

ALDERON IRON ORE CORP.



AMENDMENT TO THE ENVIRONMENTAL IMPACT STATEMENT
VOLUME 3 APPENDICES – INFORMATION REQUEST RESPONSES

Appendix G

Amphibian Survey



Stassinu Stantec Limited Partnership
607 Torbay Road
St. John's, NL A1A 4Y6
Tel: (709) 576-1458
Fax: (709) 576-2126

2012 Amphibian Surveys

Kami Iron Ore Mine and Rail Infrastructure Project

Prepared for

Alderon Iron Ore Corp.
10 Fort William Place
8th Floor
Baine Johnston Centre
St. John's, NL A1C 5W2

Draft Report

File No. 121614000.489

Date: November 16, 2012

EXECUTIVE SUMMARY

Stassinu Stantec Limited Partnership was retained by Iron Ore Corp (Alderon) to conduct amphibian surveys for an area encompassing the Kamistatusset (Kami) Iron Ore Mine and Rail Infrastructure (the Project). The purpose of the Amphibian Study is to provide environmental information on species present in the Project area to be used in the environmental assessment of the Project, as well as ongoing Project planning and design work.

Dedicated amphibian surveys were conducted between 5 and 8 July 2012, although biologists conducting other surveys in support of the Project at other times were recording incidental observations of wildlife species that would have included amphibians. Surveys consisted of a variety of field techniques, based on target species and habitat encountered, in three main areas within the Project area (Areas A, B and C).

Three amphibian species were confirmed in the Project area during the surveys. The most frequently detected species were wood frogs (*Rana [Lithobates] sylvatica*) and American toads (*Bufo [Anaxurys] americana*). These species are likely widespread and abundant in the Study Area. Northern two-lined salamanders (*Eurycea bislineata*) were found on two occasions. Blue spotted salamanders (*Ambystoma laterale*) and mink frogs (*Rana [Lithobates] septentrionalis*) are recorded in the area, but no observances of these species were made during these field surveys.

The amphibian surveys conducted in the Project area will provide additional data for use in the environmental assessment process. As a supplement to a variety of waterfowl, vegetation, songbird and other wildlife surveys and ground based field work completed in summer and fall 2011, the 2012 amphibian surveys account for temporal boundaries of species that may be present in the Project area throughout the year.

STASSINU STANTEC LIMITED PARTNERSHIP
WINTER WILDLIFE SURVEYS: KAMI IRON ORE PROJECT



Table of Contents

| | |
|--|----------|
| 1.0 INTRODUCTION | 1 |
| 1.1 Kami Iron Ore Project Overview | 1 |
| 1.2 Amphibian Surveys | 3 |
| 1.3 Study Team | 3 |

| | |
|---|----------|
| 2.0 RATIONALE AND OBJECTIVES | 7 |
|---|----------|

| | |
|-----------------------------|----------|
| 3.0 STUDY AREA | 8 |
|-----------------------------|----------|

| | |
|--|-----------|
| 4.0 METHODS..... | 10 |
| 4.1 Pre-Survey Planning | 10 |
| 4.2 Field / Sampling Methods..... | 10 |
| 4.2.1 Data Analysis..... | 11 |
| 4.2.2 Quality Assurance / Quality Control Procedures | 11 |

| | |
|--------------------------------|-----------|
| 5.0 STUDY OUTPUTS | 12 |
| 5.1 Field Survey Results | 12 |
| 5.2 Discussion..... | 14 |
| 5.2.1 Frogs and Toads | 14 |
| 5.2.2 Salamanders | 15 |
| 5.3 Summary..... | 16 |

| | |
|-------------------------------------|-----------|
| 6.0 INFORMATION SOURCES..... | 17 |
| 6.1 Literature Cited..... | 17 |

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

LIST OF FIGURES

Figure 1.1 Project Location for the Kamistatusset (Kami) Iron Ore Project2
Figure 3.1 Study Areas for Dedicated Amphibian Surveys, July 20129
Figure 5.1 Amphibian Species Recorded in the Regional Study Area, July 2012 13

LIST OF TABLES

Table 1.1 Study Team and Associated Roles3

LIST OF APPENDICES

APPENDIX A Amphibian Observation Data

1.0 INTRODUCTION

Alderon Iron Ore Corp. (Alderon) is proposing to develop an iron ore mine in western Labrador, and build associated infrastructure at the Pointe-Noire Terminal in the Port of Sept-Îles, Québec. The mine property is located south of the towns of Wabush and Labrador City in Newfoundland and Labrador and east of Fermont, Québec (Figure 1.1). The Kami Iron Ore Mine and Rail Infrastructure (the “Project”) is located entirely within Labrador, and includes construction, operation, and rehabilitation and closure of an open pit, waste rock disposal areas, processing infrastructure, a tailings management facility (TMF), ancillary infrastructure to support the mine and process plant, and a rail transportation component. The mine will have a nominal capacity of 16 million metric tonnes of iron ore concentrate per year. Concentrate will be transported by existing rail to the Pointe-Noire Terminal at the Port of Sept-Îles, where Project-related components will be located on land within the jurisdiction of the Port Authority of Sept-Îles.

The Labrador Project components will require approvals from the Government of Newfoundland and Labrador and are subject to environmental assessment (EA) under the *Environmental Protection Act* (NLEPA) and associated Environmental Assessment Regulations. Federal approvals will also be required, which trigger the requirement for a federal EA under the *Canadian Environment Assessment Act* (CEAA), at the comprehensive study level. The Project was registered in accordance with the NLEPA and CEAA in October 2011. This environmental study was conducted in support of the EIS and federal EA.

1.1 Kami Iron Ore Project Overview

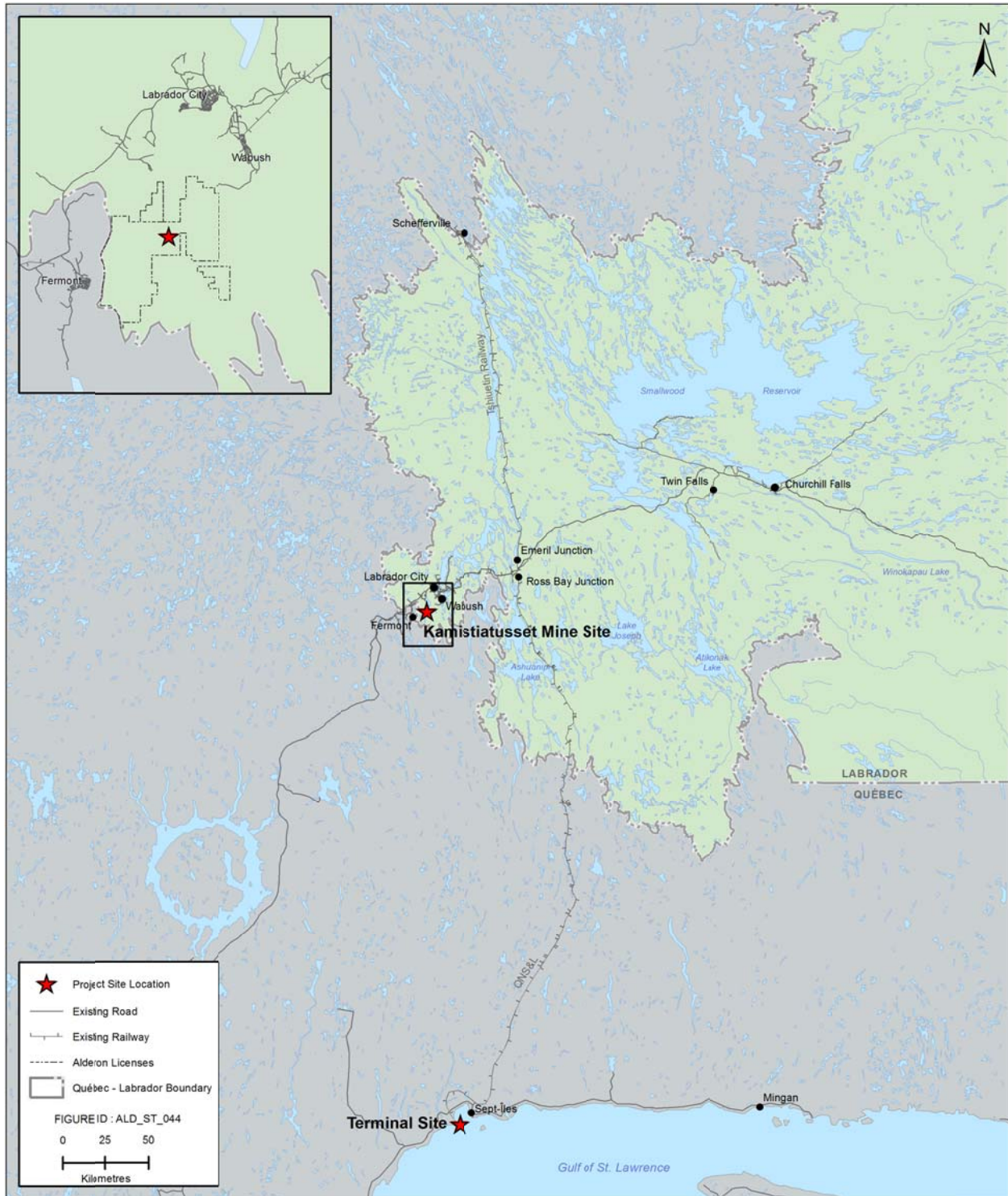
The Kami Iron Ore Project in Labrador includes construction, operation, and closure / decommissioning of the following primary components.

- Open pit (Rose Pit);
- Waste rock disposal areas (Rose North and Rose South);
- Processing infrastructure includes crushing, grinding, spiral concentration, magnetic separation, and tailings thickening areas;
- Tailings management facility (TMF);
- Effluent treatment facility;
- Ancillary infrastructure to support the mine and process plant (gate and guardhouse, reclaim water pumphouse, truck wash bay and shop, electrical substation, explosives magazine storage, administration / office buildings, maintenance offices, warehouse area and employee facilities, conveyors, load-out silo, stockpiles, sewage and water treatment units, mobile equipment, access road and transmission lines);

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

Figure 1.1 Project Location for the Kamistatusset (Kami) Iron Ore Project



STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

- A rail transportation component to connect the mine site to the Québec North Shore & Labrador (QNS&L) Railway; and
- Electrical transmission line to be located by Nalcor Energy.

1.2 Amphibian Surveys

The Draft Guidelines for the Environmental Assessment require a description of the amphibians and their habitat within the Project Footprint and areas that could be reasonably affected by Project activities (CEAA 2012). Based on a review of existing literature and previous records of observations in the region, it was determined that two species of frog, one species of toad and two species of salamander possibly occur in the Study Area (Desroches et al. 2006; Maunder 1983): wood frog (*Rana [Lithobates] sylvatica*) and mink frog (*Rana [Lithobates] septentrionalis*), American toad (*Bufo [Anaxurys] americanus*), Blue-spotted salamander (*Ambystoma laterale*) and Northern two-lined salamander (*Eurycea bislineata*). The purpose of this Amphibian Study was to identify and or find evidence of these – and potentially other species – in the Project Study Area. This survey is a supplement to a series of aerial (waterfowl, wildlife) and ground based (Ecological Land Classification, rare plants, forest songbirds) surveys completed in Study Area that began in summer of 2011.

1.3 Study Team

The Study Team for the Amphibian Study included a study manager, a study lead, field observers, GIS support as well as report preparation (Table 1.1). All team members have in-depth knowledge and experience in their fields of expertise and a broad general knowledge of the work conducted by other experts in related fields. Brief biographical statements, highlighting project roles and responsibilities and relevant education and employment experience, are provided below.

Table 1.1 Study Team and Associated Roles

| Role | Personnel |
|-------------------------------|---|
| Study Manager and Lead | Perry Trimper |
| Field Biologists (Study Team) | Mike Macdonald, Mike Crowell, Sean Bennett, Rich Lapaix, Kelly Hopkins, Anna Buchheit |
| Report Preparation | Tina Newbury, Karen Rashleigh, Mike Crowell |
| GIS | Anna Buchheit |

Perry Trimper, B.Sc.F., is a Principal with Stassinu Stantec based in the Goose Bay office in Labrador. His 28 years of experience is primarily in northern environments, of both Canada and Russia, and his areas of specialization include boreal and Arctic wildlife research, northern indigenous peoples, environmental assessment, and sustainable resource development. Mr. Trimper served as the Project Manager and Lead for the Amphibian Study.

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

Michael Macdonald, B.Sc., B.Ed., has been an associate for over twelve years with Stantec (and previously Jacques Whitford) in Dartmouth, Nova Scotia. He is an accomplished herpetologist, with over 20 years of experience conducting amphibian and reptile surveys throughout the Maritime Provinces as well as in Swaziland (South Africa) in the late 1980s. His range of experience includes species specific surveys for Four-toed Salamander (*Hemidactylium scutatum*) and Wood Turtle (*Glyptemys insculpta*), as well as general amphibian surveys for the lower Churchill River project of Labrador. Mr. MacDonald's expertise also includes avifauna surveys (e.g., raptor, owl, nighthawk and other species) in support of large scale environmental assessments such as EMERA's power line corridor project in the Sydney area of Cape Breton, Nova Scotia, and a wind farm project near Amherst, Nova Scotia. He has also performed many wetland evaluations, and general biological surveys (including in Labrador and the island of Newfoundland), and has more than 12 years in free-lance and company environmental consulting experience in this regard. Mr. Macdonald is also a highly skilled botanist who regularly conducts rare plant surveys, and entomologist with considerable experience in invertebrate taxonomy. His broad experience further includes teaching in Swaziland in the late 1980's, and running entomology and parasitology labs at Dalhousie University in Halifax, Nova Scotia in the early-mid 1990's. Given his extensive natural history background, Mr. Macdonald is a valuable asset to the Study Team.

Michael Crowell, M.Sc., is a senior terrestrial ecologist with over 27 years of experience with Stantec Consulting Ltd. He is a highly experienced botanist and plant ecologist having conducted numerous botanical surveys and plant community studies in a wide range of habitat types throughout Atlantic Canada. Mr. Crowell is also an experienced wildlife ecologist. He has conducted breeding bird surveys, aerial raptor and waterfowl surveys, aerial large mammal surveys, small mammal trapping, general mammal surveys, reptile surveys and amphibian surveys for a wide variety of projects throughout Atlantic Canada. His terrestrial ecological skills are used mainly in environmental assessments to assess the effects of various anthropogenic activities on rare or endangered species and sensitive habitats. As part of this process Michael develops mitigative measures to eliminate or reduce the adverse effects of these activities. Mr. Crowell has been responsible for designing and implementing a variety of environmental monitoring programs for rare or endangered species as well as terrestrial and wetland habitats. He is also experienced in conducting wetland evaluations and wetland functional analyses. Mr. Crowell is also experienced in air photo interpretation and plant community mapping from air photos as well as the description of plant communities. He has used these skills to prepare ecological land classifications for various areas in Atlantic Canada. Mr. Crowell participated in the field surveys and served as the senior technical reviewer for this report.

Sean Bennett, R.P.F., P.Biol., a Terrestrial Ecologist and technical lead (Terrain & Soils) with Stantec Consulting (St. John's, NL). Sean has worked in the environment industry for more than 15 years, and has experience working in Alberta, British Columbia, the Yukon, Nunavut, NWT and Newfoundland and Labrador's environment, natural resources, mining, energy and forestry sectors. As an environmental professional with a focus on the assessment and characterization of terrestrial ecosystems, Sean has provided technical expertise to numerous large and small-scale conventional oil and gas, heavy oil (insitu), oil sands, mining, infrastructure and forestry projects. As the Discipline Lead for vegetation and soils, Mr. Bennett is experienced in project

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

discipline and team management, QA/QC protocol development and implementation, and coordination and execution of a wide array of field and office programs. His exposure to various sectors has provided him with experience in land use planning, oil & gas and mine site development/operations/maintenance/closure, federal and provincial regulatory approval and permit acquisition, public consultation and community meetings. Sean has coordinated and been responsible for numerous literature reviews, environmental overviews, environmental assessments, environmental impact assessments, air photo interpretation (hard & soft copy), Ecological Land Classification (vegetation and habitat classification and mapping), environmental monitoring, project planning, communication and budgeting, data management and synthesis, and technical reporting. Mr. Bennett participated in several field components associated with the Project and collected observations in support of the Amphibian Study.

Rich LaPaix, M.Sc., is a terrestrial ecologist for Stantec's office in Dartmouth, Nova Scotia, and has over five years professional experience in the field. His terrestrial ecological skills are primarily used in the context of environmental assessment and monitoring initiatives which address the effects of various anthropogenic activities on rare or sensitive species and habitats. He is an experienced botanist and vegetation ecologist, having conducted numerous botanical surveys and plant community studies in a wide range of habitat types within both eastern and western North America. Rich is experienced in wetland delineation, classification, and functional assessment and also has expertise as a wildlife ecologist and species identification. Mr. LaPaix participated in several field components associated with the Project and collected observations in support of the Amphibian Study.

Kelly Hopkins, is a student studying Northern Natural Resources. She has over 5 years of experience with field-related environmental studies. She started working for the Conservation Corps in 2006. Since that time she worked with the Conservation Corps for three years, primarily educating the public on trying to reducing ecological footprints. Her Labrador experience has included: conducting wildlife surveys, preparing trees for pine trails, and assessing sites for proposed repeaters. As a resident of Happy Valley-Goose Bay, Ms. Hopkins has become involved in several organizations related to educating the public and fundraising for different organizations such as the local SPCA and Muscular Dystrophy of Canada. Ms. Hopkins participated as field technician for the amphibian surveys.

Anna Buchheit is a GIS Technician with the Information Management team in Stantec's St. John's office. Her background is in environmental monitoring, and she has 3 years of experience working in remote wilderness locations in Canada for various industry projects including environmental impact assessments, mineral exploration, and natural resource management. She has contributed to these projects through primary data collection and analysis, field supervision, research and report writing. Her GIS experience includes GPS data collection, post-processing & analysis, remote sensing analysis and data management. Since joining Stantec in December 2011, she has contributed to a variety of projects including Nalcor's HVDC project, Noia's Oil and Gas East Coast Map and Alderon's Kamistiatusset project. Her work on these projects has involved a variety of tasks such as data organization, data analysis, and data management as well as cartographic support and quality control. Ms. Buchheit participated as field technician for the amphibian surveys.

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

Tina Newbury, M.Sc., is a terrestrial ecologist with the Stantec office in Corner Brook, Newfoundland and has over 18 years of professional experience in the field. She graduated from Trent University (1992) with a B.Sc. with a joint major in Biology and Environmental and Resource Sciences, and completed her M.Sc. in Natural Resource Sciences from McGill University in 2006. Tina's experience includes her involvement on various large-scale projects associated with military activities and proposed mining and hydroelectric development projects in the province. Her work in Labrador includes wildlife investigations of small mammals, forest songbirds, waterfowl, raptors, woodland caribou and other species in the region, as well as various habitat characterization studies. She has been involved in similar projects within Newfoundland and Labrador, including development of an ELC for the Lower Churchill transmission line. Ms. Newbury participated in songbird, waterfowl, ELC and aerial wildlife field work as well as report preparation for this report.

Karen Rashleigh, M.Sc., is an Environmental Scientist based in Corner Brook, Newfoundland and Labrador. She graduated from the University of New Brunswick (2000) with a B.Sc. in Biology and from Memorial University (2003) with her M.Sc. in Environmental Science. Ms. Rashleigh worked with Stantec for seven years in Labrador and more recently spent two years working with the Newfoundland and Labrador Wildlife Division, Department of Environment and Conservation. She has participated in field and written components of several large scale investigations related to resource development in the province, including: wildlife and rare plant surveys for the Trans Labrador Highway EIS, annual wildlife monitoring programs for the Institute of Environmental Monitoring and research and formerly the Department of National Defense, as well as terrestrial wildlife surveys as part of the Environmental Assessment for the Lower Churchill Project. Ms. Rashleigh participated in the management and writing of the Amphibian Survey report.

2.0 RATIONALE AND OBJECTIVES

The purpose of the surveys was to gather and present information on amphibian species in the vicinity of the Project. The primary objectives of the amphibian surveys were:

- To complete amphibian surveys and record all sightings and/or evidence of species present in the Project area;
- Use the information collected to provide insight on the presence and distribution of identified species within the Project footprint and within areas that could be reasonably affected by Project activities; and
- To address specific requirements of the EA Guidelines.

Results from the Amphibian Survey were incorporated into the EIS and used to support and inform the EA for the Project.

3.0 STUDY AREA

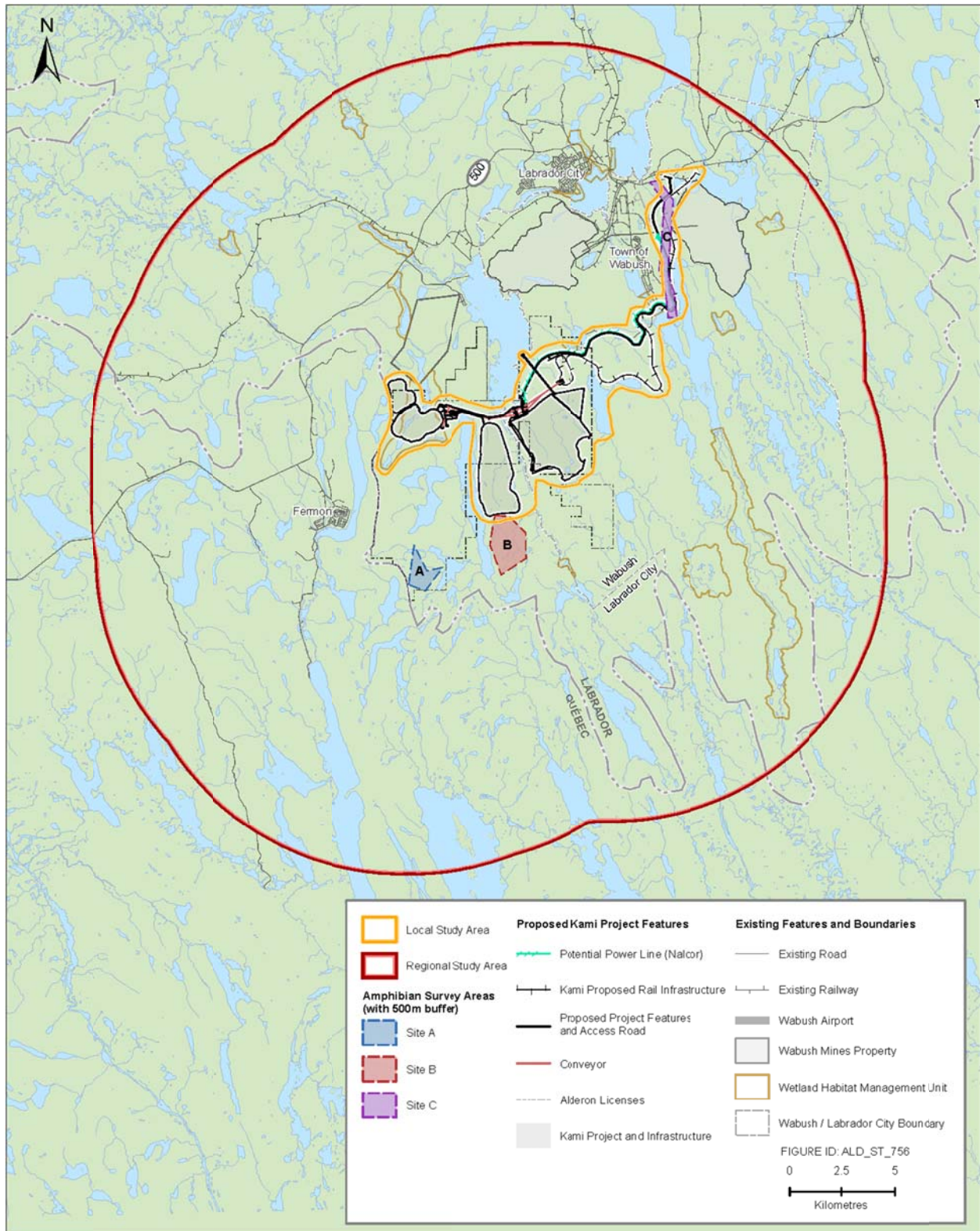
The Kami Iron Ore Mine is located in western Labrador near the Québec border, proximate to the communities of Wabush and Labrador City, Newfoundland and Labrador, and Fermont, Québec. The Project Area falls within the Mid Subarctic Forest (Michikamau) Ecoregion. This ecoregion is characterized by open coniferous forests, with spruce as predominant tree species, bare rock outcroppings, and many lakes (Meades 1990). Average winter temperature in western Labrador is -16.8°C with an average monthly snow fall amount of 65.1 cm (Environment Canada 2012). The greatest snowfall amounts occur in November and the lowest temperatures occur in January (Environment Canada 2012).

As all known and potential amphibian species in this area breed in freshwater habitats, such habitats were the focus of the field program. The area is abundantly supplied with a variety of lakes, ponds, streams, rivers, and wetlands that are often connected by a variety of water courses ranging from runs and rivers to tiny streamlets and seeps. Wetlands in the area are predominantly minerotrophic fens, but bog and marsh habitats also occur, and these are often connected by habitat and/or hydrologic drainages. There are no apparent barriers to overland dispersal (for those amphibian species recorded in the area e.g., impenetrable terrestrial habitat), though barriers may exist at the microhabitat level.

The Survey Area for this field program includes both a Local Study Area (LSA) as well as a Regional Study area (RSA) (Figure 3.1). The LSA includes all proposed Project infrastructure (i.e., the Project footprint), with a 500 m buffer placed around these Project components (approximately 71 km²). The RSA includes the LSA and surrounding area to provide a regional context for wildlife and their habitat that could potentially interact with the Project (approximately 1,193 km²).

Several sites within the LSA and RSA were selected for field surveys. Within the RSA, Survey Areas A and B (south-central within the RSA) and the Walsh River, a portion of which exists as a Wetland Habitat Management Unit, were sampled (Figure 3.1). Within the LSA, sampling occurred at the proposed Rose Pit location, in Area C (along a portion of the proposed rail infrastructure in the LSA), as well as opportunistically in easily accessible areas along the existing road (Figure 3.1).

Figure 3.1 Study Areas for Dedicated Amphibian Surveys, July 2012



4.0 METHODS

4.1 Pre-Survey Planning

A review of existing information on amphibians in the Study Area, based primarily on species accounts and range maps, documented observations, and the personal experiences of the Study Team, was conducted prior to the start of the field program. Maps produced in support of the Survey were used to establish sampling routes between wetlands prior to entering the field, to maximize efficiency.

4.2 Field / Sampling Methods

Field teams (generally two teams, comprised of two people) conducted searches for amphibian species at areas of potential habitat (i.e., areas with relatively high moisture content, including transitions from wetland habitats). Individual team members were supplied with nets suitable to capture amphibian adults, larvae, or egg masses (2 mm mesh size), as well as to conduct shallow water and near-shore blind drag netting. Field notes were updated as different habitat types were encountered, and GPS coordinates recorded. Adults, juveniles and tadpoles were identified to species in the field. Where field identifications were not possible (e.g., some tadpoles), a digital photograph was taken and/or a sample specimen was examined in detail and then released.

Study sites were accessed either by road or helicopter, and the team followed along a route that maximized encounters with a variety of potential breeding sites and other habitats where amphibians might be found. Surveys were generally conducted during the day; however, night time surveys were conducted in the vicinities of Labrador City and Wabush where these surveys could be conducted safely. These night time surveys were conducted at the northern end of Area C near Wabush and at nine sites easily accessed from the Trans Labrador Highway. Specific search techniques employed reflected the habitat of various species, and were deemed appropriate for the time of year and conditions. Generally, the survey team moved through suitable habitat areas on foot and recorded any animals flushed by their movements. In areas of terrestrial habitat, potential cover objects were turned over and the area beneath was examined for any hiding toads, frogs or salamanders. Clear waterbodies were visually surveyed, while waterbodies with heavily tannin stained water or containing abundant vegetation or detritus were netted, to try and catch hidden larvae and/or adult amphibians. Specific techniques such as drive netting (whereby a net is placed at a constriction point in the stream, and rocks are moved as an observer shuffles down the stream) were employed at suitable locations.

Areas of open water such as ponds, lakes and pools, particularly those with abundant emergent or floating leaf aquatic vegetation, were observed at a distance through binoculars wherever possible in order to sight any mink frogs before they moved underwater. Areas that could be safely accessed after dark were visited at night to listen for vocalizing frogs and toads, and search for salamanders and more reclusive species such as mink frogs.

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

On small streams, the Study Team worked in an upstream direction, gently turning cover objects both within the water and along the shore, searching for multi-year larvae and/or adults of northern two-lined salamanders. Streams, seepage streamlets, and rocky lake shores, particularly near stream and streamlet inflows, were also netted and both aquatic and terrestrial cover objects lifted to try and reveal any northern two-lined salamanders.

4.2.1 Data Analysis

Field data from the survey sites were entered into a database for summary and analysis, and maps produced using GIS software. Findings were discussed in the context of available literature on the species in question, as well as the combined expertise and experiences of the Study Team.

4.2.2 Quality Assurance / Quality Control Procedures

To ensure consistent delivery of high quality products and services, Stassinu Stantec has developed and implemented a Quality Management System (QMS) within its operations. Observations in particular were checked against field data to ensure accuracy. The QMS is registered to International Organization for Standardization 9001:2000 (QMS - Requirements) by QMI Management Systems Registration (CERT-0011312:026332).

5.0 STUDY OUTPUTS

5.1 Field Survey Results

Dedicated surveys were carried out from the 5 to 8 of July 2012, within selected areas containing suitable habitat to confirm the presence of amphibian species. Observations of amphibians were also made during rare plant field surveys conducted in the area on 25 to 26 July 2012. A summary of information collected during the amphibian surveys, as well as incidental wildlife observations made during the amphibian surveys, can be found in Appendix A.

Amphibians were found in wet and upland areas with features that provided specific habitat requirements pertinent to each species, including (but not limited to) cool waters of rivers, lakes, ponds, pools, bogs and streams; emergent vegetation; and moist forests with canopy cover. Such habitats were typically identified in a variety of ecotypes including forested wetlands, non-forested wetlands, riparian areas and other aquatic habitats.

Wood frog, American toad, northern two-lined salamander and unidentified *Rana (Lithobates)* species were the only amphibians noted within the RSA during dedicated amphibian surveys (Figure 5.1). Wood frog adults, sub-adults and larvae (tadpoles) were prevalent in all appropriate habitats, though larvae were generally fairly dispersed, except in a few cases.

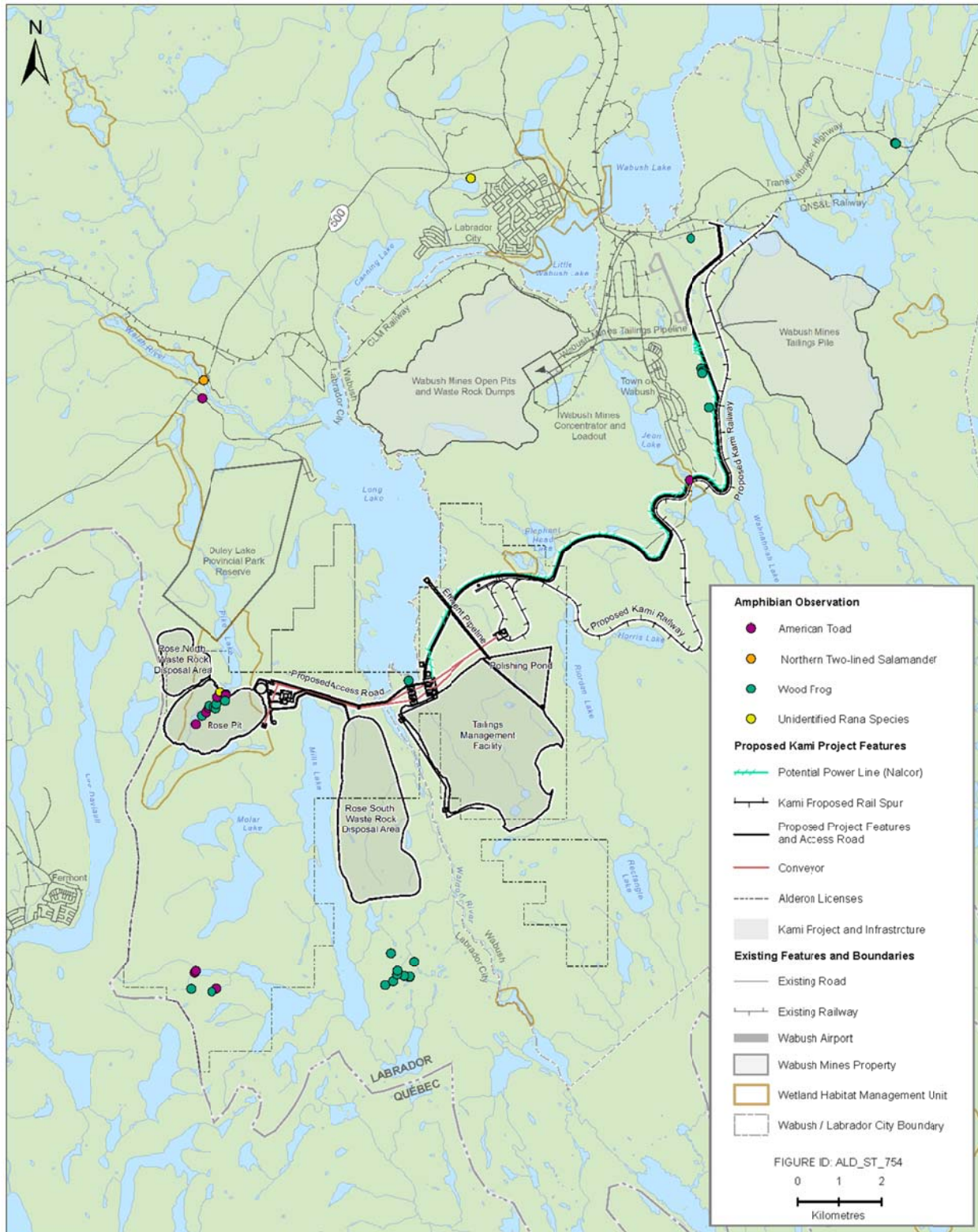
American toad larvae and adults were observed from 16 sites (Figure 5.1). Larvae were most frequently found in lakes and larger, quieter areas of streams and rivers.

Two northern two-lined salamanders were noted in the greater RSA, at the Walsh River, approximately 15 m downstream of the Trans Labrador Highway (Figure 5.1). The specimen was located near a small streamlet entering the Walsh River, along an exposure of rocky riparian shore.

The presence of mink frog was suggested, but not confirmed. Several large tadpole observations were made during other surveys conducted in support of the Project, but no specimen, picture, or definite identification exists.

Although they are known to be present in western Labrador, Blue-spotted salamanders, or evidence of their presence, were not encountered during the field program or during other surveys by the Study Team in support of the Project.

Figure 5.1 Amphibian Species Recorded in the Regional Study Area, July 2012



5.2 Discussion

From past observations in the region, published records and the suggestions of generalized range maps a total of five species of amphibians have ranges that may extend into the RSA (Desroches and Rodrigue, 2004). These include three Anurian (frogs and toads) species, American toad, wood frog, and mink frog, and two Caudata (salamander) species, northern two-lined salamander and blue-spotted salamander. Suggestions of eastern red-backed salamander (*Plethodon cinereus*) from Labrador are most likely misidentification and are actually northern two-lined salamanders, as the two species are similar in appearance. While spring peepers (*Pseudacris crucifer*) have been confirmed in the lower Churchill River Valley (Minaskuat 2008) and in wetlands along the Goose River (Bergman 1999), there are presently no records of this species from the Labrador City and Wabush area of western Labrador.

Neither blue-spotted salamander nor mink frogs were positively identified during the 2012 field surveys, although they may occur in suitable habitats in or adjacent to the RSA (Maunder 1983; Desroches et al 2006). The absence of detection does not necessarily mean that these species are not present, especially given the cryptic, mobile nature of these species. Both species may also experience population fluctuations, and in a very low part of their cycle may remain undetected in such a short timeframe.

Many local and landscape-scale factors may influence the distribution and detection of amphibians (e.g., Campbell et al. 2004; Scherer et al. 2012; Trumbo et al. 2012). The duration of the growing season, summer water temperatures, seasonal permanence of waterbodies, lotic or lentic aspect of the water body, freezing characteristics, oxygenation, tendency towards winter time hypoxia, and general nutrition of water bodies, as well as presence of fish and other predators (as competitors), can all influence which amphibian species may breed in or hibernate in a given waterbody, and/or inhabit the greater surrounding environment. Mineral or nutrient concentrations can also influence amphibian adult and larval presence to some extent. The nature of local soil development in terms of depth, friability, intensity of frost penetration, and of soil and insulating snow coverage can also be limiting factors for terrestrially hibernating amphibians. Calcium is generally available in the landscape of the RSA, so extreme acidity does not likely limit amphibian populations in this area. Various stages of successional post fire burns are present in the RSA, and it is not clear to what extent fire frequency and/or the extent of burns may affect presence and dispersal of particular amphibian species.

5.2.1 Frogs and Toads

Wood frogs were the most common species encountered, both as adults or juveniles. Their frequency in ponds and small lakes, and suggestion of their using these areas as a retreat, suggests large predatory fish are absent or scarce in these waterbodies (Babbit et al. 2003). The absence of larger frogs such as green frogs (*Rana [Lithobates] clamitans*) and bull frogs (*Rana [Lithobates] catesbeiana*), that act as competitors and even predators to wood frogs, may contribute to their abundance.

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

Observations of American toads, in contrast, were most frequently associated with waterbodies supporting fish, including large predatory fish. At these sites, competition with wood frogs may be reduced or absent (due to the presence of fish), and the toad tadpoles toxicity (Voris and Bacon 1966; Licht 1968) and group schooling tendencies protect them from fish predation. Adult and juvenile toads are likely widespread, but tend to be more cryptic and hidden during the day, compared to wood frogs. When it is dry, toads may be in burrows or under cover objects during daytime, and are thus less likely to be spotted than wood frogs, which remain in moister environments like wetlands or along streams and seeps when it is dry.

The presence of mink frog in the RSA is unconfirmed. Desroches et al. (2006) have identified western Labrador as part of the distribution of this species. No mink frogs were encountered during the dedicated amphibian surveys although there was an incidental report of a large frog tadpole from the LSA. Unfortunately, this record was not detailed enough to confirm the identity of the tadpole. In general, the small lakes and ponds present in the RSA were not ideal mink frog habitat. Mink frogs are typically associated with productive water bodies containing abundant floating leaf and emergent aquatic vegetation. Most small lakes and ponds in the RSA appear to be oligotrophic and contain very little aquatic vegetation. These shallow ponds may also freeze to the bottom or may become anoxic during the long winter resulting in heavy mortality of dormant adults and tadpoles. As such, mink frogs may be restricted to a relatively small number of sites where optimal habitat conditions are present.

5.2.2 Salamanders

Northern two-lined salamanders were encountered at only one site in the RSA but may be present in other suitable habitats in the RSA. However, many of the streams examined had a paucity of good cover objects in or along the stream, had peaty bottoms, and contained few non-embedded rocks that would provide suitable habitat. It is likely that northern two-lined salamanders are present in the RSA (Maunder 1983) but are not widely distributed. Further study is required to elucidate their distribution in the western Labrador region.

Adult blue-spotted salamanders are highly fossorial and as such are rarely observed above-ground. As such, search efforts for this species focused on the more easily detected larvae. blue spotted salamander was not detected during surveys, although several sites examined could have supported blue spotted salamander larvae. It is possible that blue-spotted salamander larvae densities were too low and widely dispersed to be detected based on survey effort.

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

5.3 Summary

The amphibian surveys conducted in the RSA will provide additional data for use in the environmental assessment process. As a supplement to a variety of waterfowl, vegetation, songbird and other wildlife surveys and ground based field work completed in summer and fall 2011, the 2012 amphibian surveys account for temporal boundaries of species that may be present in the RSA throughout the year.

Amphibians were surveyed during July 2012, in the Project LSA, and in a number of areas in the greater RSA. Wood frog and American toad were the only amphibians noted within the LSA during these or other surveys. Both species are likely widespread and abundant in the RSA. Two northern two-lined salamanders were identified in the greater RSA, in the Walsh River, downstream of the Trans Labrador Highway; however, this species is not expected within the LSA, as there is no similar, appropriate habitat. Blue spotted salamanders and mink frogs have also been recorded in the region, but no observances of these species were made during these field surveys.

6.0 INFORMATION SOURCES

6.1 Literature Cited

- Babbit, K.J., Baber, M.J., and Tarr, T.L. 2003. Patterns of larval amphibian distribution along a wetland hydroperiod gradient. *Canadian Journal of Zoology*, 6 (4): 1539-1552.
- Bergman, C.M. 1999 Range Extension of Spring Peepers in Labrador. *Canadian Field naturalist* 113:309-310.
- Canadian Environmental Assessment Agency (CEAA.) 2012. Environmental Impact Statement Guidelines (*Draft*) Prepared for the Kami iron Ore Project. 85pp.
- Campbell, C.E., Warkentin, I.G., and Powell, K.B. Factors influencing the distribution and potential spread of introduced anurans in western Newfoundland. *Northeastern Naturalist*, 11(2): 151-162.
- Desroches, J.F. & D. Rodriques. 2004. Amphibiens et Reptiles du Quebec et des Maritimes. Ed. Michel Quintin, Waterloo. 288pgs
- Desroches, J.F., Picard, I. and J.E. Maunder. 2006. The Mink Frog, *Rana septentrionalis*, in Southeastern Labrador. *Canadian Field-Naturalist*, 120: 239-240.
- Licht, L.E. 1968. Unpalatability and toxicity of toad eggs. *Herpetologica*, 24: 93-98.
- Maunder, J.E. 1983. Amphibians of the Province of Newfoundland. *Canadian Field-Naturalist*, 97(1): 33-46.
- Minasquat, 2008. Herpetile Surveys in the Lower Churchill River Valley: Environmental Baseline Report LCP 535746. 45 pp.
- Scherer, R.D., Muths, E., and Noon, B.R. 2012. The importance of local and landscape-scale processes to the occupancy of wetlands by pond-breeding amphibians. *Population Ecology*, 54: 487-498.
- Trumbo, D.R., Burgett, A.A., Hopkins, R.L., Biro, E.G., Chase, J.M., and Knouft, J.H. 2012. Integrating local breeding pond, landcover, and climate factors in predicting amphibian distributions. *Landscape Ecology*, 27: 1183-1196.
- Voris, H.K, and Bacon, J.P. Jr. 1966. Differential Predation on Tadpoles. *Copeia*, 1966 (3): 594-598.

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

APPENDIX A

Amphibian Observation Data

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

Table A-1 Amphibian Survey Data

| Date | Latitude | Longitude | Comments |
|----------|-----------|------------|--|
| 6-Jul-12 | 52.904511 | -66.862536 | Area C-9. Seep and shallow flow pools in sand pit regeneration off road to cemetery, netted and rocks looked under but no <i>Eurycea</i> or other amphibians detected. |
| 6-Jul-12 | 52.905425 | -66.858596 | Area C-8. Road-side shallow ditch pool with <i>Equisetum fluvatile</i> and <i>E. variegaetum</i> . Netted. No amphibian larvae. (Image 5245). |
| 6-Jul-12 | 52.90573 | -66.854907 | Area C-7. Netting yields 1 small wood frog tadpole in an oligotrophic likely permanent Menyanthes flark pool in a patterned shrubby fen wetland, only ~50m from Waypoint 44 and pond with plentiful wood frog larvae. (Images 5231-37). Waypoint 108 (MJC). |
| 6-Jul-12 | 52.905104 | -66.854353 | Area C-6. Deep road-side small shrub snag pond, near adjacent wetland. Netted extensively; 23 Wood frog tadpoles caught but no <i>Ambystomid</i> larvae. Some dragonfly larvae of at least 2 species. (Images 5214-5217). Waypoint 107 (MJC). |
| 6-Jul-12 | 52.904683 | -66.854688 | Area C-5 Wood Frog , Juvenile caught on dirt road by Anna -marie near a marshy to fen wetland. |
| 6-Jul-12 | 52.901568 | -66.853989 | Area C-4. Into another gently sloping open fen area. Fewer pools, looked into some poor ones and a bit better, netted, no amphibians detected. |
| 6-Jul-12 | 52.896521 | -66.847659 | Area C-3. Edge of Flora Lake near stream inflow area. No emergents in lake, not particularly good for Mink Frog. Shoreline rocks in and out of water, searched for <i>Eurycea</i> . None detected. |
| 6-Jul-12 | 52.896744 | -66.848467 | Area C-2. Same stream from large sloping fen complex near Flora Lake, no <i>Eurycea</i> . Large <i>Salix vestita</i> , <i>Thalictrum pubescens</i> common, scattered <i>Symphytotrichum puneceum</i> . |
| 6-Jul-12 | 52.897159 | -66.84897 | Area C-2. Where sloping fen starts to generate a stream that flows down to the lake through more shrubby and rocky wetland. Netted and searched for <i>Eurycea</i> but none located. |
| 6-Jul-12 | 52.897343 | -66.852684 | Area C-1. Wood Frog adult. A large gently sloping open fen complex wetland leading to a large lake and mine dumps beyond. Shallow pools, netting them revealed no amphibian larvae, <i>Dasiphora</i> , <i>Tofeldia pusilla</i> , <i>Triglochin maritime</i> . |
| 6-Jul-12 | 52.923522 | -66.846098 | Area C Disjunct. Another pool in wetland, <i>Menyanthes</i> surrounded. Netted. Small fish noted; also dragonfly larvae. No amphibians detected. |
| 6-Jul-12 | 52.92325 | -66.846369 | Area C Disjunct. Permanent type medium shallow pool lower down in same open fen in more marshy area of wetland. Netted. No amphibians detected. <i>Carex rostrata</i> , <i>Carex limosa</i> . |
| 6-Jul-12 | 52.922264 | -66.845383 | Area C Disjunct. Unusual solid bottom, very shallow flow fen below mine dump berm, <i>Triantha glutinosa</i> , <i>Tofeldia pusilla</i> , <i>Platanthera dilitata</i> , etc. present. Slopes gently to additional marshy wetland with pools. |
| 6-Jul-12 | 52.924668 | -66.84657 | Area C. Lake off the wood road, no amphibians detected in brief look and listen and a few nettings here or in adjacent road pool. Birds: A Common Loon seen fishing in the Lake. Note that between waypoint 35 and waypoint 34 (with no waypoint) pools in road through a small open wetland and in the wetland were observed and netted but no amphibians were noted. |
| 6-Jul-12 | 52.931383 | -66.854574 | Area C Disjunct. Up the wood road. Bird: A Red -breasted Nuthatch flies across the road (image #?) and a Tern is seen flying nearby. |
| Date | Latitude | Longitude | Comments |
| 6-Jul-12 | 52.93347 | -66.857483 | Area C Disjunct. Abundant Wood frog tadpoles in wetland water fringing pond off Trans-Labrador Highway seen and netted last night (5 th July). Either no fish in |

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

| Date | Latitude | Longitude | Comments |
|----------|-----------|------------|---|
| | | | pond or micro-separation aspects. Adult Wood frog found near nearby paved Trans-Labrador Highway. Site along wood road to mine dump with a <i>Nuphar sp.</i> edged (no Mink Frogs were detected last evening or night) pond on one side and a marsh and fen wetland on the other side of the track road where no amphibians were noted. |
| 7-Jul-12 | 52.95163 | -66.778175 | S-9. A broad marshy pool off the Trans-Labrador Highway and a rail line opposite a lake. Richer site, more <i>odonata</i> larvae. Netted near edge in marshy shallows, listened, imitated Mink Frog calls and playback. No amphibians noted. |
| 7-Jul-12 | 52.952276 | -66.784378 | S-8 Wood Frog tadpoles, > 25 noted in adjacent larger pool across the drive way like flange from waypoint 86. No large predator noted. No salamander larvae. |
| 7-Jul-12 | 52.952132 | -66.784087 | S-8 Wood Frog tadpoles, 3 + noted in ditch pool and a large <i>Dytiscid</i> larvae in left side pool along one side of a drive way like flange off the Trans-Labrador Highway, east of Labrador City. |
| 7-Jul-12 | 52.955025 | -66.790607 | S-7. ~ 10:09 pm. Past the 23 km marker on the Trans-Labrador Highway beyond Labrador City and Wabush. Road side cool water pools and flow. No amphibians detected. |
| 7-Jul-12 | 52.949877 | -66.966011 | S-6. No stream or seep or pool in area as hoped, an area of friable white crystalline rock off Trans-Labrador Highway. Oddly some Variegated Gout Weed and a single specimen of Stinging Nettle (<i>Urtica dioica</i>). |
| 7-Jul-12 | 52.928097 | -67.011068 | S-5. Upstream side of creek on Trans Labrador Highway. Broad pool above culvert. Netted and looked under some cover objects for <i>Eurycea</i> but no amphibians noted. |
| 7-Jul-12 | 52.927508 | -67.011743 | S-4. Road side muddy pool off Trans Labrador Highway. Between Helicopter staging area and Labrador City. No vegetation. May have ATV's run through. Netted extensively but no amphibian larvae detected. |
| 7-Jul-12 | 52.925067 | -67.01538 | S-3. Upstream side of Trans Labrador Highway on fast flowing <i>Equisetum fluviatile</i> choked rocky stream, seeps, some stream side rocks, No <i>Eurycea</i> found or other amphibians noted. |
| 7-Jul-12 | 52.906239 | -67.031157 | S-2. Two adult Northern Two-lined Salamanders (<i>Eurycea bislineata</i>) located under a rock ~ 15 m below Highway bridge downstream left bank rocky shore of the Walsh River at small streamlet inflow (Images 5889 on). |
| 7-Jul-12 | 52.902412 | -67.031728 | S-1. American Toad tadpoles. A few (6 +) noted in shallow wetland pools. <i>Potamogeton</i> sp. Connected to waypoint 78 system. Brook Trout seen to be present at periphery. Road off Trans-Labrador Highway to the Helicopter staging area well up left bank of Walsh River. |
| 7-Jul-12 | 52.902183 | -67.031868 | S-1. Open semi-impounded pool of large brook alongside of road to helicopter camp from the Highway. No larvae noted here. Fish presence a given and lost bobber suggests this strongly especially in main pool. |
| 7-Jul-12 | 52.782297 | -66.967131 | Along the pond below the sloping rock outcrop, nettings and visual reveal no amphibians. End of area search. |
| 7-Jul-12 | 52.782436 | -66.966874 | Sloping rock outcrop. On it plentiful <i>Saxifraga paniculata</i> , scattered <i>Asplenium viride</i> , <i>Dasiphora</i> , <i>Salix vestita</i> , <i>Solidago uliginosa</i> . <i>Rubus arcticus</i> . (i.e., some seepy aspect). |

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

| Date | Latitude | Longitude | Comments |
|----------|-----------|------------|---|
| 7-Jul-12 | 52.78248 | -66.966737 | Hillock in a burn regeneration, with a strange crumbling sandstone like rock above a pond and fen fringe wetland and a sloping rock face. |
| 7-Jul-12 | 52.7809 | -66.962462 | Wood Frog, adult male. A juvenile a bit further along, in lower part of same stream fen. (image #?). <i>Dasiphora</i> , <i>Anemone parviflora</i> , <i>Salix vestita</i> , <i>Lonicera vilosa</i> . Bird: American Robin. |
| 7-Jul-12 | 52.780484 | -66.962238 | Downstream on same stream in fen wetland. Saw a 4-inch brook trout in this streamlet drainage amid burned regeneration uplands. |
| 7-Jul-12 | 52.780216 | -66.96191 | Stream in the semi-open fen drainage that was searched for Northern Two-lined salamanders. |
| 7-Jul-12 | 52.779454 | -66.961969 | Fen drainage here a bit drier and with <i>Larix</i> and <i>Picea mariana</i> , steam nearby. Apparent Spruce Grouse feces. |
| 7-Jul-12 | 52.779104 | -66.962644 | Sloping rocky regeneration slope with many standing snags. <i>Cystopteris fragilis</i> rock fern on outcrop. Bird: Olive-Sided Flycatcher calling nearby. |
| 7-Jul-12 | 52.778462 | -66.962718 | Stream disappears underground. <i>Ribes lacustre</i> , <i>Trientalis borealis</i> , <i>Streptopus amplexifolius</i> . |
| 7-Jul-12 | 52.778351 | -66.962896 | Outflow stream gets rockier bed as descends, search for <i>Eurycea</i> but hard to sample, none found. Lush red-osier, <i>Phegopteris</i> , <i>Gymnocarpium dryopteris</i> , <i>Fragaria virginiana</i> ., <i>Athyrium felix-femina</i> , <i>Sanguisorba</i> , <i>Dryopteris</i> , <i>Actaea rubra</i> , <i>Mitella</i> , <i>Betula minor</i> , <i>Viburnum edule</i> , <i>Galium triflorum</i> . |
| 7-Jul-12 | 52.7779 | -66.963664 | Outflow stream from wood frog tadpole pond waypoints 65, 66, still in open wetland, no <i>Eurycea</i> found. (Image 5697 to pond, 5698 downstream from pond). |
| 7-Jul-12 | 52.777573 | -66.964268 | Same clear bottomed oligotrophic pond12 + Wood frog tadpoles observed or captured, estimate 100's in the pond. (image 5685). |
| 7-Jul-12 | 52.777722 | -66.964221 | A small Wood Frog tadpole in clear bottomed oligotrophic pond shallows, then another. Twelve wood frog larvae observed or captured at various locations in the pond. |
| 7-Jul-12 | 52.777843 | -66.966111 | Fen flark type pool off edge of larger pond. 1 Wood frog, a small adult. Dives in pool with algal brown mat. No amphibian larvae seen. Bird: Common Goldeneye flies over when it sees us. Olive-Sided Flycatcher calls > 100 m away to east. (images 5674-75). |
| 7-Jul-12 | 52.77758 | -66.967065 | Along the same lake as Waypoint 62 at marshier edge end. (image 5663). Two large dark bellied leeches seen, mammal: hear a red squirrel, no frogs/amphibians yet. |
| 7-Jul-12 | 52.776543 | -66.968896 | Along an oligotrophic lake the stream led to, no frogs yet. See a few Water tigers. (image 5652). |
| 7-Jul-12 | 52.776386 | -66.969668 | Likely along same stream leading to another oligotrophic lake, no <i>Eurycea</i> or other amphibians noted. |
| 7-Jul-12 | 52.776181 | -66.970838 | Outflow stream from the pond at Waypoint 57. No <i>Eurycea</i> found, Small scud like Amphipods noted. |
| 7-Jul-12 | 52.775963 | -66.974014 | Sloping mossy black spruce forest, some green alder, <i>Platanthera obtusata</i> , <i>Pyrola asarifolia</i> , <i>Solidago macrophylla</i> , <i>Viburnum edule</i> . <i>Mitella</i> . |
| 7-Jul-12 | 52.775757 | -66.973285 | Sloping mossy mature black spruce with some fir dominated forest. <i>Vaccinium angustifolium</i> , Labrador Tea, Snowberry. |

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

| Date | Latitude | Longitude | Comments |
|----------|-----------|------------|--|
| 7-Jul-12 | 52.776031 | -66.972712 | Kelly sees one Wood Frog along pond, Seep head streamlet feeding into nearby pond. Birds Ruby-crowned Kinglet, Gray Jay, Northern Flicker, Goose droppings, <i>Salix vestita</i> common. No <i>Eurycea</i> or other amphibians noted. |
| 7-Jul-12 | 52.776834 | -66.972056 | Willow drainage in coniferous forest stream dry above ground, here and in earlier seep no <i>Eurycea</i> or other amphibians found. |
| 7-Jul-12 | 52.776802 | -66.969933 | Wood frog, an adult male, and a greyer one in nearby small seep flow. Moving up a gently sloping open fen. |
| 7-Jul-12 | 52.778208 | -66.96857 | Frog jumps into lake, not seen by me. Kelly thinks greenish. Possible Mink Frog; We wait but nothing moves or surfaces. No amphibian larvae to be seen or netted. Likely a wood frog in retrospect. Bird: A drake Common Goldeneye flew up off the lake earlier on our approach. |
| 7-Jul-12 | 52.779042 | -66.968353 | Wood Frogs, a juvenile. along the stream (image #?); a small adult jumps in upstream further on small stream nearing the lake edge. Bird: Greater Yellowlegs. |
| 7-Jul-12 | 52.779422 | -66.968579 | Small stream in fen, apparently flowing out of nearby small lake through part of open fen. Netted. No <i>Eurycea</i> detected. |
| 7-Jul-12 | 52.780456 | -66.968845 | Open fen wetland, <i>Dasiphora</i> , <i>Tofeldia</i> , <i>Anemone parviflora</i> , develops a stream and leads to a lake. |
| 7-Jul-12 | 52.781208 | -66.969219 | Small fen wetland with <i>Veratrum viride</i> , <i>Anemone parviflora</i> , no pools, small seeps, no amphibians detected. |
| 7-Jul-12 | 52.782904 | -66.970469 | 1 adult Wood frog seen in first pond, another along 2nd pond. Helicopter landing place in small open fen and larger pools complex wetland between burn regeneration and unburned black spruce forest fringe. No <i>Nuphar</i> in ponds, algae common at surface margins. No larvae seen or netted. Birds: several White-throated Sparrow, Gray Jay, Common Goldeneye drake flies in then off when sees us. Three-toed Woodpecker nearby. |
| 8-Jul-12 | 52.77604 | -67.031574 | Area A-6. Apparent extant beaver lodge along large pond edge of same American Toad tadpole site. |
| 8-Jul-12 | 52.776319 | -67.032203 | Area A-6 Essentially same Waypoint as Waypoint 100. |
| 8-Jul-12 | 52.775614 | -67.033967 | Area A-5 Wood Frog, adult in sloping mesic mature coniferous forest. Note: A small station of <i>Gymnocarpium robertianum</i> in mossy woods nearby this point. |
| 8-Jul-12 | 52.774417 | -67.038862 | Area A-4. Small open fen wetland with no evident pools, immediately down slope from Helicopter put down site. |
| 8-Jul-12 | 52.779811 | -67.039999 | Area A-3. More American Toad tadpoles along same upper end large lake edge shallows. Saw a resident Common loon fly in and fly off. |
| 8-Jul-12 | 52.780193 | -67.039556 | Area A-3. Abundant American Toad Tadpoles (100's up and down lake shallows) in the shallows of a large lake, essentially between a small stream and larger brook inflow. Abandoned old beaver lodge nearby, caught a Long Nose Dace, and brook trout seen in inflow streams and streamlets. |
| 8-Jul-12 | 52.77978 | -67.040638 | Area A-3. Small cold streamlet soon to enter a large lake. Searched for Northern Two-lined Salamanders but only saw small and larger Brook Trout. |
| 8-Jul-12 | 52.77645 | -67.045076 | Area A-2 Another large pond or small Lake also set in semi-burned regeneration area, just outside study site. No amphibians noted but not sampled extensively. Bird: A Solitary Sandpiper feeding. |
| 8-Jul-12 | 52.776407 | -67.042124 | Area A-1? Maybe of end of wetland and large pond complex. |
| 8-Jul-12 | 52.776384 | -67.04129 | Area A-1. Wood Frog, juvenile and >5 of the freshwater amphipods. Old abandoned beaver lodge. |

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

| Date | Latitude | Longitude | Comments |
|-----------|-----------|------------|---|
| 8-Jul-12 | 52.775734 | -67.0404 | Area -A. 1 narrow fringing fen wetland with some pools off a large pond or small lake largely set in a burned area but with some fringes of intact coniferous forest. |
| 8-Jul-12 | 52.774896 | -67.038114 | Area -A. Helicopter drop off area in an open burn. |
| 8-Jul-12 | 52.900787 | -67.02847 | Materials and Helicopter staging camp well up off the right bank of the Walsh River. |
| 20-Jul-12 | -66.91661 | 52.683195 | |
| 21-Jul-12 | 52.776258 | -67.03216 | Area A-6. American toad tadpoles; ~ 20 netted and seen by small streamlet inflow, small shiner like fish and larger schooling not well seen fish, large pond or small lake, bit richer than many water bodies encountered. Caught a big <i>Dytiscid</i> beetle larva. |
| 21-Jul-12 | -66.9616 | 52.840968 | SE corner of long lake. |
| 25-Jul-12 | -67.03722 | 52.832792 | Dark with gold speckles (photos 198-204) abundant in shallow water with mineral subs; to be confirmed. |
| 25-Jul-12 | -67.03502 | 52.834558 | 1 adult in black spruce-feathermoss transitional area, ~2m from lake edge (SB photos 1365 -1367). |
| 25-Jul-12 | -67.03234 | 52.836523 | 1 tadpole at lake edge on CARROS, black with gold speckles, fish present. |
| 25-Jul-12 | -67.0335 | 52.835225 | 5 tadpoles, black w gold speckles, lake edge. |
| 25-Jul-12 | -67.03256 | 52.836162 | ~20 tadpoles in shallow (<0.5') water at lake edge, dark with gold speckles. |
| 25-Jul-12 | -67.03232 | 52.836665 | Unconfirmed adult in shore marsh / fen, water <10cm deep, <i>Carex aquatilis</i> dominant. |
| 25-Jul-12 | -67.03074 | 52.836383 | 2 adults, side of small pond in shrub / graminoid fen. |
| 25-Jul-12 | -67.02972 | 52.836048 | Juvenile, white belly, at least 1 of previous WOFR entry likely juvenile (photos 206-207). |
| 25-Jul-12 | -67.02942 | 52.837 | 1 adult in gram / shrub fen ~ 10 m from edge of pool. |
| 25-Jul-12 | -67.02903 | 52.83844 | 2 tadpoles, still-water on side of river, black w gold speckles. |
| 25-Jul-12 | -67.02796 | 52.83957 | Not confirmed, jumped into water, quiet area of stream before it enters lake with old beaver dam. |
| 25-Jul-12 | -67.02596 | 52.839035 | 2 tadpoles -juvenile, legs and arms present, end of slow moving stream at lake (photos 208-209). |
| 25-Jul-12 | -67.02597 | 52.839005 | 2 tadpole-juvenile, green on sides, brownish-orange spots on back, light underside. (photos 210-213). |
| 25-Jul-12 | -67.02601 | 52.838775 | 1 adult in black spruce/feathermoss treed stream fen, ~ 10m from lake edge (SB photos 1376, 79, 80). |
| 25-Jul-12 | -67.02628 | 52.837643 | 1 juvenile, in graminoid/shrub fen (photos SB 1383-85) |
| 26-Jul-12 | -66.72227 | 52.747143 | |
| 26-Jul-12 | -66.86062 | 52.8819 | In mixed-wood habitat. |

STASSINU STANTEC LIMITED PARTNERSHIP

2012 AMPHIBIAN SURVEYS - KAMI IRON ORE MINE AND RAIL INFRASTRUCTURE PROJECT

Table A-2 Incidental Wildlife Observations

| | | | | | |
|--------------|----------|---------|--|--|-----------------------------------|
| 7 July, 2012 | 52.77784 | 66.9661 | Common Goldeneye | individual | Flew over |
| 7 July, 2012 | 52.77758 | 66.9671 | Dark-bellied leeches; red squirrel | 2 leeches; 1 red squirrel | Red squirrel was heard nearby |
| 7 July, 2012 | 52.77654 | 66.9689 | Predaceous diving beetles | individuals | |
| 7 July, 2012 | 52.77618 | 66.9708 | amphipods | individuals | Scud-like |
| 7 July, 2012 | 52.77603 | 66.9727 | Ruby-crowned kinglet; Gray Jay; Northern Flicker; Canada Goose | Individuals of Canada Goose scat | |
| 7 July, 2012 | 52.77821 | 66.9686 | Common Goldeneye | individual | Drake flew up off lake |
| 7 July, 2012 | 52.77904 | 66.9684 | Greater yellowlegs | individual | |
| 7 July, 2012 | 52.7829 | 66.9705 | White-throated Sparrow; Gray Jay; Common Goldeneye; Three-toed Woodpecker | individuals | Drake Common Goldeneye flushed |
| 6 July, 2012 | 52.9051 | 66.8544 | dragonfly | larvae | At least two species |
| 6 July, 2012 | 52.89674 | 66.8485 | Unidentified species | scat | |
| 6 July, 2012 | 52.92352 | 66.8461 | Fish; dragonfly | individuals | Dragonfly larvae |
| 6 July, 2012 | 52.92467 | 66.8466 | Common Loon | individual | Fishing in lake |
| 6 July, 2012 | 52.93138 | 66.8546 | Red-breasted Nuthatch; Common Tern | individuals | Both in flight |