APPENDIX C

PROVINCIAL APPROVED TERMS OF REFERENCE, CONCORDANCE TABLE AND COMMITMENTS

APPENDIX C-1

APPROVED TERMS OF REFERENCE

RAINY RIVER RESOURCES LIMITED

RAINY RIVER GOLD PROJECT

PROPOSED TERMS OF REFERENCE - AMENDED

JANUARY 2013

TC111504

Rainy River Resources Ltd.
1111 Victoria Avenue East
Thunder Bay, Ontario P7C 1B7

T 807-623-1540
F 807-623-0974

January 29, 2013

Ms. Agatha Garcia-Wright
Director, Environmental Assessment and Approvals Branch
c/o Cindy Batista, Project Officer
Ministry of the Environment
2 St. Clair Avenue W., 12th Floor
Toronto, Ontario, M4V 1LS

Re: Rainy River Gold Project - Submission of Amended Proposed Terms of Reference and Revised Record of Consultation, Discussions and Meetings

Dear Ms. Garcia-Wright:

The Rainy River Gold Project is a gold exploration project located within the Township of Chapple, approximately 65 kilometres northwest of Fort Frances in Northwestern Ontario. Rainy River Resources Ltd. (Rainy River) is pursuing environmental approvals for the development of a gold mine that will see a capital investment of approximately $700M along with the creation of approximately 500 fulltime jobs with a projected project life of 16+ years. Rainy River entered into a Voluntary Agreement with the Ontario Ministry of the Environment to conduct an Environmental Assessment for the Project in accordance with the requirements of the Ontario Environmental Assessment Act in April of 2012.

In support of this process, Rainy River Resources is submitting this Amended Proposed Terms of Reference for approval, along with a Revised Record of Consultation, Discussions and Meetings for review. The document has been developed together with your departmental staff through a collaborative consultation process.

We are confident that you will find the attached documentation satisfactory and look forward to moving to the next phase of project development in the coming year. Should you have any questions or comments related to the information provided herein, please do not hesitate to contact me.

Most sincerely,

Kyle L. Stanfield
Vice-President, Environment & Sustainability
Rainy River Resources Ltd.

FORWARD LOOKING INFORMATION

This document contains "forward-looking information" as defined in applicable securities laws (referred to herein as "forward-looking statements"). Forward looking statements include, but are not limited to, statements with respect to the cost and timing of the development of the Rainy River Gold Project, including the exercise of the economic parameters of the project; the success and continuation of exploration activities; estimates of mineral resources; acquisitions of additional mineral properties; the future price of gold; government regulations and permitting timelines; estimates of reclamation obligations that may be assumed in connection with the exercise of the economic parameters of the project; requirements for additional capital; environmental risks; and general business and economic conditions. Often, but not always, forward-looking statements can be identified by the use of words such as "plans", "expects", "is expected", "budget", "scheduled", "estimates", "suggests", "continues", "forecasts", "projects", "predicts", "intends", "anticipates" or "believes", or variations of, or the negatives of, such words and phrases, or statements that certain actions, events or results "may", "could", "would", "should", "might" or "will" be taken, occur or be achieved. Inherent in forward-looking statements are risks, uncertainties and other factors beyond the Company's ability to predict or control. These risks, uncertainties and other factors include, but are not limited to, the assumptions underlying the document not being realized, future gold prices, changes in cost of labour, supplies, fuel and equipment, changes in equity markets, actual results of current exploration, changes in project parameters, exchange rate fluctuations, title risks, regulatory risks and uncertainties with respect to obtaining necessary surface rights and permits or delays in obtaining same, and other risks involved in the gold exploration and development industry, as well as those risk factors discussed in the section entitled "Description of Business-Risk Factors" in Rainy River Resources' 2012 Annual Information Form. Forward-looking statements are based on a number of assumptions which may prove to be incorrect, including, but not limited to, the availability of financing for the Company's exploration and development activities; the timelines for the Company's exploration and development activities on the Rainy River Property; the availability of certain consumables and services; assumptions made in mineral resource estimates, including geological interpretation grade, recovery rates, and operational costs; and general business and economic conditions. Forward looking statements involve known and unknown risks, uncertainties and other factors which may cause the Company's actual results, performance or achievements to be materially different from any of its future results, performance or achievements expressed or implied by forward-looking statements. All forward-looking statements herein are qualified by this cautionary statement. Accordingly, readers should not place undue reliance on forward-looking statements. The Company undertakes no obligation to update publicly or otherwise revise any forward-looking statements whether as a result of new information or future events or otherwise, except as may be required by law.

Rainy River Resources Ltd.
1111 Victoria Avenue East
Thunder Bay, Ontario P7C 1B7

T 807-623-1540
F 807-623-0974

February 21, 2013

Ministry of the Environment
Environmental Approvals Branch
2 St. Clair Avenue West
Floor 12A
Toronto ON M4V 1L5
Attention: Ian Parrott, Acting Director

RE: Submission of Erratum; Rainy River Gold Project Amended Terms of Reference
EA File No. 05 09 02

Dear Mr. Parrott:

Pursuant to a recent e-mail from Ms Cindy Batista, Project Officer, we would like to submit this letter with attached erratum table for the Rainy River Gold Project Amended Terms of Reference (ToR), for your consideration.

The Amended Proposed ToR will be posted on the Rainy River Gold Project website.

Please do not hesitate to contact me if you have any questions or concerns.

Sincerely,

Kyle L. Stanfield
Vice-President, Environment & Sustainability
Rainy River Resources Ltd.

cc. Cindy Batista, Ross Lashbrook - MOE
Sheila Daniel – AMEC
Howard Hampton - Fasken Martineau

RAINY RIVER GOLD POWER PROJECT
AMENDED PROPOSED TERMS OF REFERENCE
- ERRATUM

Page	Existing Text	Page	Correction Required / Additional Text
27	As both of these mining methods are being consider,.... they will be both be assessed in the EA.	27	As both of these mining methods are being consider,.... they will be **assessed individually and in combination** in the EA.
10	• Active reclamation: 1 to 2 years	10	• **Decommissioning / Closure Phase (including** active reclamation: 1 to 2 years **followed by passive reclamation and monitoring**)
26	-	26	**Alternatives to the Undertaking** The purpose of the Project as defined in Section 3 is to develop and operate a new gold mine to produce gold from RRGP property. There are no other suitable alternatives to the RRGP which meet this purpose, and as such, the only alternative to the RRGP is the "do nothing" alternative. It is a standard best practice within the context of an EA to bring forward the "do nothing" alternative, primarily as a benchmark against which the anticipated overall project impacts can be measured, and can be used to highlight the benefits of proceeding with the undertaking. As such, while the "do nothing" alternative would mean that the RRGP would not go forward, it will be carried forward to the EA process to allow comparison against the impacts of the whole undertaking. The alternative of proceeding with the undertaking, but on a delayed schedule will also be considered. RRR recognizes that the MNR has a unique screening approach to selecting and assessing Project alternatives within the Class EA process for MNR Resource Stewardship and Facility Development Projects. RRR proposes to utilize the MNR Environmental Screening Criteria to assess Project alternatives in the EA Report.
44	Environmental baseline studies for certain aspects, including,..... TK/TLU and socio-economics are on-going as of the issuance of the Amended Proposed ToR.	44	Environmental baseline studies for certain aspects, including,..... **built heritage / cultural heritage resources,** TK/TLU and socio-economics are on-going. **These specialized studies will be used to inform the EA.**
55	-	55	• identify the need for additional monitoring and assessment to address potential facility development impacts that had not been defined at the time of the baseline study.
82 (7.2.1)	• Groundwater systems	82 (7.2.1)	• Groundwater systems **(flow and quality)**

RAINY RIVER

TABLE OF CONTENTS

Page

amec

ASSOCIATED DOCUMENT

Revised Record of Consultation, Discussions and Meetings

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

GLOSSARY

µg/g	micrograms (one-millionth of a gram) per gram
µg/m^3	micrograms (one-millionth of a gram) per cubic metre
AANDC	Aboriginal Affairs and Northern Development Canada
Aboriginal	In the context of the RRGP, includes both First Nation and Métis people.
ABA	acid base accounting
AMEC	AMEC Environment & Infrastructure
ARD	acid rock drainage
asl	above sea level
CCME	Canadian Council of Ministers of the Environment
CEA Agency	Canadian Environmental Assessment Agency
CEAA, 2012	*Canadian Environmental Assessment Act, 2012*
CEP	Consultation and Engagement Plan
CEQG	Canadian Environmental Quality Guidelines
cm	centimetres
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
dBA	A-weighted decibels
EA	environmental assessment
EIS	environmental impact statement
FFCS	Fort Frances Chiefs Secretariat
GHG	greenhouse gas
ICP	inductively coupled plasma
km	kilometre
km/h	kilometres per hour
kV	kilovolt
L	litres
L_{eq} levels	loudness equivalent
LSA	local study area
MAA	Ontario Ministry of Aboriginal Affairs
m	metre
m^3	cubic metres
m^3/a	cubic metres per year
m^3/d	cubic metres per day
m^3/s	cubic metres per second
mm	millimetre
Mm^3	million cubic metres
MMER	Federal Metal Mining Effluent Regulations
MNDM	Ontario Ministry of Northern Development and Mines
MNO	Métis Nation of Ontario
MNR	Ontario Ministry of Natural Resources
MODFLOW	Modular Finite-Difference Groundwater Flow Model
MOE	Ontario Ministry of the Environment
MTCS	Ontario Ministry of Tourism, Culture and Sport
MTO	Ontario Ministry of Transportation
MOU	Memorandum of Understanding
Mt	million tonnes

NO	mono nitrogen oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
^oC	degrees Celsius
PAAC	Participation Agreement Advisory Committee
PAG	potentially acid generating
PDGZNYZ	Pwi-Di-Goo-Zing-Ne-Yaa-Zhing
PM	particulate material
$PM_{2.5}$	particles less than 2.5 micrometers in diameter
PM_{10}	particles less than 10 micrometers in diameter
PSQG LEL	Provincial Sediment Quality Guideline lowest effect levels
PWQO	Provincial Water Quality Objectives for the protection of aquatic life
RRGP	Rainy River Gold Project
RRR	Rainy River Resources Ltd.
RSA	regional study area
SAR	Species at Risk
SARA	*Species at Risk Act*
SARO	Species at Risk in Ontario
SO_2	sulphur dioxide
TK	Traditional Knowledge
TLU	Traditional Land Use
TMA	tailings management area
ToR	Terms of Reference
tpd or t/d	tonnes per day
UTM	Universal Transverse Mercator
WSC	Water Survey of Canada

1.0 IDENTIFICATION OF PROPONENT

1.1 Proponent

Rainy River Resources Ltd.

Rainy River Resources Ltd. (RRR) is focussed on exploring and developing a world-class gold resource located in the Rainy River District of northwestern Ontario and is listed on the Toronto Stock Exchange main board under the symbol "RR". The company's key asset is the large 100%-owned advanced exploration stage Rainy River Gold Project (RRGP) that is proposed to be located primarily on private, patented lands owned by RRR.

Rainy River Resources Ltd.
1 Richmond Street West
Suite 701
Toronto, ON, M5H 3W4
Telephone: (416) 645-7280
Website: www.rainyriverresources.com

1.2 Principal Contact

Kyle L. Stanfield, P.Eng.
Vice President, Environment & Sustainability
Rainy River Resources Ltd.
1111 Victoria Avenue East
Thunder Bay, ON, P7C 1B7
Telephone: (807) 623-1540
Mobile: (807) 621-6152
E-mail: kstanfield@rainyriverresources.com

2.0 INDICATION OF HOW THE ENVIRONMENTAL ASSESSMENT WILL BE PREPARED

2.1 Provincial Requirements

RRR entered into a Voluntary Agreement with the Ontario Ministry of the Environment (MOE) to conduct a Provincial Environmental Assessment (EA) for the RRGP that will meet the requirements of the Ontario *Environmental Assessment Act*. It should be noted that a Federal EA process for the RRGP, pursuant to the *Canadian Environmental Assessment Act, 2012* is also underway.

Mining projects in their entirety are not subject to the Ontario *Environmental Assessment Act* unless designated by the Minister of the Environment or unless the Proponent enters into a Voluntary Agreement. Several individual aspects of the RRGP were however, anticipated to require completion of Provincial EA process(es):

- A 230 kilovolt (kV) transmission line of approximately 20 kilometre (km) length (Class EA for Minor Transmission Facilities);

- Diesel generation of between one and five megawatts of power (Class EA per the Electricity Projects Regulation, Ontario Regulation 116/01);

- Disposition of Crown resources, potentially related to Crown lands (such as work on streambeds / shorelands) and potential effects on Species at Risk (SAR; Class EA for Ministry of Natural Resources (MNR) Resource Stewardship and Facility Development Projects); and

- Re-alignment of a portion of Highway 600 for safety reasons and to avoid potential land use conflicts (Class EA for Provincial Transportation Facilities).

Rather than meeting separate Provincial EA requirements to allow issuance of approvals to construct mining-related infrastructure individually, RRR has entered into a Voluntary Agreement to complete a single coordinated Provincial EA process. The EA will be completed in accordance with Section 6(2)(c) of the Ontario *Environmental Assessment Act*; and will consider the whole RRGP and not just those aspects having Provincial EA requirements.

RRR has completed two Preliminary Economic Assessments and a Feasibility Study is currently underway with completion anticipated in early 2013. The Project Description submitted and subsequently approved by the CEA Agency on August 31, 2012, was based on planning, studies and consultation to that time. These two parallel processes have together directed RRR on RRGP design and lead to the focusing and scoping of the EA provided in this document. RRR will nonetheless evaluate and assess a reasonable range of alternatives methods in the EA to define the final undertaking. It is recognized that the details of the undertaking may change, including alteration to proposed mitigation measures, based on consultation during the

EA preparation. Accordingly, Section 6(2)(c) will be followed in preparation of the EA, as RRR is advanced in its decision-making in relation to a number of RRGP components, and will focus the alternative methods considered in the EA to those that meet the RRR requirements for health and safety, and environmental protection.

The EA report that will be prepared as part of the EA process and will conform to the Terms of Reference (ToR), and will include as a minimum:

(a) A description of the purpose of the undertaking;

(b) A description of and a statement of the rationale for,
  (i) the alternative methods of carrying out the undertaking, and
  (ii) the undertaking,

(c) A description of,
  (i) the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly,
  (ii) the effects that will be caused or that might reasonably be expected to be caused to the environment, and
  (iii) the actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment, by the undertaking and the alternative methods of carrying out the undertaking;

(d) An evaluation of the advantages and disadvantages to the environment of the undertaking and the alternative methods of carrying out the undertaking; and

(e) A description of any consultation about the undertaking by the proponent and the results of the consultation (Ontario *Environmental Assessment Act*).

The purpose of the EA is to assess the potential environmental effects (positive or negative) of a proposed undertaking. Key components of the EA include consultation with government agencies and the public; consideration and evaluation of alternatives; and the management of potential environmental effects. Conducting an EA promotes good environmental planning (MOE 2009a). The EA will also allow:

- Development of a detailed project description which identifies all RRGP components;
- Identification of potential environmental interactions / components in order to identify sources of environmental impacts;
- Completion of baseline data to define existing environmental conditions;

- Development of criteria to assess for potential effects;
- Assessment of potential effects of different alternative methods and development of mitigation measures;
- Decision making to identify project alternative methods;
- Completion of consultation and engagement; and
- Monitoring and follow-up programs.

2.2 Federal Requirements

In addition to the Provincial Individual EA process, the design of the RRGP as currently understood is anticipated to require completion of a Federal EA, pursuant to the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012). The Federal "Regulation Designating Physical Activities" identifies the physical activities that constitute the designated projects that could require an EA. Section 15(d) of the Regulation identifies one of the designated projects as: "the construction, operation, decommissioning and abandonment of a gold mine, other than a placer mine, with an ore production capacity of 600 t/d or more". For that reason, RRR submitted a Project Description to the Canadian Environmental Assessment Agency (CEA Agency) which was accepted. The CEA Agency subsequently determined that a Federal EA is required and Environmental Impact Statement (EIS) Guidelines have been issued which identify the scope of the Federal EA required for the RRGP.

RRR is working with the Provincial and Federal approvals agencies to integrate the EA processes to meet the needs of each *Act*. This approach is anticipated to minimize unnecessary delays, such as duplication of EA reports / studies and consultation activities. As RRR has been informed that the Federal EA requirements will apply, the MOE and the CEA Agency, as well as RRR will attempt to coordinate public consultation activities in order to minimize the effort required by stakeholders to be effectively engaged. These efforts are aimed at minimizing duplication and unnecessary delays. This coordination will be directed by the *Canada-Ontario Agreement on Environmental Assessment Cooperation*.

The Provincial ToR if approved and the Federal EIS Guidelines will together define the content requirements for the EA document. RRR and the government agencies attempted, to align the timing of the decision on the Amended Proposed ToR by the Ontario Minister of the Environment, with the issuance of the final EIS Guidelines by the CEA Agency.

It is fully expected that a single body of information will be used to inform both the Provincial and Federal EA processes, culminating in a single EA document. The content of the EA document will be guided by both the approved Provincial ToR and the EIS Guidelines. Concordance table(s) will be provided within the EA document to demonstrate how the EA document meets

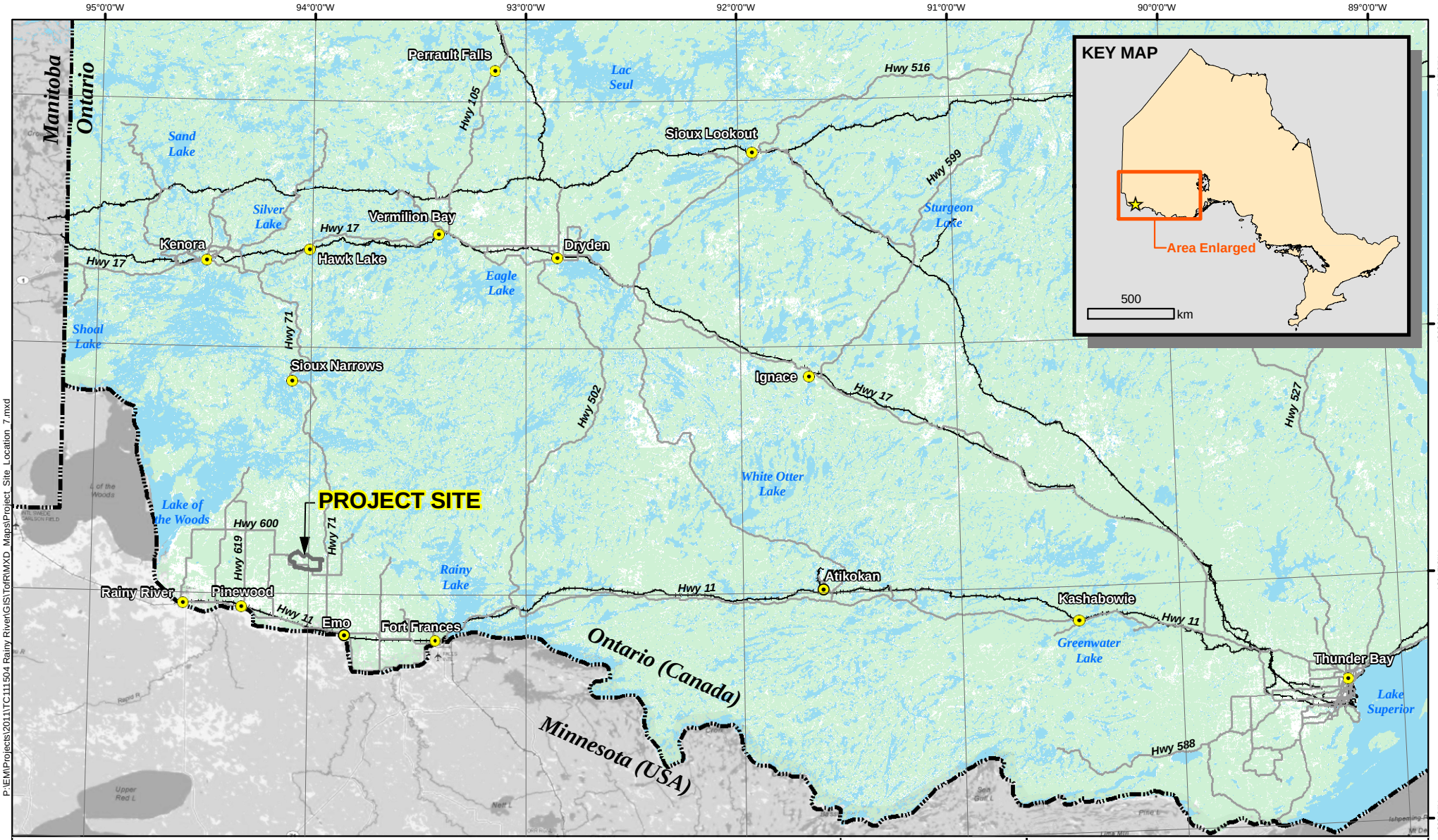
both the approved ToR and the Federal EIS Guidelines. After RRR issues the final EA report, the Provincial Individual EA and the Federal EA processes will continue in a parallel manner, to the extent possible, according to the regulated requirements.

A draft EA document will be provided for review, comment, and conformity review (to the ToR and EIS Guidelines) by stakeholders (including government agencies, other interested groups and the public) and Aboriginal groups.

3.0 PURPOSE OF THE UNDERTAKING

The purpose of the undertaking is to produce gold for sale and provide a return on investment to shareholders of RRR, by constructing and operating a gold mine (the RRGP). The RRGP is situated within the Township of Chapple, approximately 45 km northwest of Fort Frances and 420 km west of Thunder Bay (Figure 1). Coordinates for the centroid of the proposed mine are at 425660E, 5409700N (NAD 83 Zone 15).

Issuance of this Amended Proposed ToR is to provide the framework for completing a Provincial Individual EA.



P:\EM\Projects\2011\TC111504 Rainy River\GIS\Tof\RMXD_Maps\Project_Site_Location_7.mxd

LEGEND

- Approximate Project Boundary
- Regional Communities
- Provincial / National Border
- Regional Road / Highway
- Railway

0 25 50 100 150 200 250 Kilometres

NOTES:
- Ontario base data extracted from Land Information Ontario (MNR) data warehouse.
- Base data outside of Ontario extracted from ESRI DeLorme World Basemap

Datum: NAD83
Projection: UTM Zone 15N

RAINY RIVER

amec

RAINY RIVER GOLD PROJECT

Project Location

PROJECT N°: TC111504	**FIGURE: 1**
SCALE: 1:1,800,000	DATE: October 2012

4.0 DESCRIPTION OF AND RATIONALE FOR THE PROPOSED UNDERTAKING

4.1 Description of the Undertaking

The undertaking is defined as: the construction and development of a gold mine. RRR proposes to construct and operate a new gold mine, and associated facilities, on the RRGP property and nearby lands, totalling approximately 5,000 hectares. Reclamation of the RRGP will be completed on cessation of operations (and progressively during operation as practical) per the Ontario *Mining Act* requirements. The preliminary site layout proposes to place the required mine-related facilities in close proximity to the proposed mine, primarily on private lands owned by RRR.

The area exhibits variable, gently undulating terrain, and is drained principally by the Pinewood River and its associated tributaries. The RRGP site is located in a low density rural area (Township of Chapple) within which some limited agricultural (focused on cattle and fodder cropping) and logging activities occurs. Adjacent areas show mainly second growth poplar-dominated forests and wetlands. The RRGP site is well-connected to the regional infrastructure, including primary access by means of the gravel-surfaced, Highway 600. Photographs of the RRGP site and related aspects are provided in Appendix B.

The major components of the proposed undertaking are expected to include:

- Open pit and underground mine;
- Ore processing plant;
- Maintenance shop, warehouse and administration complex;
- Construction and possible operations accommodations complexes;
- Explosives manufacturing and storage facilities;
- Stockpiles (overburden, run of mine[1] ore, low-grade ore, and mine rock[2]);
- Aggregate extraction;
- Tailings management area (TMA);
- Onsite access roads and pipelines, power infrastructure and fuel storage facilities;
- Domestic and industrial waste handling;
- Water management facilities, drainage works and watercourse diversions;
- Re-alignment of existing Highway 600; and
- Offsite transmission line.

The preliminary description below is provided in order to assist in the ToR review process, and should not be considered finalized. The current description represents the preferred RRGP components based on preliminary planning studies, including Preliminary Economic

[1] Run of mine rock is rock from the blasting operation, with only limited sizing to allow handling by heavy equipment.
[2] Mine rock, also termed waste rock or development rock, is rock that must be extracted to gain access to the mineralized ore.

Assessments and engineering-related investigations. A range of alternatives for each component will be assessed as part of the EA process and as outlined in Section 5.0. A conceptual site plan has been included with this document to facilitate consultation (Figure 2). It is recognized that the undertaking as currently understood and described briefly below (and more comprehensively in the Project Description recently accepted by the Federal government) may change materially as a result of the Provincial and Federal EA processes, including the required assessment of alternatives. An updated and more detailed site and infrastructure plan will be provided in the EA document.

RRR is planning to construct, operate and eventually reclaim a new gold mine at the RRGP site to produce gold for sale. The preliminary site layout proposes to place the required mine related facilities in close proximity to the open pit, to the extent practicable, primarily on private, patented lands owned by RRR. Open pit mining operations will occur at a rate of approximately 20,000 tonnes per day (tpd), supported by a planned 2,000 tpd adjunct underground mining operation. However, the combined tonnage from open pit and underground mining will remain at approximately 20,000 tpd. For contingency purposes, a nominal 20% additional ore throughput should be considered above the planned output. Overburden and mine rock stripped from the open pit will be stored in adjacent stockpiles. Mining operations will be supported by development of an explosives manufacturing and storage facility.

Ore processing will be carried out using conventional whole ore cyanidation for gold recovery, followed by in-plant cyanide destruction using the SO_2/Air oxidation process. Mill tailings will be stored in a constructed TMA. The ore processing plant will operate on extensive waste water recycle derived from the TMA and mine water. Excess TMA and mine water which cannot be used in recycling will be discharged to the Pinewood River, potentially after a secondary polishing pond. Such discharge will meet all applicable Federal and Provincial effluent discharge requirements, and will be protective of receiving water aquatic life within the Pinewood River (and as a result, also protective of downstream watercourse quality including Rainy River and Lake of the Woods).

A maintenance garage, warehouse and administration complex will be developed adjacent to the mill. Non-hazardous domestic solid wastes will likely be deposited in an onsite landfill, unless suitable off site landfill capacity can be found. Hazardous solid and liquid waste will be hauled off site by licenced contractors to licenced storage facilities. Domestic sewage will be treated using a package sewage treatment plant or equivalent. The construction workforce is expected to be housed within local communities, although an onsite construction accommodations complex may be developed. Staffing for permanent operations will likely occur off site, but this remains to be confirmed and it is still possible that an onsite operations accommodations complex will be developed.

As part of the proposed development, relocation of a portion of gravel-surfaced Highway 600 will be required. In addition, West Creek will require diversion to allow safe development and operation of the open pit. Loslo Creek, Marr Creek and Clark Creek are expected to also be

directly affected by the proposed development. Pinewood River is no longer anticipated to require diversion.

Initial construction power will be provided by the existing connection to the Provincial electrical grid, supported by diesel power generator(s) if required. The existing electrical connection is a residential line only, and is insufficient to support an industrial development. Permanent power will be provided through dedicated 230 kV connection to a nearby 230 kV transmission line.

A preliminary schedule for the development of the RRGP has been prepared which aims for gold production starting first quarter 2016. The uncertainty in timing of environmental process and approvals is understood; and it is recognized that approvals may constrain the timing of some of the activities that have been scheduled. The actual timeline for RRGP development will therefore depend in part, on the timing of the Federal and Provincial EA process and subsequent environmental approvals.

4.2 Key Project Phases

The approximate duration of the key RRGP phases are as follows:

- Construction: 1.5 years;
- Operation: 15 to 20 years; and
- Active reclamation: 1 to 2 years.

4.2.1 Construction Phase

A significant amount of work will be required over a relatively short period of time to complete RRGP feasibility and engineering studies, and to obtain the necessary environmental approvals, to commence mine construction in the second quarter of 2014, in order to commence mine and process plant commissioning in late 2015 (all assuming environmental approvals are obtained).

Primary construction phase activities will include:

- Completion of feasibility and initiation of detailed engineering studies;
- Application for, and receipt of applicable environment-related approvals, including meeting any / all Federal and Provincial EA requirements;
- Procurement of material and equipment;
- Movement of construction materials to identified laydown areas and site;
- Development and implementation of environmental protection and monitoring plan(s) for construction;

- Initiation of mine development;
- Development of aggregate source(s) anticipated to be principally for concrete manufacture, foundation work and TMA construction;
- Establishment of watercourse diversions and site drainage works, including pipelines from freshwater / recycled water sources;
- Construction of associated buildings and facilities, fuel tank farm and landfill (if developed); and
- Preparation of onsite mineral waste handling facilities, including the TMA dams;
- Construction of the gravel-surfaced Highway 600 realignment and Pinewood River crossing, and redirection of local traffic; and
- Construction and energizing of a 230 kV feeder transmission line.

A construction camp may be required for workers at the site to build facilities associated with the RRGP. The construction workforce is expected to peak at about 600 to 700 persons.

Other construction activities will be sequenced according to manpower and equipment availability and site conditions. Certain activities, such as those involving working in wet or poorly accessible terrain, are best carried out under frozen ground conditions. Sequencing will also consider environmental aspects, such as fish spawning and bird nesting seasons.

4.2.2 Operations Phase

During the RRGP operations phase, overburden, ore and mine rock will be extracted from the mine for stockpiling or transport directly to the mill primary crusher for sizing. Sized ore will be processed in the mill to recover the gold and produce doré bars for periodic shipment offsite.

As the operations phase continues, mining will continue and the related overburden and mine rock stockpiles and the TMA will become progressively larger.

Solid and liquid wastes / effluent will be managed to ensure regulatory compliance. Environment-related activities that will be carried out during the operations phase are anticipated to include:

- Ongoing management of chemicals and wastes;
- Water management;
- Air quality and sound management;

- Environmental monitoring and reporting; and
- Progressive site reclamation where practical.

4.2.3 Decommissioning / Closure Phase

Closure of the RRGP site will be governed by the Ontario *Mining Act* and its associated Regulations and Codes. The *Act* requires that a Closure Plan be filed for any mining project before the project is undertaken, and that financial assurance be provided prior to substantive development to ensure that funds are in place to carry out the Closure Plan.

The objective of closure is to reclaim the mine site area to a naturalized and productive condition on completion of mining. The terms naturalized and productive are interpreted to mean a reclaimed site without infrastructure (unless otherwise negotiated), that while different from the existing environment, is capable of supporting plant, wildlife and fish communities; and other applicable land uses.

It is expected that active phase of reclamation of the RRGP will take approximately two years after operations cease, although there will be open pit flooding and environmental monitoring and potentially effluent quality management thereafter.

Open Pit

The open pit will be flooded to create a pit lake either passively through natural groundwater and precipitation inputs; or by active filling of the open pit, using water pumped from an alternate source (seasonal freshwater inputs or recycled water from the TMA). Other measures to be taken to reclaim the pit may, or are likely to include:

- Remove all infrastructure and equipment within the open pit and clean up any contamination (petroleum hydrocarbons or explosives);

- Shape and revegetate overburden pit slopes to a stable condition and to facilitate riparian habitat along the pit lake margins;

- Block the entrance to the open pit; a boulder or traditional security fence will be installed around the pit perimeter during or following active mining operations to ensure safety while the pit is flooding; and

- Develop a spillway if needed, to allow the pit lake to eventually overflow to the Pinewood River.

Mine Rock and Overburden Stockpiles

Progressive rehabilitation of mine rock and overburden stockpiles will be undertaken where practical once the maximum height of each stockpile has been reached and/or as each lift is completed, to minimize the amount of reclamation required at closure. Means of reclamation of the stockpiles remain under investigation, but as a minimum will include the placement of overburden over rock as appropriate either in full or in part, and seeding / hydroseeding and hand planting of tree seedlings, as appropriate to expedite the colonization by indigenous species. Investigations will also be undertaken to determine the feasibility of establishing specific wildlife habitats, such as those that might be used by SAR, following mine closure.

Tailings Management Area

The principal concerns associated with closure of the TMA involve longterm slope stability, erosion control, drainage, vegetation cover and aesthetics, as well as prevention of acid rock drainage (ARD) from the tailings. The TMA development plan currently provides for a water and/or clay cover at closure to restrict oxygen contact with the tailings surface. Detailed hydrological studies are underway as part of TMA design process to ensure that the water cover designed to prevent ARD development is self-sustaining even under drought conditions. TMA overflow spillway(s) will be developed or deepened to ensure efficient drainage of excess runoff.

Aggregate Sources

If quarries or pits are developed as aggregate sources during the construction and operation phases, these will be reclaimed according to Provincial approvals and standards, which may include flooding naturally to create pond features.

Buildings, Machinery, Equipment and Infrastructure

A dedicated onsite demolition landfill is expected to be developed for the disposal of non-hazardous demolition wastes (such as concrete, steel, wallboard and other inert materials) generated by mine closure. It is expected that this demolition landfill will be developed within a mineral waste stockpile.

Salvageable machinery, equipment and other materials will be dismantled and taken off site for sale or reuse if economically feasible, or cleaned of oil and grease where appropriate and deposited within the onsite demolition landfill. There will be no polychlorinated biphenyl (PCB) containing equipment at the site. Gearboxes or other equipment containing hydrocarbons that cannot be readily cleaned will be removed from equipment and machinery and trucked offsite for disposal at a licensed facility.

All above grade concrete structures will be broken and reduced to near grade as required. Concrete structures and below grade facilities (if any) will be infilled if needed. Affected areas will be contoured, covered with overburden as needed and revegetated.

Petroleum Products, Chemicals and Explosives

All petroleum products and chemicals will ultimately be removed from the site. Empty tanks will be sold as scrap or reused off site; or cleaned to remove any residual fuel / chemicals and deposited within the demolition landfill. An environmental site investigation will be conducted at the end of operations or early in the closure phase. Soil found to exceed acceptable criteria will be remediated onsite or transported offsite to an approved disposal facility.

The explosives stockpile will be depleted towards the end of operations and any remaining explosives will be either detonated on site or hauled offsite by an authorized transportation service provider.

Roads, Pipelines and Power Lines

Site roads will be scarified when no longer needed to support final reclamation, longterm site management and environmental monitoring. Safety berms, if any, along the perimeter of haul roads will be bladed out. Culverts will be removed and roads breached at the culvert locations on site to allow natural drainage.

The East Access Road and Marr Connector Road to be constructed to support the RRGP development, are expected to remain in place should they continue to be required to provide local residential access.

There will be a number of pipelines at the site. Pipelines or pipeline sections will be sealed and left in place; or purged if needed, dismantled and disposed of in the onsite demolition landfill.

Onsite power lines and associated materials that have no salvage value will be dismantled and deposited in the demolition landfill. Other power equipment and materials including oil-filled transformers will be taken off site for sale or reuse.

Site Drainage and Water Structures

The new alignments for the West Creek will naturalize over the life of the mine and will become the permanent creek channel, even after closure unless it is determined during closure planning that returning West Creek to its original route is preferred.

General site drainage will remain at closure with the exception of the removal of culverts at water crossings during site road reclamation activities as appropriate. Water intake structures at

the Pinewood River (or other waterbodies if any) will be reclaimed by removing any structures and mechanical components for disposal in the demolition landfill.

Waste Management

At the end of reclamation activities, onsite landfill(s) will be capped and revegetated consistent with the remainder of the site.

Offsite Facilities

Highway 600 will remain in its realigned form, and will continue to provide local access. The realigned gravel-surfaced Highway 600 water crossing will remain in place at closure.

It is expected that the 230 kV transmission line constructed to support the RRGP operations will not be required by other local users and will be removed at closure. Should reclamation be required, electrical equipment will be removed and recycled / reused or disposed of. Poles will be removed or cut at grade, and either reused or disposed of.

4.3 Undertaking Rationale

RRR is a publicly traded company that proposes to develop and operate the RRGP in order to provide shareholders with a reasonable return on investment. The underlying rationale for the RRGP is the strong demand for gold in the global marketplace. With gold prices at sustained high levels, the economics of the RRGP are expected to be such that RRR can successfully produce gold and provide shareholders with value.

The RRGP is expected to also provide benefit to the local area and region. There is a demonstrated local and regional need in northwestern Ontario for economic development. In the 2006 census, the Rainy River District exhibited a higher unemployment rate than the Province of Ontario as a whole, with some of the highest out-migration rates in Canada. The regional workforce, however, shows a tendency toward occupations related to primary industry and trades, and is well-suited to support the RRGP. In 2009, there were approximately 300 active mineral projects in northwestern Ontario with expenditures of approximately $230 million (KCB 2011).

The RRGP is expected to be a positive economic influence on the region providing construction and permanent employment opportunities for a large number of people. Approximately 600 people will be required during site construction of the RRGP and there is expected to be approximately 600 full time permanent positions during operations.

RRR is an active member of the local community with offices in both Emo and Thunder Bay that offer residents easily accessible locations to learn about the RRGP. RRR has engaged the local communities as well as First Nations and Métis community members. Through meetings, site

tours and regular communications, RRR strives to ensure engagement with all members of the local communities. Community Town Hall meetings are held regularly to discuss and update the community on the RRGP. Key comments received by RRR during consultation and discussions regarding the RRGP to date, have consistently been related to employment and training opportunities. The region has experienced recent declines in both employment and population in large part related to the downturn in the forestry industry, and development of the RRGP has received very strong Municipal and Provincial government support to date.

The final description of the proposed undertaking and the rationale therein, will be provided in the EA.

417500 420000 422500 425000 427500 430000 432500

5415000 5412500 5410000 5407500

Tailings Management Area
Pond
Pond
Pond
Pond
Pond
Pond
Explosives Storage
Explosives Plant
Gravel Pit
230 kV Transmission Line
East Access Road
Constructed Wetland
Overburden/ Mine Rock
Open Pit
Mine Rock
Marr Rd
Hwy 600
Loslo Rd
Roen Rd
West Creek
McCallum Creek
Pine River Rd
Loslo Creek
Hwy 600
Pinewood River
Clark Creek
Clark Rd
Teeple Rd
Hwy 71
Heatwole Rd
Tait Rd
Blackhawk Rd

P:\EM\Projects\2011\TC111504 Rainy River\GIS\for\RIWD_Maps\Proposed Site_Plan_GeneralPreliminary_23.mxd

LEGEND

- Residence-House
- Lodging Cabin-Occasional Use
- Building - Unknown Use
- Roads
- Contours, 10 m interval (LIO-MNR)
- Watercourses
- Low-lying Area

Elevation Colour Ramp

High ground
Low ground

Proposed or Potential Site Features

- Underground Portal
- Open Pit
- Plant Site / Ancillary Facilities
- Explosives Plant/Storage
- Water Take / Discharge
- Pipeline / Road
- Major Crossing
- Gravel Pit Area
- Tailings Management Area
- Pond
- Mine Rock Stockpile
- Overburden/Mine Rock Stockpile
- Watercourse Diversion
- Potential Constructed Wetland Area
- Highway Re-alignment / Access Road
- 230 kV Transmission Line

Note: Only major facilities are shown. Connecting infrastructure and supporting facilities are generally not shown.

Source:
- Road data extracted from Land Information Ontario, Ontario Road Network, MNR
- Background topographic and elevation data extracted from MNR Land Information Ontario

Datum: NAD83
Projection: UTM Zone 15N

0 1 2 4 6 8 10 Kilometres

RAINYRIVER amec

RAINY RIVER GOLD PROJECT

Site Plan
Conceptual Layout

PROJECT N°: TC111504 | **FIGURE: 2**

SCALE: (see bar scale) | DATE: October 2012

5.0 DESCRIPTION OF AND RATIONALE FOR ALTERNATIVES

5.1 Background

The Ontario *Environmental Assessment Act* makes reference to both "alternatives to" a proposed undertaking, and "alternate methods" of carrying out a proposed undertaking. As a matter of general policy, alternatives will only be brought forward into the EA if they are likely to satisfy the following (adapted from MOE 2009a):

- Do they provide a viable solution to the problem or opportunity to be addressed?
- Are they proven technologies *at the scale required*?
- Are they technically feasible *at the scale required*?
- Are they consistent with other relevant planning objectives, policies and decisions?
- Are they consistent with Provincial government priority initiatives (for example, waste diversion, energy efficiency, source water protection, reducing greenhouse gas emissions)?
- Could they affect any sensitive environmental features (for example, Provincially significant wetlands, prime agricultural area, endangered species habitat, floodplains, archaeological resources, built heritage)?
- Are they practical, financially realistic and economically viable?
- Are they within the ability of the proponent to implement?
- Can they be implemented within the defined study area?
- Are they appropriate to the proponent doing the study?
- Are they able to meet the purpose of the (Ontario) *Environmental Assessment Act*?

In addition to the above considerations, an alternative is considered unacceptable if any of the following criteria are met, the alternative:

- Cannot adequately meet the needs of the RRGP;
- Cannot be financially supported by the RRGP (causes an unacceptable return on investment). Cost-effectiveness is measured within the context of capital costs, operational costs, maintenance costs, and closure / reclamation costs; or

- Would result in substantive and unnecessary disruption to the natural or human environment when compared with other viable alternatives.

5.2 Assessment and Alternatives Evaluation Methodology

5.2.1 Performance Objectives

The assessment of alternatives will be carried out at a level sufficient to distinguish the relative merits of the different alternatives methods. A comparative evaluation of feasible alternative methods will be conducted. The advantages and disadvantages of each method will be assessed within the EA based on a series of performance objectives, evaluation criteria and indicators, to define a preferred alternative.

Performance objectives are meaningful attributes that are essential for the RRGP success, and provide a basis for distinguishing between individual alternatives. The following performance objectives (or a subset thereof as appropriate for any given alternative) will be used in the evaluations of alternatives:

- Cost-effectiveness;
- Technical applicability and/or system integrity and reliability;
- Ability to service the site effectively;
- Effects (adverse) to the natural environment;
- Effects (adverse) to the human environment, including Aboriginal and treaty rights, cultural heritage resources and traditional land use; and
- Amenability to reclamation.

In regards to effects to the natural and human environment, consideration will also be given to positive effects in the evaluation of the alternatives.

5.2.2 Evaluation Criteria and Indicators

Proposed criteria and indicators for assessing the performance objectives identified in Section 6.2.1 are detailed below. The application of these criteria and indicators will be documented in a tabular format in the EA to allow an assessment of the advantages and disadvantages of each feasible alternative method. Overall summary narratives for each alternative will be provided for each applicable performance objective to determine whether an individual alternative has a preferred, acceptable or unacceptable level of performance.

Criteria and indicators presented in this ToR may evolve through the EA process, following further analysis and input from the various stakeholders. Proposed criteria and indicators are provided in the tables that follow, along with applicable performance objectives.

Cost-effectiveness

Criteria	**Indicator**
RRGP financing	• Investor attractiveness or risk
Return on investment	• Provides a competitive or acceptable return on investment
Financial risk	• Provides, or is associated with, a preferred, manageable or acceptable financial risk
Performance	
Preferred	Facilitates a competitive return on investment
Acceptable	Facilitates an acceptable return on investment
Unacceptable	Cannot be financially supported by the RRGP

Cost-effectiveness relates to overall RRGP costs, including capital, operation, maintenance, and closure / reclamation costs. Each aspect of the RRGP has cost implications and thus cost-effectiveness is a performance objective common to all aspects.

Technical Applicability and/or System Integrity and Reliability

Criteria	**Indicator**
Available technology	• Used elsewhere in similar circumstances, and is predictably effective with contingencies if and as required • New technologies supported by pilot plant or strong theoretical investigations or testing, with contingencies if and as required
Performance	
Preferred	Predictably effective with contingencies if the alternative does not perform as expected
Acceptable	Appears effective based on theoretical considerations; contingencies are available if the alternative fails to perform as expected
Unacceptable	Effectiveness appears dubious or relies on unproven technologies

'Technical applicability' and 'system integrity and reliability' are used interchangeably, as appropriate to the issue, to describe the suitability or expected performance of a given alternative.

Ability to Service the Site Effectively

Criteria	Indicator
Service	• Provides a guaranteed supply to the site with manageable potential for supply disruption, and/or contingencies available
Accessibility	• Accessible land base or infrastructure needed to support component development and operation
Performance	
Preferred	Provides a guaranteed access / supply to the site with a low risk of interruption
Acceptable	Provides the required access / supply to the site with contingencies in the event of disruptions
Unacceptable	Cannot reliably provide sufficient access / supply, or involves an unacceptable level of risk without contingencies

This performance objective is relevant for those aspects of the RRGP dealing with the provision of consumables or access to the RRGP site. The reliable (guaranteed) supply of consumables, such as fuel, is critical to the uninterrupted operation of the mine.

Effects to the Natural Environment

Criteria	Indicator
Effect on air quality and climate	• Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives • Emission rates of greenhouse gases
Effect on fish and aquatic habitat	• Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives • Maintenance or provision of fish habitat • Maintenance of water flows or conditions suitable for fish passage • Maintenance of groundwater flows, levels and quality
Effect on wetlands	• Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives • Area, type and quality (functionality) of wetlands that would be displaced or altered • Maintenance of wetland connectivity

Criteria	Indicator
Effect on terrestrial species and habitat	• Area, type and quality (functionality) of terrestrial habitat that would be displaced or altered • Potential for noise (or other harm and harassment) related disturbance • Maintenance or provision of plant dispersion and wildlife movement corridors
Effect on SAR	• Sensitivity level of involved species (Endangered, Threatened, Special Concern) • Area, type and quality of SAR territories or habitat that would be displaced • Potential for noise (or other harm and harassment) related disturbance • Maintenance or provision of wildlife movement corridors
Performance	
Preferred	Minimizes adverse effects to the natural environment without mitigation
Acceptable	Minimizes adverse effects to the natural environment with mitigation
Unacceptable	Likely to cause significant adverse effects to the natural environment that cannot reasonably be mitigated

The 'natural environment' referred to in this performance objective is a broad term used to describe the air, bedrock, soil / overburden, water (surface and ground) and biological organisms / communities. The assessment of alternatives within the EA will also consider potential positive effects. Potential climate change scenarios will be considered, where applicable. For example, could climate change alter the anticipated effects on the natural environment?

Effects to the Human Environment

Criteria	Indicator
Effect on local residents	• Maintenance of property values • Maintenance or improvement of income opportunities • Maintenance or provision of local access • Attainment of noise by-law guidelines, and /or background sound levels if already above the guidelines • Non-interference with water well supply systems • Potential for general disturbance and adverse affects on aesthetics • Potential for adverse health and safety effects
Effect on infrastructure	• Maintenance or provision of local and regional access • Maintenance and reliability of power supply systems • Maintenance and reliability of pipeline systems
Public health and safety	• Attainment or maintenance of air quality point of

Criteria	Indicator
	impingement standards, or scientifically defensible alternatives • Maintenance or attainment of the quality of drinking water supply systems • Managing the potential for adverse electromagnetic exposure • Maintaining safe road traffic conditions that are within the domain of RRR control • Maintenance or provision of health services
Effect on local businesses	• Maintenance or improvement of business opportunities
Effect on tourism and recreation	• Maintenance or improvement of tourism and recreational opportunities
Effect on agricultural lands	• Potential loss of agricultural lands • Potential loss of agricultural productivity
Regional economy	• Maintenance or improvement of the regional economy
Effect on government services	• Maintenance or improvement on the capacity of existing health, education and family support services
Effect on resource management objectives	• Consistency with established and planned resource management objectives
Excessive waste materials	• Limiting the generation of unnecessary waste materials
Effect on built heritage and cultural heritage landscapes	• Avoidance of damage to built heritage resources, or document heritage values if damage or relocation cannot reasonably be avoided
Effects on First Nation reserves and communities	• Maintenance or improvement of First Nation reserve and community conditions (subject to the limitations of Company capacity and community members' personal choice)
Effect on spiritual, ceremonial, and cultural heritage, and archaeological sites	• Avoidance of damage or disturbance to known spiritual, ceremonial, cultural heritage and archaeological sites; or implement other forms protection / preservation supported by local First Nations and Métis
Effects on traditional land use	• Maintain access to traditional lands for current traditional land uses, except as otherwise agreed to with local First Nations and Métis
Effects on Aboriginal and Treaty Rights	• Avoid infringement of Aboriginal and Treaty Rights, except as otherwise agreed to with local First Nations and Métis
Performance	
Preferred	Minimizes adverse effects to the human environment without mitigation and provides positive effects
Acceptable	Minimizes adverse effects to the human environment with mitigation
Unacceptable	Likely to cause significant adverse human environment effects that cannot reasonably be mitigated

The potential for negative human environment effects, such as the reduction of land use, is evaluated where appropriate for the alternatives for the various aspects of the RRGP. The human environment is defined herein to also include aspects of the cultural heritage environment as well as Aboriginal and treaty rights. The potential for negative effects to cultural heritage resources, traditional land use, and Aboriginal and treaty rights, such as the reduction of land use by Aboriginal peoples, or the quality of resources harvested by Aboriginal peoples, is evaluated where appropriate for the alternatives for the various aspects of the RRGP. RRR acknowledges that there are Provincial Standards and Guidelines for Conservation of Provincial Heritage Properties that could apply. The assessment of alternatives within the EA will also consider potential positive effects.

Amenability to Reclamation

Criteria	**Indicator**
Effect on public safety and security	• Avoidance of safety and security risks to the general public
Effect on environmental health and sustainability	• Attainment or maintenance of air quality point of impingement standards, or scientifically defensible alternatives • Attainment or maintenance of water quality guidelines for the protection of aquatic life, or scientifically defensible alternatives • Restoration of passive drainage systems • Provision of habitats for vegetation and wildlife species, including SAR
Effect on land use	• Provide opportunities for productive land uses following the completion of mining activities • Provide for an aesthetically pleasing site
Performance	
Preferred	Causes disturbance to the natural environment that requires limited reclamation
Acceptable	Causes disturbance to the natural environment that requires moderate to extensive reclamation
Unacceptable	Mitigation of disturbance to the natural environment is not practical or feasible

This performance objective relates to the decommissioning or reclamation of the RRGP and associated infrastructure (if any).

5.2.3 Identification of the Preferred Alternative

The alternatives are given an overall or summary evaluation, taking all of the performance objectives into consideration. There are two general approaches to summary evaluations in EA processes. One approach is to give numerical values to individual performance objectives,

based on application of the appropriate criteria, and then to sum these values to arrive at an overall index. This approach typically requires some form of weighting to take into account the varying importance of the different performance objectives. Weighting factors have to be carefully justified and are thus are often open to interpretation. In addition, the numerical approach may result in two or more very different alternatives that have the same, or very similar, overall index values; when intuitively it is clear that one alternative better meets environmental, and health and safety requirements; and is technically superior to the other. Numerical evaluations may not be readily transparent during public review and consultation processes.

The second approach, and the one proposed herein to be used for the RRGP EA, is to rely on a comparative evaluation of the overall advantages and disadvantages of a method as demonstrated through the performance descriptions (that is whether an alternative is preferred, acceptable or unacceptable for each performance objective). Using this method, and with the knowledge that all performance objectives are essential to the decision process; an alternative is rejected if it attains an unacceptable rating for any single performance objective.

This approach with minor variations, has been used successfully by AMEC for alternative assessments for a number of other mining project-related EAs in Ontario, that were subsequently approved by the Ontario Minister of the Environment or Federal Minister of the Environment as applicable. These include:

- Aquarius Project (Federal EA pursuant to the *Canadian Environmental Assessment Act*);
- Victor (Diamond) Project (Federal EA pursuant to the *Canadian Environmental Assessment Act*); and
- Detour Lake Project (Federal EA pursuant to the Canadian *Environmental Assessment Act*; two Provincial Individual EAs pursuant to the Ontario *Environmental Assessment Act*, and one Class EA pursuant to the Ontario *Environmental Assessment Act*).

These EAs and the associated alternatives assessment methodology were subject to review at the time by Federal and Provincial government agencies, other stakeholders and Aboriginal groups. This methodology has also been utilized for a number of other mining-related undertakings which were subject to a proponent-driven Class EA process under the Ontario *Environmental Assessment Act* related to the Electricity Projects Regulation, that were reviewed by Federal and Provincial government agencies, other stakeholders and Aboriginal groups at the time.

The alternative which receives the greatest number of preferred ratings is not necessarily the best, or most preferred, overall alternative. The relative importance of the individual performance objectives needs to be considered as well. It may be that one or two performance objectives are more important and override all other objectives, so long as a minimum rating of

acceptable is attained for the less important objectives and the relative importance assigned to performance objectives is supported by Provincial and Federal regulatory agencies. The final evaluation of alternatives is therefore a reasoned process, in which the basis for the final selection of alternatives is easily understood at all levels.

The evaluation of alternatives will be undertaken in consideration of comments received and the results of consultation and discussions with the general public, Aboriginal communities and government reviewers. Information collected during this engagement will help to determine the choice of alternatives considered and the relative importance of the individual performance objectives.

The EA will also consider an evaluation of the advantages and disadvantages to the environment of the undertaking and the alternatives methods of the undertaking, as required by the Provincial *Environmental Assessment Act*.

5.3 Alternative Methods for Carrying Out the Undertaking

5.3.1 Identification of Alternative Methods

Alternatives will be identified and selected for assessment only if they satisfy the RRR requirements for employee, local residents and Aboriginal health and safety, and environmental protection. All mining operations pose some unavoidable on-site safety risks, as do other industrial operations. RRR is cognizant of this and will place an emphasis on worker health and safety, and training programs.

Alternative methods of carrying out the RRGP have been considered with respect to the following elements:

- Mining;
- Minewater management;
- Mine rock and overburden management;
- Ore processing;
- Mill effluent treatment;
- Tailings management;
- Water supply;
- Site infrastructure positioning;
- Aggregate supply;
- Solid waste management and domestic sewage treatment;
- Power supply and routing; and
- Highway 600 re-alignment routing.

A preliminary screening was completed of potential alternatives for those aspects above and other related to mining development and operation. This initial screening considered such

aspects as: technical applicability, ability to service the site effectively, potential negative environmental effects on the natural and human environment, cost effectiveness and amenability to reclamation. This preliminary screening is reflected in the descriptions of alternatives that follow and the identification of a preliminary preferred alternative. This preliminary alternatives assessment will be assessed further and detailed within the EA and could result in a revised preferred alternative.

There is the potential that other alternatives may arise through on-going engineering studies, or the EA process and related consultation / engagement activities.

5.3.2 Mining Alternative Methods

The available alternatives for mining of the RRGP ore body are:

- Open pit mining; or
- Underground mining.

The choice of the mining method is a function of: the geometry and characteristics of the ore body in relation to the surrounding geology and terrain; available technologies; environmental sensitivities; and costs relative to the resource value (reflective of commodity pricing).

The RRGP ore body is a high tonnage, relatively lower grade deposit located close to the surface, which is most amenable to open pit mining at a comparatively high ore production and throughput rate. This operation will be supported by an underground operation which will access higher grade materials near to the open pit. Underground mining is presently envisioned at a significantly lower rate, with ramp or shaft access, possibly from multiple points for production, safety egress and ventilation. As both of these mining methods are being considered for development of the RRGP and there are no other alternative methods appropriate for hard rock mining, they will be both be assessed in the EA.

There was the potential that development of the open pit could require the re-alignment of a short section of the Pinewood River. Additional engineering studies have determined that this is no longer required. As a result, the alternative of developing the open pit with the Pinewood River re-alignment will not be considered in the EA.

5.3.3 Minewater Management Alternative Methods

Minewater from surface water and groundwater inflow into the open pit and underground mine workings will contain suspended solids, residual ammonia from the use of explosives, and possibly petroleum-based hydrocarbons. The available alternatives for management are:

- Develop a separate minewater treatment and management system; or
- Integrate minewater treatment with stockpile catchment and TMA operations.

Both of these alternatives, as well as potentially other proven treatment technologies identified through public consultation and on-going engineering will be considered in the EA. With either of these alternatives, minewater will be re-used as possible to reduce freshwater requirements. Minewater will be extracted using standard industry techniques, and is expected to include in-mine sumps to be described further in the EA.

5.3.4 Mine Rock and Overburden Management Alternative Methods

Options for management of mine rock and overburden resulting from the removal of these materials to access the ore body include re-use as construction material principally for TMA dams, re-use during reclamation as a cover material and permanent stockpiling. It is intended that the overburden and mine rock generated from mine development will be used for RRGP construction and reclamation to the extent practical given the materials' physical and geochemical characteristics, in order to limit the quantity of fresh aggregate required. The quantities of overburden and mine rock are in excess of needs and the bulk of the material will require permanent storage in stockpiles.

The available alternatives for mine rock storage and management that cannot be re-used in construction are:

- Place and manage the mine rock in the stockpile adjacent or proximal to open pit;
- Develop an alternative mine rock storage and management plan; or,
- Establish a temporary stockpile location, with mine rock retained in the open pit during operations and/or returned to the open pit at closure.

The criteria used for selecting mine rock and overburden stockpile sites are: haul distance, maintaining a compact overall site plan, runoff and seepage quality management, avoidance of direct impacts to aquatic habitat, minimizing adverse effects, amenability to closure, and land use and land tenure considerations. It is important to place these materials in as close a proximity to the open pit as practically feasible, while at the same time minimizing potential adverse effects to the natural environment and to local residents. The alternative of placing mine rock within the mined out open pit, either during operation or at closure will also be assessed in the EA.

Overburden storage is governed by many of the same parameters as mine rock storage, with the exception that drainage management is limited to suspended solids control.

The available alternatives for overburden storage and management that cannot be re-used in construction are:

- Place and manage the overburden adjacent to open pit;
- Develop an alternative overburden storage and management plan; and
- Establish a temporary stockpile location, with overburden retained in the open pit during operations and/or returned to the open pit at closure.

Placing the overburden back in the pit, either during active mining operations or at mine reclamation will also be assessed in the EA.

Investigations into mine rock and overburden management and stockpile siting are part of the on-going engineering studies. In parallel with the preparation of the EA document, RRR expects to conduct a detailed alternatives assessment process regarding mine rock and overburden (and tailings) storage, as required by the Federal Metal Mining Effluent Regulations (MMER) for overprinting of waters frequented by fish (Environment Canada 2011). The results of the assessment will be used to inform the EA. The mineral waste alternatives document will be provided with the EA document submitted for approval.

Each of the alternatives identified above with respect to mine rock and overburden, storage and management will be considered in the EA. Temporary stockpiling of ore for blending of mill feed during operations such as in the mine rock stockpile area may also be considered in the evaluation of mine rock storage alternatives.

5.3.5 Ore Processing Alternative Methods

Potential alternative methods of ore processing that could be considered in the EA include the following:

- Onsite and offsite processing;
- Non-cyanide recovery methods:
- Cyanide recovery methods; and
- Combination of non-cyanide and cyanide recovery methods.

The choice of whether or not to process gold on or off site, and how best to extract and recover the gold, is a function of recovery efficiencies, economics and environmental protection. Onsite processing is typical for large scale, low grade operations such as the RRGP, as offsite processing is not economic, and could have substantial environmental implications related to ore transport.

Offsite processing of ore is not a reasonable alternative given the grade of the ore and that there are no existing gold ore processing facilities proximal to the RRGP site.
Offsite ore processing will therefore not be considered in the EA.

All methods of ore processing from hard rock gold ore deposits involve some combination of crushing and grinding, followed by gold extraction and gold recovery. Alternative non-cyanide and cyanide gold processing recovery methods will be assessed in the EA, both independently, and in combination.

5.3.6 Mill Effluent Treatment Alternative Methods

The alternative methods to be assessed in the EA for mill effluent treatment are:

- In-plant cyanide destruction using the SO_2/Air process;
- Mill effluent discharge to the TMA with natural degradation for the destruction of cyanide; and
- Mill effluent discharge to the TMA with natural degradation for the destruction of cyanide, with supplemental hydrogen peroxide destruction of residual cyanide.

Other cyanide destruction and recovery technologies are also available, but the above methods are the proven technologies most commonly used and are most applicable to the RRGP.

5.3.7 Tailings Management Alternative Methods

The alternatives to be considered in the EA for tailings slurry management include:

- Selection of a site immediately northwest of the open pit; and
- Selection of a more remote tailings site (potentially on lands held by others).

The principal criteria for selection of the TMA arrangement are the following:

- Select an area within reasonably close proximity to the mine site to minimize the overall RRGP environmental footprint and to achieve economic efficiencies of operation;
- Provide for all tailings storage in a single location;
- Position the TMA in a manner such that drainage from the system can be collected and managed in an integrated manner, in accordance with MMER and Provincial environmental approval requirements;
- Provide for an optimal operations and reclamation scenario for potential ARD management using passive systems to the extent possible, but with an allowance for contingency chemical treatment if required;

- Minimize potential adverse effects to aquatic and terrestrial habitats, including to SAR, recognizing the need to capture a sufficient area of upstream watershed so as to be able to maintain a water cover on the deposited tailings to minimize oxygen exposure and prevent ARD development; and

- Land tenure and existing / potential land uses.

A number of other possible areas for tailings storage are potentially available in the general RRGP area although potentially subject to land acquisition. All of these potential alternative sites suffer from the disadvantage of either lacking capacity, or being more remote from the open pit and plant site, and therefore more difficult to integrate with other site operations (particularly in regards to water management aspects; see Section 5.4.3). For these reasons, the site to the northwest of the pit is being advanced as the preferred alternative.

Consideration in the EA will also be given to alternative tailings deposition methods, such as thickened tailings and use in mine backfill that have been used at other mining operations.

A comprehensive assessment of mineral waste management alternatives will be provided in the EA, consistent with the alternatives assessment requirements associated with the Federal MMER and in accordance with the Guidelines for the Assessment of Alternatives for Mine Waste Disposal (Environment Canada 2011).

5.3.8 Fresh Water Supply Alternative Methods

The primary source of water for the RRGP is proposed to be water recycle from the TMA, which derives its water from either the tailings slurry from the processing plant, or natural inputs (surface runoff and precipitation). The alternative of not recycling water does not meet the RRR alternatives criteria (Section 5.4.1). There are a large number of benefits to recycling of water, rather than utilizing entirely fresh water. Nonetheless, a freshwater supply will still be required for potential seasonal water deficits, initial start-up and on-going processing plant needs, and potable water uses. This freshwater demand is still being developed as part of the overall site water balance.

There are no lakes within 10 km of the RRGP site centroid and the closest lakes beyond this distance are small headwater lakes such as Pinewood Lake to the east. Area creeks are also small and frequently intermittent in nature. The option of taking water from the Pinewood River as well as other surface water bodies will be evaluated in the EA with reference to the ability to meet the supply needs of the overall site water balance and the net effects on the water body.

It may be possible to derive all or a portion of the potable water needs from well(s), depending on the selected locations for the construction and permanent accommodations (if constructed) camps, and the potential effects of open pit and underground dewatering on possible well locations. It should be noted that there are no feasible methods whereby the RRGP could

proceed / a mine could be developed and operate safely at the scale proposed, without the dewatering of the overburden and rock at the mine location.

Potable water, whether taken from wells or the Pinewood River, will be treated as necessary to ensure drinking water quality standards are met. The option of using groundwater or surface water for potable water needs will be evaluated in the EA, including the placement of potential wells or surface water sources.

5.3.9 Site Infrastructure Positioning Alternative Methods

Options for locating the majority of site infrastructure are dictated by the positioning of the open pit, TMA, mine rock and overburden stockpiles, geographic constraints (such as avoidance of watercourses as practical) and land ownership. There are as a result comparatively few alternatives for the siting of most of the required infrastructure components, given the preference to limit the overall site footprint as practical.

The most stringent requirements for site infrastructure positioning are for the: mill and crusher (proper foundation support); construction and possibly permanent accommodation complex (worker comfort); and explosives manufacturing and storage facilities (Federal requirements for remoteness and security).

Ground stability is critical for the mill and crusher foundation(s) because of the heavy loads and the precise tolerances required for mill operations. The identified location is an area close to the open pit and underground mine portal on land owned by the Proponent, where bedrock is available to provide the necessary ground support. Proximity of the processing buildings to the open pit is necessary in order to reduce ore transport requirements and resultant effects (such as greenhouse gas emissions).

Options for worker accommodations during the construction phase include an onsite construction camp or offsite residence in one or more of the local communities. Identification of locations for dedicated construction worker accommodations is in progress. If workers were to reside offsite, the primary alternatives for residence would be nearby homes owned by RRR; or existing residences in Emo (35 km by road), Fort Frances (65 km by road) or Rainy River (75 km by road). Other more distant communities do not present a reasonable daily commute, especially in the Winter. It is possible some combination of these alternatives may be used, and each will be assessed in the EA.

Options for operations phase accommodations include offsite and/or onsite residences. Onsite residency will likely only be considered if there is insufficient accommodation potential locally, and for emergency purposes in the event of highway closure due to weather events. Both of these alternatives for operations phase accommodations will be assessed in the EA, as there is a likelihood of some combination to be used.

The positioning of the explosives facilities is prescribed by the *Quantity Distance Principles User's Manual* (Natural Resources Canada 1995) and is dependent in part on the location of other site facilities. For that reason limited practical alternatives are available. Alternative locations will be described and assessed in the EA.

5.3.10 Aggregates Alternative Methods

The majority of aggregate required to develop the RRGP will be clean, chemically inert mine rock produced incidental to ore extraction. Additional aggregate sources are expected to be needed for concrete manufacture, TMA dam filter zone construction and other incidental uses. Identification of aggregate supply locations is in progress and alternative sources will be defined in the EA, potentially including commercial sources. Consideration of these alternative sources will allow for operational flexibility in terms of timing, availability and quality of materials.

5.3.11 Solid Waste Management and Domestic Sewage Treatment Alternative Methods

Non-hazardous Solid Waste

Alternatives to be considered in the EA for the management of non-hazardous solid wastes are:

- Truck the waste off site to an existing licenced landfill;
- Develop an onsite landfill;
- Expand the Township of Chapple (or other Municipal) landfill; and
- Incineration.

Use of an incinerator was rejected as being too costly and challenging to obtain environmental approvals. Consideration may be given to controlled burning in accordance with environmental regulations / timing, of clean wood and cardboard waste in order to reduce overall waste volumes for landfilling, especially during construction.

Solid wastes from the exploration program are currently trucked off site to the Township of Chapple landfill. Recent discussions with the Township suggest that the landfill does not have the capacity to meet the RRGP waste management needs. Opportunity may exist to assist the Township to expand its current landfill capacity such that it could meet future RRGP needs, but this remains to be verified. A non-hazardous solid waste landfill could be developed onsite to support the RRGP needs and alternative locations for an onsite landfill are under development.

Hazardous Solid Waste

Hazardous solid waste will be shipped off site to a licenced landfill or other facility approved to receive such wastes. Hydrocarbon contaminated soils could potentially be remediated on site using approved methodologies which have demonstrated effectiveness. This will be assessed during future engineering investigations. Both of these alternatives will be assessed in the EA.

No onsite alternatives (such as development of an onsite hazardous waste landfill) are considered acceptable to RRR and meet the RRR identification criteria for alternatives (Section 5.4.1). Specifically, the potential negative effects on the natural and human environment are considered unacceptable when compared with transporting the material to an existing hazardous waste management facility. As such, development of an on-site hazardous waste management system will not be considered in the EA.

Domestic Sewage

The alternatives currently being considered for domestic sewage treatment at the RRGP site include:

- Septic tank(s) and tile field(s); and
- Package sewage treatment plant.

The package sewage treatment plant may be either a: rotating biological contactor, sequencing batch reactor, or membrane bioreactor. Site area soils consist mainly of clay and clay till, and are therefore not well-suited to the development of a septic tile field. Use of a package sewage treatment plant may therefore be preferred; although septic tanks / tile field(s) could be used where suitable fill material is used. Each of these alternatives will be carried forward to the EA, pending further siting and operational studies. Offsite treatment of sewage during operation (that is, storage in tanks onsite and trucking of raw sewage to a local sewage treatment plant) will also be considered as an alternative in the EA.

5.3.12 Power Supply Alternative Methods

Reliable, cost-effective power is a critical component for the RRGP operations. The mine has a planned power requirement of 54 megawatts (MW) when in full production. About three quarters of the power requirement is for the processing plant, with the balance required by the mine itself, along with ancillary needs such as dewatering, administration, etc. During construction, electrical power demand is expected to be relatively low, at around 2 to 3 MW or less for most of the construction period, rising to around 5 MW prior to commissioning of the processing plant. The current schedule anticipates the 230 kV connection will be in service for the later stages of construction.

The available power supply alternatives which are technically able to support the RRGP during the latter stage of construction and operations are:

- Onsite diesel-fired generation; or
- Construction of a 230 kV transmission line to the existing Provincial electrical grid (closest location is approximately 16 km away).

The existing local hydroelectric transmission lines cannot provide sufficient power to support a large industrial operation. Alternative energy sources such as hydroelectric, solar and wind power were considered. Neither solar nor wind power are able to deliver the required power under any practicable development scenario. Dedicated generation of hydroelectric power was not considered a viable option as the closest suitable river is the Rainy River. It is an international waterway and is further removed from the RRGP site than the existing Provincial power line and does not afford itself to hydroelectric generation. As a result, alternative energy sources as the primary power generation supply will not be carried forward into the EA for further assessment.

Onsite diesel-fired power generation to support operations will result in the release of greater direct carbon dioxide emissions than other alternatives and is not considered to be cost effective for normal operations. Diesel power is however, an effective method to support mine construction prior to additional grid power being brought to site and can serve effectively as emergency power for critical site functions. This alternative will be brought forward into the EA to be considered for short-term use during the construction phase and subsequent periodic use during operation (and potentially closure) as needed when grid power is unavailable.

A 230 kV transmission line connection to the existing Hydro-One 230 kV line linking Fort Frances and Kenora, approximately 16 km northeast of the proposed plant site location, is the preferred option for operations power. Power will need also to be brought to the substation from the local network.

The alternatives of grid power supply (ie. a local transmission line connected to the existing Ontario electrical grid) and diesel power generation will be assessed fully in the EA as they represent practical and proven alternatives.

A number of alternative routings have been defined to connect to RRGP to the regional electrical grid (Figure 3, Appendix C, including both cross-country routes and routes that parallel existing road systems. The proposed connection point is subject to engineering design and approval by the Independent Electricity System Operator and Hydro One Networks Inc. The potential routing of the 230 kV transmission line will be considered in the EA.

5.3.13 Highway 600 Re-alignment Alternative Methods

Highway 600 is a tertiary, gravel-surfaced, two-lane roadway that services local traffic where it bisects the RRGP site. The road is proposed to be re-aligned around the RRGP site to provide safer and improved local access, and facilitate mine development. Access will be retained or otherwise provided to the limited number of properties directly affected by this re-alignment, including properties on Marr Road north of the RRGP site, for which there is no other alternative access currently available.

A number of routing alternatives for Highway 600 have been identified and will be described and assessed in the EA (Figure 3, Appendix D). The alternative of closing Highway 600 and not providing an alternative access to local properties is not acceptable and will not be considered in the EA. Similarly, RRR believes that maintaining the existing Highway 600 routing presents an inappropriate risk to public safety given the current condition of the road and proximity to the proposed open pit and processing operations, and this alternative will not be carried forward into the EA.

5.3.14 Mine Decommissioning and Closure Alternative Methods

The proponent is committed to the progressive rehabilitation of the RRGP over the life of the project. During the closure phase, mining is terminated and reclamation of the site occurs. The EA will include an assessment of decommissioning alternatives and the proposed progressive and final reclamation measures for the RRGP (site and related infrastructure if applicable, and may include a draft Closure Plan).

The EA will also assess alternative methods for the decommissioning of the RRGP consistent with Provincial regulatory requirements, and which reduce the potential immediate and longer term impacts on the social and natural environments. The EA will include alternative methods of closure for the following and other RRGP components (a preliminary summary of alternatives provided below):

- Open pit mine (natural flooding, enhanced flooding, backfill with mineral waste);
- Underground mine (natural flooding, enhanced flooding, backfill with mineral waste);
- Stockpiles (re-use, stabilization and covering / revegetation, use in backfill, engineered cover);
- TMA (permanent flooding, covering and revegetation);
- Buildings (disassembly and removal, re-use of acceptable buildings);
- Infrastructure (decontamination and removal, leave in place for future use, reclaim in place); and
- Drainage (stabilize and leave in place, removal).

It should be noted that when the RRGP proceeds to the permitting phase, a detailed, certified Closure Plan (including financial assurance) is required under Ontario Regulation 240/00 of the *Mining Act* which will be submitted by the proponent for review by applicable government agencies and Aboriginal groups, and will be consulted upon with the general public.

A summary of all of the alternatives proposed to be evaluated for the RRGP in the EA is provided in Table 1. Other alternatives may arise through on-going engineering or consultation / engagement which will also be considered in the EA.

Table 1: Summary of Alternatives to be Assessed in the EA

Project Element	Alternative Methods [1]	To be Assessed in the EA	Major Reasons
Mining Alternatives	Open pit mining without Pinewood River re-routing	Yes	Ore is a large tonnage deposit located near surface best suited to open pit mining
	Underground mining	Yes	Underground mining is anticipated to be able to provide supplementary higher grade ore feed (but is not appropriate as the primary form of mining)
	Open pit and underground mining	Yes	Takes advantage of both mining methods
Minewater Management Alternatives	Develop a separate minewater system	Yes	EA will consider alternative minewater management approaches
	Integrate minewater with TMA operations	Yes	EA will consider alternative minewater management approaches
Mine Rock Waste Management Alternatives	**Place and manage mine rock in a stockpile close to the open pit (east of the open pit preferred)**	Yes	EA will consider alternative mine rock management approaches
	Develop an alternative mine rock storage plan	Yes	EA will consider alternative mine rock management approaches
	Establish a temporary stockpile location, with mine rock retained in the pit during operations and/or returned to pit at closure	Yes	EA will consider alternative mine rock management approaches
Overburden Waste Management Alternatives	**Place and manage overburden in a stockpile close to the open pit (west of the open pit preferred)**	Yes	EA will consider alternative overburden management approaches
	Develop an alternative overburden storage plan	Yes	EA will consider alternative overburden management approaches
	Establish a temporary stockpile location, with overburden retained in the pit during operations and/or returned to pit at closure	Yes	EA will consider alternative overburden management approaches
Ore Processing Alternatives	Offsite processing	No	Does not meet RRR alternatives criteria
	Onsite, non-cyanide recovery methods	Yes	EA will consider alternative approaches to gold ore processing, using industry-standard, proven methods
	Onsite, cyanide recovery methods	Yes	EA will consider alternative approaches to gold ore processing, using industry-standard, proven methods
	Onsite, combination of non-cyanide and cyanide recovery methods	Yes	EA will consider alternative approaches to gold ore processing, using industry-standard, proven methods
Mill Effluent Treatment Alternatives	**In-plant cyanide destruction using the SO_2/Air process with natural degradation for the destruction of cyanide**	Yes	EA will consider alternative mill effluent approaches using industry-standard, proven methods
	Mill effluent discharge to the TMA with natural degradation for the destruction of cyanide	Yes	EA will consider alternative mill effluent approaches using industry-standard, proven methods

Project Element	Alternative Methods [1]	To be Assessed in the EA	Major Reasons
	Mill effluent discharge to the TMA with natural cyanide degradation and supplemental hydrogen peroxide destruction of residual cyanide	Yes	EA will consider alternative mill effluent approaches using industry-standard, proven methods
Tailings Management Alternatives	**Surface TMA utilizing slurry discharge located a reasonable distance from the processing plant** (northwest of the mine preferred)	Yes	EA will consider alternative tailings management methods and locations
	Selection of a more remote surface TMA site	Yes	EA will consider alternative tailings management methods and locations
	Alternatives tailings management methods, such as thickened tailings or tailings co-disposal with mine rock	Yes	EA will consider alternative tailings management methods and locations
Fresh water Supply Alternatives	Pinewood River	Yes	The method of meeting the fresh water needs (that cannot be met by recycling) will be considered in the EA
	Other area watercourse(s), lake(s) and pond(s)	Yes	The method of meeting the fresh water needs (that cannot be met by recycling) will be considered in the EA
	Groundwater	Yes	The method of meeting the fresh water needs (that cannot be met by recycling) will be considered in the EA
Site Infrastructure Positioning Alternatives	Processing facilities (various placements)	Yes	Siting has very particular needs and limited other alternatives are available
	Accommodation facilities (various placements)	Yes	Existing offsite accommodations are preferred during operations due to the local economic benefit; but alternatives will be considered if sufficient offsite housing is found to not be available
	Explosives facilities (various placements)	Yes	Siting has very particular regulatory and safety needs and other reasonable alternatives may not be available
Aggregates Alternatives	Overburden / mine rock	Yes	Will be carried forward into the EA, as can be supported by physical and geochemical testing
	Dedicated aggregate pits	Yes	Will be carried forward into the EA
	Commercial aggregate pits	Yes	Will be carried forward into the EA
Non-Hazardous Solid Waste Alternatives	Truck waste off-site to an existing licensed landfill	Yes	EA will consider alternative non-hazardous waste management methods and locations
	Develop an on-site landfill	Yes	EA will consider alternative non-hazardous waste management methods and locations
	Incineration	No	Does not meet RRR alternatives criteria
Hazardous / Special	Shipment off site to an appropriate licensed landfill	Yes	EA will consider alternative hazardous / special management waste management methods

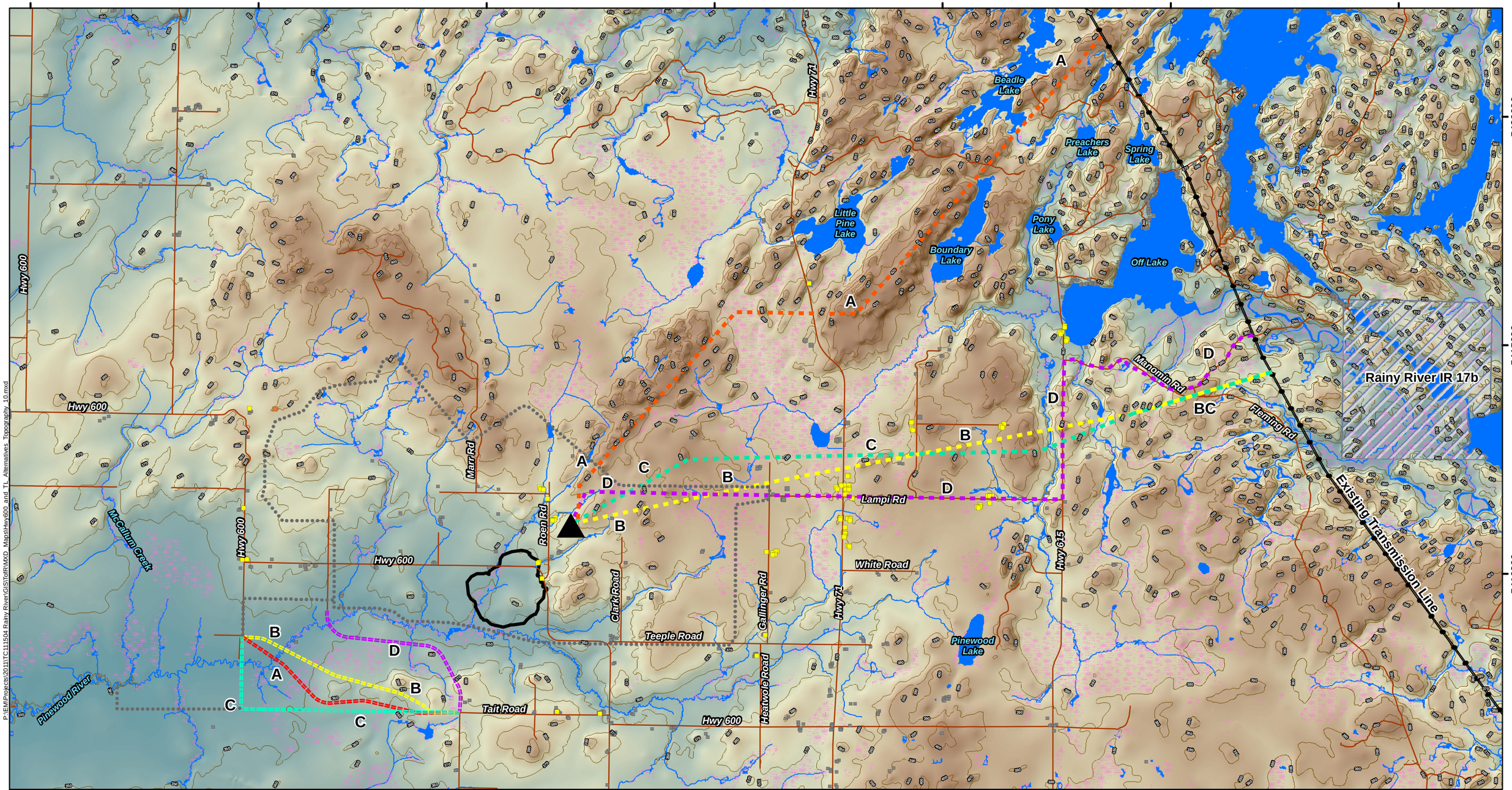
Project Element	Alternative Methods [1]	To be Assessed in the EA	Major Reasons
Management Solid Waste Alternatives	Onsite remediation for hydrocarbon contaminated soils	Yes	EA will consider alternative hazardous / special management waste management methods
	Development of an onsite hazardous solid waste management system (such as landfill)	No	Does not meet RRR alternatives criteria
Domestic Sewage	Septic tank(s) and tile field(s)	Yes	EA will consider proven methods of treating domestic sewage. Septic tank(s) and tile field(s) may be most appropriate for remote locations.
	Off-site treatment	Yes	EA will consider proven methods of treating domestic sewage.
	Package sewage treatment plant	Yes	EA will consider proven methods of treating domestic sewage
Power Supply Alternatives	On-site diesel generation	Yes	Only alternative that can provide power in addition to the existing lower voltage transmission line prior to construction and energizing of a higher voltage transmission line
	230 kV transmission line to the existing Provincial grid	Yes	The only acceptable alternative for operations phase power supply
	Alternative energy sources (hydroelectric, solar, wind)	No	Renewable energy cannot provide consistent uninterrupted power (renewable energy) or do not meet the RRR criteria regarding environmental protection (dedicated hydroelectric) or technical needs
Transmission Line Routing Alternatives	**Alternative A: northern route**	Yes	Routing of the 230 kV transmission line to the existing Provincial electrical grid will be considered in the EA. Four routes have been identified. Design must comply with applicable standards.
	Alternative B: direct route	Yes	
	Alternative C: eastern route	Yes	
	Alternative D: routed along existing roads	Yes	
Highway 600 Re-alignment	Maintain existing routing through the RRGP site	No	Does not meet RRR alternatives criteria
	Re-alignment A: routing from Tait Road following an existing trail in part to re-connect with Highway 600	Yes	Routing of Highway 600 around the RRGP site will be considered in the EA. Four routes have been identified. Design must comply with MTO standards. Option C preferred by Township of Chapple.
	Re-alignment B: routing from Tait Road following an existing trail in part to re-connect with Highway 600	Yes	
	Re-alignment C: routing from Tait Road following an existing trail along higher land to re-connect with Highway 600	Yes	

Project Element	Alternative Methods [1]	To be Assessed in the EA	Major Reasons
	Re-alignment D: direct route from Tait Road to connect with Loslo Road	Yes	

[1] **Proposed undertaking** as currently understood is shown above in **BOLD** where appropriate.

Mine Decommissioning and Closure Alternatives			
Project Element	**Preliminary Alternative Reclamation Methods**	**To be Assessed in the EA**	**Major Reasons**
Open Pit	• natural flooding • enhanced flooding • backfill with mineral waste	Yes	May meet Provincial regulatory requirements
Underground Mine	• natural flooding • enhanced flooding • backfill with mineral waste	Yes	May meet Provincial regulatory requirements
Stockpiles (low grade ore, mine rock, overburden)	• re-use during construction • stabilize and cover / revegetate • use in backfill • engineered cover	Yes	May meet Provincial regulatory requirements
TMA	• stabilize and permanent flooding • stabilize and permanent flooding / cover with overburden and revegetate • cover with mineral waste and revegetate • cover with modified mineral waste and revegetate	Yes	May meet Provincial regulatory requirements
Buildings	• destruction, and removal and disposal of wastes according to applicable regulations • re-use of acceptable buildings	Yes	May meet Provincial regulatory requirements

Mine Decommissioning and Closure Alternatives			
Project Element	**Preliminary Alternative Reclamation Methods**	**To be Assessed in the EA**	**Major Reasons**
Infrastructure	Including (but not limited to): site roads, connector roads, Highway 600 re-alignment, pipelines, local transmission lines, 230 kV connector transmission line: • decommissioning, and removal and disposal of wastes according to applicable regulations • leave in place for future use • reclaim in place	Yes	May meet Provincial regulatory requirements
Drainage	Including (but not limited to): culverts, ditching, ponds, West Creek re-alignment: • stabilize and leave in place • removal and restoration	Yes	May meet Provincial regulatory requirements



LEGEND

- Approximate Project Boundary
- Approximate Open Pit Outline
- Approximate Processing Plant Location
- Roads
- Existing Transmission Line
- Low-lying Area
- Residence - House
- Lodging Cabin - Occasional Use
- Building - Unknown Use
- Contours, 10 m interval (LIO-MNR)
- First Nation Land

Elevation Colour Ramp

High ground

Low ground

Transmission Line: Preliminary Alternative Routes

- Alternative A (approx. 16.6 km)
- Alternative B (approx. 15.7 km)
- Alternative C (approx. 16 km)
- Alternative D (approx. 19.2 km)

Highway 600 Realignment: Preliminary Alternative Routes

- Alternate A (approx. 5.3 km)
- Alternate B (approx. 5.1 km)
- Alternate C (approx. 6.4 km)
- Alternate D (approx. 4.3 km)

NOTES:
- Road and Utility data and topographic data extracted from Land Information Ontario, Ontario Road Network, MNR

Datum: NAD83
Projection: UTM Zone 15N

0 2.5 5 10 15 20 Kilometres

RAINY RIVER

amec

RAINY RIVER GOLD PROJECT

Preliminary Transmission Line and Highway 600 Re-alignment Routing Alternatives

PROJECT N°: TC111504

FIGURE: 3

SCALE: (see bar scale)

DATE: October 2012

6.0 DESCRIPTION OF THE ENVIRONMENT

6.1 Overview and Study Areas

The description of the existing environment provided herein is a brief, focussed summary based on extensive baseline studies conducted to date for the RRGP over a three-year period. The intent of this section is to familiarize the reader with the local setting. Further detail, including copies of the baseline reports referenced herein, will be provided in the EA.

The objectives of the baseline studies are to characterize the natural (or biophysical) and human environment aspects of potentially impacted areas, along with reference locations (such as upstream locations) where appropriate for comparison. Environmental baseline data (description of the existing environment):

- Helps inform project designs (for example, knowledge of rock characteristics assists in determining how best to handle and store the material);

- Will allow an assessment to be made of likely project environmental effects, including comparisons with established environmental guidelines, thresholds and limits, where applicable; and

- Provide a reference for future environmental monitoring (that is, it allows a comparison to be made of pre-development and post development conditions).

Studies to date have been completed using standard field protocol and scientific methodology, to accurately document areal and temporal variability, and have considered the information needs of regulatory agencies for approval of previous Ontario mining projects. The baseline studies have included collection of site-specific information regarding the following general aspects (and others) as well as documentation of applicable published material:

- Air quality;
- Meteorology and climate;
- Sound;
- Aquatic resources (fish and benthic invertebrates) and habitat;
- Wildlife and habitat;
- SAR;
- Surface water quality and follows;
- Groundwater quality and paths;
- Sediment quality;
- Geochemistry;
- Socio-economics;
- Archaeology and heritage resources; and
- Traditional knowledge and traditional land use (TK / TLU).

Environmental baseline studies for certain aspects, including water quality, aquatics, SAR, archaeology, TK / TLU and socio-economics are on-going as of issuance of the Amended Proposed ToR. The list below contains the baseline studies which have been used to inform the Amended Proposed ToR describing the environment on the RRGP site, within the Local Study Area (LSA) and Regional Study Area (RSA), each inclusive of the one previously stated:

- KCB (2011): Rainy River Gold Project Baseline Report, 2008 - 2010;
- AMEC (2012): Rainy River Gold Project Climate, Air Quality and Sound Baseline Study (report in progress);
- AMEC (2012): Rainy River Gold Project, 2011 Aquatic Resources Baseline Study;
- AMEC (2012): Rainy River Gold Project, 2011 Site Noise Monitoring Report;
- AMEC (2012): Rainy River Gold Project, Socio-economic Baseline Study (report in progress);
- AMEC (2012): Rainy River Gold Project, 2011 Wildlife Resources Baseline Study;
- AMEC (2012): Rainy River Gold Project, 2011 Species at Risk Report;
- AMEC (2012): Interim Report, Metal Leaching and Acid Rock Drainage Characterization of Mine Rock, Geochemistry Report, Rainy River Gold Project;
- AMEC (2012): Rainy River Gold Project, 2012 Terrestrial Resources Baseline Study (report in progress);
- AMEC (2012): Rainy River Gold Project, 2012 Species at Risk Report (report in progress);
- AMEC (2012): Rainy River Gold Project, 2012 Aquatic Resources Baseline Study (report in progress);
- AMEC (2012): Rainy River Gold Project, 2012 Site Sound Monitoring Report (report in progress); and
- Woodland Heritage Services (2012): Stage 1 Archaeological And Cultural Heritage Resource Assessment of the Rainy River Resources Advanced Exploration Project, northwest of Fort Frances, Rainy River District, Ontario (in progress); and

- Woodland Heritage Services (2012): Stage 2 Archaeological and Cultural Heritage Resource Assessment of the Rainy River Gold Project, northwest of Fort Frances, Rainy River District, Ontario (in progress)

Information from other field investigations / work not formally documented as of the issuance of this document may also have been used in the preparation of the Amended Proposed ToR.

For natural environment functions the LSA which includes the entire RRGP site, for all aspects, has been defined as:

- The Upper Pinewood River, which includes all lands and waters within the watershed upstream of, and including; McCallum Creek (also known as Jones Creek) and Tait Creek tributary subwatersheds; together with a 1 km buffer bordering the northern margin of the watershed to account for minor road allowance excursions which extend slightly beyond the watershed boundary at some locations; and

- A 4 km buffer (2 km on either side of the centreline) of the proposed 230 kV transmission line routing.

The RSA (natural environment) includes the entire Pinewood River watershed (including the LSA and RRGP site) extending east to the existing transmission line corridor.

Watershed boundaries were mainly selected to define the natural environment LSA and RSA because:

- These boundaries capture all aspects of drainage associated with the RRGP, including water takings, and effluent and runoff discharges; all of which will occur within the Pinewood River watershed; and

- All proposed RRGP developments are located within the Upper Pinewood River watershed, except as described above for minor road allowance excursions which are captured by the 1 km buffer along the north side of the watershed. All residual RRGP adverse effects to terrestrial ecosystem components are also expected to occur within the LSA, as defined above.

The RRGP site, natural environment LSA and RSA are illustrated in Figure 4.

In establishing individual sampling / study locations the following aspects (and others) were considered:

- Adequacy to produce high quality samples that can be replicated;

- Effectiveness of the location to define baseline (existing) conditions;

- Use of the location for long term evaluation of potential effects of the project (for example, baseline characteristics of the receiving watercourse); and

- Development of a reference condition for the watershed to facilitate comparisons with non-impacted watersheds and to evaluate watershed changes.

The RSA for the human environment aspects was established to define the region that could be influenced by the RRGP. The human environment RSA is therefore broader than that typically used for natural environment baseline studies because cumulative effects are usually experienced in human communities located outside of the RRGP footprint. The human environment LSA has been defined as the area immediately surrounding the proposed mine site. The LSA is defined to analyze RRGP-specific effects on non-traditional land and resource uses (Figure 5).

Table 2 summarizes the environmental components to be profiled at an appropriate level of detail within the EA document, and which will be used to inform the alternatives evaluation and impact assessment. Proposed sources of information are listed in Table 3 which will be expanded upon on within the EA. Copies of the environmental baseline studies which will inform the EA document, will be provided with the EA.

6.2 General Description of the RRGP Site

The RRGP property (as of August 1, 2012) comprises a portfolio of 131 patented mining claims, 81 unpatented mining claims and 3 leasehold rights in three claims, located in the Townships of Chapple, Mather, Richardson, Tait, Fleming, Potts, Menary, Senn and Sifton. The RRGP site and surrounding lands are dominantly privately held, with RRR holding a considerable private land package. It is understood that the Crown retains the ownership of lands bounded by the high water mark of local watercourses. For the purposes of this document, the RRGP site has been defined as the area within the LSA contained within the RRGP conceptual layout and likely to contain key elements of the undertaking.

The RRGP site land is heavily impacted by historic and ongoing farming operations. The principal local features of existing or past land uses are those related to limited existing and past agricultural and forestry practices in the area. Areas of abandoned farmland are evident throughout the RRGP site (and LSA), where farmlands are returning to scrub and successional forest communities, including in some cases small, desegregated wetlands. There are some residual houses and buildings on the RRGP site; some of which continue to be used temporarily by the previous landowners, and some of which RRR currently utilize to support the RRGP. The majority of the RRGP site is cleared, although where tree cover is present, it is dominantly of a mixed popular forest. Poplar forests, principally Trembling Aspen, are indicative of disturbed lands recovering from past forestry and farming activities, or regrowth following past fires.

Access to the RRGP site is available from existing Highway 600, a gravel-surfaced road that passes through the RRGP site, which connects to Highway 71 (paved). Highway 71 provides connections to Emo and Fort Frances, and from Fort Frances to Thunder Bay by means of Highway 11. In the northward direction, Highway 71 connects with the TransCanada Highway 17 near Kenora. The closest existing railway access for the RRGP is located at Emo (Canadian National Railway). The RRGP site is currently serviced by a local transmission line.

The RRGP site area is positioned within the upper portion of the Pinewood River watershed. The Pinewood River drains to the Rainy River approximately 37 km downstream of the site. The Rainy River is an international waterway, flowing through Ontario into the Arctic watershed. A number of small tributaries drain from the general RRGP site area to the Pinewood River. These include generally from west to east: Loslo Creek, Marr Creek, West Creek and Clark Creek, all located on the north side of the Pinewood River. A number of the creeks and tributaries, including Clark Creek, appear to have been altered to act dominantly as agricultural drains. Note that local names have been utilized for watercourses to ease of public understanding and RRR acknowledges that some of these watercourse names are not officially recognized.

The RRGP is somewhat unique from an environmental perspective, in that there are no lakes located within, or adjacent to, the RRGP footprint. The creeks that are present in the local area do not support a commercial or recreational fishery based on baseline aquatic resources data gathered to date. The area around the proposed mine site experiences limited bait fishing, mainly in West Creek and Clark Creek (KCB 2011).

There are no Areas of Natural and Scientific Interest, or Provincially Significant Wetlands within or proximal to the general RRGP site area.

The RRGP site does not overlap with any First Nation reserve lands or lands under land claim and the RRGP itself is located primarily on private lands. The Rainy Lake Reserve 17b located east of the proposed transmission line connection point is the closest reserve to the RRGP, although upstream (Figure 3).

6.3 Climate, Air Quality and Sound

6.3.1 Climate

The nearest Environment Canada climate station to the RRGP site, for which longterm, current records are available, is located at Barwick, Ontario. This station is located 23 km southwest from the site, at coordinates 428807E and 5387043N, and has climate records dating back to 1978. Table 4 summarizes the most recently available climate normals for the period of 1971 through 2000 for the Barwick station. Only temperature and precipitation data are available.

Mean monthly temperatures range from a low of -15.9°C in January to a high of 18.8°C in July. The mean annual precipitation for Barwick is 694.7 mm, with 79.5% of this average value occurring as rain. June is typically the wettest month.

A temporary, dedicated climate station was established at the RRGP site during 2009 and 2010 as part of an environmental baseline study (KCB 2011). This station measured temperature, precipitation, relative humidity, wind speed and direction, barometric pressure and solar radiation. Temperature comparisons for site records versus Barwick station records have shown a high correlation, with an r^2 value of 0.984. Strong agreement has also been observed between RRGP site and Barwick station precipitation records.

Wind speeds for the RRGP climate station show average daily speeds ranging from 2 to 15 km/h, with maximum daily wind speeds ranging from 10 to 80 km/h. There was no overall predominant wind direction noted, but the strongest sustained prevailing winds tend to come from the northwest and the southeast.

6.3.2 Air Quality

There are no large urban centres and industrial sources near the RRGP. Air quality in the RRGP area will be influenced by long range transport of air emissions from the south and also by natural sources, such as volatile organic emissions from vegetation and natural fires. The greatest potential local influence to air quality is increased particulate matter from traffic, agricultural operations and heavy equipment operation / exploration drilling.

Background air quality data were measured at two stations proximal to the RRGP site to measure particulate matter: Station AQ1 and Station AQ2, located respectively 115 m and 20 m from Highway 600. Data were collected from Station AQ1 in June through July 2009, and in October 2010. Data were collected from Station AQ2 in July 2009. Highway 600 (a gravel road) was considered to be principal source of local particulate material. Measured data summaries are presented in Table 5. All measured average particulate material concentrations were below applicable Federal and Provincial standards / criteria.

Estimates of background concentrations for other commonly assessed air quality parameters (ozone, NO, NO_2 and NO_x), as well as for $PM_{2.5}$, can be determined from Provincial air quality measurements from the nearest Provincial ambient air quality station in Thunder Bay (MOE 2012). Lower 10^{th} to 30^{th} percentile air quality values are generally considered to represent background air quality values, not influenced by anthropogenic activities. Measured values for 2009 are shown in Table 6. The regional mean $PM_{2.5}$ value agrees well with the AQ1 June / July value of 5 µg/m^3 but is lower than other measured site values.

Air quality concentrations for SO_2 and for key metals and metalloids (arsenic, cadmium, lead and mercury) are not measured at the Thunder Bay station. Background concentrations of these parameters are generally assumed to be nil for impact assessment modelling purposes.

6.3.3 Sound

Ambient sound surveys were conducted in the RRGP site area by KCB in July 2009, and in September and October 2010 (KCB 2011). Sound data were collected from seven sites using Quest Model 2900 Advanced Integrating Sound Level Meters. Six of the seven stations were positioned in close proximity to area roads. No stations were positioned further than about 300 m from a road or dwelling and three of the monitoring stations were positioned near human receptors.

Additional sound studies were undertaken at four sites in May and July 2011 by a joint Ministry of Natural Resources (MNR) and Trent University team, supported by RRR and AMEC. All four sites were located in relative proximity to roads. This second set of noise surveys was carried out using Larson Davis Model SoundTrack LxT Integrating Sound Level Meters.

Measured sound levels were similar in both studies with background Energy Equivalent Continuous Sound Levels (L_{eq} levels) generally ranging from about 40 to 50 A-weighted decibels (dBA) for most sites, but with the more distant sites (sites >200 m from roads) showing more typical values in the 35 to 40 dBA range. Differences between day and night time sound levels were not appreciable. L_{eq} values for some stations occasionally reached or approached 60 dBA; and in some instances approached or decreased below 30 dBA.

The RRGP area has characteristics intermediate between those of MOE Class 2 and 3 areas; where Class 2 includes areas which tend to be dominated by natural sounds and infrequent human activity during the night time, but some levels of human activity during the daytime; and Class 3 meaning rural or agricultural areas having little or no road traffic. Class 2 sound level limits are 50 dBA during the daytime (07:00 to 19:00 hr) and 45 dBA during the night time (19:00 to 07:00 hr); and Class 3 sound level limits are 45 dBA during the daytime and 40 dBA during the night time (MOE 1995a,b).

6.4 Physiography, Soils and Geology

6.4.1 Physiography

Terrain in the RRGP site area transitions from upland, bedrock controlled lake areas to the northeast, to lower-lying, to gently undulating terrain to the southwest. The Pinewood River system which drains most of the RRGP site area, occupies a broad lacustrine plain. Lands in the immediate RRGP site vicinity are typically gently rolling to flat, with wetlands occurring in low-lying areas, and rounded bedrock outcrops and subcrops occurring in upland areas. Elevations increase to as much as much as 430 m above sea level (asl) in highlands northeast of the RRGP site, and decline to approximately 340 m asl in lower reaches of the Pinewood River valley southwest of the RRGP site. Maximum slopes in localized areas are typically in the

order of 5 to 10 percent. Low-lying areas were inundated by glacial Lake Agassiz which left a variably thick veneer of lacustrine clay over much of the landscape.

The overburden sequence at RRGP site consists of discontinuous Labradorean Till, overlain by Keewatin Till, with the Keewatin Till typically being overlain and underlain by Lake Agassiz lacustrine deposits. Extensive surface peat deposits occur in many low-lying areas. Alluvial deposits occur in the creek and river valleys. The Labradorean Till consists mainly of silty sands and gravels, and forms localized aquifers, frequently kept under pressure by the overlying lower permeability Keewatin Till. The Keewatin Till is clay-rich and clast poor and is prevalent throughout the area except where it is disrupted by bedrock and subcrop zones. Average Keewatin Till thickness at the RRGP site is in the order of 20 to 25 m, whereas the underlying Labradorean Till is typically less than 5 m in thickness, and is discontinuous. Lake Agassiz lacustrine sediments, comprising clays, with minor silts and sands, typically occur above and below the Keewatin Till, but can also occur locally in more complex sequences (KCB 2011). Overall overburden thicknesses can range up to 100 m in some places, but are typically in the order of 20 to 30 m in areas closer to the RRGP site, which are not disrupted by bedrock exposures. Peat deposits are typically <1.5 m in thickness but can be thicker and are widespread in low-lying areas.

6.4.2 Soils

Soils in the RRGP site area are generally comprised of gray luvisols, gleysols, humisols, and rockland soils, with lesser expressions of podzolic and brunisolic soils (KCB 2011). Gray luvisols are typically clay or clay / silt rich and imperfectly drained. Gleysols are poorly drained / frequently saturated, and in the RRGP site area generally consist of silt loams to more coarse textured soils. Humisols (organic soils) are associated with wetland systems. From a textural perspective the majority of RRGP site area soils consist of clay and clay loam soils, with lesser quantities of sandy clay loam, sandy loam, loam, silt loam and silty clay. Site specific investigations undertaken by KCB (2011) included 95 soil samples collected from 50 test pits.

The soils are overwhelmingly calcareous, except for the organic soils, because of the nature of the parent material. Organic soils are acidic. Cation exchange capacity tends to be relatively high because of the elevated organic and clay content of most soils present. Soil metal contents were typical of expected background soil conditions for the soil types present, with mean soil metal concentrations generally being below Ontario guideline values (KCB 2011); but upper range site values were frequently above the generally more stringent Canadian Environmental (Soil) Quality Guidelines (Table 7). Exceedance of guidelines is not uncommon for background soil conditions, and does not imply contamination.

Soil suitability for agriculture is limited by moisture content and climate, with most of the agriculture presently in the area being devoted to forage crops and livestock (mainly beef and dairy cattle).

6.4.3 Geology and Geochemistry

The RRGP is positioned within the Rainy River Greenstone Belt that forms part of the 900 km long, east-west trending Wabigoon Subprovince of the Canadian Shield (SRK 2011). Locally, the deposit is hosted within a zone of mafic volcanics infolded with younger metavolcanics with lesser representation of metasediments. Intermediate rocks (dacites) host most of the Rainy River gold mineralization (SRK 2011). Pillow lavas occur east as well as further to the west of the deposit. The deposit is associated with a series of vertical strike slip faults and with an inferred tabular fault zone below, and directly adjacent to, the deposit. The seismic hazard is considered to be low.

Gold mineralization is associated with early sulphide formations consisting of pyrite, sphalerite, chalcopyrite and galena stringers and veins, and disseminated pyrite, and with later formed quartz-pyrite-chalcopyrite veins and veinlets.

Static geochemical testing for acid base accounting (ABA), total metals, and shake flask analysis was conducted under the direction of KCB (2011) on 444 samples considered to be representative of 10 lithologies. An additional 10 samples were selected for kinetic testing. ABA testing was conducted using standard procedures including the Modified Sobek method for neutralization potential determination. The extent of active management of mine rock ARD and/or metal leaching required is currently under assessment. Kinetic testing indicated that onset times for ARD development are likely to be on the order of several years to decades depending upon the material type. Interim geochemical characterizations suggest that the majority of the overburden is non-acid generating.

Additional geochemical testing and analyses are being conducted under the direction of AMEC to further define ARD potentials, and to formulate strategies for optimal mine rock and tailings management, including the selection of mine rock that would be suitable for construction purposes. This additional testing includes 211 rock samples for static testing (ABA, total metals, and shake flask testing), 10 samples for kinetic testing, and 7 field test cells. Testing of simulated tailings materials will commence when samples are available from the metallurgical program.

6.5 Hydrology and Hydrogeology

6.5.1 Hydrology

Local drainage systems are characterized by numerous small creeks draining to the Pinewood River (Table 8). The creeks generally originate in rocky uplands, but also frequently originate from or pass through headwater wetland systems. Hydrological systems to the northeast of the RRGP site show an abrupt transition to larger lake systems in bedrock dominated terrain. This lake terrain is remote from proposed undertaking development areas with the exception of the transmission line corridor which passes through this northeast area.

Much of the area has been cleared for agricultural development, except where rock outcrop and wetlands occur. The natural drainage systems have been altered near the RRGP site through the development of agricultural drains and on-going beaver activities. In addition to the Water Survey of Canada (WSC) data, water level / flow data are being collected periodically by RRR from local creek systems.

Regional hydrological data are available from four WSC stations: two on the Pinewood River and two on the much larger Rainy River. Additional RRGP flow data are also available for a number of the RRGP local creek systems. Summary statistics for the four WSC stations are presented in Table 9.

The Rainy River WSC stations are too large to derive flow condition data which could be applied to the RRGP site, other than for comparisons of longterm, per unit area annual averages (i.e., mean annual runoff data) which are not affected by watershed catchment size, or whether or not the station exhibits regulated or natural flow. Data from the Pinewood River near Pinewood are more helpful, especially given the longterm record for this station; but the data are limited by the fact that there are no Winter data for this station and that the station was discontinued in 1998. The higher mean annual runoff values for this station (270 mm) compared with those of the other three stations is a reflection of the lack of Winter measurements for this station.

Data from the Pinewood River at Highway 617 are particularly relevant to the local study area because they are on the same river system (the Pinewood River); data are collected year-round; the station is currently still active; and the watershed is comparatively small allowing for direct prorated data derivations for other site area watersheds. The only limitation to data records for this station is the comparatively short timeframe for data collection, 2007 to present.

As with all of northern Ontario, peak stream flows occur in the Spring, with a secondary smaller peak flow in the Fall. Low flows occur in the Winter under ice cover, and also more variably depending on the year in the late Summer or early Fall. The average annual runoff for the region is approximately 230 mm, reflecting progressively drier conditions towards the western portion of the province.

6.5.2 Hydrogeology

The groundwater regime is governed by the overall structure and hydraulic properties of the overburden and bedrock sequences, and by the local topography and associated surface watercourses. A network of 95 installations was used by KCB (2011) to assess site area groundwater conditions, consisting of 18 monitoring wells, 4 test wells, 37 drill holes, 7 auger holes, 5 mini-piezometers, and 24 cone penetration test holes. Additional monitoring wells are currently being installed by AMEC. KCB performed 10 slug tests in bedrock installations, and 23 slug tests in overburden installations. Packer tests were performed in two bedrock installations, and a total of five pump tests were performed in three of the test wells. In addition

AMEC developed a preliminary hydrogeological model using the Modular Finite-Difference Groundwater Flow Model (MODFLOW) to estimate likely seepage rates of groundwater into a fully developed, open pit.

Hydraulic properties of the principal hydrologic system components are listed in Table 10. Hydraulic conductivities were derived from the work of KCB (2011) and literature values.

Based on model applications, and sensitivity analyses, preliminary predicted groundwater seepage rates into the open pit would be expected to range from about 2,500 to 4,600 m^3/d at full pit development, once steady state conditions have been achieved. Further analysis and modelling will be required to determine potential pit dewatering effects on surface water systems. The relationship between future pit dewatering and the adjacent Pinewood River is particularly critical in this regard, as the Pinewood River passes to within about 200 m of the preliminary open pit boundary near to the southern boundary of the proposed open pit. Further hydrogeological investigations are planned for this area to better understand the potential hydrogeological connections between the Pinewood River and the future open pit.

Additional groundwater modelling will also be required to assess the potential effects of open pit dewatering on other area creeks and wetlands. Based on the high clay content of the Keewatin Till and the associated glacial Lake Agassiz sediments, these creek and wetland systems are expected to be perched, and not overly sensitive to open pit dewatering effects.

A more important groundwater consideration will be the potential effect of open pit dewatering on local residential wells. There is a broad network of residential / agricultural water supply wells in the area, with the closest well being positioned approximately 1 km from the future pit centroid, and approximately 20 groundwater supply wells are located within an approximate 5 km distance from the future pit centroid. These local water supply wells are mainly screened in the more permeable, but discontinuous Labradorean Till unit, with some wells being screened in the upper fractured bedrock zone.

At the time of submission of the Proposed ToR, the hydrogeological baseline study was in progress. The MOE requested that the document be revised to include a commitment to provide the following information in the baseline study:

- conceptual hydrogeological model with a written expert opinion summarizing groundwater flow paths, identification of potential receptors, travel times, and water quality;

- hydrogeological maps and cross-sections showing: relevant features, including surface water features, water supply wells, and other potential receptors; groundwater monitoring wells with respect to proposed RRGP facilities, potential seeps of contaminated groundwater, surface water features and other potential receptors; the extent of overburden and bedrock aquifers, including bedrock contact / fracture zones;

groundwater contours (potentiometric surfaces); and groundwater flow directions including location of all groundwater divides; and

- groundwater water quality analytical results in tabular format with ion balances and also presented with ion plots.

6.6 Surface Water, Sediment and Groundwater Quality

6.6.1 Surface Water

A total of 20 surface water sampling stations were established for the RRGP during the period of 2007 through 2010, with 13 of these stations still being active. Active stations include:

- Four stations on the Pinewood River;
- Two stations on both West Creek and Marr Creek;
- One station on each of Muskrat Creek, Clark Creek and Loslo Creek; and
- Two stations on the Rainy River.

Attempts have been made to position stations upstream and downstream of potential future developments within the limitations of the local drainage systems. Since June 2010, water quality samples have been collected at approximately monthly intervals to provide a full seasonal spectrum of data, with samples being analysed for a broad range of general parameters and metals. The analysis of general parameters includes: pH, conductivity, total suspended solids, ammonia, fluoride, nitrite, nitrate, total cyanide and *E. Coli*. The inductively coupled plasma (ICP) metal scan includes dissolved aluminum, and total metal concentrations for antimony, arsenic, boron, cadmium, chromium, cobalt, copper, iron, lead, mercury, molybdenum, nickel, thallium, uranium, vanadium and zinc.

Surface water quality in the area is generally quite good, with all parameters typically meeting PWQO and Canadian Environmental Quality Guidelines (CEQG) for the protection of aquatic life except for: iron which is commonly above the objectives; dissolved aluminum which is frequently above the objectives; and antimony, chromium, cobalt, vanadium and zinc which exceed their respective objectives on occasion. Increased coliform levels at some stations may be related to area cattle operations and cattle foraging activities. It is not unusual for baseline water quality to exceed PWQO and CEQG on occasion for various metals as a result of naturally-elevated metal content in the local soil and rock.

6.6.2 Sediment

Sediment quality samples were collected in 2008 and 2009 from upstream and downstream stations on the Pinewood River, and from West Creek below Highway 600 (KCB 2011). Sample analyses included pH, particle size, chloride, bromide, sulphate, nitrite, nitrate, phosphate, total organic carbon, and an ICP metals scan for aluminum, antimony, arsenic, barium, beryllium,

cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, potassium, sulphur, selenium, silver, sodium, strontium, thallium, vanadium and zinc. Data were compared with the Provincial Sediment Quality Guidelines (PSQG) and Federal CEQG. All parameters were found below Federal guideline values, and below Provincial sediment quality guideline lowest effect levels (PSQG LEL) with the exception of TOC in all samples, and manganese and nickel for the downstream Pinewood River sample in July 2009. In the case of manganese and nickel the values were only slightly in excess of the PSQG LEL, with the single manganese sample being recorded at 470 µg/g compared with a guideline value of 460 µg/g, and nickel being recorded at 19 µg/g compared with a guideline value of 16 µg/g. Total organic carbon values ranged from 13,000 µg/g to 26,000 µg/g, which compares with a guideline value of 10,000 µg/g.

Total organic carbon values can be elevated because of naturally high organic content, such as that associated with wetlands and wetland drainages; or in the case of elevated values due to human influences, the sources of contamination are typically sewage or agricultural runoff. The RRGP area is influenced by both conditions.

6.6.3 Groundwater

Groundwater quality samples were collected from 20 monitoring well and drill holes near to the RRGP site during 2007, 2009 and 2010 (KCB 2011). Samples were analysed for pH, conductivity, TOC, colour, chloride, fluoride, ammonia, nitrite, nitrate, biochemical oxygen demand, total and fecal coliforms, total cyanide, oil and grease, and an ICP metals scan for aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, silver, sodium, strontium, tellurium, thallium, thorium, tin, titanium, tungsten, uranium, vanadium, zinc and zirconium. Data were compared with PWQO and CEQG for the protection of aquatic life, and to Federal and Provincial drinking water standards, recognizing that these criteria are not directly applicable (and in the context of the MOE Reasonable Use Policy - Guideline B-7, which is applied to all regulated sources of groundwater contamination, and which incorporates the Ontario Drinking Water Standards).

In addition, an analysis was conducted of groundwater samples collected from four Municipal wells in the Village of Barwick, and from eight private wells across the region (KSG 2003 in KCB 2011).

Analytical results for RRGP site drill holes and wells showed that a number of groundwater samples exceeded PWQO and CEQG values for the protection of aquatic life for cobalt and iron, and that occasional exceedances of protection of aquatic life guidelines (<7% of samples) were noted for cadmium, copper, molybdenum, uranium, and zinc (KCB 2011). Federal or Provincial drinking water guidelines were commonly exceeded for total dissolved solids, turbidity, iron and manganese; with occasional exceedances (<4% of samples) for barium, chloride and antimony. The very high values recorded for turbidity, likely reflecting clay content,

suggested that a majority of the drill holes / wells were not fully developed / purged prior to sampling (KCB 2011). Groundwater baseline water quality is expected to reflect the naturally-elevated metal content in the local soil and rock.

Results from a Municipal and private wells surveyed (KSG 2003 in KCB 2011) showed generally good water quality, with occasional exceedances of drinking water objectives for one or more of the following parameters conductivity, turbidity, alkalinity, total dissolved solids, organic nitrogen, DOC, colour, aluminum, iron, manganese and sodium.

6.7 Biological Environment - Existing Conditions

6.7.1 Aquatic Resources

Studies of fisheries and aquatic resources were carried out during 2008 through 2010 by KCB (2011), with supplemental data collected in 2011 and 2012 by AMEC (AMEC 2012; report in progress). These studies included habitat assessments and fishing efforts focused on the Pinewood River system and its tributaries using a variety of fishing gear (electroshocking, seines, minnow traps, trap nets and gill nets). Fishing efforts were conducted in Spring, Summer and Fall, together with some late Winter sampling efforts. In the general vicinity of the RRGP area the Pinewood River shows typical widths of 10 to 15 m, with wider sections associated with beaver impoundments. Summer water depths are typically 0.9 to 1.7 m, with maximum Summer water depths in the order of 2 m. Substrates consist of clays and silts, with some detritus. Gravel, rock or cobble substrates are almost nonexistent. Turbidity is high because of erosion of the clay and silt substrates, and agricultural drainage. Cattle wade into the river at a number of locations. Dissolved organic carbon levels are also elevated due to wetland drainage, further contributing to poor water column visibility. Beaver dams are frequent.

Table 11 provides a summary of the aquatic habitat present in the RRGP area. The smaller creeks draining into the Pinewood River (Loslo, Marr, West, Clark, Tait and Blackhawk Creeks) typically exhibit Summer widths of 0.5 to 3 m, except where they are impounded by beaver dams, with upper creek reaches being smaller, generally from <0.5 to 1.5 m and frequently exhibiting intermittent flow. Headwater areas of many of these tributary creek systems are associated with wetland systems. Beaver impoundments are frequent.

Fish species captured from local watercourses during 2009 and 2010 are listed in Table 12. Large-bodied species (Northern Pike, Brown Bullhead and White Sucker) were found only in the Pinewood River, and not in the smaller tributaries, with the exception of White Sucker which were also found in Clark Creek. The distribution of Northern Pike in the Pinewood River appears to be limited to, or principally limited to areas downstream of the Blackhawk Road crossing area, possibly because of habitat limitations or more likely because of restrictions imposed by numerous beaver dams on the system. Northern Pike are reported to have been present in Pinewood Lake in the past, but have not been observed in several years. Local residents indicated that Walleye and Yellow Perch occur further downstream in the Pinewood River, but

not in the general area of the RRGP site. Lake Sturgeon occur in the Rainy River, but according to local knowledge are not known to occur in the Pinewood River (KCB 2011). Neither Walleye nor Lake Sturgeon have been observed in any of the aquatic surveys to date related to the RRGP. MNR also does not have any records of Lake Sturgeon in the area (MNR pers. comm.).

Small-bodied fish occur in greatest abundance in the smaller tributaries, possibly because of an absence of predaceous Pike in these tributaries. All of the fish species noted in Table 12, including the large-bodied fish, are late Spring or early Summer spawners. There are no salmonid species present. West Creek and Clark Creek are apparently used by local bait fishermen.

Benthos communities were assessed in the Pinewood River and in West Creek. Benthos metrics included densities, richness, evenness and the Bray Curtis Index of dissimilarity, in accordance with Environmental Effects Monitoring protocols. The benthic community exhibits a low-to-moderate abundance, and is dominated by crustaceans and chironomids, most likely because of the limited clay-silt substrate conditions.

6.7.2 Vegetation Communities

Vegetation mapping has been completed based on MNR Forest Resource Inventory mapping. Vegetation communities were also assessed on the basis of data available from Harris et al. (1996), Racey et al. (1996) and Sims et al. (1997), all of which describe vegetation communities that occur in northwestern Ontario; as well as on the basis of 300 field site investigations conducted for the RRGP by KCB between the dates of June 2009 and October 2010.

The RRGP and environs occur within the Agassiz Clay Plain Ecoregion, which extends from Lake of the Woods in the west to Fort Frances in the east, and from the United States border northward. The Pinewood River watershed is dominated by mixed Poplar and Black Spruce forests, and by non-forested areas (mainly agricultural lands), together with wetlands. The local area shows an even greater preponderance of mixed poplar forests, which occupy greater than 50% of the landscape, together with wetlands and agricultural lands. Wetlands are comprised mainly of treed and open fens, together with wetland thickets and marsh areas. Agricultural lands are mainly pasture and hay fields. Poplar forests comprised principally of Trembling Aspen are indicative of disturbed lands as Trembling Aspen are a successional species in Ontario.

Only two Provincially rare species have been identified in the local area: New England Violet and Field Sedge. Muskroot, another rare species, has been identified as being present historically.

6.7.3 Wildlife

Wildlife surveys were carried out for the RRGP and its immediate environs by KCB (2009 and 2010) and by AMEC in 2011 (KCB 2011; AMEC 2011a,b) and 2012 (report in progress). These surveys were focused principally on birds and to a lesser extent on mammals, amphibians and dragonflies / damselflies. A major focus was placed on SAR.

KCB conducted focused surveys on forest birds, breeding birds, owls, marsh birds and waterfowl species, Sharp-tailed Grouse, and nocturnal avian species (Whip-poor-will and Common Nighthawk), using established survey protocols. AMEC conducted additional surveys of breeding birds, marsh birds, nocturnal birds (including owls), amphibians and SAR in 2011. KCB also undertook a brief survey of migrating species, focusing principally on raptors, during October 2010. The relatively high avian species diversity present in the area reflects the mosaic of principal habitats in the areas (forest, wetlands, fields and shrublands), and the transitional (or near transitional) position of the study area relative to the Great Lakes, Boreal and Prairie regions.

Twenty-two mammal species have been identified in the RRGP environs through direct observation, trapping records or sign (KCB 2011). A number of other small mammal species are also likely to be present as no specific efforts were made to trap small mammals. Three commercial traplines overlap with the local area. Fur returns for these traplines for the period of 1993 through 2008 indicated that Beaver, American Marten, Red Fox, Otter, Fisher and Mink are the most frequently and valued furbearers taken.

Amphibian and reptile surveys identified eight frog species and three reptile species (Eastern Garter Snake, Western Painted Turtle and Snapping Turtle). No salamander species were observed. Twelve species of dragonflies / damselflies were observed, or are known to occur, in or adjacent to the RRGP, three of which are Provincially rare (Horned Clubtail, Arrowhead Spiketail and Green-faced Clubtail).

6.7.4 SAR and Critical Habitat

The SAR known to occur in the RRGP environs are listed in Table 13. The following sections provide a brief commentary on the species from Table 13 that are listed as Endangered or Threatened, Provincially or Federally. Species listed as Endangered or Threatened Provincially may require a Provincial SAR Permit pursuant to requirements of the *Endangered Species Act*, if the proposed undertaking activities are likely to harm the species in question or its habitat.

Barn Swallow

Barn Swallows are aerial insectivores that nest principally in association with man-made structures such as buildings and bridges, but also in association with natural structures such as cliffs and caves. The species appears to be declining in Ontario, possibly because of changes to

building structures. Mine site development is likely to result in the removal of some farm dwellings which could adversely affect this species.

Bobolink

Bobolinks are associated with grasslands, including agricultural areas, and open wetlands. Small numbers of Bobolinks have been observed in the RRGP and surrounding areas. The principal threat to this species is believed to be reductions in, or changes to, their preferred habitat, and destruction of nests and pre-fledgling individuals during hay cropping.

Whip-poor-will

Whip-poor-will tend to nest in semi-open habitats such as open woodlands, woodlands associated with rock outcrop areas, and along forest edges. Individuals of this species have been noted at several locations at and adjacent to the RRGP site. RRR is currently funding a two year study coordinated with the MNR and Trent University, and funded jointly by the MNR, to study Whip-poor-will in the RRGP area in support of both species conservation and mine approval requirements.

American White Pelican

American White Pelican have been observed to occasionally forage in both the Pinewood River and in West Creek, but they are not known to breed locally (KCB 2011). The birds observed are suspected as being part of the Lake of the Woods breeding population. Individuals of this species are known to forage over wide areas.

Canada Warbler

Canada Warblers typically nest in mixed forests with dense shrub understories. The species has a broad distribution in Ontario, excluding the extreme north, and one singing male was observed during the 2009 breeding bird surveys. The principal threats to this species are thought to be habitat reductions, especially within South American wintering areas.

Common Nighthawk

Common Nighthawks nest in open areas with little or no ground cover, such as rock outcrops. Possible threats to this species include insecticide use in wintering areas, habitat loss, and nest predation. Opportunities would be available during mine operations and following mine closure to develop nesting habitats suitable for this species associated with both TMA and mine rock stockpiles.

Golden-winged Warbler

The majority of Ontario's Golden-winged Warblers occur in southern Ontario along the Canadian Shield. This species was most often observed in disturbed areas such as regenerating thicketed areas along Highway 600 and edge habitat along deciduous or mixed forests and rocky, open woodlands.

Olive-sided Flycatcher

Olive-sided flycatchers utilize a variety of habitat types including forest edges and opening, such as those bordering wetlands and riverine habitats. The principal threats to this species appear to be related to winter habitat loss in outside of Canada, and potentially also more broadly to fire suppression activities and declines in the numbers of Beavers, both of which would reduce the numbers of snags available for use as foraging perches.

Peregrine Falcon

A single Peregrine Falcon was observed within the RRGP area during the fall migration period. The species is not known to breed locally or in the surrounding region.

Red-headed Woodpecker

This species is known to breed locally in the Rainy River District and a single individual was noted flying across Blackhawk Road during the 2011 breeding bird surveys. Preferred habitats include mature poplar stands with an open understory.

Little Brown Bat

The Little Brown Bat (and Northern Bat listed below) are in decline across eastern North America in part due to the recent spread of the White Nose Syndrome. The Little Brown Bat occurs year-round in Ontario. They use hibernacula during the winter and cavity roost sites in the summer. As cavity nesters in the summer, Little Brown Bat require a high density of mature cavity trees of large diameter for use as roosts and they generally forage at woodland edges or over wetlands. No bat hibernacula were found in the LSA during a records review or during field investigations.

Northern Bat

This species also occurs year-round in Ontario and uses hibernacula during the winter and cavity roost sites in the summer. Like the Little Brown Bat, as cavity nesters the Northern Bat require a high density of mature cavity trees of large diameter for use as roosts. They generally forage by gleaning off leaves within woodlands and along woodland edges. No bat hibernacula were found in the LSA during a records review or during field investigations.

6.8 Human Environment

6.8.1 Population and Demographics

The population of the Rainy River District was 21,564 in 2006, a decline of 2.5% from the 2001 census. Approximately 38% of the Rainy River District's population resides in the largest urban centre, Fort Frances that has a population of 8,103 (Statistics Canada 2007). Emo and Rainy River are the closest communities to the RRGP site with populations of 1,305 and 909, respectively. The trend of population decline is expected to continue in the region over the long term (Ministry of Finance 2009) due, in part, to loss of employment in the forestry sector.

The population of the RSA has approximately equal representation of males and females with the youngest and oldest age cohorts being higher than the Provincial averages. Overall, the median age is higher in the RSA than the province with a median age of 41 and even older in the rural areas (unorganized) of the District (over 47 compared to the Provincial median age of 39).

6.8.2 Regional Economy

The regional economy in the Rainy River District is primarily supported by the forestry sector with three of the ten major employers involved in forestry manufacturing (Resolute Forest Products, Ainsworth and NORFAB). The remainder of the major employers are in public and retail services (health, education, Municipal government). This is evident in labour force statistics that show the largest proportion of the labour force worked in the manufacturing (13.5%), health care and social services (13.5%), retail trade (9.9%) and other services (24.7%). By comparison, agriculture and other resource-based industries (such as forestry and mining) made up 8.5% of the District's labour force 15 years of age and older in 2006.

Northwest Ontario Labour Market Monitor (Service Canada 2010) indicates that there is emerging economic activities in the broader region includes gold mining (Hammond Reef Project northeast of Atikokan and Sherridon Project in the Kenora District); winter road infrastructure development and maintenance, and alternative energy (Sky Power solar energy park in Thunder Bay). New and diversified economic drivers in the region such as value added forestry, telecommunications and mining are considered critical to reversing or stabilizing declining population trends.

In 2006, the participation in the labour force for the Rainy River District was 64.2%. This rate is slightly lower than for the province (67.1%) with a significantly higher unemployment rate (7.9%) compared with the province (6.4%). The Rainy River District had a larger workforce share employed in occupations unique to primary industry and trades, transport and equipment operates and related occupations in 2006, compared with Ontario as a whole. This suggests that the workforce is well positioned to service the RRGP.

In terms of labour skills, the proportion of the population over 15 years of age with education beyond high school is lower than the Provincial proportion; however, the proportion with apprenticeship or trades certificates or diplomas is higher in the RSA communities than the province as a whole.

The 2005 median earnings for persons over 15 years of age with earnings in the Rainy River District were about 15% lower than the Provincial average. When considering median earnings for those who worked full time, full year, the median incomes were however, higher in Fort Frances and Emo than the province overall. Females earned less than males in the Districts of Rainy River, Kenora and Thunder Bay.

6.8.3 Community Infrastructure and Services

Given that the region has experienced population declines, service capacity may be able to handle additional demands which could be experienced by these communities in the event of population increases either temporarily in the construction phase or permanently in operations phase of the RRGP. The available information suggests that there could be some near term capacity challenges for housing and accommodation as well as for cellular communications services. Information for this section was primarily sourced KCB (2011).

The extent to which permanent and temporary accommodations are available in the local study area is currently being investigated by RRR. At this time, there is a challenge finding sufficient proximal housing to support the on-going exploration program. Additional housing market research will be required to determine whether there is sufficient local accommodation to house the construction workforce and whether a permanent camp will be required to house the operations work force. The closest centres with accommodations are Emo (35 km by road), Fort Frances (65 km by road) and Rainy River (75 km by road). A temporary construction work camp could be required to house workers during the construction phase of the RRGP. During operations and if no permanent camp is constructed, workers are expected to relocate to study area communities if they do not already reside in the region.

Local communities are well-serviced with schools and enrolment is declining since 2002 prompting discussions about school closures between 2008 and 2012. Post secondary training institutions in the region include Confederation College in Thunder Bay, with six regional campuses in Dryden, Fort Frances, Geraldton, Kenora, Marathon and Sioux Lookout.

Health care services are provided by Riverside Health Care Facilities Incorporated that operates the Emo Health Centre (in Emo), the Rainy River Health Centre (in Rainy River) and the La Verendrye Hospital (in Fort Frances). All facilities are staffed with full time doctors and the Rainy River and Fort Frances facilities have emergency departments.

Emergency services (fire, police and ambulance) are available throughout the Rainy River District. The Rainy River District Mutual Aid System provides cooperative services in the district and is comprised of 11 Municipal fire departments, two First Nation fire departments and 2 northern fire departments (http://fire.fort-frances.com/mutualaid). Ambulance services are provided by the Rainy River District Social Services Administration Board and which operates four ambulance stations in Atikokan, Fort Frances, Emo and Rainy River. There are also several heliports for air ambulance services located in Atikokan, Emo, Rainy River and Lac La Croix First Nation. (http://rrdssab.ca/). The Ontario Provincial Police have a Rainy River District Detachment headquartered in Fort Frances with satellite detachments in Atikokan, Emo and Rainy River (http://www.opp.ca/ecms/files/250280565.2.pdf)

The region is well serviced and accessible from Highways 71, 11 and 600. The Canadian National Railway runs east-west through the region and within 40 km of the RRGP site with links to Winnipeg (Manitoba), Thunder Bay (Ontario) and Duluth (Minnesota). Fort Frances has regular commercial air service.

Potable water near the RRGP site is sourced from individual groundwater wells. The water sources for the Towns of Emo and Fort Frances are respectively, the Rainy River and Rainy Lake (KCB 2011). Fort Frances waste water is treated in a waste water treatment plant with a small number of residences on septic systems. Emo treats waste water in a lagoon that is discharged to the Rainy River during periods of high flow at discharge points upstream of the RRGP site (KCB 2011). Both Emo and Fort Frances have landfills for solid waste disposal.

Local generating stations include three dams on the Seine River (Calm Lake Generating Station, Sturgeon Falls Generating Station and Valerie Falls Generating Station). The Seine River drains into Rainy Lake with water levels controlled by a dam at Fort Frances. The Atikokan Generating Station (coal-fired) also generates electricity for the grid in the region (KCB 2011).

6.8.4 Mineral Exploration, Forestry and Agriculture

Mining and mineral exploration are key economic activities in northwestern Ontario. In 2009, there were approximately 300 active mineral projects in northwestern Ontario with expenditures of approximately $230 million (KCB 2011). Over 80% of the exploration activities were focused on gold; however, other projects involving diamonds, base metals and platinum were also active. The nearest operating mine to the RRGP is the Red Lake Mine in Balmertown, Ontario, approximately 245 km to the northwest.

The Crossroute Forest overlaps with the Rainy River District and the RRGP area. The Sustainable Forest License for the Crossroute Forest is held by Resolute Forest Products (formerly AbitibiBowater) who are responsible for harvest management, inventories and planning. The current Forest Management Plan (2007 to 2017) does not show any planned harvesting in the RRGP area (KCB 2011).

Agriculture is also an important component of the regional economy in the Rainy River District, with 420 farm operators on 312 farms with total gross farm receipts (excluding forest products sold) for the main commodities at over $13 million in 2006 with a total market value of over $178 million (Statistics Canada 2007). Livestock production (beef cattle and dairy) was the most important commodity (KCB 2011).

6.8.5 Recreation and Tourism

Recreation and tourism in the region is mainly related to outdoor pursuits such as hunting, fishing, camping, snowmobiling, hiking and the like and occurs primarily in the Crossroute Forest. There are a number of Provincial Parks and Conservation Reserves in the region. The tourism sector is highly dependent on United States-based visitation (AbitibiConsolidated 2007). Many of the tourism operations in the region are remote and only accessible only by boat or plane.

Table 2: Summary of Environmental Components to be Profiled

Component	Item To Be Profiled
Atmospheric Environment	
Climate	Baseline conditions in the vicinity of proposed undertaking components from available data sources including the RRGP weather station
Air quality	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
Noise	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
Aquatic Environment	
Hydrology	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
Hydrogeology	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
Water quality	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work and on-going environmental monitoring
Fisheries and aquatic resources	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
Aquatic habitat	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
Terrestrial Environment	
Physiography and geology	Baseline conditions in the vicinity of proposed undertaking components from available data sources
Terrestrial habitat	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
Wildlife	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
Migratory birds	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
SAR	Baseline conditions in the vicinity of proposed undertaking components from available data sources including completed RRGP baseline work
Human Environment Aspects	
Socio-economic	Baseline conditions in the vicinity of proposed undertaking components from available data sources including both published sources and interviews completed during RRGP baseline work
Land use	Baseline conditions in the vicinity of proposed undertaking components from available data sources including both published sources and interviews completed during RRGP baseline work
Cultural heritage resources	Baseline conditions (including archaeological resources, built heritage resources and cultural heritage landscapes) in the vicinity of proposed undertaking components from available data sources including RRGP-specific archaeological investigations and new data derived from on-going Traditional Knowledge studies with local First Nations
Traditional Knowledge and Land Use	Baseline conditions in the vicinity of proposed undertaking components from available data sources; including new data derived from on-going Traditional Knowledge studies with local First Nations

Table 3: Summary of Proposed Environmental Data Sources

Environmental Data Sources
RRGP-specific field investigations and associated reports including, but not limited to: • KCB (2011): Rainy River Gold Project Baseline Report, 2008 - 2010; • AMEC (2012): Rainy River Gold Project Climate, Air Quality and Sound Baseline Study (report in progress); • AMEC (2012): Rainy River Gold Project, 2011 Aquatic Resources Baseline Study; • AMEC (2012): Rainy River Gold Project, 2011 Site Noise Monitoring Report; • AMEC (2012): Rainy River Gold Project, Socio-economic Baseline Study (report in progress); • AMEC (2012): Rainy River Gold Project, 2011 Wildlife Baseline Study; • AMEC (2012): Rainy River Gold Project, 2011 Species at Risk Report; • AMEC (2012): Interim Report, Metal Leaching and Acid Rock Drainage Characterization of Mine Rock, Geochemistry Report, Rainy River Gold Project; • AMEC (2012): Rainy River Gold Project, 2012 Terrestrial Resources Baseline Study; • AMEC (2012): Rainy River Gold Project, 2012 Species at Risk Report; • AMEC (2012): Rainy River Gold Project, 2012 Aquatic Resources Baseline Study (report in progress); • AMEC (2012): Rainy River Gold Project, 2012 Site Sound Monitoring Report (report in progress); and • Woodland Heritage Services (2012): Stage 1 Archaeological and Cultural Heritage Resource Assessment of the Rainy River Resources Advanced Exploration Project, northwest of Fort Frances, Rainy River District, Ontario (in progress) • Woodland Heritage Services (2012): Stage 2 Archaeological and Cultural Heritage Resource Assessment of the Rainy River Gold Project, northwest of Fort Frances, Rainy River District, Ontario (in progress)
Traditional Knowledge studies with local First Nations. It is standard practice in Canada and elsewhere to include Aboriginal Traditional Knowledge in the conducting of EAs for projects where there is Aboriginal involvement. This knowledge is used to help inform decisions related to the project including assessment of potential impacts. Subject matter where TK could be expected to be most applicable would include, but would not necessarily be limited to, wildlife and fisheries information, medicinal plants, cultural heritage resources and general land use. In addition to the TK studies, additional TK and general environmental insights have been gained through consultation and discussions with members of the local Aboriginal communities and their leaderships during community open houses and at other meetings to discuss Project planning and Aboriginal interests and concerns. TK will be considered in decisions related to the Project.
Satellite imagery, aerial photography and various Geographic Information System data sources (such as for Areas of Natural and Scientific Interest, Environmentally Sensitive Areas and Provincially Significant Wetlands and other location-specific information)
Government data sources including: climate data, air quality data, field studies, management guidelines, recovery plans, SAR database, land use atlas, land use plans, local community data, land registry information and archaeological site database
Other published and unpublished data sources including: topographic and other mapping, field guides, technical papers and atlases
Provincial government agencies, Aboriginal and public consultation; and other personal communications

Table 4: Barwick Climatic Normals

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Temperature (°C)													
Daily Average	-15.9	-11.6	-4.4	4.2	11.7	16.2	18.8	17.8	12.1	5.5	-3.8	-12.7	3.2
Daily Max.	-9.9	-5.4	1.4	10.5	18.5	22.5	24.8	24	17.7	10.4	0.1	-7.7	8.9
Daily Min.	-22	-17.8	-10.2	-2.1	4.9	10	12.6	11.6	6.5	0.7	-7.7	-17.7	-2.6
Extreme Max.	9	14	19.5	31	32	36.5	35.5	35	34	28.5	21	9	
Extreme Min.	-45.5	-49	-38	-25	-7.5	-2	2.5	-1	-5.5	-17	-39	-44	
Precipitation (mm; except snowfall as cm)													
Rainfall	0.3	3.3	11	30.4	67.3	113.8	99	84	79.4	50.4	12.8	0.8	552.4
Snowfall	28	20.8	18.7	9.6	1	0	0	0	0.6	5.8	28.9	28.9	142.3
Precipitation	28.3	24.1	29.7	40	68.3	113.8	99	84	80	56.2	41.7	29.7	694.7

Source: Station ID 6020559

Table 5: Measured RRGP Site Airborne Particulate Material (PM; data expressed as µg/m^3)

Station	Parameter	Average Concentration	Criteria
AQ1 – June / July 2009	$PM_{2.5}$	5	30 [1]
	PM_{10}	9	50 [2]
	Total PM	9	120 [2]
AQ1 – October 2009	$PM_{2.5}$	15	30 [1]
	PM_{10}	15	50 [2]
	Total PM	16	120 [2]
AQ2 – July 2009	$PM_{2.5}$	11	30 [1]
	PM_{10}	13	50 [2]
	Total PM	13	120 [2]

Notes: 1 – CCME 2000, MOE 2012
2 – MOE 2012
All values based on 24-hour averages

Table 6: Regional Ambient Air Quality Concentrations
(Thunder Bay, data expressed as ppb, except for $PM_{2.5}$ which is expressed as µg/m^3)

Parameter	10th Percentile	30th Percentile	Mean
$PM_{2.5}$	0	1	3.8
Ozone	7	17	24.2
NO	0	1	5.7
NO_2	2	4	8.4
NO_x	3	5	14.1

Source: MOE (2009)

Table 7: RRGP Area Soil Metal and Metalloid Concentrations
(data expressed as parts per million)

Parameter	RRGP Area Mean Soil Content	Federal Guidelines (CEQG)	
		Agricultural Use	Residential / Parkland Use
Antimony	0.19 – 1.77	20	20
Arsenic	2.2 – 25	12	12
Barium	84 -838	750	500
Beryllium	1.2 – 2.1	4	4
Boron	9 – 85	2	-
Cadmium	0.06 – 1.1	1.4	10
Chromium (total)	7 – 221	64	64
Cobalt	1.6 – 21.5	40	50
Copper	6 – 80	63	63
Fluoride	73 – 566	200	400
Lead	10 – 84	70	140
Mercury	0.02 – 0.41	6.6	6.6
Molybdenum	1 – 3	5	10
Nickel	4 – 55	50	50
Selenium	0.05 – 1.27	1	1
Silver	0.03 – 8	20	20
Thallium	0.02 – 2.8	1	1
Vanadium	5 – 190	130	130
Zinc	17 – 125	200	200

Notes: Bracketed Provincial values are for medium to fine textured soils
Source: KCB (2011)

Table 8: Local Watercourse Characteristics

Watercourse Name	Sample Location ID	Mean Wetted Width (m)	Mean Wetted Depth (m)
Pinewood River	Pin-1	5.40	0.40
	Pin-2	1.80	0.26
	Pin-3	7	>1.5
	Pin-4	15	0.30
	Pin-5	5	0.40
	Pin-6	5	2
	Pin-7	8	1
Loslo Creek	Los-1	2.80	1.06
	Los-2	5	>1.5
Marr Creek	Marr-2	0.54	0.37
	Marr-3	2.10	0.32
	Marr-4	0.63	0.25
	Marr-5Y	1.22	0.74
	Marr-5B	1	0.50
West Creek	Wes-1	1.10	0.11
	Wes-2	1	0.10
	Wes-3	7.50	0.50
	Wes-4	1.40	0.40
	West Trib. 3	1.10	0.45
Clark Creek	Cla-1	0.66	0.12
	Cla-2	2.10	0.68
	Cla-3	1.60	0.38

Source: AMEC (2012)

Table 9: Regional WSC Hydrometric Flow Stations

Station	Location		Data Range	Catchment Area (km^2)	Flow (m^3/s)			Mean Annual Runoff (mm)
	Easting	Northing			Mean	Maximum	Minimum	
Pinewood River near Pinewood (05PC011)	409290	5400720	1952 to 1998	461	4.0	104	0.001	270
Pinewood River at Highway 617 (05PC023)	413017	5405653	2007 to 2010	233	1.7	34	0.001	235
Rainy River at Fort Frances (05PC019)	470270	5384000	1905 to 2010	38,600	280	1,360	1	230
Rainy River at Manitou Rapids (05PC018)	432680	5387200	1928 to 2010	50,200	370	2,020	26	230

Notes: Pinewood River stations exhibit natural flow; the Rainy River stations are regulated (impounded). Pinewood River near Pinewood station was not set up to provide Winter flow measurements; all other stations provide year-round measurements

Table 10: RRGP Area Hydrologic System Hydraulic Conductivities (used in Preliminary Hydrogeological Model; m/s)

Material	Average Condition	Expected Range
Peat	10^{-5}	$10^{-6} – 10^{-4}$
Keewatin derived Till	$3x10^{-7}$	$10^{-11} – 10^{-6}$
Lake Agassiz Clay	10^{-8}	$10^{-10} – 10^{-7}$
Labradorean derived Till	$5x10^{-5}$	$10^{-6} – 10^{-4}$
Shallow Fractured Bedrock	10^{-6}	$10^{-8} – 10^{-4}$
Intermediate Rock	10^{-8}	$10^{-13} – 10^{-10}$
Deep Rock	10^{-9}	$10^{-13} – 10^{-10}$

RAINY RIVER

Table 11: Habitat Characteristics of RRGP Creeks and River

ID	Watercourse Type	Location Coordinates Easting Northing	Wet/ Dry	Section Length (m)	Current Velocity (m/s)	Channel Morphology (% composition)	Channel Features (m)	Other Channel Features (%)	Mean Wetted Width (m)	Mean Wetted Depth (m)	Mean Bankfull Width (m)	Mean Bankfull Depth (m)	Floodplain Width (m)	Substrate Composition (%)[1]	In stream Cover (% of surface area)	Aquatic Vegetation Type (based on overall 100% distribution) Emergent	Floating	Submergent	Overhead Coverage (% stream shaded)	Migratory Obstructions / Upwellings
Pinewood River																				
Pin-1	Permanent: Stream	0428973 5407289	Wet	40	0.1	Pools: 80 Braided/Diffuse:10 Beaver Ponds:10	Gradient: 0.03 Meander Length:30 Meander Amplitude:17 Entrenchment: L 1.3/1 R 1.5/2.5	Undercut Banks:5 Beaver Dams/# Observed: 1 Eroding Banks: 30 Woody Structure: 2 Organic Debris: 10	5.40	0.40	6.80	1.80	45	Bo: 2 Gr: 5 Sa: 3 Si/Mu: 10 Cl: 80	Undercut Banks:10 Logs:0.3	30 (20 Sedges 5 Water Parsnip)	NR	10 Floating Pondweed	Canopy (Vertical Shading): 25 Ground Vegetation: Shrubs:5 Graminoid:20	NR / NO
Pin-2	Permanent: Channelized Stream	0427752 5407048	Wet	18	NR	Pools:60 Flats:10 Runs:30	Gradient: Low/Moderate Meander Length:18 Meander Amplitude:3.4 Entrenchment:1/1	Undercut Banks:5 Eroding Banks:60 Woody Structure:10 Organic Debris:5	1.80	0.26	1.80	0.47	35	Co: 60 Gr: 30 Sa: 5 Si/Mu: 5	Overhanging Branches:5 Bottom Branch Debris:5 Undercut Banks:5 Logs:0.5	15 (20 Arrowhead 80 Burreed)	NR	25 (90 Myriophyllum 10 Broad-Leaved Pondweed)	Canopy (Vertical Shading):10	NR / NO
Pin-3	Permanent: Channelized Stream	0425917 5408565	Wet	43.6	<0.01	Flats	Gradient:Very Low Meander Length:30.4 Meander Amplitude:6.5 Entrenchment:1/1	Undercut Banks:5 Beaver Dams/# Observed:1 Eroding Banks:5	7	>1.5	7	>1.75	>200	Sa:5 Si/Mu:30 Cl:50 D:5	Undercut Banks:5	5 (25 Broad-Leaved Arrowhead 25 Marshy Spikerush 40 Branching Spikerush 10 Floating Arrowhead)	NR	15 (50 Yellow Pond Lilly 30 Broad-Leaved Arrowhead 5 Slender Pondweed 15 Myriophyllum **Richardson's Pondweed also observed)	Canopy (Vertical Shading):5 Ground Vegetation: Shrubs:5 Graminoid:5	NR / NO
Pin-4	Permanent: Channelized River	0424224 5408815	Wet	140	0.01	Pools:50 Flats:45 Braided/Diffuse:5	Gradient: Low/Moderate Meander Length:260 Meander Amplitude:17 Entrenchment:1/2.5	Eroding Banks:5 Woody Structure:1 Organic Debris:5	15	0.30	17	0.30	200	Si/Mu:60 Cl:25 D:15	Undercut Banks:1 Logs:0.5	8 (Sedges Cattails Water Parsnip)	NR	70 (Floating Pondweed Yellow Pond Lilly Coontail Slender Pondweed Duckweed)	Canopy (Vertical Shading):10 Ground Vegetation/ Shrubs:1 Graminoid:9	NR / NO
Pin-5	Permanent: Channelized Stream	0423523 5408925	Wet	70	0.02	Pools:25 Flats:75	Meander Length:65 Meander Amplitude:22 Entrenchment:1/1	Undercut Banks:5 Beaver Dams/# Observed:1(5%) Woody Structure:5 Organic Debris:5	5	0.40	6	0.64	250	Si/Mu:30 Cl:50 D:20	Undercut Banks:5 Logs:0.5	15 (10 Broad-Leaved Arrowhead 5 Spikerush 5 Burreed)	NR	85 (40 Yellow Pond Lilly 5 Ceratophyllum 20 Slender Pondweed 5 Broad Leaved-Pondweed 5 Richardson's)	Graminoid:95	NR / NO
Pin-6	Permanent: Channelized River	0421549 5408894	Wet	120	0.01	Pools:30 Flats:70	Gradient:Low Meander Length:70Meander Amplitude:25	Eroding Banks:5 Woody Structure:10 Organic Debris:10	5	2	5.40	>2.2	30	Si/Mu:75 Cl:15 D:10	Overhanging Branches:5 Bottom Branch Debris:5	15 (Spike Rush Yellow Pond Lilly)	NR	5 Pondweed	Canopy (Vertical Shading):10 Ground Vegetation: Shrubs:5 Graminoid:5	NR / NO
Pin-7	Permanent: Channelized Stream	0420348 5408151	Wet	80	NR	Flats:100	Gradient:Low Meander Length:75 Meander Amplitude:60 Entrenchment:2/1	Undercut Banks:5 Woody Structure:5 Organic Debris:15	8	1	10	3.50	90	Sa:5 Si/Mu:60 Cl:35	Overhanging Branches:3 Bottom Branch Debris:10 Undercut Banks:5 Logs:(2%)	5 (15 Marshy Spikerush 85 Bullrush)	NR	15 (60 Richardson's Pondweed 5 Bladderwort 5 Coontail 20 Broad-Leaved Pondweed 10 Slender Pondweed)	Canopy (Vertical Shading):25 Ground Vegetation: Shrubs:5 Graminoid:5	NR / NO
Tait Cr. Trib.2																				
Tai-T2-2	Ephemeral: Channelized	0423706 5406665	Dry	NR	NA	NA	NR	NR	NA	NA	0.40	NR	NR	NR	NA	NA	NA	NA	Canopy (Vertical Shading): Ground Vegetation: Willow Alder Shrubs:Ericaceous Graminoid	NR / NO

amec

RAINYRIVER

Table 11: Habitat Characteristics of RRGP Creeks and River

ID	Watercourse Type	Location Coordinates	Wet/ Dry	Section Length (m)	Current Velocity (m/s)	Channel Morphology (% composition)	Channel Features (m)	Other Channel Features (%)	Mean Wetted		Mean Bankfull		Floodplain Width (m)	Substrate Composition (%)[1]	In stream Cover (% of surface area)	Aquatic Vegetation Type (based on overall 100% distribution)			Overhead Coverage (% stream shaded)	Migratory Obstructions / Upwellings
		Easting Northing							Width (m)	Depth (m)	Width (m)	Depth (m)				Emergent	Floating	Submergent		
Loslo Creek																				
Los-1	Permanent: Channelized Stream	0422870 5411973	Wet	35	0.01	Beaver Ponds	Gradient:Low Meander Length:70 Meander Amplitude:7.9 Entrenchment:1/1	Undercut Banks:5-10 Beaver Dams/# Observed:2 Woody Structure:5 Organic Debris:15	2.80	1.06	2.80	1.06	18	Gr:10 Sa:15 Si/Mu:40 Cl:20 D:5	Undercut Banks: 5 Logs:(<5%)	10 (40 Burreed 40 Marshy Spikerush 15 Broad-Leaved Arrowhead 3 Marsh Marigold 2 Cattails)	NR	15 (Broad-Leaved Pondweed Lemna)	Graminoid:10	NR / NO
Los-2	Permanent: Channelized Stream	0421792 5409583	Wet	60	0	Pools:20 Flats:80	Gradient:Low Meander Length:40 Meander Amplitude:11.5 Entrenchment:>1/1(Very Steep)	Undercut Banks:5 Eroding Banks:5 Woody Structure:5 Organic Debris:10	5	>1.5	6.50	>2	50	Gr:5 Sa:5 Si/Mu:50 Cl:35 D:5	Logs:1	20 (Sedges Water Carrot Broad-Leaved Arrowhead Spikerush)	NR	5 Floating Pondweed	Canopy (Vertical Shading):10 Ground Vegetation: Shrubs:4 Graminoid:6	NR / NO
Upper Trib. 5																				
UPP-T5-1	Ephemeral: Channelized	424057 5407574	Dry	NR	NA	NA	Entrenchment:High	NR	NA	NA	0.50	0.40	NR	Sa/Si	NA	NA	NA	NA	Canopy (Vertical Shading): Ground Vegetation: Poplar Shrubs:Ericaceous Graminoid	NR / NO
Marr Creek																				
Marr-2	Permanent: Channelized Stream	0423677 5411731	Wet	6.5	<0.001	Flats	Sinuosity: Gradient:Low Meander Length:6.5 Meander Amplitude:1.6 Entrenchment:1/1	Undercut Banks:85 Eroding Banks:5 Organic Debris:10	0.54	0.37	0.62	0.55	85	Gr:5 Sa:5 Si/Mu:10 Cl:60 D:20	Undercut Banks:20	5 (Pipeweed Carex)	NR	5 (Pink Flowers with long slender leaves Unidentified)	Canopy (Vertical Shading): Ground Vegetation: Shrubs:5 Graminoid:60	NR / NO
Marr-3	Permanent: Channelized Stream	0424030 5410691	Wet	35	<0.01	Flats:90 Braided/Diffuse:10	Gradient:Low Meander Length:12 Meander Amplitude:1.5 Entrenchment:1.5/0.25	Woody Structure:5 Organic Debris:15	2.10	0.32	2.90	0.62	50		Overhanging Branches:5 Bottom Branch Debris:5	75 (15 Sedge, 60 Carex)	NR	5 Lemna	Canopy (Vertical Shading):5 Ground Vegetation: Shrubs:5 Graminoid:80	NR / NO
Marr-4	Permanent: Channelized Stream	0423603 5410144	Wet	75	<0.01	Pools:25 Flats:75	Gradient:Low Meander Length:17.9 Meander Amplitude:8 Entrenchment:1/1	Undercut Banks:35 Beaver Dams/# Observed:1 Organic Debris:30	0.63	0.25	1.10	0.79	180-200	Gr:10 Si/Mu:30 Cl:45 D:15	Bottom Branch Debris:2 Undercut Banks:30 Logs:Breaver Dam	35 (20 Carex 5 Broad-Leaved Arrowhead 5 Burreed 5 Marsh Marigold)	NR	45 (25 Pondweed 25 Lemna 5 Ceratophyllum 5 Slender Pondweed 5 Round Pondweed)	Graminoid:68	Beaver Dam / NO
Marr-4A	Intermittent: Channelized Stream	0423642 5409640	Wet	NR	NR	NR	NR	NR	NR	NR	NR	NR	180-200	NR	NR	35 (20 Carex 5 Broad-Leaved Arrowhead 5 Burreed 5 Marsh Marigold)	NR	45 (25 Pondweed 25 Lemna 5 Ceratophyllum 5 Slender Pondweed 5 Round Pondweed)	Graminoid:68	NR / NO
Marr-5	Intermittent: Channelized Stream	0423538	Wet	NR	NR	Braided/Diffuse	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	Cattle Crossing / NO
Marr-5Y	Intermittent: Channelized Stream	0423504 5408918	Wet	NR	NR	Braided/Diffuse	NR	NR	1.22	0.74	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR / NO
Marr-5Z	Intermittent: Channelized Stream	0423499 5408950	Wet	NR	NR	Braided/Diffuse	NR	NR	NR	NR	NR	NR	NR	Si/Cl	NR	NR	NR	NR	Graminoid	NR / NO
Marr-5B	Permanent: Channelized Stream	0423559 5408963	Wet	NR	0	NR	Entrenchment:High (Steep bank/box shape channel)	NR	1	0.50	NR	NR	20	Si/Cl/D	NR	NR	NR	Duckweed	Canopy (Vertical Shading): Ground Vegetation:Willow Alders Shrubs: Dogwood Graminoid:	NR / NO

amec

RAINYRIVER

Table 11: Habitat Characteristics of RRGP Creeks and River

ID	Watercourse Type	Location Coordinates Easting Northing	Wet/ Dry	Section Length (m)	Current Velocity (m/s)	Channel Morphology (% composition)	Channel Features (m)	Other Channel Features (%)	Mean Wetted Width (m)	Mean Wetted Depth (m)	Mean Bankfull Width (m)	Mean Bankfull Depth (m)	Floodplain Width (m)	Substrate Composition (%)[1]	In stream Cover (% of surface area)	Aquatic Vegetation Type (based on overall 100% distribution) Emergent	Floating	Submergent	Overhead Coverage (% stream shaded)	Migratory Obstructions / Upwellings
Core Shack Creek																				
Cor-1	Intermittent	0425117 5411904	Dry	25	NA	NA	NR	Woody Structure: Organic Debris:	NA	NA	1.10	0.42	NR	Co:10 Gr:10 Cl:80	NA	NA	NA	NA	NA	Canopy (Vertical Shading):100 Ground Vegetation: 30 White Birch 20 Trembling Aspen 50 Black Ash Graminoid:Bedstraw Violet Alder Rue Pyeweed Goldenrod	NR / NO
West Creek																				
West Trib.4	Permanent: Not Channelized	0426238 5420000	Wet	NR	0	NR	NR	NR	NR	0.40	NR	NR	NR	NR	NR	Carex	NR	NR	Canopy (Vertical Shading): Ground Vegetation:Willow Spruce Graminoid:	NR / NO
West Trib.4B	Permanent: Not Channelized	0426238 5411974	Wet	180	0.03	Braided/Diffuse	NR	Beaver Dams/# Observed:1	40	0.3-0.4	NR	NR	200	Bo:10 Co:10 Cl:80	NR	10 (Bullrush Cattail)	NR	Lilly Pads Pondweed Coontail Lemna Frogsbit	Canopy (Vertical Shading): Ground Vegetation: Willow Alder Graminoid:80	Beaver Dam / NO
Wes-1	Permanent: Stream	0426287 5411811	Wet	30	0.03	Pools:70 Runs:30	Meander Length:12 Meander Amplitude:8 Entrenchment:0.35/0.4	Undercut Banks:30 Eroding Banks:5 Woody Structure:30 Organic Debris:5	1.10	0.11	2	0.80	12	Bo:10 Gr:45 Si/Mu:2 Cl:20 D:5	Overhanging Branches:30 Bottom Branch Debris:10 Undercut Banks:50 Logs:5	35 (30 Burreed 5 Water Parsnip)	NR	0	Canopy (Vertical Shading):80 Ground Vegetation: Shrubs:20 Graminoid:60	NR / NO
Wes-2	Permanent: Channelized Stream	0425696 5410885	Wet	25	0.12	Pools:10 Flats:80 Runs:5 Riffles:5 Beaver Ponds:1	Gradient: 0.025 Meander Length:25 Meander Amplitude:12 Entrenchment:0.8/1.5	Undercut Banks:10 Beaver Dams/# Observed:1 Woody Structure:30 Organic Debris:5	1	0.10	4	0.95	48	Bo:5 Co:5 Gr:30 Si/Mu:5 Cl:55	Overhanging Branches:1 Undercut Banks:5 Logs:1	90 (80 Burreed 10 Arrowhead)	NR	10 Duckweed	Canopy (Vertical Shading):40 Ground Vegetation: Graminoid:100	Beaver Dam / NO *
Wes-3	Permanent: Channelized Stream	0425009 5409575	Wet	NR	0	Flats	NR	NR	7.50	0.50	13	1.20	75	Si/Mu:10 Cl:90	NR	20 (80 Cattails 5 Arrowhead 10 Pyeweed/Nightshade/ Carex)	NR	80 (30 Coontail 10 Floating Pondweed 5 Water Hemlock 30 Yellow Pond Lilly 5 Duckweed)	Canopy (Vertical Shading):20 Ground Vegetation: 20 Trembling Aspen 10 Black Spruce 20 Tamarack 20 White Birch 30 Willow	Beaver Pond, Lodge / NO
Wes-3-Pond	Permanent	0425009 5409575	Wet	75	0	Beaver Ponds	Gradient:0.01	Beaver Dams/# Observed:1 Eroding Banks: Woody Structure:30 Organic Debris:40	30	0.40	NR	1	200	Si/Mu: 20 Cl: 70 D: 10	Logs:1	Water Parsnip Cattails Sedges Broad-Leaved Arrowhead	NR	Floating Pondweed Slender Pondweed Coontail	Graminoid	Beaver Pond, Lodge / NO
Wes-4	Permanent: Channelized Stream	0424723 5409049	Wet	24.9	0.01	Pools:40 Flats:60	Gradient:Low Meander Length:24.9 Meander Amplitude:7.1 Entrenchment:1/1	Undercut Banks:10 Beaver Dams/# Observed:1 Eroding Banks:20 Woody Structure:10 Organic Debris:5	1.40	0.40	1.20	0.84	120	Sa: 5 Si/Mu: 15 Cl: 80	Overhanging Branches:5 Bottom Branch Debris:5 Undercut Banks:10 Logs:1.5	10 (Broad-Leaved Arrowhead Narrow-Leaved Spikerush)	NR	5	Canopy (Vertical Shading):5 Ground Vegetation: Shrubs:5 Graminoid:10	NR / NO

amec

RAINY RIVER

Table 11: Habitat Characteristics of RRGP Creeks and River

ID	Watercourse Type	Location Coordinates Easting Northing	Wet/ Dry	Section Length (m)	Current Velocity (m/s)	Channel Morphology (% composition)	Channel Features (m)	Other Channel Features (%)	Mean Wetted Width (m)	Mean Wetted Depth (m)	Mean Bankfull Width (m)	Mean Bankfull Depth (m)	Floodplain Width (m)	Substrate Composition (%)[1]	In stream Cover (% of surface area)	Aquatic Vegetation Type (based on overall 100% distribution) Emergent	Floating	Submergent	Overhead Coverage (% stream shaded)	Migratory Obstructions / Upwellings
West Trib. 3	Intermittent	0426391 5411575	Wet	NR	<0.01	Pools: Flats: Braided/Diffuse:	NR	Undercut Banks:25 Woody Structure:25	1.10	0.45	3	0.90	NR	Gr:25 Si/Mu:25 Cl:30 D:20	Bottom Branch Debris:25 Undercut Banks:25	NR	NR	NR	Canopy (Vertical Shading):80 Ground Vegetation:30 Willow Alder White Birch Trembling Aspen Shrubs: Graminoid:50 Water Parsnip Meadow Rue Nightshade Ferns	NR / NO
Clark Creek																				
Cla-1	Permanent: Channelized Stream	0429495 5409977	Wet	18.5	0.02	Flats	Gradient:Low Meander Length:9.8 Meander Amplitude:0.89 Entrenchment:2/1	Undercut Banks:2 Eroding Banks:10 Woody Structure:5 Organic Debris:5	0.66	0.12	1.08	0.36	20.0	Si/Mu:10 Cl:75 D:15	Undercut Banks:2 Logs:(5%)	5 (45 Burreed 5 Marsh Marigold 40 Marshy Spikerush 10 Broad-Leaved Arrowhead)	NR	10 (30 Slender Pondweed 30 Lemna 40 Myriophyllum)	Graminoid:5	NR / NO
Cla-2	Permanent: Channelized Stream	0428087 5409317	Wet	28	0.01	Pools:70 Flats:20 Riffles:10	Gradient:Low/Moderate Meander Length:28 Meander Amplitude:5.7 Entrenchment:1/1-2/1	Undercut Banks:5 Eroding Banks:15 Woody Structure:5 Organic Debris:5	2.10	0.68	3.10	1.06	30	Gr:10 Sa:15 Si/Mu:35 Cl:40	Undercut Banks:15 Logs:(5%)	5 (30 Broad-Leaved Arrowhead 30 Floating Arrowhead 40 Marsh Marigold)	NR	5 Pondweed	Canopy (Vertical Shading): Ground Vegetation: Shrubs:2 Graminoid:40	NR / NO
Cla-3	Permanent: Channelized Stream	0426688 5408752	Wet	8.7	0.01	Pools:15 Flats:85	Gradient:Low Meander Length:8.7 Meander Amplitude:1.7 Entrenchment:2/1	Undercut Banks:10 Eroding Banks:5 Woody Structure:10 Organic Debris:5	1.60	0.38	2.20	0.88	30	Gr:10 Sa:30 Si/Mu:40 Cl:15 D:5	Overhanging Branches:80 Bottom Branch Debris:50 Undercut Banks:10 Logs:(5%)	10 (2 Marshy Spikerush 8 Carex)	NR	0	Canopy (Vertical Shading):85 Ground Vegetation: Graminoid:10	NR / NO
Blackhawk Creek																				
Bla-1	Permanent: Channelized Stream	0429210 5406689	Wet	40	<0.01	Runs	Sinuosity:Low Gradient:0.01	Undercut Banks:10 Woody Structure:20 Organic Debris:10	2.30	1.50	4.50	2.10	60	Bo:20 Gr:10 Si/Mu:30 Cl:30 D:10	Overhanging Branches:5 Bottom Branch Debris:10 Undercut Banks:10 Logs:0.3	5 Sedge	NR	2 Duckweed	Canopy (Vertical Shading):25 Ground Vegetation: Shrubs:12.5 Graminoid:12.5	NR / NO

Notes

Sample Site Pin-7 is also presented as "Route 600"

Co = Cobble
Gr = Gravel
Sa = Sand
Sm = Silt/Muck
Cl = Clay
D = Detritus
Bo = Boulder
NR= Not Recorded
NA= Not Applicable
NO= None Observed

* Gravel substrate may allow for some upwelling

amec

Table 12: Fish Species Captured in the RRGP Environs (2009 and 2010)

Common Name	Pinewood River	West Creek	Marr Creek	Loslo Creek	Clark Creek	Tait Creek
Large-Bodied Fish						
Northern Pike	X					
Brown Bullhead	X					
White Sucker	X				X	
Small-bodied Fish						
Brook Stickleback	X	X	X	X	X	X
Creek Chub	X	X	X	X	X	
Lake Chub	X	X	X	X	X	
Common Shiner	X				X	
Brassy Minnow	X	X	X	X	X	X
Northern Redbelly Dace	X	X	X	X	X	X
Finescale Dace		X				
Dace spp.	X	X	X	X	X	X
Northern Pearl Dace		X				
Fathead Minnow		X				
Emerald Shiner	X	X	X	X	X	
Spottail Shiner	X	X	X	X	X	
Mimic Shiner	X					
Golden Shiner	X				X	
Blackside Darter					X	
Iowa Darter		X				
Central Mudminnow	X	X	X		X	X

Source: KCB (2011)

Table 13: SAR Known to be Present in the RRGP Environs

Species	Conservation Status		
Common Name	**SARO**	**SARA**	**COSEWIC**
Birds			
Barn Swallow	T	-	-
Bobolink	T	-	T
Whip-poor-will	T	T	T
American White Pelican	T	NAR	NAR
Bald Eagle	SC	NAR	SC
Canada Warbler	SC	T	T
Common Nighthawk	SC	T	T
Golden-winged Warbler	SC	T	T
Olive-sided Flycatcher	SC	T	T
Peregrine Falcon (migrant)	T	SC	T
Red-headed Woodpecker	SC	T	T
Short-eared Owl	SC	SC	SC
Mammals			
Little Brown Bat	E	E	E
Northern Bat	E	E	E
Reptiles			
Snapping Turtle	SC	SC	SC

Notes: E – Endangered, NAR – Not at Risk, SP – Special Concern, T – Threatened

397500 405000 412500 420000 427500 435000 442500 450000

5422500 5415000 5407500 5400000

Bergland
Hwy-600
Little Grassy River
Sifton Township Conservation Reserve
Cranberry Lake Provincial Park
Hwy-621
Hwy-619
Marsh Lake
Agassiz Peatlands Provincial Park
Cranberry Lake
Gameland
Kishkakoesis River
North Branch
Hwy-617
Dearlock
Hwy-600
Pinewood River
Spruce Island Provincial Park
Little Pine Lake
Muskrat Lake
Hwy-71
Hwy-615
Burditt Lake
Off Lake
Pinewood Lake
Burditt Lake
West Jackfish Lake
Rainy Lake I.R. No. 17B
Lake Despair
Abbott Lake
Sturgeon Creek
La Vallée River
Hwy-613
CANADA
U.S.A.
Hwy-11
Pinewood
Rainy River

P:\EM\Projects\2011\TC111504 Rainy River\GIS\Tod\RIM\D_Maps\RSA_and_LSA_8.mxd

LEGEND

- Project Site
- Local Study Area Boundary (LSA)
- Regional Study Area Boundary (RSA)
- Transmission Line
- Regional Road / Highway
- Waterbody / Large Watercourse
- Wooded Area
- First Nation Reserve
- Conservation Reserve (Regulated)
- Provincial Park

NOTES:
- All base data on this map was extacted from Land Information Ontario, MNDMF, OBM Ontario Digital Geospatial Database and Ontario Road Network Database and Geogratis-NRCan Toporama.

Datum: NAD83
Projection: UTM Zone 15N

0 5 10 20 30 40 Kilometres

N W E S

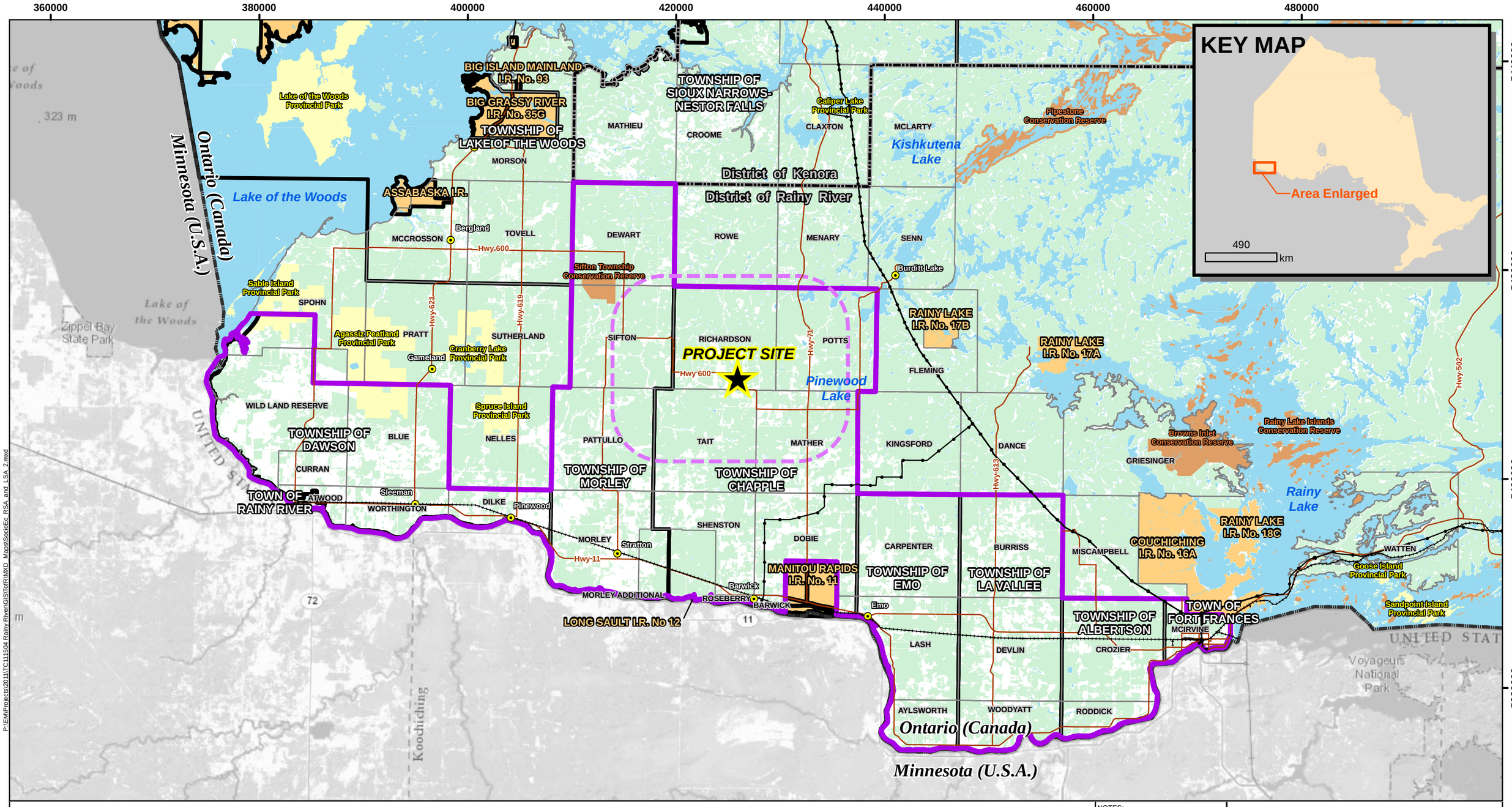
RAINYRIVER amec

RAINY RIVER GOLD PROJECT

Local and Regional Study Areas Natural Environment

PROJECT N°: TC111504 | **FIGURE: 4**

SCALE: (see bar scale) | DATE: October 2012



P:\EM\Projects\2011\TC111504 Rainy River\GIS\fd\RMXD_MapsSocioEc_RSA_and_LSA_2.mxd

LEGEND

- Project Site
- Regional Study Area (RSA)
- Local Study Area (LSA)
- Regional Road / Highway
- Transmission Line
- Railway
- Small Town/Community
- Upper Tier Municipality Boundary
- Lower Tier Municipality Boundary
- Township Boundary
- First Nation Land
- International (Canada - U.S.A.) Border
- Provincial Park
- Conservation Reserve (Regulated)
- Waterbody / Large Watercourse
- Wooded Area

0 10 20 40 60 80 100 Kilometres

NOTES:
- Road data extracted from Land Information Ontario, Ontario Road Network, MNR
- Ontario base data extracted from Land Information Ontario (MNR) data warehouse.
- Base data outside of Ontario extracted from ESRI DeLorme World Basemap
- First Nation Land extracted from GeoBase, NRCAn

Datum: NAD83
Projection: UTM Zone 15N

RAINYRIVER amec

RAINY RIVER GOLD PROJECT

Local and Regional Study Areas Human Environment

PROJECT N°: TC111504 | **FIGURE: 5**

SCALE: (see bar scale) | DATE: October 2012

330000 360000 390000 420000 450000 480000 510000 540000 570000 600000

5490000 5460000 5430000 5400000 5370000

Kenora
Dryden
Hwy 71
Sioux Narrows
Manitoba
Lake of the Woods
INTL SWEDE CARLSON FIELD
Lake of the Woods
Kakagi Lake
Lower Manitou Lake
Kaiashkons Lake
Hwy 502
Clearwater West Lake
Hwy 622
Rainy Lake
Hwy 11
Ontario (Canada)
Minnesota (USA)
FALLS INTL
Rainy River
Pinewood
Emo
Fort Frances
Hwy 600
Hwy 621
Hwy 613
Roseau R
Rapid R

View INSET A

INSET A

Minahico
Bergland
Sifton Township Conservation Reserve
Burditt Lake
Cranberry Lake Provincial Park
Gameland
Spruce Island Provincial Park
Sleeman
Pinewood
Stratton
Barwick
Emo
10 km

P:\EM\Projects\2011\TC111504 Rainy River\GIS\ToRMD_Maps\Surrounding_First_Nation_and_Non_Abor_Commun_5.mxd

LEGEND

- Project Site
- Local / Regional Non-Aboriginal Communities
- International (Canada - U.S.A.) Border
- Regional Road / Highway
- Railway
- 25 First Nation Land
- Conservation Reserve
- Provincial Park

1 Northwest Angle Indian Reserve 37C
2 Buffalo Point 1
3 Buffalo Point 3
4 Buffalo Point 2
5 Buffalo Point 36
6 Rainy Lake 26A
7 Wabigoon Lake 27
8 Rainy Lake 17B
9 Shoal Lake 31J
10 Sabaskong Bay 35C
11 Neguaguon Lake 25D
12 Lake of the Woods 31H
13 Rainy Lake 26B
14 Shoal Lake 39A
15 Saug-A-Gaw-Sing 1
16 Shoal Lake 39
17 Shoal Lake 34B1
18 Couchiching 16A
19 Northwest Angle 34C & 37B
20 Shoal Lake 34B2
21 Agency 30
22 Assabaska
23 Big Island Mainland 93
24 Shoal Lake 37A
25 Lake of the Woods 31C
26 Lake of the Woods 37B
27 Sabaskong Bay 35H
28 Sabaskong Bay 32C
29 Seine River 23B
30 Lake of the Woods 37
31 Sabaskong Bay 35D
32 Big Island 31F
33 Big Grassy River 35G
34 Naongashing 31A & 35A
35 Lake of the Woods 34
36 Lake of the Woods 31B
37 Sturgeon Falls 23
38 Seine River 23A
39 Agency 1
40 Kenora 38B
41 Obabikong 35B
42 Rat Portage 38A
43 Yellow Girl Bay 32B
44 Manitou Rapids 11
45 Lake of the Woods 35J
46 Rainy Lake 26C
47 Rainy Lake 18C
48 Rainy Lake 17A
49 Shoal Lake 40
50 Long Sault 12
51 Lake of the Woods 31G
52 Eagle Lake 27
53 Northwest Angle 33B
54 Sabaskong Bay 35F
55 Big Island 31D
56 Whitefish Bay 33A
57 Big Island 37
58 Big Island 31E
59 Whitefish Bay 34A
60 Whitefish Bay 32A

NOTES:
- Road data extracted from Land Information Ontario, Ontario Road Network, MNR
- Ontario base data extracted from Land Information Ontario (MNR) data warehouse.
- Base data outside of Ontario extracted from ESRI DeLorme World Basemap
- First Nation Land extracted from GeoBase, NRCAn

Datum: NAD83
Projection: UTM Zone 15N

0 20 40 80 120 160 200 Kilometres

RAINYRIVER amec

RAINY RIVER GOLD PROJECT

Surrounding Communities and First Nation Reserves

PROJECT N°: TC111504 | **FIGURE: 6**

SCALE: (see bar scale) | DATE: October 2012

7.0 DESCRIPTION OF POTENTIAL ENVIRONMENTAL EFFECTS

7.1 Effects Analysis Overview

Residual environmental effects (after mitigation) will be assessed within the EA and will consider:

- Environmental effects of the undertaking and its alternatives on the environment, including potential effects from accidents and malfunctions; and

- Potential cumulative environmental effects resulting from the effects of the RRGP with other past and future (as currently understood) undertakings.

The proposed methodology is described in the section that follows, but may be modified as a result of on-going engineering work, as well as consultation / engagement activities and other comments received.

This methodology with minor variations, has been used in the past by AMEC to conduct several EAs for, or related to, mining projects in Ontario, which were subsequently approved by the Ontario Minister of the Environment or Federal Minister of the Environment as applicable. These include the:

- Aquarius Project (Federal EA pursuant to the *Canadian Environmental Assessment Act*);

- Victor (Diamond) Project (Federal EA pursuant to the *Canadian Environmental Assessment Act*); and

- Detour Lake Project (Federal EA pursuant to the *Canadian Environmental Assessment Act;* two Provincial Individual EAs pursuant to the Ontario *Environmental Assessment Act*, and one Class EA pursuant to the Ontario *Environmental Assessment Act*).

These EAs and the associated EA methodology were subject to review at the time by Federal and Provincial government agencies, other stakeholders and Aboriginal groups. This methodology has also been utilized for a number of other mining-related undertakings which were subject to a proponent-driven Class EA process under the Ontario *Environmental Assessment Act* related to the Electricity Projects Regulation, that were reviewed by Federal and Provincial government agencies, other stakeholders and Aboriginal groups at the time.

7.2 Effects Analysis Methodology

7.2.1 Valued Ecosystem and Socio-Economic Components

Valued Ecosystem (VECs) and Socio-Economic Components (VSECs) are those aspects of the natural and human environment that are particularly notable or valued because of their ecological, scientific, resource, socio-economic, cultural, health, aesthetic, or spiritual importance, and which have a potential to be adversely affected by Project development. The identification of VECs and VSECs helps to focus firstly on avoidance / mitigation measures, followed by the residual environmental effects assessment.

A natural environment VEC can be a particular habitat, an environmental feature, a particular assemblage of plants or animals, a particular species of plant or animal, or an indicator of environmental health. Data from baseline studies, including personal interviews and literature sources will be used to identify VECs on the basis of their meeting one or more of the following criteria:

- Area of notable biological diversity;
- Significant habitat for locally important species;
- Significant habitat for uncommon, rare or unusual species;
- Important corridor or linkage for fish and/or wildlife movement;
- Sensitive receiving water environment;
- SAR;
- Notable species or species groups;
- Indicator of environmental health;
- Important component to the function of other ecosystem elements or functions;
- Component is of economic or cultural significance (such as identified through TK);
- Component is of educational, scientific, or aesthetic interest;
- Component is of provincial, national or international significance; and
- Component is of administrative significance.

"Component is of administrative significance" is specifically included to address MMER Schedule 2 aspects, where criteria normally applied to the definition of VECs (i.e., all other bullets in the above bullet list) might not otherwise apply.

Selected VECs will be defined from a consideration of the natural environment and the criteria listed above and are expected to comply with the following framework:

- Atmospheric systems;
- Geological systems;
- Surface water (aquatic) systems;
- Groundwater systems;

- Terrestrial environment; and
- Natural Heritage Systems.

This framework allows for an integration of aspects derived from a consideration of both physical and biological environmental components, and therefore better accommodates an ecosystem approach to the definition and assessment of VECs. In general, the designation of VECs is focused on habitats, features, and specific species groups and related system interactions, rather than on individual species, with a few notable exceptions.

VSECs are typically defined as being components of the socio-economic environment that are significant in terms of people's values and quality of life. VSECs are selected based on whether or not the human environment component is:

- Identified or valued by the public, stakeholders and Aboriginal groups who will potentially be affected by the RRGP and are therefore consulted in project planning and implementation;

- Identified or valued by government agencies reviewing the EA; and

- Identified and as potentially affected by the RRGP based on professional judgment

Selected VSECs are expected to be selected to fit within the following framework:

- Land and resource use;
- Community and regional population and demographics;
- Community and regional infrastructure and social services;
- Regional economy, labour and business;
- Human health;
- Cultural heritage resources (include archaeological resources, built heritage resources and cultural heritage landscapes archaeology); and
- Traditional knowledge of First Nation and Métis communities.

Socio-economic impact assessment variables or VSECs are identified and confirmed through various means:

- Expertise of the consultants, based upon broad experiences with similar projects;
- Legislative requirements; and
- Issues scoping (both formal and informal through regulatory and public consultation).

7.2.2 Effects Analysis

For each VEC or VSEC, the analysis of effects is structured according to environmental effects, proposed mitigation and significance. These have been defined as:

- Environmental effects describe RRGP-related environmental effects on a given VEC / VSEC that could reasonably be expected to occur.

- Mitigation refers to measures that are proposed to prevent, eliminate, or reduce effects, and includes elements inherent in the RRGP design to prevent effects from happening in the first place. Mitigation also includes compensation, as in the case of potential adverse effects to fish habitat where the provision of alternative fish habitat can be used to offset adverse effects.

- The significance of environmental effects will be determined for effects after the application of mitigation measures, and was evaluated on the basis of identified criteria.

In carrying out the environmental effects analysis, a number of analytical methods and tools will be utilized and are expected to include laboratory tests, mass balance calculations, statistical packages of various types and various types of models. For example, the methodology for estimating air emissions will follow all the required methods and requirements provided in guidance from the MOE (Procedure for Preparing an Emission Summary and Dispersion Modelling Report Version 3.0, PIBS 3614e03). Modelling (most recent version of the U.S.EPA AERMOD model) will be used to predict air quality impacts. The modelling will be done using the methods and requirements provided in the MOE publication "Air Dispersion Modelling Guideline for Ontario, PIBS 5165e02. Results of the modelling will be combined with baseline air quality data to provide predicted total ambient air quality. The ambient air quality will be compared against MOE ambient air quality criteria.

Criteria anticipated to be used to evaluate significance include consideration of magnitude / geographic extent, duration and frequency, and ecological / socio-economic context of each effect, as well as whether the effect is likely to occur. The terms magnitude/ geographic extent, duration, etc., are referred to as attributes. Associated with each attribute is a set of criteria used to evaluate the attribute. Criteria are categorized into three levels (Levels I, II, and III), where Level I is indicative of a negligible or limited potential to contribute to an overall significant environmental effect, and Level III is indicative of a high potential to contribute to an overall significant environmental effect. Level II represents an intermediate condition.

AMEC has conducted several EAs for mining projects in Ontario. Through this work, including building on the work of others, AMEC has developed a methodology which has been accepted, that integrates the aforementioned attributes into a collective assessment of overall significance. Accordingly, for an effect to be defined as significant within the context of this assessment, the effect must be such that both of the following criteria are satisfied:

- A Level II or III rating is attained for ecological and/or socio-economic context; and

- A Level II or III rating is attained for all of the attributes involving magnitude/geographic extent, duration and frequency.

Conversely, if a Level I rating is achieved for any of the attributes involving magnitude/ geographic extent, duration, or frequency; or, if a Level I rating is achieved for both ecological and socio-economic contexts (where applicable), then the effect is considered to be "not significant".

Effects are also assessed as to their likelihood of occurrence, recognizing that there is some overlap in the concepts of duration, frequency and likelihood.

The logic in the above methodology is that a predicted environmental effect is not likely to be "significant", if it is: of low magnitude/geographic extent; or of short-term duration including residual effects (i.e., the effect itself is a short-term duration); or is likely to occur very infrequently (or not at all) with little potential for long-lasting effects. Similarly, the effect is not likely to be significant, if the effect has low, or limited, ecological or socio-economic importance, for whatever reason. Sufficient data will be provided in the accompanying text, relating to the significance evaluations, to allow the reader to fully understand and appreciate the rationale and professional judgment associated with the significance rankings.

7.2.3 Definition and Approach to Cumulative Effects Analysis

As noted in Section 2.2, the RRGP as currently understood is anticipated to require completion of a Federal EA, pursuant to CEAA, 2012. The CEA Agency Guide for Addressing Cumulative Environmental Effects (CEA Agency 1999) defines cumulative environmental effects as:

> *"The effect on the environment which results from effects of a project when combined with those of other past, existing and imminent projects and activities."*

The guide further states that:

> *"To a limited extent, federal and other environmental assessments already address cumulative environmental effects. For example, most examine the baseline environmental conditions, which include the cumulative environmental effects of past and existing projects and activities. However, consideration should also be given to the cumulative environmental effects resulting from the interactions among the environmental effects of the proposed project with those of future projects and activities."*

Future project and activities are defined in the federal CEAA as projects and activities that "will be carried out".

The cumulative effects analysis presented in the EA will therefore be restricted to the analysis of cumulative effects on the existing environmental baseline related to identified projects and activities that "will be carried out"; and to those projects of significance within the broader regional context, which may overlap the undertaking in regards to type of effect, time and space. Input will be sought from Aboriginal communities into the cumulative effects analyses. The cumulative effects analysis may extend to projects located beyond the physical boundaries of the LSA and the RSA, if the there is a potential for the effects to overlap with the RRGP.

7.3 Preliminary Description of Potential Effects

As described in Section 7.2.1, VECs and VSECs will be utilized in the EA to assess potential environmental effects of the RRGP. The determination of VECs and VSECs will be made and within the EA. MOE (2009) suggests that the Proponent may include a preliminary list of potential environmental effects, recognizing that the actual determination of effects and mitigation if appropriate will be assessed and defined in the EA. For this reason, a preliminary description of potential negative environmental effects has been developed and presented below, grouped by the primary elements of the undertaking defined in Section 4.1. Positive environmental effects are also listed and both are summarized in Table 14.

Mine (and aggregate operations):

- reduction in localized air quality due to the release of particulate from mining activities and heavy equipment diesel emissions;
- increase localized sound emissions as a result of intermittent blasting activities, heavy equipment operation and safety equipment (back-up beepers);
- alteration to the local terrain (physiography) from excavation of the open pit, forming a permanent surface depression in the landscape;
- potential for loss of aquatic habitat by the re-routing of West Creek to avoid the mine operation;
- depression of the local groundwater aquifer by changes to the local landscape and mine dewatering activities;
- potential effect on water quality in the Pinewood River from the release of treated effluent from the site, including treated minewater;
- reduction in terrestrial habitat cause by the mine footprint development anticipated to be replaced by an open pit lake at closure; and

- temporary effect on local traffic by re-routing of Highway 600 to avoid the mine operation.

Buildings (including processing plant, maintenance shop, warehouse and administration complex, explosives manufacturing and various storage facilities)

- reduction in localized air quality and increase in localized sound emissions during construction;
- reduction in localized air quality due to the release of emissions from the processing plant;
- increase localized sound emissions as a result of processing plant and maintenance operations;
- loss of local terrestrial habitat and/or quality of habitat, including habitat for SAR as a result of the process plant building and other buildings footprints and related operations;
- potential effect on water quality in the Pinewood River from the release of treated effluent from the site, including treated process plant effluent and various wash water sources; and
- potential effect on the localized environment from accidents and malfunctions.

Stockpiles:

- reduction in localized air quality due to the release of particulate matter from stockpiling activities and from the stockpiles themselves prior to reclamation, as well as heavy equipment emissions;
- increase localized sound as a result of heavy equipment operation, mineral waste deposition and safety equipment (back-up beepers);
- alteration to the local terrain from excavation through the forming of permanent stockpiles elevated about the existing landscape;
- potential for loss of aquatic habitat by overprinting and/or re-routing local creek systems to accommodate stockpiling operations;
- potential effect on water quality in the Pinewood River from the release of treated runoff and/or seepage from the stockpiles; and
- reduction in terrestrial habitat cause by the stockpile footprints.

TMA:

- reduction in localized air quality due to dust release from the tailings surface as well as particulate matter from construction activities and heavy equipment operation;

- increase localized sound emissions as a result of heavy equipment operation and safety equipment (back-up beepers) during TMA dam construction;
- alteration to the local terrain from the construction of a permanent facility raised above the surrounding landscape;
- reduction in terrestrial habitat cause by the TMA footprint;
- potential for loss of aquatic habitat by overprinting local creeks and associated wetlands;
- potential alteration of local groundwater infiltration rates; and
- potential effect on water quality in the Pinewood River from the release of effluent and seepage from the TMA.

Onsite access roads and pipelines, power infrastructure:

- reduction in localized air quality and increase in localized sound emissions during construction;
- reduction in localized air quality due to dust release from roads and vehicle emissions;
- loss of local terrestrial habitat and/or the quality of habitat, including for SAR as a result of the infrastructure footprints; and
- potential effect on the localized environment from accidents and malfunctions.

Re-alignment of existing Highway 600:

- reduction in localized air quality and increase in localized sound during construction;
- alteration to the local terrain;
- potential for minor loss of aquatic habitat from culvert / bridge installation;
- reduction in terrestrial habitat and/or the quality of habitat, caused by the altered highway footprint; and
- temporary inconvenience to local landowners during construction / re-routing activities.

Offsite transmission line:

- increase in localized sound during construction;
- alteration to local visual aesthetics; and

- alteration to terrestrial habitat cause by the transmission line corridor development.

There is the potential for direct effects on cultural and heritages resources if any are present at proposed development locations; and to Aboriginal and treaty rights. In addition, the RRGP may pose an extra demand on existing infrastructure and social services in the region.

Potential positive effects of the RRGP are expected to include:

local, regional and Provincial economic benefits, expected to be in the form of direct and indirect, employment and business opportunities; direct expenditures; taxation and royalties.

A preliminary listing of potential changes to the environment after mitigation, related to the RRGP, is summarized in Table 14.

Table 14: Preliminary Summary of Potential Environmental Effects

Undertaking Component (paraphrased)	Potential Effect (Negative '-'; Positive '+'; D - direct; I - indirect; S - short term; L - longterm)
Gold mine	• reduction in localized air quality due to the release of particulate from mining activities and heavy equipment diesel emissions (-DS) • increase localized sound emissions as a result of intermittent blasting activities, heavy equipment operation and safety equipment (-DS) • alteration to the local terrain from excavation of the open pit, forming a permanent surface depression in the landscape (-DL) • potential for loss of aquatic habitat by the re-routing of West Creek to avoid the mine operation (-DL) • depression of the local groundwater aquifer by changes to the local landscape and mine dewatering activities (-DL) • potential effect on water quality in the Pinewood River from the release of treated effluent from the site, including treated minewater (-IS) • reduction in terrestrial habitat cause by the mine footprint development anticipated to be replaced by an open pit lake at closure (-DL) • temporary effect on local traffic by re-routing of Highway 600 to avoid the mine operation (-IS)
Buildings and Storage	• reduction in localized air quality and increase in localized sound emissions during construction (-DS) • reduction in localized air quality due to the release of emissions from the processing plant (-DS) • increase localized sound emissions as a result of processing plant and maintenance operations (-DS) • loss of local terrestrial habitat and/or quality of habitat including habitat for SAR as a result of the process plant building and other buildings footprints (-DL) • potential effect on water quality in the Pinewood River from the release of treated effluent from the site, including treated process plant effluent and various wash water sources (-IL) • potential effect on the localized environment from accidents and malfunctions (-IS)
Stockpiles	• reduction in localized air quality due to the release of particulate matter from stockpiling activities and heavy equipment emissions (-DS) • reduction in localized air quality due to dust release from the stockpiles (-DL) • increase localized sound emissions as a result of heavy equipment operation, mineral waste deposition and safety equipment (-DS) • alteration to the local terrain through the forming of permanent stockpiles elevated about the existing landscape (-DL) • potential for loss of aquatic habitat by overprinting and/or re-routing of local creeks systems to accommodate stockpiling operations (-DL) • potential effect on water quality in the Pinewood River from the release of treated runoff and/or seepage from the stockpiles (-IL) • reduction in terrestrial habitat cause by the stockpile footprints (-DL)

Undertaking Component (paraphrased)	Potential Effect (Negative '-'; Positive '+'; D - direct; I - indirect; S - short term; L - longterm)
TMA	• potential reduction in localized air quality due to dust release from the tailings surface (-DL) • reduction in localized air quality due to the release of particulate matter from construction activities and heavy equipment operation (-DS) • increase localized sound emissions as a result of heavy equipment operation and safety equipment during TMA dam construction (-DS) • alteration to the local terrain from the construction of a permanent facility raised above the surrounding landscape (-DL) • reduction in terrestrial habitat caused by the TMA footprint (-DL) • potential for loss of aquatic habitat by local creeks and wetlands (-DL) • potential alteration of groundwater infiltration rates (-DL) • potential effect on water quality in the Pinewood River from the release of effluent and seepage from the TMA (-DL)
Onsite Infrastructure	• reduction in localized air quality and increase in localized sound emissions during construction (-DS) • reduction in localized air quality due to dust release from roads and vehicle emissions (-DS) • loss and/or alteration of local terrestrial habitat and/or quality of habitat including for SAR, as a result of the infrastructure footprints (-DS/-DL) • potential effect on the localized environment from accidents and malfunctions (-IS)
Re-alignment of existing Highway 600	• reduction in localized air quality and increase in localized sound emissions during construction (-DS) • alteration to the local terrain (-DL) • potential for minor loss of aquatic habitat from culvert / bridge installation (-DL) • reduction in terrestrial habitat and/or quality of habitat cause by the altered highway footprint (-DL) • temporary inconvenience to local landowners during construction / re-routing activities (-DS) • improved Highway 600 alignment less prone to flooding (+DL)

Undertaking Component (paraphrased)	Potential Effect (Negative '-'; Positive '+'; D - direct; I - indirect; S - short term; L - longterm)
Overall RRGP	• direct local economic benefits, employment and business opportunities, direct expenditures and taxes (+DS/+DL) • indirect local economic benefits, spin-off employment and business opportunities; spin-off expenditures and taxes (+IS/+IL) • direct regional economic benefits, employment and business opportunities, direct expenditures and taxes (+DS/+DL) • indirect regional economic benefits, spin-off employment and business opportunities; spin-off expenditures and taxes (+IS/+IL) • direct Provincial economic benefits, employment and business opportunities, direct expenditures, taxes and royalties (+DS/+DL) • indirect Provincial economic benefits, spin-off employment and business opportunities; spin-off expenditures and taxes (+IS/+IL) • direct Federal economic benefits, employment and business opportunities, direct expenditures and taxes (+DS/+DL) • indirect Federal economic benefits, spin-off employment and business opportunities; spin-off expenditures and taxes (+IS/+IL) • extra demand on existing community and regional infrastructure, and social services in the region (-IS) • potential direct effect on archaeology and heritage resources, include built heritage (-DL) • potential direct effect on local First Nations and Métis traditional land uses (-DL)

* for the purposes of this table, short term has been defined to include the construction, operation and active closure phase of the RRGP

8.0 COMMITMENTS AND MONITORING

The EA will also include a comprehensive record of commitments made by RRR during the ToR process, and where or how they have been dealt with in the EA. The EA will also include a comprehensive record of commitments made by RRR during the preparation of the EA. This will include commitments relating to:

- impact management measures (such as mitigation measures);
- additional works and studies to be carried out;
- monitoring;
- public consultation and contingency planning; and
- documentation and correspondence.

During the preparation of the EA, a monitoring framework will be developed with consideration of comments raised by stakeholders and Aboriginal communities for the post-EA phase, to address all stages of the proposed undertaking (planning, detailed design, tendering, construction, operation, closure and decommissioning). Where appropriate, it will include compliance monitoring and effects monitoring, as well as any follow-up programs developed through the Federal process.

It is fully expected that the existing environmental baseline monitoring network will be modified through the EA and environmental approvals processes. For example, there is an extensive groundwater well network being monitored at the RRGP site and environs. Some of these wells will be overprinted by proposed mine-related facilities and require relocation. Additional monitoring wells will be proposed through the EA and environmental approvals processes outside the footprint of the mine infrastructure, to serve as long term monitoring locations, strategically placed to assess and track compliance with approvals and effectiveness of implemented mitigation measures.

9.0 CONSULTATION PLAN FOR THE EA

9.1 Potentially Affected and Interested Stakeholders

RRR believes that in order to be successful it needs to effectively engage the local communities. Stakeholders involved to date in the RRGP include those with a direct interest in the RRGP, or those who were able to provide data for baseline environmental reports such as Municipal and Provincial government department representatives, community–based service providers, economic development agencies and similar.

The range of stakeholders is expected to grow and will continue to evolve throughout RRGP development to reflect varying levels of interest and issues over time. Stakeholders expected to be engaged by RRR for the EA include:

Business and Community Interests:

- Ainsworth Lumber;
- Borderland Snowmobile Club;
- Camp Narrows Lodge;
- Clearwater Lodge;
- Confederation College;
- Fort Frances Chamber of Commerce;
- Fort Frances Sportsman's Club;
- Gateway North Outfitters;
- Riverside Health Care Facilities;
- Mining Watch Canada;
- Natural Resources Advisory Committee;
- Northwatch;
- Northwest Catholic District School Board;
- Ontario Federation of Anglers and Hunters;
- Rainy Lake Conservancy;
- Rainy River Cattleman's Association;
- Rainy River District School Board;
- Rainy River District Social Services Administration Board;
- Rainy River District Stewardship;
- Rainy River Future Development Corporation;
- Rainy River Outfitters;
- Rainy River Trapping Council;
- Rainy River Valley Field Naturalists;
- Resolute Forest Products; and
- Other local small business owners.

Municipal Government:

- Township of Alberton;
- Township of Chapple;
- Township of Dawson;
- Township of LaVallee;
- Township of Morley;
- Town of Emo;
- Town of Fort Frances; and
- Town of Rainy River.

Provincial (Ontario) Government:

- Ministry of Aboriginal Affairs;
- Ministry of Agriculture, Food and Rural Affairs;
- Ministry of Economic Development and Trade;
- Ministry of Energy;
- Ministry of Health and Long-Term Care;
- Ministry of Infrastructure;
- Ministry of Labour;
- Ministry of Municipal Affairs and Housing;
- Ministry of Natural Resources;
- Ministry of Northern Development and Mines;
- Ministry of the Environment;
- Ministry of Tourism, Culture and Sport;
- Ministry of Transportation;
- Hydro One Networks Inc.;
- Ontario Provincial Police; and
- Provincial Parliament representatives.

Federal Government:

- Aboriginal Affairs and Northern Development Canada;
- Canadian Environmental Assessment Agency;
- Environment Canada;
- Fisheries and Oceans Canada;
- Health Canada;
- International Joint Commission (Canada - United States);
- Major Projects Management Office;
- Natural Resources Canada;
- Transport Canada and

- Federal Parliament representative.

Consultation, discussions and meetings related to Aboriginal groups are described in Section 9.5.

9.2 Potentially Affected and Interested Aboriginal Groups

RRR requested advice from the Crown (MNDM) in 2010 and again in 2011 as to which Aboriginal groups should be engaged regarding the RRGP due to potential impacts of exploration and mine development on Aboriginal or Treaty rights. Following from advice provided by the Provincial Crown (MNDM) at the time, RRR engaged nine First Nations that could be affected by RRGP along with the MNO (Table 15). Seven of the nine First Nations are members of the FFCS (PDGZNYZ Tribal Council), while the Big Island First Nation and Big Grassy First Nation belong to a different Tribal Council. The Aboriginal groups initially consulted with and engaged in relation to the RRGP were also identified using the following criteria:

- Direction from MNDM;
- Proximity to the RRGP; if the stakeholders or Aboriginal groups are resident in and/or have jurisdiction over the area in which the RRGP is proposed or has the potential to affect;
- Past or current interest in similar projects or developments in the region; if the stakeholders or Aboriginal groups have been involved in consultation processes in current or past projects in the region that are anticipated to have a similar interest in the RRGP;
- Demonstrated previous interest in potential environmental effects of the RRGP; or
- Aboriginal groups with traditional lands encompassing the RRGP site and its related proposed infrastructure.

In May 2012, the Provincial government identified changes and expanded considerably the list of Aboriginal groups RRR is to consult or notify about mine development (Table 16). The majority of these groups are located in the Lake of the Woods area, a considerable distance from the RRGP site. At the direction of the MNDM, RRR began holding discussions and meetings with the additional First Nations identified in Table 16, in the Spring of 2012.

The Provincial government (jointly with the MNDM, MOE, MNR and Ministry of Aboriginal Affairs; MAA) has delegated the procedural aspects of Provincial Crown Aboriginal consultation to RRR, who is in the best position to provide information on the RRGP.

9.3 Overview of Proposed EA Consultation Activities

RRR will continue to inform and involve the stakeholders and Aboriginal groups in a variety of ways (Appendices E and F). The focus of early consultation was to introduce RRR, to inform citizens of the status of the exploration and mining-related activities and to provide information regarding future consultation opportunities. Consultation activities are now focused on gathering input for the Provincial and Federal EA process.

RRR and the Federal and Provincial government agencies recognize that there are opportunities to collaborate on planning and implementing stakeholder engagement and consultation for their respective EA process, and will attempt to align future consultation activities as possible.

The following consultation activities are planned for the development of the Provincial EA and will be starting in 2013, if the Minister of the Environment approves the ToR:

- Post a Notice of Commencement of the EA in local newspapers, on the RRR website and distribute to the RRGP mailing list.

- Post Notice of a Public Information Event(s) in local newspapers, on the RRR website and distribute to the RRGP mailing list. The notice will invite stakeholders and local citizens to get an update on the RRGP, to become informed about preliminary EA findings and to provide feedback about appropriate management of potential environmental effects.

- Hold on-going discussions with stakeholder organizations (as requested) to assist in the preparation of the EA.

- Prepare and widely distribute a RRR Community Newsletter to highlight information about the EA findings and inform newsletter recipients about upcoming public meetings and encourage feedback through the RRR website, dedicated e-mail address, or through direct contact with RRR staff at the RRR Emo or Thunder Bay offices.

- Distribute copies of the draft EA for a 30-day review and making hard copies available at convenient and strategic public locations such as public libraries in local communities, the RRR and government offices. The EA will also be available for downloading from the RRR website.

- Host public information centres in local communities to provide an update on the RRGP, become informed about preliminary EA findings and provide feedback about appropriate management of potential environmental effects.

- Update the RRR website to include information about the preliminary EA findings and provide a link for direct feedback.

Table 15: Local First Nations Engaged as Instructed by MNDM, December 2011

First Nation	First Nation Number	FFCS Member	Reserves Near RRGP Site	Distance to RRGP (km)
Anishinaabeg of Naongashiing (Big Island)	125	No	Big Island Mainland No. 93	35
			Saug-A-Gaw-Sing No. 1	39
Couchiching	126	Yes	Agency 1	
			Couchiching 16A	48
Lac La Croix	127	Yes	Neguaguon Lake 25D	151
Mishkosiminiziibiing (Big Grassy River)	124	No	Big Grassy River No. 35 G	33
Mitaanjigamiing (Stanjikoming)	133	Yes	Agency 1	48
			Rainy Lake 18C	51
Naicatchewenin	128	Yes	Agency 1	48
			Rainy Lake No. 17A	32
			Rainy Lake No. 17B	21
Nigigoonsiminikaaning (Nicickousemenecaning)	129	Yes	Agency 1	48
			Rainy Lake 26A	81
			Rainy Lake 26B	78
			Rainy Lake 26C	93
Rainy River	130	Yes	Manitou Rapids No. 11	21
			Long Sault No. 12	21
Seine River	132	Yes	Seine River 23A	117
			Seine River 23B	94
			Sturgeon Falls 23	123

Source: Adapted from KCB (2011)

Table 16: Aboriginal Groups Identified by the Provincial Government to be Consulted or Notified, May 2012

First Nation or Métis Group	Physical address	Mailing Address	City / Province / Country	Postal Code	Phone	Fax	E-mail
Aboriginal Groups to Consult:							
Big Grassy First Nation	410 Anishnaabe Way	Box 414	Morson / Ontario / Canada	P0W 1J0	807-488-5614	807-488-5533	ccopenace@hotmail.com
Big Island First Nation	1 Main Road	Box 335	Morson	P0W 1J0	807-488-5602	807-488-5492	keniis@tbaytel.net
Métis – Rainy River Lake of the Woods RCC Region #1	NA	Box 403	Fort Frances / Ontario / Canada	P9A 3M7	807-274-1386	807-274-9773	danao@metisnation.org
Naicatchewenin First Nation	186A Main Community Road	R.R.#1 Box 15	Devlin / Ontario / Canada	P0W 1C0	807-486-3407	807-486-3704	Wayne.smith@bellnet.ca
Naotkamegwanning (Whitefish Bay) First Nation	NA	Pawtik Post Office	Pawtik / Ontario / Canada	P0X 1L0	807-226-5411	NA	naotmineral@gmail.com
Onigaming First Nation	NA	Box 160	Nestor Falls / Ontario / Canada	P0Z 1K0	807-484-2162	NA	NA
Rainy River First Nation	147 Manitou Rapids Drive	Box 450	Emo / Ontario / Canada	P0W 1E0	807-482-2479	807-482-2603	j.leonard@bellnet.ca
Buffalo Point First Nation	NA	Box 1037	Buffalo Point / Manitoba / Canada	R0A 2W0	204-437-2133	204-437-2368	chief@buffalopoint.mb.ca
Aboriginal Groups to Notify:							
Anishinabe of Wauzhushk Onigum First Nation (Rat Portage)	NA	Box 1850	Kenora / Ontario / Canada	P9N 3X8	807-548-5663	807-548-4877	NA
Couchiching First Nation	107 Highway 11 East	RMB 2027 R.R. #2	Fort Frances / Ontario / Canada	P9A 3M3	807-274 - 3228	807-274-6458	chuckmcp@vianet.ca
Lac La Croix First Nation	Street A	Box 640	Fort Frances / Ontario / Canada	P9A 3M9	807-485-2431 ext. 2222	807-485-2583	reception@llcfn.ca
Mitaanjigamiing (Stanjikoming) First Nation	108 Main St.	Box 609	Fort Frances / Ontario / Canada	P9A 3M9	807-274-2188	807-274-4744	janice@mitaanjigamiing.ca
Nigigoonsiminikaaning (Nicickousemenecaning) First Nation	423 U Drive	Box 68	Fort Frances / Ontario / Canada	P9A 3M5	807-481-2536	807-481-2511	chiefallen@nigig.com
Northwest Angle #33 First Nation	Main Office	Box 1490	Kenora / Ontario / Canada	P9N 3X7	807-733-2200	807-733-3148	NA
Northwest Angle #37 First Nation	NA	Box 267	Sioux Narrows / Ontario / Canada	P0X 1N0	807-226-5353	807-226-1164	NA
Seine River First Nation	33 Riverside Rd. West	Box 124	Mine Centre / Ontario / Canada	POW 1HO	807-599-2224	807-599-2865	Earlklyne695@msn.ca

Note: Although the FFCS and PDGZNYZ Advisory Services Tribal organizations were not identified to be either consulted or notified, RRR will continue to involve and inform these organizations as had been agreed to by RRR and the Tribal organizations prior to direction provided by the Crown.

10.0 FLEXIBILITY TO ACCOMMODATE NEW CIRCUMSTANCES

The Proposed ToR was issued to facilitate public consultation and comment and has been prepared in accordance with the *Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario* (MOE 2009a). The Project Description described in Section 4 and the alternatives described in Section 5 are preliminary in that the RRGP component locations such as ore and mine rock stockpiles, TMA, processing facilities, administrative facilities, etc., will be optimized during the engineering stage and as a result of on-going consultation activities.

The EA document which will be guided by the approved ToR will be prepared in accordance with the *Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario* (MOE 2009b). RRR recognizes that the EA must be prepared in accordance with the approved ToR. Nonetheless circumstances may arise that could prevent the commitments made in the ToR from being made in full or in part. It is recognized that the RRGP is at the feasibility engineering design stage and consultation is on-going. Situations may therefore arise that cause RRR to be unable to completely fulfil the commitments contained herein as a result of a need to accommodate new circumstances. RRR have attempted in this ToR to anticipate these changes but minor adjustments to the ToR may be required to be undertaken by RRR in consultation with the MOE.

As part of the EA, RRR will develop short term contingency plans as appropriate to gain further flexibility, such as minor design changes or specific consultation activities. Such plans will outline a course of action to be followed if unforeseen situations arise that would prevent the proponent from implementing or operating a component of the RRGP on a temporary basis, for example.

11.0 OTHER APPROVALS REQUIRED

11.1 Municipal Approvals

In 2011 the Township of Chapple initiated a legislated review of the Official Plan and Zoning By-law, and released a draft version of the revised plan in February 2012 (Township of Chapple 1998, 1997, 2012). The 1997 Official Plan and Zoning By-law; however, remains in place and designates the RRGP area as rural, with some conservation - environmental protection area and industrial sites. The RRGP site and infrastructure corridors generally have a rural designation; however, the TMA and open pit overlap with rural and conservation-environmental protection areas.

RRGP has received very strong Municipal and Provincial government, as well as First Nations support to date. Municipal approvals / request for a variation to the Township of Chapple official plan, may or may not be required.

11.2 Provincial Environmental Approvals Processes

The *Ontario Water Resources Act*, the *Ontario Environmental Protection Act*, the *Mining Act*, the *Public Lands Act* and the *Ontario Planning Act* contain associated regulations, guidelines and policies that stipulate that relevant aspects of the natural and/or human use environments are to be protected against contamination and undue disturbance from industrial and other sources, except as provided through the granting of permits, approvals and authorizations.

There are four primary Provincial agencies that could be involved with approvals / permits for the RRGP: MNDM, MOE, MNR and the Ontario Energy Board (OEB). Additional agencies which may be involved with permitting of RRGP components includes Ministry of Transportation (MTO) and Ministry of Tourism, Culture and Sport (MTCS).

The MNDM has a responsibility to ensure the orderly development of mineral resources in the province of Ontario, including responsibilities for the disposition of Crown lands for mining, and primary responsibility for mine closure activities. The MOE grants permits and approvals that address project aspects related to water and air quality (including noise) and waste management. The MNR role is to ensure the protection and wise use of Crown resources not otherwise disposed, such as through the *Mining Act* administered by the MNDM. The OEB has responsibility for energy-related approvals, including approval to construct transmission lines, and operates as an adjudicative tribunal, carrying out its regulatory function through oral or written public hearings.

A large number of Provincial environmental approvals are expected to be required construct and operate the RRGP. Table 17 provides a preliminary listing of the Provincial approvals anticipated to be required or likely to be required for the construction and operation of the

RRGP. These Provincial permits and approvals are informed in part, by the Provincial EA process that the approved ToR will guide.

11.3 Federal EA Process

The RRGP as currently proposed will require completion of a Federal EA, pursuant to the *CEAA, 2012*. The Federal "Regulation Designating Physical Activities" identifies the physical activities that constitute the designated projects that could require an EA. Section 15(d) of the Regulation identifies one of the designated projects as: "the construction, operation, decommissioning and abandonment of a gold mine, other than a placer mine, with an ore production capacity of 600 tonnes per day or more".

For that reason, RRR submitted a Project Description to the CEA Agency in August 2012, which has now been accepted. Based on the Project Description, the CEA Agency determined that a Federal EA is required. The Project Description was used to assist development of the EIS Guidelines, which identify the scope of the EA required for the RRGP from a Federal perspective.

RRR is working closely with the Provincial and Federal approvals agencies to integrate the EA processes to meet the needs of each *Act*, while minimizing duplication of effort. This coordination will be directed by the *Canada-Ontario Agreement on Environmental Assessment Cooperation*.

RRR, as well as the Federal and Provincial governments attempted to align the schedule of the Federal EIS Guideline issuance with the approval of the Amended Proposed ToR by the Ontario Minister of the Environment. These two documents (the approved ToR and EIS Guidelines) together will guide the draft and final EA document preparation and content, and associated consultation activities. It is fully expected that a single body of information will be use to inform both the Provincial and Federal EA processes, culminating in a single final EA report and where possible, coordinated consultation activities.

After RRR issues the final EA report, the Federal and Provincial processes will continue in a parallel manner according to the regulated requirements.

11.4 Federal Environmental Approvals

Table 18 summarizes the types of Federal environmental approvals that could potentially be required for the RRGP (in addition to engineering approvals related to explosives manufacturing and/or storage).

In addition to these environmental approvals, it is expected that the overprinting of waters frequented by fish by tailings and mine rock stockpiles (or other deleterious material) may be necessary and will require a listing under Schedule 2 of the Federal MMER, pursuant to the

Fisheries Act. Input or approval from Transport Canada may be required for the re-alignment of Highway 600.

Table 17: Preliminary List of Required Provincial Environmental Approvals

Permit / Licence / Assessment	Agency Responsible	Description
Permit to Take Water *Ontario Water Resources Act*	MOE	Taking of water of greater than 50,000 litres per day (such as for potable water wells, mine dewatering)
Environmental Compliance Approval *Environmental Protection Act*	MOE	Establishment and operation of a domestic sewage treatment plant, industrial sewage treatment facility (such as minewater pond, TMA) and domestic landfill, and management of air emissions
Work Permit / Approval *Public Lands Act / Lakes and Rivers Improvement Act*	MNR	Work / construction on Crown land, including below the high water mark of local watercourses and construction of dams
Forest Resource Licence (Cutting Permit) *Crown Forest Sustainability Act*	MNR	Clearing of Crown merchantable timber (if any)
Land Use Permit *Public Lands Act*	MNR	Tenure for permanent facilities on Crown land (if any)
Aggregate Permit *Aggregate Resources Act*	MNR	Establishment and operation of a sand and gravel pit / quarry
SAR Screening *Endangered Species Act*	MNR	Management of activities related to SAR
Closure Plan *Mining Act*	MNDM	For mine construction / production including that related to the eventual RRGP decommissioning at mine closure
Leave to Construct *Ontario Energy Board Act*	OEB	Approval to construct a transmission line
Clearance Letter *Public Transportation and Highway Improvement Act*	MTCS	Confirmation of suitable archaeological studies along proposed highway re-alignment.
Work Permit / Various Approvals *Public Transportation and Highway Improvement Act*	MTO	For planning, design, construction of Highway 600 re-alignment.

Table 18: Preliminary List of Required Federal Environmental Approvals

Permit / License	Responsible Agency	Description
Authorization(s) for Harmful Alteration, Disruption or Destruction of Fish Habitat *Fisheries Act*	Fisheries and Oceans Canada	Potentially for the establishment of the mine rock stockpile(s) and TMA; Highway 600 and mine access, creek crossings; in-water structures such as for freshwater taking; watercourse diversions / re-routing; and/or mine dewatering groundwater effects that would cause disruption to watercourses supporting fisheries
Review of Works in Navigable Waters *Navigable Waters Protection Act*	Transport Canada	For alteration of navigable waters, such as through establishment of crossing(s) over Pinewood River (if determined to be a Navigable Water); potentially for the construction of transmission line crossing(s) over Navigable Waters (if not meeting the Operational Standard); or others
Schedule 2 Listing MMER, *Fisheries Act*	Environment Canada	It is expected that the overprinting of waters frequented by fish by tailings and mine rock stockpiles (or other deleterious material) may be necessary and will also require a listing under Schedule 2 of the Federal MMER, pursuant to the *Fisheries Act*.

12.0 REFERENCES

AbitibiConsolidated. 2007. 2007-2017 Crossroute Forest Sustainable Use Forest Management Plan.

AMEC. 2011a. Rainy River Gold Project, 2011 Wildlife Baseline Report.

AMEC. 2011b. Rainy River Gold Project, 2011 Species at Risk Report.

AMEC. 2012. Rainy River Gold Project, Aquatic Resources 2011 Baseline Investigation.

Canadian Council of Ministers of the Environment. 2000. Canada-Wide Standards for Particulate Matter (PM) and Ozone.

Canadian Environmental Assessment Agency. 1999. Cumulative Effects Assessment Practitioners Guide.

Environment Canada. 2011. Guidelines for the Assessment of Alternatives for Mine Waste Disposal. Federal Metal Mining Effluent Regulations.

Harris, A.G., S.C. McMurray, P.W.C. Uhlig, J.K. Jeglum, R.F. Foster, and G.D. Racey. 1996. Field guide to the wetland ecosystem classification of northwestern Ontario. Ontario Ministry of Natural Resources, Northwest Science & Technology Field Guide FG-01. 74 pp.

Klohn Crippen Berger. 2009. Rainy River Gold Project. Preliminary Pit Slope Design and Waste Management Assessment.

Klohn Crippen Berger. 2010. Rainy River Gold Project. Geotechnical Site Investigation Report.

Klohn Crippen Berger. 2011. Rainy River Gold Project Baseline Report 2008-2010.

Ministry of Environment. 1995a. Sound Level Limits for Stationary Sources in Class 3 Areas (Rural) - Publication NPC-232 and Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban) - Publication NPC 205.

Ministry of the Environment. 1995b. Publication NPC-232: Sound Level Limits for Stationary Sources in Class 3 Areas (Rural).

Ministry of Environment. 2009a. Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario.

Ministry of Environment. 2009b. Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario. October 2009.

Ministry of the Environment. 2012. Ontario's Ambient Air Quality Criteria (Sorted by Chemical Abstracts Service Registry Number). PIBS # 6570e01.Ministry of the Environment. 2010. Air Quality in Ontario Reports.
http://www.airqualityontario.com/press/publications.php Accessed June 2012.

Ministry of Finance. 2009. Ontario Population Projections, 2008 – 2036 Ontario and its 49 Census Divisions.

Ministry of Northern Development and Mines. 2012. E-mail of May 17, 2012 from Neal Bennett, Mineral Exploration and Development Consultant.

Natural Resources Canada. 1995. Quantity Distance Principles User's Manual.

Racey, G.D., A.G. Harris, J.K. Jeglum, R.F. Foster and G.M. Wickware.1996. Terrestrial and wetland ecosites of northwestern Ontario. Ontario Ministry of Natural Resources, Northwestern Science and Technology. Thunder Bay, Ontario Field Guide FG-02. 88 pp.

Service Canada. 2010. Northwest Ontario Labour Market Monitor – December 2010. Accessed 24 April 2012. <http://www.ntab.on.ca/wp-content/uploads/2011/01/LMM_Northwest_2010-Dec_e.pdf>.

Sims, R.A. W.D Towill, Baldwin, P. Uhlig, and G.M. Wickware. 1997. Field Guide to the Forest Ecosystem Classification for Northwestern Ontario. Ontario Ministry of Natural Resources Northwest Science and Technology. Thunder Bay, Ontario Field Guide FG-03. 176 pp.

SRK Consulting Canada Inc. 2011. Mineral Resource Evaluation Rainy River Gold Project Western Ontario, Canada. Report Prepared for Rainy River Resources Ltd.

Statistics Canada. 2007. 2006 Census Data.

Town of Rainy River. 2012. History: Retrieved from http://www.rainyriver.ca July 25, 2012.

Township of Chapple. 1998. Zoning By-Law No. 1227.

Township of Chapple. 1997. Official Plan for the Township of Chapple.

Township of Chapple. 2012. Official Plan Draft for the Township of Chapple.

Township of Emo. 2011. Our History: Retrieved from http://www.twspemo.on.ca/history.html, July 25, 2012.

Woodland Heritage Services. 2012. Stage 1 Archaeological And Cultural Heritage Resource Assessment of The Rainy River Resources Advanced Exploration Project Northwest Of Fort Frances, Rainy River District, Ontario.

APPENDIX A

Consultant Information

1.0 CONSULTANT

AMEC Environment & Infrastructure, a division of AMEC Americas Limited is pleased to be working with RRR to complete the EA process and obtain environmental approvals for the construction of the RRGP.

Sheila Daniel, M.Sc., P.Geo.
Head, Environmental Management
Senior Associate Geoscientist
AMEC Environment & Infrastructure
160 Traders Blvd. East, Suite 110
Mississauga, ON, L4Z 3K7
Telephone: (905) 568-2929
Mobile: (416) 524-5928
E-mail: sheila.daniel@amec.com

APPENDIX B

Photographic Summary

Plate 1 – Rainy River Gold Project (RRGP) core processing facility

Plate 2 – Typical exploration drilling operations

Plate 3 – RRGP core racks

Plate 4 – RRGP core processing facility and core racks (November 2011)

Plate 5 – RRGP drill core sample

Plate 6 – RRGP proposed open pit area

Plate 7 – Highway 600

Plate 8 - Highway 71

Plate 9 – 'Mining Matters' day at the RRGP site (August 12, 2011)

Plate 10 – 'Mining Matters' team holding RRGP core box (August 12, 2011)

Plate 11 – Confederation College Diamond Drillers Helpers First Nations Graduates (June 11, 2010)

Plate 12 – Rainy River District Stewardship (MNR) tour (October 26, 2011)

Plate 13 – Public information session, Emo (August 22, 2011)

Plate 14 – Lac La Croix Community Meeting (March 1, 2012)

Plate 15 – Big Grassy First Nation elders and youth tour (October 13, 2011)

Plate 16 – Rainy River First Nations elders tour (November 7, 2010)

Plate 17 – Naicatchewenin First Nation elders and youth tour (September 30, 2010)

Plate 18 - Spring celebration and feasting at the RRGP site (May 16, 2012)

Plate 19 – Participation Agreement Signing Ceremony March, 2012

Plate 20 – Big Grassy First Nation signing ceremony (March 6, 2012)

Plate 21 – Loslo Creek at a downstream location (August 2011)

Plate 22 – Upstream location on Marr Creek (August 2011)

Plate 23 – Downstream location on Marr Creek (August 2011)

Plate 24 – Midstream section along West Creek (August 2011)

Plate 25 – Downstream section on West Creek (August 2011)

Plate 26 – Upstream section of Clark Creek (July 2011)

Plate 27 – Clark Creek culvert crossing at Clark Road, midstream section (November 2011)

Plate 28 – Pinewood River upstream location culvert crossing (August 2011)

Plate 29 – Pinewood River upstream location culvert crossing (August 2011)

Plate 30 – Pinewood River midstream section under the influence of beaver activity (August 2011)

Plate 31 – Immediately upstream of Water Survey Canada Station (05PC023) at Pinewood River bridge, Highway 617 (August 2011)

Plate 32 – Immediately downstream of Water Survey Canada Station (05PC023) at Pinewood River bridge, Highway 617

Plate 33 – Fish sampling on midstream section of Pinewood River below the RRGP site

APPENDIX C

Preliminary Assessment of Transmission Line Routing Alternatives

1.0 BACKGROUND

Development of the Rainy River Gold Project (RRGP) requires a sufficient source of power to support both the later stages of construction and operational power needs of the project. It is expected that a 230 kilovolt (kV) transmission line is required based on similar scale projects. The existing grid / infrastructure at the RRGP site, while sufficient to support local use cannot support a large industrial operation.

A Hydro One Networks Inc (HONI) transmission line exists less than 20 kilometres (km) to the east of the project site. **Unless there is an overlying environmental or engineering requirement that makes connection to this HONI line unviable, this power source is selected as it is the closest location for the RRGP site to establish a 230 kV connector transmission line.** The next closest location for connection to a different HONI transmission line would require crossing the same area and offer no benefit.

The purpose of identifying and selecting a preliminary preferred transmission line right-of-way (ROW) alternative at this stage of the environmental approvals process, is to ensure that:

- The appropriate environmental information is collected for future progression of the Project;
- There exists no fatal flaw in regards to the Project design;
- Land tenure discussions are facilitated; and
- A preliminary routing for the transmission line is determined for further investigation.

2.0 ROUTING ALTERNATIVES

2.1 Assumptions

The assumptions made for this analysis are based on approximate location of RRGP site infrastructure, and the data available at the time of this analysis. As such the final design and terminus of the transmission line and substation at the mine site will be governed by:

- The final engineered position of site infrastructure such as the open pit, mill building, crusher, explosives manufacturing / storage facilities, mine rock and overburden stockpiles, access roads, and other related features and services;
- Avoidance of environmentally sensitive areas (such as waterbodies, wetlands and high value habitat); and
- Geotechnical ground conditions.

A working corridor of approximately 40 metres (m) is the standard width required to construct a 230 kV transmission line in order accommodate the poles, guy wires (if any) and temporary construction access. Some additional width may be required at turning points or areas requiring additional geotechnical support.

With regard to design alternatives, all facilities and equipment related to the transmission line and connection to the electrical grid must be designed according to applicable codes, regulations and best management practices. This includes: the Canadian Electrical Code, (Ontario) Transmission System Code and the Canadian Standards Association Code for Overhead Systems (CAN/CSA-C22.3 No. 1-06), as periodically amended.

2.2 Methodology for Identifying Routes

The siting of the terminus of the transmission line at the RRGP site was assumed to be fixed at the approximate proposed process plant location which will draw the heaviest load (generally preferred and standard industry approach). The eastern terminus of the transmission line was based on the alternative routings identified and was assumed to not be limited by engineering aspects. The distance from the eastern terminus to the western terminus for the various alternatives ranged from 16 to 18 km.

Routings considered the following criteria and aimed to minimize the number of turning points:

- Proximity to residential dwellings;
- The number of crossings through low-lying natural areas (wetlands);
- The width of crossings through low-lying natural areas (wetlands);
- The number of crossings of major and minor roads;
- Areas with higher and variable topographic relief;
- Proximity to waterbodies, watercourses and forested areas;
- Proximity to agricultural land parcels;
- Areas where Species at Risk (SAR) have been identified;
- Anticipated potential geotechnical conditions; and
- Land tenure aspects.

To identify the above criteria a desktop review using current satellite imagery, Ministry of Natural Resources road and utility information (MNR 2011), topographic relief data, currently observed location of SAR (KCB 2011, AMEC 2011) and a final desktop review of MNR-identified structures located in proximity to the proposed routings using Google Earth.

Review and analysis of the MNR-identified structures entailed using a combination of the high resolution satellite imagery, and Google Maps to identify if the structure was a place of active use (residential dwelling), unknown use or non-existent.

Active use was determined based upon aerial imagery analysis for evidence that revealed a structure in place (residence), a driveway that was actively used (or a vehicle in the driveway) or physical evidence to suggest the area is highly active in use. Areas of unknown use may be those which have a structure in place and are less frequented. Non-existent are those where the MNR database revealed a structure, and there is no structure or evidence of use.

It was found that the majority of the MNR-identified structures located in close proximity to major roads were typically residential dwellings. The remaining structures not located near to major roads and without road access appeared to be non-existent structures. For the purposes of this analysis both residential dwellings actively in use and those of unknown use are identified on Figure AppC-1. The remaining structures which are not in use, non-existent, and not in close proximity to the identified transmission line routings have been removed from Figure AppC-1 (despite presence in the MNR database).

2.3 Preliminary Routes

A number of routes can be used to connect the RRGP site to the existing transmission line to the east. All alternatives identified require a new transmission line ROW. The potential routings identified based on remote sensing are listed below and shown on Figure AppC-1.

- **Alternative A (northern):** Connect to the transmission line via a route that travels northeast across areas of higher topographic relief avoiding low-lying environmentally sensitive areas (wetlands). All residential receptors are located to the southeast. This alternative has the least number of watercourse crossings. The closest receptor is located approximately 390 m away;

- **Alternative B (direct route):** Connect by means of the most direct route (shortest straight line distance, across country) avoiding direct crossing of residential dwellings. Does not consider any environmentally sensitive areas and route is primarily a function of shortest distance. The closest receptor is located approximately 190 m away at Highway 71;

- **Alternative C (eastern):** Connection via a direct line northeast from the RRGP site, turning east and following (parallel to) the north side of Lampi Road. The transmission line would then turn northeast again avoiding any residential dwellings and connect at a junction point between Manomin Road (to the north), and Flemin Road (to the south). The closest receptor is located approximately 390 m away at Roen Road; and

- **Alternative D (along existing roads):** Connect by following Lampi Road east, turning north on Highway 615, then east on Manomin Road and finally tying into the road junction at Manomin Road and the existing transmission line. The closest receptor is closer than 50 m from the proposed ROW, at the intersection of Lampi Road and Highway 71.

3.0 ASSESSMENT OF ALTERNATE ROUTES

3.1 Methodology

The preliminary evaluations of alternatives presented herein, are based on the development of a series of performance objectives and evaluation criteria. Performance objectives are meaningful attributes that are essential for the RRGP success, and provide a basis for distinguishing between alternatives. Each alternative is assessed for each performance objective according to three evaluation criteria:

- Preferred;
- Acceptable; and
- Unacceptable.

The following performance objectives (or a subset thereof as appropriate for any given alternative) were used in the evaluations of alternatives:

- Cost-effectiveness;
- Technical applicability and/or system integrity and reliability;
- Ability to service the site effectively;
- Effects (adverse) to the natural environment;
- Effects (adverse) to the human environment; and
- Amenability to reclamation.

For each performance objective, the set of three criteria (preferred, acceptable and unacceptable) are applied per the following.

Cost-effectiveness

- Facilitates a competitive return on investment (preferred);
- Facilitates an acceptable return on investment (acceptable); and
- Cannot be financially supported by the project (unacceptable).

Cost-effectiveness relates to overall project costs, including capital, operation, maintenance, and closure/reclamation costs. Each aspect of the project has cost implications and thus cost-effectiveness is a performance objective common to all aspects.

Technical Applicability and/or System Integrity and Reliability

- Predictably effective with contingencies if the alternative does not perform as expected (preferred);

- Appears effective based on theoretical considerations; contingencies are available if the alternative fails to perform as expected (acceptable); and

- Effectiveness appears dubious or relies on unproven technologies (unacceptable).

'Technical applicability' and 'system integrity and reliability' are used interchangeably, as appropriate to the issue, to describe the suitability or expected performance of a given alternative.

Ability to Service the Site Effectively

- Provides a guaranteed power supply to the site with a low risk of interruption (preferred);

- Provides the required power supply to the site with contingency method(s) of power supply in the event of disruptions (acceptable); and

- Cannot reliably provide sufficient power supply, or involves an unacceptable level of risk without contingencies (unacceptable).

The reliable (guaranteed) supply of power to the site is critical to the uninterrupted operation of the mine.

Effects (adverse) to the Natural Environment

- Minimizes adverse effects to the natural environment without mitigation (preferred);

- Minimizes adverse effects to the natural environment with mitigation (acceptable); and

- Likely to cause significant adverse effects to the natural environment that cannot reasonably be mitigated (unacceptable).

The 'natural environment' referred to in this performance objective is a broad term used to describe the air, bedrock, soil, water (surface and ground) and biological organisms and communities.

Effects (adverse) to the Human Environment

- Minimizes adverse effects to the human environment without mitigation and provides positive effects (preferred);

- Minimizes adverse effects to the human environment with mitigation (acceptable); and

- Likely to cause significant adverse human environment effects that cannot reasonably be mitigated (unacceptable).

The potential for negative human environment effects, such as the reduction of land use by Aboriginal groups, is evaluated where appropriate for the alternatives for the various aspects of the project. The human environment is defined herein to also include aspects of the cultural heritage environment.

Amenability to Reclamation

- Causes disturbance to the natural environment that requires limited reclamation (preferred);

- Causes disturbance to the natural environment that requires moderate to extensive reclamation (acceptable); and

- Mitigation of disturbance to the natural environment is not practical or feasible (unacceptable).

This performance objective relates to the decommissioning or reclamation of both the transmission line and its associated infrastructure.

3.2 Evaluation

The alternatives are then given a preliminary overall or summary evaluation, taking all the performance objectives into consideration. There are two general approaches to summary evaluations. One approach is to give numerical values to individual performance objectives, based on application of the criteria, and then to sum these values to arrive at an overall index. This approach typically requires some form of weighting to take into account the varying importance of the different performance objectives. Weighting factors have to be carefully justified and are thus often open to interpretation. In addition, the numerical approach may result in two or more very different alternatives that have the same, or very similar, overall index values; when it is intuitively clear that one alternative meets environmental and health and safety requirements, and is technically better than the other.

The second approach, and the one used herein, is to rely on verbal distinctions inherent in the terminology of the criteria. Using this method, and with the knowledge that all performance objectives are essential to the decision process, an alternative is rejected if it attains an unacceptable rating for any single performance objective.

The alternative which receives the greatest number of preferred ratings is not necessarily the best, or most preferred, overall alternative. The relative importance of the individual performance objectives needs to be considered as well. It may be that one or two performance

objectives are more important and override all other objectives, so long as a minimum rating of acceptable is attained for the less important objectives. The final evaluation of alternatives is therefore a reasoned process, in which the basis for the final selection of alternatives is easily understood at all levels.

4.0 PRELIMINARY PREFERRED OPTION

Table AppC-1 summarizes the evaluation of each alternative.

Alternative A utilizing the proposed northern routing, has the following ratings and is the preferred option at this stage of project review:

- Facilitates a competitive return on investment: equally costly to the other alternative (preferred);
- Technical applicability: predictably effective (preferred);
- Minimizes adverse effects to the natural environment: impacts to the environment are minimized through mitigation (acceptable);
- Minimizes adverse effects to the human environment without mitigation and provides positive effects (preferred); and
- Amenability to reclamation: disturbance to the natural environment will require reclamation once the RRGP is no longer required (acceptable).

This preliminary, preferred option should be considered approximate and is pending field investigations, detailed engineering, site specific land use issues and field ground truthing.

5.0 REFERENCES

AMEC 2011. Rainy River Gold Project, Species at Risk Report.

Klohn Crippen Berger. 2011. Rainy River Gold Project Baseline Report 2008-2010.

Ministry of Natural Resources Land Information Ontario Database 2010.
< http://www.mnr.gov.on.ca/en/Business/LIO/>

Table AppC-1: Preliminary Performance Evaluation – Transmission Line Alternatives to the RRGP

Performance Objective	Alternatives			
	Alternate A	**Alternate B**	**Alternate C**	**Alternate D**
Cost-effectiveness	Provides a competitive return on investment. ***Rating – Preferred***	Provides a competitive return on investment. ***Rating – Preferred***	Provides a competitive return on investment. ***Rating – Preferred***	Provides a competitive return on investment. ***Rating – Preferred***
Technical applicability	Predictably effective. ***Rating – Preferred***	Predictably effective. ***Rating – Preferred***	Predictably effective. ***Rating – Preferred***	Appears effective based on theoretical considerations; ***Rating – Acceptable***
Effects (Adverse) on the Natural Environment	Impacts to the natural environment are minimized through mitigation. ***Rating – Acceptable***	Impacts to the natural environment are minimized through mitigation. ***Rating – Acceptable***	Impacts to the natural environment are minimized through mitigation. ***Rating – Acceptable***	Impacts to the natural environment are minimized through mitigation. ***Rating – Acceptable***
Effects (Adverse) on the Human Environment	Minimizes adverse effects to the human environment without mitigation. ***Rating – Preferred***	Minimizes adverse effects to the human environment with mitigation. ***Rating – Acceptable***	Minimizes adverse effects to the human environment with mitigation. ***Rating – Acceptable***	Minimizes adverse effects to the human environment with mitigation. ***Rating – Acceptable***
Amenability to Reclamation	Causes disturbance to the natural environment that requires moderate to extensive reclamation. ***Rating – Acceptable***	Causes disturbance to the natural environment that requires moderate to extensive reclamation. ***Rating – Acceptable***	Causes disturbance to the natural environment that requires moderate to extensive reclamation. ***Rating – Acceptable***	Causes disturbance to the natural environment that requires moderate to extensive reclamation. ***Rating – Acceptable***
SUMMARY EVALUATION	***RATING – PREFERRED***	***RATING – ACCEPTABLE***	***RATING – ACCEPTABLE***	***RATING – ACCEPTABLE***

420000 425000 430000 435000 440000 445000

5420000 5415000 5410000

P:\EM\Projects\2011\TC111504 Rainy River\GIS\ToR\MXD_Maps\TransLine_Route_Options_11_AppFig.mxd

Beadle Lake
Hwy 71
Preachers Lake
Spring Lake
Little Pine Lake
Pony Lake
Boundary Lake
Off Lake
Rainy Lake IR 17b
Mamomin Rd
Fleming Rd
Existing Transmission Line
Muskrat Lake
Marr Rd
Lampi Rd
Hwy 600
Roen Rd
Clark Road
Gallinger Rd
Hwy 71
White Road
Hwy 615
Pinewood River
Teeple Road
Pinewood Lake
Tait Road
Heatwole Road
Hwy 600

A B C D

LEGEND

- Approximate Project Boundary
- Approximate Open Pit Outline
- Approximate Processing Plant Location
- Residence-House
- Lodging Cabin-Occasional Use
- Building - Unknown Use
- Roads
- Existing Transmission Line
- Low-lying Area
- First Nation Land
- Contours, 10 m interval (LIO-MNR)

Elevation Colour Ramp
High ground
Low ground

Transmission Line: Preliminary Alternative Routes
- Alternative A (approx. 16.6 km)
- Alternative B (approx. 15.7 km)
- Alternative C (approx. 16 km)
- Alternative D (approx. 19.2 km)

NOTES:
- Road and Utility data and topographic data extracted from Land Information Ontario, Ontario Road Network, MNR

RAINYRIVER amec

RAINY RIVER GOLD PROJECT

Preliminary 230 kV Transmission Line Routing Options

Datum: NAD83
Projection: UTM Zone 15N

0 2.5 5 10 15 20 Kilometres

N W E S

PROJECT N°: TC111504 | **FIGURE: App. C - 1**

SCALE: (see bar scale) | DATE: October 2012

APPENDIX D

Preliminary Assessment of Highway 600 Re-alignment Routing Alternatives

1.0 BACKGROUND

Rainy River Resources Ltd. proposes to construct, operate and eventually close a new open pit gold mine, the Rainy River Gold Project (RRGP). The proposed open pit will overprint the existing gravel-surfaced, two-lane Highway 600 right-of-way (ROW). In order to facilitate the mine development and ensure safety of existing road users, it is proposed to re-align the affected section of the existing Highway 600 in order to maintain local transportation connections. As this is a public road, routing concurrence from the Ontario Ministry of Transportation (MTO) and Township was considered critical.

Direction provided from the MTO (April 4, 2012), was that the Ministry is receptive to the concept of realigning a portion of Highway 600 to allow for the development of the mine. Relocation will need to adhere to Ministry design standards and processes, and will need to be fully funded by Rainy River Resources. The Township of Chapple has indicated agreement with the re-alignment and has been fully engaged in the engineering screening assessment work completed. The preferred highway re-alignment will need to meet the MTO standards for highway design unless otherwise negotiated, and the new highway segment will be assumed by MTO following an inspection and approval of the works undertaken by Rainy River.

To support the Highway 600 re-alignment process this document has been prepared to ensure that:

- The appropriate environmental information is collected for future progression of the project;
- There exists no fatal flaw in regards to the RRGP design (public road through RRGP site);
- Land tenure discussions are facilitated; and
- An appropriate routing for the Highway 600 road re-alignment is identified for further assessment.

2.0 HIGHWAY RE-ALIGNMENT ALTERNATIVES

2.1 Assumptions

The assumptions made for this analysis are based on approximate location of Rainy River Project site infrastructure, and the data available at the time of this analysis. As such the final design of the road re-alignment will be governed by:

- In-field avoidance of environmentally sensitive areas (such as watercourses / water bodies and forested areas);

- Guidance derived through consultation;

- Maximize use of existing road infrastructure (to avoid unnecessary traffic disruption and land disturbance); and

- Geotechnical conditions.

2.2 Methodology for Identifying Alternative Re-alignments

2.2.1 Initial Re-alignment Location Screening

Highway 600 could either be aligned to the north or to the southwest of the RRGP to avoid the proposed site development (the reason for the Highway 600 re-alignment). Re-alignment through the RRGP site but avoiding the open pit would not address the potential land use conflict / safety concerns. A northern route would require a lengthier road, would be across generally, less-developed terrain than a southern routing, and would disrupt the local traffic flow patterns more. A southerly route would require a minor road to maintain access to northern Marr Road properties in addition to highway re-alignment itself.

A desktop engineering study was completed along with an aerial fly-over by transportation experienced engineers (TBT Engineering 2012). It identified eight preliminary Highway 600 re-alignment routes: three routes to the north and five routes to the southwest (Attachment 1). Routes were optimized and assessed based on property ownership, topography, geology and water crossings, as well as consideration of basic route planning principles for minimizing length. A quantitative method of analysis was applied to assess the feasibility of each alignment based on inferred geotechnical conditions and centreline profiles. A qualitative analysis was also conducted of each alternative, considering such factors as potential impacts to local residents / motorists, travel distances, roadway geometrics, potential environmental considerations, property ownership, and maintenance costs and responsibilities. The study determined that a southern route connecting Tait Road to the existing Pine River Road was preferred.

As part of the study, the Township of Chapple was consulted on the preliminary routing and the final report was provided to the MTO for comment. Both the Township of Chapple and MTO expressed a preference for a route to the southwest of the RRGP site. Specifically, the Township of Chapple: "was in agreement that they prefer one of the southerly options to better accommodate local traffic" (Alternate C; MTO 2012). Further, Township of Chapple indicated that the development of the re-alignment along a southerly route could be located along the majority of its length along municipal road allowances, thereby minimizing disturbance to land

owners when obtaining lands for construction (Township of Chapple 2012). The alternatives to the southwest provide for an improved flow of traffic eliminating existing meandering and provide for a more direct flow of traffic along Highway 600 from Black Hawk to Dearlock.

As a result of this study and the comments received from the Township of Chapple and MTO, only routes located southwest of the proposed RRGP site were investigated further and considered herein within this preliminary environmental alternatives screening process.

2.2.2 Initial Re-alignment Route Identification

The southern re-alignment options seek to connect Tait Road to one of the existing roads west of the RRGP site. All preliminary re-alignment alternatives aimed to maintain the least number of turning points to improve traffic flow / visibility, while considering the following criteria:

- Proximity to residential dwellings;
- The number of crossings through low lying natural areas (wetlands);
- The number of crossings of major and minor roads;
- Areas with higher and variable topographic relief;
- Proximity to waterbodies, watercourses and forested areas;
- Proximity to agricultural land parcels;
- Areas where species-at-risk (SAR) have been identified through baseline investigations;
- Land tenure (mining claims and leases);
- Maximizing distance from project site while minimizing additional distance traffic would travel using highway re-alignment compared to existing highway; and
- Anticipated potential geotechnical conditions.

To identify the above criteria a desktop review using current satellite imagery, Ministry of Natural Resources road and utility information (MNR 2011), topographic relief data, currently observed location of SAR (KCB 2011; AMEC 2011) and a final desktop review of MNR-identified structures located in proximity to the proposed routings using Google Earth.

Review and analysis of the MNR-identified structures entailed using a combination of the high resolution satellite imagery, and Google Maps to identify if the structure was a place of active use (residential dwelling), unknown use, or non-existent.

Active use was determined based upon aerial imagery analysis for evidence that revealed a structure in place (residence) a driveway that was actively used (or a vehicle in the driveway) or physical evidence to suggest the area is highly active in use. Areas of unknown use may be those which have a structure in place, and are less frequented. Non-existent are those where the MNR database revealed a structure, and there is no structure or evidence of use.

2.3 Preliminary Routes

A number of alternatives exists which facilitate a safe flow of traffic around the project site. The potential re-alignments are listed below and shown on Figure AppD-1.

- **Re-alignment A:** Provides for a route from Tait Road to Highway 600, via Pine River Road. There are no blind spots and flow of traffic would be acceptable. The route crosses one watercourse. The distance from Tait Road to Pine River Road is 5.3 kilometres (km).

- **Re-alignment B:** Follows an existing trail west, and meanders north to connect with Pine River Road as a 90° turn. Flow of traffic would be acceptable. This re-alignment crosses a small portion of wetland (approximately 0.25 km wide) and one watercourse. The distance from Tait Road to Pine River Road is 5.1 km.

- **Re-alignment C:** Follows areas of higher topography and an existing ATV/ARGO trail which can be seen from the satellite imagery from Tait Road. The route crosses one watercourse and one wetland. This re-alignment is 6.4 km and is the longest re-alignment proposed; however, it is shorter than the existing Highway 600 route from Black Hawk to Dearlock. This re-alignment routes traffic the greatest distance from the RRGP site and is the one most preferred by the Township of Chapple Reeve and Council.

- **Re-alignment D:** Turns north off Tait Road and gradually meanders northwest to connect with the southernmost tip of Loslo Road. There are multiple corners and bends and flow of traffic would be reduced. This route crosses two watercourses.

The re-alignment with the longest distance travelled is still shorter than the existing Highway 600 route from Black Hawk to Dearlock. The distance from the east terminus of the road beginning at Tait Road to the west connecting with the southernmost tip of either the existing, Pine River Road or Loslo Road ranges from 4.3 to 6.4 km depending upon the routing alternative.

3.0 PRELIMINARY ASSESSMENT OF RE-ALIGNMENT ALTERNATIVES

3.1 Methodology

The evaluations of alternatives presented herein, are based on the development of a series of performance objectives and evaluation criteria. Performance objectives are meaningful attributes that are essential for the RRGP success, and provide a basis for distinguishing between alternatives. Each alternative is assessed for each performance objective according to three evaluation criteria:

- Preferred;
- Acceptable; and
- Unacceptable.

The following performance objectives (or a subset thereof as appropriate for any given alternative) were used in the evaluations of alternatives:

- Cost-effectiveness;
- Technical applicability and/or system integrity and reliability;
- Ability to service the site effectively;
- Effects (adverse) to the natural environment;
- Effects (adverse) to the human environment; and

For each performance objective, the set of three criteria (preferred, acceptable and unacceptable) are applied per the following.

Cost-effectiveness

- Facilitates a competitive return on investment (preferred);
- Facilitates an acceptable return on investment (acceptable); and
- Cannot be financially supported by the project (unacceptable).

Cost-effectiveness relates to overall project costs, including capital, operation, maintenance, and closure/reclamation costs. Each aspect of the project has cost implications and thus cost-effectiveness is a performance objective common to all aspects.

Technical Applicability and/or System Integrity and Reliability

- Predictably effective with contingencies if the alternative does not perform as expected (preferred);

- Appears effective based on theoretical considerations; contingencies are available if the alternative fails to perform as expected (acceptable); and

- Effectiveness appears dubious or relies on unproven technologies (unacceptable).

'Technical applicability' and 'system integrity and reliability' are used interchangeably, as appropriate to the issue, to describe the suitability or expected performance of a given alternative.

Ability to Service the Site Effectively

- Provides a guaranteed means of re-routing / travel around the site with a low risk of interruption (preferred);
- Provides the required means of re-routing / travel around the site with contingency alternatives(s) in the event of disruptions (acceptable); and
- Cannot reliably provide sufficient re-routing / travel around the site, or involves an unacceptable level of risk without contingencies (unacceptable).

The re-routing of highway around the site is critical to the development of the mine.

Effects (adverse) to the Natural Environment

- Minimizes adverse effects to the natural environment without mitigation (preferred);
- Minimizes adverse effects to the natural environment with mitigation (acceptable); and
- Likely to cause significant adverse effects to the natural environment that cannot reasonably be mitigated (unacceptable).

The 'natural environment' referred to in this performance objective is a broad term used to describe the air, bedrock, soil, water (surface and ground) and biological organisms and communities.

Effects (adverse) to the Human Environment

- Minimizes adverse effects to the human environment without mitigation and provides positive effects (preferred);
- Minimizes adverse effects to the human environment with mitigation (acceptable); and
- Likely to cause significant adverse human environment effects that cannot reasonably be mitigated (unacceptable).

The potential for negative human environment effects, such as the reduction of land use by Aboriginal groups, is evaluated where appropriate for the alternatives for the various aspects of the project. The human environment is defined herein to also include aspects of the cultural heritage environment and considers traffic flow and safety.

3.2 Preliminary Evaluation

The alternatives are then given a preliminary overall or summary evaluation, taking all the performance objectives into consideration. There are two general approaches to summary evaluations. One approach is to give numerical values to individual performance objectives, based on application of the criteria, and then to sum these values to arrive at an overall index. This approach typically requires some form of weighting to take into account the varying importance of the different performance objectives. Weighting factors have to be carefully justified and are thus often open to interpretation. In addition, the numerical approach may result in two or more very different alternatives that have the same, or very similar, overall index values; when it is intuitively clear that one alternative meets environmental and health and safety requirements, and is technically better than the other.

The second approach, and the one used herein, is to rely on verbal distinctions inherent in the terminology of the criteria. Using this method (and with the knowledge that all performance objectives are essential to the decision process), an alternative is rejected if it attains an unacceptable rating for any single performance objective.

The alternative which receives the greatest number of preferred ratings is not necessarily the best, or most preferred, overall alternative. The relative importance of the individual performance objectives needs to be considered as well. It may be that one or two performance objectives are more important and override all other objectives, so long as a minimum rating of acceptable is attained for the less important objectives. The final evaluation of alternatives is therefore a reasoned process, in which the basis for the final selection of alternatives is easily understood at all levels.

4.0 PRELIMINARY PREFERRED OPTION

Table AppD-1 summarizes the preliminary evaluation of each alternative highway routing. Alternate C is preferred as it benefits from existing road allowances and is preferred by the Township of Chapple. Alternate D is less preferred as it is located closer to proposed development and has an additional creek crossing. All routes are potentially considered acceptable pending further evaluation.

5.0 REFERENCES

AMEC 2011. Rainy River Gold Project. Species At Risk Report.

Klohn Krippen Berger 2010. Rainy River Project, Baseline Investigation.

Ministry of Natural Resources. Land Information Ontario Database 2011. < http://www.mnr.gov.on.ca/en/Business/LIO/>

Ministry of Transportation. 2012. Letter to Rainy River Resources from Mr. James McKever, April 4, 2012, regarding Highway 600 Re-alignment Proposal, TBT Engineering Feasibility Study.

TBT Engineering. 2012. Feasibility Study Highway 600 Re-alignment. Rainy River Gold Project.

Township of Chapple. 2012. Letter to Rainy River Resources from Ms. Peggy Johnson, regarding Highway 600 Re-alignment Options.

Table AppD-1: Preliminary Performance Evaluation – Highway Re-alignment Alternatives to the Rainy River Project

Performance Objective	Alternatives			
	Alternate A	**Alternate B**	**Alternate C**	**Alternate D**
Cost-effectiveness	Provides a competitive return on investment. ***Rating – Preferred***	Provides a competitive return on investment. ***Rating – Preferred***	Provides a competitive return on investment. ***Rating – Preferred***	Provides a competitive return on investment. ***Rating – Preferred***
Technical applicability	Predictably effective. ***Rating – Preferred***	Predictably effective. ***Rating – Preferred***	Predictably effective. ***Rating – Preferred***	Appears effective based on theoretical considerations. ***Rating – Acceptable***
Effects (Adverse) on the Natural Environment	Impacts to the natural environment are minimized through mitigation. ***Rating – Acceptable***	Impacts to the natural environment are minimized through mitigation. ***Rating – Acceptable***	Impacts to the natural environment are minimized through mitigation. ***Rating – Acceptable***	Impacts to the natural environment are minimized through mitigation. ***Rating – Acceptable***
Effects (Adverse) on the Human Environment	Minimizes adverse effects to the human environment with mitigation. ***Rating – Acceptable***	Minimizes adverse effects to the human environment with mitigation. ***Rating – Acceptable***	Minimizes adverse effects to the human environment with mitigation. ***Rating – Acceptable***	Minimizes adverse effects to the human environment with mitigation. ***Rating – Acceptable***
SUMMARY EVALUATION	***RATING – ACCEPTABLE***	***RATING – ACCEPTABLE***	***RATING – PREFERRED****	***RATING – ACCEPTABLE***

*Note: that while all routes are acceptable, Alternate C would be preferred due to the availability of existing road allowances and a preference by the Township of Chapple. Alternate D would be less preferred as it is closer to the proposed mining development.

417500 420000 422500 425000 427500 430000 432500

5412500

5410000

5407500

Marr Rd
Loslo Creek
Marr Creek
West Creek
Roen Rd
Hwy 600
McCallum Creek
Pine River Rd
Loslo Rd
Pinewood River
Clark-Rd
Clark Creek
Teeple Rd
Heatwole Rd
Tait Rd
Blackhawk Rd
A
B
C
D

P:\EM\Projects\2011\TC111504 Rainy River\GIS\ToRMXD_MarshHwy600_Realignment_Options_8_AppFig.mxd

LEGEND

- Approximate Project Boundary
- Approximate Open Pit Outline
- Residence-House
- Lodging Cabin-Occasional Use
- Building - Unknown Use
- Roads
- Watercourses
- Contours, 10 m interval (LIO-MNR)
- Low-lying Area

Elevation Colour Ramp

High ground

Low ground

Preliminary Highway 600 Re-alignment Alternatives

- Alternate A (approx. 5.3 km)
- Alternate B (approx. 5.1 km)
- Alternate C (approx. 6.4 km)
- Alternate D (approx. 4.3 km)

0 1 2 4 6 8 10 Kilometres

NOTES:
- Road data extracted from Land Information Ontario, Ontario Road Network, MNR
- Background topographic and elevation data extracted from MNR Land Information Ontario
- Road Alternative data extracted from TBT Engineering Consulting Group (Jan. 2012)

Datum: NAD83
Projection: UTM Zone 15N

N W E S

RAINYRIVER amec

RAINY RIVER GOLD PROJECT

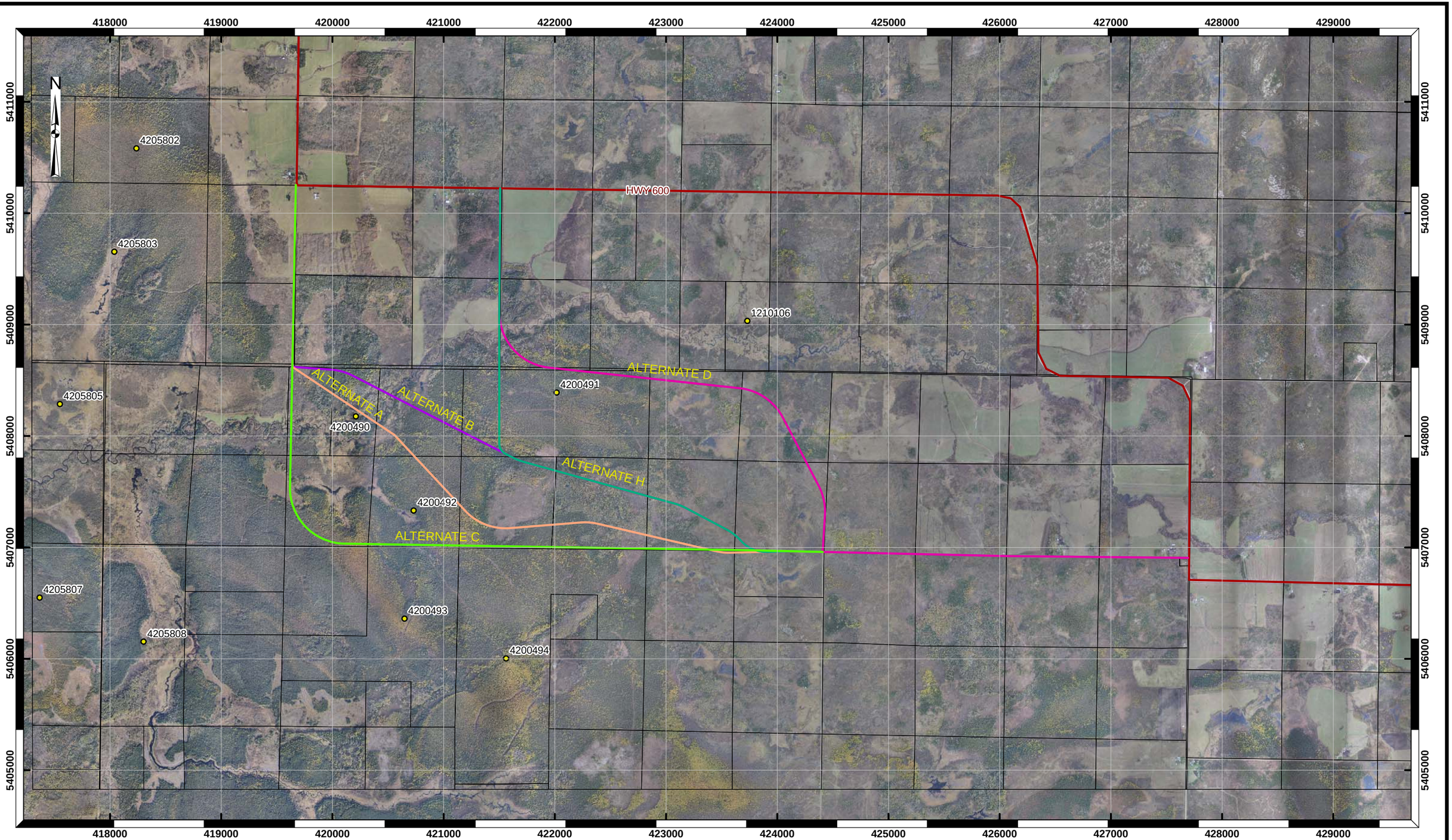
Preliminary Highway 600 Re-alignment Options

PROJECT N°: TC111504 | **FIGURE: App. D - 1**

SCALE: (see bar scale) | DATE: October 2012

ATTACHMENT 1

Preliminary Highway 600 Re-alignment Routing Alternatives extracted from TBTE (2012)



ALTERNATE A
ALTERNATE B
ALTERNATE C
ALTERNATE D
ALTERNATE H
EXISTING ROAD

DATUM: NORTH AMERICAN DATUM (NAD) 1983
MAP PROJECTION: UNIVERSAL TRANSVERSE MERCATOR (UTM), ZONE 15N

TITLE: ALIGNMENTS A - D & H: HIGHWAY RE-ALIGNMENT OPTIONS

PROJECT: PROPOSED HIGHWAY RE-ALIGNMENT HWY 600

TBT ENGINEERING CONSULTING GROUP

CLIENT: RAINY RIVER RESOURCES LTD.

APPROVED BY:	DRAWN BY:	PROJECT NO.
R.F.	C.M.	11-361

DATE: JAN 2012

SCALE: AS SHOWN

ENCLOSURE 1-2

3

ALTERNATE G

ALTERNATE F

MARRS RD CONNECTION

ALTERNATE E

HWY 600

HWY 71

4208867

4208866

4208866

4205829

4205830

1161592

4200496

4200497

4200495

1161604

1105428

1161081

1161080

4200498

1105430

1105427

1161100

4200499

1161075

1178215

1105425

1161074

1161076

1161079

1105426

1105423

1161073

1105422

415000 416000 417000 418000 419000 420000 421000 422000 423000 424000 425000 426000 427000 428000 429000 430000 431000 432000 433000

5421000 5420000 5419000 5418000 5417000 5416000 5415000 5414000 5413000 5412000 5411000

EXISTING ROAD

PROPOSED ALTERNATE E

PROPOSED ALTERNATE F

PROPOSED ALTERNATE G

PROPOSED ALTERNATE MARRS RD CONNECTION

DATUM: NORTH AMERICAN DATUM (NAD) 1983
MAP PROJECTION: UNIVERSAL TRANSVERSE MERCATOR (UTM), ZONE 15N

TITLE: ALIGNMENTS E-G & MARRS ROAD CONNECTION: HIGHWAY RE-ALIGNMENT OPTIONS

PROJECT: PROPOSED HIGHWAY RE-ALIGNMENT HWY 600

TBT ENGINEERING CONSULTING GROUP

CLIENT: RAINY RIVER RESOURCES LTD.

APPROVED BY:	DRAWN BY:	PROJECT NO.
R.F.	C.M.	11-361

DATE: JAN 2012

SCALE: AS SHOWN

ENCLOSURE 1-3

APPENDIX E

RRGP EA Consultation and Engagement Plan - Stakeholders

1.0 INTRODUCTION

Rainy River Resources Ltd. (RRR) is pursuing Provincial and Federal environmental approvals for the development of a gold mine, the Rainy River Gold Project (RRGP).

RRR, along with the Federal and Provincial government agencies recognize that there are opportunities to collaborate on the planning and implementation of Aboriginal and stakeholder engagement and consultation for their respective environmental assessment (EA) process. RRR intends to prepare one body of knowledge about the current baseline environment and the potential effects of the RRGP on various aspects of the environment and populate the EA required. Combining and coordinating consultation efforts on the EA process where practical, ensures that stakeholder and Aboriginal groups are engaged in dialogue about the current environment, potential effects, and management measures at the same or similar time for all the EA process rather than in multiple meetings on the same subject for a different EA process. This document provides a plan for these coordinated consultation efforts.

1.1 Provincial EA and Consultation Plan Requirements

In consultation with the local regulatory agencies, RRR has entered into a Voluntary Agreement with the Ontario Ministry of the Environment (MOE) to conduct an EA for the Project in accordance with the requirements of the Ontario *Environmental Assessment Act*. The first step in preparing the EA is preparation and approval of a Terms of Reference (ToR) to guide what is to be assessed in the EA and an associated Consultation and Engagement Plan (CEP) that defines how government agencies, the general public, other stakeholders and Aboriginal groups will be engaged. A draft CEP was issued with the draft ToR that underwent a 30-day public comment period (May to June 2012). The draft CEP was revised to incorporate input received from the community, Aboriginal people and government agencies during the draft ToR consultation.

The RRR approach to consultation on the EA required as part of the Provincial EA process will follow the guidelines outlined in the MOE C*ode of Practice: Consultation in Ontario's EA Process* (MOE 2009a). This document dictates that a proponent's Consultation Plan must:

- *Indicate how potentially interested and affected persons, including Aboriginal peoples, will be identified, notified and consulted;*
- *Indicate how government agencies will be identified, notified and consulted;*
- *Identify the points in the EA process when interested persons will be consulted;*
- *Identify the methods that will be used to consult;*

- *Identify the decisions that interested persons can provide input to and what role they can play when the proponent makes choices; and*

- *Acknowledge and attempt to address concerns raised during the EA process.*

According to the *Code of Practice: Preparing and Reviewing Terms of Reference for EAs in Ontario* (MOE 2009b) the Consultation Plan should outline:

- *General consultation methods proposed;*

- *How input from interested persons will be obtained;*

- *A description of key decision-making milestones during the preparation of the EA when consultation will occur; and*

- *An issues resolution strategy.*

1.2 Federal EA and Consultation Plan Requirements

The Canadian Environmental Assessment Agency (CEA Agency) has recently released guidance for the CEP required as part of a Project Description for a designated project (CEA Agency 2012). A Project Description was used by the CEA Agency to conduct a screening of a designated project and determine whether an EA was required.

The guide states that the Project Description must include:

> *a consultation and information gathering plan that outlines the ongoing and proposed Aboriginal engagement or consultation activities, the general schedule for these activities and the type of information to be collected (or alternatively, an indication of why such engagement or consultation is not required). Include background information on Aboriginal groups' potential or established Aboriginal or treaty rights. Provide information on the impact area of the designated project and how it overlaps with uses by Aboriginal groups that have potential or established Aboriginal or treaty rights (CEA Agency 2012).*

The CEP presented herein is intended to meet both the Federal and Provincial consultation plan requirements related to the EA (preparation, submission and approval).

1.3 Responsibility for CEP Implementation

This CEP is intended to guide the activities and responsibilities of RRR only. While government agencies have a role in supporting and guiding RRR in consultation planning and activities,

government-led consultation activities (such as posting notices on government websites) are not be outlined herein.

The responsibility of RRR for consultation is understood to be:

- To design and implement CEP as part of the overall EA process;
- Implementing the procedural aspects of consulting or notifying interested persons including Aboriginal peoples throughout the process, including those likely to be directly affected and any others that may be potentially affected, as well as government agencies having a mandate or responsibility for particular aspects of the RRGP approvals;
- Initiating meaningful consultation with interested persons to identify information needs and concerns early in the planning process;
- Providing appropriate time for interested persons to review and comment on EA-related materials and documentation;
- Documenting how input received from participants was (or was not) taken into account;
- Addressing and where possible, resolving concerns raised through the consultation process; and
- Keeping participants informed of decisions made and how the proponent addressed identified concerns or reasons that concerns were not addressed.

2.0 CONSULTATION APPROACH AND TOOLS

2.1 Rainy River Resources Consultation Approach

One of the objectives of the RRR Health, Safety, Environment and Sustainability policy is to demonstrate its commitment to fostering sustainable development in the communities in which it operates. To meet this objective RRR implements activities that helps them to identify and consider public and stakeholder views, customs and cultures and take into account these aspects throughout the life cycle of the Company's operations.

In recognition of the value of developing positive, mutually beneficial relationships with stakeholders, and First Nations and Métis community members, consultation with local communities and stakeholders was initiated in 2010 well before commencing the environmental approvals processes for the proposed RRGP. These early efforts have resulted in a better understanding of the exploration and mining development process on the part of the local

citizens as well as positive working relationships in the region. Early consultation has also resulted in negotiated agreements with First Nations that set in place the expectations and processes by which consultation and participation in the preparation of the EA and throughout the life of the mine.

The objectives during this early consultation period were to:

- Raise awareness about the RRGP and mining sector with citizens (non-Aboriginal and Aboriginal) of the region;
- Promote an atmosphere of mutual respect and cultural awareness;
- Identify and establish effective working relationships and build trust with the leadership of each potentially affected Aboriginal community, with government agencies and other key stakeholder organizations;
- Develop agreements with Aboriginal communities for participation in the environmental approvals processes, as well as for involvement in and mutual benefit from the project;
- Discuss preliminary project plans and gather feedback from key stakeholders, governments and Aboriginal communities about their issues and interests; and
- Prepare a CEP that is responsive to stakeholder needs and that will meet regulatory requirements.

During this early stage of the RRGP, consultation activities consisted of:

- Hosting informal meetings, exploration site tours and presentations for stakeholders including local citizens, government departments and members of the Aboriginal communities;
- Initiating meetings with the Aboriginal leaderships to establish a path forward through negotiated agreements;
- Establishing a local Aboriginal liaison position to enhance community participation in the project;
- Raising awareness about mining and supporting training by sponsoring a Mining Matters workshop (Prospectors and Developers Association of Canada) in Fort Frances in the Summer of 2011 and 2012, and by supporting Confederation College's Diamond Driller's Helper's program; and

- Discussions about approaches to Aboriginal Traditional Knowledge and Traditional Land Use Studies with Aboriginal groups to work toward building a relationship to proceed with studies.

In 2012 and 2013, consultation efforts have and will continue to focus mainly on supporting the EA process as RRR moves toward environmental approvals for construction, operation and closure of the RRGP.

2.2 Stakeholder and Issues Tracking

RRR is maintaining a record of its consultation activities for the RRGP. The system being used will track records of consultation that occur between RRR and a stakeholder or Aboriginal group and will be used to generate reports that include:

- Who was consulted;
- When, where and by what method the activity took place;
- What issues / interests were shared and how are they were addressed; and
- Follow-up actions or commitments arising from consultation activities.

Correspondence regarding the RRGP obtained by the MOE and other government agencies will not necessarily be included. The database is only a record of RRR-led consultation activities and should therefore not be considered a comprehensive record of all consultation and engagement related to the RRGP.

2.3 Issue Resolution

RRR recognizes the benefit of resolving issues early and to the mutual satisfaction of those involved. To this end, stakeholders, Aboriginal groups or other individuals bringing forward an issue of concern regarding the RRGP will receive a response containing information to help clarify and/or assist in issue resolution.

Comments from stakeholders, Aboriginal groups or individuals (written or verbal) as well as responses from RRR will be documented, and where applicable will be considered in the EA and environmental approval processes. Depending on the magnitude and nature of any concerns, RRR will make an effort to address and resolve the concern directly with the stakeholder, Aboriginal group or individual.

2.4 Participant Support

RRR recognizes that some Aboriginal communities may require financial support to participate in a meaningful and timely manner in the EA process. RRR has negotiated or is in the process of negotiating various agreements with local First Nations and Métis groups to facilitate community involvement throughout the life of the project including participation in the EA process. RRR worked with the Fort Frances Chiefs Secretariat (FFCS) to fund an Aboriginal Liaison for the FFCS member First Nations. RRR has also established and is supporting an Advisory Committee for the FFCS member First Nations signatory to the Participation Agreement. If requested, RRR will assist in providing information to the Aboriginal groups involved about Federal (if applicable) or Provincial participant funding programs.

In addition, RRR will be supporting community involvement in the preparation of Aboriginal Traditional Knowledge and Land Use (TK / TLU) studies that will be important for the EA, build capacity in Aboriginal communities, and potentially expand documented traditional knowledge / land use information.

RRR has, and will continue to bear much of the costs associated with providing information about the RRGP and the EA process to stakeholders and Aboriginal groups in a format that is accessible; as well as for conducting any meetings or information sessions that build an understanding of the RRGP so that stakeholders and Aboriginal groups may meaningfully participate in the RRGP and EAs.

2.5 CEP Evaluation

RRR will evaluate consultation activities and the consultation process to ensure successful implementation. Evaluation of the consultation activities will be solicited from participants at each consultation event and will be used to improve and refine on-going consultation activities as appropriate. Evaluations may be conducted using a variety of methods including targeted participant questionnaires, recording any verbal feedback from participants and through the RRR website.

Evaluation criteria may be results-based and/or process-based and will be developed using best practices. Results-based criteria measure whether or not a defined objective or goal has been met. Process-based criteria measure how the engagement process was implemented. The types of evaluation criteria used will differ depending on the consultation activity.

3.0 ABORIGINAL GROUP PARTICIPANTS

3.1 Delegation of Procedural Aspects of Consultation

The Federal and Provincial Governments (the Crown) has a legal obligation to consult with, and accommodate where appropriate, Aboriginal peoples when the Crown has knowledge, real or

constructive, of the potential existence of the Aboriginal right or title and contemplates conduct which might adversely affect it. The Crown has verified that a duty to consult about the RRGP EA process has been triggered.

On June 15, 2012, MNDM directed RRR to undertake the procedural aspects of Aboriginal consultation with respect to the RRGP. The procedural aspects that were delegated are:

- Providing information about the nature of the proposed project, which includes:
  - providing information in a format that is accessible; and
  - conducting any meetings or information sessions that may be appropriate to ensure the community has a clear understanding of the project to respond;

- Gathering information about the potential of the project to impact Aboriginal or Treaty rights (as opposed to assessing the information gathered which is the Crown's role);

- Proposing/discussing measures to mitigate concerns heard; and

- Maintaining an appropriate record of the process steps taken; what was shared, what was heard, how it was considered.

The benefit of this approach is that RRR is in the best position to describe the RRGP and discuss potential effects and environmental management options and approaches. To date, RRR believes that their direct involvement with Aboriginal groups has resulted in:

- Identification of issues to be addressed in project planning and throughout mine life;

- Better understanding of shared interests;

- Positive working relationships; and

- Long-term opportunities and benefits.

The initial CEP as presented in the draft ToR has been revised (herein) to include the specific procedural aspects as delegated by the Province. The revised CEP includes the specific steps that will be undertaken to ensure the consultation requirements are fulfilled, specific to the scope as determined by the Crown. Through regular meetings and correspondence, RRR will align consultation efforts to the Federal Aboriginal consultation work plan as it is developed.

3.2 Aboriginal Groups Involved in the RRGP

Table AppE-1 provides a list of First Nation and Métis communities with which RRGP has been asked by the Crown to involve in the RRGP and associated Provincial and Federal EA process.

Table AppE-1: First Nations and Métis Groups to Consult or Notify

Approach	Aboriginal Group
Aboriginal Groups to Consult	Big Grassy River First Nation
	Big Island First Nation
	Métis – Rainy River Lake of the Woods RCC Region #1
	Naicatchewenin First Nation
	Naotkamegwanning (Whitefish Bay) First Nation
	Onigaming First Nation
	Rainy River First Nations
	Buffalo Point First Nation
Aboriginal Groups to Notify	Anishinabe of Wauzhushk Onigum First Nation (Rat Portage)
	Couchiching First Nation
	Lac La Croix First Nation
	Mitaanjigamiing (Stanjikoming) First Nation
	Nigigoonsiminikaaning (Nicickousemenecaning) First Nation
	Northwest Angle #33 First Nation
	Northwest Angle #37 First Nation
	Seine River First Nation
First Nation Tribal Organizations*	Fort Frances Chiefs Secretariat
	Pwi-Di-Goo-Zing Ne-Yaa-Zhing Advisory Services

*It is recognized by RRR that consultation or notification will occur with individual communities. RRR will continue to involve and inform these organizations as had been agreed to by RRR and the Tribal organizations prior to direction provided by the Crown.

3.3 Aboriginal Treaty Rights Related to RRGP

All of the First Nations identified as potentially being affected by the Project are signatories to the 1873 Treaty 3. In 1875, there was a unique adhesion to Treaty 3 which also recognized the "half-breeds of Rainy River and Lake" who wanted to be included in the Treaty. In modern terminology, "half-breed" has been replaced with the word Métis which expresses the idea of a mixture of blood. Negotiations for Treaty #3 were initiated in 1869 and concluded in 1873 with a written document.

Treaty #3 rights included:

- Fishing and hunting throughout the tract;

- Supplies to continue agricultural practices;
- Harvesting rice and other plants; and
- Entitlement to education, annual financial disbursements, clothing, lands and title to these granted lands.

Specific Treaty rights and their interpretation, such as ownership of mineral rights, remain in dispute between the Crown and Treaty #3 signatories.

The potential for the proposed RRGP to affect Aboriginal and Treaty rights has been identified by the MOE through their communications with the communities. The MOE has listed the potential of the Project to affect water quality and wildlife populations as a Treaty right concern. If animal and fish populations are affected by water quality, the ability to hunt, trap and fish may be compromised. Mine activities may affect wildlife habitat and these may lead to impacts to Treaty rights to hunt, fish, and trap, as well as current use for traditional purposes such as plant gathering. Some communities held or hold commercial fishing licenses in areas adjacent to the Project and these may be affected by development and operation of the mine.

The degree to which Aboriginal people continue traditional practices as part of their culture and economy within the RRGP area is considered low based on current land uses and information sharing to date. However, on a regional basis cultural practices remain strong. The area has been settled for many years and owned in fee simple. Agricultural and timber harvest have been the primary uses for the land and these activities and private land ownership may have curtailed Aboriginal practices. Discussions with First Nation community members to date indicate that the area is not heavily used and that the primary activity in the past few years is cutting wood for pulp.

RRR has initiated discussions and traditional land use studies with First Nations to identify historic and current land uses, and potential impacts to recent or current traditional practices. RRR has requested information from First Nations and Métis on potential impacts, as well as current collection and consumption information on country foods and products from hunting, fishing and trapping. To date, community and band discussions have revealed little traditional use of the area and low reliance on hunting fishing and trapping within the Project area as a significant part of household consumption or economic reliance.

Due to the level of impact expected from the Project, cultural resources, if present, may be destroyed. RRR has requested information on any cultural concerns within the area including ceremonial and or spiritual uses of the area and information about any archaeological or historic structures that may be affected.

4.0 STAKEHOLDER PARTICIPANTS

The focus of consultation is usually to share information with, and gather input from, members of the public who may have an interest in a proposed project. In the context of the Provincial and Federal EA process, the intent of consultation is usually to ensure that those who must make decisions during and after the EA process are well informed.

In most cases, a member of the public or a group, who may participate in an EA process, is an interested party. In relation to the Federal EA, the *Canadian Environmental Assessment Act, 2012* defines an interested party as a person directly affected by the carrying out of the designated project, or if the person has relevant information or expertise as determined by the responsible authority or review panel.

Until the need for a Federal EA has been established, and in the context of the RRGP, an interested party may be any person or group of people with an interest to protect, a stake in an issue, or knowledge to contribute. Table AppE-2 provides a list of the stakeholders or interested parties in the RRGP that were identified during the early consultation activities. Stakeholders include:

- Adjacent landowners and land / resource users;
- Government (Municipal, Provincial and Federal);
- Community-based organizations; and
- Environmental non-government organizations.

Interested stakeholders were identified using the following criteria:

- Proximity to the RRGP; if the stakeholders are resident in and/or have jurisdiction over the area in which the project is proposed or has the potential to affect;
- Past or current interest in similar projects or developments in the region; if the stakeholders have been involved in consultation processes in current or past projects in the region that are anticipated to have a similar interest in the RRGP; or
- A stake in potential biophysical and socio-economic environmental effects of the RRGP.

Table AppE-2: RRGP Stakeholder Organizations

Stakeholder Category	Stakeholder Name	
Business and Community Interests (including land / resource users)	Ainsworth Lumber	Northwest Catholic District School Board
	Borderland Snowmobile Club	Ontario Federation of Anglers and Hunters
	Camp Narrows Lodge	Rainy Lake Conservancy
	Clearwater Lodge	Rainy River Cattleman's Association
	Confederation College	Rainy River District School Board
	Fort Frances Chamber of Commerce	Rainy River District Social Services Administration Board
	Fort Frances Sportsman's Club	Rainy River District Stewardship
	Gateway North Outfitters	Rainy River Future Development Corporation
	Riverside Health Care Facilities	Rainy River Outfitters
	Mining Watch Canada	Rainy River Trapping Council
	Natural Resources Advisory Committee	Rainy River Field Naturalists
	Northwatch	Resolute Forest Products
	Other local small business owners	
Municipal Government	Township of Alberton	Township of Morley
	Township of Chapple	Town of Emo
	Township of Dawson	Town of Fort Frances
	Township of LaVallee	Town of Rainy River
Provincial (Ontario) Government	Ministry of Aboriginal Affairs	Ministry of Natural Resources
	Ministry of Agriculture, Food and Rural Affairs	Ministry of Northern Development and Mines
	Ministry of Economic Development and Trade	Ministry of the Environment
	Ministry of Energy	Ministry of Tourism, Culture and Sport
	Ministry of Health and Long-Term Care	Ministry of Transportation
	Ministry of Infrastructure	Hydro One Networks
	Ministry of Labour	Ontario Provincial Police
	Ministry of Municipal Affairs and Housing	Provincial Parliament representatives
Federal Government	Aboriginal Affairs and Northern Development Canada	International Joint Commission (Canada - United States)
	Canadian Environmental Assessment Agency	Major Projects Management Office
	Environment Canada	Natural Resources Canada
	Fisheries and Oceans Canada	Transport Canada
	Health Canada	Federal Parliament representative

* Stakeholder list current to September 1, 2012

The number of stakeholders and individuals involved in the Project is expected to be dynamic. Interests and concerns may be addressed and a stakeholder group may choose to drop out of a process. Conversely, interests or concerns may arise or individuals move and new stakeholders

may enter the process at any time. RRR will request at public meetings and through their website if there are other individuals or stakeholder groups that should be involved or aware of the RRGP. In this way, new groups with a stake in the project may be identified and engaged. To reflect and manage this dynamism, a record of stakeholders and individuals involved in the project is maintained and updated regularly.

5.0 CONSULTATION MILESTONES IN THE EA PROCESS

5.1 Background

There are two main milestones when stakeholders (including government) and Aboriginal groups will be involved in the Provincial and Federal EA process. The first is in the preparation and review of the ToR (for the Provincial EA) and Environmental Impact Statement (EIS) Guidelines (for the Federal EA); and the second is in the preparation and review of the EA documents (draft and final).

Consultation with stakeholders and Aboriginal groups during the EA is described below and includes a description of:

- Purpose and objectives of consultation;
- Consultation activities; and
- Notification requirements (for Provincial EA only as Federal notices are the responsibility of CEA Agency).

This section only describes Proponent-led consultation activities.

5.2 Consultation on the EA

5.2.1 Consultation Purpose

The purpose of consultation during preparation and approval of the EA is to engage a wide range of stakeholders and Aboriginal groups through various methods to gather feedback on the proposed undertaking (the RRGP) and the preliminary EA findings. Submission of a draft EA for stakeholder and Aboriginal group review is preferred where time allows, in order to receive feedback and determine if there are any remaining issues or concerns that need to be addressed and should be resolved before the final submission of the EA to the government agencies for review. RRR propose to submit a draft EA for comment to stakeholders (including government agencies and the public) and Aboriginal groups.

5.2.2 Consultation Objectives

Consultation objectives for Stakeholders and Aboriginal Groups:

- Review the EA findings with identified stakeholders and Aboriginal groups to show how issues and concerns were addressed;
- Document and respond to any issues or concerns;
- Identify and solicit from stakeholders appropriate strategies to manage, avoid or eliminate environmental effects; and
- Meet all regulatory requirements for public and stakeholder consultation.

Objectives Specific to Aboriginal Groups;

- Ensure Aboriginal groups have had an adequate opportunity to understand the project and identify potential impacts to Aboriginal or Treaty rights and interests;
- Demonstrate how the project (or components of the project) has been modified to reduce or avoid those impacts;
- Provide an explanation of why the project (or components of the project) cannot be modified to reduce or avoid the impacts; and
- Provide an explanation of how the communities have been either accommodated or compensated for remaining impacts that cannot be avoided.

5.2.3 Activities

The following activities are presented in approximate chronological order and will occur over the Winter of 2012 / 2013.

- Post a Notice of Commencement of the EA in local newspapers, on the RRR website and distribute to the RRGP mailing list;
- Post Notice of a Public Information Event(s) in local newspapers, on the RRR website and distribute to the project mailing list. The notice will invite Aboriginal groups, stakeholders and local citizens to be updated on the RRGP, learn about the EA process, become informed about EA findings and to provide feedback about appropriate management of environmental effects;

- Distribute notices of community information events in Aboriginal communities (using methods preferred by the specific community);

- Hold regular meetings with the Crown (CEA Agency, MOE and MNDM) to discuss the adequacy of and coordinate participation in consultation activities.

- Participate in on-going discussions with Aboriginal, government and other stakeholder organizations (as requested) to assist in the preparation of and the EA including meetings with established Traditional Knowledge or Environmental Advisory Committees. Records of these discussions (meeting notes) will provide an opportunity for an identified representative of the stakeholder organization, individual or Aboriginal group to review and verify the accuracy of the meeting notes before they are finalized. When the meeting notes are a record of discussions with an Aboriginal group and in particular if they relate to concerns, options and potential environmental management measures, they will also be carbon copied to CEA Agency, MOE and MNDM representatives;

- Prepare and widely distribute a RRR Community Newsletters to highlight information about the EA findings including summaries of baseline studies and inform newsletter recipients about upcoming public meetings and encourage feedback through the RRR website or through direct contact with RRR staff at the Emo office;

- Distribute copies of a draft and final EA including summaries of baseline studies for 30-day reviews, including through making hard copies available at strategic public locations such as public libraries in local communities, and the RRR and government offices. The EA will also be available for downloading from the RRR Internet website;

- Host Public Information Events or open houses in the Township of Chapple or Towns of Emo, Fort Frances or Rainy River, and provide opportunities for the identified Aboriginal communities to receive an update on the RRGP, become informed about EA findings, and provide feedback about appropriate management of environmental effects; and

- Update the RRR website to include information about the EA findings and provide a link for direct feedback.

5.2.4 Notification Requirements

RRR will advertise in local newspapers and post / distribute the following notices (in appropriate locations as outlined above):

- Notice of Commencement of EA;

- Notices of Public Information Events / Open House;
- Notice of Submission of EA;
- Notice of Completion of EA Review; and
- Notice of Minister's Decision.

As a minimum, advertisements and posting are proposed for the same locations as used for the draft and proposed ToR, unless it is determined that the locations are not appropriate. There may additional notifications from the government agencies.

6.0 REFERENCES

Canadian Environmental Assessment Agency, July 2012. Guide to Preparing a Description of a Designated Project under the *Canadian EA Act*, 2012.

Ministry of Environment. 2009a. Code of Practice: Preparing and Reviewing EAs in Ontario.

Ministry of Environment. 2009b. Preparing and Reviewing Terms of Reference for EAs in Ontario.

APPENDIX F

RRGP EA Consultation and Engagement Plan – Aboriginal Groups

1.0 INTRODUCTION

Rainy River Resources Ltd. (RRR) is pursuing Provincial and Federal environmental approvals for the development of a gold mine, the Rainy River Gold Project (RRGP).

RRR, along with the Federal and Provincial government agencies recognize that there are opportunities to collaborate on the planning and implementation of Aboriginal engagement for their respective environmental assessment (EA) process. RRR intends to prepare one body of knowledge about the current baseline environment and the potential effects of the RRGP on various aspects of the environment and populate the EA required. Combining and coordinating consultation efforts on the EA process where practical, ensures that Aboriginal groups are engaged in dialogue about the current environment, potential effects, and management measures at the same or similar time for all the EA process rather than in multiple meetings on the same subject for a different EA process. This document provides a plan for these coordinated consultation efforts.

1.1 Provincial EA and Consultation Plan Requirements

In consultation with the local regulatory agencies, RRR has entered into a Voluntary Agreement with the Ontario Ministry of the Environment (MOE) to conduct an EA for the Project in accordance with the requirements of the Ontario *Environmental Assessment Act*. The first step in preparing the EA is preparation and approval of a Terms of Reference (ToR) to guide what is to be assessed in the EA and an associated Aboriginal Consultation and Engagement Plan (ACEP) that defines how government agencies, the general public, other stakeholders and Aboriginal groups will be engaged. A draft Consultation and Engagement Plan (CEP) was issued with the draft ToR that underwent a 30-day public comment period (May to June 2012). The draft CEP was revised to incorporate input received from the community, Aboriginal people and government agencies during the draft ToR consultation. It was further revised to reflect comments received on the proposed ToR whereby the MOE requested that two separate CEPs be prepared: one for stakeholders (CEP) and the other for Aboriginal Groups (ACEP).

The RRR approach to consultation on the EA required as part of the Provincial EA process will follow the guidelines outlined in the MOE Co*de of Practice: Consultation in Ontario's EA Process* (MOE 2009a). This document dictates that a proponent's Consultation Plan must:

- *Indicate how potentially interested and affected persons, including Aboriginal peoples, will be identified, notified and consulted;*
- *Indicate how government agencies will be identified, notified and consulted;*
- *Identify the points in the EA process when interested persons will be consulted;*
- *Identify the methods that will be used to consult;*

- *Identify the decisions that interested persons can provide input to and what role they can play when the proponent makes choices; and*

- *Acknowledge and attempt to address concerns raised during the EA process.*

According to the *Code of Practice: Preparing and Reviewing Terms of Reference for EAs in Ontario* (MOE 2009b) the Consultation Plan should outline:

- *General consultation methods proposed;*

- *How input from interested persons will be obtained;*

- *A description of key decision-making milestones during the preparation of the EA when consultation will occur; and*

- *An issues resolution strategy.*

1.2 Federal EA and Consultation Plan Requirements

The Canadian Environmental Assessment Agency (CEA Agency) has recently released guidance for the ACEP required as part of a Project Description for a designated project (CEA Agency 2012). A Project Description prepared by RRR was used by the CEA Agency to conduct a screening of a designated project and determine whether an EA was required.

The guide states that the Project Description must include:

> *a consultation and information gathering plan that outlines the ongoing and proposed Aboriginal engagement or consultation activities, the general schedule for these activities and the type of information to be collected (or alternatively, an indication of why such engagement or consultation is not required). Include background information on Aboriginal groups' potential or established Aboriginal or treaty rights. Provide information on the impact area of the designated project and how it overlaps with uses by Aboriginal groups that have potential or established Aboriginal or treaty rights (CEA Agency 2012).*

The ACEP presented herein is intended to meet both the Federal and Provincial consultation plan requirements related to the EA (preparation, submission and approval).

1.3 Responsibility for ACEP Implementation

This ACEP is intended to guide the activities and responsibilities of RRR only. While government agencies have a role in supporting and guiding RRR in consultation planning and activities, government-led consultation activities (such as posting notices on government websites) are not be outlined herein.

The responsibility of RRR for consultation is understood to be:

- To design and implement ACEP as part of the overall EA process;
- Implementing the procedural aspects of consulting or notifying interested persons including Aboriginal peoples throughout the process, including those likely to be directly affected and any others that may be potentially affected, as well as government agencies having a mandate or responsibility for particular aspects of the RRGP approvals;
- Initiating meaningful consultation with interested persons to identify information needs and concerns early in the planning process;
- Providing appropriate time for interested persons to review and comment on EA-related materials and documentation;
- Documenting how input received from participants was (or was not) taken into account;
- Addressing and where possible, resolving concerns raised through the consultation process; and
- Keeping participants informed of decisions made and how the proponent addressed identified concerns or reasons that concerns were not addressed.

2.0 CONSULTATION APPROACH AND TOOLS

2.1 Rainy River Resources Consultation Approach

One of the objectives of the RRR Health, Safety, Environment and Sustainability policy is to demonstrate its commitment to fostering sustainable development in the communities in which it operates. To meet this objective RRR implements activities that helps them to identify and consider public and stakeholder views, customs and cultures and take into account these aspects throughout the life cycle of the Company's operations.

In recognition of the value of developing positive, mutually beneficial relationships with stakeholders, and First Nations and Métis community members, consultation with local communities and stakeholders was initiated in 2010 well before commencing the environmental approvals processes for the proposed RRGP. These early efforts have resulted in a better understanding of the exploration and mining development process on the part of the local citizens as well as positive working relationships in the region. Early consultation has also resulted in negotiated agreements with First Nations that set in place the expectations and processes by which consultation and participation in the preparation of the EA and throughout the life of the mine.

The objectives during this early consultation period were to:

- Raise awareness about the RRGP and mining sector with citizens (non-Aboriginal and Aboriginal) of the region;
- Promote an atmosphere of mutual respect and cultural awareness;
- Identify and establish effective working relationships and build trust with the leadership of each potentially affected Aboriginal community, with government agencies and other key stakeholder organizations;
- Develop agreements with Aboriginal communities for participation in the environmental approvals processes, as well as for involvement in and mutual benefit from the project;
- Discuss preliminary project plans and gather feedback from key stakeholders, governments and Aboriginal communities about their issues and interests; and
- Prepare an ACEP that is responsive to Aboriginal group needs and that will meet regulatory requirements.

During this early stage of the RRGP, consultation activities consisted of:

- Hosting informal meetings, exploration site tours and presentations for Aboriginal communities;
- Initiating meetings with the Aboriginal leaderships to establish a path forward through negotiated agreements;
- Establishing a local Aboriginal liaison position to enhance community participation in the project; and

- Discussions about approaches to Aboriginal Traditional Knowledge and Traditional Land Use Studies with Aboriginal groups to work toward building a relationship to proceed with studies.

In 2012 and 2013, consultation efforts have and will continue to focus mainly on supporting the EA process as RRR moves toward environmental approvals for construction, operation and closure of the RRGP.

2.2 Issues Tracking

RRR is maintaining a record of its consultation activities for the RRGP. The system being used will track records of consultation, meetings and discussions that occur between RRR and an Aboriginal group and will be used to generate reports that include:

- Who was consulted;
- When, where and by what method the activity took place;
- What issues / interests were shared and how are they were addressed; and
- Follow-up actions or commitments arising from consultation activities.

Correspondence regarding the RRGP obtained by the MOE and other government agencies will not necessarily be included. The database is only a record of RRR-led consultation activities and should therefore not be considered a comprehensive record of all consultation and engagement related to the RRGP.

2.3 Issue Resolution

RRR recognizes the benefit of resolving issues early and to the mutual satisfaction of those involved. To this end, Aboriginal groups bringing forward an issue of concern regarding the RRGP will receive a response containing information to help clarify and/or assist in issue resolution.

Comments from Aboriginal groups (written or verbal) as well as responses from RRR will be documented, and where applicable will be considered in the EA. Depending on the magnitude and nature of any concerns, RRR will make an effort to address and resolve the concern directly with the Aboriginal group.

2.4 Participant Support

RRR recognizes that some Aboriginal communities may require financial support to participate in a meaningful and timely manner in the EA process. RRR has negotiated or is in the process of negotiating various agreements with local First Nations and Métis groups to facilitate community involvement throughout the life of the project including participation in the EA process. RRR worked with the Fort Frances Chiefs Secretariat (FFCS) to fund an Aboriginal Liaison for the FFCS member First Nations. RRR has also established and is supporting an Advisory Committee for the FFCS member First Nations signatory to the Participation Agreement. If requested, RRR will assist in providing information to the Aboriginal groups involved about Federal (if applicable) or Provincial participant funding programs.

In addition, RRR will be supporting community involvement in the preparation of Aboriginal Traditional Knowledge and Land Use (TK / TLU) studies that will be important for the EA, build capacity in Aboriginal communities, and potentially expand documented traditional knowledge / land use information. RRR is working with the Métis Nation of Ontario to understand how the Company can avoid Project impacts to the Métis way of life. Rainy River Resources expects to address capacity for a TK / TLU study through Memorandum of Understanding discussions.

RRR has, and will continue to bear much of the costs associated with providing information about the RRGP and the EA to Aboriginal groups in a format that is accessible; as well as for conducting any meetings or information sessions that build an understanding of the RRGP so that Aboriginal groups may meaningfully participate in the RRGP and the EA.

2.5 ACEP Evaluation

RRR will evaluate consultation activities and the consultation process to ensure successful implementation. Evaluation of the consultation activities will be solicited from participants at each consultation event and will be used to improve and refine on-going consultation activities as appropriate. Evaluations may be conducted using a variety of methods including targeted participant questionnaires, recording any verbal feedback from participants and through the RRR website.

Evaluation criteria may be results-based and/or process-based and will be developed using best practices. Results-based criteria measure whether or not a defined objective or goal has been met. Process-based criteria measure how the engagement process was implemented. The types of evaluation criteria used will differ depending on the consultation activity.

3.0 ABORIGINAL GROUP PARTICIPANTS

3.1 Delegation of Procedural Aspects of Consultation

The Federal and Provincial Governments (the Crown) has a legal obligation to consult with, and accommodate where appropriate, Aboriginal peoples when the Crown has knowledge, real or constructive, of the potential existence of the Aboriginal right or title and contemplates conduct which might adversely affect it. The Crown has verified that a duty to consult about the RRGP EA process has been triggered.

On June 15, 2012, the Ontario Ministry of Northern Development and Mines (MNDM) directed RRR to undertake the procedural aspects of Aboriginal consultation with respect to the RRGP. The procedural aspects that were delegated are:

- Providing information about the nature of the proposed project, which includes:
  - providing information in a format that is accessible; and
  - conducting any meetings or information sessions that may be appropriate to ensure the community has a clear understanding of the project to respond;

- Gathering information about the potential of the project to impact Aboriginal or Treaty rights (as opposed to assessing the information gathered which is the Crown's role);

- Proposing/discussing measures to mitigate concerns heard; and

- Maintaining an appropriate record of the process steps taken; what was shared, what was heard, how it was considered.

The benefit of this approach is that RRR is in the best position to describe the RRGP and discuss potential effects and environmental management options and approaches. To date, RRR believes that their direct involvement with Aboriginal groups has resulted in:

- Identification of issues to be addressed in project planning and throughout mine life;

- Better understanding of shared interests;

- Positive working relationships; and

- Long-term opportunities and benefits.

The initial CEP as presented in the draft ToR has been revised (herein) to include the specific procedural aspects as delegated by the Province. This ACEP includes the specific steps that will be undertaken to ensure the consultation requirements are fulfilled, specific to the scope as

determined by the Crown. Through regular meetings and correspondence, RRR will align consultation efforts to the Federal Aboriginal consultation work plan as it is developed.

3.2 Aboriginal Groups Involved in the RRGP

Table AppF-1 provides a list of First Nation and Métis communities with which RRGP has been asked by the Crown to involve in the RRGP and associated Provincial and Federal EA process.

Table AppF-1: First Nations and Métis Groups to Consult or Notify

Approach	Aboriginal Group
Aboriginal Groups to Consult	Big Grassy River First Nation
	Big Island First Nation
	Métis – Rainy River Lake of the Woods RCC Region #1
	Naicatchewenin First Nation
	Naotkamegwanning (Whitefish Bay) First Nation
	Onigaming First Nation
	Rainy River First Nations
	Buffalo Point First Nation
Aboriginal Groups to Notify	Anishinabe of Wauzhushk Onigum First Nation (Rat Portage)
	Couchiching First Nation
	Lac La Croix First Nation
	Mitaanjigamiing (Stanjikoming) First Nation
	Nigigoonsiminikaaning (Nicickousemenecaning) First Nation
	Northwest Angle #33 First Nation
	Northwest Angle #37 First Nation
	Seine River First Nation
First Nation Tribal Organizations*	Fort Frances Chiefs Secretariat
	Pwi-Di-Goo-Zing Ne-Yaa-Zhing Advisory Services

*It is recognized by RRR that consultation or notification will occur with individual communities. RRR will continue to involve and inform these organizations as had been agreed to by RRR and the Tribal organizations prior to direction provided by the Crown.

3.3 Aboriginal Treaty Rights Related to RRGP

All of the First Nations identified as potentially being affected by the Project are signatories to the 1873 Treaty 3. In 1875, there was a unique adhesion to Treaty 3 which also recognized the "half-breeds of Rainy River and Lake" who wanted to be included in the Treaty. In modern terminology, "half-breed" has been replaced with the word Métis which expresses the idea of a mixture of blood. Negotiations for Treaty #3 were initiated in 1869 and concluded in 1873 with a written document.

Treaty #3 rights included:

- Fishing and hunting throughout the tract;
- Supplies to continue agricultural practices;
- Harvesting rice and other plants; and
- Entitlement to education, annual financial disbursements, clothing, lands and title to these granted lands.

Specific Treaty rights and their interpretation, such as ownership of mineral rights, remain in dispute between the Crown and Treaty #3 signatories.

The potential for the proposed RRGP to affect Aboriginal and Treaty rights has been identified by the MOE through their communications with the communities. The MOE has listed the potential of the Project to affect water quality and wildlife populations as a Treaty right concern. If animal and fish populations are affected by water quality, the ability to hunt, trap and fish may be compromised. Mine activities may affect wildlife habitat and these may lead to impacts to Treaty rights to hunt, fish, and trap, as well as current use for traditional purposes such as plant gathering. Some communities held or hold commercial fishing licenses in areas adjacent to the Project and these may be affected by development and operation of the mine.

The degree to which Aboriginal people continue traditional practices as part of their culture and economy within the RRGP area is considered low based on current land uses and information sharing to date. However, on a regional basis cultural practices remain strong. The area has been settled for many years and owned in fee simple. Agricultural and timber harvest have been the primary uses for the land and these activities and private land ownership may have curtailed Aboriginal practices. Discussions with First Nation community members to date indicate that the area is not heavily used and that the primary activity in the past few years is cutting wood for pulp.

RRR has initiated discussions and traditional land use studies with First Nations to identify historic and current land uses, and potential impacts to recent or current traditional practices. RRR has requested information from First Nations and Métis on potential impacts, as well as current collection and consumption information on country foods and products from hunting, fishing and trapping. To date, community and band discussions have revealed little traditional use of the area and low reliance on hunting fishing and trapping within the Project area as a significant part of household consumption or economic reliance.

Due to the level of impact expected from the Project, cultural resources, if present, may be destroyed. RRR has requested information on any cultural concerns within the area including

ceremonial and or spiritual uses of the area and information about any archaeological or historic structures that may be affected.

4.0 CONSULTATION MILESTONES IN THE EA PROCESS

4.1 Background

There are two main milestones when Aboriginal groups will be involved in the Provincial and Federal EA process. The first is in the preparation and review of the ToR (for the Provincial process) and review of the Environmental Impact Statement (EIS) Guidelines (for the Federal process); and the second is in the preparation and review of the EA documents (draft and final).

Consultation with Aboriginal groups during the preparation of the EA is described below and includes a description of:

- Purpose and objectives of consultation;
- Consultation activities; and
- Notification requirements (for Provincial EA only as Federal notices are the responsibility of the CEA Agency).

This section only describes Proponent-led consultation activities.

4.2 Consultation on the EA

4.2.1 Consultation Purpose

The purpose of consultation during preparation of the EA is to engage a wide range of stakeholders and Aboriginal groups through various methods to gather feedback on the proposed undertaking (the RRGP) and the preliminary EA findings. Submission of a draft EA for stakeholder and Aboriginal group review is preferred where time allows, in order to receive feedback and determine if there are any remaining issues or concerns that need to be addressed and should be resolved before the final submission of the EA to the government agencies for review. RRR propose to submit a draft EA for comment to stakeholders (including government agencies and the public) and Aboriginal groups.

4.2.2 Consultation Objectives

Consultation objectives for Aboriginal Groups:

- Review the EA findings with identified Aboriginal groups to show how issues and concerns were addressed;

- Document and respond to any issues or concerns;
- Identify and solicit from Aboriginal groups appropriate strategies to manage, avoid or eliminate environmental effects;
- Meet all regulatory requirements for Aboriginal engagement.

- Ensure Aboriginal groups have had an adequate opportunity to understand the project and identify potential impacts to Aboriginal or Treaty rights and interests;
- Demonstrate how the project (or components of the project) has been modified to reduce or avoid those impacts;
- Provide an explanation of why the project (or components of the project) cannot be modified to reduce or avoid the impacts; and
- Provide an explanation of how the communities have been either accommodated or compensated for remaining impacts that cannot be avoided.

4.2.3 Activities

The following activities are presented in approximate chronological order and will occur starting in early 2013 if the ToR is approved:.

- Post a Notice of Commencement of the EA in local newspapers, on the RRR website and distribute to the RRGP mailing list;
- Post Notice of a Public Information Event(s) in local newspapers, on the RRR website and distribute to the project mailing list. The notice will invite Aboriginal groups, stakeholders and local citizens to be updated on the RRGP, learn about the EA process, become informed about EA findings and to provide feedback about appropriate management of environmental effects;
- Distribute notices of community information events in Aboriginal communities (using methods preferred by the specific community);
- Hold regular meetings with the Crown (CEA Agency, MOE and MNDM) to discuss the adequacy of and coordinate Aboriginal participation in consultation activities.

- Participate in on-going discussions with Aboriginal groups to assist in the preparation of and the EA. Records of these discussions (meeting notes) will provide an opportunity for an identified representative of the Aboriginal group to review and verify the accuracy of the meeting notes before they are finalized. When the meeting notes are a record of discussions with an Aboriginal group and in particular if they relate to concerns, options and potential environmental management measures, they will also be carbon copied to CEA Agency, MOE and MNDM representatives;

- Prepare and widely distribute to Aboriginal groups a RRR Community Newsletters to highlight information about the EA findings including summaries of baseline studies and inform newsletter recipients about upcoming public meetings and encourage feedback through the RRR website or through direct contact with RRR staff at the Emo office;

- Distribute copies of a draft and final EA including summaries of baseline studies for 30-day reviews, including through making hard copies available at strategic public locations such as public libraries in local communities (as was done for the proposed ToR), and the RRR and government offices. The EA will also be available for downloading from the RRR Internet website;

- Offer to host a Public Information Event or open houses in each of the Aboriginal communities that RRR is to consult to provide opportunities for the identified Aboriginal communities to receive an update on the RRGP, become informed about EA findings, and provide feedback about appropriate management of environmental effects; and

- Update the RRR website to include information about the EA findings and provide an e-mail link for direct feedback.

4.2.4 Notification Requirements

RRR will advertise in local newspapers and post / distribute the following notices (in appropriate locations as outlined above):

- Notice of Commencement of EA;

- Notices of Public Information Events / Open House;

- Notice of Submission of EA;

- Notice of Completion of EA Review; and

- Notice of Minister's Decision.

As a minimum, advertisements and posting are proposed for the same locations as used for the proposed ToR, unless it is determined that the locations are not appropriate, or it is otherwise not possible / practical. There may additional notifications from the government agencies.

5.0 REFERENCES

Canadian Environmental Assessment Agency, July 2012. Guide to Preparing a Description of a Designated Project under the *Canadian EA Act*, 2012.

Ministry of Environment. 2009a. Code of Practice: Preparing and Reviewing EAs in Ontario.

Ministry of Environment. 2009b. Preparing and Reviewing Terms of Reference for EAs in Ontario.