Troilus Mining Project

Initial Project Description - English Summary

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PROJECT TEAM

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PART F – SUMMARY

1.0 BACKGROUND

Troilus Gold Corp (TSX: TLG) is a mineral exploration society, whose objective is to reopen the former Troilus gold and copper mine. This mine is located in the southeastern part of the Nord-du-Québec Administrative Region, on the Eeyou Istchee James Bay Territory, about 76 km northwest of the Cree community of Mistissini and about 170 km north of the city of Chibougamau. A maximum daily production of 40,000 tonnes per day (tpd) is currently planned for the mine with an estimated 10 year production period.

2.0 JUSTIFICATION AND NEED FOR THE PROJECT

The development of the Troilus mining project is relevant in the current context. For instance, there has been a notable increase in investments for precious metals like gold since 2020. Furthermore, 8% of the gold produced in Canada is used for technological applications. The price of gold is currently at an historically high level. Lastly, there is an increasing demand for gold and copper to answer the needs in electrification, which are increasing due to Canada's push to reduce greenhouse gas emissions.

The results of the preliminary economic assessment conducted in 2020 are positive and validate the reopening of the former Troilus mine. This project will allow the development of a gold and copper deposit which is economically viable, and a more thorough exploitation of the resource.

3.0 PROJECT DESCRIPTION

Generally, the Troilus mining project will include the following main activities:

- Development and exploitation of a new open pit (South-West pit);
- Expansion and exploitation of two previously exploited open pits (pit 87 and pit J4);
- Construction and operation of an ore processing plant (maximum capacity of 10,000 tpd);
- Reuse of the existing tailings management facility, including dike lifts and construction;
- Construction and operation of the waste rock and overburden piles;
- Construction and operation of an industrial and domestic water treatment plant;
- Diversion of a stream (Ruisseau Sans Nom) of about 10 km;
- Modification of the about 7 km existing access routes and installation of a gatehouse to control access to the site;
- Construction of a permanent camp for workers with a capacity of 450 persons;
- Construction of related buildings (administration, garage, etc.); and
- Expansion and operation of an existing in-trench landfill site.

4.0 POTENTIAL ALTERNATIVES

The study of potential project alternatives has already started, including the following:

- Location of mining and industrial infrastructures;
- Management of mining waste (type of mining waste, location of the tailings management facility, etc.);
- Water management; and
- Waste management.

It is important to note that due to the nature of the deposit, only an open-pit mining exploitation is possible.

5.0 ENGAGEMENT ACTIVITIES AND FUTURE ENGAGEMENT PLAN

Engagement activities are ongoing with the various stakeholders and Indigenous groups concerned by the Troilus mining project. The main objectives of these activities are to present an overview of the project in its current stage and to gather comments and initial concerns. To this day, the following authorities and non-indigenous organizations have been met by Troilus Gold representatives:

- James Bay Regional Administration;
- Développement économique Chapais;
- Développement économique Chibougamau;
- City of Chapais; and
- City of Chibougamau.

The main issues and comments raised by the authorities and organisms met were the following: wildlife (protection of fauna species at risk and fish protection), air quality (dust emissions generated by the mining site), water quality (watercourses' water quality preservation), socioeconomic aspects (labour shortage, housing need, mine's local employment rate/ number of jobs, working hours, retention of workers in the region, and local and regional economic benefits), other social aspects (road transport and waste management), consultation (information and periodic consultation of the stakeholders, equity between efforts made to indigenous and allochthonous communities as well as the duplication of the federal and provincial assessment processes).

It is important to note that a future engagement plan will be developed as part of the impact assessment study to ensure continuous and transparent communication with all the concerned stakeholders.

Furthermore, several discussions and consultations happened since 2017 with the Cree community of Mistissini, which was closely involved in the former mining operation. A pre-development agreement was signed with the Cree community of Mistissini regarding the development of the Troilus mining project. Information and consultation meetings took place with families whose trapping territory overlaps the project site (M-34A, M-39 and M-40). In addition to the impacted families, the following authorities and indigenous peoples were met by Troilus Gold representatives:

- Mistissini Native Women's Association;
- Cree Trappers' Association of Mistissini;
- Elders Council of Mistissini;
- Mistissini Youth Council;
- Nibiischii Corporation of Mistissini.
- Grand Council of the Crees; and
- Cree Nation of Mistissini.

Mobilization Activities and Future Mobilization Plan

The main issues and comments raised by the authorities and indigenous peoples met were the following: environment (dust emissions, particularly of the tailings management facility, diversion of a watercourse, possible flooding, oil spill risk, collection of surface runoff from waste rock), wildlife (wildlife circulation in the sector), light pollution (dark sky park recognition process ongoing), cultural aspects (enhanced security of traditional activities in the restored sectors/design of new development, circulation of users of the territory in the sector), socioeconomic aspects (distribution of economic benefits in the community, prioritization of impacted families for hiring and training, impact on tourism activities, income taxation by employment status, training and experience recognition), other social aspects (difficulty of long work rotations for family life, road transport).

A future mobilization plan will be developed as part of the impact assessment study collaboratively with the Cree communities identified by the Cree Nation Government.

6.0 BIOLOGICAL AND PHYSICAL ENVIRONMENTS

The project site is part of Eastmain lowlands, division of the physiographic unit of the James region. The terrain is rugged. To the south, there are rocky hills with a maximum altitude of 520 m and to the north, there is a rocky ridge with a maximum altitude of 430 m.

The project site is located within Rupert River watershed, more precisely in the sub watershed of Boisfort Lake. It is important to note that the water quality in the area of the mining site is altered by the presence of the mining infrastructures and some parameters are above the surface water criteria for the protection of aquatic life (chronic effect), for instance aluminum, cadmium, copper, and zinc.

Two different geological units corresponding to two hydrogeological units are observed at the project site, being till and rock. Monitoring of groundwater at the project site shows that the groundwater upstream of the tailings management facility is naturally acid (pH below 6), of good quality upstream of the site, and does not show any contaminants over established criteria for groundwater whereas the concentration of dissolved copper is above the permitted limit for groundwater seepage into surface water in the former industrial sector.

The project is located within the boreal vegetation zone and more particularly in the continuous boreal forest subzone as well as in the bioclimatic domain of spruce-moss, west subdomain. The main tree species present within the project sector are jack pine and black spruce. Wetlands are present in the project's sector. There are mainly open peatlands, forested peatlands, ponds, marshes, and shrub swaps.

During field surveys, the following fish species were fished: lake herring, walleye, northern pike, lake whitefish, white sucker, longnose dace, and brook trout.

Among the bird species observed in the project's sector, four species at risk were identified; they are the following: common nighthawk, short-eared owl, olive-sided flycatcher, and bank swallow. The big brown bat is the only bat species identified during inventory conducted in the project sector. Herpetofauna species recorded in the project sector are the following: northern spring peeper, American toad, wood frog, north frog, northern two-lined salamander, blue-spotted salamander, and common garter snake. Most abundant micromammals species in the project sector are the red-backed vole and the common shrew. Among large wildlife species present in the project sector, there is the boreal woodland caribou, the moose, the black bear, and the grey wolf.

7.0 HEALTH, SOCIAL AND ECONOMIC CONTEXT

The following table presents socio-demographic data for Mistissini, Chibougamau and Chapais for 2021 and 2016.

Table 1: Socio-Demographic Data for Mistissini, Chibougamau and Chapais (2021 and 2016)

Community/Municipality	2021	2016
Mistissini		
Population	3,731	3,523
Population density per km^2	4.6	4.1
Average age	-	29.8
Median age	-	26.5
Average household size	-	3.9
First official language	-	English
No certificate, diploma, or degree	-	54.3%
High school diploma or equivalency certificate	-	8.4%
Postsecondary certificate, diploma, or degree	-	37.3%
Chibougamau		
Population	7,233	7,504
Population density per km^2	10.4	10.7
Average age	-	39.5
Median age	-	39.8
Average household size	-	2.3
First official language	-	French
No certificate, diploma, or degree	-	25.5%
High school diploma or equivalency certificate	-	18.1%
Postsecondary certificate, diploma, or degree	-	56.3%

Community/Municipality	2021	2016
Chapais		
Population	1,468	1,499
Population density per km^2	23.6	23.5
Average age	-	41.4
Median age	-	43.8
Average household size	-	2.2
First official language	-	French
No certificate, diploma, or degree	-	33.3%
High school diploma or equivalency certificate	-	15.2%
Postsecondary certificate, diploma, or degree	-	51.4%

Notes: -: not available

A survey conducted on the health of Canadian communities in 2003 has shown that in the region of Iiyiyiu Aschii, one in six residents estimates its health as “passable or bad”. Also, more than half of the residents of Iiyiyiu Aschii have reported having had at least one long-term health problem. In 2009, a review of the health and well-being of the Jamesians was conducted for the Nord-du-Québec Health Region. Here are some of the results of this review:

- The quality of drinking water and exposition to tobacco smoke in the environment are the two documented indicators that show the most potential for adverse effects on health.
- Proportions of smokers and alcohol consumers are decreasing even if the age at the time of the first completely smoked cigarette is lower than in Quebec.
- The physical health perceived by the Jamesians is similar to the one of the Quebec population.
- The Jamesians show comparable or better mental health compared to Quebec with the exception of suicidal thoughts that show no gap.
- The life expectancy of Jamesians is not significantly different from the one for Quebecers.

Nord-du-Québec, Abitibi-Témiscamingue and Côte-Nord are the three main mining regions of Quebec. They provide most jobs in the mining sector. The following table shows economic data for Mistissini, Chibougamau and Chapais in 2015 and 2016.

Table 2: Economic Data for Mistissini, Chibougamau and Chapais

Community/Municipality	Both Sexes	Men	Women
Mistissini			
Median total income in 2015	$35,392	$35,691	$35,072
Average total income in 2015	$40,203	$40,572	$39,871
Median total income of households in 2015	$92,928	-	-
Average total income of households in 2015	$102,080	-	-
In the labour force in 2016	1,590	805	785
Participation rate in 2016	65.2%	68.8%	61.8%
Employment rate in 2016	54.1%	54.7%	53.5%
Unemployment rate in 2016	16.7%	20.5%	13.4%
Chibougamau			
Median total income in 2015	$39,215	$47,440	$30,464
Average total income in 2015	$45,702	$53,215	$37,506
Median total income of households in 2015	$71,899	-	-
Average total income of households in 2015	$83,031	-	-
In the labour force in 2016	4,345	2,330	2,015
Participation rate in 2016	72.1%	74.8%	69.2%
Employment rate in 2016	67.1%	67.9%	66.3%
Unemployment rate in 2016	6.9%	9.0%	4.5%
Chapais			
Median total income in 2015	$34,912	$49,280	$23,467
Average total income in 2015	$43,531	$54,484	$31,285
Median total income of households in 2015	$67,174	-	-
Average total income of households in 2015	$75,742	-	-
In the labour force in 2016	800	435	370
Participation rate in 2016	65.6%	67.4%	64.3%
Employment rate in 2016	60.7%	61.2%	60.0%
Unemployment rate in 2016	7.5%	8.0%	6.8%

Notes: -: not applicable

8.0 CHANGES TO THE ENVIRONMENT AND IMPACTS ON INDIGENOUS PEOPLES

Carrying out the project could lead to potential changes to components of the environment that are within the legislative authority of Parliament, like fish and its habitat, and migratory birds. Mitigation measures will be implemented during the impact assessment study to reduce impacts of the project on those components.

Carrying out the project could also have impacts on Indigenous peoples, including on the current use of the lands and resources for traditional purposes as well as on physical and cultural heritage. Furthermore, the development of the project could lead to potential changes to health, social and economic conditions of Indigenous peoples. Mitigation measures will be implemented during the impact assessment study to reduce impacts of the project on those components.

The following table presents the matrix of interrelationships between the potential effect sources of the project and the environmental components and health, social and economic conditions of Indigenous peoples.

Table 3: Interrelationship Matrix

Sources of Potential Effects	Environment Components / Health, Social or Economic Conditions of Indigenous Peoples						
	Fish and Fish Habitat	Migratory Birds	Current Use of Lands and Resources for Traditional Purposes	Physical and Cultural Heritage	Health Conditions	Social Conditions	Economic Conditions
Construction Phase							
Installation and presence of the construction site		X	X			X	
Ground preparation (deforestation, stripping, excavation, landscaping, blasting)	X	X	X	X	X	X	X
Construction of infrastructures as well as temporary and permanent facilities	X	X	X	X	X	X	X
Vehicles and heavy machinery circulation as well as use and maintenance of equipment/heavy machinery	X	X	X	X	X	X	
Purchase of goods and services							X
Presence of workforce (including workers camp)	X	X					
Operation Phase							
Operation of the mine and ore processing	X	X	X		X	X	X
Management of tailings and waste rocks	X	X			X		
Waste management (in-trench landfill site)	X	X			X		

Sources of Potential Effects	Environment Components / Health, Social or Economic Conditions of Indigenous Peoples						
	Fish and Fish Habitat	Migratory Birds	Current Use of Lands and Resources for Traditional Purposes	Physical and Cultural Heritage	Health Conditions	Social Conditions	Economic Conditions
Water management and treatment	X	X			X		
Vehicles and heavy machinery circulation as well as use and maintenance of equipment/heavy machinery	X	X	X		X	X	
Purchase of goods and services							X
Presence of workforce (including workers camp)	X	X					
Closing Phase							
Dismantling of infrastructures and facilities		X	X		X	X	X
Pits flooding		X			X		
Site restoration	X	X	X		X	X	X
Vehicles and heavy machinery circulation as well as use and maintenance of equipment/heavy machinery	X	X	X		X	X	
Presence of workforce (including workers camp)	X	X	X				

9.0 CHANGES TO THE ENVIRONMENTAL COMPONENTS

Carrying out the project could lead to potential changes to the components of the environment, namely:

- Fish and fish habitat:
  - Potential modification of water quality
  - Potential habitat loss
  - Potential degradation/disturbance of habitat quality
  - Potential disturbance of fish communities
  - Potential death of individuals
- Migratory birds:
  - Potential habitat loss, damage, and fragmentation
  - Potential disturbance during nesting period

- Disturbance of individuals or communities
- Accidental death of individuals

10.0 IMPACTS ON INDIGENOUS PEOPLES

The development of the project could lead to impacts on Indigenous peoples, namely:

- Current use of land and resources for traditional purposes:
  - Disturbance of traditional activities that happen on the territory (hunting, fishing, trapping, picking, etc.)
  - Potential loss of places to practice traditional activities (hunting, fishing, trapping, picking, etc.)
  - Collision/accident risks due to increased circulation on the territory
- Physical and cultural heritage:
  - Change to the physical heritage by addition of anthropogenic features in the landscape
  - Change to the physical heritage by alterations of physical components of the environment (for example, deforestation, diversion of a watercourse)
  - Potential damages to elements of cultural heritage (for example, archeological remains)

11.0 CHANGES TO HEALTH, SOCIAL AND/OR ECONOMIC CONDITIONS OF INDIGENOUS PEOPLES

Carrying out the project could lead to change to health, social or economic conditions of Indigenous peoples, namely:

- Health conditions:
  - Potential effects on human's health (air emissions, noise)
  - Collision/accident risks due to increased circulation on the territory
  - Potential change in surface water quality
- Social conditions:
  - Change in hunting, fishing, and trapping habits on the territory
  - Change in the current family dynamic
  - Change in the quality of life
- Economic conditions:
  - Regional and local economic benefits
  - Job creation

- Acquisition of goods and services
- Business opportunities for Indigenous companies

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