STILLWATER CANADA INC.

SECTION 1.0

BACKGROUND AND INTRODUCTION

1.0 BACKGROUND AND INTRODUCTION

Stillwater Canada Inc. (SCI) proposes to develop a platinum group metals (PGMs), copper (Cu) and possibly iron (Fe) open-pit mine and milling operation near Marathon, Ontario (the "Project"). The following provides an overview of the basic principles that guided the preparation of this report (and associated supporting documentation) and a synopsis of key aspects of the proposed development.

1.1 Guiding Principles

1.1.1 Environmental Assessment as a Planning Tool

Environmental assessment is a planning tool used to ensure that projects are considered in a careful and precautionary manner in order to avoid or mitigate the possible adverse effects of development on the environment and to encourage decision makers to take actions that promote sustainable development and thereby achieve or maintain a healthy environment, healthy communities and a healthy economy.

The EA of this Project has, in a manner consistent with those purposes:

- considered and evaluated reasonable alternatives;
- documented consultation activities;
- identified the Project's possible environmental effects, including natural, social, cultural and economic;
- proposed measures to modify activities with the potential for significant adverse environmental effects to reduce or mitigate adverse effects to an acceptable (non-significant) level; and
- predicted whether there will be likely significant adverse environmental effects after mitigation measures are implemented.

1.1.1.1 Traditional and Local Knowledge

Traditional and local knowledge refers to the broad base of knowledge held by individuals and collectively by communities that may be based on spiritual teachings, personal observation and experience or passed on from one generation to another through oral and/or written traditions.

Traditional knowledge, which is rooted in the traditional life of Aboriginal people, has an important contribution to make to an environmental assessment. Certain issues relevant to the review process are firmly grounded in traditional knowledge, such as harvesting, use of lands and resources for traditional purposes, cultural well-being, heritage resources, and others. Although the basis for traditional and local knowledge and science-based knowledge can differ, they may on their own or together contribute to the understanding of these issues.

SCI has undertaken significant efforts and invested considerable resources in its attempts to acquire such information. SCI has incorporated into the work leading to this EIS the traditional and local knowledge to which it has been granted access.

1.1.2 Sustainable Development

As outlined in the Brundtland Report (1987), sustainable development can be defined as development that seeks to meet the needs of present generations without compromising the ability of future generations to meet their own needs.

The Project, including its alternative means, has taken into account the relations and interactions among the various components of the ecosystem. SCI has included in the EIS consideration of the extent to which the Project contributes to sustainable development, specifically:

- the extent to which biological diversity may be enhanced or affected by the Project;
- the capacity of renewable resources that are likely to be significantly affected by the Project to meet the needs of present and future generations; and
- the extent to which the Project may enhance the long-term environmental, social, and economic viability of the community.

1.1.3 Precautionary Approach

One of the purposes of EA is to ensure that projects are considered in a careful and precautionary manner before authorities take a course of action in connection with them, in order to avoid or mitigate significant adverse environmental effects. The precautionary principle informs the decision-maker to take a cautionary approach, or to err on the side of caution, especially where there is a large degree of uncertainty or high risk.

The Government of Canada document *A Framework for the Application of Precaution in Science-based Decision Making About Risk* (2003) sets out guiding principles for the application of precaution to science-based decision making in areas of federal regulatory activity for the protection of health and safety and the environment and the conservation of natural resources. The proposed Stillwater Project has been designed and is assessed in this EIS and the technical work supporting it in a careful and precautionary manner with a view to ensuring that it does not cause significant and irreversible damage to the environment and/or the human health of current and future generations.

1.1.4 Study Strategy, Methodology and Level of Detail

Consistent with the intent of the EIS Guidelines, SCI has endeavoured to identify the material environmental, social, economic, cultural and human health effects that may arise from the Project, the mitigation measures that will be applied, and the significance of any residual effects.

The EIS Guidelines provide a framework for preparing the EIS. The level of detail presented by SCI in the main EIS report is consistent with this guidance and the conceptual nature of the mine design. More detailed information, which in many cases provides much of the information and analyses necessary for obtaining permits and authorizations from federal and provincial authorities is provided in the various supporting documentation that accompanies the EIS.

1.2 The Project Proponent

1.2.1 Contact Information

Stillwater Canada Inc., an indirect subsidiary of the Stillwater Mining Corporation (SWC), is the proponent of the Project. The address for the proponent is:

(Registered Office Address)
STILLWATER CANADA INC.
90 Peninsula Road
P.O. Box 1508
Marathon ON P0T 2E0
Canada

(Project Office Address)
STILLWATER CANADA INC.
357, 1100 Memorial Ave.
Thunder Bay, ON P7B 4A3
Ph: 807-285-4272
Fax: 807 285-4276
Email: comments@marathonpgmproject.com
Internet: http://www.marathonpgmproject.com

The Chief Executive Officer of Stillwater Canada Inc. is Mr. Francis R. McAllister.

For the purposes of the environmental assessment process the primary contacts at SCI are:

Mr. Stan Emms
Vice President and General Manager
Stillwater Canada Inc.
semms@stillwatercandainc.com.

Ms. Tabatha LeBlanc
Environmental Manager
Stillwater Canada Inc.
tleblanc@stillwatercanadainc.com

1.2.2 Development, Operation and Management of the Project

1.2.2.1 Responsible Legal Entity

The name of the legal entity that will develop, operate and manage the Project is Stillwater Canada Inc.

1.2.2.2 Corporate and Management Structure of Stillwater Canada Inc.

On November 30, 2010 SWC completed the acquisition of Marathon PGM Corporation's platinum group assets including the properties and claims near Marathon, Ontario. In January 2011, those assets were consolidated under Stillwater Canada Inc., an indirect subsidiary of SWC. SCI's registered office is in Marathon, Ontario, with its current project office located in Thunder Bay, Ontario. Seventy-five percent of SCI is owned by Stillwater Canada Holding Inc. As noted below, the balance of SCI is owned by MC Mining Ltd.

Stillwater Canada Holding Inc. is a wholly owned subsidiary of Stillwater Mining Company (SWC). SWC was incorporated in 1992 and is headquartered in Billings, Montana USA. SWC is the largest primary producer of platinum group metals (PGM's) in North America. SWC conducts mining and concentrating operations in the USA at the Stillwater Mine and East Boulder Mine in Montana. SWC also operates a precious metal smelter, base metals refinery, catalyst recycling plant and an analytical laboratory in Montana. More information on Stillwater Mining Company is available at www.stillwatermining.com.

On April 10, 2012 MC Mining Ltd. (MC) purchased a 25% interest in SCI. MC is an indirect subsidiary of Mitsubishi Corporation.

1.2.2.3 Management Structure of Stillwater Canada Inc.

The business and affairs of the Company are supervised by the Board of Directors of SCI. The Board consists of 3 appointees by SWC, 1 appointee by MC and a Secretary appointed by the BOD. The Chairman of the Board is nominated by SWC.

Reporting to the board of SCI is the President and Chief Executive Officer. Reporting to the CEO is the Executive Vice President, Vice President and General Manager of the Marathon Project and the Vice President of Exploration. Under the direction of the Vice President and General Manager, the initial Project Team is comprised of a Human Resources and Safety Manager, Environmental Manager, Construction Manager, Mill Manager and Administration Superintendent.

The SCI management team and its board of directors are committed to responsible corporate governance practices. The Officers are accountable for directly overseeing the exploration, permitting, design, construction, operation, closure and decommissioning of the Marathon Project.

The management and monitoring of environmental liabilities and occupational hazards during all phases of the Project life cycle will comply with all relevant federal and provincial legislation, regulations and project approvals as well as SCI policies and management programs applicable to corporate environmental and safety management processes.

The Company will have in place appropriate insurance and liability coverage relevant to the Project and as required by the Ontario Mining Act; including, but not limited to, the following:

- General Liability;
- Commercial Automotive;
- Worker's Compensation & Employers Liability;
- Employee Practice Liability;
- General Property;
- Director & Officer;
- Financial Assurance as required; and
- Others as required.

1.2.2.4 Health and Safety

SCI will develop and implement an effective safety and health management system with the objective of eliminating hazards or exposures which may result in personal injury or illness. SCI will support and sustain these systems by providing progressive safety leadership built on performance standards and personal accountability modeled by leadership focus on safety. The system will be continually updated throughout the life of the Project to ensure ongoing compliance with current and future regulatory standards. The SCI leadership team is committed to open communication to foster and sustain a culture of employee engagement, involvement and ownership. The SCI management team is committed to ensuring "*Everyone Goes Home Safe, Every Day*".

Our safety and health management systems will include the following components:

- Safe Work Environment - We are committed to developing and sustaining a safe work environment which includes ongoing review workplace hazards associated with of facilities and equipment; the implementation of effective inspection and maintenance programs; and, the establishment of controls on health and hygiene and ergonomics.
- Safe Work Practices and Procedures - We are committed to providing comprehensive orientation and training to our employees; regular analysis of job tasks; and, observation and compliance to standards, rules and regulations. SCI will also respond promptly and cooperatively to any concerns identified by representatives from the Ontario Ministry of Labour.

- Information and Communication - We are committed to maintaining safety data for compliance and trend analysis; we will establish follow-up and feedback systems; and, we will ensure regular safety meetings are held which will include collaboration and safety shares.
- Management - We are committed to regular assessments of the effectiveness of occupational health and safety plan, providing effective emergency preparedness and response planning and systematic accident/incident reporting, investigation, analysis and follow-up. We will periodically update our plan as appropriate.

1.2.2.5 Environmental Management Policy and Systems

SCI has an environmental policy and is developing an Environmental Management System (EMS) consistent with the results of this EIS. The EMS will be continually updated throughout the Project life to ensure ongoing compliance with current and future regulatory standards. The SCI Environmental Policy contains the following core values:

- Conservation and protection of important environmental resources and assets through a commitment to environmental protection and, where applicable, going beyond regulatory compliance standards by establishing proactive environmental procedures, pollution prevention practices, waste minimization initiatives and biological mitigation designed to maintain site integrity;
- Implementing the spirit of “Neighbouring” with local residents, community groups and aboriginal communities near our mines and operating facilities to help improve the physical and socio-economic factors leading to a high quality of life and economic sustainability;
- Monitoring environmental performance and striving to continually improve performance by taking a proactive approach to addressing and minimizing potentially adverse environmental impacts;
- Providing a safe and environmentally-focused working atmosphere that protects employees and environmental resources while sustaining a culture of proactive environmental activism; and,
- Communicating Stillwater’s commitment to the environment with our employees, on-site contractors, customers and the public at large in order to reaffirm SCI’s dedication to environmental excellence and the responsible management of our operations.

Stillwater Canada Inc. intends to conduct its operations as a “Good Neighbor” and “Good Corporate Citizen” and is committed to the maintenance of the cultural, economic and natural environment in which we operate. This commitment was evident in the decision by SCI to being the first mineral development project in Ontario to be voluntarily assessed under the Ontario *Environmental Assessment Act.*

1.2.3 Environmental and Socio-economic Performance on Past and On-going Projects

Stillwater Mining Company, SCI’s ultimate parent company, has mines operating in sensitive environmental settings and headwater drainages in Montana that are within 3-5 miles of

wilderness boundaries and within 20 miles of Yellowstone National Park. The Stillwater Mine has operated in this environment for over 25 years and has a well-deserved reputation for environmental excellence. In 2003, Stillwater Mining Company was presented with the Hardrock Mineral Environmental Award by the U.S. Department of the Interior. The citation on the award reads as follows:

> *Presented October 1, 2003 for outstanding performance in environmental programs and environmentally responsible management of its Montana operations through a proactive sustainable development program that recognizes and serves the needs of all stakeholders including employees, shareholders, local communities, government & consumers of Platinum Group Metals – Stillwater Mining Company has proven that responsible mining can co-exist in a sensitive environmental setting.*

Stillwater was commended by Senator Max Baucus in the U.S. Senate in September 2006 for its response to the massive Derby Mountain Fire. Senator Baucus finished his commendation with the following words:

> *The Stillwater Mining Company saw a neighbour in need and without hesitation they lent a hand. I am proud to call them a neighbour, and in Montana there is no higher compliment.*

Stillwater Mining Company prides itself on being progressive in its approach to the health, safety and environmental issues and in its desire to work cooperatively to support and strengthen local communities. This commitment is evident in the "Good Neighbor Agreement" entered into between Stillwater and the Northern Plains Resource Council, the Cottonwood Resource Council and the Stillwater Protective Association in May of 2000, which gives local conservation groups and the public a chance to work with the company on processes and mine site development issues.

Some examples of SWC's environmental initiatives include:

- Best Environmental Practices - going well beyond regulatory compliance, setting high standards for its operating facilities and focused on protection of natural resources.
- Environmental Innovation - utilizing new technologies and initiatives to advance environmental and social responsiveness; including, state of the art water and waste treatment, air emission controls, visual mitigation, interim reclamation design, wildlife enhancements and social initiatives.
- Recycling Waste Streams and Spent PGM Catalytic Materials - materials are diverted from landfills or scrap metal yards to Stillwater's recycling facility to conserve natural resources and minimize waste while at the same time, providing for a cleaner environment.
- Setting the Industry Standard - with exemplary environmental management, unparalleled compliance record, innovative technologies, forward-thinking initiatives and a transparent and open approach to "neighbouring" and public relations. For current

Stillwater operations, these initiatives have been recognized by organizations representing the full spectrum of the environmental community.
- Environmental Effectiveness - monitored by a Board level committee, which reviews environmental management effectiveness and regulatory compliance.

SWC continuously strives to establish and maintain collaborative community relationships. In implementing this collaborative approach, SWC works to ensure that development plans are shared with local residents and stakeholders to provide an opportunity to address socio-economic and environmental issues in an interactive and cooperative way. SWC believes that successful and sustainable relationships are created through respectful and long term collaborative partnerships. Key elements of SWC's good neighbour approach include:

- Social Accountability - through SWC's precedent-setting agreements and working committees which allow for cooperation with the community and public participation in the oversight of our environmental compliance programs. These cooperative relationships build trust between participants through open communication and a process that enhances transparency.
- Collaborative Community Relationships - in which SWC's development plans are shared and discussed, providing the opportunity to address the socio-economic impact in a collaborative way.
- Monitoring of Local Socio-economic Conditions - to evaluate SWC's impact (positive and negative) on local communities, to assist in the equitable distribution of benefits
- Charitable Giving and Educational Support – support for community projects, cultural events, emergency services, youth activities, and education. Charitable giving for the social and economic well-being of local communities is designed to enhance the quality of life for employees, their families and the general neighbouring public.

SCI intends to build on the industry-leading and award-winning approach as its ultimate parent company – SWC - to environmentally responsible mining.

1.2.4 Aboriginal Engagement

SCI adopted a formal Aboriginal engagement policy as of January 3, 2011. The policy reads:

> *Stillwater Canada Inc. (Stillwater) recognizes the importance of building positive and sustainable relationships with aboriginal peoples. Forging these relationships on trust and respect will be mutually beneficial for both aboriginal peoples and Stillwater and will improve the understanding of goals and aspirations for these groups. Stillwater respects the culture, history, lands, uniqueness and traditions of Aboriginal groups. This commitment is a shared responsibility involving all of Stillwater and its subsidiaries, employees and contractors, and we will conduct business in a manner that reflects these principles. To ensure the effective implementation of the principles ongoing resources and leadership will be available.*

Vision:

- *To be an industry leader in developing mutually beneficial and respectful relationships with Aboriginal groups and members of those groups.*

Mission:

- *To engage in sincere and transparent consultation about its projects and operations.*

Principles:

- *To establish Aboriginal engagement processes and monitor their effectiveness.*
- *To respect traditional land and resource uses and activities.*
- *To provide cross-cultural learning opportunities for company employees and directors.*
- *To support Aboriginal community-based initiatives, whose goals are to maintain and enhance wellness and traditional culture.*
- *To protect the integrity of the environment.*
- *To foster economic development and business opportunities derived from Stillwater Canada Inc.'s activities.*
- *To support opportunities for employment and skills development.*

Stillwater Canada Inc. will endeavor to build positive and sustainable relationships with aboriginal peoples. Forging these relationships on trust and respect will be mutually beneficial for both aboriginal peoples and SCI and will improve the understanding of goals and aspirations for these groups. SCI respects the culture, history, lands, uniqueness and traditions of Aboriginal groups. This commitment is a shared responsibility involving SCI and its employees and contractors, and we will conduct business in a manner that reflects these principles.

1.2.5 Key Personnel Engaged in Developing the EIS

The key personnel engaged in developing the EIS included staff from Stillwater Canada Inc., as well as its supporting team of consultants, engineers and scientists, with the support of Stillwater Mining Company. The names and roles of the key individuals involved in the preparation of the EIS and their professional affiliation are provided in Tables 1.2-1 and 1.2-2.

Table 1.2-1: Key Individuals within Stillwater Canada Inc. and the Stillwater Mining Company Involved in the Preparation of the Marathon PGM-Cu Project EIS

Name	Affiliation	Role(s)
Stan Emms	Vice President and General Manager, Stillwater Canada Inc.	Overall responsibility for the EIS and development of the Project
Tabatha Leblanc	Environmental Manager, Stillwater Canada Inc.	Responsibility for the environmental aspects for the Project
Kevin McCarthy	Construction Manager, Stillwater Canada Inc.	Mine design and construction related aspects of the Project
Don Emms	Mill Manager, Stillwater Canada Inc.	Mill design related aspects of the Project
Bruce Gilbert	Vice President Environment, Stillwater Mining Company	Parent Company oversight on EIS
Terry Ackerman	Vice President of Projects, Stillwater Mining Company	Parent Company oversight on EIS

Table 1.2-2: Key Individuals on the Marathon PGM-Cu Project EA Project Team Involved in the Preparation of the Marathon PGM-Cu Project EIS

Name	Affiliation	Role(s)
Brian Fraser, M.Sc.	EcoMetrix Inc.	Lead EA process (federal), EIS primary author, Lead Aquatic Resources
Eric Zakrewski, CEIT	True Grit Consulting Ltd.	Co-lead EA process (provincial)
Paula Sdao, B.Eng.	True Grit Consulting Ltd.	Co-lead EA process (provincial), Lead Atmospheric Environment, Lead Acoustic Environment
Ron Nicholson, Ph.D.	EcoMetrix Inc.	Lead Mine Waste Geochemistry
Craig Hall, P. Eng.	Knight Piesold	Lead Process Solids and Mine Rock Management
Rob Whyte, M.Sc., P. Eng.	Calder Engineering	Lead Hydrology
Leif Nelson, M.Sc.	True Grit Consulting Ltd.	Lead Hydrogeology
Bruce Rodgers, M.Sc., P. Eng.	EcoMetrix Inc.	Water Quality and Pathways Modeling
Robert Foster, Ph.D.	Northern BioScience	Co-lead Terrestrial Environment
Allan Harris, M.Sc.	Northern BioScience	Co-lead Terrestrial Environment
Genevieve Knauff, RPF	gck Consulting	Lead Baseline Socio-economics
Nick Poushinsky, Ph.D.	Stantec Consulting Ltd.	Lead Socio-economic Impact Assessment
Livio Dematteo, Ph.D.	Chair, Department of Economics, Lakehead University	Co-lead Economic Impact Assessment
William Ross, Ph.D.	Ross Archaeological Research Services	Lead Aboriginal, Physical and Cultural Heritage Resources
George Hegmann, M.E. Des., P.Eng.	Stantec Consulting Ltd.	Cumulative Impact Assessment

1.3 Legal Framework and the Role of Government

1.3.1 Environmental Assessment Framework

1.3.1.1 Federal Environmental Assessment

The *Canadian Environmental Assessment Act* (CEA Act) is the legislative basis for the federal environmental assessment process. The CEA Act came into force in 1995. It applies to the federal government and where, among other things there are specific federal decisions and approvals required to permit a proposed project to move forward.

It has been determined that the Project is subject to review under the *Canadian Environmental Assessment Act* given the requirement for Fisheries and Oceans Canada (DFO), Transport Canada (TC) and Natural Resources Canada (NRCan) to issue permits, approvals, authorizations and/or licences pursuant to the *Fisheries Act*, the *Navigable Waters Protection Act* and the *Explosives Act,* respectively.

An initial project description was submitted by Marathon PGM Corp., the Proponent at that time, on March 11, 2010 (CEAR document number 40). The Notice of Commencement of the comprehensive study was posted on the Canadian Environmental Assessment Registry Internet Site (CEAR) on April 29, 2010 and subsequently amended on July 19, 2010 (see Appendix 2). An addendum to the project description was submitted on July 21, 2010 (CEAR document number 41). Further updates on specific components of the project description were provided in September 2011 (CEAR document number 159) and December 2011 (CEAR document numbers 199 and 200). Additional refinements to the project description have been reviewed with the public, Aboriginal groups and government agencies since September 2011 and are reflected in the project description (Section 1.4.3) presented in this EIS.

On August 24, 2010, DFO, NRCan and TC responded to a request from the CEA Agency to provide advice and analysis based on their areas of technical expertise and jurisdictional responsibilities as to whether, taking into account any appropriate mitigation measures, the Project may cause significant adverse environmental effects. DFO and TC provided advice to the CEA Agency that the Project ***as then described*** may result in significant adverse environmental effects. NRCan indicated that it did not have sufficient information at the time to determine whether there was the potential for the Project to result in significant adverse environmental effects. Taking this advice into consideration, the CEA Agency recommended that the federal Minister of the Environment refer the Project to a Review Panel. On October 7, 2010, the Honourable Jim Prentice, Minister of the Environment, announced that the Project would undergo a federal environmental assessment (EA) by way of an independent review panel (see Appendix 2).

1.3.1.2 Provincial Environmental Assessment

Mining projects in Ontario have not historically been subject to the *Ontario Environmental Assessment Act* (OEA Act), but components of or related to a mining development may be. In the case of the Marathon PGM-Cu Project three OEA Act triggers related to aspects of the proposed development were identified in the mine planning process:

- Class EA for Minor Transmission Facilities (under the Ontario Electricity Regulation (OER) of the OEA Act) for a new electrical transmission line;
- Class EA for provincial transportation facilities as the result of likely improvements to Hwy 17 at the site access road intersection; and
- Ministry of Natural Resources (MNR) Class EA for Resource Stewardship and Facility Development process for the disposition of certain rights to Crown resources given that mining activities are proposed on Crown lands.

SCI concluded that it would be beneficial to all stakeholders to bring the Project under the OEA Act, and entered into a Voluntary Agreement (VA) with the Province of Ontario to have the Project subject to the OEA Act on March 23, 2011 (see Appendix 2). The agreement provided for an assessment of the entire Project under the OEA Act in order to permit the federal and provincial environmental assessment processes to be implemented in a coordinated fashion, in terms of scope, timing and procedure.

1.3.1.3 Co-ordination of the Environmental Assessment Process and Environmental Assessment Process Activities

The VA was the instrument that permitted the provincial government to issue a Harmonization Order (HO) under Section 18(2) of the Canada-Ontario Agreement on Environmental Assessment Cooperation to Establish a Joint Review Panel for the Project between the Minister of the Environment, Canada and The Minister of the Environment, Ontario (see Appendix 2). The HO was issued on March 25, 2011. This Order indicates that the joint review panel process is equivalent to and fulfills the requirements of the Ontario *Environmental Assessment Act*.

The Terms of Reference (ToR) for the Project Environmental Impact Statement (EIS) and the agreement establishing the Joint Review Panel (JRP) were issued on August 8, 2011 (see Appendix 2).

The Project is also subject to the Major Resource Project Initiative led by the Major Projects Management Office, which works collaboratively with federal departments and agencies, and acts as a single window into the federal regulatory process. Similarly, the Project is also subject to the One Window Coordination Process led by the Ontario Ministry of Northern Development and Mines.

1.3.1.4 The Joint Review Panel

Canada's Environment Minister Peter Kent, in consultation with Ontario's then Minister of the Environment John Wilkinson, established a three-member joint review panel (JRP) for the environmental assessment of the proposed Project (see Appendix 2). The JRP Agreement, which took into consideration comments received from the public and Aboriginal groups, describes the Panel's terms of reference, as well as the process to be followed for conducting the joint panel review (see Appendix 2). The Panel comprises the following individuals: Dr. Louis La Pierre as the Panel chair, and Dr. David Pearson and Dr. Philip H. Byer as Panel members.

This is the first time that Ontario has formed a joint EA review panel with the federal government. This joint review panel process allows for a single, comprehensive assessment of both the possible impacts and benefits of the Project before any decisions are made by the federal and provincial governments. After the conclusion of the review process, the Panel will prepare a report setting out its conclusions and recommendations relating to the environmental assessment of the Project.

1.3.1.5 Public Registry

Both the province and federal governments maintain internet registries to help the public find information and records related to EAs. The registries provide timely notice about the start of an EA and opportunities for public participation. Publically available records that have been produced, collected or submitted with respect to the EA, or instructions as to how to locate them, can be found on the registry. The Canadian Environmental Assessment Registry (CEAR) number for the Marathon PGM-Cu Project is 10-05-54755 and the internet address for Project-related information is:

http://www.ceaa.gc.ca/050/details-eng.cfm?evaluation=54755.

The provincial EA reference number is 11010 and the internet address for Project-related information is:

http://www.ene.gov.on.ca/environment/en/industry/assessment_and_approvals/environmental_assessments/projects/STDPROD_085203.html?page=1.

1.3.2 Role of Government

1.3.2.1 Federal Government

The role of the federal government in relation to the Project is described in the Project Agreement for the Marathon Platinum Group Metals and Copper Mine Project in Ontario. The purpose of this agreement is to provide an effective tool to enable its signatories (CEA Agency, NRCan, Fisheries and Oceans Canada, Environment Canada, Aboriginal Affairs and Northern

Development Canada) to deliver an efficient federal review process. It articulates the roles and responsibilities of each department and agency and timeline based targets for the achievement of process milestones. The agreement is provided in full in Appendix 2.

1.3.2.2 Provincial Government

To facilitate the permitting and approvals process associated with mineral development projects in Ontario, a 'One Window' coordination process has been initiated. The objectives of the 'One Window' coordination process are to provide:

- for efficient, transparent and timely review of new mineral development projects that involve the regulatory requirements of more than one government ministry or department;
- a framework of clear roles and responsibilities, including effective communication processes and improved information sharing, between a Proponent and government as well as within government; and
- project Proponents, via the Project Coordinator, with a clearer understanding of where their permit and approval applications are within the regulatory process, thereby allowing more efficient project planning.

In this process, the Ministry of Northern Development and Mines is the lead Ministry and is responsible for facilitating the coordination of the multi-agency regulatory process for projects that may involve several ministries. A Project Coordinator from MNDM works closely with the other participating ministries (including OMOE, OMOL, OMNR and OMOT) as is appropriate to the scale and nature of the proposed project.

The essence of the coordination process that defines the roles and responsibilities of the provincial government in the Project is shown in Figure 1.3-1. More detail is provided by the Government of Ontario (2009).

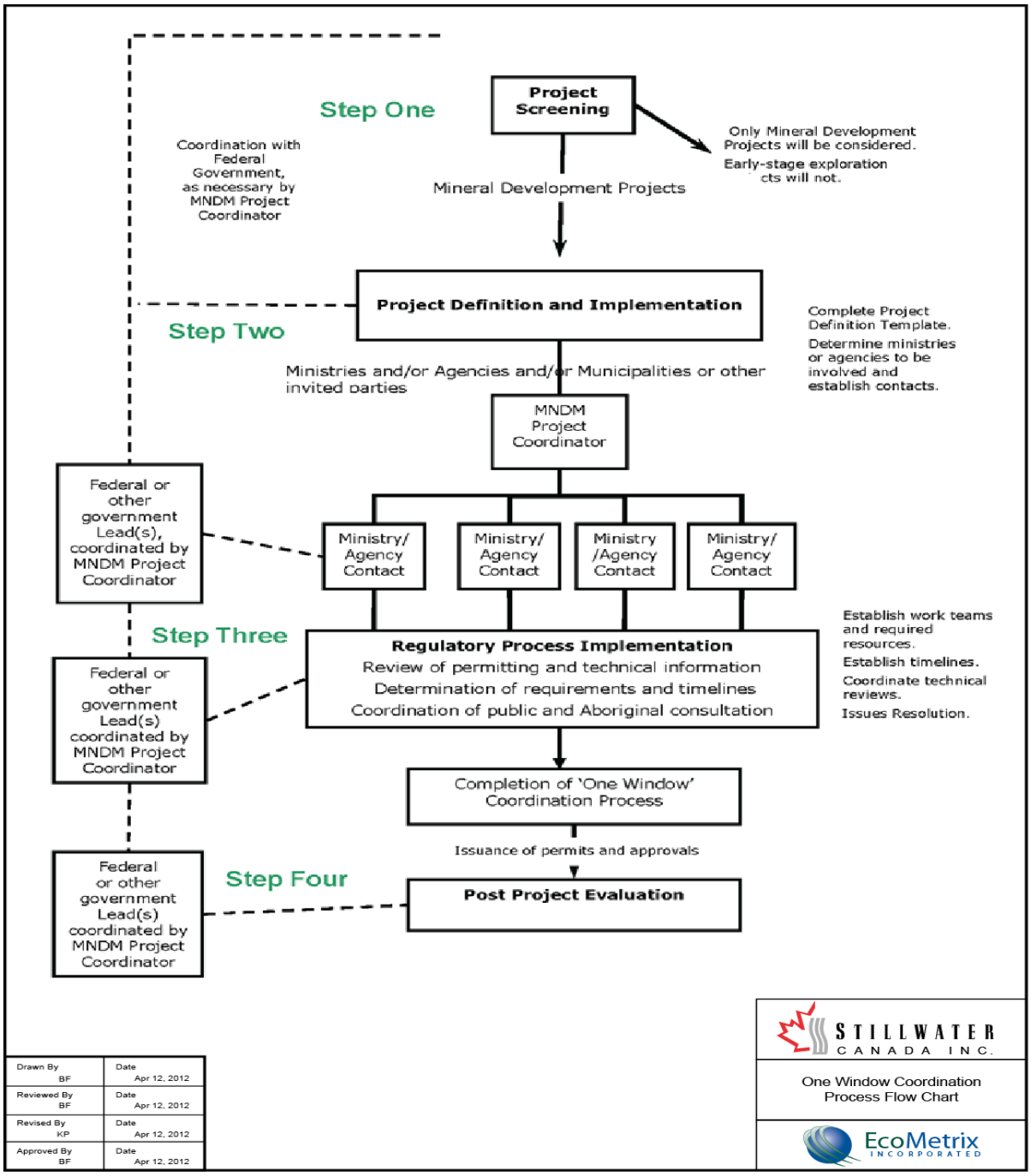

Figure 1.3-1: One Window Coordination Process Flow Chart

1.3.3 Planning Context for the Environmental Assessment Process

A number of international, federal, provincial, municipal agreements, conventions, policies and/or guidelines could affect the manner by which the Project is assessed or implemented. The OMOE, for example, has literally hundreds of guidelines and interim and draft guidelines and policies, which are far too numerous to summarize. A summary of some of the principal international, federal and provincial agreements, etc. … that have been considered in relation to this EIS are summarized below.

The Great Lakes Water Quality Agreement (IJC, 1978, amended 1987) provides objectives and guidelines for co-operation between the Canadian and United States federal governments with respect to restoring and maintaining the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem. In 2009, Canada and the United States committed to amending the Great Lakes Water Quality Agreement, as it is out of date; however, a new agreement has not been issued.

The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (2007) establishes principles to guide the provincial and federal governments with respect to restoring, protecting and conserving the Great Lakes Basin Ecosystem. It is the means by which the federal partners of the Canadian Federal Great Lakes Program interact with the provincial ministries to help meet Canada's obligations under the Canada-US Great Lakes Water Quality Agreement.

The Canada-Ontario Agreement on Environmental Cooperation (COA, 2004) outlines the administrative framework within which the federal and provincial governments can cooperatively exercise their respective powers and duties established by the *Canadian Environmental Assessment Act* and the *Ontario Environmental Assessment Act*.

The Binational Program to Restore and Protect the Lake Superior Basin began in 1991 through an agreement between the federal governments of Canada and the United States, the province of Ontario and the states of Michigan, Minnesota and Wisconsin. The administrative framework through which these jurisdictions jointly act on the commitments identified in the agreement is known as the Lake Superior Binational Program (LSBP). The Lake Superior Lakewide Management Plan, or LaMP, is the main planning document developed through the LSBP. The LSBP outlines a non-binding zero-discharge policy for Lake Superior with respect to nine toxic, persistent, and bioaccumulative chemicals, as well as coordinating the effort of the many relevant resource and environmental agencies.

The 2007 Canada-Ontario Decision-Making Framework for the Assessment of Great Lakes Contaminated Sediment is the framework for sediment assessment and considers potential effects on sediment-dwelling and aquatic organisms, as well as potential for contamination to accumulate in the food chain. Peninsula Harbour at Marathon is a Remedial Action Plan (RAP) site where a sediment management scheme has been proposed.

The 1986 Federal Policy for the Management of Fish Habitat (1986) outlines the policy, goals and strategies for the management of fish habitat supporting Canada's marine and freshwater fisheries.

The 2009 Fish Habitat Referral Protocol for Ontario outlines the permitting and approval roles of agencies that have a regulatory responsibility for the review of proposed development projects in and around water, where there may be impacts to fish or fish habitat.

The Ontario Area Specific Crown Land Use Policy (2007) identifies the management land use throughout Ontario, and provides specific requirements for the Marathon area. In the Marathon area, mining exploration and development is generally permitted, except within 300 m of the shoreline of Lake Superior.

Ontario's Living Legacy Land Use Strategy outlines the intended strategic direction for the management of 39 million hectares of Crown lands and waters in a planning area covering 45 percent of the province.

The Growth Plan for Northern Ontario (2011) guides provincial decision-making and investment now and in the future and aims to strengthen the economy of the North by: diversifying the region's traditional resource-based industries; stimulating new investment and entrepreneurship; and, nurturing new and emerging sectors with high growth potential. The Plan specifically identifies the minerals sector and mining supply and services as a priority economic sector.

The 2011 Ontario Biodiversity Strategy aims to protect the genetic, species and ecosystem diversity of Ontario, and to use and develop the biological assets of Ontario sustainably, and capture benefits from such use for Ontarians.

The objectives of the 2009 Ontario Moose Management Policy are to manage moose populations sustainably according to the broad overarching direction set out in Ontario's Cervid Ecological Framework and to provide an optimal mix of benefits from the moose population through harvest allocation and through the management of activities related to moose

The objectives of the 2009 Ontario Woodland Caribou Conservation Plan are to maintain self-sustaining, genetically-connected local populations of Woodland Caribou (forest-dwelling boreal population) where they currently exist, improve security and connections among isolated mainland local populations, and facilitate the return of caribou to strategic areas near their current extent of occurrence.

The Government of Ontario has had Peregrine Falcon (*Falco peregrinus*) Habitat Management Guidelines in place since 1987. The guidelines generally apply to existing nest sites, though some recommendations are also provided for eyries and may be applied at a manager's discretion.

Water Management Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (July 1994, reprinted February 1999) outlines objectives with respect to surface water quality in Ontario, and guidance on dealing with water quality that is better or worse than the objectives.

The MNR Environmental Guidelines for Access Roads and Water Crossings (1988) establishes guidelines for ensuring minimal disturbance to the natural environment associated with construction, maintenance and abandonment of access roads. This document outlines the legislation and standards associated with building, utilizing and abandonment of access roads on the proposed Project site.

1.3.3.1 Municipal Planning Perspective

The Project site lies partially within the municipal boundaries of the Town of Marathon, as well as partially within the unorganized townships of Pic, O'Neil and McCoy. The primary zoning designation within the Project site is "rural". Changes to the Town of Marathon Official Plan and Zoning By-law as it pertains to land-use zoning will be required so as to permit the development of the mine.

Municipal boundaries and zoning designations as it relates to the Project claim and lease area are shown in Figures 1.3-2 (land use), 1.3-3 (groundwater protection zones) and 1.3-4 (resources and constraints). The Town of Marathon Official Plan shows that an area to the south of the Project site is designated as a Groundwater Protection Zone. This area is largely to the south and west of the Trans-Canada Highway at Peninsula Road.

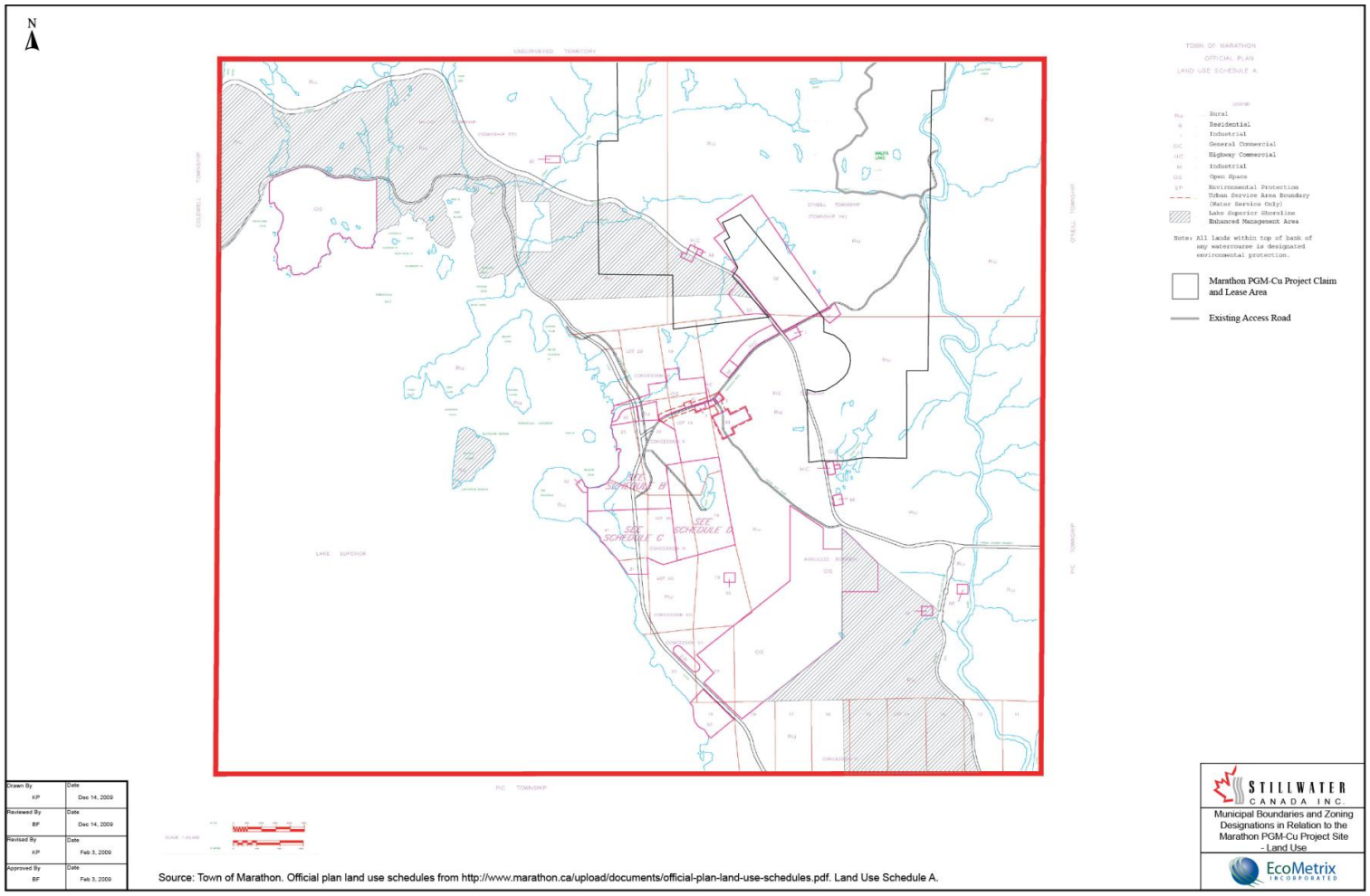

Figure 1.3-2: Municipal Boundaries and Zoning Designations in Relation to the Marathon PGM-Cu Project Site – Land Use

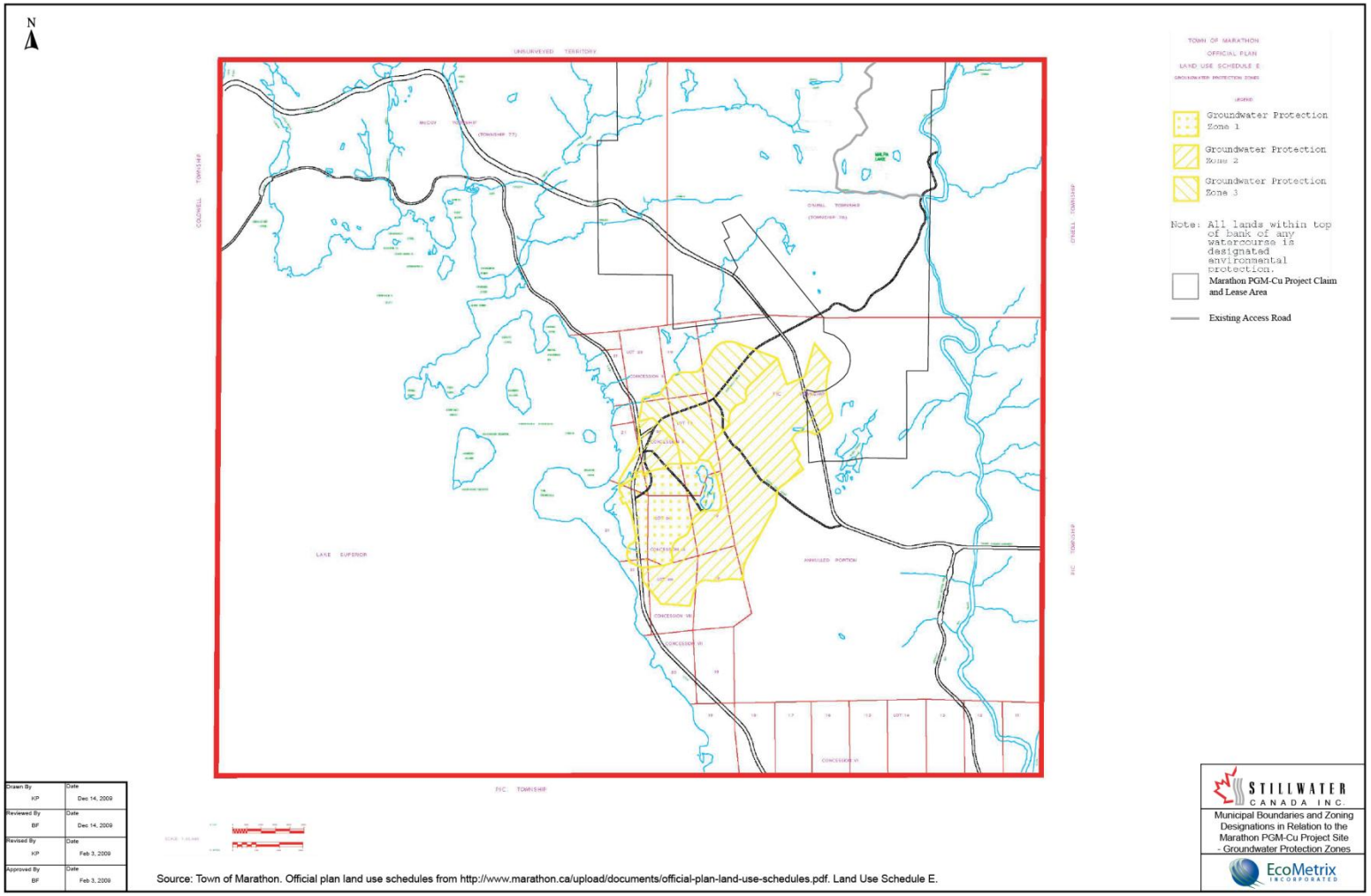

Figure 1.3-3: Municipal Boundaries and Zoning Designations in Relation to the Marathon PGM-Cu Project Site – Groundwater Protection Zones

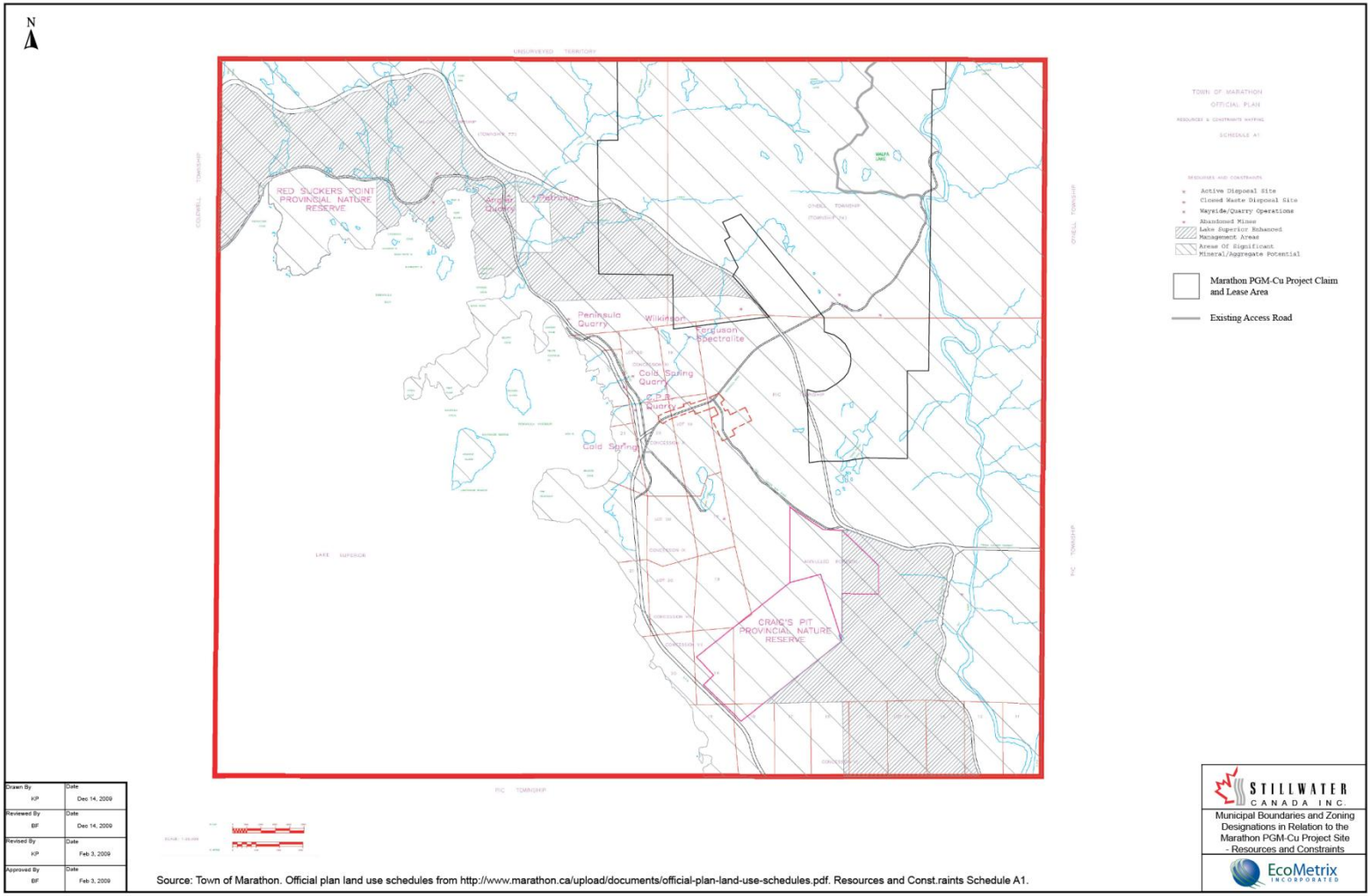

Figure 1.3-4: Municipal Boundaries and Zoning Designations in Relation to the Marathon PGM-Cu Project Site – Resources and Constraints

1.3.4 Regulatory Approvals

A number of federal, provincial and municipal approvals, permits and/or authorizations are, or may be required for the Project to move forward beyond the environmental assessment phase and into operations. Key such approvals are summarized below in Tables 1.3-1 (federal approvals), 1.3-2 (provincial approvals) and 1.3-3 (municipal approvals).

Where it is unclear at this time whether specific approvals, permits and/or authorizations are required it is assumed that the need for the approval, permit and/or authorization will be clarified during or following the EA process.

Table 1.3-1: Federal approvals, permits and/or authorizations that may be required for the Project

Federal Approval, Permit and/or Authorization	Rationale
Authorization for Works Affecting Fish Habitat under the *Fisheries Act (Department of Fisheries and Oceans)*	A HADD will created by the development of mine-related infrastructure including the open pits, MRSA, PSMF and site road network.
Approval to amend Schedule 2 of the Metal Mining Effluent Regulations to designate watercourses frequented by fish as "tailings impoundment areas" under the Metal Mining Effluent Regulations of the Fisheries Act (Environment Canada)	Watercourses (or portions thereof) that are frequented by fish will be included within the boundaries of areas on the mine site that are used for long-term storage of process solids and/or mine rock.
Authorization for the interference with a navigable water (as defined by the *Navigable Waters Protection Act)* under the *Navigable Waters Protection Act* (Transport Canada)	The development of mine related infrastructure including the open pits, MRSA, PSMF and site road network may interfere with the navigability of waterways that are defined as "navigable" under the NWPA.
Licence for a Factory and Magazine for Explosives under the *Explosives Act* (NRCan)	The proposed development includes facilities to manufacture and store nitrogen-based explosives that will be used for the purpose of excavating the ore body.
An authorization or approval under the *Canada Transportation Act* (Canadian Transportation Agency)	Infrastructure related to a potential concentrate load out facility at a rail siding in the Town of Marathon may require an authorization.

Table 1.3-2: Provincial approvals, permits and/or authorizations that may be required for the Project

Provincial Approval, Permit and/or Authorization	Rationale
Environmental Compliance Approval (ECA) for all site-related emissions, discharges and wastes under the *Environmental Protection Act* (Ontario Ministry of the Environment)	An ECA is required for stationary source emissions, discharges and waste related to the Project, including air emissions, noise emissions, effluent discharges to water, stormwater management.
Permit to Take Water under the *Ontario Water Resources Act* (Ontario Ministry of the Environment)	A permit to take water is required for instances where groundwater or surface water is taken at a rate of 50,000 L/d, or more. As it pertains to the proposed development a permit to take water may be needed for dewatering of the open pits and for the development of groundwater well(s) for the supply of potable water.
Work Permit under the *Public Lands Act* (Ontario Ministry of Natural Resources)	A work permit is required for mine-related construction on Crown Land, including buildings, dams, drainage channels, roads, culverts and bridges, and for dredging and filling of shore lands.
Land use permit under the *Public Lands Act* (Ontario Ministry of Natural Resources)	A land use permit is required to construct buildings on Crown Land.
Lakes and Rivers Improvement Act permit under *Lakes and Rivers Improvement Act* (Ontario Ministry of Natural Resources)	A permit will be required for the construction of dams, dykes, diversion channels, culverts or causeways that hold back or divert water.
Endangered Species Act Permit under the *Endangered Species Act* (Ontario Ministry of Natural Resources)	A permit may be required if species at risk or its protected habitat may be affected by the development of the Project. The potential effect of the Project on Woodland Caribou habitat has been assessed in this regard. Woodland Caribou are not anticipated to receive habitat protection until approximately June 30, 2013.
Aggregate License under the *Aggregate Resources Act* (Ontario Ministry of Natural Resources)	A license may be required for the purposes of obtaining aggregate that is needed to develop mine site infrastructure from borrow areas around the development footprint. SCI has a licensed aggregate quarry adjacent to the Project site.
Encroachment Permit under the *Public Transportation and Highway Improvement Act* (Ministry of Transportation)	An encroachment permit would be required for construction of transmission line over or under Provincial Highway or within the highway right-of-way. A permit would also be required for any work within the highway right-of-way, including improvements to the highway itself required for the Project, specifically at the Hwy 17 – site access road intersection.
Building and land use permits under the *Public Transportation and Highway Improvement Act* (Ministry of Transportation)	Permits will be required for any development or construction within 45 m of the right-of-way limit of the highway and 395m of the centre point of the intersection of a side road (such as the site access road) with Highway 17.
Sign Permit under the *Public Transportation and Highway Improvement Act* (Ministry of Transportation)	A permit will be required for any sign erected within 400 m of the limit of the highway.

Provincial Approval, Permit and/or Authorization	Rationale
An approved Schedule 2 Closure Plan under the *Mining Act* (Ontario Ministry of Northern Development and Mines)	An approved Schedule 2 Closure Plan is required for mine site prior to beginning operations.
Domestic Processing Exemption under the *Mining Act* (Ontario Ministry of Northern Development and Mines)	An exemption under Section 91 of the Mining Act would be required in the event that ore was processed outside of Canada
License to Operate a Bulk Fuel Plant under the *Technical Standards and Safety Act* (Technical Standards and Safety Authority)	A license will be required for the purpose of operating a private bulk fuel storage and distribution system on the mine site
Septic System Permit under the *Building Code Act* (Northwestern Ontario District Health Unit)	A permit to construct an on-site private septic sewage system <10,000 L/day will be required
Pre-development review and approval under the *Occupational Health and Safety Act* (Ontario Ministry of Labour)	The Ministry of Labour will subject the proponent to a safety and procedures review prior to the initiation of the development

Table 1.3-3: Municipal approvals, permits and/or authorizations that may be required for the Project

Municipal Approval, Permit and/or Authorization	Rationale
Official Plan and Zoning Bylaw Amendment (Town of Marathon, Building and Emergency Services)	Changes to the Official Plan and Zoning By-law as it pertains to land-use zoning will be required so as to permit the development of the mine.

1.4 Project Description

1.4.1 Need for and Purposes of the Project

1.4.1.1 Rationale for the Project

1.4.1.1.1 Stillwater Mining Company – Corporate Objectives

Stillwater Mining Company (SWC) produces palladium and platinum, rare and precious metals essential in automotive catalysts to convert harmful air pollutants into harmless emissions, and various other applications. SWC is the only producer of palladium and platinum in the United States. The company's current mining operations are in south-central Montana where it operates two underground mines along the J-M Reef, the world's richest known deposit of PGMs. SWC's operations include a nearby smelting and refining complex where it concurrently processes concentrates from mined ore and spent catalytic material containing PGMs from its recycling business.

A key strategic goal of SWC is to meet ongoing demand by developing new PGM resources in jurisdictions that are stable (from an institutional and governmental perspective) and have ready access to a skilled work force. SWC also seeks to diversify its operations and mineral portfolio in an attempt to reduce its current reliance on its holdings in Montana. To this end, SWC, as noted above, acquired the PGM assets of Marathon PGM Corporation in November 2010.

1.4.1.1.2 The Case for PGMs

PGMs are used for numerous commercial and industrial applications, including but not limited to those outlined in Table 1.4-1.

Table 1.4-1: Commercial and industrial applications of the platinum group metals (source SWCSWC, 2011)

PGM Application	
Autocatalysts	Autocatalysts are by far the largest user of PGMs; autocatalysts convert over 90 percent of hydrocarbons, carbon monoxide and oxides of nitrogen produced in the exhaust from gasoline engines into carbon dioxide, nitrogen and water vapour.
Oil Refining	Palladium and other PGM metals serve important functions in catalytic reactions that are used in various stages in the refining of petroleum.
Chemical	Palladium is an important part of the refining of nitric acid, and has important uses in developing raw materials for synthetic rubber and nylon.
Electronics	Palladium has a number of electronic applications. For example, palladium's chemical stability and electrical conductivity make it an effective and durable alternative to gold for plating in electronic components.
Medicine	Palladium-103, a radioactive isotope of palladium, is seeing promising applications in the treatment of prostate cancer. A newly emerging added area of research is potential use in the treatment of breast cancer.
Dentistry	Palladium-based alloys are used in dentistry for dental crowns and bridges. And palladium metal is also compatible with human tissue and is used, in a radioactive form, in the medical industry for the treatment of cancer.
Fuel Cells	Palladium-based alloys are actively being researched for applications in fuel cell technology, an area of future promise for the metal.
Polyester	Palladium is a critical catalyst in the manufacture of polyester.
Photography	Palladium and platinum are both used in an historic photographic printing process that many consider superior to conventional silver in tonal quality and archival longevity.
Water Treatment	Palladium is a unique and important catalyst being studied for use in removing a number of toxic and carcinogenic substances from groundwater.
Hydrogen Purification	Palladium's ability to absorb and desorb hydrogen depending on circumstances allows it to be an effective material to filter hydrogen from

PGM Application	
	other gasses resulting in an ultra-pure hydrogen gas.
Jewelry	Palladium is lighter than platinum having about the same density as silver, thus, palladium is a jewelry metal as well. Palladium in jewelry is primarily used as an alloy with platinum to optimize platinum's working characteristics and wear properties. Palladium is also used as an alloy in producing white gold.

Based on 2010 data, total world-wide demand for palladium and platinum were 7,935 oz and 6,568 oz, respectively. Relative demand by end-use in 2010 for platinum and palladium is shown in Figures 1.4-1 and Figure 1.4-2, respectively.

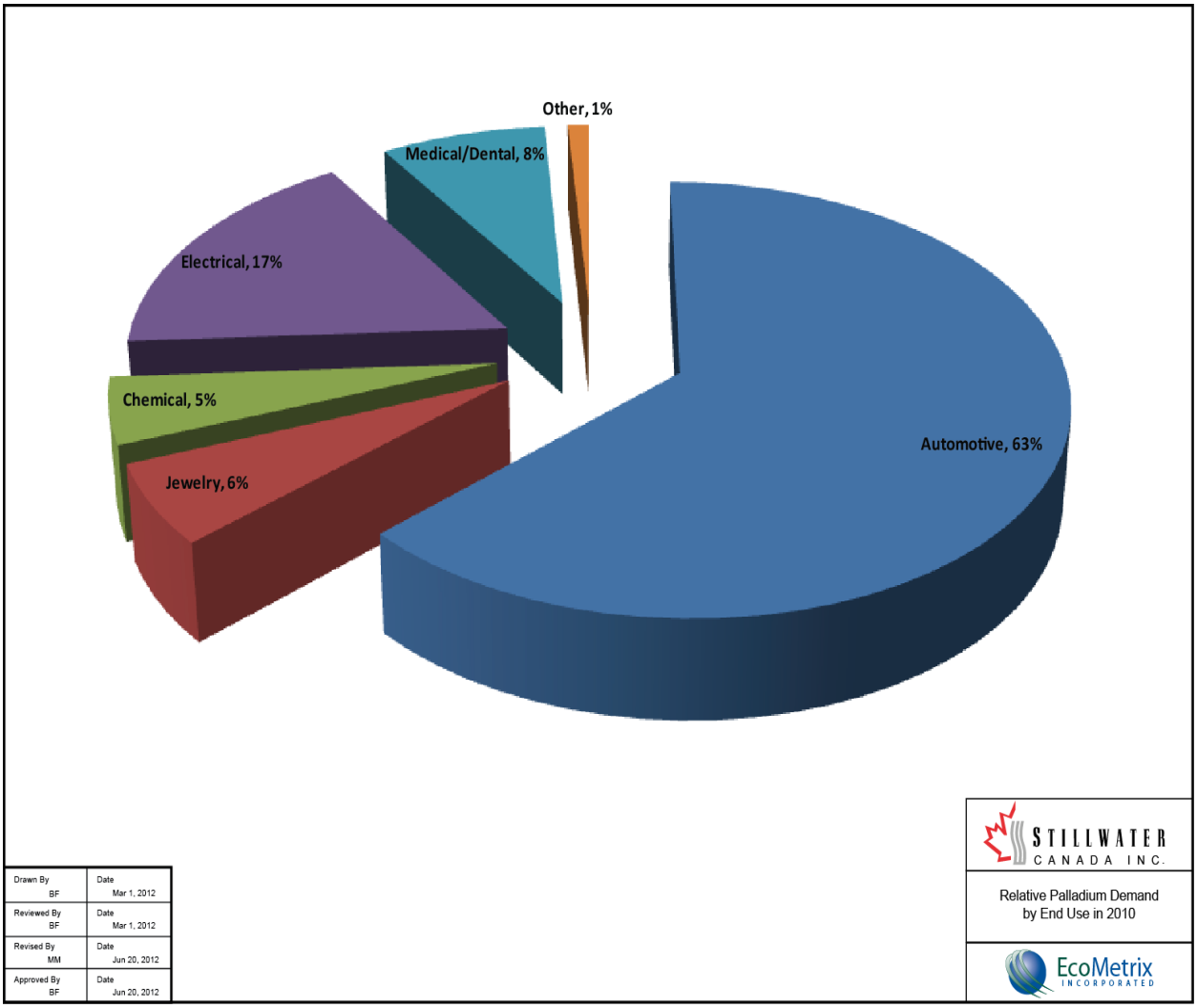

Figure 1.4-1: Relative Palladium Demand by End Use in 2010

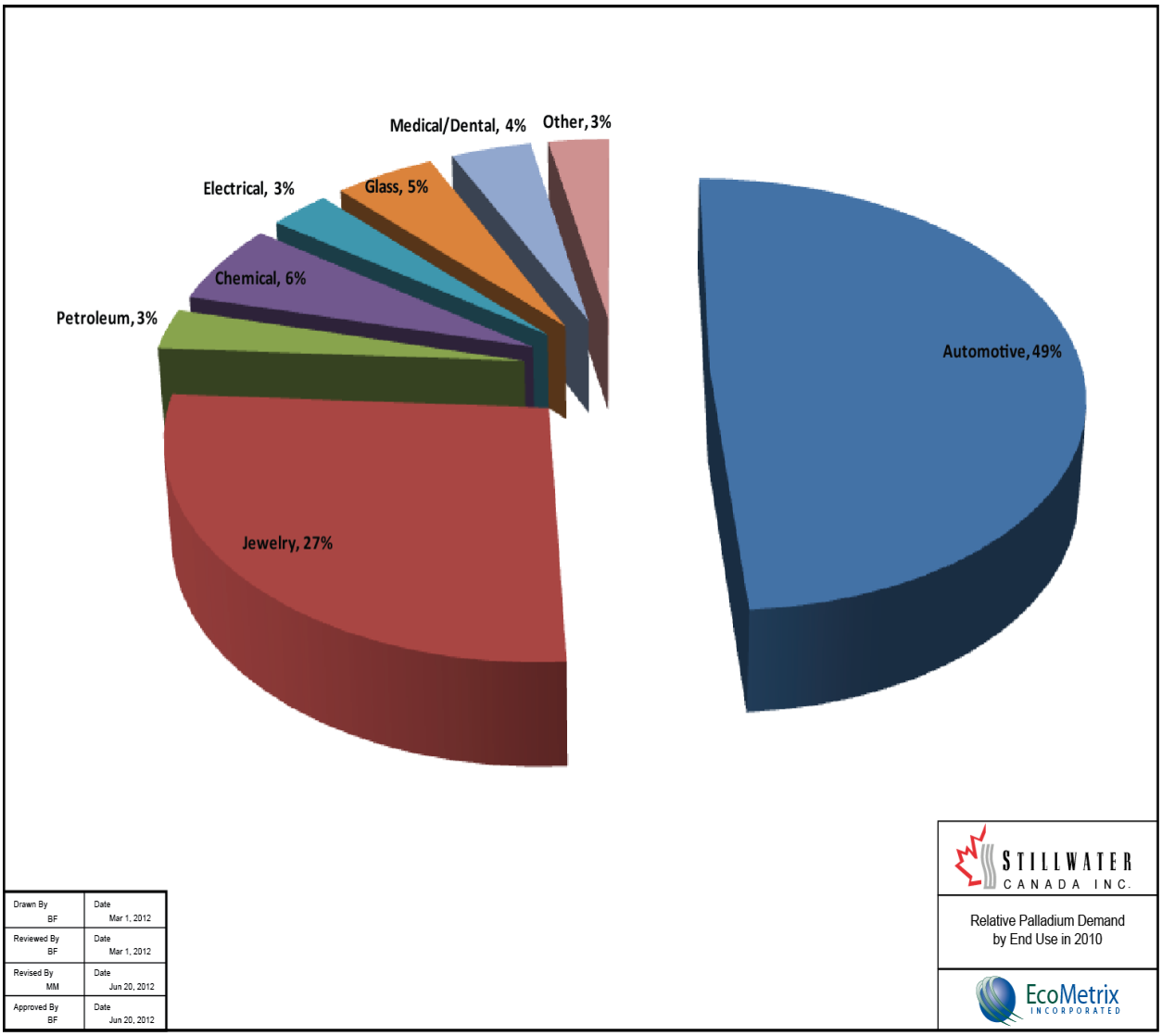

Figure 1.4-2: Relative Platinum Demand by End Use in 2010

At present, 90% of the world's PGM supply comes from South Africa (60%) and Russia (30%). In 2009, SWC presented a detailed analysis of PGM supply-demand fundamentals, which is still relevant today (SWC, 2010). On the supply side the analysis indicated the following. The PGM supply is constrained because of operational challenges faced by South African producers, which has seen production levels stagnate since 2006. PGM supply is further constrained because of its dependence on nickel mining in Russia, where it is produced as a by-product of nickel mining; therefore its place in the supply chain is based on the market for nickel. Moreover, there is general uncertainty as to the Russian PGM inventory but it is thought that it may in fact be significantly depleted. Finally, although the PGM recycling rate of 15% is

projected to increase, the recycling volume increases are insufficient to bridge projected PGM market imbalance.

From a demand perspective the analysis indicated that there has been, and will continue to be an increase in PGM demand associated with the automobile manufacturing sector, and in particular auto catalysts. Following a global decline in 2008, auto production was back to record levels in 2010, at a reported 75 million light vehicles. By 2015 auto production it is projected to eclipse 100 million, with the vehicle build rate surging in the emerging economies of China and India. This surge is demand enhanced by with the tightening of air emission standards on a global basis (including on recreational and heavy industrial equipment) and the gradual move to diesel autos (which require a heavier PGM load).

Overall, it is predicted that there could be a net deficit of PGMs on the world market in the near future and that this deficit could reach about 6 M oz by 2020 (SFA [Oxford] in SWC, 2011; see Figure 1.4-3). This net deficit, particularly as it pertains to secure PGM sources, presents SWC a business opportunity consistent with its corporate mandate.

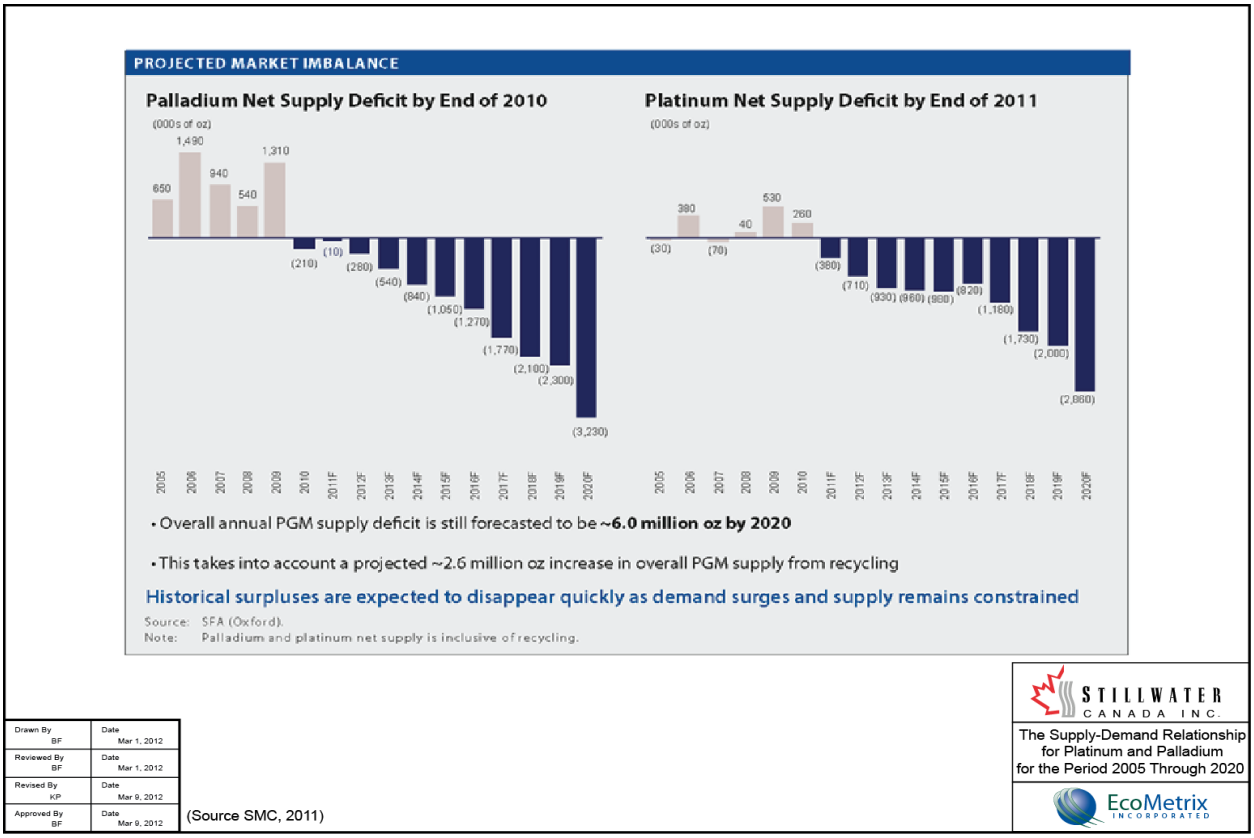

Figure 1.4-3: The Supply-Demand Relationship for Platinum and Palladium for the Period 2005 through 2020 (source SFA [Oxford] in SWC, 2011)

1.4.1.1.3 The Case for Copper

Copper is one of the oldest metals known to man. It is estimated that about 80% of the copper that has been mined over the centuries is still in circulation.

Over the years, copper's uses have multiplied, largely due to its unique combination of properties. Copper can be shaped into a variety of forms, such as wire or thin sheets, and is a highly efficient heat and electrical conductor. It is estimated that around 70% of all copper consumed is used for its thermal and electrical properties.

Electrical uses of copper, including power transmission and generation, building wiring, telecommunication, and electrical and electronic products, account for about three quarters of total copper use. Building construction is the single largest market, followed by electronics and electronic products, transportation, industrial machinery, and consumer and general products. Copper byproducts from manufacturing and obsolete copper products are readily recycled and contribute significantly to copper supply.

New uses are also constantly appearing as technology advances, whether in communications, computers or medicine. Its extensive use in "green" technologies, such as solar cells, water-heating panels and electric vehicles, ensures that copper will continue to play a key role in our sustainable future.

World copper consumption over the period 2000 through 2010 is presented in Figure 1.4-4. Over this period copper consumption has increased from about 14 M tonnes to about 19 M tonnes.

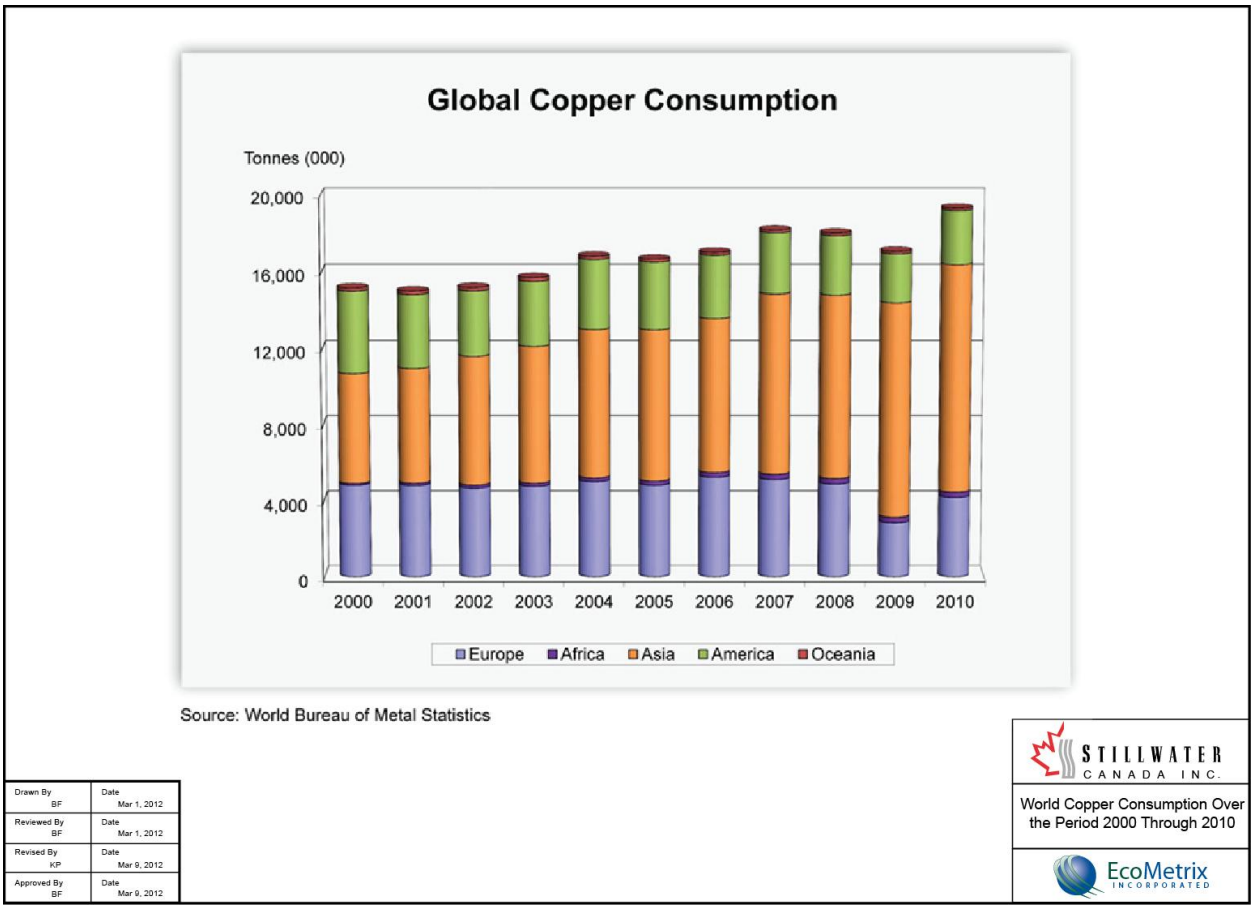

Figure 1.4-4: World Copper Consumption Over the Period 2000 Through 2010

World mine production is shown for the period 1900 through 2010 is shown in Figure 1.4-5. Over this period mine production has shown exponential growth with production in 2010 just over 16 M tonnes.

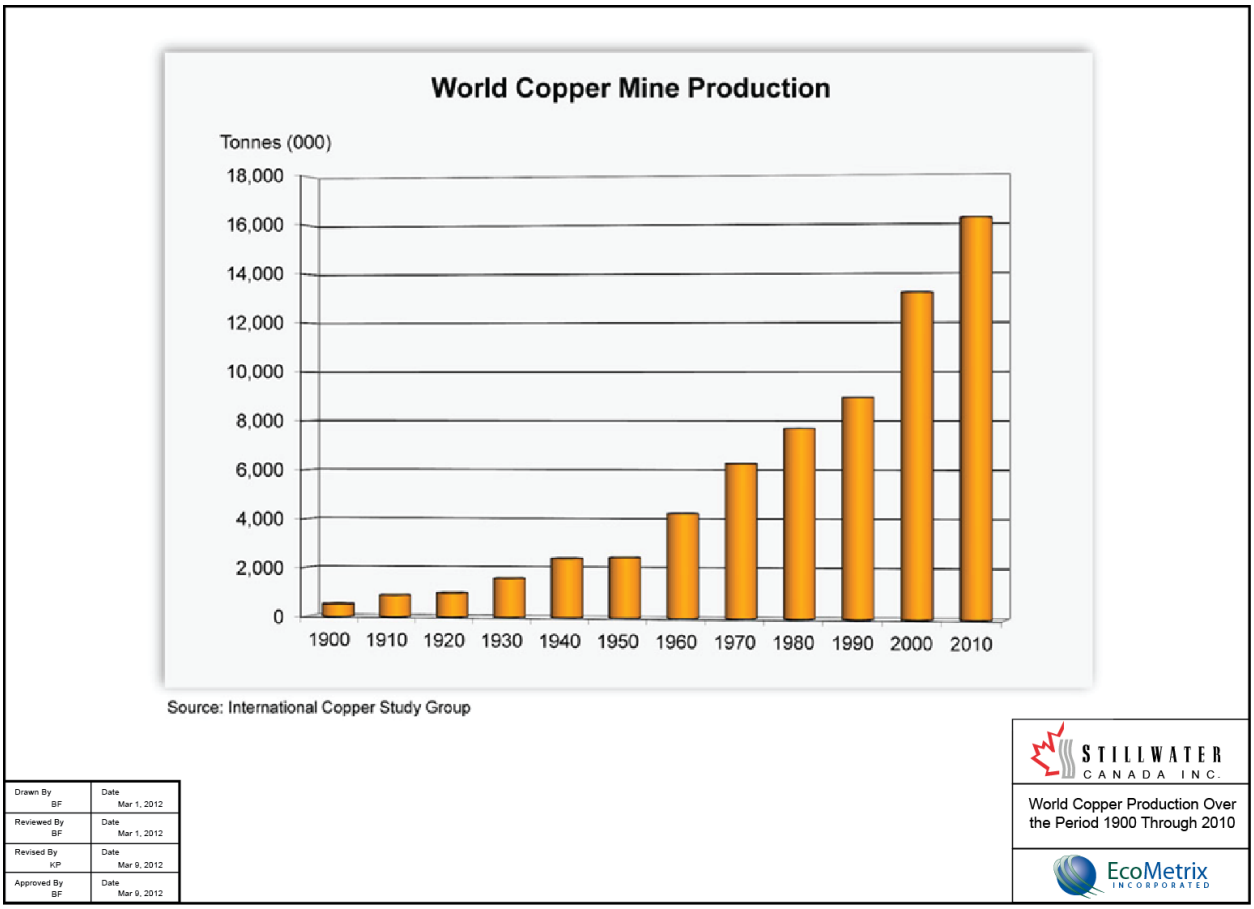

Figure 1.4-5: World Copper Production Over the Period 1900 Through 2010

According to the ICSG (2011) global growth in copper demand for 2012 is projected to outstrip supply resulting in a predicted deficit of about 250,000 t. By 2013, however, increased production and lower growth in demand are expected to yield a nearly balanced market. Longer term forecasts suggest demand will continue to grow with supply keeping pace or lagging slightly.

1.4.1.1.4 The Mining Sector in Canada and Ontario

Mining in Canada

Mining is one of Canada's most important economic sectors and is a major driver of our country's prosperity. In 2009, the industry contributed $32 billion to the gross domestic product (GDP) and employed 306,000 workers in the sectors of mineral extraction, processing and manufacturing. It is an industry that stimulates and supports economic growth both in large urban centres and in remote rural communities, including numerous First Nations communities. Mining is an important employer of Aboriginal Canadians.

Mining accounts for 19% of Canadian goods exports and $5.5 billion in taxes and royalties paid to federal, provincial and territorial governments. The industry also generates considerable economic spin-off activity: There are more than 3,200 companies that provide the industry with services ranging from engineering consulting to drilling equipment. In addition, over half the freight revenues of Canada's railroads are generated by mining.

Globally, Canada remains the top destination for mining exploration, attracting 16% of the world's spending in this sector. In the same vein, Canada is recognized internationally as a source of mining leadership and related finance expertise: There are approximately 1,000 Canadian exploration companies active in over 100 countries.

On a national scale, the natural resource sector in general and the mining industry in particular will remain a priority from an economic perspective into the future. The Canadian Economic Action Plan (2011, 2012) includes many initiatives that are aimed at fostering growth in the mineral sector (http://www.actionplan.gc.ca/initiatives/eng/index.asp).

Mining in Ontario

Ontario was Canada's leading jurisdiction in the value of mineral production in 2010, as metal prices recovered and production increased. Ontario accounted for 19% of Canadian mineral production in 2010. Preliminary estimates for 2010 indicate that the total value of Ontario's mineral production (metals and nonmetals) was $7.7 billion or about 2% of the provincial GDP. This is an increase of $1.4 billion over the 2009 total of $6.3 billion, primarily due to higher metal prices and increased production from nickel-copper mines.

Ontario's mineral sector makes significant contributions to their local communities and the provincial economy. It is reported that in an average year, mining companies will pay out almost $1 B in wages and salaries, $1 B in goods and services (80% of which is spent in Ontario, $100 M in federal taxes, $115 M in provincial taxes and $40 M in municipal taxes.

The provincial government has recognized the importance of the mining industry, specifically in the north, in its Growth Plan for Northern Ontario (2011). The Plan guides provincial decision-making and investment now and in the future and aims to strengthen the economy of Northern Ontario by:

- diversifying the region's traditional resource-based industries;
- stimulating new investment and entrepreneurship; and,
- nurturing new and emerging sectors with high growth potential.

The Plan's policies are built upon six themes that each contributes to the region's long-term sustainability and prosperity: economy, people, communities, aboriginal peoples, infrastructure and environment.

The Plan specifically identifies the minerals sector and mining supply and services as a priority economic sector. As such, efforts by the Province, industry and, where appropriate, other partners, to grow and diversify the minerals and mining supply and services sectors are recommended to include:

- marketing that showcases Ontario as a global leader in environmentally sustainable mineral development and stewardship;
- creating new value-added resource sector opportunities through research, development and application of advanced processing and manufacturing technologies;
- expanding the mining supply and services industry, increasing exports, and supporting particular areas of competitive advantage including deep mining techniques and clean technologies;
- improving timeliness and clarity in regulatory processes, supported by a one window, coordinated process for approvals;
- expanding geoscience mapping and data collection and public access to resource information to expedite the discovery and development of new minerals and other resources;
- investing in research and innovation that improves the efficiency of industry operations, with an emphasis on extraction and exploration technologies, environmental technologies, and mine closure and rehabilitation processes;
- enabling new mining opportunities;
- facilitating partnerships among communities and industry to optimize community employment and benefits; and,
- facilitating the entry of new participants and entrepreneurs, including Aboriginal businesses, co-operatives and commercial developers.

1.4.1.1.5 Stillwater Mining Company and the Marathon PGM-Cu Project

The Stillwater Mining Company targeted the Marathon PGM-Cu Project for several reasons as outlined above. The acquisition of the Project was consistent with SWC's corporate objectives for growth and diversification. It was also consistent with its priority for focusing on potential opportunities in stable geopolitical environments, and in particular North America, that have a mature and well-serviced mineral development sector.

Based on all of the available information SWC came to the conclusion that, from their perspective there was "need or rationale" to move forward with the Project and therefore has done so.

1.4.1.2 Overall Purpose of the Project

The purpose of the Project from the proponent's perspective is:

> *To fill a business opportunity, consistent with Stillwater Mining Company's overall corporate growth and diversification strategy, through the development of a PGM-Cu*

resource in a timely manner and in a stable jurisdiction, and that brings economic benefits to local and regional communities and First Nations, while having no significant long-term adverse effects on the natural and socio-economic environments.

1.4.1.3 The Purpose of Project-related Activities and Facilities

The Project will be implemented in phases and will involve various Project-related facilities, each with its own specific purpose or objective. The four principal phases include: site preparation; construction; operations; and closure and post-closure. The purpose of each of the phases is provided below in Table 1.4-2. Specific individual undertakings associated with each of the Project phases are described in Section 1.4.3 of this report.

Table 1.4-2: Primary Phases Associated with the proposed Marathon PGM-Cu Project

Activity	Purpose
Site preparation	- To prepare the Project site for subsequent construction
Construction	- To build the physical infrastructure and associated structures necessary to bring the proposed mine into production
Operations	- To extract and process selected minerals from the ore body
Decommissioning and Closure/Post-Closure	- To reclaim land within the Project footprint to permit future use by resident biota and for traditional and other land-use activities.

A number of facilities (largely physical structures) will be constructed as part of the implementation of the four Project phases. The major facilities and their purpose(s) are identified in Table 1.4-3. Further details regarding these facilities are provided in Section 1.4.3 of this report.

Table 1.4-3: Major Facilities Associated with the proposed Marathon PGM-Cu Project

Facility	Purpose
Site Access Road	- To provide safe and direct access to the Project site
Power Transmission Corridor	- To provide electrical power to the Project site from the existing power grid
Explosives Plant and Magazine	- To manufacture and store nitrogen-based explosives that are used for the purpose of excavating the ore body
Open Pits	- Areas from which the ore body is excavated
Mine Rock Storage Area	- To provide a location in which mine rock (that is, rock that has been excavated from active mining areas but does not have sufficient ore grades to permit economically viable extraction) can be stored safely in perpetuity following extraction from the open pits
Ore Stockpile	- To provide a storage area for ore that is to be processed in the mineral processing facilities
Primary Crusher	- To reduce the large pieces of rock excavated from the open pits to a size that can be handled by the downstream machinery
Secondary Crusher	- To further reduce the size of pieces of rock initially processed

Facility	Purpose
	in the primary crusher to a size that can be handled by the downstream machinery
Concentrator Building	- To generate a marketable mineral product (i.e., a concentrate) from crushed ore
Concentrate Handling Facility	- To facilitate the shipment of concentrate to a third-party mineral processor
Contact Water Management System	- To collect contact water that may be generated around the mine site, including pit water, drainage from the MRSA, process water, natural drainage from the PSMF and drainage from the mill site to affect water quality management and control
Process Solids Management Facility	- To store non-marketable solids generated during the ore milling process following extraction of the ore (minerals) from the host material
Water Treatment Plant	- To treat the concentrations of constituents of potential concern in liquid effluent stream(s) that are discharged to the environment
Ancillary structures	- To support the mining operation, including administrative buildings, storage buildings and other structures

1.4.2 Project Setting

1.4.2.1 Project Location

The Project is located approximately 10 km north of the Town of Marathon, Ontario (Figure 1.4-6). The Town, population approximately 4,000, is situated adjacent to the Trans-Canada Highway No. 17 on the northeast shore of Lake Superior, about 300 km east and 400 km northwest (by highway) of Thunder Bay and Sault Ste-Marie, respectively. The centre of the Project footprint sits at approximately 48° 47’ N latitude, 86° 19’ W longitude.

The Project site is in an area characterized by relatively dense vegetation, comprised largely of a birch- and, to a lesser extent, spruce-dominated mixed wood forest. The terrain is moderate to steep, with frequent bedrock outcrops and prominent east-west oriented valleys. The climate of this area is typical of northern areas within the Canadian Shield, with long winters and short, warm summers.

Figure 1.4-6: Location of the Proposed Marathon PGM-Cu Project Site Near Marathon, Ontario

1.4.2.2 Legal Description of the Project Claim and Lease Property

The land tenure of the mining claims associated with the Project site is provided in Table 1.4-4. A mining claim reference plan is presented in Figure 1.4-7.

The Marathon PGM-Cu Project claim and lease property (the Project property) consists of a total surface area of 5,284 Ha, including:

- Land Registry Parcel Numbers 107094, 108581, 107323 and 107112 (comprising 86 mining claims) for which SCI has mining and/or surface rights; and,
- a further 61 mining claims that are contiguous with the lease areas.

The Project site (Site Study Area (SSA) within the Project property has a total surface area of approximately 1700 Ha.

In 2011, Stillwater made application to bring mining claims 4204207, 4204208 and 3015168 (see Figure 1.4-7) to lease including surface and mineral rights. The application is currently being processed by the MNDMF.

Surveying was completed in spring 2012 and another application is being submitted to bring additional mining claims to lease, also with surface and mineral rights (see Figure 1.4-7). Only claims on which with mine-related infrastructure will be located (corridors, roads, buildings, etc…) are being brought to lease; other mineral claims within the Project site boundary will not be brought to lease.

Table 1.4-4: Land Tenure of the Stillwater Canada Inc. Marathon PGM-Cu Project

Claim	Lease	MNDMF Units	MNDMF Hectares	Measured Hectares	Tenure
4208442		14	224	223.50	Mineral Rights
4208437		10	160	164.30	Mining Rights – 2012 application filed for lease
3006106		1	16	16.32	Mining Rights – 2012 application filed for lease
4246277		16	256	252.10	Mining Rights – 2012 application filed for lease
4246285		15	240	229.70	Mining Rights – 2012 application filed for lease
4242127		4	64	63.62	Mining Rights – 2012 application filed for lease
3019959		13	208	215.70	Mining Rights – 2012 application filed for lease
3019958		14	224	202.40	Mining Rights – 2012 application filed for lease
3014935		12	192	174.50	Mineral Rights

Claim	Lease	MNDMF Units	MNDMF Hectares	Measured Hectares	Tenure
4209026		10	160	158.00	Mineral Rights
1245837		2	32	41.71	Mineral Rights
1246695		14	224	203.70	Mining Rights – 2012 application filed for lease
4246283		2	32	27.18	Mining Rights – 2012 application filed for lease
4246284		3	48	45.53	Mining Rights – 2012 application filed for lease
3015168		5	80	69.24	Mineral Rights – need to include in 2012 application
3015167		2	32	13.19	Mineral Rights
3012173		11	176	131.00	Mineral Rights
3006862		15	240	222.40	Mineral Rights
3019790		12	192	184.10	Mineral Rights
4204048		4	64	65.13	Mining Rights – 2011 application filed for lease
1205330		12	192	175.50	Mining Rights – 2012 application filed for lease
1245837		2	32	41.71	Mineral Rights
1240016		7	112	94.01	Mineral Rights
3015140		1	16	5.78	Mining Rights – 2012 application filed for lease
3015141		1	16	4.07	Mining Rights – 2012 application filed for lease
3015166		3	48	39.90	Mining Rights – 2012 application filed for lease
3015165		4	64	65.86	Mining Rights – 2012 application filed for lease
3015163		5	80	68.05	Mining Rights – 2012 application filed for lease
3015164		4	64	53.57	Mining Rights – 2012 application filed for lease
3012177		6	96	133.70	Mining Rights – 2012 application filed for lease
4204047		7	112	103.20	Mining Rights – 2011 application filed for lease
4204049		10	160	149.40	Mining Rights – 2012 application filed for lease
TB101578	Lease 107094			18.97	Mining Rights Only
TB101581	Lease 107094			8.20	Mining Rights Only
TB101224	Leases 107094 and 108581			15.44	Surface and Mining Rights

Claim	Lease	MNDMF Units	MNDMF Hectares	Measured Hectares	Tenure
TB101225	Leases 107094 and 108581			14.23	Surface and Mining Rights
TB101579	Leases 107094 and 108581			17.68	Surface and Mining Rights
TB101580	Leases 107094 and 108581			11.29	Surface and Mining Rights
TB101583	Leases 107094 and 108581			6.64	Surface and Mining Rights
TB103572	Leases 107094 and 108581			14.12	Surface and Mining Rights
TB103573	Leases 107094 and 108581			14.61	Surface and Mining Rights
TB103574	Leases 107094 and 108581			17.28	Surface and Mining Rights
TB103575	Leases 107094 and 108581			15.54	Surface and Mining Rights
TB103583	Leases 107094 and 108581			13.74	Surface and Mining Rights
TB103584	Leases 107094 and 108581			8.62	Surface and Mining Rights
TB103657	Leases 107094 and 108581			14.23	Surface and Mining Rights
TB106983	Leases 107094 and 108581			16.62	Surface and Mining Rights
TB107641	Leases 107094 and 108581			5.62	Surface and Mining Rights
TB112787	Lease 107323			15.55	Mining Rights Only
TB112788	Lease 107323			30.82	Mining Rights Only
TB112789	Lease 107323			18.75	Mining Rights Only
TB105709	Leases 107112 and 108581			38.13	Surface and Mining Rights
TB105712	Leases 107112 and 108581			19.19	Surface and Mining Rights
TB105713	Lease 107112			23.23	Mining Rights Only
TB105715	Leases 107112 and 108581			14.90	Surface and Mining Rights
TB105716	Leases 107112 and 108581			24.67	Surface and Mining Rights
TB105717	Leases 107112 and 108581			26.29	Surface and Mining Rights
TB105718	Leases 107112 and 108581			36.52	Surface and Mining Rights

Claim	Lease	MNDMF Units	MNDMF Hectares	Measured Hectares	Tenure
TB105719	Leases 107112 and 108581			26.93	Surface and Mining Rights
TB105720	Leases 107112 and 108581			31.25	Surface and Mining Rights
TB105721	Leases 107112 and 108581			30.64	Surface and Mining Rights
TB105722	Leases 107112 and 108581			24.78	Surface and Mining Rights
TB105723	Leases 107112 and 108581			5.98	Surface and Mining Rights
TB105724	Leases 107112 and 108581			6.96	Surface and Mining Rights
TB105725	Leases 107112 and 108581			7.88	Surface and Mining Rights
TB105726	Leases 107112 and 108581			10.74	Surface and Mining Rights
TB105727	Leases 107112 and 108581			18.23	Surface and Mining Rights
TB105728	Leases 107112 and 108581			88.68	Surface and Mining Rights
TB105729	Leases 107112 and 108581			23.54	Surface and Mining Rights
TB105730	Leases 107112 and 108581			13.25	Surface and Mining Rights
TB105731	Leases 107112 and 108581			17.94	Surface and Mining Rights
TB105732	Leases 107112 and 108581			16.48	Surface and Mining Rights
TB105733	Leases 107112 and 108581			18.67	Surface and Mining Rights
TB105734	Leases 107112 and 108581			33.95	Surface and Mining Rights
TB105735	Leases 107112 and 108581			14.50	Surface and Mining Rights
TB105736	Leases 107112 and 108581			10.81	Surface and Mining Rights
TB105737	Leases 107112 and 108581			14.80	Surface and Mining Rights
TB105739	Leases 107112 and 108581			10.10	Surface and Mining Rights
TB105740	Leases 107112 and 108581			8.44	Surface and Mining Rights
TB105741	Leases 107112 and 108581			12.06	Surface and Mining Rights
TB105743	Leases 107112 and 108581			23.99	Surface and Mining Rights

Claim	Lease	MNDMF Units	MNDMF Hectares	Measured Hectares	Tenure
TB105744	Leases 107112 and 108581			13.51	Surface and Mining Rights
TB105745	Leases 107112 and 108581			18.06	Surface and Mining Rights
TB105747	Leases 107112 and 108581			5.23	Surface and Mining Rights
TB105748	Leases 107112 and 108581			20.15	Surface and Mining Rights
TB105751	Leases 107112 and 108581			13.07	Surface and Mining Rights
TB105752	Leases 107112 and 108581			22.02	Surface and Mining Rights
TB105753	Leases 107112 and 108581			14.44	Surface and Mining Rights
TB105754	Leases 107112 and 108581			21.33	Surface and Mining Rights
TB105755	Leases 107112 and 108581			14.27	Surface and Mining Rights
TB105756	Leases 107112 and 108581			14.56	Surface and Mining Rights
TB105757	Leases 107112 and 108581			12.34	Surface and Mining Rights
TB105758	Leases 107112 and 108581			9.24	Surface and Mining Rights
TB105759	Leases 107112 and 108581			8.77	Surface and Mining Rights
TB105760	Leases 107112 and 108581			12.16	Surface and Mining Rights
TB105761	Leases 107112 and 108581			14.74	Surface and Mining Rights
TB105763	Leases 107112 and 108581			14.63	Surface and Mining Rights
TB105764	Leases 107112 and 108581			15.87	Surface and Mining Rights
TB105765	Leases 107112 and 108581			12.92	Surface and Mining Rights
TB105766	Leases 107112 and 108581			23.15	Surface and Mining Rights
TB105767	Leases 107112 and 108581			18.11	Surface and Mining Rights
TB105769	Leases 107112 and 108581			15.89	Surface and Mining Rights
TB105770	Leases 107112 and 108581			15.21	Surface and Mining Rights
TB105771	Leases 107112 and 108581			13.95	Surface and Mining Rights

Claim	Lease	MNDMF Units	MNDMF Hectares	Measured Hectares	Tenure
TB105772	Leases 107112 and 108581			27.74	Surface and Mining Rights
TB105775	Leases 107112 and 108581			16.10	Surface and Mining Rights
TB105776	Leases 107112 and 108581			9.28	Surface and Mining Rights
TB105777	Leases 107112 and 108581			10.16	Surface and Mining Rights
TB105778	Leases 107112 and 108581			22.06	Surface and Mining Rights
TB105781	Leases 107112 and 108581			16.85	Surface and Mining Rights
TB105782	Leases 107112 and 108581			16.27	Surface and Mining Rights
TB105783	Leases 107112 and 108581			15.05	Surface and Mining Rights
TB105784	Leases 107112 and 108581			29.21	Surface and Mining Rights
TB112769	Leases 107112 and 108581			8.19	Surface and Mining Rights
TB112774	Leases 107112 and 108581			14.21	Surface and Mining Rights
TB112775	Leases 107112 and 108581			7.51	Surface and Mining Rights
Total				**5281**	

Figure 1.4-7: Summary of Crown Leases and Claim Blocks for the Marathon PGM-Cu Project Site

1.4.2.3 Established Land/Water Uses and Resource/Conservation Plans Within and Near the Project Site

Topographic maps at scales of 1:50,000 and 1:250,000 that provide a regional perspective for the proposed development are provided in Figures 1.4-8 and 1.4-9. Parks, reserves, and management areas, as well as commercial and industrial activities, in the general vicinity of the Project site (as described in the following report sections).

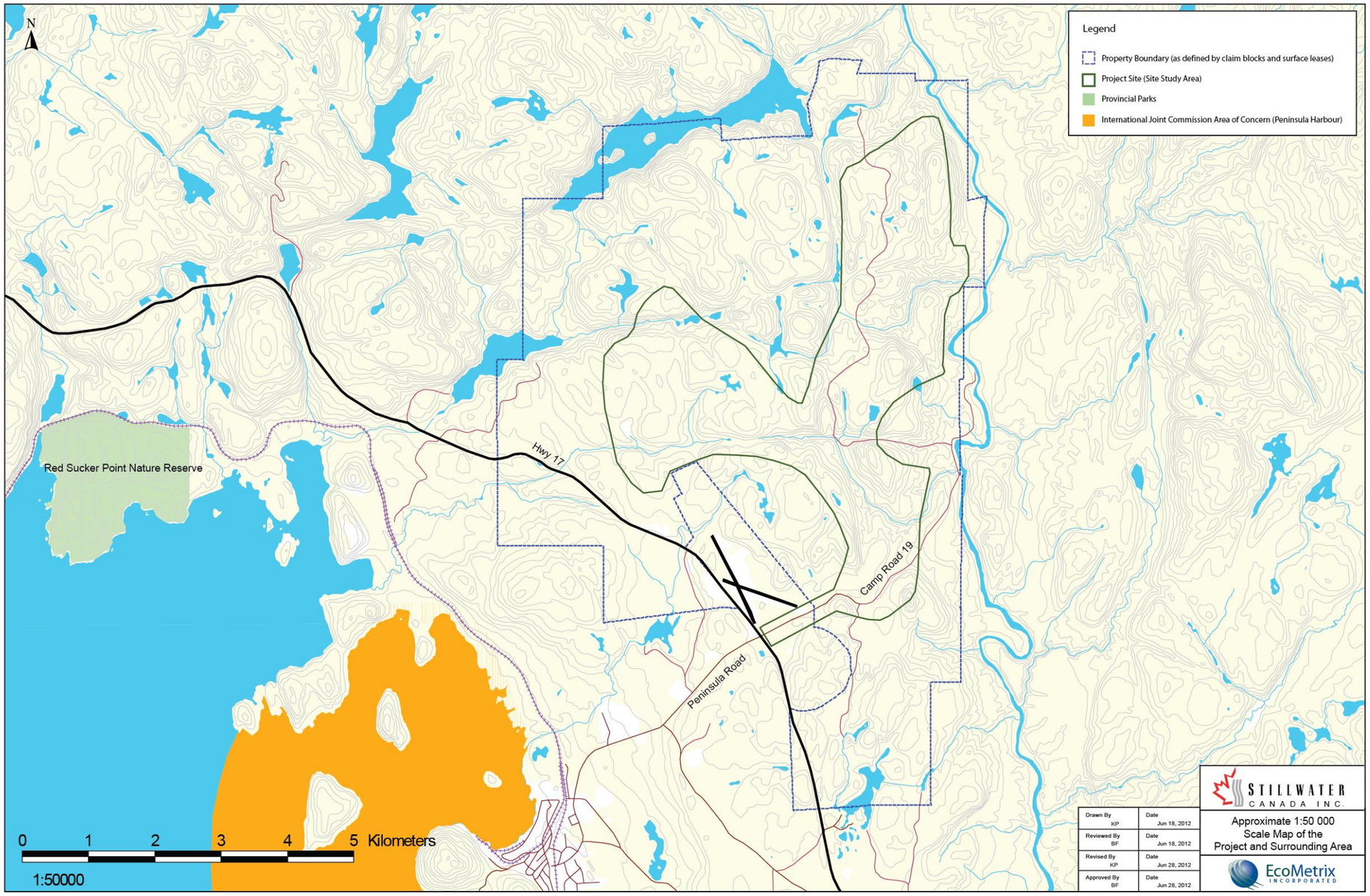

Figure 1.4-8: Approximate 1:50,000 Scale Map of the Project and Surrounding Area

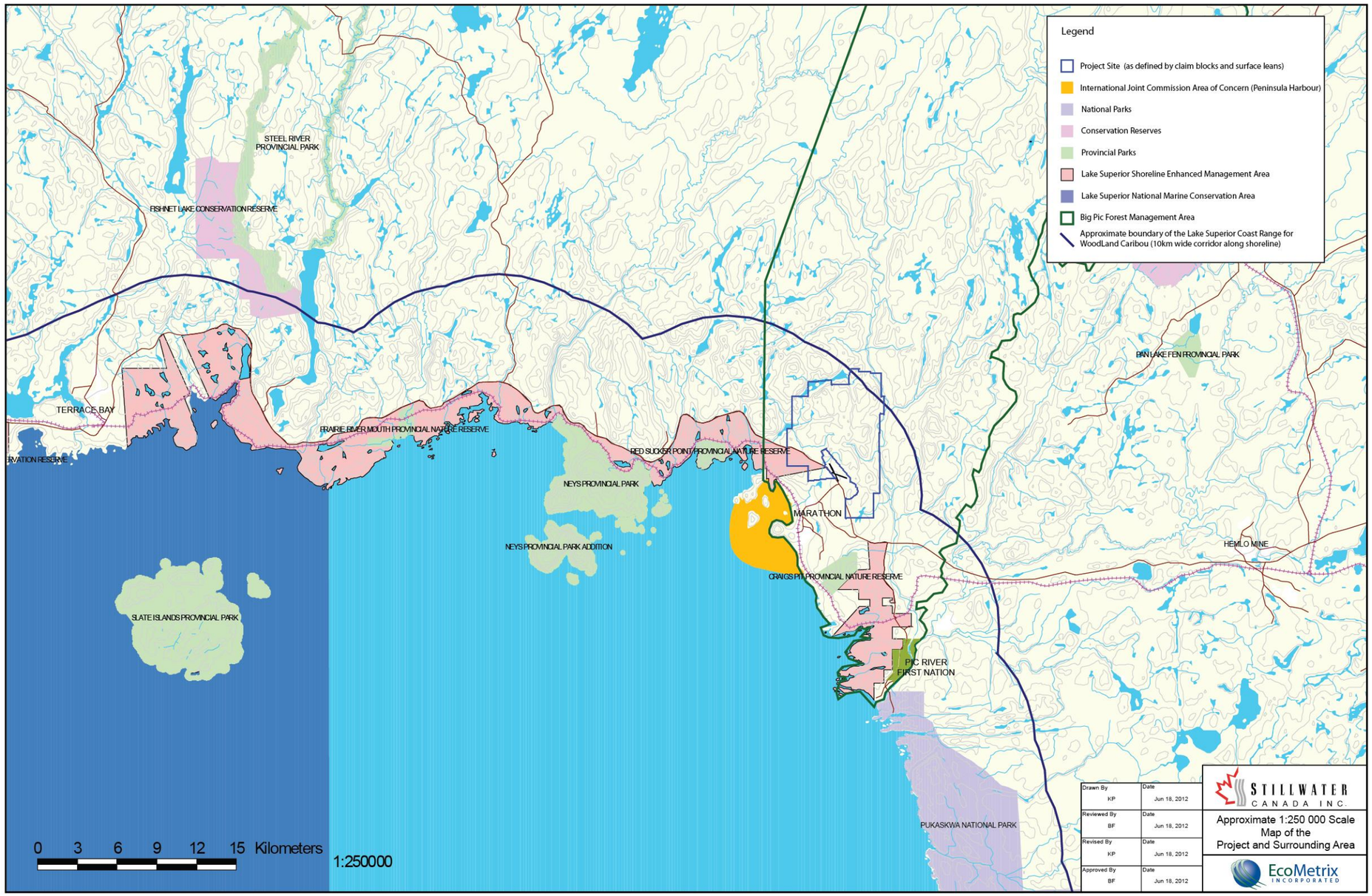

Figure 1.4-9: Approximate 1:250,000 Scale Map of the Project and Surrounding Area

1.4.2.3.1 General Land Use and Activities

Regional land-use activities in the area in which the Project site is found include hunting, fishing, trapping and snowmobiling, as well as mineral exploration (and mining) and forestry. As it pertains specifically to the Project site, the existing access road, which forms the southern limit of the site before turning north along the Pic River, provides access to the Pic River and can also be used to access the interior of the site, though access to the interior of the Project site has been limited for the last number of years by a security gate.

The Project site is located within the Big Pic Forest Management Area. The Big Pic Forest includes Crown land east and north of Lake Superior and is generally north, south and west of the community of Manitouwadge and includes the communities of Marathon, Caramat and Hillsport. The forest is managed under the authority of a Sustainable Forest License, which is has been vested to the Crown since 2010. The Big Pic Forest is located in the boreal forest, which is dominated by mixed-wood sites.

Two registered trap line areas, TR022 and TR023, are in the vicinity of the Project site. The Project site is entirely withinTR022 which is registered to the Pic River First Nation (PRFN) and is held in trust for the community. TR023 adjacent to the Project site to the east and is registered to an individual who is a member of the PRFN community.

Local recreational and food fishing activity is focused on the Pic River, which contains a variety of coldwater and coolwater fish species, in Hare and Bamoos lakes and Lake Superior and its tributary streams. Hare Lake is road accessible from its southwest corner and has two cottages. Bamoos Lake, which is upstream from Hare Lake within the same catchment, is accessible by portage or by snowmobile in the winter from Hare Lake/Creek. The existing site access road provides access to a location about 750 m southeast of Bamoos Lake from where the lake is accessible by hiking or all-terrain vehicle or snowmobile. As indicated above access via this route has been limited for the last number of years by a security gate.

SCI undertook specific consultations with aboriginal groups in relation to current uses of lands and resources for traditional purposes at the Project site. The results of these consultations are summarized in Section 5.11. The Project site and surrounding area is reported to be used for a variety of traditional pursuits. The PRFN report extensive traditional land uses in the general vicinity of the Project Site such as hunting, trapping, fishing and country food gathering.

Local watersheds, national and provincial parks and preserves, designated management areas and commercial and industrial sites in the vicinity of the Project site are described in the report subsections that follow.

1.4.2.3.2 Local Watersheds

The Project site falls entirely within the Lake Superior watershed. A major watershed divide separates the site along a north-south axis, with land to the west of the divide draining to Lake Superior directly and the land to the east of the divide draining to the Pic River (and subsequently to Lake Superior).

There are a total of 6 subwatersheds that drain the Project site, four to the Pic River and 2 to Lake Superior directly. Hereafter these watersheds are referred to as the Stream 1 subwatershed through the Stream 6 subwatershed and are described as follows:

- Stream 1 subwatershed – drains the southeast portion of the site;
- Stream 2 subwatershed – drains the middle of the eastern half of the site;
- Stream 3 subwatershed – drains the middle of the eastern half of the site;
- Stream 4 subwatershed – drains the northeast portion of the site;
- Stream 5 subwatershed – drains the northwest portion of the site; and,
- Stream 6 subwatershed – drains the southwest portion of the site.

A subwatershed map showing the major and minor watershed divides is provided in Figure 1.4-10. The Shank Creek subwatershed, which is identified as the Stream 7 watershed on Figure 1.4-10 is outside the footprint of the mine. More detailed descriptions of the features of the subwatersheds are provided in Section 5.4 of this report, as well as other supporting documentation (EcoMetrix, 2012a; Calder, 2012a).

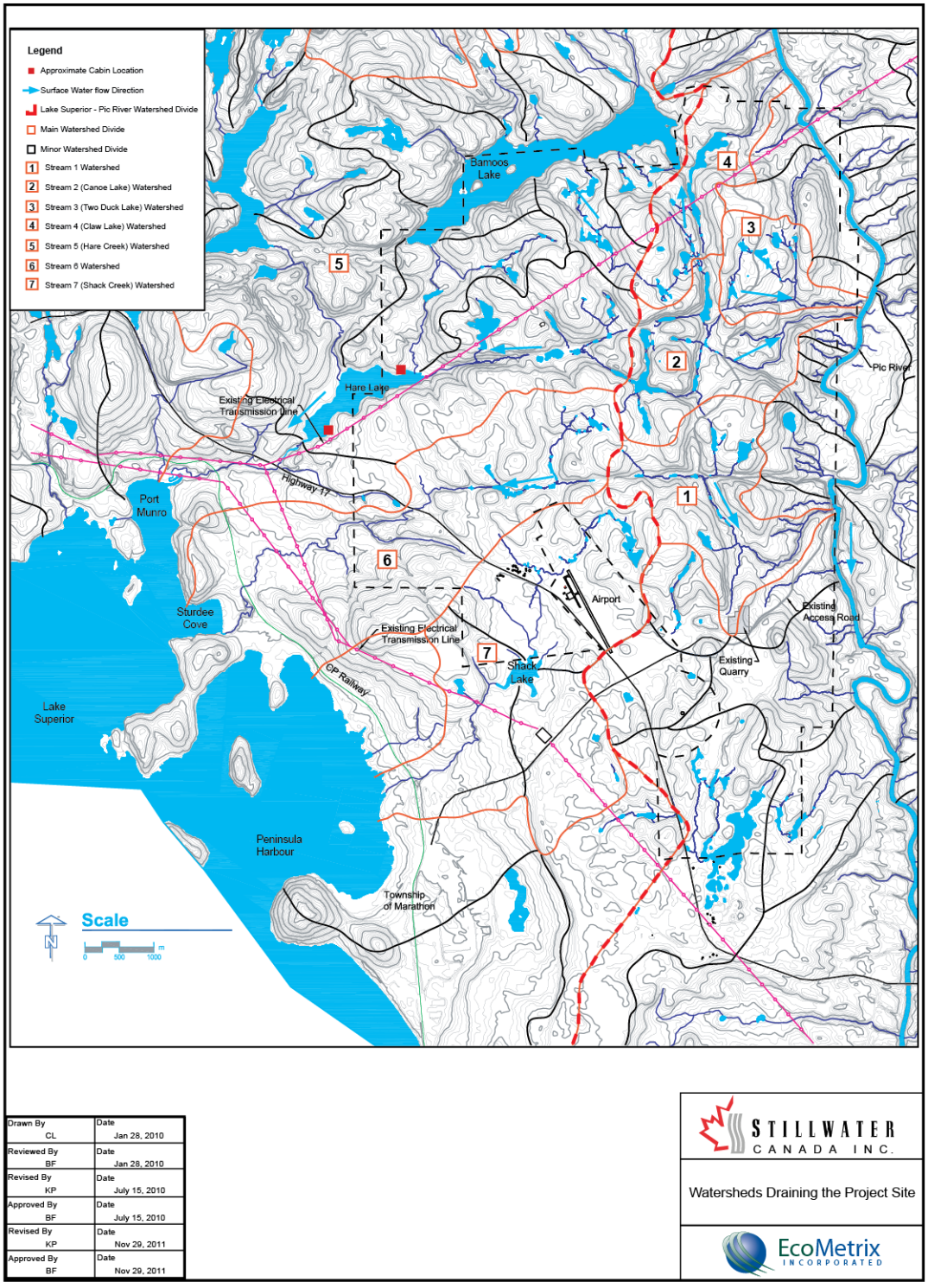

Figure 1.4-10: Watersheds Draining the Project Site

1.4.2.3.3 National and Provincial Parks and Reserves

Pukaskwa National Park is located approximately 20 km south of the Project, east of the Pic River. The park is accessed from Highway 17 via Highway 627 at Hattie Cove. The Park is a wilderness area covering 1,878 km^2. There are no interior roads at the Park so its main users are backcountry hikers, long distance canoeists and kayakers (due to a long Lake Superior coastline). The only improved campground and general public access to the park is at the northwest corner in the Hattie Cove region.

The eastern boundary of the Lake Superior National Marine Conservation Area is located approximately 40 km west of the Project. The Lake Superior National Marine Conservation Area as defined by the (Marine Conservation Areas Act) extends 140 kilometers eastward from Thunder Cape in the west, at the tip of Sleeping Giant Provincial Park, to Bottle Point in the east, and stretches southward to the Canada-US border, linking with Isle Royale National Park. It also anchors existing protected areas to the north, including the Nipigon River, Lake Nipigon, and the Wabakimi Provincial Park.

Neys Provincial Park is located on the north shore of Lake Superior on the Coldwell Peninsula, 20 km west of the Project. None of the watercourses that drain the Marathon property flow through Neys Park. The Park is a Natural Environment Class provincial park within the Ontario Parks system, covering an area of about 54 km^2 including the Coldwell Peninsula and the surrounding island system consisting of: Pic Island, Detention Island, and the Sullivan Islands. The park offers 144 campsites within four campgrounds.

Red Sucker Point Provincial Park (3.6 km^2) is a Nature Reserve Class park located along the shore of Lake Superior south of the CNR rail line between Red Sucker Cove and Craddock Cove, approximately 10 km west of the Project site. There are no visitors' facilities at the park. Nature study and fishing are permitted but camping is not allowed.

Craig's Pit Provincial Nature Reserve is located south of the Trans-Canada Highway west of the Heron Bay Access Road near the southern limit of the Town of Marathon. The reserve covers an area of 5.3 km^2 and features a variety of landforms including four major kettle holes, deep deltaic deposits and wave-cut bluffs from the glacial Lake Minong period.

Steel River Provincial Park (112.4 km^2) is a Waterway Class park located about 24 km northeast of Terrace Bay or about 55 km northwest of the Project site. It is a wishbone-shaped park consisting of long, narrow lakes, rugged cliffs, ravines, swamps, ponds and oxbow lakes. There are no visitor facilities; backcountry camping and canoeing are recommended activities.

Slate Islands Provincial Park is a Natural Environment Class provincial park covering an area of 65.7 km^2. The park is located in Lake Superior 12 km south of Terrace Bay or about 50 km west of the Project site. The park comprises a group of rugged islands and is home to a herd of woodland caribou whose population density is the highest in the province due to the lack of predators. There are no visitor facilities in the park.

1.4.2.3.4 Designated Management Areas

As indicated above, the Project site is located within the Big Pic Forest Management Area. The Big Pic Forest includes Crown land east and north of Lake Superior and is generally north, south and west of the community of Manitouwadge and includes the communities of Marathon, Caramat and Hillsport. The forest is managed under the authority of a Sustainable Forest License, which is has been vested to the Crown since 2010. The Big Pic Forest is located in the boreal forest, which is dominated by mixed-wood sites.

Lake Superior Shoreline Enhanced Management Areas exist both north and south of the Town of Marathon, as part of the Great Lakes Heritage Coast initiative. The initiative does not define a land use designation; rather it is a broad policy statement that identifies the Great Lakes coast for special planning and management consideration. The Great Lakes Heritage Coast policies apply to all Crown lands, waters, lakebeds, Crown islands, and intervening coastal areas along the Great Lakes shoreline from Port Severn in Georgian Bay, through the North Channel of Lake Huron, to the international border south of Thunder Bay on Lake Superior. The Heritage Coast policies do not apply to Aboriginal or privately owned lands. The shoreline enhancement area to the north of Marathon includes portions of Hare Creek, Angler Creek and Shack Creek, which drain the Project site to the west into Lake Superior, but does not include the Project footprint.

Peninsula Harbour is an International Joint Commission Area of Concern (AOC). The harbour is located on the northeastern shore of Lake Superior at the Town of Marathon and extends approximately four kilometers into Lake Superior. The environmental impairments in Peninsula Harbour result, almost exclusively, from the presence of a substantial area of contaminated sediments. Sediment contamination is largely the result of wood fibre, mercury and PCBs. Remedial strategies for Peninsula Harbour include the development of a 15 cm thick cover on the most contaminated sediments, though this course of action is yet to be implemented.

1.4.2.3.5 Commercial and Industrial Activities

The Project site falls within a bait fish license area. Claw Lake, north of the Project site, is accessed for this purpose from time to time.

The Marathon airport is located near the southwest corner of the Property boundary. The airport is used by private plane owners and several small commercial helicopter companies.

The Town of Marathon operates a municipal waste disposal site within the Town boundaries. The disposal site has recently gone through an expansion approval process and at current disposal rates the landfill will continue to accept material for the next ten years. A new disposal site about 64 km (by road) northwest of the Town is currently in the midst of the provincial review process. The site encompasses 77 ha and will receive solid non-hazardous domestic and industrial wastes from the Town and surrounding area. At expected fill rates the site will receive wastes for about 35 years.

The Hemlo Gold Mine comprises the Williams (open pit and underground facilities) and David Bell (open pit) operations and is located approximately 30 km southeast of the Project. Surface water discharge from this mine enters the Pic River via the Black River the mouth of which is located on the east bank of the Pic River, approximately 18 km downstream of the Marathon Project.

Until recently, Marathon Pulp Inc. (MPI) operated a Kraft pulp mill in Marathon on the shore of Peninsula Harbour. The mill discharged treated effluent from a submerged diffuser into Lake Superior approximately 3 km south of town. The mill announced its indefinite shut down (effective at the end of February 2009) on February 11, 2009. MPI owns a waste disposal site along the Project site access road about 5 km north of Marathon. During mill operations the site was used to dispose of solid wastes (e.g., dewatered treatment system sludge, fly ash).

Buchanan Forest Products owns/operates the Terrace Bay Pulp mill at Terrace Bay, about 100 km west of the Project site. The mill was idled in March of 2009, having filed for protection from its creditors under the federal *Companies' Creditors Arrangement Act*. The mill re-opened late in 2010 but was idled again in late 2011. Buchanan Forest Products has officially announced that the mill is for sale. During operations mill effluent is discharged to Jackfish Bay (Lake Superior).

Minimal agricultural activities exist in Marathon. The 2006 Census of Agriculture provides information on farming in the census consolidated subdivision of Thunder Bay, which includes Marathon. There are 67 farms in the census consolidated subdivision of Thunder Bay, with the majority of farms growing hay, fodder crops and alfalfa, and a minority growing potatoes, oats, and barley.

1.4.2.4 Aboriginal Peoples

The Project site is within the boundaries of those lands that fall within the purview of the Robinson-Superior Treaty (the Treaty). The Treaty area extends along the shore of Lake Superior from Pigeon River west of Thunder Bay to Batchawana Bay south of Wawa, as well as inland. The PRFN is the closest resident Aboriginal group to the Project site. The PRFN reserve is approximately 20 km south of the Project. The PRFN have filed an Amended claim exclusive Aboriginal land title to an area in which the Project site is found. The claim has been before the Ontario Courts since 2004. The PRFN do not consider themselves bound by the Robinson-Superior Treaty. Detailed information regarding Aboriginal peoples is provided in Section 5.11 of this report.

1.4.2.5 Exploration History of the Site

Exploration for copper and nickel deposits on the Project site started in the 1920s and continued until the 1940s with the discovery of titaniferous magnetite and disseminated chalcopyrite occurrences. During the past four decades, the site has undergone several phases of exploration and economic evaluation, including geophysical surveys, prospecting, trenching,

diamond drilling programs, geological studies, resource estimates, metallurgical studies, mining studies, and economic analyses. These studies successively enhanced the knowledge base of the deposit.

In 1963, Anaconda acquired the Marathon property and carried out systematic exploration work including diamond drilling of 36,531 m in 173 drill holes. This culminated in the discovery of a copper-PGM deposit. Anaconda carried out a test pitting program that recovered 350 tonnes of material and had it tested at its Extraction Metallurgy Research Division (EMRD) facilities. Anaconda conducted a number of metallurgical tests intermittently from 1965 to 1982. Anaconda's primary objective was to improve metallurgical recoveries of copper and increase the copper concentrate grade. Anaconda discontinued further work on the project in the early 1980s due to low metal prices at the time.

In 1985, Fleck purchased a 100% interest in the Marathon PGM-Cu Project with the objective of improving the project economics by focusing on the platinum group element (PGE) values of the deposit. Fleck carried out an extensive program which included re-assaying of the Anaconda drill core, further diamond drilling, surface trenching of the mineralized zones, bulk sampling and a pilot plant test program at Lakefield Research Limited. The Fleck drilling totaled 3,615 m in 37 diamond drill holes. On June 10, 1998, Fleck changed its name to PolyMet Mining Corp.

In 1986, H.A. Symons carried out a feasibility study for Fleck based on a 9,000 tonnes per day conventional flotation plant with marketing of copper concentrate. The study indicated a low internal rate of return. Also in 1986, Kilborn Limited carried out a prefeasibility review for Fleck that included preliminary results from the Lakefield pilot plant tests (Kilborn Limited, 1987). The study envisaged a 13,400 tonnes/day conventional flotation plant with marketing of copper concentrate. In late 1986 Teck Corporation prepared a preliminary economic feasibility report on Fleck's Marathon PGM-Cu Project based on a conventional open pit operation and concluded that the project was uneconomic due to low metal prices at that time.

In 1989, BHP Engineering Pty Ltd. (BHP) carried out a prefeasibility study for Euralba Mining Ltd. (Euralba), an Australian Junior mining company that had entered into a joint venture agreement with Fleck in 1987. Euralba re-sampled some 2,500 samples of drill core and had them assayed at Lakefield. Euralba retained Geostat Systems International (Geostat) to develop a block model of the Marathon deposit that was used by BHP to design an optimized open pit. BHP considered several metallurgical processes, including an on-site smelter process.

In 2000, Geomaque acquired certain rights to the Marathon PGM-Cu Project through an option agreement with Polymet. Geomaque and its consultants carried out a study of the economic potential of the Marathon PGM-Cu Project. The study included a review of the geology and drill hole database, interpretation of the mineralized zones, statistics and geostatistics, computerized block model, resource estimation, open pit design and optimization, metallurgy, process design, and capital and operating cost.

Marathon PGM Corp. (MPGM) acquired the Marathon PGM-Cu deposit from Polymet in December 2003. MPGM funded programs of advanced exploration and diamond drilling on a continuous basis between June 2004 and 2009. Over this period a total of 100,694 metres was drilled in 511 holes. Drilling was conducted across the Project site for various purposes including: to upgrade or expand the resource; for condemnation holes at the process solids management area, crusher and mills sites; and, to further define the resource.

Stillwater Mining Company and Marathon PGM Corp. entered into an agreement on September 7, 2010 pursuant to which SWC would acquire all of the outstanding shares of MPGM. The acquisition agreement received ministerial approval under the Investment Canada Act on November 24, 2010 and the agreement closed on November 30, 2010. On December 31, 2010 Stillwater Mining Company formed a Canadian corporation, Stillwater Canada Inc., which officially became the new proponent of the Marathon PGM-Cu Project.

1.4.3 Project Description

The information provided below and in this EIS is based on the conceptual mine design for the Marathon Platinum Group Metals and Copper Mine Project. The conceptual design provides planning level information for the environmental assessment process. Detailed design will follow EA approval in concordance with the concepts presented herein. The mine plan has been developed taking into account the guidance provided in in the federal environmental code of practice for metal mines (Environment Canada, 2009).

1.4.3.1 Overview

The Project is based on the development of an open pit mining and milling operation. The general layout of the components of the mine site, the transmission line corridor and access road is provided in Figure 1.4-12 below. One primary pit and a satellite pit complex to the south (currently envisaged to comprise four satellite pits) are proposed to be mined. Ore will be processed (crushed, ground, concentrated) at an on-site processing facility. Final concentrates containing copper and platinum group metals will be transported off-site via road and/or rail to a smelter and refinery for subsequent metal extraction and separation. The total mineral reserve (proven and probable) is estimated to be approximately 91.5 million tonnes (see Section 1.4.3.3). It is possible that an iron concentrate may also be produced, depending upon the results of further metallurgical testing and market conditions at that time.

During the operations phase of the Project, ore will be fed to the mill at an average rate of approximately 22,000 tonnes per day. The operating life of the mine is estimated to be approximately 11.5 years. The construction workforce will average approximately 400 people and will be required for between 18 and 24 months. During operations the work force will comprise an estimated 365 workers. The mine workforce will reside in local and surrounding communities, as well as in an Accommodations Complex that will be constructed in the Town of Marathon.

Approximately 288 million tonnes of mine rock[1] will be produced. The majority of this material (between 85 to 90%) is NAG and will be permanently stored in a purposefully built Mine Rock Storage Area (MRSA) located east of the primary pit. The NAG (non-acid generating) or so-called Type 1 mine rock will also be used in the construction of access roads, dams and other site infrastructure as needed. Drainage from the MRSA will be collected, stored, treated and discharged as necessary to the Pic River. It is estimated that approximately, 20 million tonnes PAG (potentially acid generating) mine rock will be managed on surface during mine operations in temporary stock piles with drainage directed into the open pits. This material will be relocated to the bottom of the primary and satellite pits and covered with water and/or NAG material to prevent potential acid generation.

Process solids[2] will be managed in the Process Solids Management Facility (PSMF), as well as in the satellite pit complex. The PSMF will be designed to hold approximately 61 million m^3 of material, and its creation will require the construction of dams. Two streams of process solids will be generated. An estimated 85 to 90% of the total amount of process solids produced will be NAG, or so-called Type 1 material. The Type 2 process solids will be PAG. They will be stored below the water table in the PSMF or in the satellites pits and covered with Type 1 process solids to mitigate potential acid generation. Water collected within in the PSMF, as well as water collected around the mine site other than from the MRSA (e.g., water pumped from the pits, run-off collected around the mill site) will be managed in the PSMF for eventual reclamation in the milling process. Excess water not needed in the mill will be discharged, following treatment as is necessary, to Hare Lake.

Access to the Project site is currently provided by the Camp 19 Road, opposite Peninsula Road at Hwy 17. The existing road runs east towards the Pic River before turning north along the river to the Project site (approximately 8 km). The existing road will be upgraded and utilized from its junction with Hwy 17 for approximately 2.0 km. At this point a new road running north will be constructed to the future plant site. The primary rationale for developing the new road is to move traffic away from the Pic River, where erosion of the existing road is an environmental concern. The new section of road will link two sections of forest access roads located on the site.

Power to the Project site will be provided via a new 115 kV transmission line that will be constructed from a purposefully built junction point on the Terrace Bay-Manitouwadge transmission line (M2W Line) located to the northwest of the primary pit. The new transmission line will run approximately 4.1 km to a substation at the mill site. The width of the transmission corridor will be approximately 30 m.

[1] Mine rock is rock that has been excavated from active mining areas but does not have sufficient ore grades to process for mineral extraction.
[2] Process solids are solids generated during the ore milling process following extraction of the ore (minerals) from the host material.

Disturbed areas of the Project footprint will be reclaimed in a progressive manner during all Project phases. Natural drainage patterns will be restored as much as possible. The ultimate goal of mine decommissioning will be to reclaim land within the Project footprint to permit future use by resident biota and as determined through consultation with the public, Aboriginal people and government. A certified Closure Plan for the Project will be prepared as required by Ontario Regulation (O.Reg.) 240/00 as amended by O.Reg.194/06 "Mine Development and Closure under Part VII of the Mining Act" and "Mine Rehabilitation Code of Ontario".

Maps showing the existing features and topography of the site, as well as the proposed conceptual development of the site are provided in Figure 1.4-11 and 1.4-12 below.

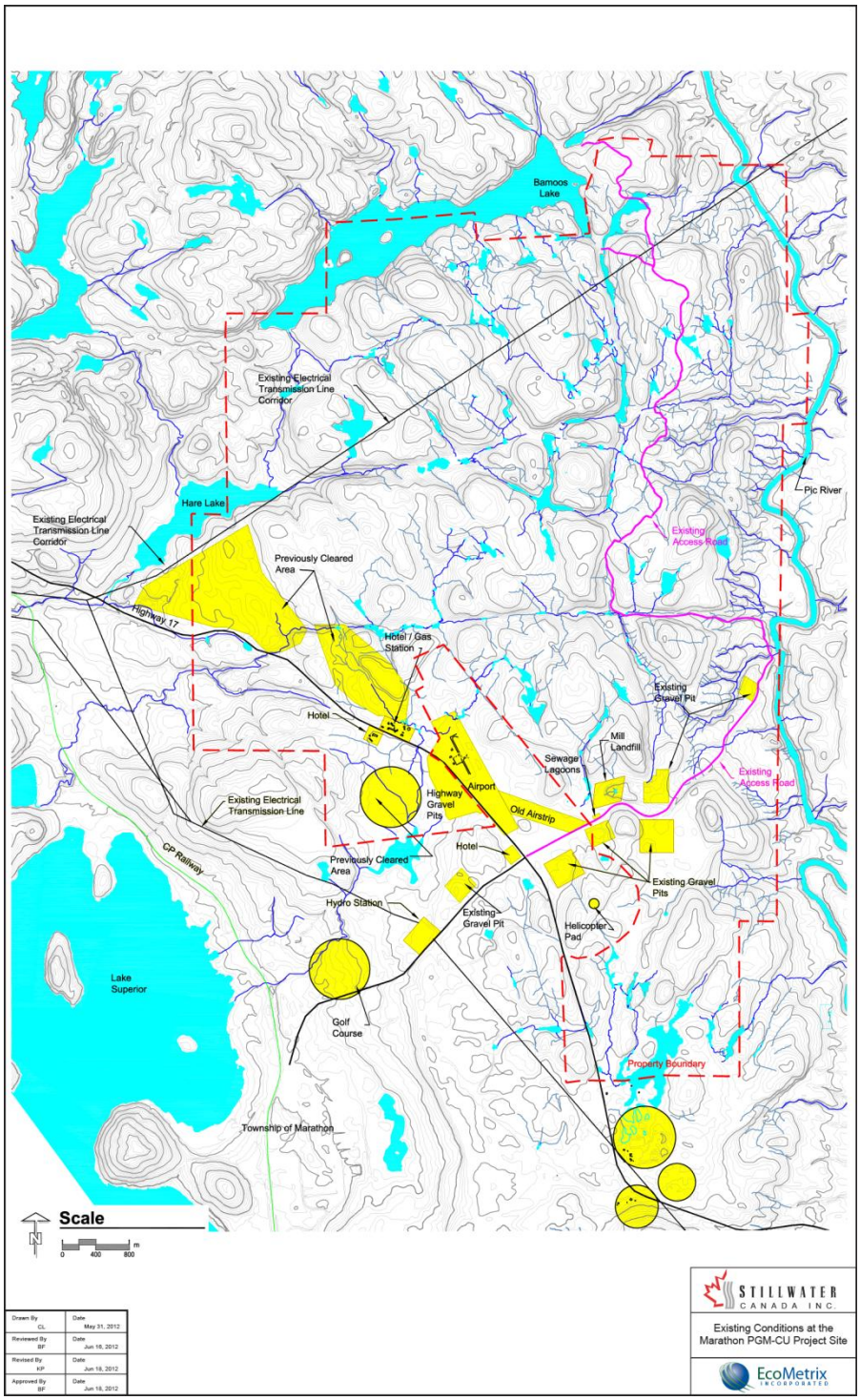

Figure 1.4-11: Existing Conditions at the Marathon PGM-Cu Project Site

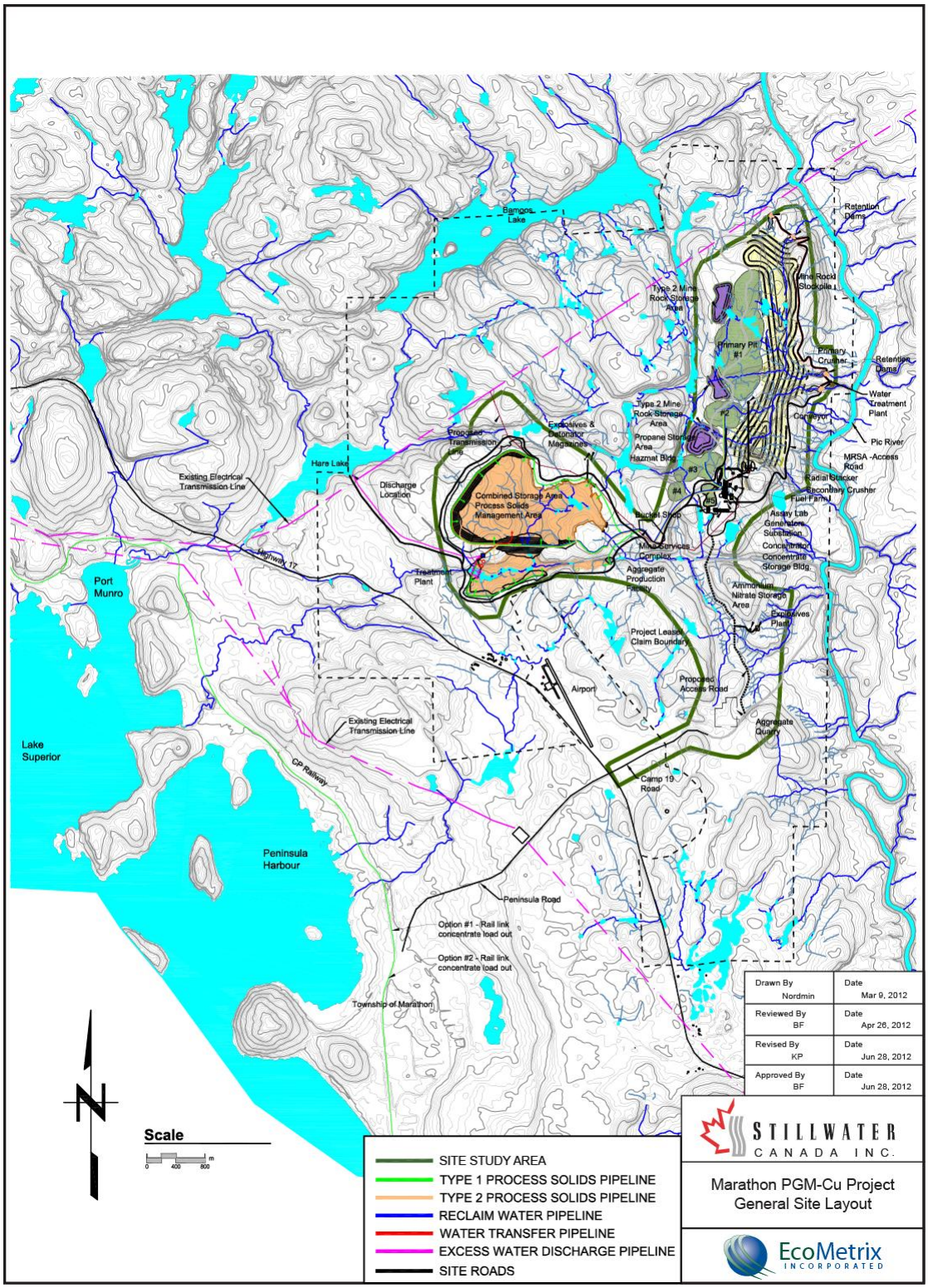

Figure 1.4-12: Marathon PGM-Cu Project General Site Layout

1.4.3.2 Project Phases

The Project will be implemented in four phases: site preparation; construction; operations; and decommissioning and closure. The primary activities associated with each of the phases are described below. Further details pertaining to specific activities, mine components and/or mine facilities are presented in Sections 1.4.3.3 (Mine Plan – Mineral Resource and Mineral Reserve), Section 1.4.3.4 (Mine Development), Section 1.4.3.5 (Process Plant), Section 1.4.3.6 (Maintenance, Administration and On-site Support Facilities) and 1.4.3.7 (Off-site Support Infrastructure for Mine Development and Operations).

1.4.3.2.1 Site Preparation

Prior to the commencement of construction, a number of activities are necessary to prepare the Project site. Site preparation will consist of the following key activities: clearing; grubbing; stripping; grading; drilling and blasting; excavating and pre-stripping; development of the site road network (including upgrades to the Hwy 17 intersection); development of the electrical power transmission corridor; preparation of construction surfaces; development of the process solids management facility (PSMF); development of the mine rock storage area (MRSA); waste management; and environmental management and monitoring. These activities are summarized in Table 1.4-5. The approximate footprint of the areas that will be developed (cleared) to accommodate the mine and related infrastructure is shown in Figure 1.4-13.

Site preparation, in combination with construction (see Section 1.4.3.2.2), is estimated to be completed over a 18 to 24 month period. The work schedule will likely vary over this period according to the nature of the work that is being completed at any one time but work will largely progress 7 days per week, with two shifts per day. It is estimated that as many as 90 passenger vehicles will be entering the mine site for the day shift and 60 will enter the mine site for the night shift. The majority of the traffic will be workers traveling to and from the site at the start and end of their shifts, with some general freight and equipment transport vehicles accessing the site throughout the day. The majority of the truck traffic will be restricted to Highway #17 and the Camp #19 Road.

During this period the work force will comprise on average about 400 workers. An Accommodations Complex (see Section 1.4.3.7.3) with a capacity of approximately 250 people will be constructed in the Town of Marathon to accommodate the portion of the workforce that is not derived from the local/regional catchment (estimated to be equivalent to about a 100 km one way commute). An additional three hotels owned by SCI will be available for worker accommodations.

Electrical power needed during initial site preparation will be provided by diesel generators (see Section 1.4.3.4.10).

Table 1.4-5: Summary of Key Site Preparation Phase Activities

Activity	Description
Clearing	Clearing consists of the removal and disposal of vegetation such as trees, brush, shrubs and other foliage. Trees will be felled, skidded and piled in the cut area. The Big Pic Forest Management Plan has describes areas on the Project site that are planned for harvest. Merchantable timber from these areas will be salvaged and marketed, assuming market conditions permit. Unsalvageable cuttings may be disposed of by chipping and piling, and other beneficial uses of slash and non-merchantable timber may be investigated. Clearing will occur to facilitate development of the open pits, mill site, PSMF, roads, explosives manufacturing and storage facilities and electrical power corridor.
Grubbing	Grubbing is the removal of roots, stumps, embedded logs and debris. Stumps may be removed with machinery and/or heavy equipment. To the extent possible grub material will be stockpiled with the overburden and subsequently used as biomass following construction to restore disturbed areas. No grubbing is expected within the area along the transmission corridor that is outside the footprint of other site infrastructure.
Stripping	Stripping involves the removal of topsoil and other organic materials. To the extent possible, the topsoil stripped and will be stockpiled in the same area as the overburden and subsequently used following construction during mine life for progressive reclamation and closure to restore disturbed areas. No stripping is expected for roads or the transmission corridor.
Grading	Grading involves the removal and placement of overburden, which will be accomplished using a bulldozer, excavator or scraper. Graded material will be stored temporarily in one of the previously cleared areas. If suitable for reuse, the excavated materials will be placed in areas requiring fill (i.e., during road and plant site construction). If not suitable for reuse, due to permeability or high moisture content, the material may be placed in an overburden stockpile for reclamation purposes.
Drilling and blasting	Drilling and blasting will occur in order to develop the open pits and to prepare the mill site area. Blasting will also be required for road and dam construction. Blast holes will be drilled using conventional drills. Explosives will range from pre-packaged design to ANFO and/or Emulsion based products for large blasts.
Excavating and pre-stripping	During the first year of site development mine rock will be excavated from the open pits and surrounding area in preparation of the commencement of mining operations. Hydraulic shovels or front end loaders will be used to load excavated rock onto haul trucks. This rock will be hauled for immediate use in infrastructure development or temporarily stored in one of the previously cleared areas. Type 1 mine rock will be used for dam and road construction, and/or pads and other infrastructure-related development. A crusher will be used to reduce mine rock to aggregate of various sizes for use in construction. Any Type 2 material that is identified via testing in the Assay Lab will be segregated so that its drainage will be contained and managed, as

Activity	Description
	required.
Development of the site road network	Improvements to the Hwy 17 Camp 19 road will be completed (see Section 1.4.3.7.4). A new site access road will be constructed and the site road network will be developed. The new site access road will join the Camp 19 Road via an old cut line to the mill site (see Section 1.4.3.4.9). The site road network will link site facilities.
Development of the electrical power transmission corridor	A new 115 kV overhead transmission line will be constructed to link the M2W Line to the site. An approximate 30 m wide corridor will be developed. The corridor is shown in Figure 1.4-2. More information pertaining to the new 115 kV overhead transmission line is provided in Section 1.4.3.7.1.
Preparation of construction surfaces	Reclaimed graded material, as well as fill obtained from the existing aggregate pit or mine rock that is crushed and screened, will be hauled and consolidated at construction locations to establish building surfaces. Temporary construction support facilities such as a construction offices, laydown areas and temporary maintenance shop will be constructed onsite to service machinery used during the site preparation and construction phase.
Development of the mine rock storage area	The basic infrastructure of the MRSA will be developed during the site preparation phase so that the area is ready to begin accepting material at the onset of operations. Most of the Type 1 mine rock generated through pre-stripping will be used to construct roads, laydown areas and pads for infrastructure. Any Type 2 rock identified via testing in the Assay Lab during this Phase will be stockpiled in an area adjacent to the pits so that runoff from this material will be contained and managed, as required. More information pertaining to the MRSA is provided in Section 1.4.3.4.4.
Development of the process solids management facility	The basic infrastructure of the PSMF will be developed during the site preparation phase so that the area is ready to begin accepting material at the onset of operations. More information pertaining to the PSMF is provided in Section 1.4.3.4.5.
Waste management	Most waste generated during site preparation will be recyclable. Scrap metal, wood, paper and cardboard, where not reusable, will be segregated and trucked offsite to appropriate facilities. Solid non-hazardous wastes generated during site preparation will be collected in temporary collection areas (areas that have been disturbed by clearing) and subsequently trucked off site to a licensed disposal site. Hazardous waste will be collected, stored on site temporarily as appropriate and trucked offsite to appropriate licensed facilities. Grey water and sewage from temporary bathroom facilities will be collected in above ground storage containers. These biological wastes will be transported by a provincially licensed company to an approved facility.

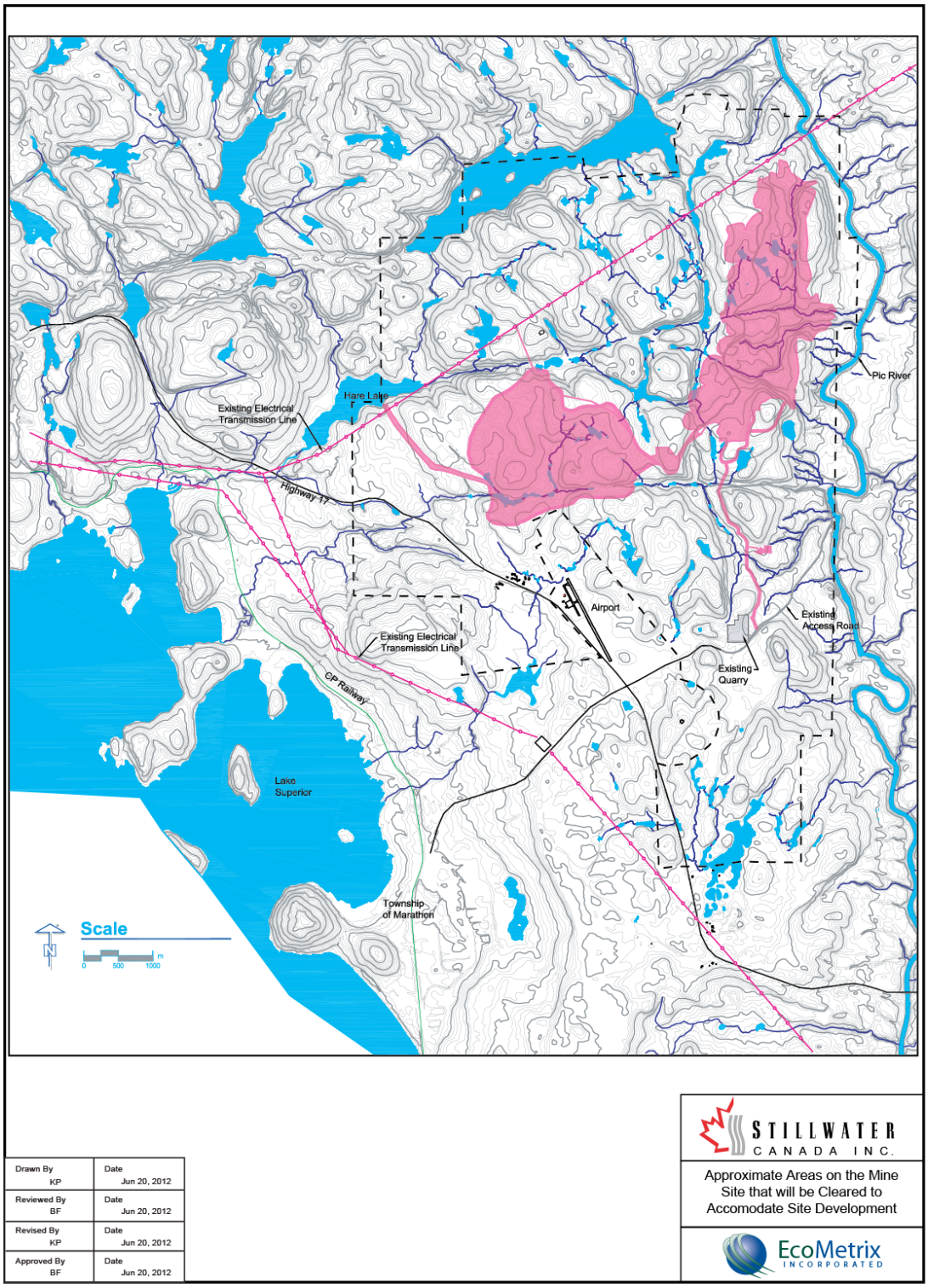

Figure 1.4-13: Approximate Areas on the Mine Site that will be cleared to Accommodate Site Development

1.4.3.2.2 Construction

The construction phase will be completed in part concurrently with site preparation. During construction site infrastructure, such as the electrical transmission corridor, the PSMF and MRSA will continue to be developed. The focus of the construction phase as described herein however largely turns to building and facility construction. All of the site infrastructure necessary to operate the mine will be completed and commissioned by the end of this phase. Key mine facilities are described in Sections 1.4.3.4 and 1.4.3.5. Key maintenance, administration and on-site support facilities are described in Section 1.4.3.6. Key off-site support infrastructure is described in Section 1.4.3.7.

As described above, site preparation, in combination with construction is estimated to be completed over an 18 to 24 month period. Work will progress 7 days per week, with two shifts per day, though the work schedule will likely vary over this period according to the nature of the work that is being completed. Vehicle traffic estimates, staffing estimates and employee accommodations are the same as those described previously.

Electrical power needed during construction will continue to be provided by diesel generators (see Section 1.4.3.4.10), until such time as the 115 kV power line is completed.

Waste generated on-site during construction will be managed in the same way as during the site preparation phase.

1.4.3.2.3 Operations

The operations phase of mine life includes the development of the ore body and the production of copper, PGM and possibly iron concentrates. Mill throughput during operations will be on average 22,000 tonnes per day. The operating life of the mine is estimated to be approximately 11.5 years.

The operations phase will be a 7 day per week operation. Operations will include two shifts per day and it is estimated that 90 passenger vehicles will be entering the mine site for the day shift and 60 passenger vehicles entering the mine site for the night shift. A portion of the workforce, specifically the administration and management employees, will work on shorter rotation (4 on/3 off or 5 on/2 off). The majority of the traffic will be workers traveling to and from the site at the start and end of their shifts, with some general freight and equipment transport vehicles accessing the site throughout the day. The truck traffic will be primarily restricted to Highway #17 and Camp #19. The shift changes will likely occur during periods of the day that are outside of the regular work or school day, early in the morning or later in the evening so any increase in traffic in Marathon may not be apparent to the residents. Although employees may drive their personal vehicles to the communities, the contractors or employer will provide a crew bus, where appropriate to the mine site.

During this period the work force will comprise approximately 365 workers. The Accommodations Complex (see Section 1.4.3.7.3) will continue to house the portion of the workforce that is not derived from the local/regional catchment (estimated to be equivalent to about a 100 km one way commute). An additional three hotels owned by SCI will also be available for worker accommodations.

Key mine facilities and/or activities associated with the mining operation are listed below and described further in Sections 1.4.3.4 and 1.4.3.5:

- open pits;
- ore processing;
- concentrate handling, storage, and transport;
- mine rock management;
- process solids management;
- water supply;
- water management;
- water discharge and treatment plants;
- pipelines;
- site road network;
- power supply and distribution;
- explosives storage and production;
- aggregate supply;
- water management; and
- mill processing plant.

Key maintenance, administration and on-site support facilities are listed below and described in Section 1.4.3.6;

- fuel farm;
- bucket shop and heavy repair facility;
- concrete batch plant;
- aggregate plant facility;
- hazmat building;
- assay lab;
- mine services complex;
- propane storage area; and,
- concentrate storage building.

Key off-site support infrastructure is listed below and described in Section 1.4.3.7:

- a 115 kV electrical power transmission line;
- (possibly) a concentrate handling and rail-load facility;
- an employee Accommodations Complex; and
- upgrades to the Camp 19 – Highway 17 intersection.

1.4.3.2.4 Decommissioning and Closure

A proposed draft Conceptual Closure Plan has been prepared and is included as a supporting document to the EIS (see TGCL, 2012d). Conceptually, the closure phase includes activities that are designed to ensure that the Project site is decommissioned and closed in a manner that reduces the potential impacts on the social and natural environment, and to the extent possible returns the site to an end use that is supported by Aboriginal people, the public and government. The timetable for closure of the site includes contingency for both short-term and long-term activities. The most intense period of decommissioning of site infrastructure will occur immediately following the cessation of operations. At this time as much of the site infrastructure will be removed as is possible, while still providing sufficient resources on the site to engage in ongoing closure and post-closure activities. The specific activities that will occur during this phase of the Project include:

- decommissioning/removal of maintenance, administration and on-site support facilities;
- decommissioning/removal of off-site support infrastructure;
- decommissioning/removal of the process plant and associated ore processing equipment and facilities (pipelines, crushers, conveyors);
- decommissioning/removal of the explosives factory and magazine facilities;
- removal of power lines and electrical equipment;
- decommissioning of parts of the site road network;
- decommissioning of the potable water and sewage treatment systems;
- placement of any Type 2 material still on surface into the pits for permanent storage;
- regrading and stabilization of any stockpiles that are left on surface for the long term; and,
- reclamation of the PSMF, MRSA, mill sites and other developed areas.

Comments on specific elements of the closure activities listed above are provided below.

A combination of approaches is planned to be used to rehabilitate the open pits. The satellite pits that have been utilized for process solids storage will be covered with overburden and reclaimed. New stream channels and fish habitat will be created so that water will drain from the satellite pits to the north into the primary pit. Satellite Pit 5 will be partially backfilled and flooded to create new fish habitat. An outlet stream will be created to link the new lake with the Stream 1 subwatershed. The Primary Pit will take many years to fill completely and therefore precautions will be taken to prevent inadvertent access to the pit. To this end, a boulder barrier (boulder) or fencing will be constructed around the perimeter of the primary pit and warning signs will be posted. In the long-term, the primary pit will overflow in a planned and predicted manner, in its southeast corner with water draining into the Stream 2 subwatershed and to the Pic River (see TGCL, 2012c, 2012d; EcoMetrix, 2012e). The closure of the PSMF will include re-grading and the creation of channels to restore the natural drainage patterns in the Stream 6 subwatershed and revegetation.

Closure of the MRSA will be based on the requirements as set out by the Ontario Mining Act, Regulation 240/00. The primary objectives for the MRSA closure plan include:

- ensuring slope stability;
- ensuring run-off drainage control on and around the MRSA is maintained; and,
- pursuing reclamation strategies that are consistent with or promote post closure land use.

Reclamation of the MRSA will be proactive. Horizontal surfaces will be covered with overburden and/or topsoil and subsequently revegetated using native seed. Once it has been demonstrated that water draining the MRSA meets all applicable regulatory requirements the water collection system will be dismantled and natural flows will be returned to the four subwatersheds draining the MRSA.

In addition to the physical works that comprise decommissioning and closure a phase-specific monitoring plan will also be developed (see Section 7.0). The programs will focus on evaluating the physical integrity of permanent man-made structures (e.g., dams safety inspections), the relative success of the implementation of closure and reclamation activities (e.g., revegetation success) and the potential effects of the closed mine site on the environment (e.g., surface water and groundwater quality monitoring). The nature and extent of these programs will be developed during detailed closure planning.

1.4.3.3 Mine Plan - Mineral Resource and Mineral Reserve

Detailed information relating regional and deposit geology, host material geochemistry and seismicity are provided by EcoMetrix (2012b, 2012d, 2012e) and MICON (2010). A summary of that information is provided in Section 5.1 of this report.

An updated feasibility study was published by MICON (2010) that included mineral resource and mineral reserve estimates (Tables 1.4-6 and 1.4-7, respectively). The total measured, indicated, and inferred mineral resource for the Marathon PGM-Cu Project, as described in MICON (2010) is estimated to be 121.0 million tonnes. The mineable mineral reserve (proven and probable) was estimated to be almost 91.5 million tonnes.

Table 1.4-6: Marathon PGM-Cu Project Pit Shell Mineral Resource Estimates (Source; MICON, 2010)

Category	Mineral Resource						Contained Metal				
	Tonnes (M)	Pd (g/t)	Pt (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Pd (oz*000)	Pt (oz*000)	Au (oz*000)	Cu (Mlb)	Ag (oz*000)
Measured	94.3	0.846	0.243	0.088	0.262	1.599	2,564	736	266	545	4,847
Indicated	20.5	0.451	0.160	0.062	0.140	1.421	386	133	50	73	976
Measured plus Indicated	114.8	0.775	0.228	0.083	0.241	1.567	2,950	869	316	618	5,823
Inferred	6.2	0.306	0.104	0.047	0.151	1.459	61	21	9	21	290

Notes:
MICON (2010) did not provide estimates of potential iron resources or reserves. SCI is currently evaluating the potential economic feasibility of generating an iron product at the Project site.

Table 1.4-7: Estimated Mineable Mineral Reserves for the Marathon PGM-Cu Deposit (Source; MICON, 2010)

Classification	Tonnes (M)	Pd (g/t)	Pt (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Cu (Mlb)	Pd (oz*000)	Pt (oz*000)	Au (oz*000)	Ag (oz*000)
Proven	76,461,000	0.910	0.254	0.090	0.268	1.464	452	2,237	625	222	3,600
Probable	14,986,000	0.435	0.147	0.060	0.138	1.318	46	209	71	29	635
Total	91,447,000	0.832	0.237	0.085	0.247	1.440	497	2,447	696	251	4,235

Notes:
CIM Standards on Mineral Resources and Reserves Definitions and Guidelines define 'Proven Mineral Reserve' as the economically mineable part of a Measured Mineral Resource and 'Probable Mineral Reserve' as the economically mineable part of an Indicated Mineral Resource and in some circumstances a Measured Mineral Resource (CIM, 2005).
MICON (2010) did not provide estimates of potential iron resources or reserves. SCI is currently evaluating the potential economic feasibility of generating an iron product at the Project site.

1.4.3.4 Mine Development

1.4.3.4.1 Open Pits

The Marathon PGM-Cu ore body is hosted within the eastern portion of the Coldwell Complex along a north-south axis over a distance of about 3 km. To access and mine the ore body, SCI proposes to develop one primary open, as well as a satellite pit complex located south of the primary pit.

The pits will be excavated by blasting using an emulsion explosive, an ammonium-nitrate fuel oil (ANFO) explosive or, possibly a combination of the two. The open pit design provides for:

- minimum safety factors of 1.2:1 on pit walls;
- bench heights of approximately 12 m in rock; and,
- use of safety berms.

Ramp widths will be maintained at approximately 30 m with maximum grades of 10%. Interramp design slope angles in rock will be maintained at a maximum of 55 degrees. Slopes with weathered bedrock will be reviewed separately to ensure proper factors of safety in consideration of rock conditions and characteristics.

Blasted ore and mine rock will be handled in the pits by mining shovels and large wheel loaders in combination with high-capacity rear dump haul trucks. Smaller capacity haul trucks may also be used to support the main fleet. Ore will be directed to the primary crushing unit. Mine rock will be managed in two streams. Type 1 mine rock will be directed to the MRSA for permanent storage, though some will be crushed and used for dam construction and as borrow material (aggregate) for site infrastructure needs. Type 2 mine rock will be temporarily stored on surface during operations and moved into the primary pit and/or satellite pits for long term storage. Mine rock management is discussed in Section 1.4.3.4.4.

Grade control, and the segregation of ore and mine rock, will be managed in the pits. Samples will be taken from a sufficient and strategic number of drill holes and analyzed on-site at the Assay Lab. Samples taken from the blast holes will be assayed to determine ore and waste boundaries within blasted material and also to segregate Type 1 and Type 2 mine rock.

The conceptual plan for pit development is to mine the primary pit and satellite pits simultaneously. A majority of the higher grade ore is found in the primary pit, whereas medium to low grade ore is primarily in the satellite pits. Mining the pits together can provide a balanced blend of ore types, which helps to stabilize the processing mill floatation circuit and improves recoveries. By approximately year 6, a number of the satellite pits will be completely mined out to allow for storage of process solids and Type 2 mine rock.

The conceptual dimensions and surface areas of the pits at the cessation of mining operations are provided in Table1.4-8. Ultimate closure of the pits is summarized above in Section 1.4.3.2.4 and in more detail in TGCL (2012d).

Table 1.4-8: Conceptual Dimensions and Surface Areas of the Primary Pit and Satellite Pits at the Marathon PGM-Cu Project

Pit	Dimensions and Surface Area			
	North-South Axis (m)	East-West Axis (m)	Depth (m)	Surface Area (ha)
Primary Pit	2,000	670	340	78.7
Satellite Pit 2	400	500	180	15.3
Satellite Pit 3	400	700	120	18.9
Satellite Pit 4	260	250	170	4.9
Satellite Pit 5	340	280	120	6.3

1.4.3.4.2 Ore Processing

Ore-grade material will be hauled from the open pits to the Primary Crusher, located on the eastern side of the Primary Pit, by way of high-capacity rear dump haul trucks. Smaller capacity haul trucks may also be used to support the main fleet. The Primary Crusher will be an enclosed structure with a dust collection system. Rock will be crushed in a gyratory crusher to minus 150 mm.

Crushed ore will be transported via a covered conveyor over a distance of about 1 km south and stockpiled adjacent to the Concentrator Building. About 5 days' worth of minus 150 mm ore (or about 110,000 tonnes) will be stockpiled at any one time. Drainage from the ore stockpile will be directed back to the pit areas and managed through the PSMF.

Minus 150 mm ore from the stockpile will be transported by a covered conveyor over a distance of about 300 m to the southwest to the secondary crushing facility or directly to the Concentrator Building if semi-autogenous grinding (SAG) equipment is used in the grinding circuit. The secondary crushing facility will be an enclosed structure with a dust collection system. Minus 150 mm ore will be crushed at the secondary crusher to minus 44 mm for subsequent transfer to the Concentrator Building for mineral extraction. SCI will employ a conventional two step (grinding and floatation) process to produce copper and PGM concentrates from the feeds. Should it also prove feasible to produce an iron concentrate, a magnetic separation process will

be used to extract it from the process solids component. The proposed mineral extraction process is conceptually described in Section 1.4.3.5.

1.4.3.4.3 Concentrate Handling, Storage and Transportation

Concentrate will be loaded onto trucks at the mill within an enclosed space ensuring that any losses that may occur during loading are contained, are easily cleaned-up and pose no threat to the environment. The load-out will be located on the ground floor of the mill building and is a truck drive-through facility. Loading will only occur after the space has been isolated. After filling, the trucks will be covered for transport off site. Concentrate will be transported off-site to an existing third-party facility for further processing. It is estimated that about eight truckloads will leave the site on a daily basis if the final concentrate product contains PGMs and copper only. Alternatively, as many as fifty truckloads may leave the site on a daily basis if iron is also produced.

A separate concentrate storage shed will be constructed in close proximity to the concentrator. This enclosed facility will be built on a concrete pad, isolating the concentrate from the environment. This facility will be used to store concentrate in the event that there is a short term (days) interruption of concentrate delivery off the mine site so that the milling facility can continue to operate.

Two options are being considered for concentrate delivery, one of which involves the construction of a concentrate handling and rail load-out facility in the Town of Marathon. The potential rail load-out facility in Marathon would be situated on existing rail siding in close proximity to the CP rail line. Two potential rail siding locations are under consideration (see Figure 1.4-12). The infrastructure necessary to develop the facility and the manner in which the facility would operate is described in Section 1.4.3.7.2. The other option for concentrate transport involves direct delivery from the mine site via truck to off-site third-party processing facilities.

1.4.3.4.4 Mine Rock Management

Mine rock will be managed in two streams. Type 1 mine rock that is not crushed and used for dam construction and as borrow material (aggregate) for site infrastructure needs will be directed to the MRSA for permanent storage. Type 2 mine rock will be temporarily stored on surface during operations and moved into one of the pits for permanent storage. Type 1 mine rock is defined as mine rock with less than 0.3% sulphur (by weight), which has been assessed to be NAG. Type 2 mine rock is defined as mine rock with greater than 0.3% sulphur (by weight), which has been assessed to be PAG (EcoMetrix, 2012e). Based on sulphur distribution through the host material it has been estimated that about 20 million tonnes of Type 2 mine rock will be excavated during mine life (EcoMetrix, 2012e).

The proposed MRSA is located to the east of the Primary Pit. It has been conceptually designed to store the full complement of surplus mine rock that is expected to be produced

through the estimated 11.5 year mine life. The MRSA will be constructed with an overall slope of approximately 2.2H:1V, with 30 m tall benches with mid slopes at 2H:1V and 10 m wide mid-slope benches. The stockpile slopes will provide long term stability and allow for concurrent reclamation. Preliminary design criteria incorporated into the MRSA included the codes and standards of Ontario Mining Act, Regulation 240/00. The conceptual development of the MRSA throughout the operational life of the mine is represented in Figures 1.4-14 to 1.4-17. Ultimate closure of the MRSA is described briefly above in Section 1.4.3.2.4 and in more detail in TGCL (2012d).

As indicated, an estimated 20 million tonnes of Type 2 mine rock will be excavated from the host material coincident with the ore body. Because this material is PAG it has been designated for special management to mitigate the potential for acid generation. During operations Type 2 mine rock will be stockpiled adjacent to the primary and satellite pits so that any run off from the Type 2 material is captured and will drain into the pits. Pit water will be managed (both in terms of quality and quantity) through the PSMF. Type 2 mine rock that is stockpiled on the surface will be relocated to the bottom of the Primary Pit, as well as to the satellite pits once the pits are fully excavated. Following the completion of mining, the Primary Pit will flood and therefore the PAG material will be isolated and will prevent the potential for acid generation. If the Type 2 material is demonstrating acid generation prior to its relocation to the bottom of the pits, the pits will be pro-actively flooded to create a water cover and stop the acid production cycle. First-order predictions indicate that the PAG material will take in the range of 10-years to begin to generate acid (EcoMetrix, 2012e). Type 1 process solids will provide cover material for the Type 2 mine rock in the satellite pits to prevent potential acid generation.

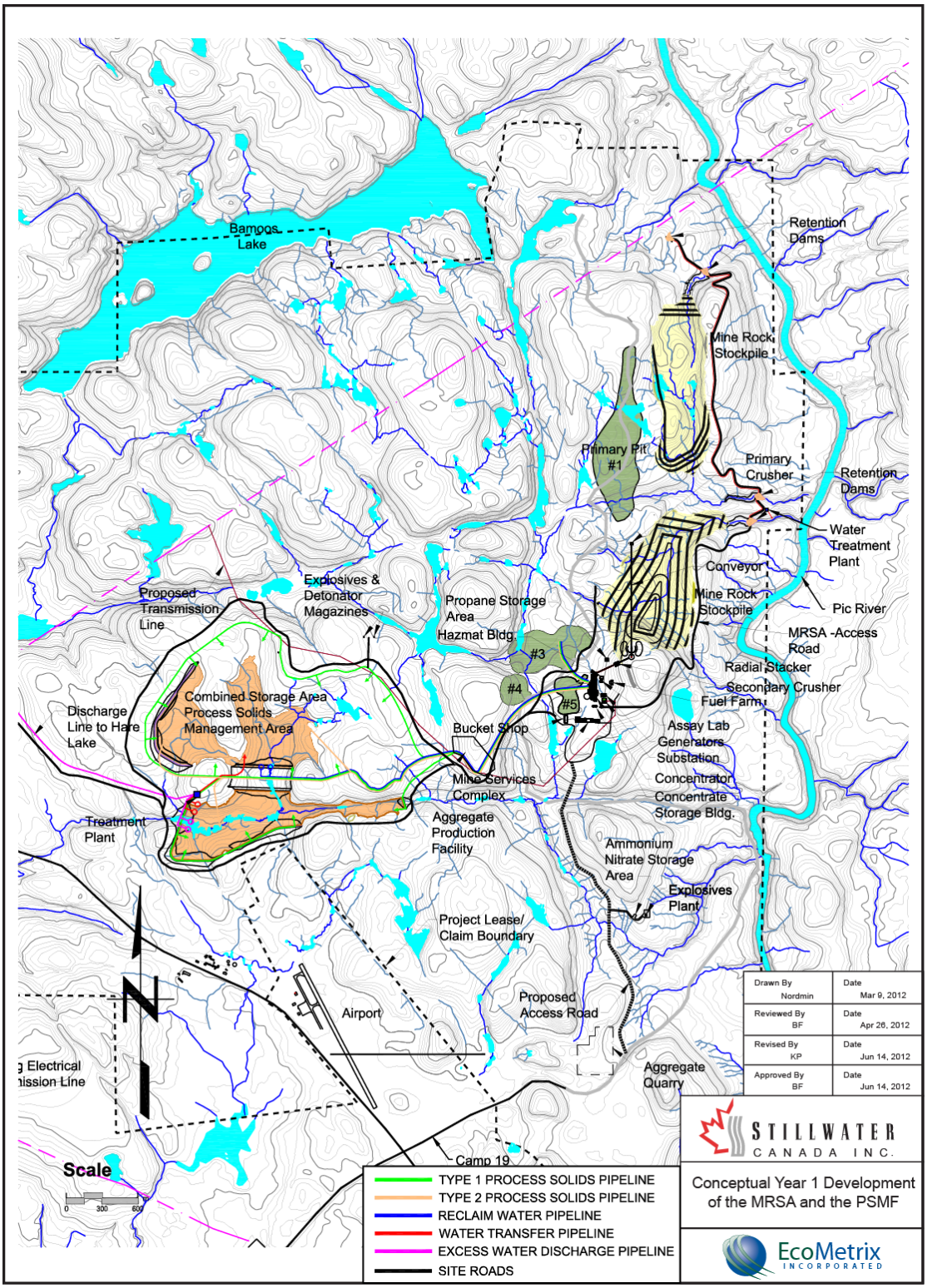

Figure 1.4-14: Conceptual Year 1 Development of the MRSA and the PSMF

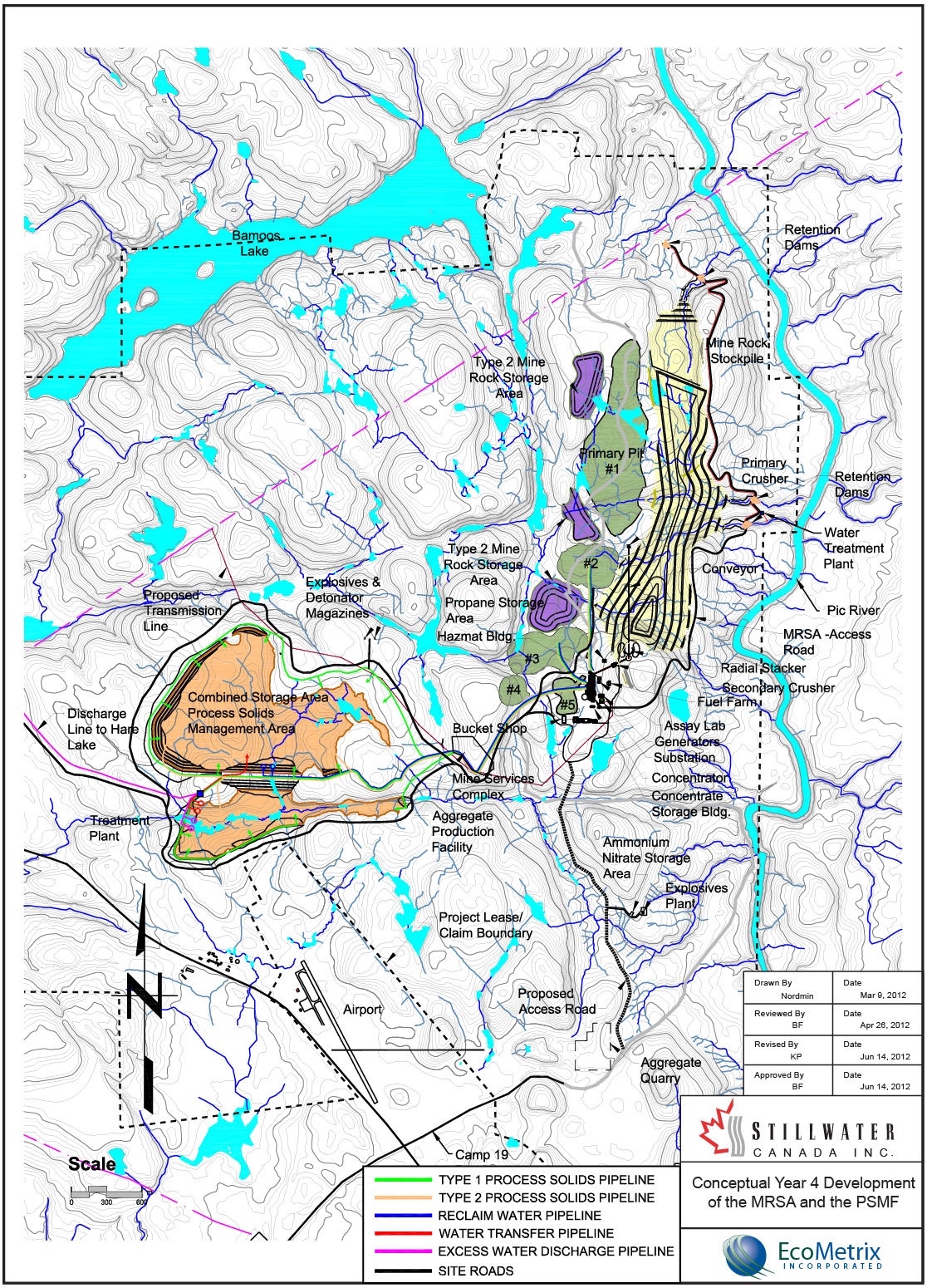

Figure 1.4-15: Conceptual Year 4 Development of the MRSA and the PSMF

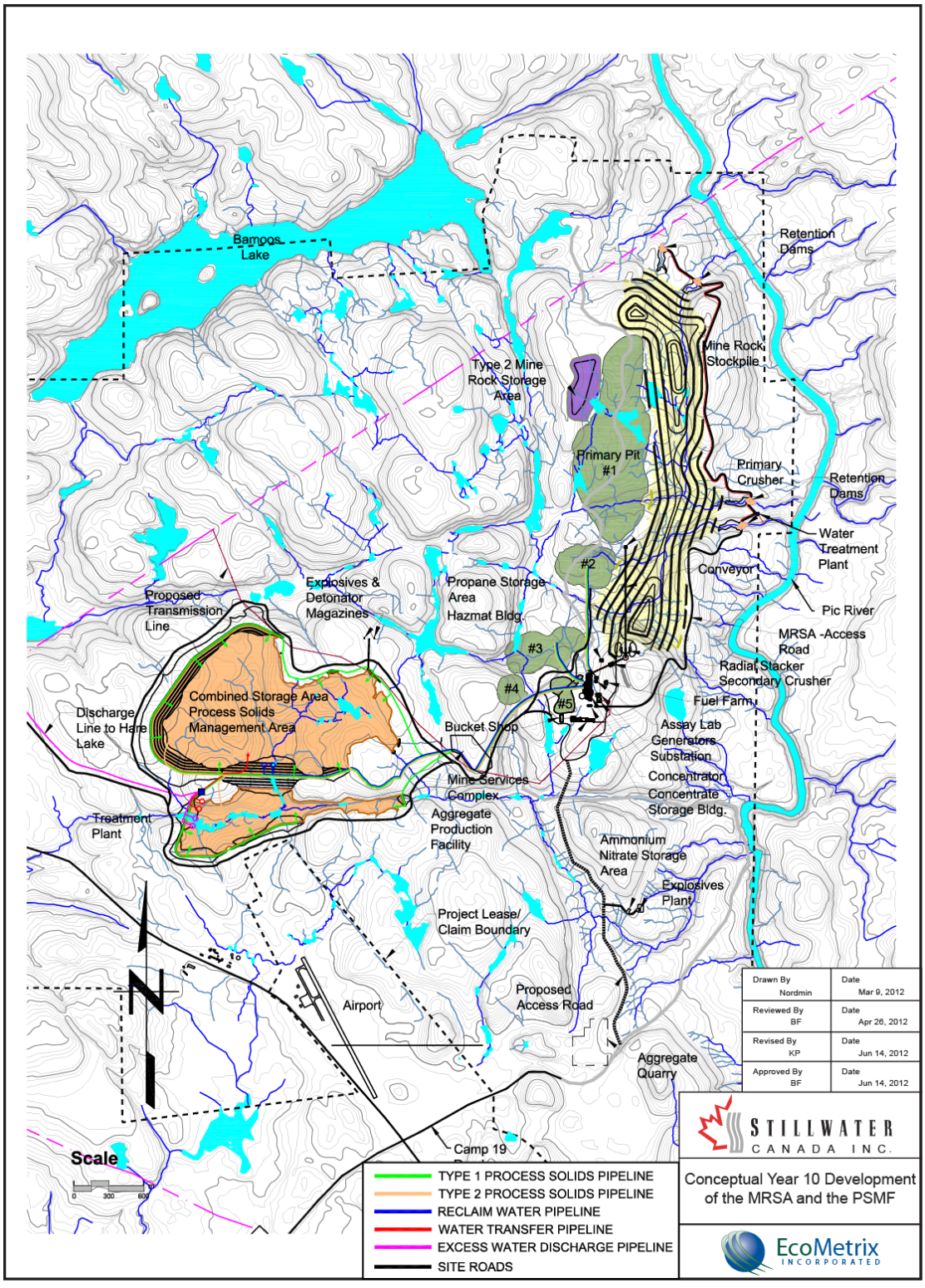

Figure 1.4-16: Conceptual Year 10 Development of the MRSA and the PSMF

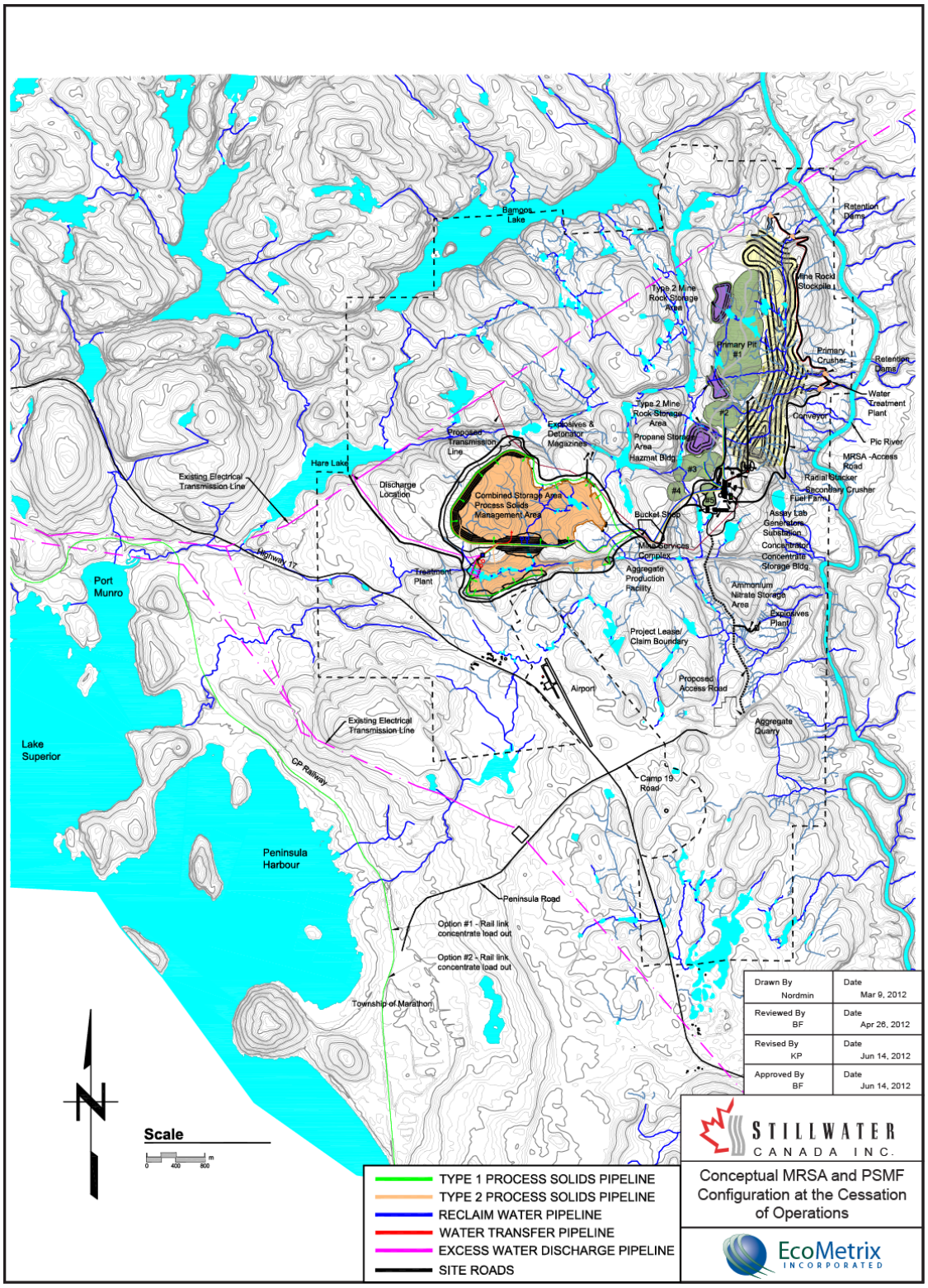

Figure 1.4-17: Conceptual MRSA and PSMF Configuration at the Cessation of Operations

1.4.3.4.5 Process Solids Management

An estimated 61 million m^3 of process solids will be generated over the life of the mine. As with the mine rock, the process solids will be produced in two streams. Type 1 process solids, which have sulphur less than 0.3% (by weight) and are NAG (see EcoMetrix, 2012e) will comprise about 85 to 90% of the total amount of process solids. The remaining 10 to 15% of the process solids, the Type 2 process solids, contain greater than 0.3% sulphur (by weight) and are PAG (see EcoMetrix, 2012e). Because the Type 2 material is PAG it has been designated for special management to mitigate the potential acid generation.

Process solids will be stored in the Process Solids Management Facility (PSMF), as well as the satellite pits other than Satellite Pit 5, which will be used to create new fish habitat. The PSMF is located to the west of the pit area, and will be created through the construction of dams, as discussed in Knight Piesold (2012). Dams will be raised through mine life to provide sufficient storage capacity for process solids and for site water management. The final elevation of the dams will range from 330 m asl to 375 m asl and will be within the existing elevations of the natural adjacent topography. The interior of the dams will be lined with HDPE keyed into bedrock via a concrete plinth. Removal of overburden and higher permeability bedrock, placement of slush grout on the prepared bedrock surface and/or injection grouting of deeper permeable bedrock zones will be completed as determined by site conditions to further reduce solute migration out of the facility.

The PSMF embankments will be constructed with upstream and downstream slopes of approximately 2.0H:1V and a final crest width of 8.0 m. The final embankment heights will be between 33 m and 77 m above grade with foundation widths of between 140 m and 316 m. The embankments will include specific rock fill zones with finer material towards the upstream portion of the embankment and coarser material towards the downstream portion of embankment. The zoned construction will result in an embankment that is not susceptible to internal erosion or piping and resistant to downstream erosion if over topping was to occur.

The proposed PSMF includes two cells separated by a lined embankment. During the initial phases of operation, Cell 1 will be used for process solids storage and for reclaim water for the mill. Cell 1 is the smaller of the cells and will ultimately store about 5 million m^3 of process solids. Water collected around the mine site (pit water including drainage off the Type 2 mine rock and ore stockpiles and drainage from the mill site) will be managed in Cell 1. After the first couple of years of operation water from Cell 1 will be pumped to Cell 2 for recycling in the mill. As described in the PSMF water balance strategy (Knight Piesold, 2012), excess water will be treated as required and discharged to Hare Lake (see Section 1.4.3.4.8). Cell 2 is the larger of the cells and will ultimately store about 45 M m^3 of process solids. Cell 2 will act as the reclaim pond with process water cycling between it and the mill for most of the operational phase of mine life.

Satellite pits will be used later in mine life for process solids storage (Type 1 and Type 2 material), as well as for Type 2 mine rock storage. Based on the conceptual design, combined these satellite pits can accept approximately 12.1 million m^3 of material.

A conceptual process solids deposition plan and the proposed staging of the construction of the PSMF is provided by Knight Piesold (2012) and is illustrated in Figures 1.4-14 to 1.4-17 below. In concept, the process solids deposition strategy envisages Type 1 process solids used as cover material for Type 2 process solids to mitigate acid generation potential. Type 2 process solids will also be stored below the water table to provide further assurance that they will not generate acid.

Ultimate conceptual closure of the PSMF is described briefly above in Section 1.4.3.2.4 and in more detail in TGCL (2012d).

1.4.3.4.6 Water Supply

Potable Water

Potable water will be supplied to the site by a groundwater supply (if available), and supplemented as required by potable water from the Town of Marathon or a bulk water supplier. Groundwater will be pumped to the surface, treated to ensure groundwater quality meets Ontario Drinking Water Quality Standards (ODWQS) and supplied to the site as needed through the associated water distribution works. The level of water taking envisaged will require a provincial permit to take water. The permitting process is designed to ensure there are no adverse effects from the water taking.

Process Water

Details regarding the process water balance are provided by Knight Piesold (2012).

About 23,000 m^3 of water will be required to charge the mill at start-up. It is estimated that a total of approximately 1.3 million m^3 of water will be necessary to sustain the milling process over the initial period of operations, as it will take some time for a sufficient supply of reclaim water to develop because of losses through evaporation and because of water being trapped within the interstitial spaces of the process solids. By initiating development of the PSMF embankments early during the site preparation and construction phases it should be possible to derive this entire volume of water through natural run-off over a 12 to 18 month period. It is possible that some supplemental water will need to be collected from a local water source to fully charge the mill. A temporary pumping system would be installed in Hare Lake, or alternatively if the Hare Lake system is under extreme drough conditions the Pic River, for that purpose. A water taking permit from the OMOE would be obtained for this activitiy.

Once operations have commenced process water to support the mill will generally be provided by recycling water from the PSMF. The water needs of the mill are estimated to be between 23,000 to 26,400 m^3/day, based on an average mill throughput of 22,000 tonnes/day.

It may be necessary to supplement the reclaim water supply with surface water sources, particularly in abnormally dry years. The first choice to supply supplemental reclaim water is Hare Lake. In the rare instance where water flow is too low in the Hare Lake system it could be necessary to obtain supplemental process water from the Pic River. The Pic River is the biggest surface water system in the direct vicinity of the Project site and drains an area of approximately 4,300 km^2. In either instance a pumping and pipeline system would be used to bring water to the mill. A provincial permit to take water will be required. The permitting process is designed to ensure there are no adverse effects from the water taking. It is anticipated that less than 5% of the Hare Lake inflow or flow in the Pic River would be needed for such purpose. The predicted effects of this water taking are addressed in Section 6.2.3.

1.4.3.4.7 Water Management

On-site water management focuses on the collection of contact water, run-off that has come in contact with and is potentially influenced by site infrastructure, and process water, the liquid component of the process solids slurry. The general conceptual strategy for on-site water management is presented below. Detailed water balance and water management information for the PSMF is provided by Knight Piesold (2012). The various water management constraints that were incorporated into the PSMF water balance models, including minimum operating pond volumes, maximum operating pond volumes, the Environmental Design Storm (EDS), and freeboard requirements, are described by Knight Piesold (2012). Detailed water balance and site hydrology pertaining to the MRSA are provided by Calder (2012b).

Water will be collected around the mine site including pit water (which includes natural groundwater and surface water inflows, as well as drainage off the Type 2 mine rock and ore stockpiles) and drainage from the mill site, by a series of pumps, pipelines and surface ditches and will be managed in Cell 1 of the PSMF. Water in Cell 1 will be pumped to Cell 2 to augment the reclaim water supply as required or alternatively will be discharged to Hare Lake following treatment as is necessary (see Section 1.4.3.4.8).

Cell 1 of the PSMF will be used to manage the process water stream during the initial stages of operation. Subsequent to this period, Cell 2 of the PSMF will be used to manage the process water stream. Water in Cell 2 will be derived from the liquid component of the process solids slurry and the natural run-off associated with the drainage area of the cell. As indicated above, water from Cell 1 can be pumped to Cell 2 to augment the volume of water available for mill needs as required. Water will be reclaimed to the mill via a pump and pipeline system from Cell 2 to the mill to service the mill's process water needs.

Run-off from the MRSA area reports naturally to the Pic River through four small subwatersheds on the east side of the mine site. Water draining the MRSA will be collected via a series of

settling ponds or collection basins located along the MRSA toe. The settling ponds will be designed to manage water volumes derived from natural run-off and snow-melt and an EDS (1 in 25 year, 24 hour event). When necessary to manage storage capacity in the collection system, water will be pumped from the settling basins to the Pic River following treatment as necessary prior to discharge (see Section 1.4.3.4.8). It is anticipated that discharge will typically occur during spring runoff and periodically thereafter until late fall. Any water coming from the settling basins will be managed through a single discharge location.

1.4.3.4.8 Water Discharge and Treatment Plants

Water will be released from the site at two locations. As noted above, water draining the MRSA will be periodically discharged as required. The MRSA sits within four small subwatersheds. Water draining each of these subwatersheds will be collected in retention ponds at the natural drainage locations of the MRSA. Water from the retention ponds will be pumped when required to a common water treatment plant, treated if necessary, and released into the Pic River via a submerged diffuser. As indicated above, the MRSA collection system will be managed so as to minimize the amount of water discharged to the Pic River. Although our assessment of water quality indicates that treatment of the MRSA drainage is not required to meet surface water quality objectives in the receiving environment (see Section 6.2.3; EcoMetrix, 2012f), a water treatment plant for water from the MRSA collection system has been accounted for in the mine design. Water would be treated as required to ensure it meets the discharge quality limits set in the ECA issued by the MOE for the system.

Excess water from the PSMF will be discharged to Hare Lake through a submerged diffuser. Under average conditions, discharge rates from the PSMF to Hare Lake vary over the operations phase from 0 m^3, at the beginning of operations when there is storage capacity in the PSMF as the result of the initial raise of the dams, to a maximum of 1.5 million m^3 during years 2 and years 8.5 to 11.5 (see Knight Piesold, 2012), when storage capacity is relatively low A minimum dilution ratio of 6:1 - with respect to the Hare Lake inflow to PSMF discharge - will be maintained under the proposed discharge regime. Although the assessment of water quality indicates that water quality at the Hare Lake outlet will meet all applicable regulatory requirements (see Section 6.2.3; EcoMetrix, 2012f) a water treatment plant that would treat water prior to discharge to Hare Lake has been accounted for in the mine design. Water will be treated as required prior to discharge to ensure it meets the discharge quality limits set in the ECA issued by the MOE for the system.

1.4.3.4.9 Pipelines

A series of pipelines will be developed on the site to serve several different functions. The pipeline systems include:

- the potable water distribution system;
- the sewage and grey water system;
- the process solids pumping system;

- the pit dewatering system;
- the reclaim water system;
- the PSMF discharge system to Hare Lake; and,
- the MRSA collection and discharge system to Pic River.

The pipelines will be sized and constructed as appropriate based on function and as determined through the detailed design process. All pipelines, other than the potable water and sewage/grey water system are anticipated to be above ground. Above ground pipelines will generally be HDPE or steel, as determined by the detailed design process.

1.4.3.4.10 Site Road Network

Road access to the site is provided off of Hwy 17 at the Camp 19 Road, opposite Peninsula Road. Upgrades to the intersection will be necessary to accommodate mine-related traffic (see Section 1.4.3.7.4; ENL, 2012).

A new 2.2 km section of road will be developed that links the Camp 19 Road to the Project site. This new road section runs north, off the Camp 19 Road about 2.2 km from Hwy 17 for a distance of about 3.0 km to the mill site. Geotechnical investigations (including condemnation drilling) have been carried out along the proposed road route and provide the basis for detailed road design. The road corridor is anticipated to be 30 m wide. Road bed material will be provided by Type 1 mine rock that has been crushed and screened to appropriate sizes with portable onsite crushing and screening equipment. The new access road crosses Stream 1 twice. Culvert design, installation and maintenance will follow and conform to appropriate DFO and MNR operational statements, guidance and protocols.

Several roads will be developed on site to provide safe and ready access to all infrastructure. The proposed mine site roads include:

- a mine haul road that extends from the from pits to the primary crusher and maintenance garage;
- a PSMF access road, extending west from the mill site to the PSMF and its related structures, as well as the explosives and detonation magazine;
- a road to Hare Lake that runs parallel and directly adjacent to the PSMF discharge pipeline to Hare Lake;
- an ammonium nitrate storage and explosives plant access road, which extends off the new site access road to the east;
- a road from the concentrator plant to the primary crusher providing access to the secondary crusher and the ore stockpile pile; and,
- a road along the toe of the MRSA.

1.4.3.4.11 Power Supply and Distribution

Four 1 MW diesel generators will be installed on site adjacent to the concentrator building (see Figure 1.4-12). In addition, there will be one 1 MW diesel generator located at the mobile crusher site. These diesel generators will be used to supply continuous duty power to the site during the site preparation and construction phases, as the new transmission line is developed. The generators will remain in place during operations to supply emergency power in the event of a power failure.

During operations, electrical demand is estimated to be a maximum of 54 MVA, using a power factor of 95%, as per the load projection for submission to Hydro One Networks Inc. This demand is available on the existing power grid. Electrical power for the site and all its facilities will be provided by a new 4.1 km 115-kV overhead electrical power line connection to the existing Ontario Hydro transmission line that runs north of the Project site between Manitouwadge and Terrace Bay, the M2W Line (see Section 1.4.3.7.1). The new line will run from the existing transmission corridor to a transformer substation near the mill site. Power will be stepped down at the substation to high and medium voltage for subsequent distribution to site infrastructure through switch gear that will also be located in the substation footprint. Smaller dry cell transformers will also be required in all end run distribution.

1.4.3.4.12 Explosives Storage and Production

Explosives to be used for excavating the ore body will be manufactured on site by a licensed contractor. Dedicated explosive manufacturing and ammonium nitrate storage facilities will be established to the south of the mill site, off the main site access road (see Figure 1.4-12). Until the factory is complete portable and semi-permanent magazines will be supplied by an explosives contractor to provide the required explosive and blasting accessories used during construction. The facilities and their component structures have been located with respect to the nearest inhabited building, airstrip, hydro lines, roads and blast sites in accordance with the guidelines set out in the Quantity-Distance Principles User's Manual published by the Explosives Regulatory Division of NRCan (NRCan, 1995). Explosives and detonator magazines will be located to the north of the PSMF (see Figure 1.4-12). These facilities have also been located in accordance with the guidelines set out in the Quantity-Distance Principles User's Manual published by the Explosives Regulatory Division of NRCan (NRCan, 1995).

1.4.3.4.13 Aggregate and Rock Fill Supply

It is anticipated that aggregate and rock fill needed for site preparation and construction purposes will primarily come from on-site sources. This includes overburden removed during stripping, as well as aggregate-grade mine rock that is excavated from the pit areas during pre-stripping and mining. SCI will employ portable crushers and screeners to generate the desired aggregate and rock fill types (sizes) from the on-site sources. It may be necessary to supplement the on-site sources with existing off-site materials that are available regionally from licensed sources.

1.4.3.4.14 Waste Management

Recyclable Material

To the extent possible all materials used on the mine site will be re-used or recycled to minimize the amount of waste needing disposal. Any recyclable material (scrap metal, wood, paper and cardboard) that is not reusable will be segregated and trucked offsite to appropriate facilities.

Organic and Solid Waste

Organic and solid non-hazardous waste collected at the mine site will be disposed of within the landfill situated in the PSMF.

Hazardous and Subject Wastes

At the Project site, fuel, various assay lab and mill reagents, lubricants, oils and grease products will be used and hazardous wastes will be produced. There will be no polychlorinated biphenyls (PCB) or underground hydrocarbon storage tanks on site. Hazardous and subject wastes will be collected, stored on site temporarily as appropriate and trucked offsite to appropriate licensed facilities.

Sewage Treatment

Sewage will be treated by means of an on-site tile field in conjunction with a Rotating Biological Contactor (RBC), rated at less than 10,000 L/d, and/or will be collected in portable infrastructure for offsite disposal at an existing, approved sewage disposal facility. Grey water will be pumped to the mill, and subsequently to the PSMF where it can be recycled for use in the mill.

1.4.3.5 Process Plant

Ore will be processed into concentrate in the Concentrator Building (or mill), located to the east of Satellite Pit 5. The average daily feed rate of the mill is 22,000 tonnes. The conceptual mill process flow diagram is shown in Figure 1.4-18. Ore will be processed into concentrate in a conventional two-step process (grinding and floatation). SCI has been able to refine this conventional approach by completing bench scale testing that has incorporated the latest in fine grinding technology combined with cleaner and scavenger floatation methods to improve metal recoveries. Increasing the rate of metal recovery provides two direct benefits. First, it enhances the overall economics of the Project. Secondly and just as important, it lessens the amounts of sulphides and metals that are directed to the process solids stream and therefore that may need to be managed from an environmental perspective.

The conceptual grinding circuit includes a High Pressure Grinding Roll (HPGR) or SAG equipment, a Ball Mill and cyclones. Once the desired level of grinding has been achieved the cyclone overflows feed the floatation circuit.

The conceptual floatation circuit comprises two processes, a copper floatation process that generates a primary copper concentrate and a PGM floatation process that generates a primary PGM concentrate. The copper floatation process consists of rougher, cleaner and regrind stages. The copper floatation process rougher tails are re-ground and feed the PGM rougher process. Cleaner tails from the copper floatation process are directed to the PGM floatation process, where the primary PGM concentrate is produced. The PGM floatation process also consists of rougher, cleaner and regrind stages. The PGM rougher tails is Type 1 process solids and will be pumped to the PSMF (or satellite pits) (see Section 1.4.3.4.5), or will feed the magnetic separation process for the removal of iron prior to being directed to the PSMF. The tails associated with the cleaner stage of the PGM floatation circuit are Type 2 process solids and will be directed to the PSMF (or satellite pits) (see Section 1.4.3.4.5), or will feed the magnetic separation process for the removal of iron prior to being directed to the PSMF. The magnetic separation process will consist of various stages of low intensity magnetic separation, a regrind and reverse floatation using conventional floatation methods for the upgrading of the concentrate.

The primary reagents that are contemplated for use in the floatation circuit to segregate the copper and PGMs from the feed material are:

- Potassium amyl xanthate (PAX), a xanthate, which is a strong floatation collector;
- Methyl Isobutyl Carbinol (MIBC), which is a foaming reagent;
- AEROfroth, which is foaming agent; and,
- Lime, which is used as a conditioner to adjust pH.

Amine-based reagents will be used in the reverse floatation circuit to segregate the impurities from the iron concentrate.

The final stages of the conceptual concentrate production process involve the thickening of the copper cleaner and PGM cleaner, and iron concentrates and subsequently the de-watering of the concentrates by pressure filter and/or vacuum filtration. The concentrates, which will contain less than 8% moisture, will be stored in stockpiles in the mill, or in the Concentrate Storage Building until they are transported off site for refining.

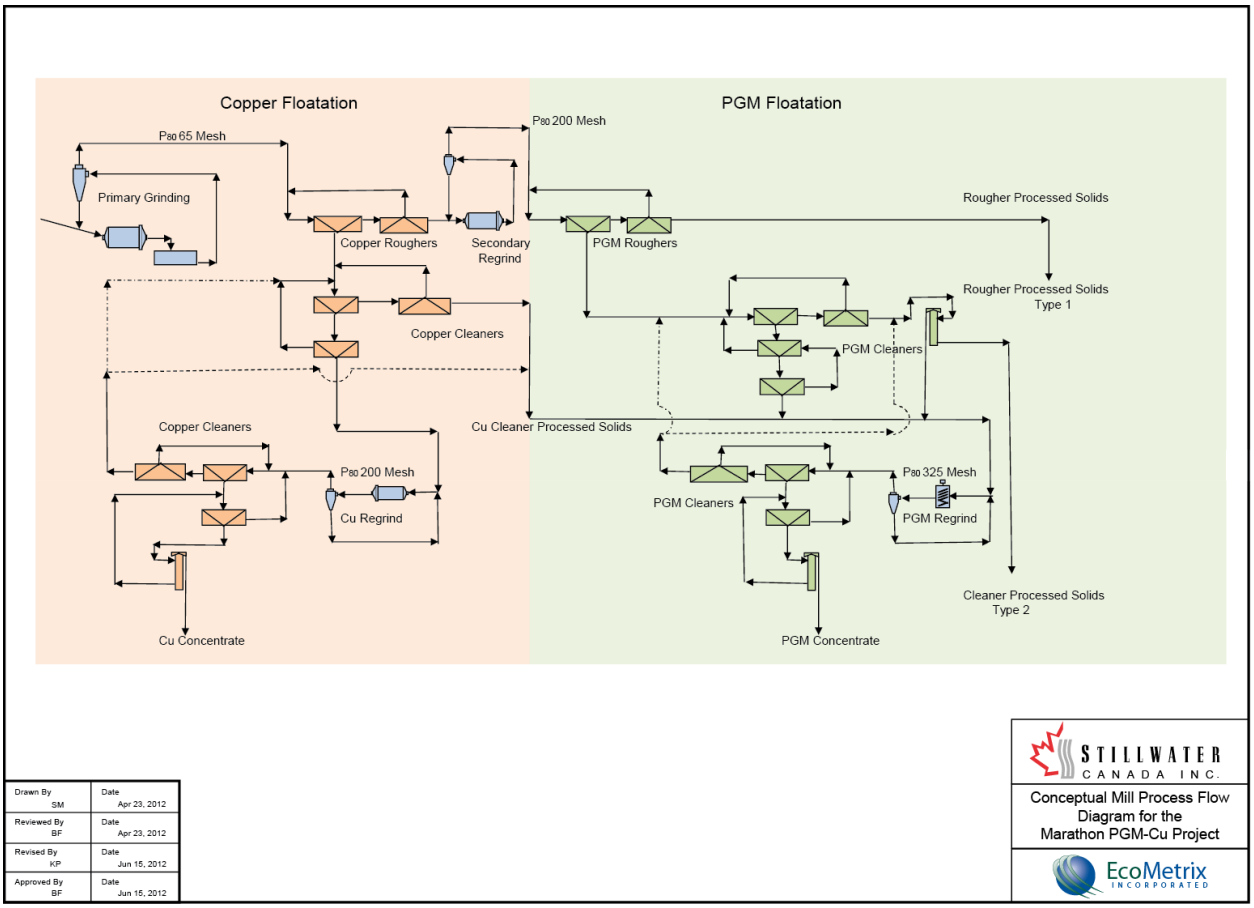

Figure 1.4-18: Conceptual Mill Process Flow Diagram for the Marathon PGM-Cu Project

1.4.3.6 Maintenance, Administration and On-Site Support Facilities

Various on-site facilities will support the development of the mine and the mining operation including the Fuel Farm, the Bucket Shop and Heavy Repair Facility, the Batch Plant, the Hazmat Building, the Assay Lab, the Mine Services Complex, the Propane Storage Area and the Concentrate Storage Building. The locations of these facilities are shown in Figure 1.4-12, and the role of each as it pertains to the Project is discussed below.

1.4.3.6.1 Fuel Farm

The primary fuel storage area or Fuel Farm will be located at the mill site adjacent to the concentrator. Fuel will be stored in aboveground vertical or horizontal bulk tanks. Storage tanks in the primary storage area will be afforded secondary containment and provided with protection to guard against possible vehicular collisions. The storage and distribution areas will include lined aprons and or will be fitted with catchments to contain any fuel that might inadvertently be released. The Fuel Farm will have sufficient capacity to provide a mine phase-specific inventory without re-supply, in the event of supply disruptions. For the site preparation

and construction phase contingency for 225,000 L of storage will be provided. For the operations phase contingency for 500,000 L of storage will be provided. For the closure phase contingency for 75,000 L of storage will be provided.

In addition, temporary storage tanks (or "day tanks") will be located at strategic locations on site to support mining activities.

All fuel storage and dispensing equipment will comply with applicable legislation, including the *Technical Standards and Safety Act* (2000) and National Fire Protection Agency (NFPA) standards and STI-F-921 requirements.

1.4.3.6.2 Bucket Shop and Heavy Repair Facility

The Bucket Shop and Heavy Repair Facility will be located to the south of satellite pits adjacent to the Mine Services Complex. The Bucket Shop and Heavy Repair Facility provides repair and maintenance to mobile heavy equipment and components of fixed equipment.

1.4.3.6.3 Concrete Batch Plant

The Concrete Batch Plant will be located in the general area of the Concentrator Building. The Concrete Batch Plant will produce concrete for use on the mine site during the site preparation and construction phases and will be decommissioned thereafter.

1.4.3.6.4 Aggregate Plant Facility

The Aggregate Plant Facility will be a permanent facility for producing road material, stemming and dam construction material. It will be located in an area north of the Processed Solids Management Facility access road approximately 1 km west of the Concentrator.

1.4.3.6.5 Hazmat Building

A hazardous materials storage building will be constructed at the mill site, adjacent to the concentrator building. Hazardous materials coming onto the site, which could include among other things mineral processing and assay lab reagents, will be delivered to, stored in and distributed from the Hazmat Building. Hazardous wastes generated on site, which could include among other things used oil, grease, lubricants and reagents, will be collected around the mine site and stored in the Hazmat building from where a licensed hazardous materials contractor will transport them to an approved disposal facility.

1.4.3.6.6 Assay Lab

An assay lab will be located on the mill site, adjacent to the concentrator building. The assay lab will provide four primary functions:

- to provide the means to segregate mine rock from ore in the pits;

- to provide ore grade control for the mill;
- to provide the means to segregate Type 1 from Type 2 mine rock; and,
- to provide process analysis to optimize the performance of the mill.

1.4.3.6.7 Mine Services Complex

The mine services complex will be located at the south end of the mill site, just east of Satellite Pit 5. The complex comprises a single structure that includes the administration and engineering office, first-aid station, meeting and training rooms, warehouse, mine dry, garage and wash bay, and security office. A security gate will be located at the entrance to the mine site, just south of the mine services complex. Security will be staffed 24 hours a day, providing restricted access to the site.

1.4.3.6.8 Propane Storage Area

During operations two 30,000 USG propane tanks will be located in the vicinity of the mill and mine services complex, with a minimum of 100 feet from either, as required. The tank will be installed on a concrete or steel foundation in a fenced in area. Two electric water bath vaporizers will be installed to ensure an adequate amount of propane gas is available during the heating season.

The installation will not have a cylinder refill station; however, storage of cylinders for propane fired fork lifts will also be provided in this area. The tanks and equipment will be owned by the mine, and will be filled by a licensed propane distributor.

Distribution to the site infrastructure will be though low pressure underground HDPE pipes to each of the buildings.

1.4.3.6.9 Concentrate Storage Building

The concentrate storage building will be situated just south of the mill between the mill and the mine services complex. The building will be a dome structure built on a concrete base capable of holding approximately 6,000 tonnes of concentrate. A wheeled-loader will access the building through an opening in the side of the dome. The concentrate storage building will allow additional storage of concentrate to mitigate any potential delays that could arise in concentrate transport.

1.4.3.7 Off-Site Support Infrastructure for Mine Development and Operations

Off-site support infrastructure associated with the Project includes the following:

- a 115 kV electrical power transmission line;
- an employee Accommodations Complex in the Town of Marathon; and,
- (possibly) a concentrate rail load-out in the Town of Marathon.

In addition, upgrades to the intersection of the Camp 19 Road and Hwy 17 will be required to facilitate large vehicle (truck) access from the highway to the site.

1.4.3.7.1 115 kV Electrical Power Transmission Line

Electrical power to the mine site will be provided from the existing provincial power grid. A new 115 kV overhead transmission line will be constructed from a purposefully built junction point on Hydro One's M2W Line located to the northwest of the primary pit. The new transmission line will run approximately 4.1 km to a transformer station at the mill site. The transformer station will provide power to distribution feeders serving the mine's various surface facilities as needed.

The configuration of the new transmission corridor is shown on the general site layout map (Figure 1.4-12). The width of the transmission corridor will be approximately 30 m. About 25% of the corridor represents land that will be cleared solely for this purpose. The remaining 75% of the corridor is routed along the toe of the PSMF and mine site roads.

1.4.3.7.2 Employee Accommodations Complex

An employee Accommodations Complex will be built in the Town of Marathon with a capacity of approximately 250 people. The complex is anticipated as a pre-engineered, wood-framed two-storey structure, comprised of individual modular units, with shared bathroom, shower facilities, and common areas. SCI has secured a potential site for the complex, which is serviced by Town water and sewer. A preliminary assessment indicates that no upgrades to the Town water and sewer systems to service the site will be necessary as both are well under capacity at the present time. It is currently envisaged that the complex will be available for continued use following the end of the Project.

Employees will also be accommodated in three existing motels owned by SCI.

1.4.3.7.3 Concentrate Rail Load-out Facility

Concentrate produced at the on-site mill will be transported off-site to an existing off-site facility for further processing. Two transport options are being considered. The first is direct truck transport from the mine site to the off-site facility(s). The second is truck transportation from the mine site to a concentrate rail load-out facility in the Town of Marathon, and rail transport from there. Two possible locations for this facility are under consideration, as shown in Figure 1.4-12. In both cases the facilities are situated on existing rail sidings in close proximity to the CP rail line. The infrastructure necessary to develop the facility at either location is the same and is described below.

The concentrate storage building (binhouse) at the rail load-out facility in Marathon will be entirely enclosed and contain two circular steel bins, each having a capacity of about 2,000 tonnes. The binhouse will be fitted with baghouses (one for each bin) with silencers to limit dust propagation and noise generation. The facility will be constructed as a steel-framed structure

over a concrete foundation, with drain capture points to capture and hold any spills or overfills that occur. It will be enclosed to prevent condensation from forming inside the bins during storage.

For delivery to the storage facility, trucks will enter the building and unload their concentrate into a hopper. A conveyor system will top-load concentrate from the hopper to the steel bins. Unloading at the binhouse will only take place after the dust collection system has been engaged.

Rail cars will be loaded within the confines of the binhouse, and again only after the binhouse dust collection system has been engaged. Individual rail cars pass beneath the steels bins on tracks and are bottom-loaded from the bins. The system will load one car at a time and once a car is loaded, the train moves forward to allow the next car to load.

The rail siding that links the storage and handling facility to the CP rail line consists of two tracks, an inbound and an outbound track that can accommodate loading 24 - 12 ft x 60 ft long rail cars.

1.4.3.7.4 Upgrades to the Camp 19 – Highway 17 Intersection

A traffic impact assessment was completed to identify whether it was necessary to modify Hwy 17 in the area of the Camp 19 Road to maintain current or acceptable levels of service (LOS), based on traffic type and intensity predictions related to the development of the mine. The detailed results of this assessment are provided by ENL (2012).

The impact study concluded that geometric improvements are required at the Camp 19 and Highway 17 intersection including providing for greater turning radii and a right turn taper to accommodate the larger-sized vehicular traffic. The analysis did not indicate a need for special turn lanes, nor did it conclude that any special signaling was warranted in the area or at the intersection specifically.

The overall drainage pattern at the intersection of Highway 17 and Camp 19 Road will remain unchanged by the upgrades. Drainage currently flows both east and west along Highway 17 away from Camp 19 Road, with no culvert across the side road. As a result, no new culvert will be required across the widened roadway platform.

The proposed configuration of the Camp 19 Road – Hwy 17 intersection based on the traffic assessment is shown in Figure 1.4-19.

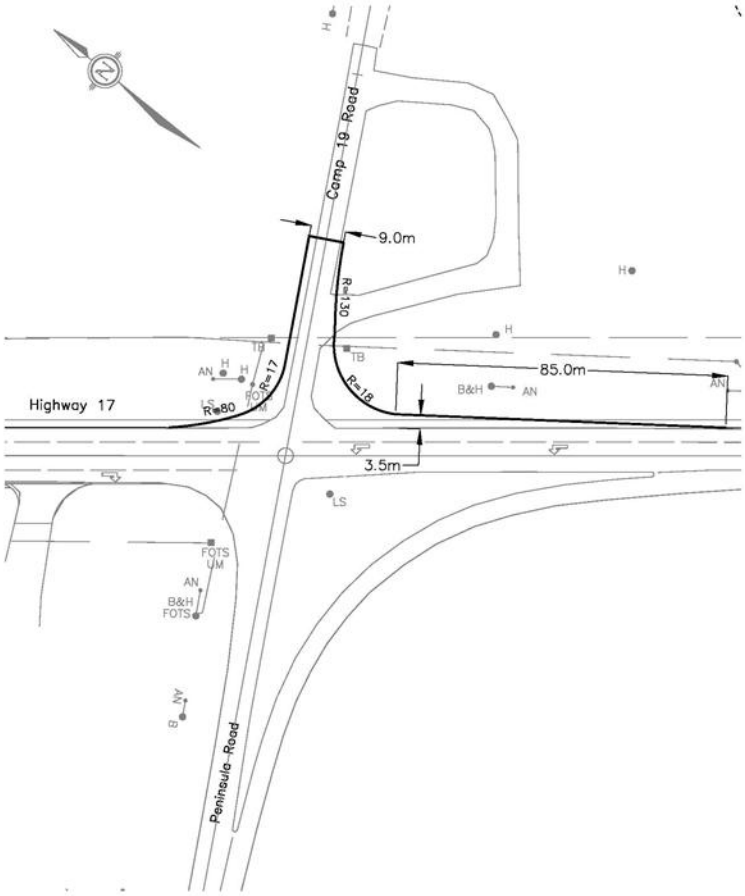

Figure 1.4-19: Proposed Configuration of the Camp 19 Road – Hwy 17 Intersection

1.4.3.8 Project Development Schedule

The anticipated Project development schedule is provided in the Gantt Chart below (see Figure 1.4-20). It is expected that it will take approximately 18 to 24 months to reach commercial production, from the time site preparation commences. The operations phase is anticipated to last approximately 11.5 years.

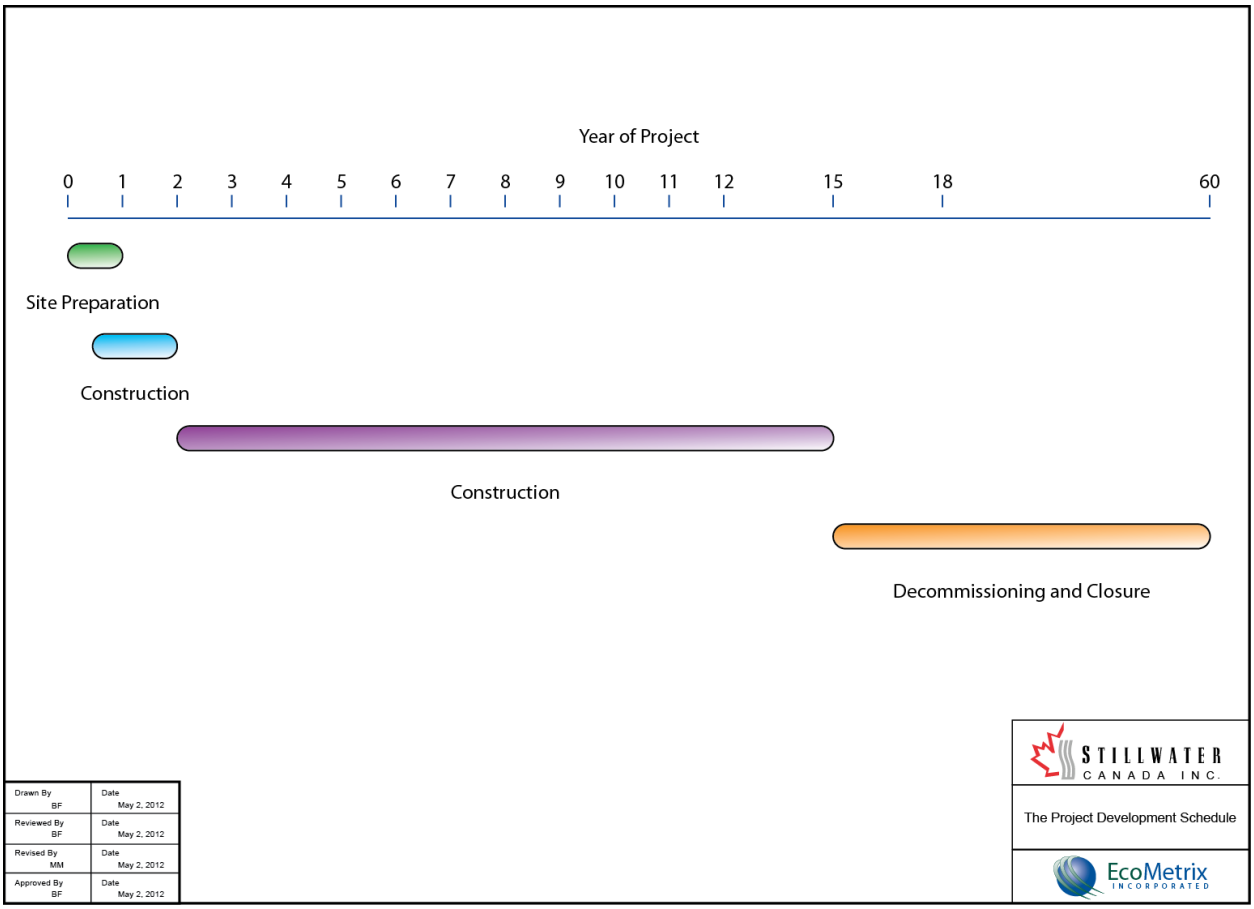

Figure 1.4-20: The Project Development Schedule