



**CANADA NICKEL**  
COMPANY



**Stantec**

# **Crawford Nickel Project Impact Statement**

## Chapter 29 Cumulative Effects Assessment



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**Prepared for:**  
**Canada Nickel Company**

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## Acronyms and Abbreviations

BCR	Bird Conservation Region
ca.	Circa (i.e., approximately)
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Emissions
DFO	Department of Fisheries and Oceans Canada
GHG	Greenhouse Gas
ha	hectare
HBC	Hudson Bay Company
kV	kilovolt
LSA	Local Study Area
MECP	Ministry of the Environment, Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry (now the Ministry of Natural Resources [MNR])
PA	Project Area
PIL	Project Inclusion List
PoPC	Parameter of Potential Concern
PTTW	Permit to Take Water
RHO	Regional Historical Overview
RSA	Regional Study Area
SAR	Species at Risk
SARA	Species at Risk Act
SOCC	Species of Conservation Concern

TIS Guidelines

Tailored Impact Statement Guidelines

VC

Valued Component

## 29 Cumulative Effects Assessment

The cumulative effects assessment identifies and assesses Project residual adverse effects that may interact with the effects of other past, present and reasonably foreseeable future physical activities.

### 29.1 Scope of the Assessment

The approach used for conducting the cumulative effects assessment for the Project follows the *Policy Framework for Assessing Cumulative Effects Under the Impact Assessment Act* (IAAC 2023) and the Tailored Impact Statement Guidelines (TIS Guidelines) for the Project (Appendix A.1 of the Impact Statement). The *Technical Guidance for Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012* is also considered for reference (in accordance with the TIS Guidelines).

General methods used to complete the cumulative effects assessment are described in Section 8.8 in Chapter 8 of the Impact Statement (Assessment Methodology), with further details provided below. As noted in Section 8.8, two conditions must be met to initiate an assessment of cumulative effects on a Valued Component (VC):

- the Project is assessed as having adverse residual effects on a VC
- the adverse residual effects from the Project overlap spatially and temporally with residual effects of other physical activities on a VC

If either condition is not met, an assessment of cumulative effects is not completed. The temporal overlap between the residual effects of the Project and the residual effects of other physical activities on a VC considers the Project phases and temporal boundaries described in Section 8.4 in Chapter 8 of the Impact Statement (Assessment Methodology).

Existing environmental conditions reflect the cumulative effects from past and existing physical activities. A 'physical activity' is a physical works (i.e., an observable and tangible object, such as a road) or an action associated with a physical works (e.g., traffic on a road), also commonly referred to as 'project'.. Sometimes a single physical activity can represent both a physical works and action. The assessment of cumulative effects focuses on future conditions, which includes ongoing and future effects of past and present physical activities.

#### 29.1.1 Physical Activities Considered for Cumulative Effects

Present-day environmental, health, social, cultural, and economic conditions reflect the cumulative effects of past and present physical activities. As such, past and present physical activities are identified to provide an understanding of how the current environmental conditions have arisen and how past and present activities may have or currently are affecting VCs. Existing environmental conditions reflect cumulative effects from past and present physical activities and are accounted for within the residual Project effects assessment.

Future physical activities in the cumulative effects assessment include those that are considered to be certain to proceed and generally includes physical activities that are reasonably foreseeable. More specifically, certain and reasonably foreseeable future physical activities considered in the cumulative effects assessment are restricted to those that meet one or more of the following criteria:

- are currently undertaking site preparation or are under construction
- have received regulatory approval
- have been publicly announced with applications filed with a defined project execution period and with sufficient project details for consideration
- are currently undergoing an impact assessment/environmental assessment
- are in a permitting process
- are identified in an approved development plan

To complete the cumulative effects assessment, a Project Inclusion List (PIL) has been developed to identify the past, present and future physical activities that may interact cumulatively with the effects of the Project. These physical activities are listed in Attachment 29.1 and have been organized under the following categories:

- Mining: mines and exploration activities
- Aggregate Extraction: pits and quarries
- Community Development: First Nation reserves, urban areas, landfills, water and wastewater treatment, and other community services
- Water Management: non-electric dams
- Transportation: airports, highways, and railways
- Power: hydroelectric dams, solar power, natural gas, and transmission lines
- Energy: pipelines and local distribution systems
- Forestry: managed forests, sawmills and paper mills
- Agriculture: agricultural conversion and operation
- Recreation: conservation areas, parks and campgrounds, and snowmobile trails
- Hunting and Fishing Activities

Based on a review of available information, a number of future physical activities are currently in regulatory review or have been approved for the region. Some of these Projects are a substantial distance from the Project but are still within one or more of the VC-specific Regional Study Areas (RSAs). Those physical activities in the RSAs have been identified from readily accessible records, including federal, provincial and municipal government records, press releases and GIS mapping applications. However, due to available source information, not all physical activities on the landscape may be captured in the PIL.

Physical activities that do not meet the criteria listed above have been excluded from the PIL. For example, NetZero Metals Inc. has proposed the future construction and operation of a Downstream Nickel Processing Facility and a Downstream Stainless-Steel Processing Facility in the Timmins Region that are planned to begin operation in 2027. Further, other future mines may someday be proposed that meet these criteria, although at present are only concepts for which exploration activities have been or will be completed but for which additional assessments and decisions (i.e., financial and technical viability) are required before they become reasonably foreseeable. However, in the absence of sufficient project details regarding these future activities (e.g., location, capacity, emissions), they have been excluded from the PIL for consideration as part of the assessment of cumulative effects. Further, administrative activities, such as regulations, policies, programs, management units, or other activities (i.e., treaties), are not considered as part of the cumulative effects assessment even though they have a role in influencing the conduct of physical activities on the landscape, particularly by Indigenous nations in their exercise of rights.

As further clarification to above, natural resource potential, such as mining deposits, does not constitute a basis for identifying future reasonably foreseeable physical activities at such locations. Exploration activities may occur and are identified if known. However, any possible future mining at these locations represents a hypothetical future physical activity and as such are not assessed (assessment of hypothetical physical activities is not required for cumulative effects assessments subject to IAA). This includes for other CNC properties in the region.

The identification and selection of specific physical activities to date was based on a conservative assumption that a potential interaction may exist due to the nature of that activity, the surrounding environment, and the VCs assessed. Physical activities have been identified according to the greatest extent of the RSAs for each VC. Due to the large geographic extent of this area, not all the physical activities in will be relevant to each VC. Therefore, a subset of the PIL will be identified for each VC based on the VC-specific RSA to define physical activities with the potential to interact cumulatively with the Project residual effects of that VC.

The list of past, present, and future physical activities included in Attachment 29.1 is based on public information available up to September 30, 2024. A description of each activity, corresponding status (timing), and proximity of the physical activities to the Project are identified in Attachment 29.1 and the location of selected physical activities is presented in the figures in Attachment 29.2. Those figures collectively provide various portrayals of the PIL based on a permutation of study areas, VCs and physical activities, all to assist contextual interpretation of the PIL and the VC CEA assessments. Figures 29.1 to 29.3 depict any past, present, and future physical activities in relation to all RSAs combined. Figure 29.4.1 presents all overlapping RSAs, and Figure 29.4.2 presents the biophysical RSAs only.

### **29.1.2 Spatial and Temporal Boundaries**

Adverse residual environmental effects on VCs are reviewed for potential spatial and temporal boundary overlap with similar environmental effects from other physical activities. Only physical activities with potential effects that overlap with the residual effects of the Project (spatially and/or temporally) are included in the assessment of potential cumulative effects.

The spatial and temporal boundaries encompass the areas and timeframes within which the Project may measurably contribute to cumulative environmental effects.

The spatial boundaries of the cumulative effects assessment are determined on a VC-specific basis with the selection of an RSA for each VC. The RSA is considered to be the area within which adverse residual effects of the Project have the potential to act in a cumulative manner with the effects of other past, present and future physical activities. The RSA encompasses the Project Area (PA) and the Local Study Area (LSA) for each VC.

No RSA has been established for Climate Change for the Project, as the environmental effects associated with greenhouse gas (GHG) emissions are a global phenomenon. This is based on GHGs mixing well and remaining in the atmosphere far from their emission sources (i.e., effects are not localized) (Intergovernmental Panel on Climate Change 2013).

The temporal boundaries for the assessment are defined (Section 8.5.2) based on the anticipated timing and duration of effects in relation to each VC. Temporal boundaries are established by determining the period (phase) over which Project-specific and cumulative effects are to be considered, consistent with the temporal boundaries for the assessment of Project-specific effects.

The period of time considered in Section 29.2 is provided for contextual purposes and does not constitute a temporal boundary for the purposes of this cumulative effects assessment.

### **29.1.3 Project Residual Effects with Potential to Interact Cumulatively with Other Past, Present, and Future Physical Activities**

The cumulative effects assessment builds on the Project-specific residual effects assessments presented in Chapters 10 to 23 of the Impact Statement (VC Chapters). This information is necessary to identify potential effects on VCs that might act cumulatively with the effects of other physical activities.

In accordance with the TIS Guidelines, a cumulative effects assessment is only required for VCs upon which the Project may result in adverse residual effects, regardless of the extent of significance, which is discussed for VCs within federal jurisdiction only (see Section 29.1.4.5). VCs that would not be affected by the Project or that would be affected positively have been omitted from the cumulative effects assessment.

The Project-specific VCs for which adverse residual effects are anticipated include:

- Geology and Geologic Hazards
- Soil
- Atmospheric Environment
- Acoustic Environment
- Groundwater
- Surface Water

- Vegetation, Riparian and Wetland Environments
- Fish and Fish Habitat
- Birds and Bird Habitat
- Wildlife and Wildlife Habitat
- Climate Change
- Health
- Social Conditions
- Economic Conditions

Adverse residual effects are also predicted on the Indigenous Interests of Apitipi Anicinapek Nation, Flying Post First Nation, Matachewan First Nation and Mattagami First Nation, Taykwa Tagamou Nation, and Métis Nation of Ontario - Region 3. The assessment of cumulative effects on Indigenous Interests is provided in Sections 25.5 (Apitipi Anicinapek Nation), 26.5 (Taykwa Tagamou Nation), 27.5 (Flying Post First Nation, Matachewan First Nation and Mattagami First Nation) and 28.5 (Métis Nation of Ontario - Region 3) of the Indigenous nation-specific chapters (Chapters 25 to 28) of the Impact Statement (Assessment of Potential Effects on Indigenous Interests). The scope, approach and methods for completing the cumulative effects assessment on Indigenous Interests are consistent with those described in this chapter.

#### **29.1.4 Cumulative Effects Approach**

The cumulative effects assessment follows the same iterative process and format used for Project effects, including an analysis and determination of effect pathways, identification of potential mitigation and enhancement measures, and description of the effect, followed by the characterization of the effect. Due to the uncertainty related to other physical activities, including mitigation measures and reclamation of each physical activity, the assessment of cumulative effects is largely qualitative.

##### **29.1.4.1 Identifying Activities with Potential to Interact Cumulatively**

The assessment of each cumulative effect begins with a description of the effect and the mechanisms whereby the effects from the Project might interact with other physical activities in the VC defined spatial boundary (i.e., VC-specific RSA).

Physical activities considered to have the potential to interact cumulatively with Project-related effects include any past, present and future physical activities that occur within VC-specific RSA. For the assessment of cumulative effects on individual VCs, those physical activities and the mechanism by which their effects may interact cumulatively are identified.

Past, present and future physical activities that are unlikely to interact cumulatively with the Project are either one or a combination of the following:

- substantially geographically removed from the Project
- do not overlap temporally
- effects do not transport beyond the Project Area such as to interact cumulatively
- their operations do not result in a potential cumulative effect pathway to the VC
- due to known success of current best management and design mitigation for such physical activities, residual effects are unlikely and assumed immeasurable and/or intangible

#### **29.1.4.2 Mitigation for Cumulative Effects**

Residual Project effects (i.e., those predicted to be likely to occur following the implementation of mitigation measures) are considered in the assessment of cumulative effects. If required and appropriate (i.e., within the care and control of the Canada Nickel Company [Canada Nickel]), additional mitigation measures to reduce identified potentially adverse cumulative effects are described for each effect.

#### **29.1.4.3 Residual Cumulative Effects**

Residual cumulative effects are described, taking into account how any proposed mitigation would alter or change the cumulative effect. Where possible, cumulative effects are characterized in terms of the direction, magnitude, geographic extent, timing, frequency, duration, reversibility and ecological or socio-economic context. The definitions of these terms specific to each VC can be found in the “Characterization of Residual Effects on” table in each VC chapter.

#### **29.1.4.4 Project Contribution to Cumulative Effects**

Once the residual cumulative effect on the VC has been determined, a description of the Project's contribution to that total residual cumulative effect (i.e., how much of the total residual cumulative effect on the VC can be attributed to the Project) is provided. This includes, where appropriate, a discussion as to whether the Project contribution will cause a change in the cumulative effect to an extent that could affect the long-term viability of the VC or would result in an unacceptable change, and, whether such effects would occur without the Project.

#### **29.1.4.5 Determination the Extent of Significance of Residual Cumulative Effects**

As explained in Section 8.7.6 of the Impact Statement, for VCs within federal jurisdiction (only), a determination of significance of the adverse residual cumulative effects is made using the standards or thresholds established for the residual Project effects for those VCs. A determination on the extent to which cumulative “adverse residual federal effects” are considered to be significant is provided for the following VCs:

- fish and fish habitat, including any aquatic species at risk (SAR) (Section 29.12.6)

- migratory birds, including any migratory bird species subject to the *Species at Risk Act* (SARA; Section 29.13.6)
- health, as it pertains to the health of Indigenous People (Section 25.5.4, 26.5.4, 27.5.4, 28.5.4)
- social and economic conditions of Indigenous People, including physical and cultural heritage, current use of lands and resources for traditional purposes, any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, or the social or economic conditions on reserve (Section 25.5.3, 26.5.3, 27.5.3, 28.5.3)
- wetlands, as they may be impacted through a *Fisheries Act Authorization* or Authorization under the *Metal and Diamond Mining Effluent Regulations* (Section 29.11.6)
- navigable waters, as they may be impacted through approvals and/or exemptions under the *Canadian Navigable Waters Act* (Section 29.16.6)

See Chapters 17 (Assessment of Potential Effects on Fish and Fish Habitat), 18 (Assessment of Potential Effects on Birds and Bird Habitat), 21 (Assessment of Potential Effects on Health), 22 (Assessment of Potential Effects on Social Conditions), and 25 to 28 (Assessment of Potential Effects on Indigenous Interests) of the Impact Statement for the respective significance determination definitions.

### 29.1.5 The Influence of Consultation and Engagement on the Assessment

Canada Nickel has engaged with potentially affected Indigenous nations, as well as regulators, landowners, and other stakeholders. Table 29.1 provides a summary of the topics, key information (including Indigenous knowledge), and concerns that Canada Nickel identified as part of their engagement efforts that relate to cumulative effects, as well as a summary of the influence that the outcomes of this engagement had on the assessment. The table also identifies examples of how these engagement outcomes influenced the assessment of each VC.

**Table 29.1 Summary of Key Information, Indigenous Knowledge, and Concerns for the Project Related to Cumulative Effects**

Topics	Key Information, Indigenous Knowledge, and Concerns	Influence on the Assessment	Where Information is Addressed in the Impact Statement
Atmospheric Environment	<ul style="list-style-type: none"> <li>• Apitipi Anicinapek Nation and Métis Nation of Ontario - Region 3 recommend a cumulative effects assessment on Indigenous Peoples and their traditional territories including on air quality.</li> </ul>	<ul style="list-style-type: none"> <li>• Toxicological risks associated with changes to air quality have been assessed in the Human Health Risk Assessment and in Section 29.6.</li> <li>• Informed the assessment of potential effects on Indigenous interests in Chapters 25 to 28 of the Impact Statement</li> </ul>	<p>Chapter 29, Section 29.6</p> <p>Chapters 25 to 28, Sections 25.5, 26.5, 27.5, and 28.5</p>
Surface Water	<ul style="list-style-type: none"> <li>• Apitipi Anicinapek Nation expressed concern regarding the number of hydro dams in Apitipi Anicinapek Nation's territory and</li> </ul>	<ul style="list-style-type: none"> <li>• Potential cumulative interactions with hydroelectric dams are considered in Section 29.9. Informed the assessment on</li> </ul>	<p>Chapter 29, Section 29.9</p> <p>Chapters 25 to 28, Sections 25.5,</p>

Topics	Key Information, Indigenous Knowledge, and Concerns	Influence on the Assessment	Where Information is Addressed in the Impact Statement
	<p>the potential impacts of flooding, water flow and fluctuation and eutrophication and algal blooms.</p> <ul style="list-style-type: none"> <li>• Apitipi Anicinapek Nation and Métis Nation of Ontario - Region 3 recommend a cumulative effects assessment on Indigenous Peoples and their traditional territories including water quantity, and water quality.</li> </ul>	<p>Indigenous interests in Chapters 25 to 28 of the Impact Statement (Assessment of Potential Effects on Indigenous Interests) and the assessment of cumulative effects on water quality and quantity.</p>	<p>26.5, 27.5, and 28,5</p>
<p>Vegetation, Riparian and Wetland Environments</p>	<ul style="list-style-type: none"> <li>• Apitipi Anicinapek Nation expressed concern regarding cumulative effects of forest clearing.</li> <li>• Apitipi Anicinapek Nation, Matachewan First Nation, Mattagami First Nation and Métis Nation of Ontario - Region 3 recommend a cumulative effects assessment on Indigenous Peoples and their traditional territories including the effects on plants.</li> </ul>	<ul style="list-style-type: none"> <li>• The results of the cumulative effects assessment of forest clearing are considered in Section 29.10.</li> <li>• The results of the cumulative effects assessment completed in Section 29.10 inform the assessment of cumulative effects on Indigenous interests conducted in Chapters 25 to 28 of the Impact Statement (Assessment of Potential Effects on Indigenous Interests).</li> </ul>	<p>Chapter 29, Section 29.10</p> <p>Chapters 25 to 28, Sections 25.5, 26.5, 27.5, and 28,5</p>
<p>Fish and Fish Habitat</p>	<ul style="list-style-type: none"> <li>• Apitipi Anicinapek Nation expressed concern regarding cumulative effects and the Project's contribution, specifically in the case of declining fish populations and water quality and quantity.</li> </ul>	<ul style="list-style-type: none"> <li>• Informed the assessment of cumulative effects on fish population in Section 29.11</li> <li>• Potential effects of fish habitat loss in the PA and changes in habitat in watercourses downstream of the Project have been included in the assessment. Potential impacts to water quality from effluent release have also been assessed.</li> <li>• Canada Nickel's responses to mitigation recommendations made by Indigenous nations are provided in Chapters 25-28 of the Impact Statement (Assessment of Potential Effects on Indigenous Interests).</li> </ul>	<p>Chapter 29, Section 29.11</p> <p>Chapters 25 to 28, Sections 25.5, 26.5, 27.5, and 28,5</p>
<p>Wildlife and Wildlife Habitat</p>	<ul style="list-style-type: none"> <li>• Apitipi Anicinapek Nation expressed concern regarding the Project's contribution to cumulative effects, specifically in the case of declining mammal and bird populations.</li> <li>• Apitipi Anicinapek Nation and Métis Nation of Ontario - Region 3 recommend a cumulative</li> </ul>	<ul style="list-style-type: none"> <li>• Potential cumulative effects in declining bird and mammal populations were assessed in Section 29.12 and 29.13.</li> <li>• Informed the assessment on Indigenous interests in Chapters 25-28 of the Impact Statement (Assessment of Potential Effects on Indigenous Interests).</li> </ul>	<p>Chapter 29, Sections 29.12 and 29.13.</p> <p>Chapters 25 to 28, Sections 25.5, 26.5, 27.5, and 28,5</p>

Topics	Key Information, Indigenous Knowledge, and Concerns	Influence on the Assessment	Where Information is Addressed in the Impact Statement
	effects assessment on Indigenous Peoples and their traditional territories including wildlife, such as caribou and moose.		
Health	<ul style="list-style-type: none"> <li>Taykwa Tagamou Nation expressed concern regarding potential contamination of harvested foods and medicinal plants, including cumulative effects associated with aerial spraying by forestry companies affecting medicinal plants.</li> </ul>	<ul style="list-style-type: none"> <li>The assessment of toxic substances and how they can potentially affect wild foods is addressed in the Human Health Risk Assessment and in Section 29.15</li> <li>Informed the assessment on Indigenous interests in Chapters 25-28 of the Impact Statement (Assessment of Potential Effects on Indigenous Interests).</li> </ul>	<p>Chapter 29, Section 29.15</p> <p>Chapters 25 to 28, Sections 25.5, 26.5, 27.5, and 28.5</p>
Social Conditions	<ul style="list-style-type: none"> <li>Apitipi Anicinapek Nation expressed concern regarding impacts to potentially unknown or previously unrecorded cultural sites due to the cumulative effects of colonialism disrupting knowledge transfer.</li> <li>Taykwa Tagamou Nation recommends Canada Nickel consider the direct and cumulative impacts of the highway and transmission line relocation within the scope of the impact assessment for the Project.</li> </ul>	<ul style="list-style-type: none"> <li>Informed engagement plans.</li> <li>Contributed to the understanding of existing land and resource uses in the Local Study Area (informed baseline conditions), the development of mitigation and management measures, and supported scope of issues assessed.</li> <li>Potentially unknown or previously unrecorded cultural sites due to the cumulative effects of colonialism disrupting knowledge transfer have been researched as part of the Stage I archeological assessment, including historical documents and geological maps.</li> <li>Potential effects on change in land use designations, including the construction and operations of infrastructure ancillary to the Project (relocated Highway 655, rail spur, and relocated 500 kilovolt transmission line) was carried forward for the social conditions assessment and informed the assessment of effects on Indigenous interests in Chapters 25-28 (Assessment of Potential Effects on Indigenous Interests).</li> </ul>	<p>Chapter 29, Section 29.16</p> <p>Chapters 25 to 28, Sections 25.5, 26.5, 27.5, and 28.5</p>

<b>Topics</b>	<b>Key Information, Indigenous Knowledge, and Concerns</b>	<b>Influence on the Assessment</b>	<b>Where Information is Addressed in the Impact Statement</b>
Indigenous Interests	<ul style="list-style-type: none"> <li>• Apitipi Anicinapek Nation, Flying Post First Nation, Métis Nation of Ontario - Region 3 and Taykwa Tagamou Nation recommend specific engagement opportunities to co-author portions of the Impact Statement and assess the potential cumulative impacts on the exercise of Indigenous and/or treaty rights.</li> <li>• Apitipi Anicinapek Nation expressed concern regarding: <ul style="list-style-type: none"> <li>- The Project's contribution to cumulative effects and its members abilities to continue their way of life.</li> <li>- Reductions in land use due to the cumulative effects of other developments in the area including drill sites and access roads and the Project's contribution.</li> <li>- The cumulative effects from mining, forestry, hydropower, agriculture (especially herbicide spraying), and linear infrastructure on Apitipi Anicinapek Nation's ability to exercise its Indigenous and treaty rights.</li> </ul> </li> <li>• Apitipi Anicinapek Nation recommended that cumulative effects be incorporated into the beginning of every valued component chapter to better reflect how interactions are holistic and not isolated, reflecting how Indigenous nations experience cumulative effects from mining and development in their territories to fish, wildlife, and human health.</li> </ul>	<ul style="list-style-type: none"> <li>• Informed the cumulative assessment on Indigenous interests in Chapters 25-28 of the Impact Statement (Assessment of Potential Effects on Indigenous Interests), which were reviewed with and informed by Indigenous nations prior to completion.</li> <li>• Information shared by the Nations was considered in preparing the cumulative assessment on Indigenous Interests, including preparation of the regional historic overview and identification of past, present, and future physical activities.</li> <li>• Informed the assessment of cumulative effects on fish population</li> <li>• Informed the assessment of cumulative effects on birds and wildlife</li> <li>• Interactions between VCs was a component built into the front end of each VC chapter, demonstrating how pathways of effects interact with multiple VCs. A consolidated narrative for all VCs was included in this Chapter 29, with cumulative effects on Indigenous Interests embedded within the Indigenous Interest chapters.</li> </ul>	<p>Chapters 25 to 28, Sections 25.5, 26.5, 27.5, and 28,5</p> <p>Chapter 29, Section 29.2</p> <p>Chapter 29, Section 29.11</p> <p>Chapter 29, Sections 29.12 and 29.13</p> <p>Chapter 29, Section 29.15</p>

Where made available by Indigenous nations through engagement, information gathering, and voluntary information sharing, Indigenous knowledge has been considered and incorporated into the Impact Statement, as applicable. Refer to the Description of Engagement with Indigenous Peoples (Chapter 7 of the Impact Statement) for detailed methods regarding the incorporation of Indigenous knowledge in the Impact Statement. This information was also considered when evaluating whether Canada Nickel's planned mitigation will effectively manage the identified potential interactions, or whether additional or refined mitigation is warranted.

Apitipi Anicinapek Nation provided a regional overview of the area during technical Working Group #2 as it pertains to their traditional territory and understanding of past and existing physical activities. This information, along with the information collected previously, was considered when describing and understanding how past and current physical activities have impacted and shaped the environment within which this Project is proposed.

## **29.2 Regional Historical Overview**

This regional historical overview (RHO) is a summary of natural and human conditions, on a regional basis, prior to current conditions. The reason for an RHO is to acknowledge such past conditions and improve the context of the assessment of VCs through improved consideration of past conditions.

This RHO has examined a time period extending to approximately the early 1900's. As stated in Section 29.1.2, that year does not constitute a temporal boundary for the purposes of this cumulative effects assessment. This timeline was selected because Treaty 9, which covers the region in which the Project is located, was signed between 1905 and 1906 (Government of Canada 1964). Furthermore, to provide a larger environmental and cultural context for the events considered in the historical timeline, the RHO provides a high-level overview of the natural and human history of the region prior to 1905.

### **29.2.1 Natural History**

Following the retreat of the Laurentide Ice Sheet circa (ca.) 10,000 years ago from Northern Ontario, the landscape was characterized by tundra grasslands, freshwater lakes, wetlands, and a variety of terrains including rocky outcrops and rolling hills. Several surface features, such as eskers, moraines, and even a small beach ridge from glacial Lake Barlow-Ojibway, survive on the landscape today. The climate was substantially colder than today, with long, harsh winters and short, cool summers. This period saw the establishment of the boreal forest, dominated by coniferous trees such as black spruce, jack pine, and balsam fir. These forests provided a habitat for a variety of wildlife, including large mammals like caribou and moose, which migrated across the region following seasonal food sources. Smaller species, such as snowshoe hares and lynxes, also thrived in this cold environment, adapting to the dense forest cover and the seasonal availability of resources.

Since then, the climate has gradually warmed, with more pronounced seasonal variations and altered precipitation patterns, leading to changes in the local ecosystem. These shifts have influenced wildlife movements, with some species expanding their range into new areas and adapting to disturbed habitats, while others face new challenges such as altered food availability, habitat loss, displacement, or population decline.

Over the last few centuries, human activities in the region, including industrial and other developments, have altered the landscape of Northern Ontario, and these are described further below in Sections 29.2.2 and 29.2.3.

## 29.2.2 Human History

Following the retreat of the Laurentide Ice Sheet circa (ca.) 10,000 years ago and the creation of ice-free areas (e.g., freshwater lakes and tundra grasses supporting a range of biota such as bison, muskox, elk, caribou, muskrat, beaver), Indigenous hunter-gatherers arrived in Northern Ontario by ca. 9,500 years ago (Hamilton 2013; Appendix B.10 of the Impact Statement). Early Indigenous inhabitants developed local adaptations by ca. 8,000 years ago, and copper mining and manufacture is known to have occurred as early as ca. 6,000 years ago in the upper Great Lakes area (Hamilton 2013; Appendix B.10 of the Impact Statement). Evidence of ceramic pottery production, bow and arrow use, and extensive trade networks appear ca. 2,000 years ago (Hamilton 2013; Appendix B.10 of the Impact Statement). Evidence of religious and spiritual beliefs of early Anishinaabeg peoples in Northern Ontario are reflected by numerous red ochre pictographs created on rock outcrops in the region (McMillan and Yellowhorn 2004; Appendix B.11 of the Impact Statement).

When European settlers arrived in the early 17<sup>th</sup> century, Northern Ontario was home to several Anishinaabeg Ojibwe, Nipissing, Odawa, Algonquin and Cree Nations (Bishop 1994a, b; Native Land Digital 2024; Appendix B.11 of the Impact Statement). Indigenous nations had well established economies, resource harvesting and management strategies, language, governance and knowledge systems, and extensive trail networks (via land and water) that were connected to their seasonal mobility strategies (i.e., for the systematic and strategic procurement of seasonally available resources such as berries, moose, maple sap, and fish) (McMillan and Yellowhorn 2004; Appendix B.11 of the Impact Statement). Part of this strategic mobility included the manufacture and use of snowshoes, birchbark canoes, and wigwam housing constructed of lightweight materials that could be easily transported (McMillan and Yellowhorn 2004; Appendix B.11 of the Impact Statement).

By 1670, the Crown established the areas of Northeastern Ontario to be within a region called “Prince Rupert’s Land”, as defined through its charter for the Hudson Bay Company (HBC) (Appendix B.11 of the Impact Statement). English presence throughout the late 17<sup>th</sup> to early 18<sup>th</sup> centuries consisted of isolated trading posts located near drainages of the Hudson Bay and James Bay (Appendix B.11 of the Impact Statement). French traders referred to this area as part of the “pays d’en haut” or “the Upper Country” and French commercial expansion into the area is considered to have been more successful than English efforts due to their understanding of local Indigenous languages and kin networks (Berthelette 2022; Appendix B.11 of the Impact Statement). However, the HBC expanded their operations into former French territories following the fall of New France and the 1763 Peace of Paris Treaty (Nassaney 2015; Appendix B.11 of the Impact Statement). French traders remained in the area after 1763, and Indigenous-French exchanges (e.g., lifeways, kinship, material culture) resulted in the emergence of the Métis in Ontario (Berthelette 2022; Appendix B.11 of the Impact Statement).

Anishinaabeg, Cree, and Métis Nations were transporting goods over hundreds of kilometres and participating in trade and other activities with the HBC and the North West Company by the mid-18<sup>th</sup> century (e.g., supplying English and other traders with various goods and provisions, including but not limited to, furs, birchbark canoes, caribou meat, pemmican, and wild rice) (Bishop 1994b; Supernant 2018; Appendix B.11 of the Impact Statement). The HBC was forced to establish additional posts further inland following the depletion of fur supplies and competition with other fur trading companies through the late 18<sup>th</sup> century and into the 19<sup>th</sup> century (Appendix B.11 of the Impact Statement). The HBC established the Frederick House post on the Frederick House River (approximately 40 km east of the PA) in 1785; however, the HBC abandoned the post in 1821 and went on to retain administration of the area throughout the 1830's via the establishment of the "Moose" fur trade district (Appendix B.11 of the Impact Statement).

Ongoing settlement and appropriation of lands and resources by Euro-Canadians continued throughout the 19<sup>th</sup> century, driven largely by the fur trade and forestry, the Crown's transfer of the "Prince Rupert's Land" into the Dominion of Canada in 1870, and improved rail networks, such as the Temiskaming and Northern Ontario Railway that made the area more accessible (Ontario Heritage Trust 2012; Appendix B.11 of the Impact Statement). During this time, Cree and Anishinaabeg Nations lobbied formal land agreements to protect their traditional territories (Appendix B.11 of the Impact Statement). Treaty 9 (also known as the James Bay Treaty) was signed between 1905 and 1906 by Anishinaabe (Algonquin and Ojibwe) and Omushkegowuk Cree communities and the Canadian Crown, and adhesions (addition of lands) were made to the Treaty in 1929 and 1930 (Government of Canada 1964). Approximately two-thirds of Ontario's total landmass (~58,676,063 ha) is covered by Treaty 9, which spans the Great Lakes watershed encompassing the Hudson Bay and James Bay drainage basins (Government of Canada 1964). Treaty commissioners made various commitments of protecting Indigenous interests through the signing of Treaty 9 with the treaty reflecting Crown and provincial governments' mining, timber, rail and hydro-electric interests (Crown-Indigenous Relations and Northern Affairs Canada 2013; Government of Canada 1964; Government of Ontario n.d.; Appendix B.11 of the Impact Statement).

The early 20<sup>th</sup> century marked a major period of human activity with the Porcupine Gold Rush of 1909 in Northern Ontario. This led to the rapid development of mining towns, including Timmins, founded in 1912 by Noah Timmins. The influx of settlers spurred the construction of new infrastructure such as roads, railways, and buildings. The Ontario Northland Railway, constructed initially to develop the Lake Timiskaming and Lake Nipissing areas, quickly became a major driver of the province's economic growth. After enduring decades of challenging construction through the Canadian Shield, workers finally reached Moosonee at the mouth of the Moose River on James Bay in 1932 (Caso Station 2024). During the process of blasting through the shield, geologists uncovered valuable mineral deposits, including gold, silver, copper, and nickel. Additionally, the railway facilitated the exploitation of Northern Ontario's timber resources. Indigenous land use practices were and continue to be encroached upon by industrial activities and the privatization of lands, which have altered the region's social and cultural fabric and the ability of Indigenous nations to exercise their Indigenous and Treaty rights in the region (Ontario Heritage Trust 2012; Chapters 25 to 28 of the Impact Statement).

In recent decades, the region has seen continued development and diversification. While mining remains a dominant industry, there has been an increased emphasis on sustainable practices and community development. Efforts to preserve Indigenous heritage and integrate Indigenous knowledge into modern practices have gained momentum through legal proceedings, advocacy, benefit agreements, and collaboration and engagement with the Indigenous nations in the region. The area has also seen improvements in infrastructure, healthcare, and education, generally contributing to an overall improved quality of life for many residents; however, Indigenous nations engaged for the Project have shared that they continue to experience the effects of colonialism, including disproportionate access to (or benefit from) services in the region.

### **29.2.3 Regional Development**

Mining has been important to the regional economy in northern Ontario, particularly north of Timmins, for over a century. The discovery of gold in the early 20th Century led to the establishment of substantial mines such as the Hollinger, McIntyre, and Dome mines. These mining operations, as well other base-metal mines like Kidd Creek, have shaped the landscape, resulting in land disturbance, such as deforestation, soil erosion, and mining infrastructure. In recent years, technological advancements and sustainable practices have been introduced to reduce the environmental impact of mining activities. However, the legacy of past mining operations and continued exploration for mineral deposits continues to influence the region's physical and ecological landscape.

The forestry industry has also played an important role in regional development. Logging operations have expanded substantially to meet the demand for timber, further contributing to the reduction of forested areas and impacting the habitats of many wildlife species. In 2016, Ontario harvested nearly 10% of the total volume of timber harvested in Canada (The Canadian Encyclopedia 2024). Sustainable forestry practices, such as selective logging and replanting initiatives, have been implemented to mitigate these impacts. Despite these efforts, the cumulative effects of decades of logging have altered the vegetative cover and wildlife habitats in the region. The forestry sector also remains an important part of the regional economy, contributing to both employment and economic growth.

In the last two decades, there has been a concerted effort to implement sustainable practices to mitigate the environmental impacts of industrial activities. Reforestation projects and land reclamation efforts have aimed to restore some of the natural vegetation, focusing on replanting native species to rebuild the boreal forest. However, ongoing mining and logging activities continue to disturb the land, posing challenges to these restoration efforts.

Infrastructure development, including the construction of roads and railways, has been essential for supported economic activities and connecting communities in northern Ontario. The Ontario Northland Railway is particularly noteworthy, facilitating the transport of goods and people across the region. Key highways such as Highway 11, Highway 101, and Highway 655 play major roles in enhancing regional connectivity. Highway 11, also known as the Trans-Canada Highway, serves as a major north-south route, while Highway 101 connects Timmins to other important economic hubs. Highway 655 provides a direct link between Timmins and Highway 11. Recent investments have focused on improving transportation networks to enhance connectivity and support economic growth. These developments

have included highway widening projects and the maintenance of winter roads and remote airports, which are needed for accessing remote communities. The expansion of infrastructure has also enabled further industrial activities, contributing to the ongoing transformation of the regional landscape.

In recognition of such past changes in northern Ontario, and in consideration of what changes may come, the Government of Canada has initiated a Regional Assessment for the Ring of Fire under the provisions of the federal *Impact Assessment Act*. A Regional Assessment is a study of past, current and potential future conditions in a landscape-scale region subject to current or pending major development. Such assessments provide enhanced means, relative to individual project assessment, to assess and manage potential cumulative effects of such overall developments. The Ring of Fire is a mineral rich region in north-central Ontario at the early stages of possible future mining. On September 4, 2024, the Impact Assessment Agency of Canada released, for public review, a draft Terms of Reference for the Regional Assessment as prepared by the Regional Assessment Working Group. The Terms of Reference included a draft Assessment Area; the Project is outside and to the southeast of that area by approximately 80 km. Canada Nickel will monitor Regional Assessment outcomes; however, at time of the Impact Statement filing for the Project, such outcomes are at early stages and have not yet adequately evolved to clearly indicate influences on the Project or its assessment, if any.

Figure 29.5 provides a customized visual depiction of anthropogenic change in the region. The figure, a type referred to as a “heat map”, shows the degree and distribution of physical activities. Each 10 km wide hexagon reveals the number of physical activities on the land it covers, which range from 1 to 25. The figure illustrates a common outcome of regional development by the clustering of physical activities along roads and railways. Following contact and the industrial revolution, roads and railways are some of the most common initial means by which human development expands in a region, and as such are a major reason for what eventually results as cumulative effects. Roads and railways are also known to often align with (i.e., overlap) historic travel ways (such as trails) established by Indigenous nations (prior to contact) and English and French traders (post-contact). Also notable is where there are no physical activities (as defined here), or very few, given the increasingly remote nature of much of Northern Ontario.

### **29.3 Project Residual Effects with Potential to Contribute to Cumulative Effects**

The assessment of cumulative effects is based on the results of the effects assessment of the Project where predicted residual adverse effects on VCs have been identified in Chapters 10 through 23 of the Impact Statement. Table 29.2 summarizes the potential adverse residual effects resulting from Project activities.

**Table 29.2 Summary of Potential Adverse Residual Effects Resulting from the Project**

<b>Valued Component</b>	<b>Potential Effect</b>	<b>Adverse Residual Effect Identified</b>	<b>Nature of the Effect</b>
Geology and Geologic Hazards	Change to terrain stability	Yes	Project-related physical activities may result in the alteration of natural terrain conditions which could exacerbate baseline terrain stability, resulting in higher risk of occurrence of a geologic hazard.
Soil	Change to soil quality	Yes	Project-related physical activities may result in changes to soil quality due to soil erosion, soil compaction, soil admixing, and soil contamination.
	Change to soil quantity	Yes	Project-related physical activities may result in changes to soil quantity due to changes in soil cover depths.
Atmospheric Environment	Change to ambient air quality	Yes	Project-related physical activities may result in emissions of Contaminants of Potential Concern that may result in increased concentrations of these parameters in the LSA.
	Change to ambient light	Yes	Project-related physical activities may result in a localized change in ambient light levels.
Acoustic Environment	Change in noise levels	Yes	Project-related physical activities may result in an increase in noise levels compared to baseline conditions.
	Change in vibration levels	Yes	Project-related physical activities may result in an increase in vibration levels compared to baseline conditions.
Groundwater	Change in groundwater quantity	Yes	Project-related physical activities may result in measurable changes in groundwater levels.
	Change in groundwater quality	Yes	Project-related physical activities may result in measurable changes in concentrations of parameters in groundwater and groundwater that discharges to surface water.
Surface Water	Change to surface water quantity	Yes	Project-related physical activities may result in measurable decreases in flows.
	Change to surface water quality	Yes	Project-related physical activities may result in localized changes to surface water quality.
Vegetation, Riparian and Wetland Environments	Change in vegetation communities and species diversity	Yes	Project-related physical activities may result in changes in vegetation communities and species diversity.
	Change in riparian form and function	Yes	Project-related physical activities may result in changes in riparian form and function.
	Change in wetland form and function	Yes	Project-related physical activities may result in changes in wetland form and function.
Fish and Fish Habitat	Change in fish habitat	Yes	Project-related physical activities may result in changes in fish habitat due to potential alteration, disruption, or destruction of fish habitat, alteration of stream flows and/or alteration of fish passage.

<b>Valued Component</b>	<b>Potential Effect</b>	<b>Adverse Residual Effect Identified</b>	<b>Nature of the Effect</b>
	Change in fish health, growth, or survival	Yes	Project-related physical activities may result in changes in fish health, growth, or survival due to potential increases in total suspended solids, changes in water quality, changes in water temperature and instances of stranding or physical injury.
Birds and Bird Habitat	Change in habitat	Yes	Project-related physical activities may result in direct and indirect habitat loss.
	Change in mortality risk	Yes	Project-related physical activities may result in changes in bird mortality risk.
Wildlife and Wildlife Habitat	Change in habitat	Yes	Project-related physical activities may result in direct habitat loss and habitat fragmentation and sensory disturbances may further degrade habitat quality.
	Change in movement	Yes	Project-related physical activities may result in habitat fragmentation and sensory disturbances that may alter wildlife movement patterns.
	Change in mortality risk	Yes	Project-related physical activities may result in changes to mortality risk for wildlife.
	Change in wildlife health	Yes	Project-related physical activities may result in habitat fragmentation and sensory disturbances that may increase stress and energy expenditure.
Climate Change	Change in release of GHG	Yes	Project-related physical activities may result in changes in release of GHG emissions.
	Change in carbon sinks	No	No adverse residual effects are anticipated.
Health	Change in physical health	Yes	Project-related physical activities may result in changes in physical health.
	Change in mental health and social well-being	Yes	Project-related physical activities may result in changes in mental health and social well-being.
	Change in community safety	Yes	Project-related physical activities may result in changes in community safety.
Social Conditions	Change in demand for services and infrastructure	Yes	Project-related physical activities may result in changes in demand for services and infrastructure due to Project workers potentially increasing demand for local health services.
	Change in accommodation availability	Yes	Project-related physical activities may result in changes in accommodation availability due to an increase in population as a result of the Project.
	Change in demand for transportation infrastructure	Yes	Project-related physical activities may result in changes in demand for transportation infrastructure due to an increase in vehicles along Highway 655.
	Change in land use designations and private property	Yes	Project-related physical activities may result in changes in land use designations and private property due to the loss of area and the restriction of access to certain areas.

<b>Valued Component</b>	<b>Potential Effect</b>	<b>Adverse Residual Effect Identified</b>	<b>Nature of the Effect</b>
	Change in recreation	Yes	Project-related physical activities may result in changes to the Big Water Campgrounds, restricted access and change to fishing and snowmobiling, and recreation experience and change in navigation.
	Change in resource use	Yes	Project-related physical activities may result in the loss of commercial resource use activities including hunting, trapping and bait harvesting.
Economic Conditions	Change in employment	Yes / No	Project-related employment and expenditures may result in positive changes in employment. However, loss of direct employment is anticipated as the Project transitions from operations to decommissioning and closure.
	Change in business	Yes	Project-related physical activities may result in competition for labour and upward pressure on wages.
	Change in provincial economy	Yes / No	Project-related employment and other expenditures may have positive effects on government tax revenues. However, the Project will no longer provide economic benefits after decommissioning and closure

To assist in the assessment of cumulative effects, several figures have been developed to inform on changes to the landscape applicable to the various VCs and corresponding biophysical RSAs. Figures 29.6.1 to 29.6.9 (Attachment 29.2) provide a visual depiction of land cover, land disturbance, and the physical activities included in the PIL in relation to the biophysical RSAs. Further, Figure 29.7 (Attachment 29.2) depicts forestry activities in the region based on publicly available harvest data to identify past harvesting and predict future harvesting areas.

## 29.4 Assessment of Cumulative Effects on Geology and Geologic Hazards

As detailed in Chapter 10 of the Impact Statement (Assessment of Potential Effects on Geology and Geologic Hazards), the Project is anticipated to have an adverse residual effect on terrain stability. As such there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities. However, residual effects are expected to be limited to localized instabilities within the PA.

### 29.4.1 Regional Study Area

As noted in Section 10.1.4.1 in Chapter 10 of the Impact Statement (Assessment of Potential Effects on Geology and Geologic Hazards), the RSA for Geology and Geologic Hazards is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA includes the PA as well as a 500 metre (m) buffer applied to the PA. The RSA for Geology and Geologic Hazards is shown on Figure 29.8.1.

### 29.4.2 Identification of Project Effects with Potential to Interact Cumulatively

Table 29.3 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.3 Physical Activities with Potential for Cumulative Effects on Geology and Geologic Hazards**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects
	Change to terrain stability
<b>Past and Present Physical Activities</b>	
Mining	–
Aggregate Extraction	–
Community Development	–
Water Management	–
Transportation	–
Power	–
Energy	–
Forestry	–

	Potential Cumulative Effects
	Change to terrain stability
<b>Physical Activities with Potential for Cumulative Effects</b>	
Agriculture	–
Recreation	–
Hunting and Fishing	–
<b>Future Physical Activities</b>	
Mining	
North Timmins Gold Project – Bradshaw Mine	–
Upper Beaver Gold Project	–
Detour Lake Gold Mine Expansion	–
Fox Mining Complex Expansion Project	–
ERO: 019-8122 - Permit to take water renewal	–
Other mine-related physical activities (e.g., mineral exploration permits)	–
Transportation	
Highway 652 Extension to Highway 11	–
Northlander Passenger Train Expansion of Service	–
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	–
Power	
Transmission Infrastructure Partnership-1	–
Wawa to Porcupine Transmission Line	–
Notes:	
✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects.	
– = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.	

Potential effects associated with past and present physical activities, including effects from mineral development (e.g., Kidd Creek Mine), in the RSA have been identified in the existing conditions for Geology and Geologic Hazards (Section 10.2 in Chapter 10 of the Impact Statement [Assessment of Potential Effects on Geology and Geologic Hazards]). As such, the contribution of present physical activities is considered in the assessment of Project residual effects (Section 10.4 in Chapter 10 of the Impact Statement [Assessment of Potential Effects on Geology and Geologic Hazards]).

Those future projects listed but not checked off represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1. Figure 29.8.1 presents the future physical activities within the RSA for Geology and Geologic Hazards.

None of the future physical activities listed in Table 29.3 are considered to have a potential to act cumulatively with the residual effects of the Project and therefore a cumulative effects assessment is not warranted, mainly due to the immediate proximity of Project effects on this VC within the PA. Project effects are associated with the creation of specific features within the PA (Open Pit, Impoundment Area) that may be susceptible to erosion, but that do not aggravate any existing slopes or other geologic hazards.

One future project, the Transmission Infrastructure Partnership-1 transmission line, may have a potential spatial and temporal overlap with the Project. This project would involve developing a 230-kV transmission line. However, with the implementation of mitigation measures, this physical activity is not anticipated to result in residual effects on terrain stability or overlap with portions of the Project where terrain stability may be an issue, and therefore cumulative effects with the Project are not anticipated.

## **29.5 Assessment of Cumulative Effects on Soil**

As detailed in Chapter 11 of the Impact Statement (Assessment of Potential Effects on Soil), the Project is anticipated to have adverse residual effects on soil quality and quantity. As such there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present, or future physical activities.

### **29.5.1 Regional Study Area**

As noted in Section 11.1.4.1 in Chapter 11 of the Impact Statement (Assessment of Potential Effects on Soil), the RSA for Soil is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present, or future activities are considered. The RSA includes the PA as well as a 500 m buffer applied to the PA. The RSA for Soil is shown on Figure 29.8.1.

### **29.5.2 Identification of Project Effects with Potential to Interact Cumulatively**

Table 29.4 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.4 Physical Activities with Potential for Cumulative Effects on Soil**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects
	Change to soil quantity and quality
<b>Past and Present Physical Activities</b>	
Mining	–
Aggregate Extraction	–
Community Development	–
Water Management	–
Transportation	–
Power	–
Energy	–
Forestry	–
Agriculture	–
Recreation	–
Hunting and Fishing	–
<b>Future Physical Activities</b>	
Mining	
North Timmins Gold Project – Bradshaw Mine	–
Upper Beaver Gold Project	–
Detour Lake Gold Mine Expansion	–
Fox Mining Complex Expansion Project	–
ERO: 019-8122 - Permit to take water renewal	–
Other mine-related physical activities (e.g., mineral exploration permits)	–
Transportation	
Highway 652 Extension to Highway 11	–
Northlander Passenger Train Expansion of Service	–
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	–
Power	
Transmission Infrastructure Partnership-1	–
Wawa to Porcupine Transmission Line	–
Notes:	
✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects.	
– = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.	

Potential effects associated with past and present physical activities in the LSA have been captured in the existing conditions for Soil (Section 11.2 in Chapter 11 of the Impact Statement [Assessment of Potential Effects on Soil]). As such, the contribution of present activities, including effects from mineral development (e.g., Kidd Creek Mine), is considered in the assessment of Project residual effects (Section 11.4 in Chapter 11 of the Impact Statement [Assessment of Potential Effects on Soil]).

Those future projects listed but not checked off represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1. Figure 29.8.1 presents the future physical activities within the RSA for Soil.

None of the future physical activities listed in Table 29.4 are considered to have a potential to act cumulatively with the residual effects of the Project and therefore a cumulative effects assessment is not warranted, mainly due to the immediate proximity of Project effects on this VC within the PA. Project effects are associated with disturbance to soil quantity and quality within the PA through removal, storage, and potential quality impacts prior to its use during restoration activities, which are limited to the Project Area.

One future project, the Transmission Infrastructure Partnership-1 transmission line, may have a potential spatial and temporal overlap with the Project. This project would involve developing a 230-kV transmission line. However, with the implementation of mitigation measures this physical activity is not anticipated to result in residual effects on soil quantity or quality, and therefore cumulative effects with the Project are not anticipated.

## **29.6 Assessment of Cumulative Effects on the Atmospheric Environment**

As detailed in Chapter 12 of the Impact Statement (Assessment of Potential Effects on the Atmospheric Environment), the Project is anticipated to have adverse residual effects on ambient air quality and ambient light. As such there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### **29.6.1 Regional Study Area**

As noted in Section 12.1.4.1 in Chapter 12 of the Impact Statement (Assessment of Potential Effects on the Atmospheric Environment), the RSA for the Atmospheric Environment is used to provide regional context for the assessment of residual effects and is also the area within which the potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA for ambient air quality is a 40-kilometre (km) buffer from the boundary of the PA. The RSA for ambient light is defined as 5 km from the boundary of the PA. The RSA for ambient air quality is shown on Figure 29.8.2 and the RSA for lighting is shown on Figure 29.8.3.

## 29.6.2 Identification of Project Effects with Potential to Interact Cumulatively

Table 29.5 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.5 Physical Activities with Potential for Cumulative Effects on the Atmospheric Environment**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects	
	Change in ambient air quality	Change in ambient light
<b>Past and Present Physical Activities</b>		
Mining	✓	–
Aggregate Extraction	✓	–
Community Development	✓	–
Water Management	–	–
Transportation	✓	–
Power	✓	–
Energy	–	–
Forestry	✓	–
Agriculture	✓	–
Recreation	–	–
Hunting and Fishing	–	–
<b>Future Physical Activities</b>		
Mining		
North Timmins Gold Project – Bradshaw Mine	✓	–
Upper Beaver Gold Project	–	–
Detour Lake Gold Mine Expansion	–	–
Fox Mining Complex Expansion Project	–	–
ERO: 019-8122 - Permit to take water renewal	–	–
Other mine-related physical activities (e.g., mineral exploration permits)	✓	–
Transportation		
Highway 652 Extension to Highway 11	–	–
Northlander Passenger Train Expansion of Service	✓	–

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects	
	Change in ambient air quality	Change in ambient light
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	✓	–
Power		
Transmission Infrastructure Partnership-1	✓	–
Wawa to Porcupine Transmission Line	✓	–
Notes: ✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects. – = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.		

Past and present physical activities identified in Table 29.5 include mineral development (e.g., Kidd Creek Mine, others), mineral exploration, water and waste projects, community development, infrastructure development (transportation, power, energy), forestry, hunting and fishing, and recreation activities. Past physical activities (e.g., not operating, closed or decommissioned facilities) will not have effects on ambient air quality as they do not overlap temporally with the Project, therefore, cannot interact cumulatively. Baseline ambient concentrations provided in Section 12.2 (Chapter 12 [Assessment of Potential Effects on the Atmospheric Environment]) account for present (currently active) projects and activities that are sources of air emissions in the LSA. As such, the contribution of present physical activities is considered in the assessment of Project residual effects (Section 12.4 in Chapter 12 [Assessment of Potential Effects on the Atmospheric Environment]).

Those future physical activities listed but not checked off represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1. Figure 29.8.2 presents the future physical activities within the RSA for the Atmospheric Environment.

The assessment of the cumulative environmental effects that are likely to result from the Project in combination with other physical activities are discussed in the following sections. Due to the uncertainty of the development, mitigation and reclamation of each physical activity, the assessment of cumulative effects is largely qualitative.

None of the future physical activities listed in Table 29.5 are considered to have a potential to act cumulatively with the residual effects of Project lighting and therefore a cumulative effects assessment for light is not warranted. However, several projects have the potential to act cumulatively with the residual effects of the Project air emissions and therefore a cumulative effects assessment for air quality provided. Projects excluded from further consideration include those where air emissions are not anticipated or whether such emissions are not expected to occur within the temporal or spatial boundaries of the Project effects.

## 29.6.3 Cumulative Effects Assessment for Change in Ambient Air Quality

### 29.6.3.1 Cumulative Effect Pathways

Potential cumulative effects on ambient air quality arising from past, present and future physical activities have the same effect pathways as those resulting from the Project, and, therefore, could act cumulatively with residual Project effects.

Emissions from a source emitting into the atmosphere will disperse as they are carried downwind, with the ambient concentration in the plume decreasing with increasing distance from the source until eventually the plume will reach a level at which the concentration of the assessed constituent is indistinguishable from ambient background level. Therefore, the potential for emissions sources to interact cumulatively will decrease with increasing distance between the two sources. Generally, based on a conservative estimate and previous experience, it would be expected that most emissions sources located greater than 40 km apart would be unlikely to have cumulative effects. This distance was therefore chosen as the extent of the RSA for ambient air quality (see Section 12.1.4.1).

### 29.6.3.2 Mitigation for Cumulative Effects

Project mitigation measures presented in Section 12.4 for the atmospheric environment are predicted to reduce and mitigate the Project's contribution to cumulative ambient air quality effects. Project mitigation measures presented in Section 12.4.2.2, such as implementing an Air Quality Management Plan and acquiring mobile equipment that meet applicable Transport Canada off-road vehicle emission requirements will reduce potential cumulative effects on ambient air quality. Canada Nickel will also reassess the need for additional mitigation measures (e.g., haul truck speeds, electric haul truck fleet) that may be identified through the provincial permitting process for air emissions (i.e., Environmental Compliance Approval). No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on atmospheric environment.

Future physical activities will require provincial or federal approval and permitting and/or an environmental impact assessment. These processes require the future proponents to identify and assess potential effects on air quality, and to identify and implement appropriate mitigation measures. It is expected that proponents of present and future physical activities will implement mitigation measures identified through permitting and approval processes, as appropriate, to reduce their contributions to cumulative effects on ambient air quality.

### 29.6.3.3 Residual Cumulative Effects

The current landscape where the Project is planned has been modified by continuous human activities such as forestry, mining, exploration, aggregate extraction, energy production and transmission, road construction, and urban development. To assist interpretation of context, Figures 29.6.1 to 29.6.9 provide a visual depiction of land cover, land disturbance and the physical activities included in the PIL in relation to the biophysical RSAs. Future physical activities identified in Table 29.5 include mineral exploration, infrastructure development (transportation and power) and mining development, as depicted on Figure

29.8.2. Future forestry activities are assumed to be similar to ongoing forestry activities whose impacts are included in baseline air quality levels.

The reasonably foreseeable mineral exploration activities in the surrounding area include claim staking and advanced exploration. Claim staking activities have negligible air emissions. Advanced exploration involves the on-site investigation of local geology. Advanced exploration activities may include drilling, surface stripping, excavation, ground geophysics, downhole geophysics, and geochemistry. Air emissions (primarily PM emissions) associated with advanced exploration are short in duration and smaller in magnitude than Project emissions. Due to the short periods and small magnitude of these emissions, the maximum concentrations associated with advanced exploration activities are not expected to overlap with the maximum model predicted ambient air quality concentrations associated with the Project emissions.

Several future infrastructure development projects are located further than 10 km from the Project. Air quality impacts from these projects are expected to be localized to within a few kilometres of each project and therefore, are not expected to have an overlapping effect with the Project with respect to air quality. The reasonably foreseeable infrastructure development projects that are closer than 10 km from the Project include the Transmission Infrastructure Partnership-1 project, which involves developing a 230 kV transmission line. Air emissions associated with this project are short in duration (i.e., limited to construction) and substantially smaller in magnitude than Project emissions.

The closest known future mineral development activity to the Project is the North Timmins Gold Project – Bradshaw Mine. It is assumed that this mine will have similar types of effects, albeit of a lesser magnitude, on ambient air quality to those predicted for the Project. The Bradshaw mine is proposed approximately 10 km southeast of the proposed Project. While the timing of the proposed development of the North Timmins Gold Project – Bradshaw Mine is unknown, it is assumed that it will affect ambient air quality and will have a spatial overlap with the Project. At 10-km from the Project, ambient air quality concentrations due to the Project are predicted to be similar to or less than background levels for most of the contaminants assessed. Therefore, cumulative interactions between the Project and the proposed Bradshaw mine will likely result in only moderate increases in ambient air quality levels.

Residual cumulative effects on ambient air quality arising from past, present and future physical activities are expected to be low to moderate in magnitude. Although most anthropogenic disturbance within the RSA has been limited to urban areas and the linear disturbances that connect them, forestry has been and continues to be widespread in the region. Residual cumulative effects will occur as multiple irregular events as future physical activities proceed. Residual effects will be medium to long term and are predicted to be reversible. The Project will, therefore, have a relatively low to moderate contribution to cumulative residual effects on ambient air quality at the RSA scale.

## 29.6.4 Cumulative Effects Without the Project

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur whether the Project occurs or not. It can also be assumed that present physical activities such as forestry and infrastructure improvements will also proceed, regardless of Project status. As shown on Figure 29.1 and Figure 29.5, past and present physical activities are largely concentrated along existing transportation corridors (e.g., highways, railways) in the region and it is likely that areas in proximity to existing transportation and other infrastructure will continue to be potential areas for future development resulting in increases in emissions. Therefore, without the Project, future cumulative effects on ambient air quality on a regional basis are expected to continue.

## 29.6.5 Summary of Cumulative Effects on the Atmospheric Environment

Table 29.6 summarizes cumulative effects on the atmospheric environment.

**Table 29.6 Residual Cumulative Effects on Atmospheric Environment**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on Ambient Air Quality</b>							
With the Project	A	L-M	RSA	NS	MT-LT	IR	R
Without the Project	A	L-M	RSA	NS	MT-LT	IR	R
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Residual effects of the Project may result in measurable increases in air quality that are predicted to be low to moderate on a regional basis (depending on distance from the Project). The Project is therefore expected to have a relatively low to moderate contribution to residual cumulative effects on air quality.						
<p><b>KEY</b></p> <p>See Table 12.11 in Chapter 12 of the Impact Statement (Assessment of Potential Effects on the Atmospheric Environment) for detailed definitions</p> <p><i>Direction:</i>                      P: Positive                      A: Adverse                      N: Neutral</p> <p><i>Magnitude:</i>                      N: Negligible                      L: Low                      M: Moderate                      H: High</p> <p><i>Geographic Extent:</i>                      PA: Project Area                      LSA: Local Study Area                      RSA: Regional Study Area</p> <p><i>Timing:</i>                      NS: No sensitivity                      MS: Moderate sensitivity                      HS: High sensitivity</p> <p><i>Duration:</i>                      ST: Short-term                      MT: Medium-term                      LT: Long-term</p> <p><i>Frequency:</i>                      S: Single event                      IR: Irregular event                      R: Regular event                      C: Continuous</p> <p><i>Reversibility:</i>                      R: Reversible                      I: Irreversible</p> <p>N/A: Not applicable</p>							

## 29.6.6 Prediction Confidence

As discussed in Section 12.6.1, there is a high degree of prediction confidence for the Project. Note that predicted Project emissions are conservative (i.e. over-estimated). While the prediction confidence is high for most aspects of the assessment, there remains some uncertainty regarding details of future physical activities, resulting in overall prediction confidence being moderate.

## 29.7 Assessment of Cumulative Effects on the Acoustic Environment

As detailed in Chapter 13 of the Impact Statement (Assessment of Potential Effects on the Acoustic Environment), the Project is anticipated to have adverse residual effects on noise and vibration. As such, there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### 29.7.1 Regional Study Area

As noted in Section 13.1.4.1 in Chapter 13 (Assessment of Potential Effects on the Acoustic Environment), the RSA for the Acoustic Environment is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA includes the PA as well as a buffer of approximately 8 km around the PA. The RSA for the Acoustic Environment is shown on Figure 29.8.4.

### 29.7.2 Identification of Project Effects with Potential to Interact Cumulatively

Table 29.7 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.7 Physical Activities with Potential for Cumulative Effects on the Acoustic Environment**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects	
	Change to noise	Change to vibration
<b>Past and Present Physical Activities</b>		
Mining	–	–
Aggregate Extraction	–	–
Community Development	–	–
Water Management	–	–
Transportation	✓	–
Power	–	–

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects	
	Change to noise	Change to vibration
Energy	–	–
Forestry	–	–
Agriculture	–	–
Recreation	–	–
Hunting and Fishing	–	–
<b>Future Physical Activities</b>		
Mining		
North Timmins Gold Project – Bradshaw Mine	–	–
Upper Beaver Gold Project	–	–
Detour Lake Gold Mine Expansion	–	–
Fox Mining Complex Expansion Project	–	–
ERO: 019-8122 - Permit to take water renewal	–	–
Other mine-related physical activities (e.g., mineral exploration permits)	–	–
Transportation		
Highway 652 Extension to Highway 11	–	–
Northlander Passenger Train Expansion of Service	✓	–
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	✓	–
Power		
Transmission Infrastructure Partnership-1	✓	–
Wawa to Porcupine Transmission Line	–	–
Notes:		
✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects.		
– = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.		

There are no cumulative noise or vibration effects with past physical activities because the effects cease after the activities are completed and there is no temporal overlap with Project effects.

The existing sound level considers existing activities resulting in noise emissions in the RSA. Section 13.2 in Chapter 13 [Assessment of Potential Effects on the Acoustic Environment] provides information on the existing noise level in the RSA. As such, the contribution of present physical activities is considered in the assessment of Project residual effects (Section 13.4 in Chapter 13 [Assessment of Potential Effects on the Acoustic Environment]).

Noise and vibration effects from future physical activities may overlap with the residual effects of the Project if emissions from a future physical activity overlaps temporally and spatially with those of the Project. Figure 29.8.4 presents the future physical activities within the RSA for Acoustic Environment. The North Timmins Gold Project – Bradshaw Mine and the Northlander Passenger Train Expansion of Service are the only physical activities likely to generate substantial noise and vibration emission, but both would be at sufficient distance from the Project that an overlap in effects is unlikely. Typically, transmission line construction, such as the Transmission Infrastructure Partnership-1, has somewhat lesser effects on noise and vibration levels in sensitive areas. Due to the smaller project scale and known success of current best management and design mitigation for such physical activities, residual effects are unlikely. As such, cumulative noise and vibration effects from future physical activities are not anticipated.

## **29.8 Assessment of Cumulative Effects on Groundwater**

As detailed in Chapter 14 of the Impact Statement (Assessment of Potential Effects on Groundwater), the Project is anticipated to have adverse residual effects on groundwater quantity and quality. As such, there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### **29.8.1 Regional Study Area**

As noted in Section 14.1.4.1 in Chapter 14 (Assessment of Potential Effects on Groundwater), the RSA for Groundwater is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA is defined by major river watershed boundaries with the Central Mattagami River watershed boundary to the west, northwest and southwest, and Abitibi River watershed boundary to the east, northeast and southeast. The RSA for Groundwater is shown on Figure 29.8.5.

### **29.8.2 Identification of Project Effects with Potential to Interact Cumulatively**

Table 29.8 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.8 Physical Activities with Potential for Cumulative Effects on Groundwater**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects	
	Change in groundwater quantity	Change in groundwater quality
<b>Past and Present Physical Activities</b>		
Mining	–	–
Aggregate Extraction	–	–
Community Development	–	–
Water Management	–	–
Transportation	–	–
Power	–	–
Energy	–	–
Forestry	–	–
Agriculture	–	–
Recreation	–	–
Hunting and Fishing	–	–
<b>Future Physical Activities</b>		
Mining		
North Timmins Gold Project – Bradshaw Mine	✓	✓
Upper Beaver Gold Project	–	–
Detour Lake Gold Mine Expansion	–	–
Fox Mining Complex Expansion Project	–	–
ERO: 019-8122 - Permit to take water renewal	–	–
Other mine-related physical activities (e.g., mineral exploration permits)	–	–
Transportation		
Highway 652 Extension to Highway 11	–	–
Northlander Passenger Train Expansion of Service	–	–
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	–	–
Power		
Transmission Infrastructure Partnership-1	–	–
Wawa to Porcupine Transmission Line	–	–
Notes:		
✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects.		
– = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.		

Potential effects associated with past and present physical activities in the RSA have been identified in the existing conditions for Groundwater (Section 14.2 in Chapter 14 [Assessment of Potential Effects on Groundwater]). As such, the contribution of present physical activities, including effects from mineral development (e.g., Kidd Creek Mine), is considered in the assessment of Project residual effects (Section 14.4 in Chapter 14 [Assessment of Potential Effects on Groundwater]).

Those future physical activities listed but not checked off represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1. Figure 29.8.5 presents the future physical activities within the RSA for Groundwater.

Future physical activities such as mining development and exploration, transportation and the Transmission Infrastructure Partnership-1 have a potential spatial and temporal overlap with the Project. With the implementation of current best management and design mitigation measures that are typically required as part of approval conditions, future transportation and power physical activities are not anticipated to result in residual effects on groundwater quantity beyond the immediate vicinity of the given Project and therefore cumulative effects with the Project are not anticipated. Effects on groundwater quantity would be restricted to possible temporary dewatering during construction only. The magnitude of drawdown is anticipated to be low due to the limited depths at which these types of infrastructure are typically installed. The short-term effect of drawdown would be confined to the area directly around the infrastructure and would not overlap spatially with the residual effects of the Project. Given this, no cumulative effects on groundwater are anticipated for these physical activities.

Regarding the North Timmins Gold Project – Bradshaw Mine, a potential spatial and temporal overlap exists, and therefore, a cumulative effects assessment is discussed in the following sections.

### **29.8.3 Cumulative Effects Assessment for Change in Groundwater Quantity and Quality**

#### **29.8.3.1 Cumulative Effect Pathways**

Potential cumulative effects on groundwater arising from past, present and future physical activities have the same effect pathways as those resulting from the Project, and, therefore, could act cumulatively with residual Project effects.

Generally, the spatial extent of Project effects on groundwater is relatively limited proximate to the Project, with few other Physical Activities overlapping spatially and temporally to suggest potential for measurable cumulative effects. However, the North Timmins Gold Project – Bradshaw Mine, approximately 10 km southeast of the Project, represents a potential for cumulative effects given its proximity to the Project and likely predictable effects on groundwater that would be similar to those from the Project. As such, the following examines further the possibility of such cumulative effects.

Based on publicly available information, the following is understood regarding the Bradshaw site regarding information relevant to groundwater:

- Shallow groundwater flow in the eastern portion of the site is likely flowing east towards the West Buskegau River and west in the western portion of the site towards a wetland area which flows northwards and eventually reports to the West Buskegau River (Stantec 2015).
- Permit to Take Water (PTTW) No. 1503-BYRR5G was issued by the Province on March 30, 2021. The PTTW allows for the taking of up to 14,200 m<sup>3</sup>/day for the purpose of mine dewatering and 270 m<sup>3</sup>/day for water supply. An application was submitted by Gowest Gold in December 2023 to renew PTTW No. 1503-BYRR5G for an additional 10 years.
- Environmental Compliance Approval (ECA) Number 1877-BKWJH3 was issued on February 3, 2020 with an approval for “collection, transmission, treatment and disposal of surface runoff and mine water, serving Bradshaw Gold Mine with an underground portal and ramp, and a stock piling area, designed for mine water inflow with an average flow rate of 3,000 cubic metres per day and a maximum flow rate of 14,200 cubic metres per day”. Under ECA 1877-BKWJH3, the following discharges to the West Buskegau River are permitted:
  - A low flow V-notch weir, with a design flow rate of up to 37 litres per second, connected to a low flow water diffusion system, which comprises a 300 metre long buried pipe, and a 150 metre long perforated pipe to allow for diffuse discharge through a peat bog (wetland) to the West Buskegau River.
  - A high flow rectangular weir with flow control system, connected to an approximately 300 metre long discharge channel and an outlet structure to discharge a peak discharge of 600 litres per second to the West Buskegau River (only be activated during freshet and/or any storm event exceeding a rainfall intensity of 5 millimetres per hour).
- The Bradshaw site will not include a process plant or tailings management facility, as ore will be processed off-site at the Redstone Mill located in Timmins (Gowest Gold Limited, 2024).

It is presumed that dewatering and discharge of mine effluent has continued during the current care and maintenance period for the Bradford Mine.

As detailed groundwater baseline data and three-dimensional groundwater flow modeling is not available for the Bradshaw project, a quantitative characterization of the potential cumulative effects on groundwater resources is not possible. However, based on professional judgement and the detailed groundwater flow modeling conducted for the Crawford Project, the following qualitative assessment of potential cumulative effects on groundwater of both the Crawford and Bradshaw projects is provided:

- Groundwater drawdown associated with the dewatering of the underground workings for the Bradshaw project may extend into the area of predicted water table mounding associated with the proposed TMF for the Crawford Project presented on Figure 14.3 in Chapter 14 of the Impact Statement, hence possibly resulting in measurable cumulative effects.

- Groundwater drawdown associated with the dewatering of the underground workings for the Bradshaw project may extend into the area of predicted water table drawdown associated with dewatering of the Crawford Open Pit presented on Figures 14.3 and 14.4 in Chapter 14 of the Impact Statement, hence possibly resulting in measurable cumulative effects (although such an interaction is unlikely given the distance between these projects).
- The movement of seepage from the Crawford Project's TMF, as presented on Figures 14.6, 14.7, and 14.8 in Chapter 14 of the Impact Statement, may be affected by the dewatering of the Bradshaw underground workings.
- Movement of seepage from the Crawford Project's Impoundment Facility is unlikely to be affected by the dewatering of the Bradshaw underground workings as the Impoundment Facility is separated from the Bradshaw project by the Crawford Open Pit, hence making cumulative effects unlikely.
- As groundwater at the Bradshaw site is expected to flow towards the West Buskegau River and seepage from the TMF and Impoundment Facility at the Crawford Project is predicted to discharge into the West Buskegau River, a cumulative effect on the water quality of the West Buskegau River is possible.

### **29.8.3.2 Mitigation for Cumulative Effects**

Project mitigation measures presented in Section 14.4 for groundwater are predicted to reduce and mitigate the Project's contribution to the cumulative groundwater effects. Project mitigation measures presented in Sections 14.4.2.2 and 14.4.3.2 will reduce potential cumulative effects on groundwater. No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on groundwater quantity and quality.

Future physical activities will require provincial or federal approval and permitting and/or an environmental impact assessment. These processes require the future proponents to identify and assess potential effects on groundwater, and to identify and implement appropriate mitigation measures. It is expected that proponents of present and future physical activities will implement mitigation measures identified through permitting and approval processes, as appropriate, to reduce their contributions to cumulative effects on groundwater quantity and quality.

### **29.8.3.3 Residual Cumulative Effects**

The current landscape where the Project is planned has been modified by continuous human activities such as forestry, mining, exploration, aggregate extraction, energy production and transmission, road construction, and urban development. To assist interpretation of context, Figures 29.6.1 to 29.6.9 provide a visual depiction of land cover, land disturbance and the physical activities included in the PIL in relation to the biophysical RSAs.

It is assumed that the North Timmins Gold Project – Bradshaw Mine will have similar effects on groundwater water to those predicted for the Project in the West Buskegau River watershed, as well as use of the river as a mine water supply. The Bradshaw mine is proposed approximately 10 km southeast of the proposed Project. While the timing of proposed development of the North Timmins Gold Project – Bradshaw Mine is unknown, it is assumed that potential effects on groundwater could have a spatial overlap with the effects of the Project. The degree to which cumulative effects may occur depend on the future Bradshaw mine’s water management plans and discharge points. The mine proponent would be expected to implement mitigation measures to protect groundwater quality and quantity, similar to what has been proposed for the Project.

Mineral exploration activities generally involve short-term, smaller-scale disturbances. As such, their contributions to cumulative effects on groundwater at the regional scale tend to be limited both temporally and spatially.

Residual cumulative effects at the regional scale on groundwater quality and quantity arising from past, present and future physical activities are likely low to high in magnitude. These would occur as multiple irregular events as future physical activities proceed, except for mining projects, which will result in residual effects that are continuous. Residual effects will be short- to long term with some predicted to be irreversible. The Project will however have a relatively low contribution to cumulative effects on groundwater quantity and quality at the RSA scale.

#### **29.8.4 Cumulative Effects Without the Project**

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur whether the Project occurs or not, especially as it related to mining development. Without the Project, future cumulative effects on groundwater quality and quantity are therefore predicted to be similar.

## 29.8.5 Summary of Cumulative Effects on Groundwater

Table 29.9 summarizes cumulative effects on groundwater quantity and quality.

**Table 29.9 Residual Cumulative Effects on Groundwater**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on groundwater quantity</b>							
With the Project	A	L-H	RSA	NS	ST-LT	IR-C	R-I
Without the Project	A	L-H	RSA	NS	ST-LT	IR-C	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Residual effects of the Project on groundwater quantity may result in measurable changes in groundwater levels as a result of Open Pit dewatering, diversion of the North Driftwood River, and operation of the TMF. However, the Project will have a relatively low contribution to residual cumulative effects on groundwater quantity.						
<b>Residual Cumulative Effect on groundwater quality</b>							
With the Project	A	L-H	RSA	NS	ST-LT	IR-C	R-I
Without the Project	A	L-H	RSA	NS	ST-LT	IR-C	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Residual effects of the Project on groundwater quality may result in measurable changes in concentrations of parameters in groundwater and groundwater that discharges to surface water. However, the Project will have a relatively low contribution to residual cumulative effects on groundwater quality.						
<p><b>KEY</b></p> <p>See Table 14.3 in Chapter 14 of the Impact Statement (Assessment of Potential Effects on Groundwater) for detailed definitions</p> <p><i>Direction:</i>                      P: Positive                      A: Adverse                      N: Neutral</p> <p><i>Magnitude:</i>                      N: Negligible                      L: Low                      M: Moderate                      H: High</p> <p><i>Geographic Extent:</i>                      PA: Project Area                      LSA: Local Study Area                      RSA: Regional Study Area</p> <p><i>Timing:</i>                      NS: No sensitivity                      MS: Moderate sensitivity                      HS: High sensitivity</p> <p><i>Duration:</i>                      ST: Short-term                      MT: Medium-term                      LT: Long-term</p> <p><i>Frequency:</i>                      S: Single event                      IR: Irregular event                      R: Regular event                      C: Continuous</p> <p><i>Reversibility:</i>                      R: Reversible                      I: Irreversible</p> <p>N/A: Not applicable</p>							

## 29.8.6 Prediction Confidence

Prediction confidence is low, because there is uncertainty regarding the timing and extent of reasonably foreseeable future activities and what mitigation measures may be implemented by them to address groundwater effects, particularly as this relates to the future potential North Timmins Gold Project – Bradshaw Mine.

## **29.9 Assessment of Cumulative Effects on Surface Water**

As detailed in Chapter 15 (Assessment of Potential Effects on Surface Water), the Project is anticipated to have adverse residual effects on surface water quantity and quality. As such, there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### **29.9.1 Regional Study Area**

As noted in Section 15.1.4.1, the RSA for Surface Water is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA for Surface Water includes the PA and LSA and extends farther downstream (northwards) than the LSA along the North Driftwood River, West Buskegau River and Jocko Creek. The extent of the RSA for surface water is shown on Figure 29.8.6.

### **29.9.2 Identification of Project Effects with Potential to Interact Cumulatively**

Table 29.10 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.10 Physical Activities with Potential for Cumulative Effects on Surface Water**

Projects and Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects	
	Change to surface water quantity	Change to surface water quality
<b>Past and Present Physical Activities</b>		
Mining	✓	✓
Aggregate Extraction	✓	✓
Community Development	✓	✓
Water Management	✓	✓
Transportation	✓	✓
Power	✓	✓
Energy	✓	✓
Forestry	✓	✓
Agriculture	✓	✓
Recreation	–	–
Hunting and Fishing	–	✓
<b>Future Physical Activities</b>		
Mining		
North Timmins Gold Project – Bradshaw Mine	✓	✓
Upper Beaver Gold Project	–	–
Detour Lake Gold Mine Expansion	–	–
Fox Mining Complex Expansion Project	–	–
ERO: 019-8122 - Permit to take water renewal	–	–
Other mine-related physical activities (e.g., mineral exploration permits)	✓	✓
Transportation		
Highway 652 Extension to Highway 11	–	–
Northlander Passenger Train Expansion of Service	–	–
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	–	–
Power		
Transmission Infrastructure Partnership-1	✓	✓
Wawa to Porcupine Transmission Line	–	–
Notes:		
✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects.		
– = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.		

Potential effects associated with past and present physical activities in the LSA have been identified in the existing conditions for Surface Water (Section 15.2 in Chapter 15 [Assessment of Potential Effects on Surface Water]). As such, the contribution of present physical activities, including effects from mineral development (e.g., Kidd Creek Mine), is considered in the assessment of Project residual effects (Section 15.4 in Chapter 15 [Assessment of Potential Effects on Surface Water]). Potential effects identified in Table 29.10 as not likely to interact cumulatively with residual effects of other physical activities (no check mark) are not discussed further. Those future physical activities listed but not checked represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1. Figure 29.8.6 presents the future physical activities within the RSA for Surface Water.

The assessment of the cumulative environmental effects that are likely to result from the Project in combination with other physical activities are discussed in the following sections. Due to the uncertainty of each project's development, mitigation and reclamation, the assessment of cumulative effects is largely qualitative.

### **29.9.3 Cumulative Effects Assessment for Change to Surface Water Quantity and Quality**

#### **29.9.3.1 Cumulative Effect Pathways**

Potential cumulative effects on surface water quality and quantity arising from past, present and future physical activities have the same effect pathways as those resulting from the Project, and, therefore, could act cumulatively with residual Project effects. Future physical activities may alter surface water quantity through changes in runoff, evapotranspiration, evaporation, infiltration characteristics, changes in watershed areas, point source discharges, and watercourse alterations and realignments. Future physical activities may affect surface water quality through erosion, sedimentation, contact water discharges and non-point source discharges.

#### **29.9.3.2 Mitigation for Cumulative Effects**

Project mitigation measures presented in Section 15.4 in Chapter 15 of the Impact Statement (Assessment of Potential Effects on Surface Water) for surface water quality and quantity are predicted to reduce or mitigate the Project's contribution to the cumulative effects on surface water. Project mitigation measures presented in Sections 15.4.2.2 and 15.4.3.2 in Chapter 15 of the Impact Statement (Assessment of Potential Effects on Surface Water), such as limiting the area of disturbance to vegetation, wetlands and waterways, properly managing flow across disturbed areas, managing water flow along and across roads, designing and implementing water collection and treatment for contact water, and using sediment fencing and/or other appropriate measures to prevent erosion and siltation into adjacent waterways (i.e., through an Erosion and Sediment Control Plan) will reduce the Project's contribution to potential cumulative effects. No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on surface water quality and quantity.

Future physical activities will require provincial or federal approval and permitting and/or an environmental impact assessment. These processes require the future proponents to identify and assess potential effects to surface water, and to identify and implement appropriate mitigation measures. It is expected

that proponents of present and future projects will implement mitigation measures identified through permitting and approval processes, as appropriate, to reduce their contributions to cumulative effects on surface water quality and quantity.

### 29.9.3.3 Residual Cumulative Effects

Existing environmental conditions reflect cumulative effects on the environment from past and present physical activities. Past and present physical activities that have been or are being carried out have influenced the existing conditions for surface water quality and quantity in the RSA, including the North Driftwood River, West Buskegau River, and Jocko Creek (Section 15.2.2 in Chapter 15 of the Impact Statement [Assessment of Potential Effects on Surface Water]). Regional hydrologic data describing mean annual, monthly, peak (flood), and low flows and environmental flow needs were obtained and analyzed (Appendix B.6 of the Impact Statement [Surface Water Resources Baseline Report]). Existing surface water hydrology is influenced by existing landscape activities and climatic conditions.

General water quality in LSA watercourses and waterbodies is described as slightly acidic. Waters within the PA were typically classified as medium hard, with soft waters in the Jocko Creek and West Buskegau River watersheds. Within the LSA, total phosphorus, dissolved aluminium (0.2 µm diameter filter) and total iron were identified as parameters of potential concern (PoPCs) where local watercourse and/or waterbody 75<sup>th</sup> percentile values exceeded the corresponding guideline. There were no substantial differences in water quality parameter results between the three watersheds in the PA (Jocko Creek, North Driftwood River, and the West Buskegau River). Regional water quality from seven Provincial Water Quality Monitoring Network stations identified total phosphorus, aluminium and total iron concentrations as PoPCs; however, regional water quality data identified total arsenic, total cadmium, total cobalt, total copper, total lead, total silver, and total zinc were identified as additional PoPCs at the regional scale that were not observed in the LSA data and are not considered PoPCs in the PA. Concentrations of parameters were typically higher in the late fall and winter months and lower in the spring and summer months. Appendix B.6 of the Impact Statement (Surface Water Resources Baseline Report) contains further details about existing surface water quality and hydrology.

Project construction includes clearing, grading and site preparation, which may increase runoff and flooding potential and reduce infiltration and evaporation, and may alter drainage patterns through development of roads, by overprinting small watercourses, drainages and wetlands, and by altering local hydrological flows through development of water management infrastructure (e.g., ditches), water holding facilities (e.g., collection ponds, Tailings Management Facility, Impoundment Facility) and discharge points. Water will continue to be managed, held and discharged during mine operations. Canada Nickel will implement the Site-Wide Water Management Plan (Appendix J of the Impact Statement), which outlines planned use of collection ponds to receive and treat contact water prior to discharging to mine water treatment plant systems to reduce effects on water quality and quantity. Localized, moderate effects of the Project on local hydrology (i.e., small but measurable decrease in flows) are predicted during construction and operations.

Erosion and sedimentation have the potential to alter surface water quality from the initiation of earthworks related to site preparation during construction through the end of operations. Collection ponds

will be constructed and have been sized to convey non-contact local water, including those from anticipated storm events, without untreated water being discharged to the environment; adequate residence time to treat expected sediment (TSS) loads in ponds is anticipated. Contact water will be treated in water treatments plants prior to being discharged to the environment. Changes to surface water quality within the North Driftwood River and West Buskegau River are not predicted to be substantial as effluent discharged to these watercourses will comply with regulatory requirement and permitting limits at the discharge points and no watershed management targets will be contravened. The LSA is expected to accommodate changes in surface water quality for all mine life phases. Local water quality immediately downstream of some Project discharge points (within the mixing zones) will experience increases of PoPCs above baseline levels; however, these changes are expected to be contained within the boundaries of mixing zones within the LSA. Localized, low to moderate effects of the Project on local water quality are predicted during construction and operations. As a result of Project changes excluding the Mattagami River as a discharge location for mine effluent, residual adverse effects on the Mattagami River are not predicted.

Future physical activities may contribute to further changes in water quality and quantity in the RSA. Some physical activities may result in temporary disturbance to water quality or flow following activity completion and reclamation (e.g., cutblocks, temporary workspaces), while some future physical activities (e.g., mining, roads) may result in long-term changes. Mineral exploration activities generally involve short-term, small-scale disturbances and typically use existing access roads and trails. There are no new point source discharge locations downstream of the project within the RSA. As such, their contributions to cumulative effects on water quality and quantity at the regional scale tend to be limited both temporally and spatially.

It is assumed that the North Timmins Gold Project – Bradshaw Mine will have similar effects on water quality and quantity to those predicted for the Project in the West Buskegau River watershed, as well as from use of the river as a mine water supply. The Bradshaw mine is proposed approximately 10 km southeast of the proposed Project. While the timing of proposed development of the North Timmins Gold Project – Bradshaw Mine is unknown, discharges to the West Buskegau River watershed have been and are expected to continue, which may change water flow or affect water quality through similar processes. The degree to which cumulative effects may occur depends on the Bradshaw mine's water management plans, which include treated discharge via a diffuser into a wetland system that drains into the West Buskegau River. It is presumed that dewatering and discharge of treated mine effluent has continued during the current care and maintenance period and may expand when operations resume in the future. The mine proponent would be expected to implement mitigation measures to protect water quality and quantity, similar to what has been proposed for the Project.

For the proposed Transmission Infrastructure Partnership-1 transmission line, it is possible for construction of the project to affect surface water quality through vegetation removal, or grading and ground disturbance, resulting in increased risk of erosion and sediment, which could flow into wetlands, drainages, or waterbodies on or adjacent to the project footprint. While transmission lines typically span watercourses, waterbodies, and wetlands (where possible), installation or removal of temporary vehicle watercourse crossings required for construction could result in sedimentation of watercourses. It is assumed that the project proponent will implement mitigation measures related to erosion and sediment

control during construction and be in compliance with applicable provincial and federal permitting requirements (e.g., DFO's Codes of Practice).

Ongoing forestry activities also have the potential to affect water quality and flow. Forest Management Plans contain procedures and measures to sustainably manage forests within the applicable forest management unit (Abitibi River Forest), including reforestation and other practices to ensure long-term yield while factoring in other resources (e.g., fish and fish habitat, water quality and quantity). It is assumed that forestry operators will follow provincial requirements to mitigate effects on water quality and quantity at watercourse crossings and follow operating conditions within riparian areas and water source areas where forestry operations are approved. Adverse residual effects to surface water quality from forestry activities would likely be related to increases in sediments during installation of stream crossings and would be short-term in duration and reversible. Removal of riparian vegetation, where permitted, may also affect water quality in the longer term (until riparian vegetation regrows).

Ongoing agricultural activities also have the potential to affect water quality. Adverse residual effects to surface water quality from agricultural activities would likely be related to increases in sediments during installation of irrigation systems and would be short-term in duration and reversible. The use of pesticides, if not managed properly, can also lead to contamination of water sources, affecting both water quality and aquatic life. Removal of riparian vegetation, where permitted, may also affect water quality in the longer term (until riparian vegetation regrows).

Residual cumulative effects on water quality and quantity arising from past, present and future physical activities are predicted to be moderate in magnitude. Residual cumulative effects will occur as multiple irregular events as future physical activities proceed. Residual effects will be short-term for some developments (including transmission line construction), medium-term for others (new mine development) and long-term for agriculture, and are predicted to be reversible. The Project will therefore have a relatively low contribution to cumulative effects on surface water quantity and quality at the RSA scale.

#### **29.9.4 Cumulative Effects Without the Project**

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur whether the Project occurs or not. It can also be assumed that present physical activities such as mining, forestry and infrastructure improvements will also proceed, regardless of Project status. Without the Project, future cumulative effects to surface water quality and quantity are therefore predicted to be lower than those identified if the proposed Project proceeds with no cumulative effects anticipated at the boundary of the RSA.

#### **29.9.5 Summary of Cumulative Effects on Surface Water**

Table 29.11 summarizes residual cumulative effects on surface water.

**Table 29.11 Residual Cumulative Effects on Surface Water**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on Surface Water Quantity</b>							
With the Project	A	M	RSA	NS	MT-LT	IR	R
Without the Project	A	L-M	RSA	NS	MT-LT	IR	R
Contribution from the Project to the Overall Regional Residual Cumulative Effect	The Project will have a relatively low contribution to residual cumulative effects on surface water quantity. The Project may result in measurable decreases in surface water flows as a result of Open Pit dewatering, centralized mine water management, sequestration of water into tailings pore spaces and other mine water uses. However, decreases in flow are predicted to be localized and are within environmental thresholds.						
<b>Residual Cumulative Effect on Surface Water Quality</b>							
With the Project	A	M	RSA	NS	MT	IR	R
Without the Project	A	L-M	RSA	NS	ST-MT	IR	R
Contribution from the Project to the Overall Regional Residual Cumulative Effect	The Project will have a relatively low contribution to residual cumulative effects on surface water quality. Effluent water discharged from the Project will comply with regulatory requirement limits/guidelines at the discharge points and no watershed management targets will be contravened. Local water quality immediately downstream of some discharge points (within the mixing zones) may experience increases of PoPCs above baseline levels and regulatory guidelines; however, these changes are expected to be contained within the boundaries of the LSA and will be dissipated at the edge of the mixing zone.						
<p><b>KEY</b></p> <p>See Table 15.3 in Chapter 15 of the Impact Statement (Assessment of Potential Effects on Surface Water) for detailed definitions</p> <p><i>Direction:</i>                      P: Positive                      A: Adverse                      N: Neutral</p> <p><i>Magnitude:</i>                      N: Negligible                      L: Low                      M: Moderate                      H: High</p> <p><i>Geographic Extent:</i>                      PA: Project Area                      LSA: Local Study Area                      RSA: Regional Study Area</p> <p><i>Timing:</i>                      NS: No sensitivity                      MS: Moderate sensitivity                      HS: High sensitivity</p> <p><i>Duration:</i>                      ST: Short-term                      MT: Medium-term                      LT: Long-term</p> <p><i>Frequency:</i>                      S: Single event                      IR: Irregular event                      R: Regular event                      C: Continuous</p> <p><i>Reversibility:</i>                      R: Reversible                      I: Irreversible</p> <p>N/A: Not applicable</p>							

### 29.9.6 Prediction Confidence

Prediction confidence is moderate, because there is uncertainty regarding the timing of future physical activities, and what mitigation measures may be implemented by them to address water quality, particularly as this relates to the future potential North Timmins Gold Project – Bradshaw Mine.

## **29.10 Assessment of Cumulative Effects on Vegetation, Riparian and Wetland Environments**

As detailed in Chapter 16 of the Impact Statement (Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments), the Project is anticipated to have adverse residual effects on vegetation communities and species diversity, riparian form and function, and wetland form and function. As such there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### **29.10.1 Regional Study Area**

As noted in Section 16.1.4.1 in Chapter 16 of the Impact Statement (Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments), the RSA for Vegetation, Riparian and Wetland Environments is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered.

The RSA for Vegetation, Riparian and Wetland Environments includes the PA and was designed to conform to regional watersheds where possible. The RSA includes the Northeast Mattagami River watershed, North Driftwood River watershed, and the Buskegau River/Fredrick House River watershed, or a 20 km boundary from the Local Study Area, whichever is greater, due to the irregularity of some watershed boundaries. The RSA for Vegetation, Riparian and Wetland Environments is shown on Figure 29.8.7.

### **29.10.2 Identification of Project Effects with Potential to Interact Cumulatively**

Table 29.12 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.12 Physical Activities with Potential for Cumulative Effects on Vegetation, Riparian and Wetland Environments**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects		
	Change in vegetation communities and species diversity	Change in Riparian Form and Function	Change in Wetland Form and Function
<b>Past and Present Physical Activities</b>			
Mining	✓	✓	✓
Aggregate Extraction	✓	✓	✓
Community Development	✓	✓	✓
Water Management	–	✓	–
Transportation	✓	✓	✓
Power	✓	✓	✓
Energy	–	–	–
Forestry	✓	–	–
Agriculture	✓	✓	✓
Recreation	✓	–	–
Hunting and Fishing	–	–	–
<b>Future Physical Activities</b>			
Mining			
North Timmins Gold Project – Bradshaw Mine	✓	✓	✓
Upper Beaver Gold Project	–	–	–
Detour Lake Gold Mine Expansion	–	–	–
Fox Mining Complex Expansion Project	–	–	–
ERO: 019-8122 - Permit to take water renewal	–	–	–
Other mine-related physical activities (e.g., mineral exploration permits)	✓	✓	✓
Transportation			
Highway 652 Extension to Highway 11	–	–	–
Northlander Passenger Train Expansion of Service	✓	✓	✓
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	✓	✓	✓
Power			
Transmission Infrastructure Partnership-1	✓	✓	✓
Wawa to Porcupine Transmission Line	✓	✓	✓
Notes: ✓ = Other projects and physical activities whose residual effects are likely to interact cumulatively with Project residual effects. – = Interactions between the residual effects of other projects and physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.			

Potential effects associated with past and present physical activities in the LSA have been identified in the existing conditions for Vegetation, Riparian and Wetland Environments (Section 16.2 in Chapter 16 [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]). As such, the contribution of present physical activities, including effects from mineral development (e.g., Kidd Creek Mine), is considered in the assessment of Project residual effects (Section 16.4 in Chapter 16 [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]).

Potential effects identified in Table 29.12 as not likely to interact cumulatively with residual effects of other physical activities (no check mark) are not discussed further. Those future physical activities listed but not checked represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1. Figure 29.8.7 presents the future physical activities within the RSA for Vegetation, Riparian and Wetland Environments.

The assessment of the cumulative environmental effects that are likely to result from the Project in combination with other physical activities are discussed in the following sections. Due to the uncertainty of each project's development, mitigation and reclamation, the assessment of cumulative effects is largely qualitative.

### **29.10.3 Cumulative Effects Assessment for Change in Vegetation, Riparian and Wetland Environments**

#### **29.10.3.1 Cumulative Effect Pathways**

No adverse residual effects are anticipated on plant species at risk (SAR) and species of conservation concern (SOCC) because of the Project (Section 16.4.2.3 in Chapter 16 of the Impact Statement [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]); therefore, they are not considered or discussed further in this assessment.

Potential cumulative effects on native vegetation communities arising from past, present and future physical activities have the same effect pathways as those resulting from the Project, and, therefore, could act cumulatively with residual Project effects.

The removal of areas containing native vegetation communities, riparian areas and wetlands is expected to occur as a result of other future physical activities in the RSA through land clearing and could result in temporary or permanent loss or alteration of native vegetation communities, plant species traditionally used by Indigenous nations, and through the potential introduction or spread of weeds. Future physical activities could affect the abundance of riparian communities through direct effects from clearing, and riparian function through indirect interactions, such as changes in groundwater and surface water levels, landscape fragmentation and edge effects such as changes in light and wind exposure. Clearing of wetland areas as a result of present physical activities (e.g., forestry) and future physical activities (e.g., mine and power infrastructure development) may result in a reduction of wetland plant community area or a change in plant community composition or could alter surface run-off and groundwater inputs.

### **29.10.3.2 Mitigation for Cumulative Effects**

Project mitigation measures presented in Section 16.4 in Chapter 16 of the Impact Statement (Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments) for vegetation, riparian and wetland environments are predicted to reduce and mitigate the Project's contribution to the cumulative loss of vegetation communities. Project mitigation measures presented in Sections 16.4.3.2 and 16.4.4.2 in Chapter 16 of the Impact Statement (Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments) such as reducing clearing and disturbance to riparian and wetland areas and using sediment fencing and/or other appropriate measures to prevent erosion and siltation into adjacent wetlands and riparian areas (i.e., through an Erosion and Sediment Control Plan) will reduce potential cumulative effects. No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on vegetation, riparian and wetland communities.

Future physical activities will require provincial or federal approval and permitting and/or an environmental impact assessment. These processes require the future proponents to identify and assess potential effects to vegetation, riparian areas and wetlands, and to identify and implement appropriate mitigation measures. It is expected that proponents of present and future projects will implement mitigation measures identified through permitting and approval processes, as appropriate, to reduce their contributions to cumulative effects on native vegetation, riparian and wetland communities.

### **29.10.3.3 Residual Cumulative Effects**

Existing environmental conditions reflect cumulative effects on the environment from past and present physical activities. Past and present physical activities that have been or are being carried out have influenced the existing conditions for vegetation in the RSA (Section 16.2.2.1 in Chapter 16 of the Impact Statement [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]). The current landscape where the Project is proposed has been altered by ongoing anthropogenic disturbance including forestry, mining and exploration, aggregate extraction, energy generation and transmission, linear development, including roads, and urban development. As described in Chapters 25 to 28, Indigenous nations indicated that the quality and quantity of harvested vegetation have diminished and that the lands and resources have been impacted by industrial development in their Traditional Territory.

Within the RSA, upland treed habitat covers approximately 47% (502,956 ha), with mixed forests and coniferous treed forests being the most common upland forest types (Table 16.5 in Chapter 16 of the Impact Statement [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]). Wetlands are the second largest ecosystem category in the RSA, covering approximately 40% (422,875 ha) of the RSA, with swamps the most common wetland class covering approximately 27% (287,638 ha) of the RSA followed by fens with 5% (53,719 ha) and bogs with 5% (50,792 ha) of the RSA. Approximately 99,205 ha (9%) of the RSA has been disturbed by anthropogenic development (Table 16.5

in Chapter 16 of the Impact Statement [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]).<sup>1</sup>

Site preparation and clearing during construction of the Project will result in a direct loss of approximately 11,785 ha of land area, of which 96% is currently forested or covered by wetlands or open water. Project construction will result in a decrease of up to 2,251 ha of upland treed vegetation, which is 0.2% of the RSA. Construction of the Project will result in an overall decrease in mean patch size in all land cover classes (naturally vegetated, anthropogenic and non-vegetated communities) of <1% and an increase in perimeter to area ratio of 1% within the RSA (Table 16.18 in Chapter 16 of the Impact Statement [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]). To assist interpretation of context, Figures 29.6.1 to 29.6.9 provide a visual depiction of land cover, land disturbance and the physical activities included in the PIL in relation to the biophysical RSAs. Additional indirect edge effects have potential to further decrease effective mean patch size and increase perimeter to area ratios in the RSA. During the construction phase of the Project, the decrease in mean patch size and increase in mean perimeter/area ratio in naturally vegetated communities is expected to be low in magnitude on a regional basis due to the relatively small change within the RSA and the already fragmented landscape within the RSA from other forms of anthropogenic disturbance (e.g., roads and forestry).

Up to 9,091 ha of wetland habitat may be directly affected by Project development, which represents up to a 2% change in wetlands in the RSA (Table 16.5 in Chapter 16 of the Impact Statement [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]). Up to 221 ha of riparian habitat will be directly affected by Project development, resulting in a loss of 36% of riparian habitat in the LSA (Table 16.19 in Chapter 16 of the Impact Statement [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]). Although riparian habitat was not mapped within the RSA, it is assumed that riparian habitat is well represented regionally, given the abundance of wetlands, watercourses and waterbodies in the RSA and the relative intact nature of the regional vegetation (i.e., the RSA is 91% upland treed, wetland or open water). During operations, on-site water management (e.g., pit dewatering diversion of non-contact water) has the potential to change hydrological conditions in the LSA, potentially resulting in drier local conditions in riparian and wetland communities (Figure 16.6 in Chapter 16 of the Impact Statement [Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments]). These drier conditions may in turn affect species composition, diversity, and plant health. Many of these predicted effects on form and function of riparian and wetland communities can be mitigated through Project design, application of construction mitigation measures, offsetting related to replacement of fish habitat (e.g., for fish-bearing wetlands, removal of riparian vegetation), and subsequent adaptive management (e.g., reclamation) measures, where required.

Future physical activities will contribute to further loss or alteration of native vegetation in the RSA. Some physical activities may result in temporary disturbance to native vegetation following activity completion,

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<sup>1</sup> Forest Resources Inventory (FRI) Versions 1 and 2 were used as a baseline for vegetation boundaries between wetlands, forests, and vegetation communities (LIO 2007, 2021). FRI from the Abitibi River Forest, Romeo Malette Forest, and Gordon Cosens Forest were used to update the baseline FRI. This classification system does not reflect stand age of forests, and thus the existing area of cutblocks (harvested forest) is not reflected in these values.

reclamation and/or reforestation (e.g., cutblocks, temporary workspaces), while some future physical activities (e.g., mining, transmission lines) may result in long-term vegetation change.

It is assumed that the North Timmins Gold Project – Bradshaw Mine will have similar types of effects (albeit of a lesser magnitude) on upland, riparian and wetland vegetation to those predicted for the Project. The Bradshaw mine is proposed approximately 10 km southeast of the proposed Project. While the timing of proposed development of the North Timmins Gold Project – Bradshaw Mine is unknown, it is assumed that it will directly affect similar vegetation communities and have similar indirect effects on vegetation owing to alterations of hydrological conditions, weed introduction and change to patch size and edge effects.

Mineral exploration activities generally involve short-term, small-scale disturbances and typically use existing access roads and trails. As such, their contributions to cumulative effects at the regional scale tend to be limited both temporally and spatially.

Within the RSA, the physical activities associated with the expansion of the Northlander Passenger Train service will be limited to minor rail upgrades and increased rail traffic. Similarly, other planned transportation upgrading projects in the RSA such as road resurfacing, bridge and culvert replacement will likely not result in large changes to vegetation, as physical activities will be largely limited to the existing disturbed areas. Some potential for incremental weed spread is possible.

The development of new transmission lines will result in direct disturbance to native vegetation through clearing for the transmission line right-of-way and associated access and temporary workspace. For the proposed Transmission Infrastructure Partnership-1 and Wawa to Porcupine transmission lines, it is assumed that vegetation types common in the RSA, such as coniferous forest and mixed forest will be affected. The Transmission Infrastructure Partnership-1 may also affect thicket communities as it is proposed to follow the existing 500 kV transmission line corridor where treed vegetation is actively managed. Direct soil disturbance (and associated vegetation clearing) is typically limited to structure locations or where grading to accommodate safe access is required. Typically, transmission line construction has somewhat lesser effects on riparian and wetland vegetation as rivers and wetlands are typically spanned and towers are placed to avoid them. Effects on graminoid and open water wetlands are typically limited to minor disturbance at structure locations in wetlands that cannot be avoided by spanning. Effects will be higher in shrubby and wooded swamps where trees and tall shrubs that might affect safe construction or operations will be removed, locally altering vegetation structure. Following construction, it is expected that native vegetation cover (i.e., grasses, forbs, shrubs) will return in areas that have been cleared, and that the spread of weeds will be controlled. Nevertheless, tall vegetation (i.e., trees) will be periodically maintained to remove trees that might endanger safe operation of the transmission line.

Ongoing forestry activities have had the greatest extent of disturbance to native vegetation communities and will likely continue to do so. As shown in Figure 29.7, forestry activities are widespread in the region. Forestry activities within the Vegetation RSA are managed through the Abitibi River, Gordon Cosens, Romeo Malette, and Timiskaming Forest Management Units, each with individual forestry management plans and supporting data. Publicly available harvest data was used to identify past harvesting and predict future harvesting; however, the location and timing of past forest management units is not publicly

available on a consistent basis. As such, the following spatial characterization of such changes are provided only for future harvesting.

Approximately 103,064 ha (9.6%) of the Vegetation RSA is planned to be modified in the future from proposed harvesting activities. In consideration of the additional 11,785 ha of land to be disturbed as a result of this Project, noting that none of the areas within the PA are currently proposed for future harvesting, a total of 114,849 ha (10.7%) within the Vegetation RSA will be disturbed. The Project would be responsible for 10.3% of the total disturbance within the Vegetation RSA. As such, future timber harvesting is anticipated to modify approximately 8.7 times the amount of land that will be impacted within the Project Area.

Not all forest harvesting outlined in the available Forest Management Plans will occur at once or at all; rather the Forest Management Plans lay out planned harvest areas within an anticipated timeframe to provide a sustainable yield, factoring in social and ecological values. A conservative approach was used, and thus all potential harvest blocks were considered in this assessment; it is likely that it is an over-estimate of future cutblock area. It is also likely that previous cutblocks are in varying states of regeneration and may be providing forest functions again (e.g., habitat, hydrological functions, soil conservation). Forestry activities generally target forest stands with sufficient timber volume to meet harvesting targets; as a result, upland forest areas are presumed to see more forestry activities than wetlands, which typically have more sparse tree cover. While upland forested areas may be most affected by forest harvesting, some riparian areas and wetlands may be affected during development of logging access roads. Post-harvesting reforestation will occur to reverse effects.

Ongoing agricultural activities also have the potential to affect vegetation, riparian areas, and wetlands and will likely continue to do so. The conversion of native vegetation into agricultural land often leads to habitat loss and fragmentation. Removal of riparian vegetation, where permitted, may affect these areas in the longer term until the vegetation regrows, potentially leading to soil erosion and habitat loss. Irrigation and drainage systems can alter natural water regimes, which can affect plant communities. The use of pesticides, if not managed properly, can also lead to contamination, affecting both plant health and the integrity of wetland ecosystems.

Residual cumulative effects on vegetation, riparian and wetland communities arising from past, present and future physical activities are predicted to be moderate in magnitude. Although most anthropogenic disturbance to vegetation communities within the RSA has been limited to urban areas and the linear disturbances that connect them, forestry has been and continues to be widespread in the region. Residual cumulative effects will occur as multiple irregular events as future physical activities proceed. Residual effects will be medium-term for some developments (including forestry) and long-term for others (including vegetation control on transmission lines, new mine development). Effects may be reversible or irreversible depending on the type of physical activity and whether it will be a permanent feature on the landscape. Reclamation and reforestation will occur in most areas of planned temporary disturbance (e.g., cutblocks, temporary workspace), while some disturbances (e.g., new mines) will result in long-term habitat loss.

### 29.10.4 Cumulative Effects Without the Project

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur in the future whether the Project occurs or not. It can also be assumed that present physical activities such as forestry and infrastructure improvements will also proceed, regardless of Project status. Residual cumulative effects from past and present physical activities include changes in the quality, quantity, and distribution of resources harvested and consumed by Indigenous nations. As shown on Figures 29.1 and 29.5, past and present physical activities are largely concentrated along existing transportation corridors (e.g., highways, railways) in the region and it is likely that areas in proximity to existing transportation and other infrastructure will continue to be potential areas for future development. Further, as shown on Figure 29.7, areas of the RSA are subject to future forestry activities. Approximately 103,064 ha (9.6%) of the Vegetation RSA is planned to be modified in the future from proposed harvesting activities, relative to 114,849 ha (10.7%) with the Project. As such, without the Project, future residual cumulative effects on vegetation, riparian and wetland communities are therefore predicted to be similar.

### 29.10.5 Summary of Cumulative Effects on Vegetation, Riparian and Wetland Environments

Table 29.13 summarizes cumulative effects on vegetation, riparian and wetland environments.

**Table 29.13 Residual Cumulative Effects on Vegetation, Riparian and Wetland Environments**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on Vegetation Communities and Species Diversity</b>							
With the Project	A	M	RSA	NS	MT-LT	IR	R-I
Without the Project	A	M	RSA	NS	MT-LT	IR	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Project construction will result in a decrease of up to 2,251 ha of upland treed vegetation, which is 0.2% of the RSA. The Project will have a relatively low contribution to residual cumulative effects on vegetation communities and species diversity.						
<b>Residual Cumulative Effect on Riparian Form and Function</b>							
With the Project	A	M	RSA	NS	MT-LT	IR	R-I
Without the Project	A	M	RSA	NS	MT-LT	IR	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Up to 9,091 ha of wetland habitat may be directly affected by Project development, which represents up to a 2% change in wetlands in the RSA. The Project will have a relatively low contribution to residual cumulative effects on riparian form and function.						
<b>Residual Cumulative Effect on Wetland Form and Function</b>							
With the Project	A	M	RSA	NS	MT-LT	IR	R-I
Without the Project	A	M	RSA	NS	MT-LT	IR	R-I

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Up to 221 ha of riparian habitat will be directly affected by Project development, which represents a small proportion of riparian vegetation in the RSA. The Project will have a relatively low contribution to residual cumulative effects on wetland form and function.						
<p><b>KEY</b></p> <p>See Table 16.4 in Chapter 16 of the Impact Statement (Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments) for detailed definitions</p> <p><i>Direction:</i>  P: Positive  A: Adverse  N: Neutral</p> <p><i>Magnitude:</i>  N: Negligible  L: Low  M: Moderate  H: High</p> <p><i>Geographic Extent:</i>  PA: Project Area  LSA: Local Study Area  RSA: Regional Study Area</p> <p><i>Timing:</i>  NS: No sensitivity  MS: Moderate sensitivity  HS: High sensitivity</p> <p><i>Duration:</i>  ST: Short-term  MT: Medium-term  LT: Long-term</p> <p><i>Frequency:</i>  S: Single event  IR: Irregular event  R: Regular event  C: Continuous</p> <p><i>Reversibility:</i>  R: Reversible  I: Irreversible</p> <p>N/A: Not applicable</p>							

### 29.10.6 Extent of Significance of Cumulative Effects

#### Change in Direct Fish Habitat Wetlands

As discussed in Chapter 16 of the Impact Statement (Assessment of Potential Effects on Vegetation, Riparian and Wetland Environments), given the abundance of wetlands in the LSA and RSA, the relatively small Project-related changes in wetland area are restricted to the PA and are not predicted to threaten the long-term viability and quality of wetlands in the LSA or RSA. The Project will result in a net loss of 115 ha of wetlands supporting fish habitat, which is a small proportion (0.03 %) of the wetlands that will remain within the RSA (413,785 ha). As such, Project-related effects on fish-bearing wetlands are predicted to be of low significance.

Similarly, if all past, present and future physical activities proceed, residual cumulative effects on fish-bearing wetlands are predicted to be of low significance. While ongoing forestry activities may have the most widespread effect on vegetation in the RSA, typically, wetlands are not the primary target for harvesting due to sparse tree cover. Where effects on fish habitat are predicted as a result of reasonably foreseeable future projects (e.g., mines, transmission lines, transportation infrastructure), these will be subject to fish habitat protection and/or offsetting requirements set out by the applicable regulator (e.g., DFO). As such, cumulative effects on fish-bearing wetlands are not predicted to exceed a conservation-based threshold and will not threaten the long-term persistence or viability of wetland function within the RSA.

### **29.10.7 Prediction Confidence**

Prediction confidence is moderate, because there is uncertainty regarding the abundance and distribution of plant and ecological communities of management concern in the RSA and within the footprint of identified future physical activities. Prediction confidence for residual effects is higher for direct effects, where losses in vegetation species or community areas are more easily understood from activities such as vegetation clearing. However, prediction confidence is lower for indirect effects such as edge effects and water table drawdown, and given some species or communities may be unaffected by changes in environmental conditions, while other species may be sensitive to minor changes.

## **29.11 Assessment of Cumulative Effects on Fish and Fish Habitat**

As detailed in Chapter 17 of the Impact Statement (Assessment of Potential Effects on Fish and Fish Habitat), the Project is anticipated to have adverse residual effects on fish habitat and fish health, growth or survival. As such, there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### **29.11.1 Regional Study Area**

As noted in Section 17.1.3.1.3 in Chapter 17 of the Impact Statement (Assessment of Potential Effects on Fish and Fish Habitat), the RSA for Fish and Fish Habitat is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA includes the PA and extends further to include the North Driftwood River watershed downstream to its confluence with the Abitibi River, the Buskegau River watershed downstream to its confluence with the Frederick House River, the Jocko Creek watershed downstream to its confluence with the Mattagami River, and the Mattagami River from Sturgeon Falls Dam downstream to Yellow Falls Dam. The RSA for Fish and Fish Habitat is shown on Figure 29.8.8.

### **29.11.2 Identification of Project Effects with Potential to Interact Cumulatively**

Table 29.14 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.14 Physical Activities with Potential for Cumulative Effects on Fish and Fish Habitat**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects	
	Change in fish habitat	Change in fish health, growth, or survival
<b>Past and Present Physical Activities</b>		
Mining	✓	✓
Aggregate Extraction	✓	✓
Community Development	✓	✓
Water Management	✓	✓
Transportation	✓	✓
Energy	✓	✓
Forestry	✓	✓
Agriculture	✓	✓
Recreation	–	–
Hunting and Fishing	–	✓
<b>Future Physical Activities</b>		
Mining		
North Timmins Gold Project – Bradshaw Mine	✓	✓
Upper Beaver Gold Project	–	–
Detour Lake Gold Mine Expansion	–	–
Fox Mining Complex Expansion Project	–	–
ERO: 019-8122 - Permit to take water renewal	–	–
Other mine-related physical activities (e.g., mineral exploration permits)	✓	✓
Transportation		
Highway 652 Extension to Highway 11	–	–
Northlander Passenger Train Expansion of Service	–	–
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	✓	✓
Power		
Transmission Infrastructure Partnership-1	✓	✓
Wawa to Porcupine Transmission Line	–	–
Notes:		
✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects.		
– = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.		

Potential effects associated with past and present physical activities in the LSA have been captured in the existing conditions for Fish and Fish Habitat (Section 17.2 of Chapter 17 of the Impact Statement [Assessment of Potential Effects on Fish and Fish Habitat]). As such, the contribution of present physical activities, including effects from mineral development (e.g., Kidd Creek Mine), is considered in the assessment of Project residual effects (Section 17.4 of Chapter 17 of the Impact Statement [Assessment of Potential Effects on Fish and Fish Habitat]).

Those future physical activities listed but not checked represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1. Figure 29.8.8 presents the future physical activities within the RSA for Fish and Fish Habitat.

The assessment of the cumulative environmental effects that are likely to result from the Project in combination with other physical activities are discussed in the following sections. Due to the uncertainty of each project's development, mitigation and reclamation, the assessment of cumulative effects is largely qualitative.

### **29.11.3 Cumulative Effects Assessment for Change to Fish Habitat, Fish Health, Growth and Survival**

#### **29.11.3.1 Cumulative Effect Pathways**

Potential cumulative effects on fish habitat, fish health, growth and survival arising from past, present and future physical activities have the same effect pathways as those resulting from the Project, and, therefore, could act cumulatively with residual Project effects. Future physical activities may alter fish habitat through direct alteration of habitat, alteration of stream flows, or alteration of fish passage. Future physical activities may affect fish health, growth, or survival through change in sediment concentrations in water (TSS), change in water quality, change in water temperature, production of underwater noise, impingement or entrainment, death of eggs or fish, introduction of aquatic invasive species or disease, increased fishing pressure, or change in the benthic invertebrate community.

As noted in Chapter 17 of the Impact Statement (Assessment of Potential Effects on Fish and Fish Habitat), Indigenous nations harvest fish species within the Indigenous interests LSA and RSA as country foods, as well as for other traditional or medicinal purposes. Example species include, pickerel (walleye), perch, northern pike/jackfish, trout, whitefish, lingcod, lake trout, speckled trout, sturgeon, minnow and bass. Traditional species of importance also include bait fish, sauger, sea trout, mooneye, sheepshead, goldeye, splake, sucker (white and redhorse), brook trout, burbot, and catfish (channel and brown bullhead).

There is no identified critical habitat for freshwater fish species in the LSA or RSA (DFO 2024), and, as such, none are affected by the Project. Cumulative effects on aquatic critical habitat are therefore not predicted.

The only sensitive habitat area identified in the PA, LSA or RSA is the provincially designated fish sanctuary located in a section of the Mattagami River from the Lower Sturgeon hydro dam and

downstream to the northern border of Mahaffy Township (MNR 2024). This designation is presumably to protect spawning habitat for lake sturgeon and walleye in this area.

The Southern Hudson Bay James Bay population of lake sturgeon, which includes populations known to inhabit the Mattagami River, Abitibi River, and Frederick House River within the RSA, are listed as Special Concern on Schedule 1 of SARA. While they are unlikely to occur in the LSA, lake sturgeon is the only aquatic species at risk that may occur in the RSA. However, residual adverse effects on lake sturgeon are not anticipated as a result of the Project, due to project changes that avoid discharge to the Mattagami River, and surface water quality is not expected to impact fish health on the Frederick House River or Abitibi River. Therefore, cumulative effects with the Project are not anticipated.

### **29.11.3.2 Mitigation for Cumulative Effects**

Project mitigation measures presented in Section 17.4 of Chapter 17 of the Impact Statement (Assessment of Potential Effects on Fish and Fish Habitat) for fish habitat and fish health, growth and survival are predicted to reduce or mitigate the Project's contribution to the cumulative effects on fish and fish habitat. Project mitigation measures presented in Section 17.4.2.2 of Chapter 17 of the Impact Statement (Assessment of Potential Effects on Fish and Fish Habitat) such as reducing the extent of disturbance, maintaining riparian buffers around fish-bearing watercourses and waterbodies, developing and implementing a Site-Wide Water Management Plan (Appendix J of the Impact Statement) to manage water flows within and across the PA, and implementing a Fish Habitat Offsetting Plan will be used to address Project effects on fish habitat. Key Project mitigation measures presented in Section 17.4.3.2 of Chapter 17 of the Impact Statement (Assessment of Potential Effects on Fish and Fish Habitat) include:

- reducing the extent of disturbance
- conducting any in-water construction activities outside of the restricted activity periods defined by DFO
- installing and maintaining appropriate temporary erosion and sediment control measures during construction in accordance with an Erosion and Sediment Control Plan implementing a no-fishing policy in watercourses and waterbodies within or adjacent to the PA by all Project personnel while on-shift
- developing and implementing a Site-Wide Water Management Plan (Appendix J of the Impact Statement) to manage water flows within and across the PA
- implementing other measures outlined in the Environmental Protection Plan, Erosion and Sediment Control Plan, Spill Prevention and Contingency Plan and other project-specific management and contingency plans

No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on fish and fish habitat.

Future physical activities will require provincial or federal approval and permitting and/or an environmental impact assessment. These processes require future proponents to identify and assess potential effects to fish and fish habitat, and to identify and implement appropriate mitigation measures. It is expected that

proponents of present and future projects will implement mitigation measures identified through permitting and approval processes, as appropriate, to reduce their contributions to cumulative effects on surface water quality and quantity. These include adherence to federal requirements and guidelines such as the DFO's codes of practice and DFO Measures to Protect Fish and Fish Habitat (DFO 2023).

### **29.11.3.3 Residual Cumulative Effects**

Existing environmental conditions reflect cumulative effects on the environment from past and present physical activities. Past and present physical activities that have been or are being carried out have influenced the existing conditions for fish and fish habitat in the RSA. The majority of aquatic habitats in the Jocko Creek, North Driftwood River and West Buskegau River watersheds are relatively undisturbed or greenfield in nature. The moderate anthropogenic disturbances that do exist are primarily related to recreational vehicle and logging access roads, highways, mines and transmission lines. As described in Chapters 25 to 28, Indigenous nations indicated that the quality and quantity of harvested fish have diminished and that the lands and resources have been impacted by industrial development in its Traditional Territory.

The fish communities in the North Driftwood River, West Buskegau River, and Mattagami River watersheds are represented by a mix of cool and cold-water fish species typical of northeastern Ontario. They include a variety of small-bodied (e.g., minnows) and large-bodied (e.g., northern pike) species. A total of 28 fish species were identified during baseline surveys. Common large-bodied fish species in streams include northern pike, white sucker, yellow perch, and burbot. Brook stickleback, fathead minnow, finescale dace, northern pearl dace, northern redbelly dace, and common shiner were the most common small-bodied fish species in the lakes and ponds. The benthic invertebrate communities in the North Driftwood River and West Buskegau River watersheds are typical of those observed in northeastern Ontario. Fish tissue data shows naturally elevated existing concentrations of total mercury and methylmercury in northern pike and methylmercury in small-bodied fish. Elevated mercury concentrations in large-bodied fish have already been observed elsewhere in northern Ontario (Pirkle et al. 2016; Fimreite and Reynolds 1973).

As discussed in Chapter 17 of the Impact Statement (Assessment of Potential Effects on Fish and Fish Habitat), the Project will result in effects on fish and fish habitat. Changes in fish habitat in the LSA will be moderate in magnitude following implementation of offsetting measures required to counterbalance the unavoidable habitat alterations or losses within the PA. Changes to fish habitat within the PA will be irreversible while change to fish habitat due to changes in stream flow will be reversible. Project-related changes in fish health, growth and survival are expected to be driven by the potential effects of changes in water quality due to effluent discharge and changes to the aquatic invertebrate community associated with changes to habitat, water quality and stream flow. These residual project effects will contribute to cumulative effects on fish and fish habitat on a regional basis.

Future physical activities may contribute to further changes in fish and fish habitat in the RSA. Some physical activities may result in temporary disturbance to fish habitat following activity completion and reclamation (e.g., cutblocks, temporary workspaces), while some future physical activities (e.g., mining, roads) may result in long-term changes.

It is assumed that the North Timmins Gold Project – Bradshaw Mine will have similar types of effects (albeit of a lesser magnitude) on fish and fish habitat to those predicted for the Project. The Bradshaw mine is proposed approximately 10 km southeast of the proposed Project. While the timing of proposed development of the North Timmins Gold Project – Bradshaw Mine is unknown, it is assumed that it may affect water flow and could affect water quality through similar processes. Fisheries and Oceans Canada determined that a Fisheries Act authorization is not required given that serious harm to fish habitat can be avoided by following standard measures (Stantec, 2015). These may lead to effects on fish health, growth, and survival. The degree to which cumulative effects may be had on the same watercourses and waterbodies that may be affected by the Project depend on the mine's water management plans and discharge points. The mine proponent would be expected to implement mitigation measures to protect water quality and fish health, similar to what has been proposed for the Project. Further, there are no new point source discharge locations downstream of the Project within the RSA that may affect water quality and corresponding fish health.

Mineral exploration activities generally involve short-term, small-scale disturbances and typically use existing access roads and trails. As such, their contributions to cumulative effects on fish and fish habitat at the regional scale tend to be limited both temporally and spatially.

For the proposed Transmission Infrastructure Partnership-1 project, it is possible for construction of that project to affect fish and fish habitat through vegetation removal, or grading and ground disturbance, resulting in increased risk of erosion and sediment, which could flow into fish-bearing wetlands, drainages, or waterbodies on or adjacent to the transmission project footprint. While transmission lines typically span watercourses, waterbodies, and wetlands (where possible), installation or removal of temporary vehicle watercourse crossings required for construction could result in sedimentation of watercourses. It is assumed that the project proponent will implement mitigation measures related to erosion and sediment control during construction and applicable provincial and federal permitting requirements (e.g., DFO's Codes of Practice) will be adhere to.

Many of the past and present physical activities identified in the PIL are not expected to contribute to fish habitat losses. For example, traditional and general land and resources uses (e.g., hunting, fishing, and recreation activities) will not affect fish habitat and, therefore, do not warrant further consideration from a cumulative effects perspective.

Ongoing forestry activities have the potential to affect fish and fish habitat, including water quality. Forest Management Plans contain procedures and measures to sustainably manage forests within the applicable forest management units (Abitibi River and Romeo Malette Forests), including reforestation and other practices to ensure long-term yield while factoring in other resources (e.g., fish and fish habitat, water quality and quantity). It is assumed that forestry operators will follow federal and provincial requirements to mitigate effects on fish and fish habitat at watercourse crossings and follow operating conditions within riparian areas and water source areas where forestry operations are approved. Adverse residual effects from forestry activities would likely be related to increases in sediments and risk to fish during installation of stream crossings and would be short-term in duration and reversible. Removal of riparian vegetation, where permitted, may also affect fish habitat in the longer term (until riparian vegetation regrows).

Residual cumulative effects on fish and fish habitat arising from past, present and future physical activities are predicted to be low to moderate in magnitude. Residual cumulative effects will occur as multiple irregular events as future physical activities proceed. Residual effects will be short-term for some developments (including forestry, transmission line construction) and medium-term for others (new mine development) and are predicted to be reversible or irreversible depending on the nature of the development. The Project will therefore have a relatively low contribution to cumulative effects on fish and fish habitat at the RSA scale.

#### **29.11.4 Cumulative Effects Without the Project**

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur in the future whether the Project occurs or not. It can also be assumed that present physical activities such as forestry and infrastructure improvements will also proceed, regardless of Project status. Residual cumulative effects from past and present physical activities include changes in the quality, quantity, and distribution of resources harvested and consumed by Indigenous nations. Traditional land use, resource use activities, and recreational activities are expected to continue at existing levels whether or not the Project occurs. These activities are not expected to affect fish habitat or fish health, growth, and survival in new ways if the Project did not occur. Effects from the Project will be offset through various compensation measures with the goal of achieving a net benefit to fish and fish habitat. Without the Project, future cumulative effects to fish and fish habitat are predicted to be low since future physical activities independent of the project are not predicted to result in substantive changes to fish or fish habitat.

### 29.11.5 Summary of Cumulative Effects on Fish and Fish Habitat

Table 29.15 summarizes residual cumulative effects on fish and fish habitat.

**Table 29.15 Residual Cumulative Effects on Fish and Fish Habitat**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on Fish Habitat</b>							
With the Project	A	L-M	RSA	NS	ST-MT	IR	R/I
Without the Project	A	L-M	RSA	NS	ST-MT	IR	R/I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	The Project will have a relatively low contribution to residual cumulative effects on fish habitat. Although the Project will result in permanent change in fish habitat where it is overprinted, compensation through offsetting will counterbalance unavoidable habitat alterations or losses within the PA.						
<b>Residual Cumulative Effect on Fish Health, Growth, or Survival</b>							
With the Project	A	L	RSA	NS	ST-MT	IR	R/I
Without the Project	A	L	RSA	NS	ST-MT	IR	R/I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	The Project will have a relatively low contribution to residual cumulative effects on fish health, growth or survival. Effluent water discharged from the Project will comply with regulatory requirement limits/guidelines at the discharge points and no watershed management targets will be contravened. Changes in water quality, which may affect fish health, growth and survival, are expected to be contained within the boundaries of the LSA and will be dissipated at the edge of the mixing zone.						
<p><b>KEY</b></p> <p>See Table 17.3 in Chapter 17 of the Impact Statement (Assessment of Potential Effects on Fish and Fish Habitat) for detailed definitions</p> <p><i>Direction:</i>                      P: Positive                      A: Adverse                      N: Neutral</p> <p><i>Magnitude:</i>                      N: Negligible                      L: Low                      M: Moderate                      H: High</p> <p><i>Geographic Extent:</i>                      PA: Project Area                      LSA: Local Study Area                      RSA: Regional Study Area</p> <p><i>Timing:</i>                      NS: No sensitivity                      MS: Moderate sensitivity                      HS: High sensitivity</p> <p><i>Duration:</i>                      ST: Short-term                      MT: Medium-term                      LT: Long-term</p> <p><i>Frequency:</i>                      S: Single event                      IR: Irregular event                      R: Regular event                      C: Continuous</p> <p><i>Reversibility:</i>                      R: Reversible                      I: Irreversible</p> <p>N/A: Not applicable</p>							

## 29.11.6 Extent of Significance of Cumulative Effects

### Change in Fish habitat and in Fish Health, Growth, or Survival

As discussed in Chapter 17 of the Impact Statement (Assessment of Potential Effects on Fish and Fish Habitat), the Project is expected to result in a moderately significant effect on fish health, growth and survival and moderately significant effect on fish habitat because: 1) the offsetting measures that Canada Nickel will implement will counterbalance these unavoidable habitat effects, including offsets in the North Driftwood River Diversion Channel that will benefit fish populations in the North Driftwood River watershed; and 2) none of the potentially affected habitat is used by lake sturgeon, the only aquatic species at risk near the Project. There is a suite of technically feasible and biologically relevant fish habitat offsets that will compensate for project-related residual effects to fish and fish habitat, including fish populations valued by Indigenous nations, recreational anglers, and other stakeholders.

Similarly, the residual cumulative effects on fish and fish habitat are predicted to be of moderate significance. If all past, present and future foreseeable projects proceed, they may result in alteration of loss of fish habitat or a change in fish health, growth, or survival that is likely to cause a measurable reduction in the productivity, abundance, community composition, or population structure of focal fish populations within the RSA but does not threaten the long-term persistence or viability of an aquatic species at risk. Where effects on fish habitat are predicted as a result of reasonably foreseeable future projects (e.g., mines, transmission lines, transportation infrastructure), these will be subject to fish habitat protection and/or offsetting requirements set out by the applicable regulator (e.g., DFO).

### 29.11.7 Prediction Confidence

Prediction confidence is moderate, because there is uncertainty regarding the timing and extent of reasonably foreseeable future activities and what mitigation measures may be implemented by them to address water quality, particularly as this relates to the future proposed North Timmins Gold Project – Bradshaw Mine.

## 29.12 Assessment of Cumulative Effects on Birds and Bird Habitat

As detailed in Chapter 18 of the Impact Statement (Assessment of Potential Effects on Birds and Bird Habitat), the Project is anticipated to have an adverse residual effect on bird habitat and mortality risk. As such, there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### 29.12.1 Regional Study Area

As noted in Section 18.1.1.1 in Chapter 18 of the Impact Statement (Assessment of Potential Effects on Birds and Bird Habitat), the RSA for Birds and Bird Habitat is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA for birds and bird habitat encompasses the PA and the LSA and was defined primarily based on major road

networks, which fragment habitat and may impede movement for some bird species. The RSA for Birds and Bird Habitat is shown on Figure 29.8.9.

### 29.12.2 Identification of Project Effects with Potential to Interact Cumulatively

Table 29.16 presents the project and physical activity inclusion list, which identifies other reasonably foreseeable physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.16 Physical Activities with Potential for Cumulative Effects on Birds and Bird Habitat**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects	
	Change in habitat	Change in mortality risk
<b>Past and Present Physical Activities</b>		
Mining	✓	✓
Aggregate Extraction	✓	✓
Community Development	✓	✓
Water Management	✓	–
Transportation	✓	✓
Power	✓	–
Energy	✓	–
Forestry	✓	✓
Agriculture	✓	✓
Recreation	✓	✓
Hunting and Fishing	✓	✓
<b>Future Physical Activities</b>		
Mining		
North Timmins Gold Project – Bradshaw Mine	✓	✓
Upper Beaver Gold Project	–	–
Detour Lake Gold Mine Expansion	–	–
Fox Mining Complex Expansion Project	–	–
ERO: 019-8122 - Permit to take water renewal	–	–
Other mine-related physical activities (e.g., mineral exploration permits)	✓	✓
Transportation		
Highway 652 Extension to Highway 11	✓	✓
Northlander Passenger Train Expansion of Service	✓	✓

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects	
	Change in habitat	Change in mortality risk
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	✓	✓
Power		
Transmission Infrastructure Partnership-1	✓	✓
Wawa to Porcupine Transmission Line	–	–
Notes: ✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects. – = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.		

Potential effects associated with past and present physical activities in the LSA have been identified in the existing conditions for Birds and Bird Habitat (Section 18.2 in Chapter 18 [Assessment of Potential Effects on Birds and Bird Habitat]). As such, the contribution of present physical activities, including effects from mineral development (e.g., Kidd Creek Mine), is considered in the assessment of Project residual effects (Section 18.4 in Chapter 18 [Assessment of Potential Effects on Birds and Bird Habitat]).

Potential effects identified in Table 29.16 as not likely to interact cumulatively with residual effects of other physical activities (no check mark) are not discussed further. Those future physical activities listed but not checked off represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1. Figure 29.8.9 presents the future physical activities within the RSA for Birds and Bird Habitat.

The assessment of the cumulative environmental effects that are likely to result from the Project in combination with other physical activities are discussed in the following sections. Due to the uncertainty of the development, mitigation and reclamation of each physical activity, the assessment of cumulative effects is largely qualitative.

### 29.12.3 Cumulative Effects Assessment for Change in Habitat and Mortality Risk

#### 29.12.3.1 Cumulative Effect Pathways

Potential cumulative effects arising from past, present and future physical activities have similar pathways as those arising from the Project (Section 18.4 in Chapter 18 of the Impact Statement [Assessment of Potential Effects on Birds and Bird Habitat]) and have the potential to result in a cumulative increase in bird habitat loss or alteration during the construction, operations, and decommissioning and closure phases of the Project. Most of the direct changes to bird habitat (i.e., habitat loss and/or alteration) will occur during Project construction, through vegetation removal, stripping and grading during site preparation, dewatering, and indirect effects through sensory disturbance and edge effects generated during Project construction, operations, and decommissioning and closure of the Project.

The removal of additional bird habitat is expected to occur as a result of other future physical activities in the RSA through land clearing and could result in temporary or permanent loss or alteration of bird habitat. Future physical activities in the RSA may also contribute additive mortality risk primarily through increased traffic levels and site preparation activities. It is possible that residual cumulative effects resulting from hunting and recreation could contribute to a minor increase in bird mortality risk in the RSA beyond existing conditions.

### **29.12.3.2 Mitigation for Cumulative Effects**

Mitigation measures presented in Section 18.4 in Chapter 18 of the Impact Statement (Assessment of Potential Effects on Birds and Bird Habitat) for birds and bird habitat are predicted to reduce and mitigate the Project's contribution to the cumulative loss of bird habitat. Project mitigation measures presented in Sections 18.4.2.2 and 18.4.3.2 in Chapter 18 of the Impact Statement (Assessment of Potential Effects on Birds and Bird Habitat), such as reducing vegetation clearing and completing vegetation clearing and site preparation activities outside the core breeding period for migratory birds (Zone C5: April 30 to August 20), will reduce potential cumulative effects. No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on bird habitat.

Future physical activities will require provincial or federal approval and permitting and/or an environmental impact assessment. These processes require the future proponents to identify and assess potential effects on bird habitat, and to identify and implement appropriate mitigation measures. It is expected that present and future physical activities will implement mitigation measures identified through permitting and approval processes, as appropriate, to reduce their contributions to cumulative effects on birds and bird habitat.

### **29.12.3.3 Residual Cumulative Effects**

Existing environmental conditions reflect cumulative effects on the environment from past and present physical activities. Past and present physical activities that have been or are being carried out have influenced the existing conditions for bird habitat in the RSA (Section 18.2 in Chapter 18 of the Impact Statement [Assessment of Potential Effects on Birds and Bird Habitat]). The current landscape where the Project is planned has been modified by human activities such as forestry, mining, exploration, aggregate extraction, energy production and transmission, road construction, and urban development. The Project falls within Bird Conservation Region 8 (BCR 8) – the Boreal Softwood Shield, which is dominated by coniferous forest interspersed with numerous lakes, rivers and wetlands. Tree species diversity in BCR 8 is low, and bird diversity is also lower compared to more southerly BCRs in Ontario (EC 2014).

The RSA supports a variety of bird groups including forest birds, waterfowl, waterbirds, shorebirds, raptors, upland gamebirds, and other landbirds. Forest landbirds are the most common and abundant species group present within the RSA. The amount of habitat remaining in the RSA following construction is shown in Table 18.15 in Chapter 18 of the Impact Statement (Assessment of Potential Effects on Birds and Bird Habitat). The PA represents 2.7% of the RSA. Loss of habitat during construction will primarily impact habitat for breeding migratory birds (e.g., songbirds, waterfowl) and habitat for birds that are year-round residents (e.g., woodpeckers, owls, grouse).

Land clearing and development within the PA will result in the direct loss of 11,785 ha of habitat that may be used by migratory birds, including 2,837 ha of upland forests, 8,667 ha of wetland, and 255 ha of anthropogenic and poorly vegetated habitats. There will be an anticipated loss of 7,605 ha (a 19% decrease) of habitat for forest birds and raptors (forests and swamps), 752 ha (a 58% decrease) of marsh bird habitat, and 26 ha (a 9% decrease) of waterbird habitat within the LSA. Direct habitat loss is restricted to the PA, whereas indirect habitat loss due to edge effects and sensory disturbance (i.e., noise) will extend to the LSA, which is conservatively estimated as 3,371 ha. In a regional context, there will be a loss of 10,085 ha of Canada Warbler forested habitat within the PA during construction, which represents 3% of the available Canada Warbler habitat within the RSA. For all species guilds and species, the suitable habitat remaining within the RSA ranges from 94% to 99%, or up to 6% of habitat for any one species guild (see Table 29.17).

**Table 29.17 Estimated Bird Habitat Remaining in the Regional Study Area**

Bird Species Group	Habitat remaining in RSA after construction	
	(ha)	(%)
Forest Birds	327,686	97
Raptors	412,491	97
Upland Gamebirds	206,929	98
Marsh Birds	4,500	94
Shorebirds	261,663	97
Waterbirds	185,814	96
Waterfowl	206,708	96
Canada Warbler	308,372	97
Lesser Yellowlegs	43,686	96
Short-eared Owl	46,087	97
Common Nighthawk	200,751	99
Evening Grosbeak	134,686	99
Olive-sided Flycatcher	266,534	97
Rusty Blackbird	218,448	96
Yellow Rail	53,888	97

\* This table is a copy of Table 18.15 provided in Section 18.4.2, provided for reference here.

It should be noted that the assessment used a habitat-based approach, which focused on identifying habitat types affected by the Project relative to the availability of those habitats in the RSA. This approach assumed that bird species are present if the habitat is available. Relatively broad habitat classes were used to categorize the vegetation in the RSA, which is likely an overestimate of both the amount of habitat that is being lost and the amount of habitat available for the bird species groups.

Existing habitat fragmentation is present in the PA, comprising of Highway 655 (two-lane highway), a 500 kV transmission line and several active and inactive logging roads, representing approximately 1,223 ha within the PA. Habitat loss as a result of the Project will be incremental, giving wildlife time to adapt to

activities occurring within the PA and relocate to the LSA and RSA. Progressive reclamation is expected to occur during the operations phase which is predicted to have a positive change in habitat, allowing birds the opportunity to return to the area.

Future physical activities will contribute to further loss or alteration of wildlife habitat in the RSA, either temporarily or permanently, depending on the nature of the future physical activities.

It is assumed that the North Timmins Gold Project – Bradshaw Mine will have similar types of effects (albeit of a lesser magnitude) on birds and bird habitat to those predicted for the Project. The Bradshaw mine is proposed approximately 10 km southeast of the proposed Project. While the timing of proposed development of the North Timmins Gold Project – Bradshaw Mine is unknown, no further disturbance of bird habitat is expected, although it is assumed that it may have similar indirect effects on birds due to edge effects.

The contribution of mineral exploration activities to cumulative effects on birds and bird habitat at the regional scale tend to be limited both temporally and spatially due to generally being short-term, small-scale disturbances and typically using existing access roads and trails.

Within the RSA, the physical activities associated with the expansion of the Northlander Passenger Train service will be limited to minor rail upgrades and increased rail traffic. Similarly, other planned transportation upgrading projects in the RSA, such as road resurfacing, bridge, and culvert replacement, will not likely result in large changes to bird habitat, as physical activities will be largely limited to the existing disturbed areas. Some potential for incremental habitat fragmentation and sensory disturbance is possible.

The development of new transmission lines will result in direct disturbance to bird habitat through clearing for the transmission line right-of-way and associated access and temporary workspace. For the proposed Transmission Infrastructure Partnership-1 transmission line, it is assumed that habitats common in the RSA will be affected. Direct soil disturbance (and associated habitat clearing) is typically limited to structure locations or where grading, to accommodate safe access, is required. Following construction, it is expected that native vegetation cover (i.e., grasses, forbs, shrubs) will return in areas that have been cleared. Nevertheless, tall vegetation (i.e., trees) will be periodically maintained to remove trees that might endanger safe operation of the transmission line, potentially affecting bird habitat.

Ongoing forestry activities have had the greatest extent of disturbance to bird habitats and will likely continue to do so. As shown in Figure 29.7, forestry activities are widespread in the region. Forestry activities within the Bird RSA are managed through the Abitibi River, Gordon Cosens, Romeo Malette, and Timiskaming Forest Management Units, each with individual forestry management plans and supporting data. Publicly available harvest data was used to identify past harvesting and predict future harvesting, noting that the location and timing of past and planned harvesting within these forest management units is not publicly available in a consistent basis.

Approximately 44,143 ha (10.1%) of the Bird RSA is planned to be modified in the future from proposed harvesting activities. In consideration of the additional 11,785 ha of land to be disturbed as a result of this Project, noting that none of the areas within the PA are currently proposed for future harvesting, a total of 55,928 ha (12.8%) within the Bird RSA will be disturbed.

Not all forest harvesting outlined in the available Forest Management Plans will occur at once or at all; rather, the Forest Management Plans lay out planned harvest areas within an anticipated timeframe to provide a sustainable yield, factoring in social and ecological values. A conservative approach was used, and thus all potential harvest blocks were considered in this assessment; it is likely that it is an over-estimate of future cutblock area. It is also likely that previous cutblocks are in varying states of regeneration and may be providing bird habitat functions again (e.g., shelter, foraging areas). Post-harvesting reforestation will occur to reverse effects, gradually restoring bird habitat.

Ongoing agricultural activities also have the potential to affect birds and bird habitats and will likely continue to do so. The conversion of natural habitats into agricultural land can lead to the loss and fragmentation of bird habitats, which can affect nesting sites and food availability. Agricultural practices that alter water regimes, such as irrigation and drainage, can impact wetland habitats that many bird species rely on. The use of pesticides, if not managed properly, can contaminate food sources, potentially affecting bird reproduction and survival rates.

Residual cumulative effects on birds and bird habitat arising from past, present and future physical activities are predicted to be moderate in magnitude. Although most anthropogenic disturbance within the RSA has been limited to urban areas and the linear disturbances that connect them, forestry has been and continues to be widespread in the region. Residual cumulative effects will occur as multiple irregular events as future physical activities proceed. Residual effects will be medium term for some developments (including forestry) and long-term for others (including vegetation control on transmission lines, new mine development). Effects may be reversible or irreversible depending on the type of physical activity and whether it will be a permanent feature on the landscape.

The Project will therefore have a relatively low contribution to the cumulative temporary effects on bird and bird habitat at the RSA scale. Project construction may disturb up to 6% of suitable bird habitat currently present in the RSA (See Table 18.15). In consideration of other future physical activities, these disturbances are not predicted to substantially change the estimated bird habitat remaining in the RSA from what is presented in Table 29.17. Progressive reclamation will reverse a portion of the habitat loss beginning in operations. When mining activities cease following decommissioning and closure, habitat within the LSA that was lost due to disturbance is expected to return to baseline conditions.

#### **29.12.4 Cumulative Effects Without the Project**

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur in the future whether the Project occurs or not. Past and future physical activities (e.g., mineral exploration, infrastructure development, forestry) are expected to have small contributions to existing levels of bird habitat loss/alteration and mortality risk in the RSA.

Residual cumulative effects from past and present physical activities include changes in the quality, quantity, and distribution of resources harvested and consumed by Indigenous nations. Trails created during mineral exploration activities will alter habitat by removing trees and provide temporary new access for predators and hunters; however, vegetation re-growth is expected once trails are no longer used.

Traditional land and resource use along with recreational hunting are activities that will continue to influence bird mortality risk in the RSA without the Project. While the number of resource users or recreational hunters is not anticipated to change measurably in the foreseeable future, the locations in the RSA where resource use occurs may shift in response to exploration activities and changes in access.

Further, as shown on Figure 29.7, areas of the RSA are subject to future forestry activities. Approximately 44,143 ha (10.1%) of the Bird RSA is planned to be modified in the future from proposed harvesting activities, relative to 55,928 ha (12.8%) with the Project. As such, without the Project, future residual cumulative effects on birds and bird habitat are therefore predicted to be similar.

## 29.12.5 Summary of Cumulative Effects on Birds and Bird Habitat

Table 29.18 summarizes cumulative effects on birds and bird habitat.

**Table 29.18 Residual Cumulative Effects on Birds and Bird Habitat**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on habitat</b>							
With the Project	A	M	RSA	NS-HS	MT-LT	IR	R-I
Without the Project	A	M	RSA	NS-HS	MT-LT	IR	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Project construction may disturb up to 6% of suitable bird habitat currently present in the RSA. Progressive reclamation is expected to occur during the operations phase which is predicted to have a positive change in habitat, allowing birds the opportunity to return to the area. The Project will have a relatively low contribution to residual cumulative effects on habitat.						
<b>Residual Cumulative Effect on mortality risk</b>							
With the Project	A	M	RSA	NS-HS	MT-LT	IR	R-I
Without the Project	A	M	RSA	NS-HS	MT-LT	IR	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	The Project may result in bird mortalities in the PA through encounters with equipment or vehicle collisions, interactions with infrastructure, and destruction of wildlife residences. The Project will have a relatively low contribution to residual cumulative effects on mortality risk.						
<p><b>KEY</b></p> <p>See Table 18.3 in Chapter 18 of the Impact Statement (Assessment of Potential Effects on Birds and Bird Habitat) for detailed definitions</p> <p><i>Direction:</i>                      P: Positive                      A: Adverse                      N: Neutral</p> <p><i>Magnitude:</i>                      N: Negligible                      L: Low                      M: Moderate                      H: High</p> <p><i>Geographic Extent:</i>                      PA: Project Area                      LSA: Local Study Area                      RSA: Regional Study Area</p> <p><i>Timing:</i>                      NS: No sensitivity                      MS: Moderate sensitivity                      HS: High sensitivity</p> <p><i>Duration:</i>                      ST: Short-term                      MT: Medium-term                      LT: Long-term</p> <p><i>Frequency:</i>                      S: Single event                      IR: Irregular event                      R: Regular event                      C: Continuous</p> <p><i>Reversibility:</i>                      R: Reversible                      I: Irreversible</p> <p>N/A: Not applicable</p>							

### **29.12.6 Extent of Significance of Cumulative Effects on Birds and Bird Habitat**

As discussed in Chapter 18 of the Impact Statement (Assessment of Potential Effects on Birds and Bird Habitat), with the mitigation measures described above, Project residual effects to migratory bird habitat are predicted to be of moderate extent of significance. In regard to Species at Risk (SAR), with mitigation measures, Project residual effects to the three remaining SAR considered in this assessment (Bank Swallow, Barn Swallow and Eastern Whip-poor-will habitat) are predicted to be of negligible/low extent of significance. In addition, with the mitigation measures, Project residual effects to a change in mortality for migratory birds, including SAR that are protected on Schedule 1 of SARA, are predicted to be of negligible/low extent of significance.

Similarly, the residual cumulative effects on migratory bird habitat are predicted to be of moderate significance. If all past, present and future foreseeable projects proceed, they may result in alteration or loss of bird habitat within the RSA but not expected to threaten the long-term persistence or viability of migratory birds within the RSA. As for SAR and mortality risk, negligible/low extent of significance is predicted at the regional scale.

### **29.12.7 Prediction Confidence**

Prediction confidence is moderate, because there is uncertainty regarding the timing, location and extent of future physical activities and what mitigation measures may be implemented by them to address potential effects on birds and bird habitat.

## **29.13 Assessment of Cumulative Effects on Wildlife and Wildlife Habitat**

As detailed in Chapter 19 of the Impact Statement (Assessment of Potential Effects on Wildlife and Wildlife Habitat), the Project is anticipated to have adverse residual effects on habitat, movement, mortality risk, and wildlife health. As such, there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### **29.13.1 Regional Study Area**

As noted in Section 19.1.4.1 of Chapter 19 of the Impact Statement (Assessment of Potential Effects on Wildlife and Wildlife Habitat), the RSA for Wildlife and Wildlife Habitat is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA for Wildlife and Wildlife Habitat (excluding boreal caribou) encompasses the PA and the LSA and was primarily based on major road networks that would present substantive deterrents or impediments to movement as well as species ranges. The RSA for Wildlife and Wildlife Habitat is shown on Figure 29.8.9. The RSA for boreal caribou is defined as the entire Kesagami Range and is shown on Figure 29.4.1.

### 29.13.2 Identification of Project Effects with Potential to Interact Cumulatively

Table 29.19 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

For further information about future physical activities, see Section 29.1.1.

**Table 29.19 Physical Activities with Potential for Cumulative Effects on Wildlife and Wildlife Habitat**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects			
	Change in habitat	Change in movement	Change in mortality risk	Change in wildlife health
<b>Past and Present Physical Activities</b>				
Mining	✓	✓	✓	✓
Aggregate Extraction	✓	✓	✓	✓
Community Development	✓	✓	✓	✓
Water Management	✓	✓	–	–
Transportation	✓	✓	✓	✓
Power	✓	✓	–	–
Energy	✓	–	–	–
Forestry	✓	✓	✓	–
Agriculture	✓	✓	✓	✓
Recreation	✓	✓	✓	–
Hunting and Fishing	✓	✓	✓	–
<b>Future Physical Activities</b>				
Mining				
North Timmins Gold Project – Bradshaw Mine	✓	✓	✓	✓
Upper Beaver Gold Project	–	–	–	–
Detour Lake Gold Mine Expansion	✓	✓	✓	✓
Fox Mining Complex Expansion Project	–	–	–	–
ERO: 019-8122 - Permit to take water renewal	–	–	–	–
Other mine-related physical activities (e.g., mineral exploration permits)	✓	✓	✓	–
Transportation				
Highway 652 Extension to Highway 11	✓	✓	✓	–

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects			
	Change in habitat	Change in movement	Change in mortality risk	Change in wildlife health
Northlander Passenger Train Expansion of Service	✓	✓	✓	–
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	✓	✓	✓	✓
Power				
Transmission Infrastructure Partnership-1	✓	✓	✓	–
Wawa to Porcupine Transmission Line	–	–	–	–
Notes: ✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects. – = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.				

Potential effects associated with past and present physical activities in the LSA have been identified in the existing conditions for Wildlife and Wildlife Habitat (Section 19.2 in Chapter 19 [Assessment of Potential Effects on Wildlife and Wildlife Habitat]). As such, the contribution of present physical activities, including effects from mineral development (e.g., Kidd Creek Mine), is considered in the assessment of Project residual effects (Section 19.4 in Chapter 19 [Assessment of Potential Effects on Wildlife and Wildlife Habitat]).

Potential effects identified in Table 29.19 as not likely to interact cumulatively with residual effects of other physical activities (no check mark) are not discussed further. Those future physical activities listed but not checked off represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1.

The assessment of the cumulative environmental effects that are likely to result from the Project in combination with other physical activities are discussed in the following sections. Due to the uncertainty of the development, mitigation and reclamation of each physical activity, the assessment of cumulative effects is largely qualitative.

### 29.13.3 Cumulative Effects Assessment for Change in Habitat, Movement, Mortality Risk, and Wildlife Health

#### 29.13.3.1 Cumulative Effect Pathways

Potential cumulative effects arising from past, present and future physical activities have similar pathways as those arising from the Project (Section 19.4 in Chapter 19 of the Impact Statement [Assessment of Potential Effects on Wildlife and Wildlife Habitat]) and have the potential to result in a cumulative increase in wildlife (including SOCC and SAR) habitat loss or alteration and wildlife mortality risk during the construction, operations, and decommissioning and closure phases of the Project. These pathways are

the direct loss or alteration of wildlife habitat through vegetation clearing and dewatering activities, and indirect effects through sensory disturbance and edge effects generated during Project construction, operations, and decommissioning and closure of the Project. In addition, Project infrastructure will include physical barriers or other deterrents that can restrict and alter wildlife movement during all Project phases. Physical barriers include construction of temporary and permanent fencing and mine infrastructure (e.g., Open Pit, Tailings Management Facility, buildings, processing plants and storage facilities). Water diversions, crossings and linear disturbances such as roads, rail spur, power and distribution lines, can also act as deterrents and impede wildlife movement.

The removal of additional wildlife habitat is expected to occur as a result of other future physical activities in the RSA through land clearing and could result in temporary or permanent loss or alteration of wildlife habitat. Future physical activities in the RSA may also contribute to additive mortality risk primarily through increased traffic levels and site preparation activities. It is possible that residual cumulative effects resulting from hunting and recreation could contribute to a minor increase in wildlife mortality risk in the RSA beyond existing conditions.

Physical activities associated with construction, operations, and/or decommissioning and closure of the Project could result in changes to wildlife health due to increased risk of exposure of wildlife to contaminants. This includes exposure to emissions, discharge of waste, Project-related PoPCs in air or water, accidental spills, among others. Exposure pathways with potential to affect wildlife health include the ingestion of soil, sediment, food, or water, and through direct contact with soil, sediments, or water (Appendix C.7 of the Impact Statement [Human Health and Ecological Risk Assessment]).

### **29.13.3.2 Mitigation for Cumulative Effects**

Mitigation measures presented in Section 19.4 in Chapter 19 of the Impact Statement (Assessment of Potential Effects on Wildlife and Wildlife Habitat) for wildlife and wildlife habitat would also reduce and mitigate the Project's contribution to the cumulative loss of wildlife habitat. Project mitigation measures presented in Sections 19.4.2.2 and 19.4.3.2 in Chapter 19 of the Impact Statement (Assessment of Potential Effects on Wildlife and Wildlife Habitat) such as reducing vegetation clearing and disturbance and using sediment fencing and/or other appropriate measures (i.e., through an Erosion and Sediment Control Plan) to direct wildlife away from construction activities, mining activities and infrastructure, and towards essential habitat outside of the PA will reduce potential cumulative effects. Site restoration, including the creation of habitats suitable for various species (including caribou), with restore the site to a naturalized condition. For caribou, the need for other measures (e.g., compensation requirements, timing windows, and setbacks) will also be identified through the Overall Benefit Permit under the Endangered Species Act. No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on wildlife habitat.

Future physical activities will require provincial or federal approval and permitting and/or an environmental impact assessment. These processes require the future proponents to identify and assess potential effects on wildlife habitat, and to identify and implement appropriate mitigation measures. It is expected that present and future physical activities will implement mitigation measures identified through permitting

and approval processes, as appropriate, to reduce their contributions to cumulative effects on wildlife and wildlife habitat.

### **29.13.3.3 Residual Cumulative Effects**

Existing environmental conditions reflect cumulative effects on the environment from past and present physical activities. Past and present physical activities that have been or are being carried out have influenced the existing conditions for wildlife habitat in the RSA (Section 19.2 in Chapter 19 of the Impact Statement [Assessment of Potential Effects on Wildlife and Wildlife Habitat]). The current landscape where the Project is proposed has been altered by ongoing anthropogenic disturbance including forestry, mining and exploration, aggregate extraction, energy generation and transmission, linear development, including roads, and urban development. As described in Chapters 25 to 28, Indigenous nations indicated that the quality and quantity of harvested wildlife have diminished and that the lands and resources have been impacted by industrial development in their Traditional Territory.

The Project is located within the Abitibi Ecoregion (Ecoregion 3E) in northeastern Ontario within the Ontario Shield Ecozone (Crins et al. 2009). Wildlife within the Ecoregion is typical of the boreal forest, which comprises moose, northern gray wolf, Canada lynx, American black bear, American marten, beaver, snowshoe hare and red squirrel. Representative species of amphibians and reptiles include blue-spotted salamander, boreal chorus frog, wood frog, mink frog, midland painted turtle, and eastern gartersnake. A preliminary list of wildlife of importance to Indigenous nations considered within the Assessment Areas is summarized in Table 19.5 in Chapter 19 of the Impact Statement (Assessment of Potential Effects on Wildlife and Wildlife Habitat); additional information regarding wildlife of importance to Indigenous nations is provided in Chapters 25 to 28 of the Impact Statement (Assessment of Potential Effects on Indigenous Interests). There are three historical records (i.e., more than 20 years ago) of Blanding's turtle in the RSA from data collected from community members. This species was not confirmed at these locations or surrounding areas during field studies, including eDNA sampling.

As discussed in Section 19.4.2.3.1.5.2 in Chapter 19 of the Impact Statement (Assessment of Potential Effects on Wildlife and Wildlife Habitat), the southern limit of the Kesagami [caribou] Range (ON8; ECCC, 2020) begins within the central portion of the LSA with limited suitable habitat present. The Range was last assessed provincially in 2010 (MNRF 2014) and was characterized at the time as having 44% of the range characterized as disturbed (or 56% undisturbed, below the critical habitat threshold of 65% of the area being in an undisturbed state), with a minimum animal count of 178 boreal caribou and a declining population trend (low calf recruitment). At that time, no boreal caribou were observed south of Pierre Lake in the southern half of the Range (MECP 2024a), which is located 78 km northeast of the PA. In 2023, subsequent monitoring was completed with 167 individuals observed, belonging to 18 groups (MECP 2024a). No boreal caribou were observed in the southern portion of the Range, consistent with previous findings from the MNRF (2014) Integrated Range Assessment report. There have been no records of boreal caribou in the southern portion of the Range since the early 2000s (MNRF 2014). Historically, the southern limits of the Range have always had low occupancy with relatively few records south of Highway 11 (MNRF 2014). Boreal caribou habitat showing the Project components overlaid is provided in Figure 19.6 (RSA extent) of Chapter 19 of the Impact Statement (Assessment of Potential Effects on Wildlife and Wildlife Habitat).

As discussed in Section 19.4.2.3.1.5.3 in Chapter 19 of the Impact Statement (Assessment of Potential Effects on Wildlife and Wildlife Habitat), total loss of potential roosting habitat for bats (upland forest) is 20% (2,837 ha) of the LSA. Wetland and water habitat, which is often important for foraging, will also be lost, representing 22% (8,667 ha) and 9% (26 ha) of the LSA, respectively. It is possible that some Project infrastructure could provide roosting opportunities for bats during the spring, summer or fall. This may include structures such as the processing plant, warehouses, storage buildings and contractor offices. It is expected that most infrastructure would not be attractive for bats due to high levels of human activity and other Project noise and lighting. However, if Project infrastructure is used during operations, this habitat will be removed during decommissioning and closure.

Site preparation and clearing during construction of the Project will result in a direct loss of approximately 11,785 ha of land area. Existing habitat fragmentation is present in the PA, comprising of Highway 655 (two-lane highway), a 500 kV transmission line and several active and inactive logging roads, representing approximately 1,223 ha within the PA. Habitat loss as a result of the Project will be incremental, giving wildlife time to adapt to activities occurring within the PA and relocate to the LSA and RSA into other areas of suitable habitat. Progressive reclamation is expected to occur during the operations phase which is predicted to have a positive change in habitat, allowing wildlife the opportunity to return to the area.

Change in wildlife health pathways will primarily occur through atmospheric fugitive dust emissions and contaminants discharged in surface water, sediments, soils, and vegetation which may extend to all Project phases. Residual Project effects are predicted to be adverse throughout all Project phases but considered negligible for most species. Similarly, future physical activities are not expected to measurably affect wildlife health.

Future physical activities will contribute to further loss or alteration of wildlife habitat in the RSA, either temporarily or permanently, depending on the nature of the future physical activities.

It is assumed that the North Timmins Gold Project – Bradshaw Mine will have similar types of effects (albeit of a lesser magnitude) on wildlife and wildlife habitat to those predicted for the Project. The Bradshaw mine is proposed approximately 10 km southeast of the proposed Project. While the timing of proposed development of the North Timmins Gold Project – Bradshaw Mine is unknown, no further disturbance of wildlife habitat is expected, although it is assumed that it may have similar indirect effects on wildlife due to edge effects and displacement as well as changing wildlife movement patterns to avoid disturbance.

The contribution of mineral exploration activities to cumulative effects on wildlife and wildlife habitat at the regional scale tend to be limited both temporally and spatially due to generally being short-term, small-scale disturbances and typically using existing access roads and trails.

Within the RSA, the physical activities associated with the expansion of the Northlander Passenger Train service will be limited to minor rail upgrades and increased rail traffic. Similarly, other planned transportation upgrading projects in the RSA, such as road resurfacing, bridge, and culvert replacement, will not likely result in large changes to wildlife habitat, as physical activities will be largely limited to the

existing disturbed areas. Some potential for incremental habitat fragmentation, sensory disturbance and disturbance to wildlife movement is possible.

The development of new transmission lines will result in direct disturbance to wildlife habitat through clearing for the transmission line right-of-way and associated access and temporary workspace. For the proposed Transmission Infrastructure Partnership-1 transmission line, it is assumed that habitats common in the RSA will be affected. Direct soil disturbance (and associated habitat clearing) is typically limited to structure locations or where grading, to accommodate safe access, is required. Following construction, it is expected that vegetation cover (i.e., grasses, forbs, shrubs) will return in areas that have been cleared. Nevertheless, tall vegetation (i.e., trees) will be periodically maintained to remove trees that might endanger safe operation of the transmission line, potentially affecting wildlife habitat.

Ongoing forestry activities have had the greatest extent of disturbance to wildlife habitats and will likely continue to do so. As shown in Figure 29.7, forestry activities are widespread in the region. Forestry activities within the Wildlife RSA are managed through the Abitibi River, Gordon Cosens, Romeo Malette, and Timiskaming Forest Management Units, each with individual forestry management plans and supporting data. Publicly available harvest data was used to identify past harvesting and predict future harvesting, noting that the location and timing of past and planned harvesting within these forest management units is not publicly available in a consistent basis.

Approximately 44,143 ha (10.1%) of the Wildlife RSA is planned to be modified in the future from proposed harvesting activities. In consideration of the additional 11,785 ha of land to be disturbed as a result of this Project, noting that none of the areas within the PA are currently proposed for future harvesting, a total of 55,928 ha (12.8%) within the Wildlife RSA will be disturbed.

Not all forest harvesting outlined in the available Forest Management Plans will occur at once or at all; rather, the Forest Management Plans lay out planned harvest areas within an anticipated timeframe to provide a sustainable yield, factoring in social and ecological values. A conservative approach was used, and thus all potential harvest blocks were considered in this assessment; it is likely that it is an over-estimate of future cutblock area. It is also likely that previous cutblocks are in varying states of regeneration and may be providing wildlife habitat functions again (e.g., shelter, foraging areas). Post-harvesting reforestation will occur to reverse effects, gradually restoring wildlife habitat.

Ongoing agricultural activities also have the potential to affect wildlife and wildlife habitat and will likely continue to do so. The conversion of natural habitats into agricultural land often leads to habitat loss and fragmentation, which can affect wildlife movement. Irrigation and drainage systems can alter natural water regimes, which can affect important habitats for many species. The use of pesticides, if not managed properly, can contaminate soil and water, potentially affecting wildlife food sources.

Residual cumulative effects on wildlife and wildlife habitat arising from past, present and future physical activities are predicted to be moderate in magnitude. Although most anthropogenic disturbance within the RSA has been limited to urban areas and the linear disturbances that connect them, forestry has been and continues to be widespread in the region. Residual cumulative effects will occur as multiple irregular events as future physical activities proceed. Residual effects will be medium-term for some developments (including forestry) and long-term for others (including vegetation control on transmission lines, new mine

development). Effects may be reversible or irreversible depending on the type of physical activity and whether it will be a permanent feature on the landscape.

Given the above, and that Project-related habitat loss will be incremental, wildlife will have time to adapt to activities occurring within the PA and relocate to the LSA and RSA, the Project will therefore have a relatively low contribution to the cumulative temporary effects on wildlife and wildlife habitat at the RSA scale.

### **29.13.4 Cumulative Effects Without the Project**

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur in the future whether the Project occurs or not. Past and future physical activities (e.g., mineral exploration, infrastructure development, forestry) are expected to have small contributions to existing levels of habitat loss/alteration and mortality risk in the RSA.

Residual cumulative effects from past and present physical activities include changes in the quality, quantity, and distribution of resources harvested and consumed by Indigenous nations. Future physical activities are not expected to measurably affect wildlife health. Trails created during mineral exploration activities will alter habitat by removing trees and provide temporary new access for predators and hunters; however, vegetation re-growth is expected once trails are no longer used. Species most vulnerable to cumulative effects associated with increased access are prey and/or harvested species, such as moose and furbearers.

Traditional land and resource use, along with recreational hunting are activities that will continue to influence wildlife mortality risk in the RSA without the Project. While the number of resource users or recreational hunters is not anticipated to change measurably in the foreseeable future, the locations in the RSA where resource use occurs may shift in response to exploration activities and changes in access.

Further, as shown on Figure 29.7, areas of the RSA are subject to future forestry activities. Approximately 44,143 ha (10.1%) of the Wildlife RSA is planned to be modified in the future from proposed harvesting activities, relative to 55,928 ha (12.8%) with the Project. As such, without the Project, future residual cumulative effects on wildlife and wildlife habitat are therefore predicted to be similar.

### **29.13.5 Summary of Cumulative Effects on Wildlife and Wildlife Habitat**

Table 29.20 summarizes cumulative effects on wildlife and wildlife habitat.

**Table 29.20 Residual Cumulative Effects of Wildlife and Wildlife Habitat**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on habitat</b>							
With the Project	A	M	RSA	NS	MT-LT	IR	R-I
Without the Project	A	M	RSA	NS	MT-LT	IR	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Project construction may disturb up to 1.2% of forested and wetland areas currently present in the RSA. The Project will have a relatively low contribution to residual cumulative effects on habitat.						
<b>Residual Cumulative Effect on movement</b>							
With the Project	A	M	RSA	NS	MT-LT	IR	R-I
Without the Project	A	M	RSA	NS	MT-LT	IR	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Project infrastructure in the PA will include physical barriers or other deterrents that can restrict and alter wildlife movement during all Project phases. The Project will have a relatively low contribution to residual cumulative effects on wildlife movement.						
<b>Residual Cumulative Effect on mortality risk</b>							
With the Project	A	M	RSA	NS	MT-LT	IR	R-I
Without the Project	A	M	RSA	NS	MT-LT	IR	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	The Project may result in wildlife mortalities in the PA through encounters with equipment or vehicle collisions, interactions with infrastructure, and destruction of wildlife residences. The Project will have a relatively low contribution to residual cumulative effects on mortality risk.						
<b>KEY</b>							
See Table 19.3 in Chapter 19 of the Impact Statement (Assessment of Potential Effects on Wildlife and Wildlife Habitat) for detailed definitions			<b>Geographic Extent:</b> PA: Project Area LSA: Local Study Area RSA: Regional Study Area		<b>Frequency:</b> S: Single event IR: Irregular event R: Regular event C: Continuous		
<b>Direction:</b> P: Positive A: Adverse N: Neutral			<b>Timing:</b> NS: No sensitivity MS: Moderate sensitivity HS: High sensitivity		<b>Reversibility:</b> R: Reversible I: Irreversible		
<b>Magnitude:</b> N: Negligible L: Low M: Moderate H: High			<b>Duration:</b> ST: Short-term MT: Medium-term LT: Long-term		N/A: Not applicable		

### 29.13.6 Prediction Confidence

The prediction confidence is considered moderate to high based on the quantity and quality of data available, field studies conducted to date, and a conservative approach to address uncertainty in the environmental effects assessment, which increases confidence in the final determination of residual effects. In addition, understanding of final closure plan and reclamation and revegetation activities and the effectiveness of mitigation measures increase prediction confidence. While the prediction confidence is high for most aspects of the assessment (e.g., presence and distribution of some species), there remains some uncertainty regarding other components (e.g., bat hibernacula, dens, species abundance and migration corridors, future physical activities details), resulting in overall prediction confidence being moderate.

### 29.14 Assessment of Cumulative Effects on Climate Change

The Project construction equipment and vehicle exhausts are sources of greenhouse gas (GHG) emissions that are primarily carbon dioxide (CO<sub>2</sub>) with smaller amounts of methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). Other future physical activities associated with the combustion of fossil fuels also result in GHG emissions. The effects associated with GHG emissions are on a global scale, consequently, no RSA has been established for the assessment of GHGs for the Project. This is based on GHGs mixing well and remaining in the atmosphere for some time dispersing well away from their emission sources (i.e., effects are not localized) (Intergovernmental Panel on Climate Change [IPCC] 2013). Therefore, the assessment of climate change provided in Chapter 20 of the Impact Statement (Assessment of Potential Effects on Climate Change) is inherently cumulative.

The mitigation measures that reduce emissions from Project construction equipment and vehicle exhausts are also applicable for reducing project GHG emissions. No additional mitigation specific to cumulative effects is proposed.

The residual environmental effects of the Project due to changes in the release of GHGs into the environment are predicted to be adverse, as the Project is expected to result in a net release of GHG emissions during the Project's lifetime, the magnitude of which is estimated to be 11,135 kilotonnes CO<sub>2</sub>e during the Project's lifetime. These emissions, which will occur sporadically during the operation of equipment and vehicles, as well as land clearing and blasting activities, are predicted to have long-term, lasting effects beyond the Project's duration. This is because, the effects on climate change due to the release of GHG in the atmosphere are persistent and long-term. Similarly, with climate change effects being realized globally, the net release of GHG emissions due to the Project is characterized as being a global effect, and irreversible, since once GHGs are released to the lower atmosphere, there is currently no mechanism by which they can be mitigated.

GHG emissions associated with future physical activities in the RSA have not been estimated since effects associated with GHG emissions are on a global scale. The contribution of the Project in combination with future projects are small on a provincial, national and global context and would not contribute measurably to climate change.

The residual environmental effects of the Project due to changes in carbon sinks are predicted to be positive, with expected net increase in carbon sinks, and carbon sequestration potential estimated to be 46,678 kilotonnes CO<sub>2e</sub> during the Project’s lifetime. Overall, this project will sequester more CO<sub>2e</sub> than will be emitted by Project activities.

This added CO<sub>2</sub> storage capacity could help reduce emissions from other regulated emitters and positively impact Canada’s GHG emissions reduction targets.

## 29.15 Assessment of Cumulative Effects on Health

As detailed in Chapter 21 of the Impact Statement (Assessment of Potential Effects on Health), the Project is anticipated to have adverse residual effects on physical health, mental health and social wellbeing, and community safety. As such, there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### 29.15.1 Regional Study Area

As noted in Section 21.1.4.1 of Chapter 21 of the Impact Statement (Assessment of Potential Effects on Health), the RSA for Health includes the area within which cumulative effects on health conditions may occur and is specific to biophysical determinants of health and social determinants of health. The biophysical determinants of the health RSA includes the outer spatial boundaries of the Atmospheric Environment RSA, Acoustic Environment RSA, Surface water RSA, Fish and Fish Habitat RSA and Indigenous Interests RSA. The social determinants of the health RSA is based on the geographic extent of the Cochrane District, the most populous component of the Porcupine Health Unit. The RSA for the biophysical determinants of Health is shown on Figures 29.8.10, while the RSA for the social determinants of health is shown on Figure 29.4.1.

### 29.15.2 Identification of Project Effects with Potential to Interact Cumulatively

Table 29.21 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

**Table 29.21 Physical Activities with Potential for Cumulative Effects on Health**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects		
	Change in Physical Health	Change in Mental Health and Social Wellbeing	Change in Community Safety
<b>Past and Present Physical Activities</b>			
Mining	✓	✓	✓
Aggregate Extraction	✓	✓	✓
Community Development	✓	✓	✓
Water Management	✓	✓	✓

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects		
	Change in Physical Health	Change in Mental Health and Social Wellbeing	Change in Community Safety
Transportation	–	✓	–
Power	✓	✓	✓
Energy	✓	✓	✓
Forestry	✓	✓	✓
Agriculture	✓	✓	–
Recreation	–	–	–
Hunting and Fishing	–	–	–
<b>Future Physical Activities</b>			
Mining			
North Timmins Gold Project – Bradshaw Mine	✓	✓	✓
Upper Beaver Gold Project	✓	✓	✓
Detour Lake Gold Mine Expansion	✓	✓	✓
Fox Mining Complex Expansion Project	✓	✓	✓
ERO: 019-8122 - Permit to take water renewal	–	–	–
Other mine-related physical activities (e.g., mineral exploration permits)	✓	✓	✓
Transportation			
Highway 652 Extension to Highway 11	✓	✓	✓
Northlander Passenger Train Expansion of Service	✓	✓	✓
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	✓	✓	✓
Power			
Transmission Infrastructure Partnership-1	✓	✓	✓
Wawa to Porcupine Transmission Line	✓	✓	✓
Notes:			
✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects.			
– = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.			

Existing conditions for health (i.e., Community Context, Environmental Quality, Physical Health, Mental Health and Social Wellbeing, and Community Safety) associated with past and present physical activities in the LSA and RSA, have been captured in Section 21.2 of Chapter 21 of the Impact Statement [Assessment of Potential Effects on Health]. As such, the contribution of present projects and activities including effects from mineral development (e.g., Kidd Creek Mine), are considered in the assessment of Project residual effects (Section 21.4 of Chapter 21 of the Impact Statement [Assessment of Potential Effects on Health]).

Potential effects identified in Table 29.21 as not likely to interact cumulatively with residual effects of other physical activities (no check mark) are not discussed further. Those future physical activities listed but not checked off represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1.

The assessment of the cumulative environmental effects that are likely to result from the Project in combination with other physical activities are discussed in the following sections. Due to the uncertainty of the development, mitigation and reclamation of each physical activity, the assessment of cumulative effects is largely qualitative.

### **29.15.3 Cumulative Effects Assessment for Change in Physical Health, Mental Health and Social Well-Being, and Community Safety**

#### **29.15.3.1 Cumulative Effect Pathways**

Potential cumulative effects arising from past, present and future physical activities have similar pathways as those arising from the Project (Section 21.4 in Chapter 21 of the Impact Statement [Assessment of Potential Effects on Health]) and have the potential to result in a cumulative increase in human health risks.

Future physical activities may affect physical health, mental health and social wellbeing, and community safety through changes in environmental quality, land use, population dynamics, and employment conditions.

#### **29.15.3.2 Mitigation for Cumulative Effects**

Mitigation measures presented in Section 21.4 in Chapter 21 of the Impact Statement (Assessment of Potential Effects on Health) for health are predicted to reduce and mitigate the Project's contribution to cumulative effects on physical health, mental health and social well-being, and community safety. Project mitigation measures presented in Sections 21.4.2.2, 21.4.3.2 and 21.4.4.2 in Chapter 21 of the Impact Statement (Assessment of Potential Effects on Health), including measures to address sensory disturbance and measures related to social and economic conditions that can reduce potential changes in physical health and in mental health and social wellbeing, will also reduce potential cumulative effects on health. No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on health.

Future physical activities may require provincial or federal permits and approvals. These processes require the future proponents to identify and assess potential effects on VCs that could affect health (e.g., water quality, air emissions), and to identify and implement appropriate mitigation measures. It is expected that present and future physical activities will implement mitigation measures identified through permitting and approval processes, as appropriate, to reduce their contributions to cumulative effects on environmental quality, which affects physical and social determinants of health. Federal and provincial agencies, as well as municipalities, are responsible for services and programs that protect health and community safety, which are funded through various taxes (e.g., income tax, sales tax) that would be generated by other physical activities in the RSA.

### 29.15.3.3 Residual Cumulative Effects

Existing conditions reflect cumulative effects from past and present physical activities. Past and present physical activities that have been or are being carried out have influenced the existing conditions on health in the LSA/RSA (Section 21.2 in Chapter 21 of the Impact Statement [Assessment of Potential Effects on Health]).

In terms of changes on physical health, mental health and social wellbeing, and community safety, and depending on the exposure pathway assessed, adverse residual effects are estimated to be of low to moderate magnitude, limited to the LSA (biophysical changes) and RSA (social changes), short-term to medium-term in duration, irregular to regular events, but reversible.

- While Project-related contaminants in air are not likely to be greater than the applicable health-based exposure limits and toxicity reference values at locations where people are expected to be present for extended periods of time (including overnight stays or beyond), some identified contaminants are non-threshold contaminants meaning any increase in exposure could result in increased risk of adverse health effects (e.g., PM<sub>2.5</sub>).
- For the North Driftwood River channel realignment, changes in methyl mercury concentration in angling fish compared to current existing is expected to be low (approximately 4%). As such, this change in concentration is not expected to markedly increase potential exposures to methyl mercury through fish consumption due to the North Driftwood River channel realignment. The presence of mercury in fish tissues and methyl mercury exposures due to consumption of fish is already a regional concern (many fish collected in North Driftwood River, West Buskegau River and Jocko Creek watersheds during baseline sampling programs had methyl mercury concentrations greater than the Health Canada standard of 0.5 mg/kg) but Project-related activities are not expected to result in increased concentrations of mercury in the environment.
- Actual or perceived changes in food quality, land use, and aesthetics in the LSA/RSA, could lead to reductions in country food availability and accessibility that may affect physical health through diet and nutritional changes. These changes could also lead to changes in physical health due to reduced recreational experiences.
- Project-related population growth and employment of temporary workers (mainly from the construction phase) from outside of the region may increase competition for Indigenous food harvesting, increase infectious diseases, and increase the cost of living.

- Increased housing rental markets could lead to the most vulnerable populations experiencing higher financial pressures and may have to make difficult decisions about the quality and quantity of food they can afford, which puts them at risk for food insecurity. However, it is expected that independent accommodation providers in the region will provide accommodations for temporary workers as they have for other large projects that will reduce such potential effects.

Canada Nickel recognizes that because of the location of the PA, some effects, such as alteration to the current use of lands and resources may affect Indigenous nations disproportionately in comparison with the non-Indigenous population.

Future physical activities may contribute to further changes in health in the RSA. Some projects and activities may result in temporary disturbance to air quality and water quality following activity completion and reclamation (e.g., cutblocks, temporary workspaces), while some future physical activities (e.g., mining, roads) may result in long-term changes.

It is assumed that the North Timmins Gold Project – Bradshaw Mine will have similar types of effects (albeit of a lesser magnitude) on health to those predicted for the Project. The Bradshaw mine is proposed approximately 10 km southeast of the proposed Project. While the timing of proposed development of the North Timmins Gold Project – Bradshaw Mine is unknown, it is assumed that it may similarly affect environmental quality through changes in air quality and water quality as a result of emissions from project activities. The mine proponent would be expected to implement mitigation measures related to air quality and water quality, similar to what has been proposed for the Project.

Mineral exploration activities generally involve short-term, small-scale disturbances and typically use existing access roads and trails. As such, their contributions to cumulative effects on health at the regional scale tend to be limited both temporally and spatially.

Within the RSA, the physical activities associated with the expansion of the Northlander Passenger Train service will be limited to minor rail upgrades and increased rail traffic. These activities are designed to ensure the safety and well-being of the community by reducing disruptions and maintaining safe travel conditions. Similarly, other planned transportation upgrading projects in the RSA, such as road resurfacing, bridge, and culvert replacement, are proposed to maintain or improve infrastructure and therefore accessibility for area residents and will not likely result in substantial changes to vegetation, thereby preserving the local environment and reducing stress on residents.

Ongoing forestry activities also have the potential to affect health. However, Forest Management Plans contain procedures and measures to sustainably manage forests within the applicable forest management units (Abitibi River, Gordon Cosens, Hearst, Romeo Malette, and Timiskaming Forests), including reforestation and other practices to ensure long-term yield while factoring in other resources (e.g., fish and fish habitat, water quality and quantity). It is assumed that forestry operators will follow provincial requirements to mitigate effects on water quality and quantity at watercourse crossings and follow operating conditions within riparian areas and water source areas where forestry operations are approved.

Residual cumulative effects will occur as multiple irregular events as future physical activities proceed. Residual effects will be short-term for some new developments (including forestry, transmission line construction) and medium to long-term for others (new mine development) and are predicted to be reversible. The Project, therefore, may have a relatively low to moderate contribution to cumulative effects on physical health, mental health and social well-being, and community safety at the RSA scale.

### 29.15.4 Cumulative Effects Without the Project

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur in the future whether the Project occurs or not. It can also be assumed that present physical activities such as forestry and infrastructure improvements will also proceed, regardless of Project status. As shown on Figures 29.1 and 29.5, past and present physical activities are largely concentrated along existing transportation corridors (e.g., highways, railways) in the region and it is likely that areas in proximity to existing transportation and other infrastructure will continue to be potential areas for future development. Without the Project, future cumulative effects on health are therefore predicted to be similar.

### 29.15.5 Summary of Cumulative Effects on Health

Table 29.22 summarizes cumulative effects on health.

**Table 29.22 Residual Cumulative Effects on Health**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on physical health</b>							
With the Project	A	L-H	RSA	NS	ST-LT	IR-R	R
Without the Project	A	L-H	RSA	NS	ST-MT	IR-R	R
Contribution from the Project to the Overall Regional Residual Cumulative Effect	The Project will have a relatively low contribution to residual cumulative effects on physical health. Depending on the effect pathways, changes may be largely unchanged from baseline conditions or reduced but not eliminated compared to baseline conditions.						
<b>Residual Cumulative Effect on mental health and social wellbeing</b>							
With the Project	A	L-H	RSA	NS	ST-LT	IR-R	R
Without the Project	A	L-H	RSA	NS	ST-LT	IR-R	R
Contribution from the Project to the Overall Regional Residual Cumulative Effect	The Project will have a low relatively contribution to residual cumulative effects on mental health and social wellbeing. Depending on the effect pathways, changes may be largely unchanged from baseline conditions or reduced but not eliminated compared to baseline conditions.						
<b>Residual Cumulative Effect on community safety</b>							
With the Project	A	L-H	RSA	NS	ST-LT	IR-R	R
Without the Project	A	L-H	RSA	NS	ST-LT	IR-R	R

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Contribution from the Project to the Overall Regional Residual Cumulative Effect	The Project will have a relatively low contribution to residual cumulative effects on community safety. Depending on the effect pathways, changes may be largely unchanged from baseline conditions or reduced but not eliminated compared to baseline conditions.						
<p><b>KEY</b></p> <p>See Table 21.4 in Chapter 21 of the Impact Statement (Assessment of Potential Effects on Health) for detailed definitions</p> <p><i>Direction:</i>  P: Positive  A: Adverse  N: Neutral</p> <p><i>Magnitude:</i>  N: Negligible  L: Low  M: Moderate  H: High</p> <p><i>Geographic Extent:</i>  PA: Project Area  LSA: Local Study Area  RSA: Regional Study Area</p> <p><i>Timing:</i>  NS: No sensitivity  MS: Moderate sensitivity  HS: High sensitivity</p> <p><i>Duration:</i>  ST: Short-term  MT: Medium-term  LT: Long-term</p> <p><i>Frequency:</i>  S: Single event  IR: Irregular event  R: Regular event  C: Continuous</p> <p><i>Reversibility:</i>  R: Reversible  I: Irreversible  N/A: Not applicable</p>							

### 29.15.6 Extent of Significance of Cumulative Effects on Health

As discussed in Chapter 21 of the Impact Statement (Assessment of Potential Effects on Health), residual adverse effects related to physical health of Indigenous Peoples are estimated to have low or moderate significance, because depending on the effect pathways, changes may be largely unchanged from baseline conditions or reduced but not eliminated compared to baseline conditions. In terms of changes on mental health and social wellbeing on Indigenous Peoples, residual adverse effects are estimated to have low or moderate significance, because depending on the effect pathways, changes may be largely unchanged from baseline conditions or reduced but not eliminated compared to baseline conditions. In terms of community safety, residual adverse effects are estimated to have low or moderate significance, because depending on the effect pathways, changes may be largely unchanged from baseline conditions or reduced but not eliminated compared to baseline conditions.

Cumulative residual effects are anticipated to be largely unchanged from baseline conditions or reduced but not eliminated compared to baseline conditions. As such, if all past, present and future foreseeable projects proceed, cumulative residual effects on physical health, mental health and social wellbeing of Indigenous Peoples, and community safety are predicted to be of low or moderate significance.

### 29.15.7 Prediction Confidence

Prediction confidence is moderate, because there is uncertainty regarding the timing, location and extent of reasonably foreseeable future activities and what mitigation measures may be implemented by them to address potential effects on health.

## 29.16 Assessment of Cumulative Effects on Social Conditions

As detailed in Chapter 22 of the Impact Statement (Assessment of Potential Effects on Social Conditions), the Project is anticipated to have adverse residual effects on demand for services and infrastructure, accommodation availability, demand for transportation and infrastructure, land use designations and private property, recreation, and resource use. As such, there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### 29.16.1 Regional Study Area

As noted in Section 22.1.4.1 of Chapter 22 of the Impact Statement (Assessment of Potential Effects on Social Conditions), the RSA for social conditions is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA for service and infrastructure includes the Statistics Canada subdivisions for four municipalities: the City of Timmins and the Towns of Cochrane, Iroquois Falls, and Smooth Rock Falls. The extent of the RSA for services and infrastructure is shown on Figure 29.8.11.

The RSA for Land and Resource Use corresponds to an area in the Cochrane District in northeastern Ontario, bounded by the City of Timmins, and the Towns of Cochrane, Iroquois Falls, and Smooth Rock Falls. The extent of the RSA for land and resource use is shown on Figure 29.8.12.

### 29.16.2 Identification of Project Effects with Potential to Interact Cumulatively

Table 29.23 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

**Table 29.23 Physical Activities with Potential for Cumulative Effects on Social Conditions**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects					
	Change in Demand for Services and Infrastructure	Change in Accommodation Availability	Change in Demand for Transportation Infrastructure	Change in Land Use Designations and Private Property	Change in Recreation	Change in Resource Use
<b>Past and Present Physical Activities</b>						
Mining	✓	✓	✓	✓	✓	✓
Aggregate Extraction	✓	–	–	–	–	–
Community Development	✓	–	–	–	–	–
Water Management	–	–	–	–	–	–

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects					
	Change in Demand for Services and Infrastructure	Change in Accommodation Availability	Change in Demand for Transportation Infrastructure	Change in Land Use Designations and Private Property	Change in Recreation	Change in Resource Use
Transportation	✓	✓	✓	–	✓	–
Power	–	–	–	–	✓	–
Energy	–	–	–	–	–	–
Forestry	–	–	–	–	✓	–
Agriculture	✓	✓	✓	–	–	–
Recreation	–	–	–	–	–	–
Hunting and Fishing	–	–	–	–	–	–
<b>Future Physical Activities</b>						
Mining						
North Timmins Gold Project – Bradshaw Mine	✓	✓	✓	✓	✓	✓
Upper Beaver Gold Project	–	–	–	–	–	–
Detour Lake Gold Mine Expansion	✓	✓	✓	✓	✓	✓
Fox Mining Complex Expansion Project	✓	✓	✓	✓	✓	✓
ERO: 019-8122 - Permit to take water renewal	✓	✓	✓	✓	✓	✓
Other mine-related physical activities (e.g., mineral exploration permits)	✓	✓	✓	✓	✓	✓
Transportation						
Highway 652 Extension to Highway 11	✓	✓	✓	✓	✓	✓
Northlander Passenger Train	✓	✓	✓	✓	✓	✓

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects					
	Change in Demand for Services and Infrastructure	Change in Accommodation Availability	Change in Demand for Transportation Infrastructure	Change in Land Use Designations and Private Property	Change in Recreation	Change in Resource Use
Expansion of Service						
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	✓	✓	✓	✓	✓	✓
<b>Power</b>						
Transmission Infrastructure Partnership-1	✓	✓	✓	✓	✓	✓
Wawa to Porcupine Transmission Line	✓	✓	✓	✓	✓	✓
Notes: ✓ = Other projects and physical activities whose residual effects are likely to interact cumulatively with Project residual effects. – = Interactions between the residual effects of other projects and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.						

Potential effects associated with past and present physical activities in the LSA have been captured in the existing conditions for Social Conditions (Section 22.2 of Chapter 22 of the Impact Statement [Assessment of Potential Effects on Social Conditions]). As such, the contribution of present physical activities, including effects from mineral development (e.g., Kidd Creek Mine), are considered in the assessment of Project residual effects (Section 22.4 of Chapter 22 of the Impact Statement [Assessment of Potential Effects on Social Conditions]).

Potential effects identified in Table 29.23 as not likely to interact cumulatively with residual effects of other physical activities (no check mark) are not discussed further. Those future physical activities listed but not checked off represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1.

The assessment of the cumulative environmental effects that are likely to result from the Project in combination with other physical activities are discussed in the following sections. Due to the uncertainty of the development, mitigation and reclamation of each physical activity, the assessment of cumulative effects is largely qualitative.

### **29.16.3 Cumulative Effects Assessment for Social Conditions**

#### **29.16.3.1 Cumulative Effect Pathways**

For services and infrastructure, potential cumulative effects arising from past, present and future physical activities have similar pathways as those arising from the Project (Section 22.4 of Chapter 22 of the Impact Statement [Assessment of Potential Effects on Social Conditions]). An increase in population within the RSA is expected as a result of the workforces associated with the Project and other projects which overlap spatially and temporally. The temporary increase in the population of the RSA may result in an increase in demand for services and infrastructure, including health, emergency, education, recreation, and utilities as well as local availability of housing and temporary accommodations. The transportation of Project goods, services, and workers will lead to additional use of existing transportation infrastructure. In addition, greater traffic volumes along local road networks could increase travel times and affect the condition of roadways.

With respect to land and resource use, site clearing, and access restrictions would result in the loss of commercial resource use activities within the PA. These include logging, hunting, trapping and bait harvesting. Project clearing and construction activities within the PA will change land use and development through the loss of area and the restriction of access to designated lands including limited provincial Crown lands. Clearing and construction activities within the PA and movement along access roads can affect land use, including sensitive receptors such as remote cabins within the LSA, due to nuisance disturbance (e.g., noise and dust) and visible Project components.

#### **29.16.3.2 Mitigation for Cumulative Effects**

Mitigation measures presented in Section 22.4 in Chapter 22 of the Impact Statement (Assessment of Potential Effects on Social Conditions) for social conditions are predicted to reduce and mitigate the Project's contribution to cumulative effects on services and infrastructure and land and resource use. Project mitigation measures presented in Sections 22.4.2.2, 22.4.3.2, 22.4.4.2, 22.4.5.2, 22.4.6.2 and 22.4.7.2 in Chapter 22 of the Impact Statement (Assessment of Potential Effects on Social Conditions), including the development of several policies, procedures, and training programs such as Health and Safety Policy, Local Procurement Policy, Code of Business Conduct and Ethics, Workplace Violence, Harassment and Discrimination Policy, Diversity and Inclusion, and Cultural Awareness Training, will mitigate adverse Project effects on services and infrastructure and will also reduce potential cumulative effects. Canada Nickel is also engaging with third parties, including Indigenous nations, which may result in an agreement for the provision of Project accommodations. No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on social conditions.

Future physical activities will require provincial or federal approval and permitting and/or an environmental impact assessment. These processes require the future proponents to identify and assess potential effects on social conditions, and to identify and implement appropriate mitigation measures. It is expected that present and future physical activities will implement mitigation measures identified through permitting and approval processes, as appropriate, to reduce their contributions to cumulative effects on services and infrastructure and land and resource use.

### 29.16.3.3 Residual Cumulative Effects

Existing conditions reflect cumulative effects on the from past and present physical activities. Past and present physical activities that have been or are being carried out have influenced the existing social conditions in the RSA (Section 22.2 of Chapter 22 of the Impact Statement [Assessment of Potential Effects on Social Conditions]).

The residual adverse effects of the Project on services and infrastructure are expected to occur in the RSA mainly during construction and operation as a result of demands created by the Project labour force.

The presence of the Project labour force may overlap temporally with that of the North Timmins Gold Project – Bradshaw Mine. Future mineral exploration and development may have large workforces that may place additional demands on local services and infrastructure; however, they will only act cumulatively with the Project if they overlap temporally. In addition, it is expected that current and future physical activities will be required to apply standard mitigation and other management measures to avoid or reduce their effect on services and infrastructure (e.g., emergency response plans) and comply with applicable regulatory requirements.

Should other projects, such as the North Timmins Gold Project-Bradshaw Mine, overlap temporally with the Project, there may be residual cumulative effects on housing and accommodations in the RSA. It is likely that proponents of future projects will have accommodations plans for their workforces and, as stated in Section 22.4.3.3, Canada Nickel has plans to undertake an accommodations study and is exploring options to provide housing through third party partners to provide accommodations for Project workers. Canada Nickel will also hire locally to the extent possible and will provide training opportunities to local residents so they may secure Project employment.

Where road improvements are made, all projects and users generally could benefit. The occurrence of current and future road development in the RSA will most likely have positive cumulative effects on transportation, because road improvements would increase the capacity of local roads. It is anticipated that these initiatives will be successful in maintaining or improving current conditions in the RSA such that the cumulative residual adverse effects on transportation during construction are predicted to be low in magnitude, short-term, and continuous.

In addition, Canada Nickel will continue to communicate with local communities and service providers with respect to scheduling so they may prepare for potential increased demands on local services and infrastructure.

Cumulative effects arising from future mineral exploration activities potentially have similar effects as those from the Project, including degradation and disturbance effects on resource use activities (e.g., hunting and trapping) due to noise disturbance, damage to areas and sites, as well as change in access and loss of wildlife habitat. Activities that can affect resource use activities include developments that involve land clearing (e.g., mineral claim staking). The exact areas for future hunting and trapping activities are unknown at this time. Future projects and activities would have the effect of removing areas from the resource base such that they would no longer be available for hunting and trapping to occur. As a result, these activities would be displaced to other locations. However, it is anticipated that there is

sufficient area within the RSA for these activities to occur in the future. The cumulative residual adverse effects on resource use are predicted to be low to moderate in magnitude, medium- to long-term, to continuous in frequency, and reversible upon Project decommissioning and closure (except for the pit lake).

Cumulative effects arising from future activities potentially have similar effects mechanisms as effects arising from the Project related to the degradation of recreational opportunities, activities, disturbance and nuisance effects, and restriction of access. Seasonal aspects with respect to recreation activities, including recreational canoeing, were considered because recreational activities are affected by timing. As discussed in Section 22.4.9.1, the Project's adverse residual effects on recreation are expected to be low to moderate in magnitude, medium- to long-term, continuous (occurring throughout the life of the Project), reversible following Project decommissioning and closure (except for the pit lake) and irreversible for navigable waters.

Residual cumulative effects on social conditions arising from past, present and future physical activities are predicted to be low to moderate in magnitude. Residual cumulative effects will occur as multiple irregular events as future physical activities proceed. Residual effects will be short-term for some developments (including forestry, transmission line construction), medium-term for others (new mine development), and are predicted to be reversible for services and infrastructure and irreversible for navigable waters. The Project will, therefore, have a relatively low to moderate contribution to cumulative effects on services and infrastructure and land and resource use at the RSA scale.

#### **29.16.4 Cumulative Effects Without the Project**

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur in the future whether the Project occurs or not. It can also be assumed that present physical activities such as forestry and infrastructure improvements will also proceed, regardless of Project status. As shown on Figures 29.1 and 29.5, past and present physical activities are largely concentrated along existing transportation corridors (e.g., highways, railways) in the region and it is likely that areas in proximity to existing transportation and other infrastructure will continue to be potential areas for future development. Without the Project, future cumulative effects on social conditions are therefore predicted to be similar.

## 29.16.5 Summary of Cumulative Effects on Social Conditions

Table 29.24 summarizes cumulative effects on social conditions.

**Table 29.24 Residual Cumulative Effects on Social Conditions**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on services and infrastructure</b>							
With the Project	A	L-M	RSA	NS	ST-MT	C	R
Without the Project	A	L-M	RSA	NS	LT	C	R
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Project's residual effects on services and infrastructure, including housing, are expected to occur in the RSA throughout construction and operations. However, the Project will make a low to moderate contribution to cumulative effects on services and infrastructure, including housing, at the RSA scale.						
<b>Residual Cumulative Effect on land and resource use</b>							
With the Project	A	L-M	RSA	MS-HS	MT-LT	C	R/I
Without the Project	A	L-M	RSA	MS-HS	MT-LT	C	R/I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Project residual effects on land and resource use are expected to occur in the RSA throughout construction and operation. Project activities that could directly affect navigation include the construction of mine components, infrastructure realignments, and infilling of navigable watercourses. Loss of or alteration of access to or through navigable waters within the PA will occur during construction. However, the Project will make a low to moderate contribution to cumulative effects on land and resource use (including navigation) at the RSA scale.						
<p><b>KEY</b></p> <p>See Table 22.3 in Chapter 22 of the Impact Statement (Assessment of Potential Effects on Social Conditions) for detailed definitions</p> <p><i>Direction:</i>                      P: Positive                      A: Adverse                      N: Neutral</p> <p><i>Magnitude:</i>                      N: Negligible                      L: Low                      M: Moderate                      H: High</p> <p><i>Geographic Extent:</i>                      PA: Project Area                      LSA: Local Study Area                      RSA: Regional Study Area</p> <p><i>Timing:</i>                      NS: No sensitivity                      MS: Moderate sensitivity                      HS: High sensitivity</p> <p><i>Duration:</i>                      ST: Short-term                      MT: Medium-term                      LT: Long-term</p> <p><i>Frequency:</i>                      S: Single event                      IR: Irregular event                      R: Regular event                      C: Continuous</p> <p><i>Reversibility:</i>                      R: Reversible                      I: Irreversible</p> <p>N/A: Not applicable</p>							

## 29.16.6 Extent of Significance of Cumulative Effects

### Change in Navigable Waters

As discussed in Section 22.4.10.1 in Chapter 22 of the Impact Statement (Assessment of Potential Effects on Social Conditions), acknowledging the loss of 'uncertain' navigable waters, and alterations to the North Driftwood River, with mitigation measures described in Section 22.4 in Chapter 22 of the Impact Statement (Assessment of Potential Effects on Social Conditions), Project residual effects to non-scheduled navigable waters are predicted to be of moderate significance. Similarly, if all past, present and future foreseeable projects proceed, cumulative residual effects on navigable waters are predicted to be of moderate significance.

## 29.16.7 Prediction Confidence

Prediction confidence is moderate to high. Prediction confidence is high for the Project contribution to cumulative effects due to known effectiveness of the standard management tools and mitigation measures that would be in place, readily understood effects of the planned construction activities and the capacity of the existing local transportation network. Prediction confidence is considered moderate for other future activities based on the information available for those activities.

## 29.17 Assessment of Cumulative Effects on Economic Conditions

As detailed in Chapter 23 of the Impact Statement (Assessment of Potential Effects on Economic Conditions), the Project is anticipated to have an adverse residual effect on business from increased competition for labour and upward pressure on wages. As such, there is potential for the residual effects of the Project to act cumulatively with residual effects of other past, present or future physical activities.

### 29.17.1 Regional Study Area

As noted in Section 23.1.4.1 of Chapter 23 of the Impact Statement (Assessment of Potential Effects on Economic Conditions), the RSA for Economic Conditions is used to provide regional context for the assessment of residual effects and is also the area within which potential for cumulative effects of the Project in combination with other past, present or future physical activities are considered. The RSA includes the Cochrane District (Census Division), the Timiskaming District (Census Division), and Mattagami First Nation (which is located in Sudbury District). The RSA for Economic Conditions is shown on Figure 29.4.1.

### 29.17.2 Identification of Project Effects with Potential to Interact Cumulatively

Table 29.25 presents the physical activity inclusion list, which identifies other future physical activities planned in the RSA. Where residual environmental effects from the Project have the potential to act cumulatively with those from other physical activities, a cumulative effects assessment is undertaken.

**Table 29.25 Physical Activities with Potential for Cumulative Effects on Economic Conditions**

Physical Activities with Potential for Cumulative Effects	Potential Cumulative Effects		
	Change in employment	Change in business	Change in provincial economy
<b>Past and Present Physical Activities</b>			
Mining	✓	✓	✓
Aggregate Extraction	✓	✓	✓
Community Development	✓	✓	✓
Water Management	✓	✓	✓
Transportation	✓	✓	✓
Power	✓	✓	✓
Energy	✓	✓	✓
Forestry	✓	✓	✓
Agriculture	✓	✓	✓
Recreation	✓	✓	✓
Hunting and Fishing	–	–	–
<b>Future Physical Activities</b>			
Mining			
North Timmins Gold Project – Bradshaw Mine	✓	✓	✓
Upper Beaver Gold Project	✓	✓	✓
Detour Lake Gold Mine Expansion	✓	✓	✓
Fox Mining Complex Expansion Project	✓	✓	✓
ERO: 019-8122 - Permit to take water renewal	–	–	
Other mine-related physical activities (e.g., mineral exploration permits)	✓	✓	✓
Transportation			
Highway 652 Extension to Highway 11	✓	✓	✓
Northlander Passenger Train Expansion of Service	✓	✓	✓
Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)	✓	✓	✓
Power			
Transmission Infrastructure Partnership-1	✓	✓	✓
Wawa to Porcupine Transmission Line	✓	✓	✓
Notes:			
✓ = Other physical activities whose residual effects are likely to interact cumulatively with Project residual effects. – = Interactions between the residual effects of other physical activities and residual effects of the Project are not expected, or the physical activity is outside of the RSA for this VC.			

Potential effects of other past and present physical activities have contributed to the existing economic conditions in which the Project will be located. As such, the cumulative effects of these past and present physical activities, including effects from mineral development (e.g., Kidd Creek Mine), have been considered in the assessment of Project residual effects (Section 23.4 of Chapter 23 of the Impact Statement [Assessment of Potential Effects on Economic Conditions]).

Potential effects identified in Table 29.25 as not likely to interact cumulatively with residual effects of other physical activities (no check mark) are not discussed further. Those future physical activities listed but not checked off represent activities that are unlikely to interact cumulatively with the Project based on the conditions described in Section 29.1.4.1.

The assessment of the cumulative environmental effects that are likely to result from the Project in combination with other physical activities are discussed in the following sections. Due to the uncertainty of the development, mitigation and reclamation of each physical activity, the assessment of cumulative effects is largely qualitative.

### **29.17.3 Cumulative Effects Assessment for Change in Employment, Business and Provincial Economy**

#### **29.17.3.1 Cumulative Effect Pathways**

Potential cumulative effects arising from past, present and future physical activities have similar pathways as those arising from the Project (Section 23.4 in Chapter 23 of the Impact Statement [Assessment of Potential Effects on Economic Conditions]) and have the potential to result in changes in employment, business and provincial economy. Positive economic effects are predicted when project-related employment and other expenditures have direct, indirect and induced beneficial effects on employment, incomes, business activity, and government tax revenues. However, adverse economic effects may occur when the labour, goods, and services required exceeds the existing capacity, leading to supply issues and cost increases (e.g., wage and price inflation).

Future physical activities in the RSA will likely affect economic conditions through changes in employment, business and provincial economy. The extent of potential cumulative demands on businesses will depend on capacity to provide the labour, goods and services required by current and future projects in the RSA. Based on labour force conditions in the RSA, it is expected that the cumulative effects on the RSA economy of constructing and operating future projects, including the Project, would likely be positive

#### **29.17.3.2 Mitigation for Cumulative Effects**

Mitigation measures presented in Section 23.4 in Chapter 23 of the Impact Statement (Assessment of Potential Effects on Economic Conditions) for social conditions are predicted to reduce and mitigate the Project's contribution to cumulative effects on services and infrastructure and land and resource use. Project mitigation measures presented in Sections 23.4.2.2, 23.4.3.2, and 23.4.4.2 in Chapter 23 of the Impact Statement (Assessment of Potential Effects on Economic Conditions), including hiring from local communities and the region and exploring opportunities to support training, education, and scholarship

programs that improve employment opportunities, will mitigate adverse Project effects on economic conditions and will also reduce potential cumulative effects. No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects on economic conditions.

Future physical activities will require provincial or federal approval and permitting and/or an environmental impact assessment. These processes require the future proponents to identify and assess potential effects on economic conditions, and to identify and implement appropriate mitigation measures. It is expected that present and future physical activities will implement mitigation measures identified through permitting and approval processes, as appropriate, to reduce their contributions to cumulative effects on employment, business and provincial economy.

### **29.17.3.3 Residual Cumulative Effects**

Existing conditions reflect cumulative effects from past and present physical activities. Past and present physical activities that have been or are being carried out have influenced the existing economic conditions in the RSA (Section 23.2 in Chapter 23 of the Impact Statement [Assessment of Potential Effects on Economic Conditions]).

With the implementation of mitigation and enhancement measures, Project residual effects on the LSA labour force are expected to be positive in direction and high in magnitude during construction and operations. Positive effects are not carried through to the cumulative effects assessment; however, the economic benefits of the Project are recognized in the area through employment opportunities, income for workers, and tax revenues.

Adverse effects on business stem from increased competition for labour and upward pressure on wages. Adverse effects stem from Project-related wages being greater than existing conditions, albeit consistent with wages in the mining industry, and due to the potential for Project employment to be deemed more desirable than other forms of employment in the LSA, both of which can result in increased competition for labour and upward pressure on wages (to attract and retain workers). Adverse residual effects are also anticipated as the Project transitions from operations through decommissioning and closure (i.e., loss of direct employment). If other mines and resource projects in the RSA are closing at the same time, the adverse cumulative effects of Project closure could be large. However, if new mines begin operating in the RSA at the same time the Project is ceasing operation, some of the adverse cumulative effects could be offset because former Project workers could be employed by the new mines. Positive and adverse effects are expected to extend to the RSA, although it is recognized that employment extends beyond Ontario.

Future mineral development and exploration within the RSA will likely result in increased labour demand (competition for labour) and stimulate indirect and induced economic activity (both of which contribute to positive effects on GDP, and depending on location, municipal government revenues). Potential therefore exists for the adverse effects of the Project to act cumulatively with contributions to increased competition for labour and upward pressure on wages from future mineral development and exploration. It is also possible that should future mineral development and exploration occur within the RSA and transition into completion phases or decommissioning/closure at the same time as the Project that cumulative adverse effects could occur.

By 2027, it is estimated that there will be a deficit in required labour for the mining industry, and that the use of mobile workers will be required to fill this void. By 2037, it is estimated that there will be a potential shortfall of 23% to 30% of vacancy rates in the mining industry within the RSA. Despite the strong specialization in the mining industry in the RSA, it is likely that the vacancy rates will continue to increase beyond 30% and that the incorporation of mitigation and enhancement measures to fulfill the labour required for the Project, or regionally, will be needed. As such, out of region workers are expected to fill the void left by retirements and the increased demand for mining sector workers within the RSA. As such, the cumulative demands of the Project, in combination with all other future foreseeable activities, will not likely result in an adverse effect on employment in the RSA during construction (short-term) or operations (medium-term). However, the exact cumulative effects of Project closure on labour conditions in the RSA are difficult to accurately predict. It is anticipated that the cumulative adverse effects of the Project in combination with the effects of other future physical activities will be of moderate magnitude on businesses in the RSA.

In terms of cumulative adverse effects of local government revenues, the overall cumulative effect of Project closure in combination with the effects of other future physical activities will reduce the magnitude of adverse effects associated with closure from moderate to low. To be conservative, it is assumed that some residual cumulative effects in the RSA at decommissioning/closure are possible and that with mitigation measures, those cumulative effects will be adverse, moderate magnitude, short-term, continuous and reversible following the completion of construction and operations, and irreversible for decommissioning and closure. The Project will therefore have a relatively low contribution to cumulative effects on employment, business, and provincial economy at the RSA scale.

#### **29.17.4 Cumulative Effects Without the Project**

It is reasonable to assume that development of other future physical activities in the RSA will continue to occur in the future whether the Project occurs or not. It can also be assumed that present physical activities such as forestry and infrastructure improvements will also proceed, regardless of Project status. As shown on Figures 29.1 and 29.5, past and present physical activities are largely concentrated along existing transportation corridors (e.g., highways, railways) in the region and it is likely that areas in proximity to existing transportation and other infrastructure will continue to be potential areas for future development. Without the Project, future cumulative effects on economic conditions are therefore predicted to be similar.

## 29.17.5 Summary of Cumulative Effects on Economic Conditions

Table 29.26 summarizes cumulative effects on economic conditions.

**Table 29.26 Residual Cumulative Effects on Economic Conditions**

Residual Cumulative Effect	Residual Cumulative Effects Characterization						
	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
<b>Residual Cumulative Effect on employment</b>							
With the Project	A	M	RSA	NS	ST-MT	C	R-I
Without the Project	A	M	RSA	NS	ST-MT	C	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Positive and adverse Project effects are expected to extend to the RSA, although it is recognized that employment extends beyond Ontario. However, the Project will have a relatively low contribution to cumulative effects on employment at the RSA scale.						
<b>Residual Cumulative Effect on business</b>							
With the Project	A	M	RSA	NS	ST-MT	C	R-I
Without the Project	A	M	RSA	NS	ST-MT	C	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Positive and adverse Project effects on regional businesses are expected to extend to the RSA, although it is recognized that employment also extends beyond Ontario. However, the Project will have a relatively low contribution to cumulative effects on business at the RSA scale.						
<b>Residual Cumulative Effect on provincial economy</b>							
With the Project	A	L	RSA	NS	ST-MT	C	R-I
Without the Project	A	L	RSA	NS	ST-MT	C	R-I
Contribution from the Project to the Overall Regional Residual Cumulative Effect	Project residual effects on the economy are predicted to be positive in direction and moderate in magnitude. Effects are expected to primarily extend to the RSA, although it is recognized that Project expenditures and, therefore, contributions to GDP will extend beyond Ontario. However, the Project will have a relatively low contribution to cumulative effects on the economy at the RSA scale.						
<p><b>KEY</b></p> <p>See Table 23.3 in Chapter 23 of the Impact Statement (Assessment of Potential Effects on Economic Conditions) for detailed definitions</p> <p><i>Direction:</i>                      P: Positive                      A: Adverse                      N: Neutral</p> <p><i>Magnitude:</i>                      N: Negligible                      L: Low                      M: Moderate                      H: High</p> <p><i>Geographic Extent:</i>                      PA: Project Area                      LSA: Local Study Area                      RSA: Regional Study Area</p> <p><i>Timing:</i>                      NS: No sensitivity                      MS: Moderate sensitivity                      HS: High sensitivity</p> <p><i>Duration:</i>                      ST: Short-term                      MT: Medium-term                      LT: Long-term</p> <p><i>Frequency:</i>                      S: Single event                      IR: Irregular event                      R: Regular event                      C: Continuous</p> <p><i>Reversibility:</i>                      R: Reversible                      I: Irreversible</p> <p>N/A: Not applicable</p>							

### **29.17.6 Prediction Confidence**

Prediction confidence is moderate, because there is uncertainty regarding the timing, location and extent of reasonably foreseeable future activities and what mitigation measures may be implemented by them to address potential effects on economic conditions.

### **29.18 Potential Cumulative Effects on Federal Lands**

The closest lands under federal jurisdiction are the Taykwa Tagamou Nation Reserve lands located approximately 37 km away (straight line) from the Project site (14 km southeast of Cochrane). The Project is not expected to adversely affect federal lands (e.g., First Nation Reserves) and therefore cumulative effects on federal lands are not anticipated.

### **29.19 Assumptions**

The assumptions related to the Project's residual adverse effects are detailed in each VC chapter within the Impact Statement (Chapters 10-23). For the assessment of cumulative effects concerning past, present, and future physical activities, the evaluation is based on the information available at the time of the assessment.

The PIL provides details on the types of physical activities, their timing, and their distances from the Project. This information is essential for identifying spatial and temporal overlaps with potential residual effects of other physical activities on a VC. In instances where timing information is not available, a conservative approach is adopted, assuming that a temporal overlap is likely to occur.

For similar physical activities, such as other proposed mines in the area, it is assumed that they will have similar types of effects on VCs as those predicted for the Project. Consequently, it is also assumed that the potential cumulative effects on VCs arising from past, present, and future physical activities will follow the same effect pathways as those resulting from the Project. Therefore, these effects could act cumulatively with the residual effects of the Project.

## 29.20 References

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# Attachments

## **Attachment 29.1      Project Inclusion List**

**Crawford Nickel Project Impact  
Statement:  
Chapter 29 Cumulative Effect –  
Attachment 29.1  
Project Inclusion List**

November 22, 2024

Prepared for:

Canada Nickel Company



Prepared by:

Stantec Consulting Ltd.



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## 1 Project Inclusion List

The cumulative effects assessment identifies and assesses Project residual adverse effects that may interact with the effects of other past, present and reasonably foreseeable future physical activities. To complete the cumulative effects assessment, this Project Inclusion List has been developed to identify the past, present and future physical activities that may interact cumulatively with the effects of the Project.

The physical activities considered in the cumulative effects assessment are listed below and have been organized under the following categories:

- Mining: mines and exploration activities
- Aggregate Extraction: pits and quarries
- Community Development: First Nation reserves, urban areas, landfills, water and wastewater treatment, and other community services
- Water Management: non-electric dams
- Transportation: airports, highways, and railways
- Power: hydroelectric dams, solar power, natural gas, and transmission lines
- Energy: pipelines and local distribution systems
- Forestry: managed forests, sawmills and paper mills
- Agriculture: agricultural conversion and operation
- Recreation: conservation areas, parks and campgrounds, and snowmobile trails
- Hunting and Fishing Activities

A description of each activity, corresponding status (timing), and proximity of each physical activity to the Project are identified below and the location of selected physical activities is presented in the figures in Attachment 29.2. This list of past, present and future physical activities included in Attachment 29.1 is based on public information available up to September 30, 2024.

## 1.1 Mining

Proponent	Physical Activity	Description	Status/Timing <sup>1</sup>	Distance from the Project (in kilometres [km])
<b>Mines</b>				
<b>Past and Present Physical Activities</b>				
Glencore Inc.	Kidd Creek Mine	Underground zinc, copper and silver mine	Operating 1966-present; producing mine	2 km
Lake Shore Gold Corp. (Pan American Silver Corp.)	Bell Creek Mine	Underground gold and silver mine	Operating 1987-present; producing mine	14 km
Kidd Creek Mines Ltd. (formerly Falconbridge Ltd.)	Owl Creek Mine	Open pit gold mine	Operated 1981-89; closed out	16 km
Lake Shore Gold Corp. (Pan American Silver Corp.)	Hallnor Gold Mine (formerly Pamour No. 2 Mine)	Underground gold mine	Operated 1938-70; closed out	18 km
Newmont Corp. – Porcupine Gold Mines	Hollinger Mine (formerly Hollinger Consolidated Gold Mine)	Underground and open pit gold mine	Operated 1910-68 (underground); operating 2014-present (open pit); producing mine	19 km
Newmont Corp. – Porcupine Gold Mines	Hoyle Pond Mine	Underground gold mine	Operating 1966-present; producing mine	19 km
Goldcorp Canada Inc.	McIntyre Mine	Underground gold mine	Operated 1912-88; abandoned	19 km
Newmont Corp. – Porcupine Gold Mines	Pamour Mine (formerly Goldcorp's Century Project)	Open pit gold and silver mine	Operating 1910-present; producing mine	20 km
Newmont Corp. – Porcupine Gold Mines	Dome Mine	Open pit and underground gold and silver mine	Operated 1910-2018; closed out; processing facility continues operations for the Hoyle Pond and Hollinger mines	21 km
Glencore Inc.	Kidd Metallurgical Site	Metallurgical site	Operating 1980-present	21 km

<sup>1</sup> Status/Timing for Mines defined per the *Mining Act*, 1990 Part VII, 139 (1). Mines identified as having been abandoned or closed are considered past activities, while operating or producing mines are considered present activities.

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing<sup>1</sup></b>	<b>Distance from the Project (in kilometres [km])</b>
Pamour Porcupine Mines Ltd.	Aunor Gold Mine	Underground gold mine	Operated 1940-84; closed out	23 km
Grace Gold Ltd.	Clavos Mine	Underground gold mine	Operated 2005-2007; abandoned	32 km
Lake Shore Gold Corp. (Pan American Silver Corp.)	Timmins West Mine	Underground gold mine	Operating 2010-present; producing mine	34 km
Agnico Eagle Mines Ltd.	Aquarius Mine (Aquarius Block of Timmins East)	Underground gold mine	Operated 1984, 1988-89; abandoned	39 km
McEwen Mining Inc.	Stock Mine	Underground gold mine	Operated 1989-2005; to resume in 2025	59 km
McEwen Mining Inc.	Black Fox-Stock Mill	Gold processing site	Operating 1999-present	59 km
Agnico Eagle Mines Ltd.	Taylor Mine (Taylor Block of Timmins East)	Underground gold mine	Operated 2012-2020; closure	59 km
Agnico Eagle Mines Ltd.	Hislop Mine (Hislop Block of Timmins East)	Open pit and underground gold mine	Operated 1990-1999 (underground), 1999-2007 (open pit); closure	71 km
McEwen Mining Inc.	Froome Mine	Underground gold mine	Operating 2021-present; producing mine	72 km
McEwen Mining Inc.	Black Fox Mine	Open pit and underground gold mine	Operated 1997-2001, 2009-2015 (open pit), 2011-21 (underground); closure	74 km
Alamos Gold Inc.	Young-Davidson Mine	Open pit and underground gold mine	Operating 1934-1957, 2005-present; producing mine	91 km
Matachewan Consolidated Mines Ltd.	Matachewan Consolidated Mine	Underground gold mine	Operated 1920-1954; abandoned	91 km
Agnico Eagle Mines Ltd.	Macassa Mine	Underground gold mine	Operating 1933-99, 2002-present; producing mine	109 km
Agnico Eagle Mines Ltd.	Macassa Mill	Gold and silver processing site	Operating 1986-99, 2002-present; producing mine	115 km
Agnico Eagle Mines Ltd.	Holt Mine (Holt-Holloway Block of Timmins East)	Underground gold mine	Operated 1980-2019; closure	117 km
Agnico Eagle Mines Ltd.	Holt Mill	Tailings storage facility	Closed	117 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing<sup>1</sup></b>	<b>Distance from the Project (in kilometres [km])</b>
Agnico Eagle Mines Ltd.	Holloway Mine (Holt-Holloway Block of Timmins East)	Underground gold mine	Operated 1980-2019; closure	117 km
Agnico Eagle Mines Ltd.	Detour Lake Gold Mine	Open pit gold mine	Operated 1983-1999, operating 2013-present; producing mine	171 km
<b>Future Physical Activities</b>				
Gowest Gold Ltd.	North Timmins Gold Project – Bradshaw Mine	Proposed restart in production of the Bradshaw Gold Deposit (formerly Frankfield East)	Future – exact timing undetermined	10 km
Agnico Eagle Mines Ltd.	Upper Beaver Gold Project	Proposed construction, operation, decommissioning, and abandonment of an underground and open-pit gold and copper mine 20 kilometres northeast of Kirkland Lake, Ontario	Future - Ongoing assessment under the <i>Impact Assessment Act</i> , 2019 (82960); 2023-2043+	133 km
Agnico Eagle Mines Ltd.	Detour Lake Gold Mine Expansion	Open pit gold mine	Future – 2030 - 2044	171 km
McEwen Mining Inc.	Fox Mining Complex Expansion Project – Froome, Stock West, Grey Fox, and Fuller Deposits	Preliminary Economic Assessment for expansion of underground gold mining scenarios of the Froome, Stock West, Grey Fox, and Fuller deposits, and upgrades to the Stock Mill. Studies are in progress to allow access to the area for potential bulk sampling and initial open pit mining.	Future – exact timing undetermined	80 km

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Proponent	Physical Activity	Description	Status/Timing <sup>1</sup>	Distance from the Project (in kilometres [km])
<b>Exploration</b>				
<b>Past and Present Physical Activities</b>				
Gowest Gold Ltd.	Deposit and Zones - Tully North Property, Tully Easy Property, Pipestone East Gowest Property, Pipestone East Main Property, Pipestone West Property, Gowest Whitney Property	Exploration activities for gold mineralization potential	Operating	5 km
Gowest Gold Ltd.	North Timmins Gold Project – Bradshaw Mine	Exploration drilling for the restart of production at the Bradshaw Mine	Operating	10 km
Kidd Creek Mines Ltd. (formerly Falconbridge Ltd.)	Owl Creek Mine site	Exploration drilling for gold mineralization	Completed in 1966-73, 1978-84, 1986-87	16 km
Central Timmins Exploration Corporation	ERO: 019-0992 – Mechanized Drilling	Early exploration activities including mechanized drilling (assembled weight >150kg)	Completed 2020-23	18 km
Lake Shore Gold Corp. (Pan American Silver Corp.)	Upper Whitney Resource	Exploration drilling for gold mineralization	Completed in 2013	18 km
Lake Shore Gold Corp. (Pan American Silver Corp.)	Upper Hallnor Deposit	Exploration drilling for gold mineralization	Completed in 2012	18 km
GFG Resources Inc.	Montclerg Gold Project	Exploration drilling for gold mineralization	Historical, 2016	37 km
Agnico Eagle Mines Ltd.	Aquarius Block (Timmins East)	Exploration drilling for gold mineralization	Completed prior to 1930's and throughout the 1990's; 2022	42 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing<sup>1</sup></b>	<b>Distance from the Project (in kilometres [km])</b>
McEwen Mining Inc.	Stock Property – Stock West, Stock Mine Deep and Gap Zone, Stock East	Exploration drilling for potential gold mineralization and continuity of gold mineralization	Historical; completed in 2018 and 2019	56 km
Agnico Eagle Mines Ltd.	Taylor Block (Timmins East)	Exploration drilling for gold mineralization; diamond drilling	Completed prior to 1930's and throughout the 1990's; 2022	59 km
GFG Resources Inc.	Pen Gold Project	Exploration drilling for gold mineralization	Completed in 2021, 2023, 2024	65 km
Agnico Eagle Mines Ltd.	Hislop Block (Timmins East)	Exploration drilling for gold mineralization; diamond drilling	Completed prior to 1930's and throughout the 1990's; 2022	71 km
GFG Resources Inc.	Doré Gold Project (formerly Swayze Gold Project)	Exploration drilling for gold mineralization	Completed in 2023, 2024	72 km
McEwen Mining Inc.	Froome Deposit	Exploration drilling for potential gold mineralization	Completed in 2018	72 km
McEwen Mining Inc.	Black Fox Mine, Froome, Tamarack, Pike River, and Grey Fox	Exploration drilling for potential continuity of gold mineralization	Completed in 2018 and 2019	77 km
Mayfair Gold	Fenn-Gib Gold Project	Exploration drilling for gold mineralization	Completed from 1994-2024	86 km
Agnico Eagle Mines Ltd.	South Mine Complex and Main Break (Macassa Mine properties)	Exploration drilling for gold mineralization	Historical; completed in 2023	109 km
Agnico Eagle Mines Ltd.	Holt-Holloway Block (Timmins East)	Exploration drilling for gold mineralization	Completed prior to 1930's and throughout the 1980's; 2006	117 km
<b>Future Physical Activities</b>				
Canada Nickel Company	Various Exploration Projects	Resource exploration projects proposed in the next 15 months	Undetermined	Undetermined

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing<sup>1</sup></b>	<b>Distance from the Project (in kilometres [km])</b>
Canada Nickel Company	ERO: 019-8169 - Mineral Exploration Permit	Early exploration activities including mechanized drilling (assembled weight >150kg)	April 2024 to 2027	13 km
Canada Nickel Company	ERO: 019-7105 - Mineral Exploration Permit	Early exploration activities including mechanized drilling (assembled weight >150kg)	Proposal – up to 3 years with possibility of renewal	17 km
2681891 Ontario Inc.	ERO: 019-8162 - Mineral Exploration Permit	Early exploration activities including mechanized drilling (assembled weight >150kg)	April 2024 to 2027	19 km
Norbert Reichert	ERO: 019-8201 - Mineral Exploration Permit	Early exploration activities including mechanized surface stripping (greater than 100 square metres in a 200 metres radius), pitting and trenching of bedrock (greater than 3 cubic metres in a 200-metre radius), and mechanized drilling (assembled weight >150kg)	April 2024 to 2027	22 km
Oakhurst Exploration Corp.	ERO: 019-8184 -Mineral Exploration Permit	Early exploration activities including mechanized drilling (assembled weight >150kg)	April 2024 to 2027	22 km
Canada Nickel Company	ERO: 019-8126 - Mineral Exploration Permit	Early exploration activities including mechanized drilling (assembled weight >150kg)	February 2024 to 2027	24 km

<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing<sup>1</sup></b>	<b>Distance from the Project (in kilometres [km])</b>
Randall Salo	ERO: 019-8235 - Mineral Exploration Permit	Early exploration activities including mechanized surface stripping (greater than 100 square metres in a 200 metres radius) and pitting and trenching of bedrock (greater than 3 cubic metres in a 200-metre radius)	April 2024 to 2027	34 km
Grace Gold Ltd.	ERO: 019-8122 - Permit to take water renewal (Proposal)	Permit to Take Water from one watercourse (North Driftwood Creek) for mining purposes	Future – 2024 to 2034	38 km
2681891 Ontario Inc.	ERO: 019-8151 - Mineral Exploration Permit	Early exploration activities including line cutting (less than 1.5 metres in width)	February 2024 to 2027	38 km
Explor Resources	ERO: 019-8130 -Mineral Exploration Permit	Early exploration activities including mechanized drilling (assembled weight >150kg)	March 2024 to 2027	58 km

## 1.2 Aggregate Extraction

<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
<b>Pits and Quarries</b>				
<b>Past and Present Physical Activities</b>				
C. Villeneuve Construction Company Ltd.	Labelle Pit - Carnegie Township	Pit	Existing	0 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Tremblay Road	Pit	Existing	11 km
Ontario Power Generation Inc.	Hydro Pit - Little Township	Pit	Existing	13 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
C. Villeneuve Construction Company Ltd.	Pit #214	Pit	Existing	15 km
C. Villeneuve Construction Company Ltd.	Pit #205	Pit	Existing	17 km
C. Villeneuve Construction Company Ltd.	Pit #137	Pit	Existing	17 km
Emile Groulx	MTO Pit #137	Pit	Existing	17 km
Ontario Power Generation Inc.	Hydro Pit - Little Township	Pit	Existing	18 km
Darcy Labelle	Palangio Pit	Pit	Existing	18 km
Ministry of Energy, Northern Development and Mines	Aggregate extraction site (no name), Clay Pit Source	Pit	Existing	19 km
Timmins Forest Productions Ltd.	Little Township - TFP Pit	Pit	Existing	19 km
C. Villeneuve Construction Company Ltd.	Driftwood Quarry West	Quarry	Existing	20 km
Ministry of Energy, Northern Development and Mines	Kam Kotia Mine Site	Quarry	Existing	21 km
C. Villeneuve Construction Company Ltd.	Mountjoy Pit	Pit	Existing	22 km
2120693 Ontario Inc.	Horseshoe Lake Pit - Mountjoy Twp.	Pit	Existing	22 km
C. Villeneuve Construction Company Ltd.	Robb Twp Kamiskotia Pit	Pit	Existing	22 km
Sarjeant Co. Ltd.	Loveland Twp Pit	Pit	Existing	22 km
C. Villeneuve Construction Company Ltd.	Loveland Pit	Pit	Existing	22 km
Robert A. Fairhurst	Fairhurst Pit - Matheson Twp.	Pit	Existing	23 km
Andy Chartrand	Andy Chartrand Pit	Pit	Existing	23 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
C. Villeneuve Construction Company Ltd.	Timber Craft Robb #7	Pit	Existing	23 km
Goldcorp Canada Ltd. c/o Porcupine Gold Mines	Whitney Township Quarry	Quarry	Existing	23 km
Ministry of Energy, Northern Development and Mines	Aggregate extraction site (no name), K.K.M. Granular Borrow Source	Pit	Existing	23 km
Sarjeant Co. Ltd.	Mountjoy Township Pit	Pit	Existing	23 km
Sarjeant Co. Ltd.	Ice Chest Lake Road Pit	Pit	Existing	23 km
ACFOR Forestry Management Inc.	S. of 2-Finger Lake Pit #500	Pit	Existing	24 km
Surface Excavation Inc.	Matheson Twp. Pit	Pit	Existing	25 km
Greenfirst Forest Products (QC) Inc.	Malette Inc. Pit #117	Pit	Existing	26 km
2197630 Ontario Ltd.	Cody Township Pit	Pit	Existing	26 km
Greenfirst Forest Products (QC) Inc.	Malette Inc. Pit #104	Pit	Existing	26 km
Greenfirst Forest Products (QC) Inc.	Tembec Pit #54 (Loveland Twp)	Pit	Existing	28 km
Rayonier A.M. Canada G.P	Sydere Pit	Pit	Existing	28 km
Rayonier A.M. Canada G.P	Laidlaw Lake Pit	Pit	Existing	28 km
Greenfirst Forest Products (QC) Inc.	Blue Lake Pit - Malette Pit # 138	Pit	Existing	29 km
2197630 Ontario Ltd.	Aggregate extraction site (no name)	Quarry	Existing	29 km
Greenfirst Forest Products (QC) Inc.	Malette Inc. Pit #118	Pit	Existing	30 km
The Corporation of the City of Timmins	Potvin Lake Pit	Pit	Existing	30 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Rayonier A.M. Canada G.P	Aggregate extraction site (no name) east of Foot Print Lake	Pit	Existing	30 km
C. Villeneuve Construction Company Ltd.	Labelle Pit - German Township	Pit	Existing	32 km
C. Villeneuve Construction Company Ltd.	Labelle Pit - German Township	Pit	Existing	32 km
Ministry of Transportation	MTO Pit - German Twp.	Pit	Existing	32 km
2197630 Ontario Ltd.	Caron - Adams Pit	Pit	Existing	33 km
Ministry of Transportation	Pit #170	Pit	Existing	33 km
Lafarge Canada Inc.	Rankin Pit	Pit	Existing	35 km
Ministry of Transportation	Iroquois Falls #02	Pit	Existing	36 km
Ministry of Transportation	Porquois Junction #21	Pit	Existing	36 km
2039641 Ontario Inc.	German Township Pit	Pit	Existing	36 km
2197630 Ontario Ltd.	Caron Equipment - Plante Pit	Pit	Existing	36 km
2197630 Ontario Ltd.	Caron Equipment - Plante Pit	Pit	Existing	36 km
Greenfirst Forest Products (QC) Inc.	Malette Inc. Pit #149	Pit	Existing	37 km
Voltage Metals Corp.	Montcalm Mine Pit #2 (Massey Twp)	Pit	Existing	37 km
Marcel Cheff Jr.	Pit #167	Pit	Existing	37 km
Greenfirst Forest Products (QC) Inc.	Pit #127	Pit	Existing	37 km
Association de Scoute du Canada	MTO Pit #1670	Pit	Existing	37 km
Trevor's Unit Step & Concrete Products Limited	Trevor's Unit Pit - German Twp.	Pit	Existing	37 km
Greenfirst Forest Products (QC) Inc.	Malette Inc. Pit #123	Pit	Existing	38 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Sarjeant Co. Ltd.	Macklem Pit	Pit	Existing	38 km
Miller Paving Limited	Miller's Macklem Twp Pit	Pit	Existing	39 km
Sarjeant Co. Ltd.	Pit #189	Pit	Existing	39 km
Greenfirst Forest Products (QC) Inc.	Tembec Pit #323	Pit	Existing	39 km
M.J. Labelle Co. Ltd.	Pit #246	Pit	Existing	39 km
2039641 Ontario Inc.	Trevors Concrete Products - Macklem	Pit	Existing	40 km
Liberty Mines Inc.	North Quarry	Pit and Quarry	Existing	40 km
Miller Paving Limited	Jacob's Hill Pit & Quarry	Pit and Quarry	Existing	40 km
M & G Logging	Junction Road Pit	Pit	Existing	40 km
Greenfirst Forest Products (QC) Inc.	SH 6 - Oke	Pit	Existing	41 km
Liberty Mines Inc.	South Quarry	Pit and Quarry	Existing	41 km
N-R Power & Energy Corp.	Long Sault Pit	Pit	Existing	41 km
Great White Minerals Ltd.	Aggregate extraction site (no name), Silica Pit in Fripp Twp.	Quarry	Existing	42 km
Liberty Mines Inc.	Redstone Mine - McWaters Rd Pit	Pit	Existing	42 km
Lorne Linklater	Pit #222	Pit	Existing	42 km
Aecon Mining Inc.	Enid Twp Pit	Pit and Quarry	Existing	43 km
C. Villeneuve Construction Company Ltd.	Peninsula Pit	Pit	Existing	44 km
C. Villeneuve Construction Company Ltd.	Departure Lake Quarry	Quarry	Existing	44 km
Greenfirst Forest Products (QC) Inc.	Malette Inc. Pit #108	Pit	Existing	44 km
Voltage Metals Corp.	Montcalm Pit No. 1	Pit	Existing	44 km
2197630 Ontario Ltd.	Denton North Pit	Pit	Existing	45 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
C. Villeneuve Construction Company Ltd.	Webster/Kendrey Quarry	Pit and Quarry	Existing	45 km
2197630 Ontario Ltd.	Denton Township Pit	Pit	Existing	45 km
M.J. Labelle Co. Ltd.	Departure Lake Pit	Pit	Existing	45 km
Greenfirst Forest Products (QC) Inc.	SH 4 - Stringer	Pit	Existing	47 km
Miller Paving Limited	Star Lake Pit	Pit	Existing	47 km
Greenfirst Forest Products (QC) Inc.	Douglas Pit #420	Pit	Existing	47 km
Rayonier A.M. Canada G.P.	Webster Pit	Pit	Existing	47 km
Ministry of Transportation	Departure Lake Road Pit	Pit	Existing	48 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Edwards Twp. Edwards Creek Road	Quarry	Existing	49 km
Liberty Mines Inc.	Liberty Mines Stringers Road Pit	Pit	Existing	49 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Mortimer Twp. Pit #7	Pit	Existing	50 km
Greenfirst Forest Products (QC) Inc.	Blount Pit #1	Pit	Existing	51 km
Aecon Mining Inc.	Aggregate extraction site (no name)	Pit	Existing	51 km
Greenfirst Forest Products (QC) Inc.	Pit #98	Pit	Existing	51 km
Resource Tech Management Inc.	Aggregate extraction site (no name), Fasken Twp.	Pit	Existing	51 km
Resource Tech Management Inc.	Aggregate extraction site (no name)	Pit	Existing	51 km
Rayonier A.M. Canada G.P.	Alexandra Clay Pit	Pit	Existing	51 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Edwards Twp. Edwards Creek Road	Pit	Existing	52 km
M.Bergeron Trucking Ltd.	Aggregate extraction site (no name)	Pit	Existing	52 km
Sarjeant Co. Ltd.	Custom Concrete Pit - Keefer Twp.	Pit	Existing	52 km
The Corporation of the Township of Fauquier-Strickland	Aggregate extraction site (no name)	Pit	Existing	52 km
Ministry of Natural Resources and Forestry	Aggregate extraction site (no name), Shackleton Road	Pit	Existing	53 km
Greenfirst Forest Products (QC) Inc.	Malette Inc. Pit #125	Pit	Existing	54 km
Greenfirst Forest Products (QC) Inc.	Tembec Pit No. 318 Montcalm Twp	Pit	Existing	54 km
EACOM Timber Corporation	Geikie Twp Pit	Pit	Existing	54 km
C. Villeneuve Construction Company Ltd.	Sand Lake	Pit	Existing	55 km
Doyle Township (East) Cottagers' Association	Cottagers Association (M - 328) Pit	Pit	Existing	55 km
Aecon Mining Inc.	Montcalm Pit	Pit	Existing	55 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Pit #4 Dempsay Twp	Pit	Existing	56 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Pit #03	Pit	Existing	56 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Stimpson Pit #226	Pit	Existing	56 km
Abitibi-Consolidated Company of Canada	Pit #08	Pit	Existing	56 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Miller Paving Limited	Aggregate extraction site (no name)	Quarry	Existing	59 km
Abitibi-Consolidated Company of Canada	Laughton Pit	Pit	Existing	59 km
EACOM Timber Corporation	Aggregate extraction site (no name), McNeil Road in Cleaver Twp.	Pit	Existing	60 km
Abitibi-Consolidated Company of Canada	Pit #131	Pit	Existing	60 km
Innlink Concrete Ltd.	Pit #118	Pit	Existing	61 km
Rayonier A.M. Canada G.P.	Tembec Pit #331	Pit	Existing	61 km
Greenfirst Forest Products (QC) Inc.	Griffin CSR 03 Pit #1	Pit	Existing	64 km
Corporation of the Township of Black River-Matheson	Aggregate extraction site (no name), Watabeag Road	Pit	Existing	65 km
Corporation of the Township of Black River-Matheson	Aggregate extraction site (no name)	Pit	Existing	66 km
Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name), Pharand Twp.	Pit	Existing	66 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Sweatman/Findlay TP Pit 38	Pit	Existing	68 km
Abitibi-Consolidated Company of Canada	Pit #130	Pit	Existing	68 km
C. Villeneuve Construction Company Ltd.	Heighington Quarry	Quarry	Existing	69 km
Wahgoshig Resources Inc., Wahgoshig Resources Limited Partnership.	Marathon Pit #230	Pit	Existing	69 km
Innlink Concrete Ltd.	ACI #001	Pit	Existing	69 km
Malette Inc.	NOVA # 312	Pit	Existing	70 km

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Abitibi-Consolidated Company of Canada	Pit #128	Pit	Existing	70 km
Greenfirst Forest Products (QC) Inc.	Tembec Pit #2 Inglis South	Pit	Existing	71 km
Greenfirst Forest Products (QC) Inc.	CH 1 - Nansen	Pit	Existing	71 km
Corporation of the Township of Moonbeam	Aggregate extraction site (no name)	Pit	Existing	71 km
Corporation of the Township of Black River-Matheson	Aggregate extraction site (no name), Painkiller Lake	Pit	Existing	71 km
Greenfirst Forest Products (QC) Inc.	Griffin 01 Road Pit B	Pit	Existing	72 km
C. Villeneuve Construction Company Ltd.	Lachance Moonbeam Quarry	Quarry	Existing	73 km
Greenfirst Forest Products (QC) Inc.	Griffin Pit	Pit	Existing	73 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Remi Lake Road	Pit	Existing	74 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	ACI 039	Pit	Existing	74 km
Greenfirst Forest Products (QC) Inc.	Nova #306	Pit	Existing	74 km
Greenfirst Forest Products (QC) Inc.	Tembec Pit #337	Pit	Existing	77 km
Greenfirst Forest Products (QC) Inc.	Casselman pit	Pit	Existing	77 km
Greenfirst Forest Products (QC) Inc.	CH 4 - Casselman	Pit	Existing	77 km
Greenfirst Forest Products (QC) Inc.	CH 5 - Fenton	Pit	Existing	77 km
Rayonier A.M. Canada G.P.	Tembec Pit #335	Pit	Existing	77 km
Greenfirst Forest Products (QC) Inc.	SW 3 - Swanson	Pit	Existing	78 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Greenfirst Forest Products (QC) Inc.	Tembec Pit #333	Pit	Existing	79 km
Greenfirst Forest Products (QC) Inc.	SW 1 - Swanson	Pit	Existing	79 km
First Nation Timber Ltd.	Aggregate extraction site (no name), Swanson Road, Swanson Twp.	Pit	Existing	79 km
Miller Paving Limited	Aggregate extraction site (no name)	Pit	Existing	80 km
Rayonier A.M. Canada G.P.	NOVA 330	Pit	Existing	80 km
Greenfirst Forest Products (QC) Inc.	BM 2 - Beardmore	Pit	Existing	81 km
Greenfirst Forest Products (QC) Inc.	CH 6 - Seaton	Pit	Existing	81 km
Kirkland Lake Rocks Ltd.	Aggregate extraction site (no name)	Quarry	Existing	82 km
Antonio Tremblay Contracting Limited	Aggregate extraction site (no name), Swanson Road	Pit	Existing	83 km
Antonio Tremblay Contracting Limited	Aggregate extraction site (no name), Clear Lake Road	Pit	Existing	83 km
Nadeau Haulage	Aggregate extraction site (no name), O'Brien Township	Pit	Existing	83 km
First Nation Timber Ltd.	Timbercraft O'Brien Pit #1	Pit	Existing	83 km
2333382 Ontario Inc.	Munro Twp Quarry	Quarry	Existing	83 km
Antonio Tremblay Contracting Limited	Timbercraft O'Brien Pit #2	Pit	Existing	84 km
Miller Paving Limited	Malloch Lake Pit	Pit	Existing	84 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Challies Twp Pit	Pit	Existing	85 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Maurice Lebrun	Aggregate extraction site (no name)	Pit	Existing	85 km
First Nation Timber Ltd.	Timber Craft O'Brien #3	Pit	Existing	85 km
Ministry of Transportation	Aggregate extraction site (no name), Butler Lake	Pit	Existing	85 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Whitewater Pit	Pit	Existing	86 km
Abitibi-Consolidated Company of Canada	Pit #207 Swartman Twp.	Pit	Existing	86 km
Sarjeant Co. Ltd.	Munro Pit 2	Pit	Existing	87 km
Sarjeant Co. Ltd.	Munro Pit 1	Pit	Existing	87 km
Miller Paving Limited	Butler Lake Pit and Quarry	Pit and Quarry	Existing	87 km
Abitibi-Consolidated Company of Canada	Pit #06	Pit	Existing	87 km
Greenfirst Forest Products (QC) Inc.	BM 1 - Gurney	Pit	Existing	88 km
The Corporation of the Town of Kapuskasing, Kapuskasing/Moonbeam Landfill Site Management Board	Aggregate extraction site (no name)	Pit	Existing	88 km
Antonio Tremblay Contracting Limited	Aggregate extraction site (no name), Gurney Road	Pit	Existing	88 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), North of Hwy. #66	Pit and Quarry	Existing	88 km
Miller Paving Limited	Aggregate extraction site (no name)	Pit	Existing	88 km
Ministry of Transportation	Pit #5	Pit	Existing	88 km
Greenfirst Forest Products (QC) Inc.	Malette Inc. Pit #205	Pit	Existing	89 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Nadeau Haulage	Aggregate extraction site (no name), east of Fred Flatt Road	Pit	Existing	89 km
Ministry of Transportation	Pit #325	Pit	Existing	89 km
Greenfirst Forest Products (QC) Inc.	GU 1 - Gurney	Pit	Existing	90 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), southeast ¼ Teetzel & O'Brien	Pit	Existing	90 km
Alamos Gold Inc.	Young-Davidson TIA Rock Quarry	Quarry	Existing	90 km
Alamos Gold Inc.	Young-Davidson (SSAG-A)	Pit	Existing	91 km
Alamos Gold Inc.	Young-Davidson (SSAG-D)	Pit	Existing	91 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Fred Flatt Road	Pit	Existing	91 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), southeast ¼ Teetzel Twp.	Pit	Existing	91
Alamos Gold Inc. (Young-Davidson -	Young-Davidson - SSAG-B	Pit	Existing	91 km
Abitibi-Consolidated Company of Canada	Epinette Rd. API #210	Pit	Existing	91 km
Greenfirst Forest Products (QC) Inc.	FR 1 - Teetzel	Pit	Existing	92 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Fred Flatt Road	Pit	Existing	93 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Knott Lake	Quarry	Existing	93 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Antonio Tremblay Contracting Limited	Aggregate extraction site (no name), Tetzell Township	Pit	Existing	93 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), east of Fred Flatt Road	Pit	Existing	94 km
EACOM Timber Corporation	Aggregate extraction site (no name), east of Highway #11 North	Pit	Existing	94 km
1345039 Ontario Ltd.	Aggregate extraction site (no name)	Pit	Existing	94 km
Kapuskasing Timber Craft Consultation Inc.	Matachewan Pit	Pit	Existing	94 km
C. Villeneuve Construction Company Ltd.	East of Fred Flatt Road	Pit	Existing	94 km
C. Villeneuve Construction Company Ltd.	Sesekinika Quarry	Pit and Quarry	Existing	95 km
Nadeau Haulage	Aggregate extraction site (no name), Teetzell Township	Pit	Existing	96 km
Resource Tech Management Inc.	Aggregate extraction site (no name), Burt Lake Road	Pit	Existing	96 km
Maurice Lebrun	Lebrun Teetzell Pit #1	Pit	Existing	97 km
Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name), Fred Flatt Haul Road at 20 km	Pit	Existing	97 km
Miller Paving Limited	Larkman & Boucher Cairo Pit #1	Pit	Existing	97 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
A. Miron Topsoil Ltd.	Aggregate extraction site (no name), Souci Lake Road	Pit	Existing	97 km
Norbord Industries Inc.	Aggregate extraction site (no name)	Pit	Existing	97 km
C. Villeneuve Construction Company Ltd.	Timber Craft Pearce Pit #8	Pit	Existing	98 km
First Nation Timber Ltd.	Tweed Twp. Pit	Pit	Existing	98 km
Greenfirst Forest Products (QC) Inc.	CA 1 - Sulman	Pit	Existing	98 km
Resource Tech Management Inc.	Burt Township Pit #3	Pit	Existing	98 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Sulman	Pit	Existing	98 km
EACOM Timber Corporation	Aggregate extraction site (no name), Whiskey Jack Creek	Pit	Existing	98 km
1168048 Ontario Inc. Robinson Consulting	Owens 2B	Pit	Existing	98 km
Abitibi-Consolidated Company of Canada	OBM 53549	Pit	Existing	98 km
Greenfirst Forest Products (QC) Inc.	FR 3 - Pearce	Pit	Existing	99 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Sulman Twp. Cargill Road	Quarry	Existing	99 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), northeast Lake 11, southeast ¼ Pearce Twp.	Pit	Existing	99 km
1168048 Ontario Inc. Robinson Consulting	Owens #2	Pit	Existing	99 km
Antonio Tremblay Contracting Limited	Aggregate extraction site (no name), Pearce Township	Pit	Existing	100 km

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Alex MacIntyre & Associates Limited	Burt Twp Pit	Pit	Existing	100 km
Miller Paving Limited	Aggregate extraction site (no name), Grenfell Twp	Pit	Existing	100 km
Resource Tech Management Inc.	Aggregate extraction site (no name), on Watabeag Road north of Hwy. #66	Pit	Existing	100 km
Nychuk Lumber Limited	MTO 3F 40	Pit	Existing	100 km
Great White Minerals Ltd.	Aggregate extraction site (no name), West of Hwy. #65	Quarry	Existing	101 km
Kirkland Lake Rocks Ltd.	Aggregate extraction site (no name), West of Hwy #65	Pit and Quarry	Existing	101 km
Great White Minerals Ltd.	GWM - Kimberly West Quarry	Quarry	Existing	101 km
Odie's Contracting	Aggregate extraction site (no name)	Pit	Existing	101 km
Alex MacIntyre & Associates Limited	Kenogami Dump Site	Pit	Existing	101 km
1168048 Ontario Inc. Robinson Consulting	Owens #1	Pit	Existing	102 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	ACI Pit #232 (Steele Twp)	Pit	Existing	104 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	ACI Pit #213	Pit	Existing	104 km
O3 Mining Inc.	Garrison Township Pit	Pit	Existing	105 km
Jordash Trucking & Equipment	Bisley Pit #1	Pit	Existing	106 km
Miller Paving Limited	Aggregate extraction site (no name), Owens	Pit	Existing	106 km

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Alex MacIntyre & Associates Limited	Morrisette Twp. Pit	Pit	Existing	106 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Pit #11	Pit	Existing	107 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name)	Quarry	Existing	107 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Todd Lake	Pit	Existing	107 km
C. Villeneuve Construction Company Ltd.	Pinard Quarry	Pit and Quarry	Existing	107 km
Island Falls Forestry General Partnership Inc.	Pit #59	Pit	Existing	108 km
First Nation Timber Ltd.	Pinard Twp. Pit	Pit	Existing	108 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	ACI Pit #220	Pit	Existing	108 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Pit #10	Pit	Existing	108 km
Island Falls Forestry General Partnership Inc.	Mewhinney Township Pit	Pit	Existing	108 km
Alex Mac Intyre & Associates Ltd.	Aggregate extraction site (no name), Morrisette Twp.	Pit	Existing	108 km
Alex Mac Intyre & Associates Ltd.	Aggregate extraction site (no name), north of Kirkland Lake	Pit	Existing	108 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name)	Quarry	Existing	108 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Cargill	Quarry	Existing	108 km
Alex MacIntyre & Associates Limited	Aggregate extraction site (no name)	Pit	Existing	108 km

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Jordash Trucking & Equipment	Aggregate extraction site (no name), Morrisette Twp.	Pit	Existing	108 km
Aecon Mining Inc.	Aggregate extraction site (no name), Cargil	Quarry	Existing	109 km
C. Villeneuve Construction Company Ltd.	Harty Pit	Pit	Existing	109 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name)	Pit	Existing	109 km
Antonio Tremblay Contracting Limited	Aggregate extraction site (no name), Harty Dump Road	Pit	Existing	109 km
H. Fiset & Sons Ltd.	Indian Chutes Pit	Pit	Existing	109 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Tremblay Road	Pit	Existing	109 km
Wayne Phippen	Aggregate extraction site (no name), Morrisette Twp.	Pit	Existing	109 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	ACI Pit # 219	Pit	Existing	110 km
Island Falls Forestry General Partnership Inc.	Pinard Twp. Pit #166	Pit	Existing	110 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Pit #218	Pit	Existing	110 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	ACI - 231, Upland Rd - Camp 36	Pit	Existing	110 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	ACI Pit #217	Pit	Existing	110 km
Greenfirst Forest Products (QC) Inc.	TR 1 - Williamson	Pit	Existing	110 km

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Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Pit #227	Pit	Existing	112 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	ACI Pit #49	Pit	Existing	112 km
Aecon Mining Inc.	Alarie Lumplugh Pit	Pit	Existing	112 km
Antonio Tremblay Contracting Limited	Aggregate extraction site (no name), Tremblay Road	Pit	Existing	112 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name)	Pit	Existing	112 km
Antonio Tremblay Contracting Limited	Aggregate extraction site (no name), Tremblay Road	Pit	Existing	112 km
Greenfirst Forest Products (QC) Inc.	FR 7 - Guilfoyle	Pit	Existing	113 km
D.Burkholder & Sons Inc.	Pit 223	Pit	Existing	113 km
Jordash Trucking & Equipment	Teck - Partridge Pit	Pit	Existing	113 km
Wahgoshig Resources Inc., Wahgoshig Resources Limited Partnership	Pit # 203 (Singer Pit)	Pit	Existing	114 km
Aecon Mining Inc.	Aggregate extraction site (no name), Category 11 Cumming Township	Quarry	Existing	114 km
Agrium Inc.	Aggregate extraction site (no name), Cargill Road	Pit	Existing	114 km
Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name)	Pit	Existing	115 km
Ontario Power Generation Inc.	Aggregate extraction site (no name), Fraserdale Road	Pit	Existing	115 km

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Greenfirst Forest Products (QC) Inc.	Howells Pit	Pit	Existing	115 km
Resource Tech Management Inc.	Aggregate extraction site (no name), north of Elk Lake	Pit	Existing	115 km
Allen Tulpin	Aggregate extraction site (no name), north of Hwy #560	Pit	Existing	115 km
Edward O'Reilly	Aggregate extraction site (no name), Howard Lake	Pit	Existing	115 km
H. Fiset & Sons Ltd.	Aggregate extraction site (no name), West of Gowganda	Pit	Existing	116 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Cumming Township	Pit	Existing	116 km
GreenFirst Forest Products (QC) Inc.	FR 8 - Guilfoyle	Pit	Existing	116 km
Rayonier A.M. Canada G.P.	Aggregate extraction site (no name), Maund and Harewood Twps.	Pit	Existing	116 km
GreenFirst Forest Products (QC) Inc.	Aggregate extraction site (no name), Howells Road	Pit	Existing	117 km
GreenFirst Forest Products (QC) Inc.	Aggregate extraction site (no name)	Pit	Existing	117 km
GreenFirst Forest Products (QC) Inc.	Howells Road	Pit	Existing	117 km
Resource Tech Management Inc.	Aggregate extraction site (no name), Tyrrell Twp.	Pit	Existing	118 km
Allen Tulpin	Aggregate extraction site (no name)	Pit	Existing	118 km

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Island Falls Forestry General Partnership Inc.	Rd. #64 Pit	Pit	Existing	119 km
D.Burkholder & Sons Inc.	ACI Pit #229	Pit	Existing	119 km
Wahgoshig Resources Inc., Wahgoshig Resources Limited Partnership.	ACI #221	Pit	Existing	119 km
EACOM Timber Corporation	Chown 2 Pit	Pit	Existing	119 km
Holloway Mining Company	Aggregate extraction site (no name), off Highway #101 East	Pit	Existing	119 km
Greenfirst Forest Products (QC) Inc.	Parliament Abitibi River Pit	Pit	Existing	120 km
C. Villeneuve Construction Company Ltd.	Howells Quarry	Quarry	Existing	120 km
First Nation Timber Ltd.	Q3	Pit and Quarry	Existing	120 km
Holloway Mining Company	Holt-McDermott Mine	Pit	Existing	120 km
P. McLean Trucking Ltd.	Aggregate extraction site (no name), Boston Township	Pit	Existing	120 km
1168048 Ontario Inc. Robinson Consulting	Aggregate extraction site (no name), Ecclestone	Pit	Existing	120 km
James D. McNaughton	Aggregate extraction site (no name), Wynn Lake	Pit	Existing	120 km
Holloway Mining Company	Aggregate extraction site (no name), McIntyre Lake Road	Pit	Existing	121 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Pit #201	Pit	Existing	121 km
H. Fiset & Sons Ltd.	Aggregate extraction site (no name)	Pit	Existing	121 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
D. Scott Connors	Aggregate extraction site (no name), West of Highway #65	Pit	Existing	121 km
Odie's Contracting	Aggregate extraction site (no name)	Pit	Existing	121 km
Moose Cree Group GP Ltd., CS Enterprises Limited Partnership.	Sargeant Twp Pit #9	Pit	Existing	122 km
Corporation of the Township of James	Aggregate extraction site (no name), North of Elk Lake	Pit	Existing	122 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Holloway Twp.	Pit	Existing	123 km
Resource Tech Management Inc.	Aggregate extraction site (no name), Beauty Lake Road	Pit	Existing	125 km
1286851 Ontario Ltd.	Tannahill #1	Pit	Existing	126 km
Rayonier A.M. Canada G.P.	Aggregate extraction site (no name), Stoughton Two, - E 60190 n 538185	Pit	Existing	126 km
Rayonier A.M. Canada G.P.	Pit #62	Pit	Existing	126 km
Ontario Power Generation Inc.	Q1	Pit	Existing	126 km
Miller Paving Limited	Aggregate extraction site (no name), Pacaud Twp	Pit	Existing	127 km
EACOM Timber Corporation	Aggregate extraction site (no name), South of Highway 560	Pit	Existing	127 km
Miller Paving Limited	H. Fiset & Sons Truax Pit	Pit	Existing	127 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
H. Fiset & Sons Ltd.	Aggregate extraction site (no name), West of Elk Lake	Pit	Existing	127 km
Rosko Forestry Operations Ltd.	Aggregate extraction site (no name), Tannahill	Pit	Existing	127 km
Greg Woollings	Aggregate extraction site (no name), Pacaud Township	Pit	Existing	127 km
Ontario Power Generation Inc.	Q2	Pit	Existing	127 km
1286851 Ontario Ltd.	Dokis # 1	Pit	Existing	128 km
Grant Lumber Company Limited	MTO 3F-63	Pit	Existing	128 km
Miller Paving Limited	Aggregate extraction site (no name), West of Englehart	Pit	Existing	129 km
Island Falls Forestry General Partnership Inc.	Aggregate extraction site (no name), Kineras Twp	Quarry	Existing	129 km
EACOM Timber Corporation	Aggregate extraction site (no name), Truax	Pit	Existing	129 km
Great White Minerals Ltd.	GWM - Roadhouse Twp Quarry	Quarry	Existing	129 km
A. Miron Topsoil Ltd.	Aggregate extraction site (no name), East of the Emu Road	Pit	Existing	129 km
Sargeant Co. Ltd.	Custom Concrete Harmon Twp Pit	Pit	Existing	130 km
D.Burkholder & Sons Inc.	Pit #228	Pit	Existing	130 km
Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name), Burritt	Pit	Existing	130 km
C. Villeneuve Construction Company Ltd.	Boyle Quarry	Quarry	Existing	130 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), off Highway #560	Quarry	Existing	130 km
A. Miron Topsoil Ltd.	Aggregate extraction site (no name), Tamarac Creek	Pit	Existing	130 km
EACOM Timber Corporation	Aggregate extraction site (no name), Crane Lake Road	Pit	Existing	130 km
Ministry of Natural Resources and Forestry	Aggregate extraction site (no name), Neely Haul Road	Pit	Existing	130 km
Ontario Power Generation Inc.	Aggregate extraction site (no name)	Pit	Existing	130 km
Sargeant Co. Ltd.	Custom Concrete Smokey Falls Pit	Pit	Existing	131 km
C. Villeneuve Construction Company Ltd.	KTCC Harmon Pit #17	Pit	Existing	131 km
Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name), Fred Flatt Road	Pit	Existing	131 km
Rayonier A.M. Canada G.P.	Pit #63	Pit	Existing	131 km
C. Villeneuve Construction Company Ltd.	Boyle Road Pit	Pit	Existing	132 km
C. Villeneuve Construction Company Ltd.	Little Long Quarry	Quarry	Existing	132 km
C. Villeneuve Construction Company Ltd.	KTCC Bradley Pit #15	Pit	Existing	134 km
Greenfirst Forest Products (QC) Inc.	Bradley #3	Pit	Existing	134 km
C. Villeneuve Construction Company Ltd.	KTCC Bradley Pit #14	Pit	Existing	134 km

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Greenfirst Forest Products (QC) Inc.	Boyle #4 Pit	Pit	Existing	135 km
Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name), Bradley Township	Pit	Existing	135 km
Greenfirst Forest Products (QC) Inc.	Bradley Pit	Pit	Existing	135 m
Ministry of Natural Resources and Forestry	Fergus Road CSR 8	Pit	Existing	135 km
5042146 Ontario Ltd.	MNR PIT 3G-16	Pit	Existing	136 km
Dean Lacarte	Aggregate extraction site (no name), Catharine Twp.	Pit	Existing	137 km
C. Villeneuve Construction Company Ltd.	KTCC Harmon Pit #9 (Smokey Pit)	Pit	Existing	138 km
Ontario Power Generation Inc.	Otter Rapids Pit	Pit	Existing	139 km
Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name), McCowan Road	Pit	Existing	139 km
Township of McGarry	Aggregate extraction site (no name), Ossian Twp.	Pit	Existing	139 km
Rayonier A.M. Canada G.P.	Aggregate extraction site (no name), Chabbie Lake Road #2	Pit	Existing	139 km
Takwata Builders LP	Pit #154	Pit	Existing	140 km
Miller Paving Limited	Aggregate extraction site (no name)	Pit	Existing	140 km
Ontario Northland Transportation Commission	Otter Rapids Pit	Pit and Quarry	Existing	141 km
Miller Paving Limited	Aggregate extraction site (no name)	Pit	Existing	141 km

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C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Otter Rapids	Quarry	Existing	141 km
Bruce Aitchison	Aggregate extraction site (no name), West of New Liskeard	Pit	Existing	141 km
L.V. Vickery Ltd.	Aggregate extraction site (no name), Skead Twp.	Pit	Existing	141 km
Greenfirst Forest Products (QC) Inc.	Third Party Road Quarry	Quarry	Existing	142 km
Greenfirst Forest Products (QC) Inc.	McKnight Twp Pit, Pit #3	Pit	Existing	143 km
D. Scott Connors	Bryce Twp Pit #1	Pit	Existing	143 km
Takwata Builders LP	Pit #54	Pit	Existing	143 km
Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name), McGowan	Pit	Existing	143 km
Malette Inc. (Division Malette United)	Aggregate extraction site (no name), Waxatike Road	Pit	Existing	143 km
Greenfirst Forest Products (QC) Inc.	Waxatike Pit #2	Pit	Existing	144 km
Greenfirst Forest Products (QC) Inc.	Tembec Haney H-11	Pit	Existing	145 km
1345039 Ontario Ltd.	Aggregate extraction site (no name), West of Earltan	Pit	Existing	145 km
Township of McGarry	Aggregate extraction site (no name), Waste Disposal Site	Pit	Existing	145 km
Ontario Power Generation Inc.	Aggregate extraction site (no name), Smokey Falls Road	Pit	Existing	146 km
William Peeling	Aggregate extraction site (no name)	Pit	Existing	146 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Gilbertson Enterprises	B.M. 498801	Pit	Existing	147 km
Corporation of the Twp of Hilliard	Aggregate extraction site (no name)	Pit	Existing	150 km
Greenfirst Forest Products (QC) Inc.	Fleck Extension	Quarry	Existing	151 km
Don Connors	Henwood Twp Pit	Pit	Existing	151 km
Miller Paving Limited	Aggregate extraction site (no name), Shepherd Lake	Pit	Existing	152 km
Miller Paving Limited	Aggregate extraction site (no name)	Pit	Existing	153 km
West Trucking	Aggregate extraction site (no name), east of Englehart	Pit	Existing	153 km
Adam Williams	Aggregate extraction site (no name), East of Englehart	Pit	Existing	153 km
Malette Inc. (Division Malette United)	Waxatike Road Pit #3 (Fryatt)	Pit	Existing	153 km
Miller Paving Limited	Aggregate extraction site (no name), Ingram Twp.	Pit	Existing	154 km
Steven Nychuk	Aggregate extraction site (no name)	Pit	Existing	156 km
The Corporation of the Township of Kerns	Aggregate extraction site (no name), Wabi Lake	Pit	Existing	159 km
Greenfirst Forest Products (QC) Inc.	Staunton Pit	Pit	Existing	163 km
C. Villeneuve Construction Company Ltd.	M.J. Labelle Devitt East Quarry	Pit and Quarry	Existing	168 km
A. Miron Topsoil Ltd.	Aggregate extraction site (no name), Hudson Township	Pit	Existing	168 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
C. Villeneuve Construction Company Ltd.	Chabot's Shannon Lake Pit	Pit	Existing	169 km
Placer Dome Inc.	Pit #248	Pit	Existing	169 km
Miller Paving Limited	Aggregate extraction site (no name), Firstbrook Twp.	Pit	Existing	171 km
A. Miron Topsoil Ltd.	Aggregate extraction site (no name), Firstbrook Road west of Spring Lake	Pit	Existing	171 km
The Corporation of the Township of Hudson	Aggregate extraction site (no name), Hudson Twp.	Pit	Existing	171 km
Don Adshead Trucking	Aggregate extraction site (no name), Bartle Lake Access Road	Pit	Existing	171 km
James Lathem Excavating Limited	Aggregate extraction site (no name), Spring Lake	Pit	Existing	172 km
The Corporation of the Township of Hudson	Aggregate extraction site (no name), Firstbrook Twp. Spring Lake	Pit	Existing	172 km
Agnico Eagle Mines Ltd.	East Aggregate Pit	Pit	Existing	175 km
C. Villeneuve Construction Company Ltd.	Shannon Lake Pit	Pit	Existing	176 km
James Lathem Excavating Limited	Aggregate extraction site (no name), North of Portage Road	Pit	Existing	178 km
1345039 Ontario Ltd.	Aggregate extraction site (no name), New Liskeard	Pit	Existing	179 km
James Lathem Excavating Limited	Aggregate extraction site (no name), Haileybury	Pit	Existing	179 km

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Don Adshead Trucking	Aggregate extraction site (no name), Coleman Seed Orchard	Pit	Existing	179 km
A. Miron Topsoil Ltd.	Aggregate extraction site (no name), New Liskeard Area	Pit and Quarry	Existing	180 km
Miller Paving Limited	Aggregate extraction site (no name), Coleman	Pit	Existing	182 km
James Lathem Excavating Limited	Aggregate extraction site (no name), Coleman Twp.	Pit	Existing	182 km
Town of Latchford	Aggregate extraction site (no name), north of Latchford dump	Pit	Existing	186 km
C. Villeneuve Construction Company Ltd.	Casgrain Pit (Villeneuve)	Pit	Existing	187 km
The Corporation of The Town of Hearst	Casgrain Pit	Pit	Existing	187 km
Roland Cote	Koivisto Road - MTO Pit	Pit	Existing	187 km
Hearst Forest Management Inc.	Ritchie Quarry	Quarry	Existing	188 km
Ministry of Transportation	MTO 1263 Pass Fontain Rd. Hanlan	Pit	Existing	197 km
Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name), Bannerman	Pit	Existing	199 km
Morin Construction Ltd.	Stoddart Quarry #1	Quarry	Existing	206 km
C. Villeneuve Construction Company Ltd.	Fushimi Quarry	Quarry	Existing	210 km
C. Villeneuve Construction Company Ltd.	Carey Lake Quarry	Quarry	Existing	213 km
Fox River Resources Corporation	PhosCan Fushimi Pit #1	Pit	Existing	214 km
Morin Construction Ltd.	Fushimi Pit #2	Pit	Existing	214 km

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C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Kabina Rd. Chega	Pit	Existing	215 km
Morin Construction Ltd.	Poulin's Pit	Pit	Existing	215 km
Morin Construction Ltd.	Kabina Pit	Pit	Existing	215 km
C. Villeneuve Construction Company Ltd.	Kabina Pit	Pit	Existing	216 km
C. Villeneuve Construction Company Ltd.	Fox Pit	Pit	Existing	216 km
C. Villeneuve Construction Company Ltd.	Kabina CN Pit	Pit	Existing	217 km
Lecours Lumber Co. Limited	Calstock Creek Pit	Pit	Existing	222 km
C. Villeneuve Construction Company Ltd.	Forde Creek Pit	Pit	Existing	223 km
Lecours Lumber Co. Limited	Rogers Rd. By-Pass Pit	Pit	Existing	226 km
Mahiihkanuk/Morin Construction Joint Venture	G. Taylor Pit	Pit	Existing	226 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Leonard Lake	Pit	Existing	226 km
Elton Taylor	Auden Pit	Pit	Existing	226 km
Morin Construction Ltd.	M. Morin Nassau Pit	Pit	Existing	227 km
C. Villeneuve Construction Company Ltd.	Labelle Marathon Pit #037	Pit	Existing	228 km
Nor Building Enterprises Ltd.	Rabbit Lake Pit #3	Pit	Existing	228 km
C. Villeneuve Construction Company Ltd.	Rabbit L. Pit	Pit	Existing	228 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Mahiihkanuk/Morin Construction Joint Venture	Rogers Road Pit	Pit	Existing	228 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Nassau Lake	Pit	Existing	228 km
Morin Construction Ltd.	Aggregate extraction site (no name), Rabbet L. Road (MTO Area)	Pit	Existing	229 km
Morin Construction Ltd.	Aggregate extraction site (no name), Rabbet L. Road	Pit	Existing	229 km
C. Villeneuve Construction Company Ltd.	Rabbet L. Rd. (Chega Pit)	Pit	Existing	229 km
Morin Construction Ltd.	Aggregate extraction site (no name), north of Marathon Pit	Pit	Existing	230 km
Ministry of Transportation	Marathon Pit (MTO 3D-25)	Pit	Existing	230 km
C. Villeneuve Construction Company Ltd.	Fintry Quarry	Pit and Quarry	Existing	248 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name)	Quarry	Existing	259 km
Innlink Concrete Ltd.	Bushy Island Pit	Pit	Existing	259 km
Moose Cree Group GP Ltd., Complex Re Limited Partnership.	Rabbit Ridge Pit #2	Pit	Existing	262 km
Moose Band Development Corporation	Rabbit Ridge	Pit	Existing	263 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), shoal	Pit	Existing	265 km
Innlink Concrete Ltd.	Winter Road Pit	Pit	Existing	265 km
Ministry of Transportation	MTO Kohler Quarry (Pit MTO 3D-29)	Pit	Existing	279 km

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Greenfirst Forest Products (QC) Inc.	Aggregate extraction site (no name), Savoff Road	Pit	Existing	283 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), Clavet Township	Pit and Quarry	Existing	287 km
Steve Peters	Aggregate extraction site (no name), Wildgoose Subdivision Road	Pit	Existing	289 km
Lecours Lumber Co. Limited	Clark Creek Bypass Pit	Pit	Existing	292 km
C. Villeneuve Construction Company Ltd.	Aggregate extraction site (no name), West Boyce Road	Pit	Existing	293 km
C. Villeneuve Construction Company Ltd.	Pagwa Quarry	Quarry	Existing	294 km
AV Terrace Bay Inc.	(7-30)	Pit	Existing	363 km
Loone's Equipment & Transport	Aggregate extraction site (no name), Yellow Creek Area	Pit	Existing	364 km
Kataquapit Equipment & Fuel Services	Fort Albany Big Island	Pit	Existing	367 km
Kimberly-Clark Forest Products Inc.	Grant lake (7-24)	Pit	Existing	371 km
Terrace Bay Pulp Inc.	Mile 30 Truax Rd (7-3)	Pit	Existing	380 km
Kimberly-Clark Forest Products Inc.	Mile 56 Poverty Road (10-26)	Pit	Existing	383 km
Terrace Bay Pulp Inc.	Mile 55 Poverty Rd. (10-25)	Pit	Existing	383 km
Terrace Bay Pulp Inc.	Supawn North Block (10-22)	Pit	Existing	386 km
Terrace Bay Pulp Inc.	Cyril Lake North (7-26)	Pit	Existing	386 km

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Kimberly-Clark Forest Products Inc.	Aggregate extraction site (no name), Mile 37 Robertson Lake Rd.	Pit	Existing	386 km
Kimberly-Clark Forest Products Inc.	Relief Road (10-14)	Pit	Existing	387 km
Kimberly-Clark Forest Products Inc.	Cyril Rd (7-23)	Pit	Existing	387 km
Kimberly-Clark Forest Products Inc.	Mile 60 Supawn Road (10-18)	Pit	Existing	388 km
Kimberly-Clark Forest Products Inc.	Poverty Road South (Pit 10-4)	Pit	Existing	388 km
Kimberly-Clark Forest Products Inc.	Mile 55 Drowning Road (10-6)	Pit	Existing	388 km
AV Terrace Bay Inc.	Mile 60 Waba Extension (10-17)	Pit	Existing	390 km
Terrace Bay Pulp Inc.	Supawn Road (10-7)	Pit	Existing	391 km
Kimberly-Clark Forest Products Inc.	Supawn Road South (10-8)	Pit	Existing	391 km
Kimberly-Clark Forest Products Inc.	Rooster Road (7-27)	Pit	Existing	391 km
Kimberly-Clark Forest Products Inc.	Chatham Road (10-19)	Pit	Existing	393 km
Kimberly-Clark Forest Products Inc.	Mile 41 Drowning Rd. (10-3c)	Pit	Existing	394 km
Terrace Bay Pulp Inc.	Mile 41 Drowning Road (10-3)	Pit	Existing	394 km
Terrace Bay Pulp Inc.	Mi.37 Blueberry Road (7-28)	Pit	Existing	396 km
Kimberly-Clark Forest Products Inc.	Chatham Road #2 (10-23)	Pit	Existing	397 km
Terrace Bay Pulp Inc.	Mile 48 Waba Extension (10-16)	Pit	Existing	398 km
Terrace Bay Pulp Inc.	Mile 35 Baize Road (12-5)	Pit	Existing	399 km
Kimberly-Clark Forest Products Inc.	John Bill Road (Pit 10-15)	Pit	Existing	400 km
Kimberly-Clark Forest Products Inc.	Mile 34 Storm Road (12-15)	Pit	Existing	401 km

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
Kimberly-Clark Forest Products Inc.	Squaw Road (10-24)	Pit	Existing	402 km
Kimberly-Clark Forest Products Inc.	Stairs Lake (12-18)	Pit	Existing	403 km
Kimberly-Clark Forest Products Inc.	Mile 30 Baize Road (12-12)	Pit	Existing	403 km
Kimberly-Clark Forest Products Inc.	Mile 30 Baize Road (12-4)	Pit	Existing	403 km
Kimberly-Clark Forest Products Inc.	Mile 37 Gravel Road (12-14)	Pit	Existing	404 km

### 1.3 Community Development

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>First Nation Reserves</b>				
<b>Past and Present Physical Activities</b>				
Crown: First Nations	First Nation Reserves	Federal lands established under the <i>Indian Act</i>	Existing	Various
<b>Urban Areas</b>				
<b>Past and Present Physical Activities</b>				
Municipalities	Urban areas	Cities, towns, villages and other developed areas	Existing	Various
<b>Landfills</b>				
<b>Past and Present Physical Activities</b>				
The Corporation of the Township of Brethour	N/A (A570901)	Municipal landfill	Operating	Exact location undetermined, located within the Township of Brethour
The Corporation of the Townships of Owens, Williamson and Idington	N/A (A7151002)	Municipal landfill	Operating	Exact location undetermined, located in the Townships of Owens, Williamson and Idington

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Glencore Canada Corporation	Kidd Landfill (A580713)	Private landfill for the Kidd Creek Mine	Operating	1 km
The Corporation of the Town of Cochrane	Town of Cochrane Municipal Waste Disposal Site – Fournier Landfill Site (A612009)	Municipal landfill	Operating	16 km
Ministry of Natural Resources	Driftwood/Hunta Waste Disposal Site (A7023501)	Municipal landfill	Closed	18 km
EROCON - 1128850 Ontario Inc.	Erocon Hollinger Woodwaste Site (A770068)	Wood waste landfill	Operating	21 km
The Corporation of the City of Timmins	Robb Township Waste Disposal Site (A580726)	Municipal landfill	Operating	22 km
The Corporation of the City of Timmins	Deloro Landfill Site (A7120302)	Municipal landfill	Closed	25 km
Waste Management of Canada Corporation	Ogden Sludge Disposal Site (A580731)	Sewage landfill	Operating	26 km
The Corporation of the Town of Smooth Rock Falls	Smooth Rock Falls Waste Disposal Site (A580604)	Municipal landfill	Operating	35 km
The Corporation of the City of Timmins	Thornloe Township Disposal Site (A580715)	Municipal landfill	Operating	35.5 km
General Chemical Performance Products Limited	Nellie Lake Landfill (A580307)	Municipal landfill	Operating	38 km
The Corporation of the Town of Iroquois Falls	Nellie Lake Waste Disposal Site (A580301)	Municipal landfill	Operating	39 km
Fox Waste Disposal Site Inc.	Fox Landfill (A7053501)	Municipal landfill	Operating	40 km
Ministry of Natural Resources	Denton Waste Disposal Site (4145-4ZPJYM)	Municipal landfill	Operating	44 km
Ministry of Natural Resources	McKeown East Waste Disposal Site (A7306006)	Municipal landfill	Operating	45 km

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The Corporation of the Township of Black River-Matheson	Val Gagne Waste Disposal Site (A580801)	Municipal landfill	Operating	47 km
Ministry of Natural Resources	McKeown West Waste Disposal Site (A7306008)	Municipal landfill	Operating	50 km
The Corporation of the Township of Fauquier-Strickland	Fauquier-Strickland Waste Disposal Site (A7065402)	Municipal landfill	Operating	52 km
The Corporation of the Township of Glackmeyer	The Dempsay Township Waste Disposal Site (A7038802)	Municipal landfill	Operating	57 km
Ministry of Natural Resources	McEvay Township Waste Disposal Site (A7393201)	Municipal landfill	Operating	66 km
The Corporation of the Township of Black River-Matheson	Matheson Waste Disposal Site (A580810)	Municipal landfill	Operating	67 km
The Corporation of the Township of Black River-Matheson	Ramore Waste Disposal Site (A580805)	Municipal landfill	Operating	80 km
The Corporation of the Town of Kirkland Lake	Kirkland Lake Landfill Site (A7086502)	Municipal landfill	Operating	80 km
The Corporation of the Township of Black River-Matheson	Butler Lake Waste Disposal Site (A7012202)	Municipal landfill	Operating	86 km
The Corporation of the Town of Kapuskasing	Kapuskasing-Moonbeam Landfill (A612006)	Municipal landfill	Operating	88 km
Rayonier A.M. Canada Enterprises Inc.	Kapuskasing Sludge Landfill (A770028)	Sewage landfill	Operating	88 km
The Corporation of the Township of Matachewan	Matachewan Landfill, Highway 66 West (A7023201)	Municipal landfill	Operating	93 km
Ministry of Natural Resources	Grenfell Waste Disposal Site (Old Ferguson Highway) Waste Disposal Site (A740191)	Municipal landfill	Operating	95 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
The Corporation of the Township of Val-Rita Harty	Val Rita - Harty Waste Disposal Site (A581203)	Municipal landfill	Operating	109 km
Ministry of Natural Resources	Marquis Township Waste Disposal Site (A7096401)	Municipal landfill	Closed	113 km
Wayne Phippen Contracting Limited	Crystal Lake Waste Disposal Site (A7086501)	Municipal landfill	Operating	115 km
Nordex Explosives Limited	Nordex Explosives (A770040)	Private landfill	Operating	116 km
St. Andrew Goldfields Limited	Holloway Mine (A7071501)	Private landfill	Operating	117 km
Ministry of Natural Resources	Arnold Township Waste Disposal Site (A7004302)	Municipal landfill	Operating	118 km
The Corporation of the Township of James	James Township Waste Disposal Site (A572103)	Municipal landfill	Operating	122 km
Ministry of Natural Resources	Longpoint Lake Waste Disposal Site (A7308501)	Municipal landfill	Operating	123 km
Improvement District of Opasatika	Opasatika Waste Disposal Site (A7076001)	Municipal landfill	Closed	123 km
EACOM Timber Corporation	Elk Lake Mill Landfill Site (A572402)	Private landfill	Operating	126 km
Ministry of Natural Resources	Rufus Lake Waste Disposal Site (A582601)	Municipal landfill	Operating	127 km
Ministry of Natural Resources	Robillard Dump (A7126602)	Municipal landfill	Closed	132 km
The Corporation of the Township of Larder Lake	Larder Lake Waste Disposal Site (A572301)	Municipal landfill	Closed	134 km
The Corporation of the Township of Chamberlain	Chamberlain Waste Disposal Site (A571201)	Municipal landfill	Operating	134 km
The Corporation of the Town of Englehart	Englehart Landfill (A7096701)	Municipal landfill	Operating	137 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Ministry of Natural Resources	Ryland Waste Disposal Site (A7066301)	Municipal landfill	Operating	139 km
GP Wood Products North Limited	Grant Landfill - Englehart Mill (A571402)	Private landfill	Operating	140 km
Ministry of Natural Resources	Cane Township Waste Disposal Site (A7318101)	Municipal landfill	Operating	143 km
The Corporation of the Township of Virginiatown	McGarry Township Municipal Waste Disposal Site (A572402)	Municipal landfill	Operating	145 km
Ministry of Natural Resources	Bayly Township Waste Disposal Site (A7010602)	Municipal landfill	Operating	145 km
The Corporation of the Township of Armstrong	Earlton Landfill (A7011002)	Municipal landfill	Operating	145 km
The Corporation of the Township of Evanturel	Evanturel Township Waste Disposal Site (A7076303)	Municipal landfill	Operating	153 km
The Corporation of the Township of Mattice-Val Cote	Mattice Waste Disposal Site (A7046201)	Municipal landfill	Operating	156 km
The Corporation of the Township of Hilliard and The Corporation of the Village of Thornloe	Hilliard/Thornloe Waste Disposal Site (A571901)	Municipal landfill	Operating	160 km
The Corporation of the Township of Cassey	Belle Vallee Landfill (A571101)	Municipal landfill	Operating	168 km
The Corporation of the Township of Hudson	Hudson Township Landfill (A572001)	Municipal landfill	Operating	168 km
Detour Gold Inc.	Detour Lake Mine Waste Disposal Site (A738503)	Private landfill	Operating	170 km
The Corporation of the Township of Harley	Harley Township Waste Disposal Site (A571702)	Municipal landfill	Operating	172 km
The Corporation of the Town of New Liskeard	New Liskeard Waste Disposal Site (A571501)	Municipal landfill	Operating	174 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
The Corporation of the City of Temiskaming Shores	New Liskeard Landfill (A571505)	Municipal landfill	Operating	174 km
Pedersen Construction Inc.	Browns Pit Landfill (3267-76AL3K)	Private landfill	Operating	174 km
Ministry of Natural Resources	Nagagami Waste Disposal Site (A7102101)	Municipal landfill	Operating	177 km
The Corporation of the City of Temiskaming Shores	Haileybury Landfill (A570402)	Municipal landfill	Operating	179 km
The Corporation of the Township of Harris	Harris Landfill (A571801)	Municipal landfill	Operating	180 km
The Corporation of the Township of Coleman	Canadian smelting & refining ltd (A571301)	Municipal landfill	Operating	183 km
Levesque Lumber (Hearst) Limited (Custom Sawmill)	Hearst Landfill Site (A7313904)	Municipal landfill	Closed	185 km
The Corporation of the Town of Latchford	Latchford Dump (A7239801)	Municipal landfill	Operating	186 km
Ministry of Natural Resources	Nagagamis Lake Waste Disposal Site/Elgie WDS (A7378401)	Municipal landfill	Operating	198 km
Ontario Northland Transportation Commission	Moose River Crossing Waste Disposal Site (A7208301)	Municipal landfill	Operating	208 km
Ministry of Natural Resources	Fushimi Lake Provincial Park Waste Disposal Site (A7219401)	Private landfill	Operating	212 km
EPCOR Power L. P.	Calstock Power Plant - Ash Landfill (6508-53KPWK)	Private landfill	Operating	215 km
Lecours Lumber Co. Limited	Lecours Lumber Wood Waste Disposal Site (A740180)	Private landfill	Operating	221 km
The Corporation of the Town of Moosonee	Moosonee Landfill (A7227001)	Municipal landfill	Operating	261 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Ministry of Natural Resources	Lower Twin Lake Waste Disposal Site (A7194501)	Municipal landfill	Operating	396 km
<b>Water and Wastewater Treatment</b>				
<b>Past and Present Physical Activities</b>				
The Corporation of the Town of Cochrane	Glackmeyer Lagoon	Biological treatment facility	Operating	Exact location undetermined, located within Glackmeyer Township.
The Corporation of the City of Timmins	Whitney and Tisdale Wastewater Treatment Plant	Wastewater treatment for the communities of South Porcupine and Porcupine	Operating	20 km
The Corporation of the City of Timmins	Whitney and Tisdale Wastewater Treatment Plant - Bob's Lake Lagoon	Biological treatment facility	Operating	21 km
The Corporation of the Town of Cochrane	Cochrane Water Pollution Control Plant	Wastewater plant for the Town of Cochrane	Operating	28 km
The Corporation of the Town of Cochrane	Cochrane Wastewater Treatment Plant	Wastewater treatment for the Town of Cochrane	Operating	28 km
The Corporation of the City of Timmins	Mattagami River Wastewater Treatment Plant	Wastewater treatment for the communities of Timmins, Mountjoy, and Schumacher	Operating	30 km
The Corporation of the City of Timmins	Timmins Water Filtration Plant	Water filtration plant	Operating	32 km
The Corporation of the Town of Iroquois Falls	Iroquois Falls Drinking Water System	Municipal, residential system for the Town of Iroquois Falls	Operating	40 km
The Corporation of the Town of Iroquois Falls	Porquis Lagoon	Wastewater treatment for the Town of Iroquois Falls	Operating	40 km
The Corporation of the Township of Smooth Rock Falls	Smooth Rock Falls Sewage Treatment Plant	Wastewater treatment of the Township of Smooth Rock Falls	Operating	42 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
The Corporation of the Township of Smooth Rock Falls	Smooth Rock Falls Water Treatment Plant	Large municipal, residential system for the Township of Smooth Rock Falls	Operating	42 km
The Corporation of the Town of Iroquois Falls	Iroquois Falls Sewage Treatment Plant	Sewage treatment for Iroquois Falls	Operating	47 km
Infrastructure Ontario	Monteith Correctional Complex Water Treatment Plant	Small municipal, residential water system for the Monteith Correctional Complex	Operating	48 km
The Corporation of the Township of Black River - Matheson	Matheson Wastewater Treatment Plant and Collection System	Large municipal, residential system for the Township of Black River Matheson	Operating	64 km
The Corporation of the Township of Black River - Matheson	Val Gagne Water Treatment Plant	Small municipal, residential system for the community of Val Gagne	Operating	68 km
The Corporation of the Township of Fauquier-Strickland	Fauquier Sewage Treatment Lagoon	Wastewater treatment for the Township of Fauquier-Strickland	Operating	71 km
The Corporation of the Township of Fauquier-Strickland	Fauquier Drinking Water System	Large municipal, residential system for the Township of Fauquier-Strickland	Operating	71 km
The Corporation of the Township of Black River - Matheson	Ramore (Playfair) Wastewater Treatment Lagoon	Small municipal, residential system for the community of Ramore	Operating	78 km
The Corporation of the Township of Black River - Matheson	Holtyre Water Treatment Plant and Wastewater Lagoon	Small municipal, residential system and wastewater treatment for the community of Holtyre	Operating	80 km
The Corporation of the Township of Kapuskasing	Kapuskasing Drinking Water System and Wastewater Pollution Control Plant	Large municipal, residential system for the Township of Kapuskasing	Operating	94 km
The Corporation of the Township of Val Rita	Val Rita Sewage Lagoon	Wastewater treatment for the Township of Val Rita	Operating	100 km
The Corporation of the Township of Matachewan	Matachewan Drinking Water System	Large municipal, residential system for the community of Matachewan	Operating	104 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
The Corporation of the Township of Kirkland Lake	Swastika Water Pollution Control Plant	Wastewater treatment for the Township of Kirkland Lake	Decommissioned	109 km
The Corporation of the Town of Kirkland Lake	Kirkland Lake Wastewater Treatment Plant and Drinking Water System – Lionel Sherratt Water Plant	Large municipal, residential system for the communities of Kirkland Lake, Chaput Hughes and Swastika	Operating	111 km
The Corporation of the Township of Opatatika	Opatatika Wastewater Lagoon	Wastewater treatment for the Township of Opatatika	Operating	126 km
The Corporation of the Township of James	Elk Lake Drinking Water System	Large municipal, residential system for the community of Elk Lake	Operating	135 km
The Corporation of the Township of McGarry	McGarry Lagoons and Sewage Treatment Plant	Wastewater treatment for the Township of McGarry	Operating	140 km
The Corporation of the Township of Englehart	Englehart Wastewater Treatment Lagoon	Wastewater treatment for the Township of McGarry	Operating	140 km
The Corporation of the Town of Englehart	Englehart Drinking Water System	Large municipal, residential system for the Town of Englehart and the Municipality of Charlton & Dack	Operating	150 km
The Corporation of the Township of Armstrong	Earlton Lagoon	Wastewater treatment for the Town of Earlton	Operating	151 km
The Corporation of the Township of Mattice-Val Cote	Mattice Wastewater Treatment Lagoon	Wastewater treatment for the community of Mattice	Operating	155 km
The Corporation of the Township of Mattice-Val Cote	Mattice Drinking Water System	Large municipal, residential system for the communities of Mattice and Val Cote	Operating	158 km
The Corporation of the Township of Mattice-Val Cote	Val Cote Lagoon	Wastewater treatment for the community of Val Cote	Operating	158 km
The Corporation of the City of Temiskaming Shores	New Liskeard Lagoon	Wastewater treatment for the community of New Liskeard and Township of Dymond	Operating	174 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
The Corporation of the City of Temiskaming Shores	Haileybury Wastewater Treatment System	Wastewater treatment for the community of North Cobalt (formerly Haileybury)	Operating	184 km
The Corporation of the Town of Hearst	Hearst Wastewater Treatment – Cecile’s Traylor Park Lagoon	Wastewater treatment for the Town of Hearst	Operating	184 km
The Town of Collingwood	Collingwood Wastewater Treatment Plant	Wastewater treatment for the Town of Collingwood	Operating	184.5 km
The Corporation of the City of Temiskaming Shores	New Liskeard Drinking Water System – New Liskeard Water Treatment Plant	Large municipal, residential system for the communities of New Liskeard and Dymond	Operating	185 km
The Corporation of the City of Temiskaming Shores	North Cobalt Wastewater Lagoon	Wastewater treatment for the Town of North Cobalt (formerly South Haileybury)	Operating	185 km
The Corporation of the City of Temiskaming Shores	Haileybury Drinking Water System – Haileybury Water Treatment Plant	Large municipal, residential system for the community of North Cobalt (formerly Haileybury)	Operating	192 km
The Corporation of the Town of Hearst	Hearst Drinking Water System – Hearst Water Treatment Plant	Large municipal, residential system for the Town of Hearst	Operating	192 km
The Corporation of the Town of Moosonee	Moosonee Wastewater Treatment – Moosonee Lagoon System	Wastewater treatment for the Town of Moosonee	Operating	262 km
Moose Cree First Nation	Moose Factory Lagoon	Wastewater treatment for the community of Moose Factory	Operating	265 km
The Corporation of the Town of Moosonee	Moosonee Drinking Water System	Large municipal, residential system for the Town of Moosonee	Operating	269 km
Fort Albany First Nation	Fort Albany First Nation Lagoon	Wastewater treatment for the community of Fort Albany First Nation	Operating	364 km

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Other Community Services</b>				
<b>Past and Present Physical Activities</b>				
Elmwood Crematorium (Timmins) Inc.	Environmental Compliance Approval (ERO: 190-0615)	Operation of a crematorium facility	Operating	21 km
Smooth Rock Falls Hospital	Cochrane District Detoxification Centre	Detox clinic	Operating	42 km
Government of Ontario	Monteith Correctional Complex	Provincial prison	Operating	47 km
Maison Renaissance	Maison Renaissance	Drug rehabilitation centre offering francophone services	Operating	185 km
Ontario Addiction Treatment Centres	Hearst Clinic	Addiction treatment centre	Operating	186 km
Sagashtawao Healing Lodge	Sagashtawao Healing Lodge	Residential treatment program for First Nation adults and families regarding drug and/or alcohol addiction	Operating	264 km

## 1.4 Water Management

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Non-Electric Dams</b>				
<b>Past and Present Physical Activities</b>				
Private	Dam-01-99001	Non-electric, private dam	Operating	16 km
Private	Dam-06-99001	Non-electric, private dam	Operating	17 km
Ontario Power Generation, H2O Power (FirstLight Power)	Frederick House Lake Dam	Non-electric dam	Operating 1937-present	22 km
Ontario Power Generation	Frederick House Lake Dam Rehabilitation Project	Rehabilitation project to extend the operating life of the dam.	Underway 2022-2025	22 km
Private	Yellow Falls Dam	Non-electric, private dam	Operating	28 km

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Ministry of Natural Resources and Forestry	Lillabelle Lake Dam	Non-electric, provincial dam	Operating	32 km
Private	DAM-02-00052	Non-electric, private dam	Operating	42 km
Private	DAM-01-00052	Non-electric, private dam	Operating	42 km
Private	Smooth Rock Falls Dam	Non-electric, private dam	Operating	43 km
Ministry of Natural Resources and Forestry	Monteith Dam	Non-electric, provincial dam	Operating	48 km
Private	DAM-01-39	Non-electric, private dam	Operating	54 km
Private	DAM-02-39	Non-electric, private dam	Operating	54 km
Ontario Power Generation	Peter Long Lake Dam	Non-electric dam	Operating	55 km
Ministry of Natural Resources and Forestry, H2O Power (FirstLight Power)	Watabeag Lake Dam	Non-electric, provincial dam	Operating	70 km
Ministry of Natural Resources and Forestry	Remi Lake Dam #2 (Weir)	Non-electric, provincial dam	Operating	83 km
Ministry of Natural Resources and Forestry	Remi Lake Dam #1 (Stoplog)	Non-electric, provincial dam	Operating	83 km
H2O Power (FirstLight Power)	Black River Dam	Non-electric, private dam	Operating	83 km
Ministry of Natural Resources and Forestry	Sagnash Lake Dam	Non-electric, provincial dam	Operating	87 km
Private	Big Beaver Falls Dam	Non-electric, private dam	Operating	92 km
Ontario Power Generation	Mistinikon Lake Dam	Non-electric dam	Operating	92 km
Private	Kapuskasing Dam	Non-electric, private dam	Operating	93 km
Private	Camp Three Rapids Dam	Non-electric, private dam	Operating	93 km
Private	White Otter Falls Dam	Non-electric, private dam	Operating	100 km
Undetermined	No Name – Val Rita	Non-electric dam	Operating	109 km
Private	Dam 1-8406	Non-electric, private dam	Operating	110 km
Private	DAM-03-8406	Non-electric, private dam	Operating	110 km
Ministry of Natural Resources and Forestry	Duncan Lake Dam	Non-electric, provincial dam	Operating	114 km

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Private	DAM-02-8406	Non-electric, private dam	Operating	115 km
Ministry of Natural Resources and Forestry	Gowganda Lake Dam	Non-electric, provincial dam	Operating	117 km
Ontario Power Generation	Newpost Creek Diversion Dam and Channel	Non-electric dam	Operating	118 km
Ministry of Natural Resources and Forestry	Stumpy Lake Dam	Non-electric, provincial dam	Operating	123 km
Ministry of Natural Resources and Forestry	Hangingstone Lake Dam	Non-electric, provincial dam	Operating	124 km
Ministry of Natural Resources and Forestry	Rufus Lake Dam	Non-electric, provincial dam	Operating	124 km
Ontario Power Generation	Zadi Lake Dam	Non-electric dam	Operating	124 km
Private	DAM-04-8158	Non-electric, private dam	Operating	126 km
Private	DAM-07-8158	Non-electric, private dam	Operating	126 km
Private	DAM-05-8158	Non-electric, private dam	Operating	126 km
Ministry of Natural Resources and Forestry	Beaverhouse Lake Dam	Non-electric, provincial dam	Operating	127 km
Private	DAM-O/F-8158	Non-electric, private dam	Operating	127 km
Private	DAM-06-8158	Non-electric, private dam	Operating	127 km
Ontario Power Generation	Adam Creek Diversion Dam	Non-electric dam	Operating	131 km
Private	DAM-01-8332	Non-electric, private dam	Operating	134 km
Ministry of Natural Resources and Forestry	Charlton West Dam	Non-electric, provincial dam	Operating	135 km
Ministry of Natural Resources and Forestry	Charlton East Dam	Non-electric, provincial dam	Operating	135 km
Ministry of Natural Resources and Forestry	Charlton Centre Dam	Non-electric, provincial dam	Operating	135 km
Private	Misema Weir Dam	Non-electric, private dam	Operating	136 km
Ministry of Natural Resources and Forestry	Hills Lake Hatchery Dam	Non-electric, provincial dam	Operating	139 km
Ministry of Natural Resources and Forestry	Larder Lake Dam	Non-electric, provincial dam	Operating	145 km
Ministry of Natural Resources and Forestry	Raven Ward Lake Dam	Non-electric, provincial dam	Operating	147 km
Ministry of Natural Resources and Forestry	Raven Lake Power Dam	Non-electric, provincial dam	Operating	147 km

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
Ministry of Natural Resources and Forestry	Raven Corset Lake Dam	Non-electric, provincial dam	Operating	147 km
Undetermined	No Name - Brethour	Non-electric dam	Operating	162 km
Ontario Power Generation	Lady Evelyn Lake Dam	Non-electric dam	Operating	165 km
Undetermined	Cobalt Wetlands	Non-electric dam	Operating	185 km
Public Services and Procurement Canada	Bay Lake (Latchford) Dam	Non-electric, federal dam	Operating	186 km
Ontario Power Generation	Lower Notch Generating Station – North Canal Dyke	Non-electric dam	Operating	218 km
Ontario Power Generation	Rabbit Lake Dam	Non-electric dam	Operating	218 km
Undetermined	Constance Lake First Nation	Non-electric dam	Operating	226 km

## 1.5 Transportation

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Airports</b>				
<b>Past and Present Physical Activities</b>				
City of Timmins	Timmins Victor M. Power Airport (YTS)	Major airport. Facility consists of a 6,000-foot main runway, 4,900-foot secondary runway, flight service station, fueling amenities, and 24-hour weather reporting operation.	Operating 1955-present	10 km
Town of Cochrane	Cochrane Municipal Airport (YCN)	Facility consists of a 4,500-foot runway, two hangars, terminal, and fueling amenities	Operating 1970's to present	32 km
Town of Iroquois Falls	Iroquois Falls Municipal Airport	Facility consists of a 3,999-foot, 2,930-foot and 2,555-foot runway, terminal and fueling amenities	Operating 1929-present	39 km

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Corporation of the Town of Kapuskasing	Kapuskasing Airport (YYU)	Facility consists of a 5,500-foot runway, terminal and fueling amenities	Operating 1940's to present	95 km
Town of Kirkland Lake	Kirkland Lake Airport	Facility consists of a 1,163-metre runway, hangar, terminal and fueling amenities	Operating 1970's to present	110 km
Karl Wattlaufer	Elk Lake Airport	Private airport. Consists of a 2,000-foot runway.	Operating	127 km
Corporation of the Township of Armstrong	Earlton-Timiskaming Regional Airport (YXR)	Facility consists of a 5,998-foot and 3,019-foot runway, terminal and fueling amenities	Operating 1937-present	152 km
The Corporation of the Town of Moosonee	Moosonee Airport (YMO)	Secondary airport. Facility consists of a 3,999-foot and 3,500-foot runway, terminal and fueling amenities.	Operating 1970's to present	268 km
Ministry of Transportation	Fort Albany Airport (YFA)	Secondary airport. Facility consists of a 3,601-foot runway, terminal and fueling amenities.	Operating	364 km
<b>Highways</b>				
<b>Past and Present Physical Activities</b>				
Ministry of Transportation	Highway 655	Secondary highway	Operating	0 km
Ministry of Transportation	Highway 11	King's highway, Trans-Canada Highway	Operating	16 km
Ministry of Transportation	Highway 668	Secondary highway	Operating	16 km
Ministry of Transportation	Highway 101	King's highway	Operating	21 km
Ministry of Transportation	Highway 579	Secondary highway	Operating	27 km
Ministry of Transportation	Highway 652	Secondary highway	Operating	30 km
Ministry of Transportation	Highway 11 – North Driftwood River Bridge Replacement (2022-5019)	Replacement of the North Driftwood River Bridge, east of Smooth Rock Falls.	2023-2024	32 km

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Ministry of Transportation	Highway 144	King's highway	Operating	36 km
Ministry of Transportation	Highway 574	Secondary highway	Operating	37 km
Ministry of Transportation	Highway 67	King's highway	Operating	39 km
Ministry of Transportation	Highway 634	Secondary highway	Operating	44 km
Ministry of Transportation	Highway 577	Secondary highway	Operating	49 km
Ministry of Transportation	Highway 581	Secondary highway	Operating	72 km
Ministry of Transportation	Highway 572	Secondary highway	Operating	76 km
Ministry of Transportation	Highway 566	Secondary highway	Operating	77 km
Ministry of Transportation	Highway 65	King's highway	Operating	94 km
Ministry of Transportation	Highway 66	King's highway	Operating	94 km
Ministry of Transportation	Highway 112	King's highway	Operating	109 km
Ministry of Transportation	Highway 560	Secondary highway	Operating	111 km
Ministry of Transportation	Highway 672	Secondary highway	Operating	121 km
Ministry of Transportation	Highway 573	Secondary highway	Operating	128 km
Ministry of Transportation	Highway 624	Secondary highway	Operating	134 km
Ministry of Transportation	Highway 569	Secondary highway	Operating	147 km
Ministry of Transportation	Highway 562	Secondary highway	Operating	152 km
Ministry of Transportation	Highway 558	Secondary highway	Operating	166 km
Ministry of Transportation	Highway 583	Secondary highway	Operating	182 km
Ministry of Transportation	Highway 631	Secondary highway	Operating	245 km

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Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Future Physical Activities</b>				
Ministry of Transportation	Highway 655 – Rehabilitation	Resurfacing of 14 kilometres of Highway 655 from Highway 11 (Driftwood), south	Planned for 2026-2027	7 km
Ministry of Transportation	Highway 101 – Rehabilitation	Resurfacing of 15.2 kilometres of Highway 101, west of Timmins	Planned for 2026-2027	20 km
Ministry of Transportation	Highway 11 – Rehabilitation	Resurfacing of 25.9 kilometres of Highway 11 from Driftwood to Smooth Rock Falls	Planned for 2026-2027	23 km
Ministry of Transportation	Highway 11 – Nellie Lake Rehabilitation	Replacement of culvert, resurfacing of 20.1 kilometres of Highway 11 and paved shoulders	Planned for 2026-2027	27 km
Ministry of Transportation	Highway 11 – Clute Creek Culverts Replacement (2024-5019)	Replacement of two culverts	Planned for 2026-2027	30 km
Ministry of Transportation	Highway 652 Extension to Highway 11	Cochrane Bypass – 4.5 km extension of Highway 652, Genier Road to Highway 11, Cochrane	In the Planning stage of the Class Environmental Assessment process	31 km
Ministry of Transportation	Highway 101 – Rehabilitation	Resurfacing of 22.9 kilometres of Highway 101, Timmins	Planned for 2026-2027	32 km
Ministry of Transportation	Highway 101 – Groundhog River and Cripple Creek Bridges Replacement and Rehabilitation	Replacement and rehabilitation of the Groundhog River and Cripple Creek bridges	Planned for 2026-2027	42 km
Ministry of Transportation	Highway 144 – Resurfacing and Culvert Rehabilitation	Resurfacing of 28.1 kilometres of Highway 144 and culvert rehabilitation north of Gogama	Planned for 2026-2027	46 km
Ministry of Transportation	Highway 11 – Poplar Rapids River Bridge Replacement (2024-5008)	Replacement of the Poplar Rapids River Bridge	Planned for 2026/2027	50 km

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Ministry of Transportation	Highway 11 – Rehabilitation (2023-5003)	Rehabilitation of 6.5 km of Highway 11 and culverts in Matheson to the west of Highway 101, east of Timmins	Planned for 2024-2025	55 km
Ministry of Transportation	Highway 11 – Kapuskasing Rehabilitation (2023-5095)	Resurfacing of 24.8 kilometres of Highway 11 from Kapuskasing to Fauquier, culvert rehabilitation and paved shoulders	Planned for 2024-2025	64 km
Ministry of Transportation	Highway 101 – Salve Creek Bridge Rehabilitation	Rehabilitation of the Salve (Painkiller) Creek Bridge	Planned for 2026-2027	70 km
Ministry of Transportation	Highway 652 – Kattawagami, Floodwood River and Little Abitibi River Bridges Replacement	Replacement of three (3) bridges	Planned for 2026-2027	78 km
Ministry of Transportation	Highway 11 – Rehabilitation	Resurfacing of 13.3 kilometres of Highway 11	Planned for 2026-2027	90 km
Ministry of Transportation	Highway 66 – Crooked Creek Culvert Rehabilitation	Rehabilitation of the Crooked Creek Culvert	Planned for 2026-2027	105 km
Ministry of Transportation	Highway 101 – Mattawasaga River and Ghost River Bridges Rehabilitation (2024-5007)	Rehabilitation of the Mattawasaga River and Ghost River Bridges, east of Matheson	Planned for 2024-2026/27	108 km
Ministry of Transportation	Highway 65-Resurfacing	Resurfacing of 18.5 kilometres of Highway 65 north of Elk Lake	Planned for 2026-2027	114 km
Ministry of Transportation	Highway 560 – Rehabilitation West of Elk Lake (2022-5009)	Culvert replacement west of west junction of Highway 65, west of Elk Lake	Planned for 2025	119 km
Ministry of Transportation	Highway 11 – Englehart River Bridge Rehabilitation (2024-5005)	Rehabilitation of roads and bridges northerly to Highway 112, Englehart	Planned for 2024-2025	122 km

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Ministry of Transportation	Highway 65 – Unnamed Culvert Replacement	Replacement of an unnamed culvert south of Elk Lake	Planned for 2025-2026	130 km
Ministry of Transportation	Highway 11 – Unnamed Culvert Rehabilitation	Rehabilitation of an unnamed culvert north of Englehart	Planned for 2026-2027	137 km
Ministry of Transportation	Highway 11 – ONR Overhead	Bridge replacement	Planned for 2024-2026	153 km
Ministry of Transportation	Highway 562 – Unnamed Creek Culvert Rehabilitation	Culvert replacement 4.9 kilometres west of Highway 11, Earlton	Planned for 2026-2027	157 km
Ministry of Transportation	Highway 569 – Moose Creek Culvert Rehabilitation	Rehabilitation of the Moose Creek Culvert	Planned for 2026-2027	162 km
Ministry of Transportation	Highway 11 – North of New Liskeard Rehabilitation (2022-5037)	Rehabilitation and paved shoulders of 11 kilometres of Highway 11 north of New Liskeard	Planned for 2024-2025	166 km
Ministry of Transportation	Highway 11 and 65 – Resurfacing	Resurfacing of 20.9 kilometres of Highway 11 and 65 north of Coleman	Planned for 2026-2027	173 km
Ministry of Transportation	Highway 11 – Straight Creek Culvert Replacement (2024-5002)	Replacement of Straight Creek Culvert, south of Latchford	Planned for 2026-2027	194 km
Ministry of Transportation	Highway 11 – Rehabilitation near Calstock (2024-5018)	Resurfacing of 16.9 kilometres of Highway 11 from the west junction of Highway 583 to Highway 663	Completed 2024	203 km
Ministry of Transportation	Highway 11 – New Facility	Construction of a new facility. Planning/environmental assessment underway.	Planned for 2026-2027	207 km
Ministry of Transportation	Highway 11 - Rehabilitation near Calstock	Resurfacing of 21.1 kilometres of Highway 11	Planned for 2026-2027	218 km

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Ministry of Transportation	Highway 11 and 631 – Rehabilitation West of Hearst (2023-5130)	Resurfacing of 22.2 kilometres of Highway 11 and 631 west of Hearst	Planned for 2024-2025	238 km
<b>Railways</b>				
<b>Past and Present Physical Activities</b>				
Ontario Northland	Ontario Northland Railway (ONR)	Approximately 1,086-kilometre rail system from Moosonee in the north to North Bay in the south, from Calstock in the west to Rouyn-Noranda (Quebec) in the east	Operating	0 km
Ontario Northland	Polar Bear Express Passenger Train	Passenger train for travel to and from Moosonee and Cochrane	Operating	27 km
Ontario Northland	Bridge Repair – Maidman’s Creek, Moosonee	Railway infrastructure project	Completed 2023	260 km
Ontario Northland	Bridge Repair – Kwatabohegan River, Moosonee	Railway infrastructure project	Completed 2023	260 km
<b>Future Physical Activities</b>				
Ontario Northland, Metrolinx	Northlander Passenger Train Expansion of Service	Proposed project to reinstate the Northeastern passenger rail service from Toronto (Union Station) to Timmins, with a rail connection to Cochrane, with 16 stops. The service was previously discontinued in 2012.	Future - Design underway; anticipated mid-2020’s launch	20 km

## 1.6 Power

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Hydroelectric Dams</b>				
<b>Past and Present Physical Activities</b>				
Ontario Power Generation	Lower Sturgeon Generating Station - Main Dam	Hydroelectric dam on the Mattagami River with a capacity of 14 megawatts	Operating 1923-present	4 km
Ontario Power Generation	Sandy Falls Generating Station	Hydroelectric dam on the Mattagami River with a capacity of 6 megawatts	Operating 1911-present	17 km
Ontario Power Generation	Wawaitin Generating Station – Main and Headworks Dams	Hydroelectric dam on the Mattagami River with a capacity of 15 megawatts	Operating 1912-present	36 km
Algonquin Power and Utilities Corp.	Long Sault Generating Station	Hydroelectric dam on Long Sault Rapids on the Abitibi River with a capacity of 18 megawatts	Operating	40 km
H2O Power (FirstLight Power)	Iroquois Falls Generating Station	Hydroelectric dam on the Abitibi River with a capacity of 29.7 megawatts	Operating 1914-present	47 km
Great Lakes Hydro Income Fund	Carmichael Falls (First Fall) Generating Station	Hydroelectric dam on the Groundhog River with a capacity of 19 megawatts	Operating 1991-present	52 km
H2O Power (FirstLight Power)	Twin Falls Generating Station	Hydroelectric dam on the Abitibi River with a capacity of 27.5 megawatts	Operating 1922-present	54 km
Boralex Inc.	Yellow Falls Generating Station	Hydroelectric dam on the Mattagami River at Yellow Falls with a capacity of 16 megawatts	Operating 2019-present	71 km
Ontario Power Generation	Abitibi Canyon Generating Station - Main Dam	Hydroelectric dam on the Abitibi River with a capacity of 345 megawatts. Includes five units	Operating 1933-present	106 km
Ontario Power Generation	Chute Generating Station	Hydroelectric dam on the Montreal River with a capacity of 3 megawatts	Operating 1923-present	111 km

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Ontario Power Generation	Peter Sutherland Sr. Generating Station - Control and Headworks Dam	Hydroelectric dam on New Post Creek with a capacity of 28 megawatts	Operating 2017-present	115 km
Ontario Power Generation	Little Long Generating Station	Hydroelectric dam on the Mattagami River with a capacity of 200 megawatts	Operating 1963-present	131 km
Ontario Power Generation	Little Long Dam Safety Project	Dam safety improvements to ensure extreme floodwater can safely bypass the Lower Mattagami River stations in the event of large-scale flooding in the area.	Underway	131 km
Ontario Power Generation	Smoky Falls Generating Station - Main and East Block Dams	Hydroelectric dam on the Mattagami River with a capacity of 267 megawatts	Operating 1931-present	137 km
Ontario Power Generation	Smoky Falls Dam Safety Project	Rehabilitation project to improve dam safety and resiliency to climate change	Underway 2021-2025	137 km
Ontario Power Generation	Lower Mattagami River Project	Addition of one generator to the existing Little Long, Harmon and Kipling Generation Stations, and redevelopment of the existing Smoky Falls Generating Station	Completed 2008-2014	137 km
Ontario Power Generation	Otter Rapids Generating Station - Main Dam	Hydroelectric dam on the Abitibi River with a capacity of 182 megawatts	Operating 1961-present	140 km
Ontario Power Generation	Harmon Generating Station	Hydroelectric dam on the Mattagami River with a capacity of 219 megawatts	Operating 1965-present	143 km
Ontario Power Generation	Kipling Generating Station	Hydroelectric dam on the Mattagami River with a capacity of 230 megawatts	Operating 1966-present	147 km

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Ontario Power Generation	Hound Chute Generating Station – Headworks and Control Dams	Hydroelectric dam on the Montreal River with a capacity of 9 megawatts	Operating 1910-present	192 km
TransAlta	Ragged Chute Generating Station	Hydroelectric dam on the Montreal River with a capacity of 7 megawatts	Operating 1991-present	196 km
Ontario Power Generation	Lower Notch Generating Station – Main and Headworks Dams	Hydroelectric dam on the Montreal River with a capacity of 274 megawatts	Operating 1971-present	217 km
Ontario Power Generation	Matabitchuan Generating Station - Control and Headworks Dams	Hydroelectric dam on the Matabitchuan River with a capacity of 10 megawatts	Operating 1910-present	218 km
Brookfield Renewable U.S.	Shekak Generating Station	Hydroelectric dam on the Nagagami River with a capacity of 20 megawatts	Operating	246 km
<b>Solar Power</b>				
<b>Past and Present Physical Activities</b>				
Northland Power	Cochrane Solar Project	10 MW ground-mounted photovoltaic solar project	Operating; 20 - year power purchase agreement with the Independent Electricity System Operator	33 km
<b>Natural Gas</b>				
<b>Past and Present Physical Activities</b>				
Northland Power	Kirkland Lake Generating Station	Three 22-megawatt General Electric LM2500 gas-fired turbines with heat recovery steam generators and two (one 20-megawatt and one 25-megawatt) steam turbine-generator sets	Operating	116 km
<b>Transmission Lines</b>				
<b>Past and Present Physical Activities</b>				
Independent Electricity System Operator	Various 500 kilovolt transmission line(s)	High-voltage IESO-Controlled Grid 500 kilovolt transmission line north and southeast of Timmins	Operating	-

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<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Independent Electricity System Operator	Various 230 kilovolt transmission line(s)	High-voltage IESO-Controlled Grid 230 kilovolt transmission line north and southeast of Timmins	Operating	-
Independent Electricity System Operator	Various 115 kilovolt transmission line(s)	High-voltage IESO-Controlled Grid 500 kilovolt transmission line north and west of Timmins	Operating	-
Hydro One	Wood Pole Replacement	Replacement of wood poles in the Town of Cochrane (Circuit A4H – 2022); unorganized District of Cochrane, Town of Hearst, Town of Kapuskasing, Township of Mattice-Val Cote, Township of Opasatika, Township of Val Rita-Harty (Circuit F1E – 2022, 2020); City of Temiskaming Shores (Circuit D3K – 2020); Township of Fauquier-Strickland (Circuit H9K – 2020); District of Cochrane (Circuit R21D – 2020); District of Cochrane and City of Timmins (Circuit T61S – 2020).	2021, 2022	-
Hydro One	Transmission Line Refurbishment A8K/A9K Circuits	Refurbishment of the A8K/A9K circuits that span between the Town of Kirkland Lake, Timiskaming District, Cochrane District, to the Township of Black River-Matheson and the Town of Iroquois Falls	2022-2023	-

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Future Physical Activities</b>				
Transmission Infrastructure Partnership-1	230-kilovolt Transmission Line	Proposal to construct and operate a new 230 kilovolt transmission line that will provide electricity from the Ontario grid to customers north of Timmins	Future - Proposal underway; subject to a Class Environmental Assessment for minor transmission facilities	0 km
Independent Electricity System Operator, Hydro One, Wabun Tribal Council	Wawa to Porcupine Transmission Line (ERO: 019-9007)	Supporting Critical Transmission Infrastructure in Northeast and Eastern Ontario - Proposal to facilitate the timely development of an additional transmission project in northeast Ontario, a 230-kilovolt line approximately 260 kilometres in length from Wawa Transformer Station to Porcupine Transformer Station	Future - Proposal underway; in-service date of 2030	20 km

## 1.7 Energy

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Pipelines</b>				
<b>Past and Present Physical Activities</b>				
TransCanada Pipelines Limited	TC Canadian Mainline	Transports natural gas through approximately 14,120 kilometres of operating pipeline and various auxiliary infrastructure	Operating	20 km
<b>Local Distribution Systems</b>				
<b>Past and Present Physical Activities</b>				
Northern Ontario Wires Inc.	Local Distribution Company	Licensed distributor for Cochrane	Operating 1921-present	27 km

<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
Northern Ontario Wires Inc.	Local Distribution Company	Licensed distributor for Kapuskasing	Operating 1921-present	47 km
Northern Ontario Wires Inc.	Local Distribution Company	Licensed distributor for Iroquois Falls	Operating 1921-present	52 km
Hearst Power Distribution Company Limited	Local Distribution Company	Licensed distributor for the Town of Hearst	Operating 1951-present	185 km
Five Nations Energy Inc., Fort Albany Power Corporation	Local Distribution Company	Licensed distributor for the community of Fort Albany	Operating 2001-present	365 km

## 1.8 Forestry

<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing</b>	<b>Distance From the Project (in kilometres [km])</b>
<b>Managed Forests</b>				
<b>Past and Present Physical Activities</b>				
Ministry of Natural Resources and Forestry and the Crown	Abitibi River Forest Management Unit (MU 110)	Geographic planning area for crown forest management	Active	0 km
GreenFirst Forest Products Inc., Abitibi River Forest Management Inc.	Abitibi River Forest Sustainable Forest License (551832)	Sustainable Forest License for harvesting all species of trees in the licensed area	Active	0 km
Ministry of Natural Resources and Forestry and the Crown	Gordon Cosens Forest Management Unit (MU 438)	Geographic planning area for crown forest management	Active	3 km
GreenFirst Forest Products Inc.	Gordon Cosens Forest Sustainable Forest License (550039)	Sustainable Forest License for harvesting all species of trees in the licensed area	Active	3 km
Ministry of Natural Resources and Forestry and the Crown	Romeo Malette Forest Management Unit (MU 930)	Geographic planning area for crown forest management	Active	30 km
GreenFirst Forest Products Inc.	Romeo Malette Forest Sustainable Forest License (550398)	Sustainable Forest License for harvesting all species of trees in the licensed area	Active	30 km

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Ministry of Natural Resources and Forestry and the Crown	Timiskaming Forest Management Unit (MU 280)	Geographic planning area for crown forest management	Active	46 km
Timiskaming Forest Alliance Inc.	Timiskaming Forest Sustainable Forest License (542247)	Sustainable Forest License for harvesting all species of trees in the licensed area	Active	46 km
Ministry of Natural Resources and Forestry and the Crown	Hearst Forest Management Unit (MU 601)	Geographic planning area for crown forest management	Active	168 km
GreenFirst Forest Products Inc., Hearst Forest Management Inc.	Heart Sustainable Forest License (550053)	Sustainable Forest License for harvesting all species of trees in the licensed area	Active	168 km
<b>Sawmills and Paper Mills</b>				
<b>Past and Present Physical Activities</b>				
GreenFirst Forest Products Inc.	Cochrane Sawmill	Sawmill	Operating	29 km
GreenFirst Forest Products Inc.	Kapuskasing Sawmill and Paper Mill	Sawmill and paper mill	Operating	92 km
Interfor	Elk Lake Sawmill	Sawmill	Operating	126 km
GreenFirst Forest Products Inc.	Hearst Sawmill	Sawmill	Operating	186 km

## 1.9 Agriculture

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Past and Present Physical Activities</b>				
Various	Agricultural Areas	Agricultural conversion and operations	Active	Various

## 1.10 Recreation

Proponent	Physical Activity	Description	Status/Timing <sup>2</sup>	Distance From the Project (in kilometres [km])
<b>Conservation Areas, Parks and Campgrounds</b>				
<b>Past and Present Physical Activities</b>				
-	Canoe and portage routes	-	Active	-
Ontario Parks	Mahaffy Township Ground Moraine Conservation Reserve	Conservation reserve	Non-operating 2005-present	3 km
Big Water Campgrounds Inc.	Big Water Campground	Recreational nature area	Active	6 km
Ontario Parks	Geary Township Shoreline Bluff Conservation Reserve	Conservation reserve	Non-operating 2003-present	18 km
Ontario Parks	Greenwater Provincial Park	Natural environment	Non-operating 1957-present	26 km
Ontario Parks	Frederick House Lake Provincial Park	Nature reserve	Non-operating 1985-present	26 km
Ontario Parks	Northern Claybelt Forest Complex Conservation Reserve	Conservation reserve	Non-operating 2005-present	26 km

<sup>2</sup> Status/Timing for Ontario Parks under Conservation Areas, Parks and Campgrounds is defined as follows:  
 Operating parks offer a variety of services and facilities and charge fees.  
 Non-operating parks offer no or minimal facilities and services within a park and do not charge fees.

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Ontario Parks	North Muskego River Mixed Forest Conservation Reserve	Conservation reserve	Non-operating 2005-present	27 km
Ontario Parks	Nahma Bog and Poor Fens Conservation Reserve	Conservation reserve	Non-operating 2005-present	27 km
City of Timmins	Gillies Lake Conservation Area	2.5-kilometre walking path circling Gillies Lake with open grassy slopes, trees and shrubs, and pocket shoreline marshes.	Active 1990's-present	32 km
City of Timmins	Porcupine Lake	8.5 and 10-kilometre loop around the shores of Porcupine Lake forming part of the Bart Thompson Trail System	Active	32 km
Ontario Parks	Kettle Lakes Provincial Park	Recreational park	Operating 1957-present	33 km
Ontario Parks	Night Hawk Lake Shoreline Bluffs Conservation Reserve	Conservation reserve	Non-operating 2005-present	36 km
Tourism Cochrane	Abitibi Campground	Recreational nature area	Active	38 km
Ontario Parks	Dana-Jowsey Lakes Provincial Park	Natural environment	Non-operating 1989-present	40 km
Ontario Parks	Tatachikapika River Plain Conservation Reserve	Conservation reserve	Non-operating 2005-present	40 km
Ontario Parks	Hicks-Oke Bog Provincial Park	Nature reserve	Non-operating 1994-present	43 km
Ontario Parks	North Driftwood River Provincial Park	Nature reserve	Non-operating 1985-present	48 km
Ontario Parks	Groundhog River Waterway Provincial Park	Waterway	Non-operating 2006-present	50 km
Ontario Parks	Shallow River Provincial Park	Nature reserve	Non-operating 1985-present	58 km

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Ontario Parks	Driftwood River White Cedar Lacustrine Conservation Reserve	Conservation reserve	Non-operating 2005-present	62 km
Ontario Parks	Whitefish Lakes Conservation Reserve	Conservation reserve	Non-operating 2005-present	63 km
Ontario Parks	Whitefish River Conservation Reserve	Conservation reserve	Non-operating 2005-present	66 km
Ontario Parks	Nova Township Clay Plain Peatlands Conservation Reserve	Conservation reserve	Non-operating 2005-present	69 km
Ontario Parks	Little Abitibi River Provincial Park	Natural environment	Non-operating 1985-present	70 km
Ontario Parks	Wildgoose Outwash Deposit Provincial Park	Nature reserve	Non-operating 2005-present	70 km
Ontario Parks	Fraserdale Wetland Complex Conservation Reserve	Conservation reserve	Non-operating 2005-present	70 km
Ontario Parks	Shallow River Poplar Outwash Conservation Reserve	Conservation reserve	Non-operating 2005-present	72 km
Ontario Parks	René Brunelle Provincial Park	Recreational park	Operating 1957-present	75 km
Ontario Parks	Abitibi-De-Troyes Provincial Park	Cultural heritage park	Non-operating 1985-present	78 km
Ontario Parks	West Montreal River Provincial Park	Waterway	Non-operating 2002-present	79 km
Ontario Parks	Sequin River Conifer and Fens Conservation Reserve	Conservation reserve	Non-operating 2005-present	80 km
Ontario Parks	Mistinikon Lake Uplands Conservation Reserve	Conservation reserve	Non-operating 2002-present	81 km

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Ontario Parks	Lake Abitibi Islands Provincial Park	Nature reserve	Non-operating 2005-present	84 km
Ontario Parks	Dunmore Township Balsam Fir Outwash Deposit Conservation Reserve	Conservation reserve	Non-operating 2001-present	87 km
Ontario Parks	Masonville Bernhardt Muskeg Maple Moraine Conservation Reserve	Conservation reserve	Non-operating 2001-present	99 km
Ontario Parks	North of the North French River Conservation Reserve	Conservation reserve	Non-operating 2005-present	100 km
Ontario Parks	McDougal Point Peninsula Conservation Reserve	Conservation reserve	Non-operating 2005-present	100 km
Ontario Parks	Englehart River Fine Sand Plain and Waterway Provincial Park	Waterway	Non-operating 2002-present	102 km
Ontario Parks	Thackeray Provincial Park	Nature reserve	Non-operating 1985-present	103 km
Ontario Parks	Esker Lakes Provincial Park	Recreational park	Operating 1957-present	106 km
Ontario Parks	Pinard Moraine Conservation Reserve	Conservation reserve	Non-operating 2005-present	109 km
Ontario Parks	Kesagami River Outwash Plain Conservation Reserve	Conservation reserve	Non-operating 2005-present	113 km
Ontario Ministry of Natural Resources	Ballantyne Lake Drumlins Conservation Reserve	Conservation reserve	Non-operating 2005-present	117 km
Ontario Parks	Bennet Lake Esker Kame Complex Conservation Reserve	Conservation reserve	Non-operating 2005-present	118 km

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Ontario Parks	Trollope Lake Burnt Hill Poplar Spruce Conservation Reserve	Conservation reserve	Non-operating 2005-present	118 km
Ontario Parks	Makobe-Grays River Provincial Park	Recreational park	Operating 1985-present	125 km
Ontario Parks	South Grassy Lake Conservation Reserve	Conservation reserve	Non-operating 2001-present	127 km
Ontario Parks	Wapus Creek Conservation Reserve	Conservation reserve	Non-operating 2002-present	127 km
Ontario Parks	Pushkin Hills Provincial Park	Nature reserve	Non-operating 1985-present	128 km
Ontario Parks	Gem Lake Maple Bedrock Provincial Park	Nature reserve	Non-operating 2002-present	133 km
Ontario Parks	Makobe Grays Ice Margin Conservation Reserve	Conservation reserve	Non-operating 2001-present	136 km
Ontario Parks	Brace Creek Outwash Plain Conservation Reserve	Conservation reserve	Non-operating 2001-present	138 km
Ontario Parks	Bryce and Cane Township Wetland Lacustrine Conservation Reserve	Conservation reserve	Non-operating 2001-present	139 km
Ontario Parks	Kap-Kig-Iwan Provincial Park	Recreational park	Operating 1957-present	140 km
Ontario Parks	Mattagami River Beach and Aeolian Deposit Provincial Park	Nature reserve	Non-operating 1985-present	141 km
Ontario Parks	Sextant Rapids Provincial Park	Nature reserve	Non-operating 1985-present	142 km
Ontario Parks	Lady Evelyn-Smoothwater Provincial Park	Recreational park	Operating 1973-present	142 km

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Ontario Parks	Smith Lake Conservation Reserve	Conservation reserve	Non-operating 2001-present	142 km
Ontario Parks	McGarry Township Forest Conservation Reserve	Conservation reserve	Non-operating 2002-present	143 km
Ontario Parks	Larder River Waterway Provincial Park	Waterway	Non-operating 1985-present	144 km
Ontario Parks	Coral Rapids Wetland Conservation Reserve	Conservation reserve	Non-operating 2005-present	144 km
Ontario Parks	Big Spring Lake Bedrock Conservation Reserve	Conservation reserve	Non-operating 2001-present	144 km
Ontario Ministry of Natural Resources	Tembec Wetland Complex Conservation Reserve	Conservation reserve	Non-operating 2004-present	145 km
Ontario Parks	Coral Rapids Provincial Park	Nature reserve	Non-operating 1985-present	146 km
Ontario Parks	Missinaibi Provincial Park	Recreational park	Operating 1970-present	146 km
Ontario Parks	East Larder River Bedrock Conifer Conservation Reserve	Conservation reserve	Non-operating 2002-present	146 km
Ontario Parks	Adam Creek Provincial Park	Nature reserve	Non-operating 1985-present	153 km
Ontario Parks	Blanche River Conservation Reserve	Conservation reserve	Non-operating 2002-present	153 km
Ontario Parks	Henwood Township Forest and Wetland Conservation Reserve	Conservation reserve	Non-operating 2001-present	155 km
Ontario Parks	North Yorston Conservation Reserve	Conservation reserve	Non-operating 2004-present	155 km

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Ontario Parks	Kesagami Provincial Park	Wilderness park	Non-operating 1983-present	156 km
Ontario Parks	Indian Bay South Conservation Reserve	Conservation reserve	Non-operating 1997-present	156 km
Ontario Parks	Jim Edwards Lake Conservation Reserve	Conservation reserve	Non-operating 2001-present	161 km
Ontario Parks	Williams Island Provincial Park	Nature reserve	Non-operating 1985-present	162 km
Ontario Parks	Obabika River Provincial Park	Recreational park	Operating 1989-present	162 km
Ontario Parks	East Lady Evelyn Lake Conservation Reserve	Conservation reserve	Non-operating 2001-present	163 km
Ontario Parks	Sugar Lake Conservation Reserve	Conservation reserve	Non-operating 2001-present	166 km
Ontario Parks	W.J.B. Greenwood Provincial Park	Recreational park	Non-operating 1985-present	185 km
Ontario Parks	Ste. Therese Ground Moraine Conservation Reserve	Conservation reserve	Non-operating 2003-present	192 km
Ontario Parks	Cliff Lake Conservation Reserve	Conservation reserve	Non-operating 2001-present	195 km
Ontario Parks	Dube Creek Iceberg Keel Marks Conservation Reserve	Conservation reserve	Non-operating 2003-present	202 km
Ontario Parks	Fushimi Lake Provincial Park	Recreational park	Operating 1979-present	204 km
Ontario Parks	Matabitchuan River Conservation Reserve	Conservation reserve	Non-operating 1997-present	218 km
Ontario Parks	South Timiskaming Shoreline Conservation Reserve	Conservation reserve	Non-operating 2004-present	224 km
Ontario Parks	Nagagamis Provincial Park	Recreational park	Operating 1957-present	246 km

**Crawford Nickel Project Impact Statement:**  
**Chapter 29 Cumulative Effect – Attachment 29.1 Project Inclusion List**  
November 22, 2024

<b>Proponent</b>	<b>Physical Activity</b>	<b>Description</b>	<b>Status/Timing<sup>2</sup></b>	<b>Distance From the Project (in kilometres [km])</b>
Ontario Parks, Moose Cree First Nation	Tidewater Provincial Park	Recreational park	Operating 1970-present	257 km
Ontario Parks	Jog Lake Conservation Reserve	Conservation reserve	Non-operating 1997-present	310 km
Ontario Parks	Low/Bell Conservation Reserve	Conservation reserve	Non-operating 2004-present	317 km
Ontario Parks	Little Current River Provincial Park	Recreational park	Non-operating 1989-present	357 km
Ontario Parks	Nakina Northeast Waterway Conservation Reserve	Conservation reserve	Non-operating 2004-present	370 km
Ontario Parks	Lower Twin Lake Conservation Reserve	Conservation reserve	Non-operating 2004-present	398 km
Ontario Parks	Albany River Provincial Park	Recreational park	Non-operating 1989-present	464 km
<b>Snowmobile Trails</b>				
<b>Past and Present Physical Activities</b>				
Timiskaming Abitibi Trail Association	Snowmobile Trails – District 14	Snowmobile trails consisting of 8 volunteer snowmobile clubs	Active – use depends on conditions	0 km
Northern Corridor Du Nord	Snowmobile Trails – District 15	Snowmobile trails consisting of 9 volunteer snowmobile clubs	Active – use depends on conditions	0 km

## 1.11 Hunting and Fishing Activities

Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Hunting Activities within Wildlife Management Units</b>				
<b>Past and Present Physical Activities</b>				
Licensed hunters	Hunting within Ministry of Natural Resources and Forestry Wildlife Management Unit - 30	Hunting activities according to applicable regulations	Active	0 km
Licensed hunters	Hunting within Ministry of Natural Resources and Forestry Wildlife Management Unit – 27	Hunting activities according to applicable regulations	Active	16 km
Licensed hunters	Hunting within Ministry of Natural Resources and Forestry Wildlife Management Unit - 29	Hunting activities according to applicable regulations	Active	19 km
Licensed hunters	Hunting within Ministry of Natural Resources and Forestry Wildlife Management Unit - 24	Hunting activities according to applicable regulations	Active	41 km
Licensed hunters	Hunting within Ministry of Natural Resources and Forestry Wildlife Management Unit – 26	Hunting activities according to applicable regulations	Active	49 km
Licensed hunters	Hunting within Ministry of Natural Resources and Forestry Wildlife Management Unit – 28	Hunting activities according to applicable regulations	Active	50 km
Licensed hunters	Hunting within Ministry of Natural Resources and Forestry Wildlife Management Unit – 25	Hunting activities according to applicable regulations	Active	178 km

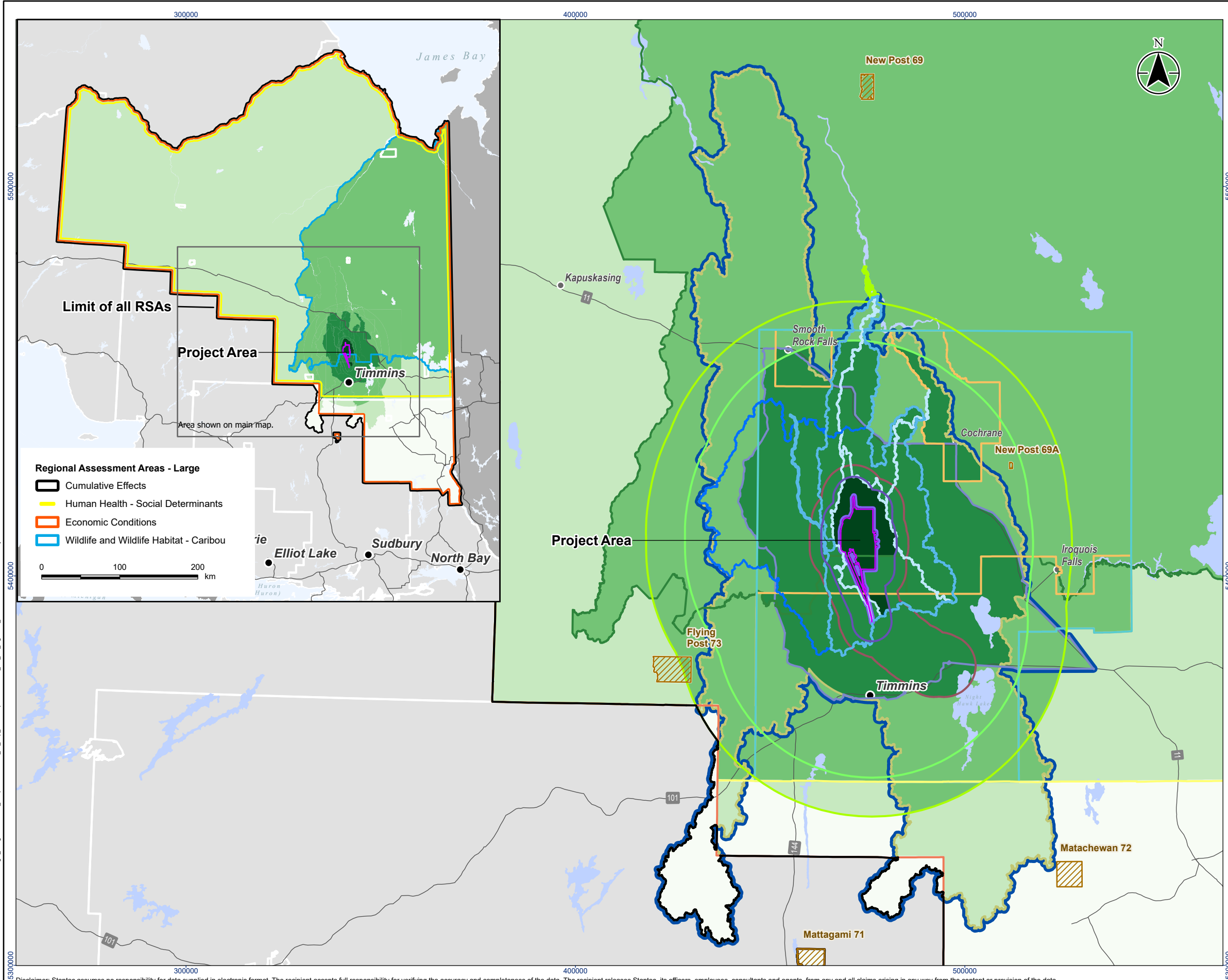
Proponent	Physical Activity	Description	Status/Timing	Distance From the Project (in kilometres [km])
<b>Fishing Activities within Fisheries Management Zones</b>				
<b>Past and Present Physical Activities</b>				
Licensed anglers	Fishing within Ministry of Natural Resources and Forestry Fisheries Management Zone - 8	Fishing activities according to applicable regulations	Active	0 km
Licensed anglers	Fishing within Ministry of Natural Resources and Forestry Fisheries Management Zone - 3	Fishing activities according to applicable regulations	Active	155 km

## Attachment 29.2      Figures

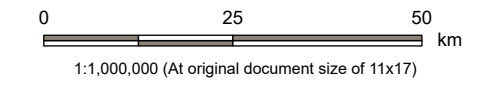








- Legend**
- Project Area
  - Limit of Biophysical RSAs
- Number of Overlapping RSAs**
- 1 - 2
  - 3 - 4
  - 5 - 8
  - 9 - 14
  - 15 - 18
- Base Features**
- Major Roads
  - First Nation Reserve
  - Waterbody
- Regional Study Areas**
- Acoustic Environment
  - Ambient Air Quality
  - Atmospheric Environment - Ambient Light
  - Cumulative Effects
  - Economic Conditions
  - Fish and Fish Habitat
  - Geology and Geologic Hazards/Soil
  - Groundwater
  - Health - Biophysical Determinants
  - Health - Social Determinants
  - Social Conditions - Land and Resource Use
  - Social Conditions - Services and Infrastructure
  - Surface Water
  - Vegetation, Riparian, and Wetland Environments
  - Wildlife and Wildlife Habitat - Caribou
  - Wildlife and Wildlife Habitat/Birds and Bird Habitat



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
  2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.
  3. Biophysical RSAs include: Vegetation, Riparian and Wetland Environments, Wildlife and Wildlife Habitat, Fish and Fish Habitat and Birds and Bird Habitat
  4. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.

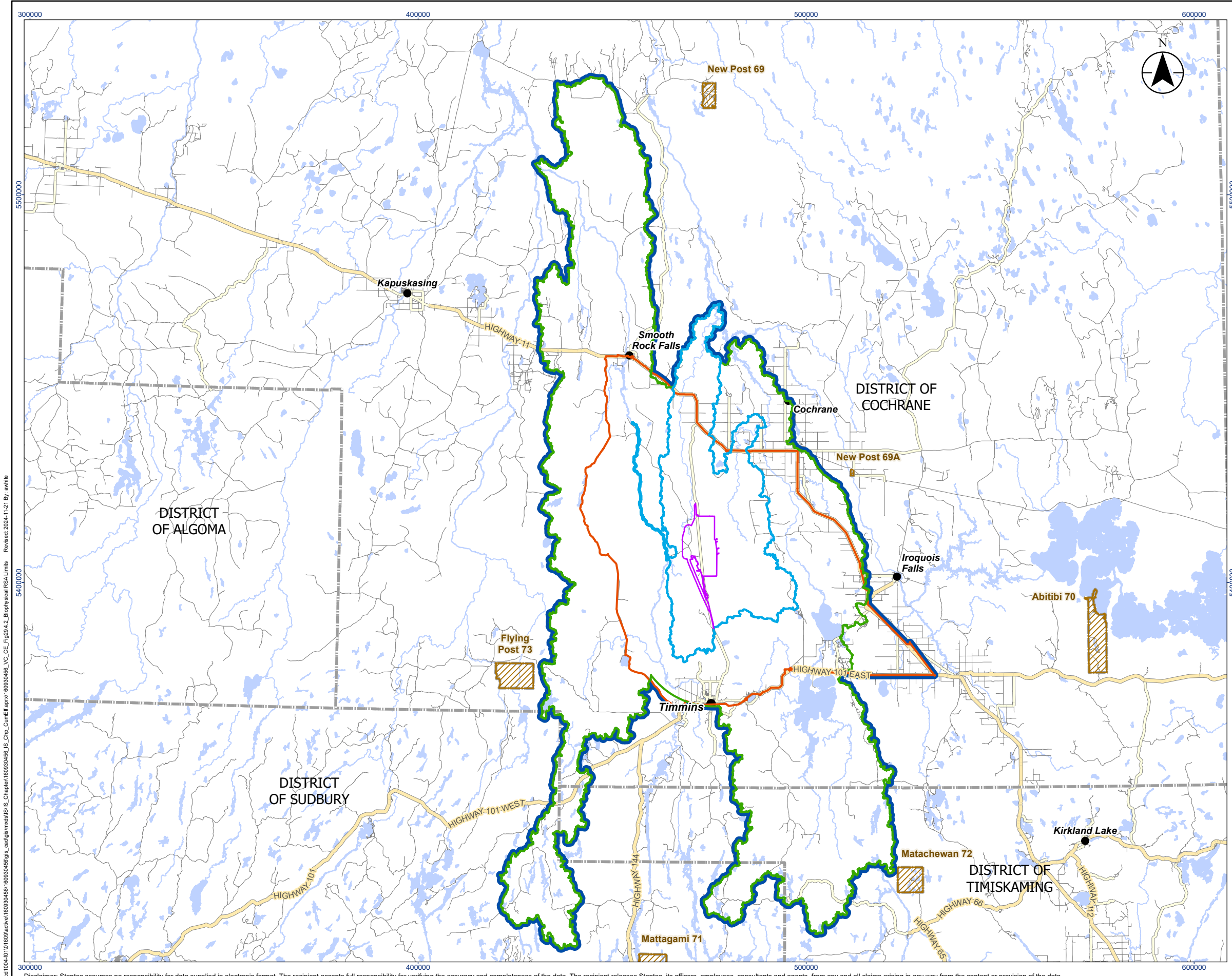
Project Location: Timmins, Ontario  
 160930456 REVA  
 Prepared by awhite on 2024-11-07

Client/Project: Canada Nickel Company (CNC)  
 Crawford Nickel Project

Figure No.: 29.4.1

Title: Regional Study Areas

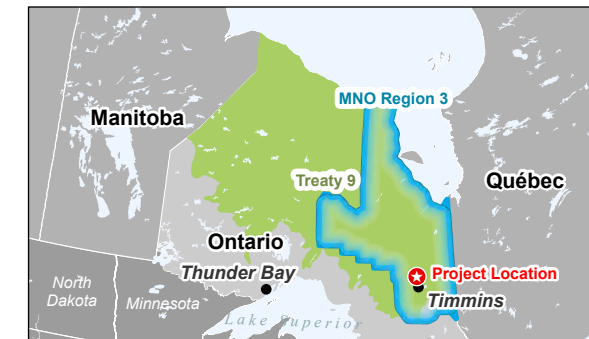
V:\1004-1010\160930456\160930456\gis\_data\gis\_data\160930456\160930456\_NC\_CE\_Fig29.4.1\_RSA\_Reviewed\_2024-11-07\_By\_awhite



- Legend**
- Project Area
  - Limit of Biophysical RSAs
- Biophysical Regional Study Areas**
- Fish and Fish Habitat
  - Vegetation, Riparian, and Wetland Environments
  - Wildlife and Wildlife Habitat/Birds and Bird Habitat
- Base Features**
- Expressway / Highway
  - Major Road
  - Minor Road
  - First Nation Reserve
  - Municipal Boundary
  - Waterbody



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
  2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.
  3. Biophysical RSAs include: Vegetation, Riparian and Wetland Environments, Wildlife and Wildlife Habitat, Fish and Fish Habitat and Birds and Bird Habitat.
  4. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



Project Location: Timmins, Ontario  
 160930456 REVA  
 Prepared by awhite on 2024-11-21

Client/Project: Canada Nickel Company (CNC)  
 Crawford Nickel Project

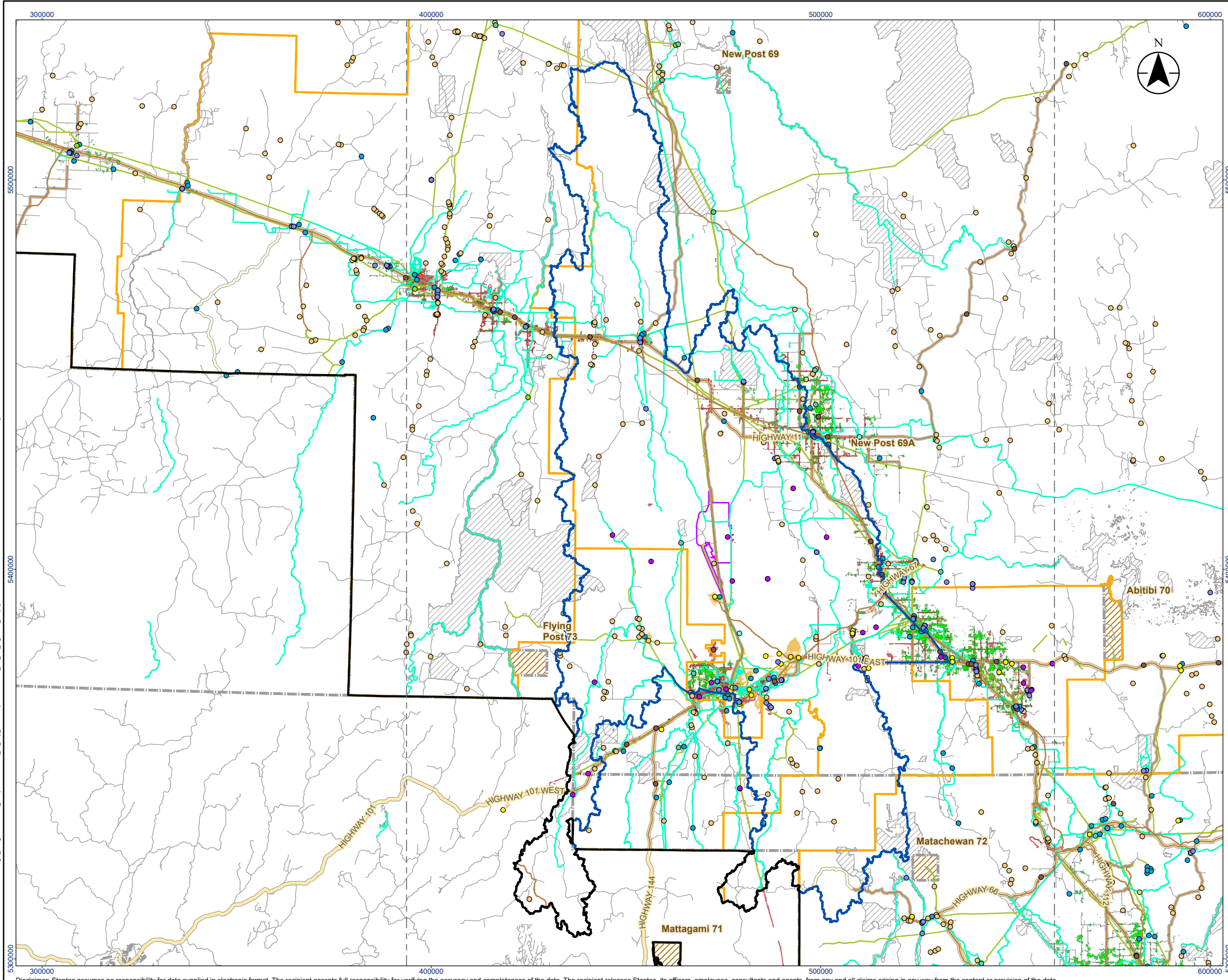
Figure No.: **29.4.2**

Title: **Limit of Biophysical Regional Study Areas**

V:\1004-101009\active\160930456\mxd\BIBIS\_Chapter\160930456\_IS\_Chp\_CumE\aprx\160930456\_NC\_CE\_Fig29.4.2\_Biophysical RSA Limits  
 Revised: 2024-11-21 By: awhite  
 Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.







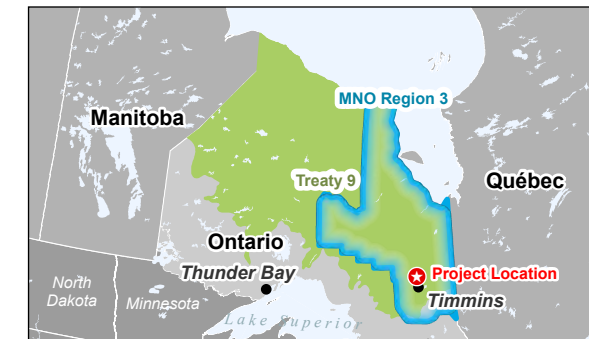
**Legend**

Project Area	<b>Selected Land Cover Classes</b>
Limit of all RSAs	Agriculture, Cropland
Limit of Biophysical RSAs	Agriculture, Pasture
<b>Past, Present and Future Physical Activities</b>	Land, Sand/Gravel/Mine Tailings
Aggregate Extraction	Land, Settlement, Infrastructure
Community Development	Limit of Land Cover Data Coverage
Energy	<b>Base Features</b>
Exploration	Expressway / Highway
Mining	Major Road
Power	Minor Road
Recreation	Municipal Boundary
Transportation	
Water Management	
Energy	
Recreation	
Transportation	
Forest Management Unit	
Recreation	
First Nation Reserve	

0 25 50 km  
1:1,000,000 (At original document size of 11x17)

**Notes**

- Coordinate System: NAD 1983 UTM Zone 17N
- Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.
- Biophysical RSAs include: Vegetation, Riparian and Wetland Environments, Wildlife and Wildlife Habitat, Fish and Fish Habitat and Birds and Bird Habitat
- Land Cover is a combination of Land Cover Class 2000 (MNR), Ontario Wetland Evaluation System (MNR), and 2022 Crop Inventory (Agriculture and Agri-Food Canada).
- First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



Project Location: Timmins, Ontario  
160930456 REVA  
Prepared by awhite on 2024-11-21

Client/Project: Canada Nickel Company (CNC)  
Crawford Nickel Project

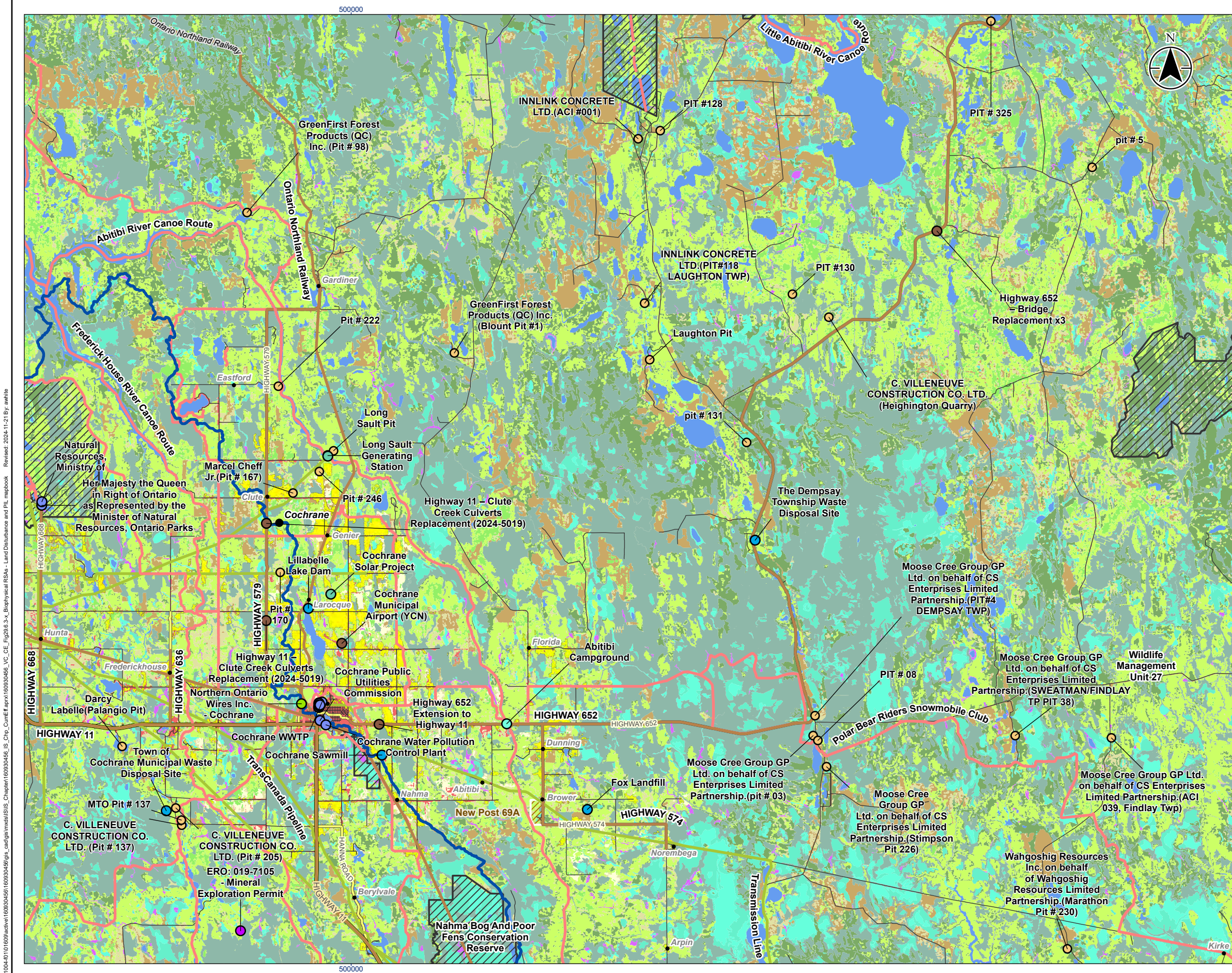
Figure No.: 29.6.2

Title: **Limit of Biophysical Regional Study Areas - Land Disturbance and Project Inclusion List**

Vertical text on the left margin: V:\1004-101\160930456\160930456\gis\_data\mxd\160930456\_Land\_Disturbance\_and\_PIL\_overview\_Revised\_2024-11-21\_By\_ahwhite







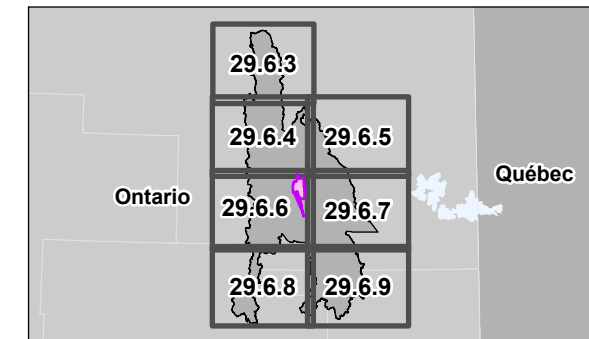
**Legend**

Limit of all RSAs	<b>Land Cover Classes</b>
Limit of Biophysical RSAs	Agriculture, Cropland
<b>Past, Present, and Future Physical Activities</b>	Agriculture, Pasture
Aggregate Extraction	Forest, Coniferous Forest
Community Development	Forest, Deciduous Forest
Energy	Forest, Mixed Forest
Exploration	Forest, Sparse Forest
Power	Wetland, Fen
Recreation	Wetland, Bog
Transportation	Wetland, Swamp
Water Management	Wetland, Marsh
Energy	Water
Recreation	Depletion, Cuts
Transportation	Land, Settlement, Infrastructure
Forest Management Unit	<b>Base Features</b>
Recreation	Expressway / Highway
First Nation Reserve	Major Road
	Minor Road

0 5 10 km  
1:250,000 (At original document size of 11x17)

**Notes**

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.
3. Biophysical RSAs include: Vegetation, Riparian and Wetland Environments, Wildlife and Wildlife Habitat, Fish and Fish Habitat and Birds and Bird Habitat. Land Cover is a combination of Land Cover Class 2000 (MNR), Ontario Wetland Evaluation System (MNR), and 2022 Crop Inventory (Agriculture and Agri-Food Canada).
4. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



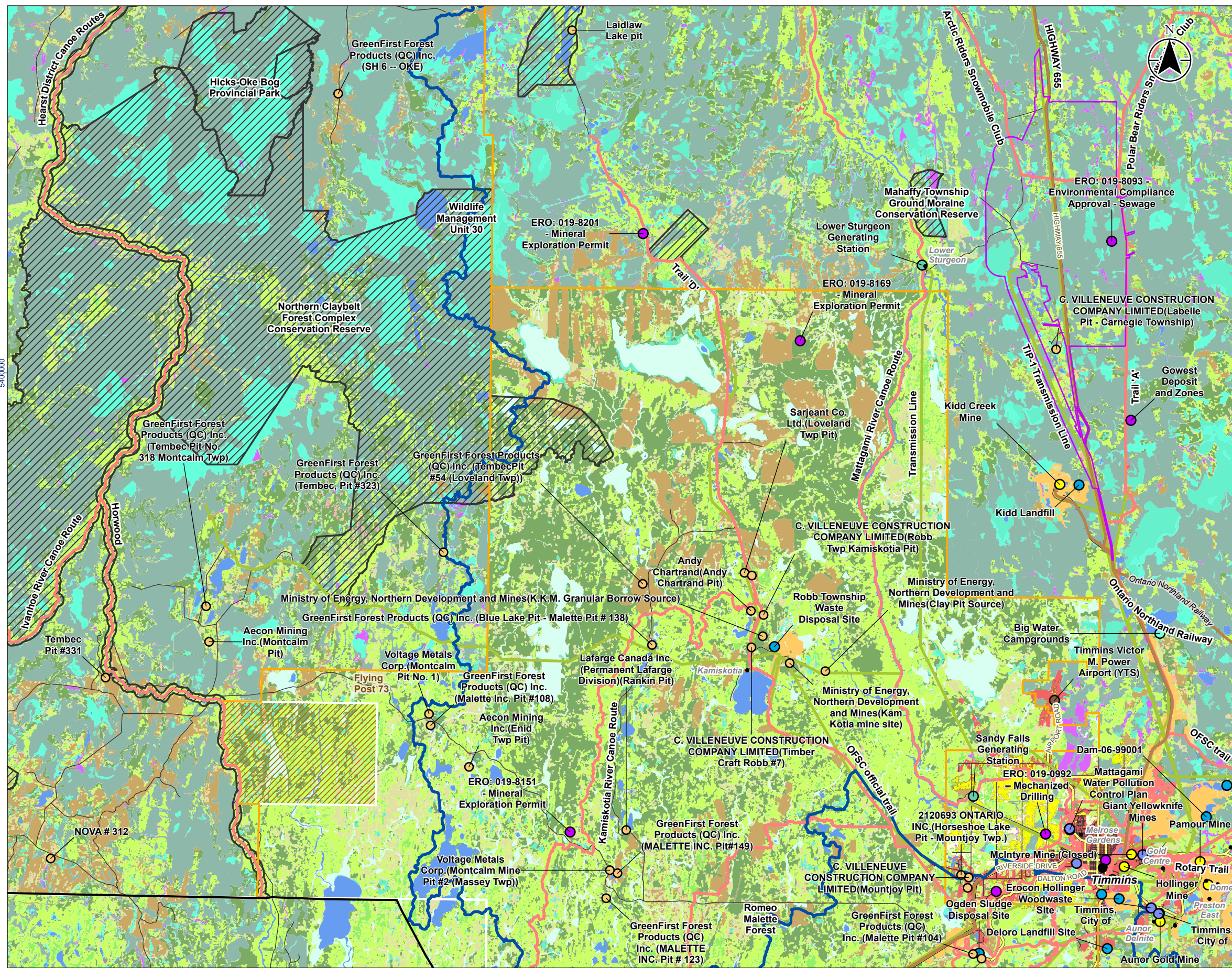
Project Location: Timmins, Ontario  
 Prepared by: awhite on 2024-11-21

Client/Project: Canada Nickel Company (CNC)  
 Crawford Nickel Project

Figure No.: **29.6.5**

Title: **Limit of Biophysical Regional Study Areas - Land Cover and Project Inclusion List (Mapbook)**

V:\0104-1010\0109\active\160930456\GIS\_Chapert\160930456\_IS\_Chp\_CumE\lapp\160930456\_NC\_CE\_Fig29.6.3-Biophysical RSAs - Land Disturbance and P.L. mapbook Reviewed: 2024-11-21 By: awhite



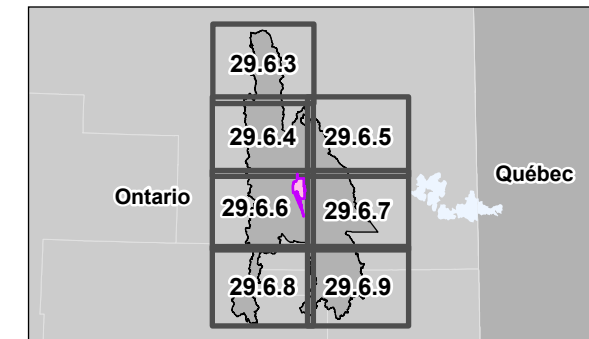
**Legend**

Project Area	<b>Land Cover Classes</b>
Limit of all RSAs	Agriculture, Pasture
Limit of Biophysical RSAs	Forest, Coniferous Forest
<b>Past, Present, and Future Physical Activities</b>	Forest, Deciduous Forest
Aggregate Extraction	Forest, Mixed Forest
Community Development	Forest, Sparse Forest
Exploration	Wetland, Fen
Mining	Wetland, Bog
Power	Wetland, Swamp
Recreation	Wetland, Marsh
Transportation	Wetland, Unclassified
Water Management	Water
Energy	Depletion, Cuts
Recreation	Land, Bedrock
Transportation	Land, Sand/Gravel/ Mine Tailings
Forest Management Unit	Land, Settlement, Infrastructure
Recreation	<b>Base Features</b>
First Nation Reserve	Expressway / Highway

Scale: 0 5 km  
1:250,000 (At original document size of 11x17)

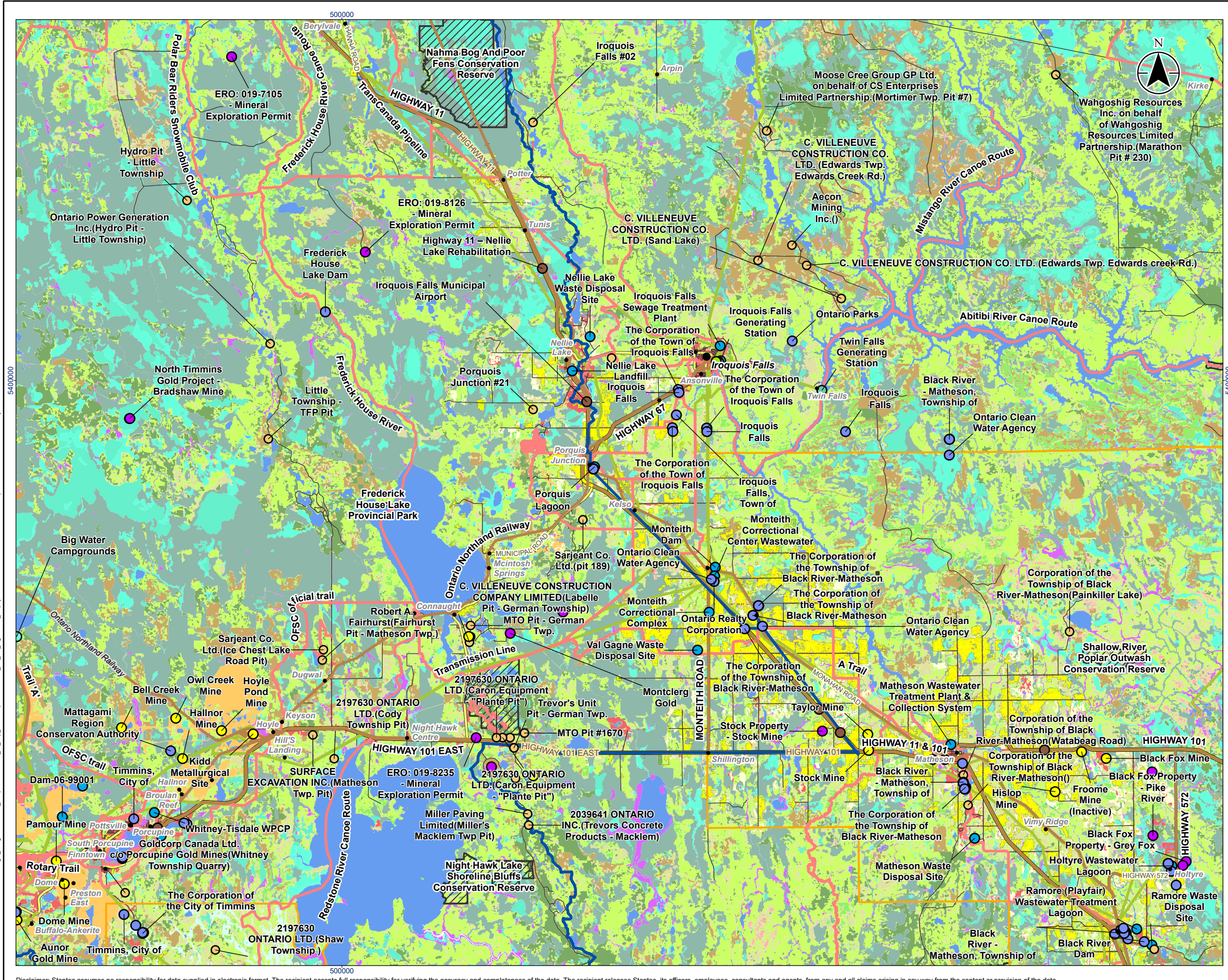
**Notes**

- Coordinate System: NAD 1983 UTM Zone 17N
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- Biophysical RSAs include: Vegetation, Riparian and Wetland Environments, Wildlife and Wildlife Habitat, Fish and Fish Habitat and Birds and Bird Habitat. Land Cover is a combination of Land Cover Class 2000 (MNR), Ontario Wetland Evaluation System (MNR), and 2022 Crop Inventory (Agriculture and Agri-Food Canada).
- First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



Project Location: Timmins, Ontario  
 Client/Project: Canada Nickel Company (CNC) Crawford Nickel Project  
 Prepared by: awhite on 2024-11-21

Figure No. **29.6.6**  
 Title: **Limit of Biophysical Regional Study Areas - Land Cover and Project Inclusion List (Mapbook)**



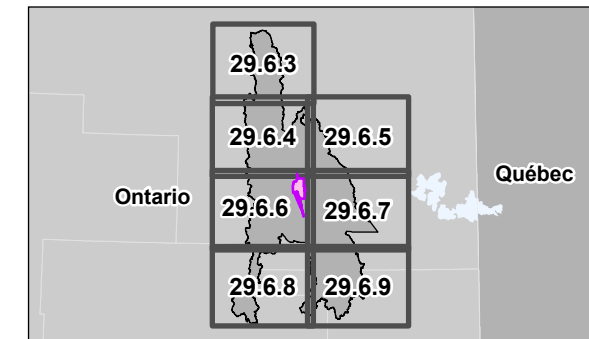
**Legend**

Limit of all RSAs	<b>Land Cover Classes</b>
Limit of Biophysical RSAs	Agriculture, Cropland
<b>Past, Present, and Future Physical Activities</b>	Agriculture, Pasture
Aggregate Extraction	Forest, Coniferous Forest
Community Development	Forest, Deciduous Forest
Energy	Forest, Mixed Forest
Exploration	Forest, Sparse Forest
Mining	Wetland, Fen
Power	Wetland, Bog
Recreation	Wetland, Swamp
Transportation	Wetland, Marsh
Water Management	Wetland, Unclassified
Energy	Water
Recreation	Depletion, Cuts
Transportation	Land, Bedrock
Forest Management Unit	Land, Sand/Gravel/Mine Tailings
Recreation	Land, Settlement, Infrastructure

0 5 10 km  
1:250,000 (At original document size of 11x17)

**Notes**

- Coordinate System: NAD 1983 UTM Zone 17N
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- Biophysical RSAs include: Vegetation, Riparian and Wetland Environments, Wildlife and Wildlife Habitat, Fish and Fish Habitat and Birds and Bird Habitat4. Land Cover is a combination of Land Cover Class 2000 (MNR), Ontario Wetland Evaluation System (MNR), and 2022 Crop Inventory (Agriculture and Agri-Food Canada).
- First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



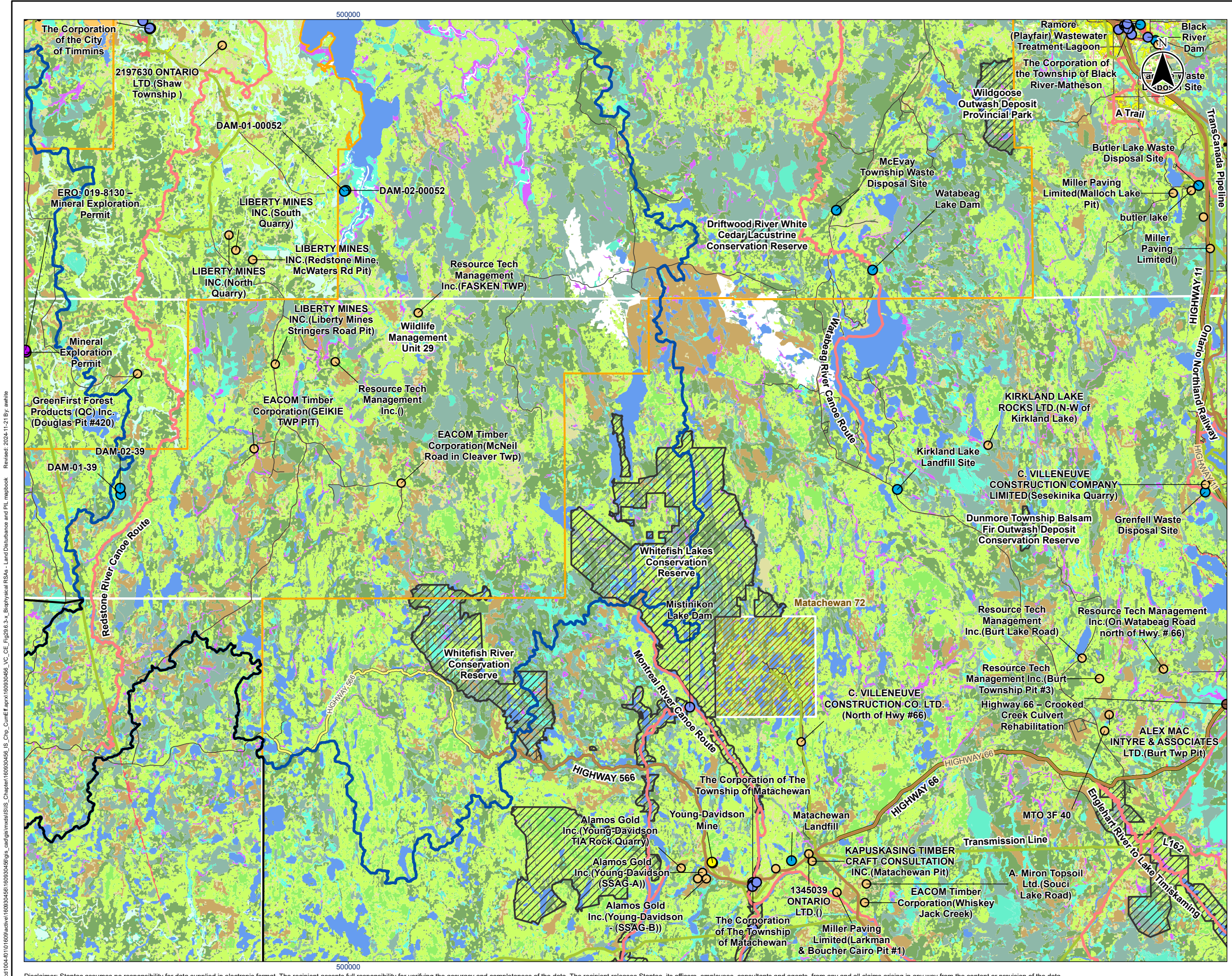
Project Location: Timmins, Ontario  
Prepared by: awhite on 2024-11-21

Client/Project: Canada Nickel Company (CNC) Crawford Nickel Project

Figure No.: 29.6.7

**Limit of Biophysical Regional Study Areas - Land Cover and Project Inclusion List (Mapbook)**





**Legend**

- Limit of all RSAs
- Limit of Biophysical RSAs

**Past, Present, and Future Physical Activities**

- Aggregate Extraction
- Community Development
- Exploration
- Mining
- Transportation
- Water Management
- Energy
- Recreation
- Transportation
- Forest Management Unit
- Recreation
- First Nation Reserve

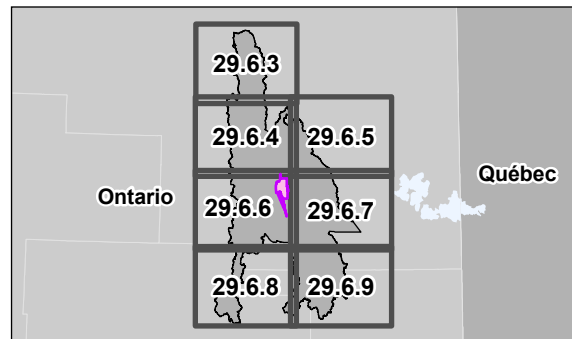
**Land Cover Classes**

- Agriculture, Cropland
- Agriculture, Pasture
- Forest, Coniferous Forest
- Forest, Deciduous Forest
- Forest, Mixed Forest
- Forest, Sparse Forest
- Wetland, Fen
- Wetland, Bog
- Wetland, Swamp
- Wetland, Marsh
- Wetland, Unclassified
- Water
- Depletion, Cuts
- Land, Bedrock
- Land, Sand/Gravel/Mine Tailings
- Land, Settlement, Infrastructure

0 5 10 km  
1:250,000 (At original document size of 11x17)

**Notes**

- Coordinate System: NAD 1983 UTM Zone 17N
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- First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



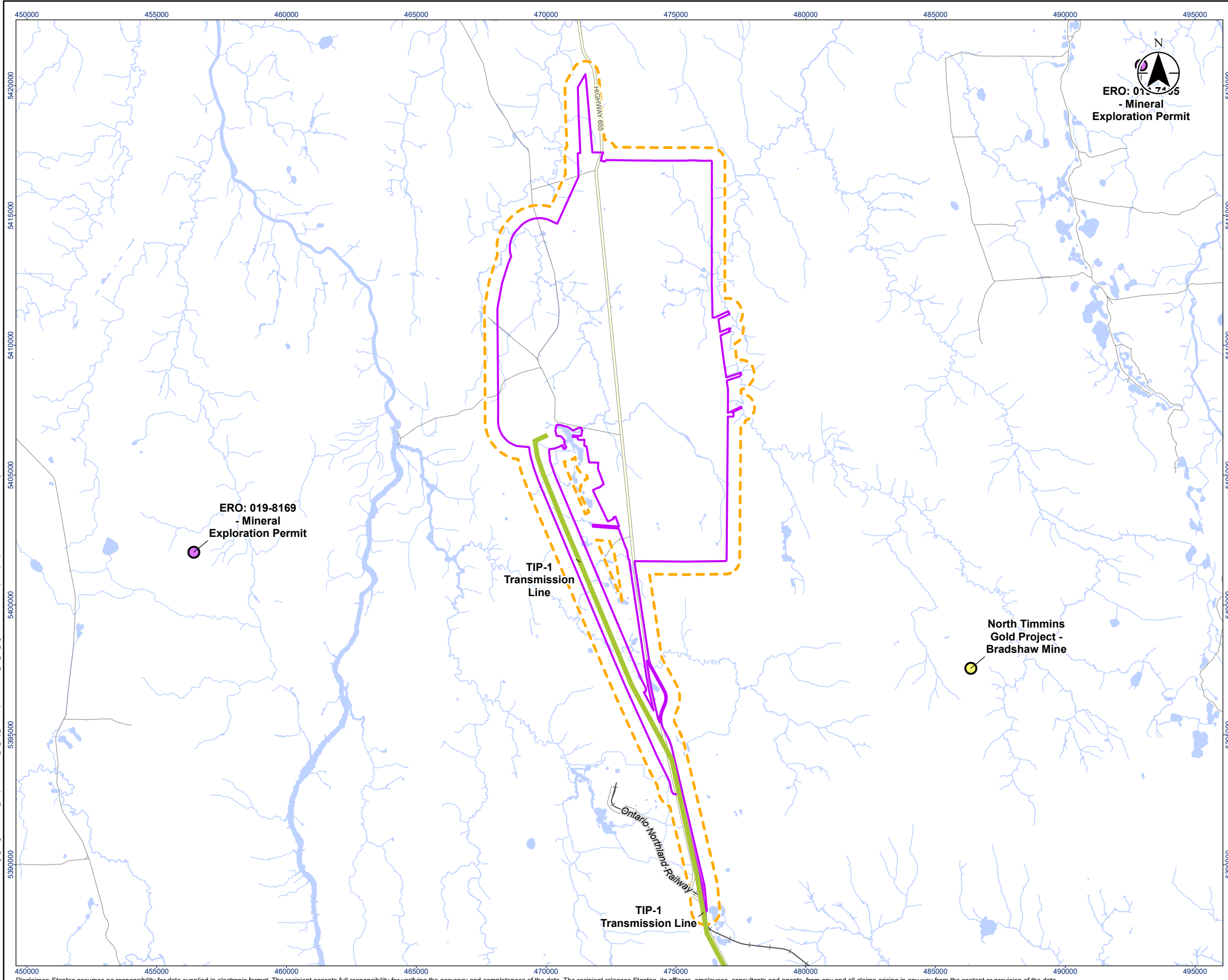
Project Location: Timmins, Ontario  
 Prepared by: awhite on 2024-11-21

Client/Project: Canada Nickel Company (CNC)  
 Crawford Nickel Project

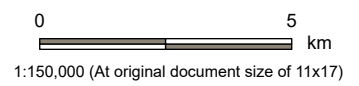
Figure No.: **29.6.9**

Title: **Limit of Biophysical Regional Study Areas - Land Cover and Project Inclusion List (Mapbook)**





- Legend**
- Project Area
  - Limit of all RSAs
  - Regional Study Area
- Future Physical Activities**
- Exploration
  - Mining
  - Energy
- Base Features**
- Major Road
  - Minor Road
  - + Railway
  - Watercourse
  - Municipal Boundary
  - Waterbody



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
  2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.
  3. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



Project Location: Timmins, Ontario  
 Prepared by: awhite on 2024-11-15

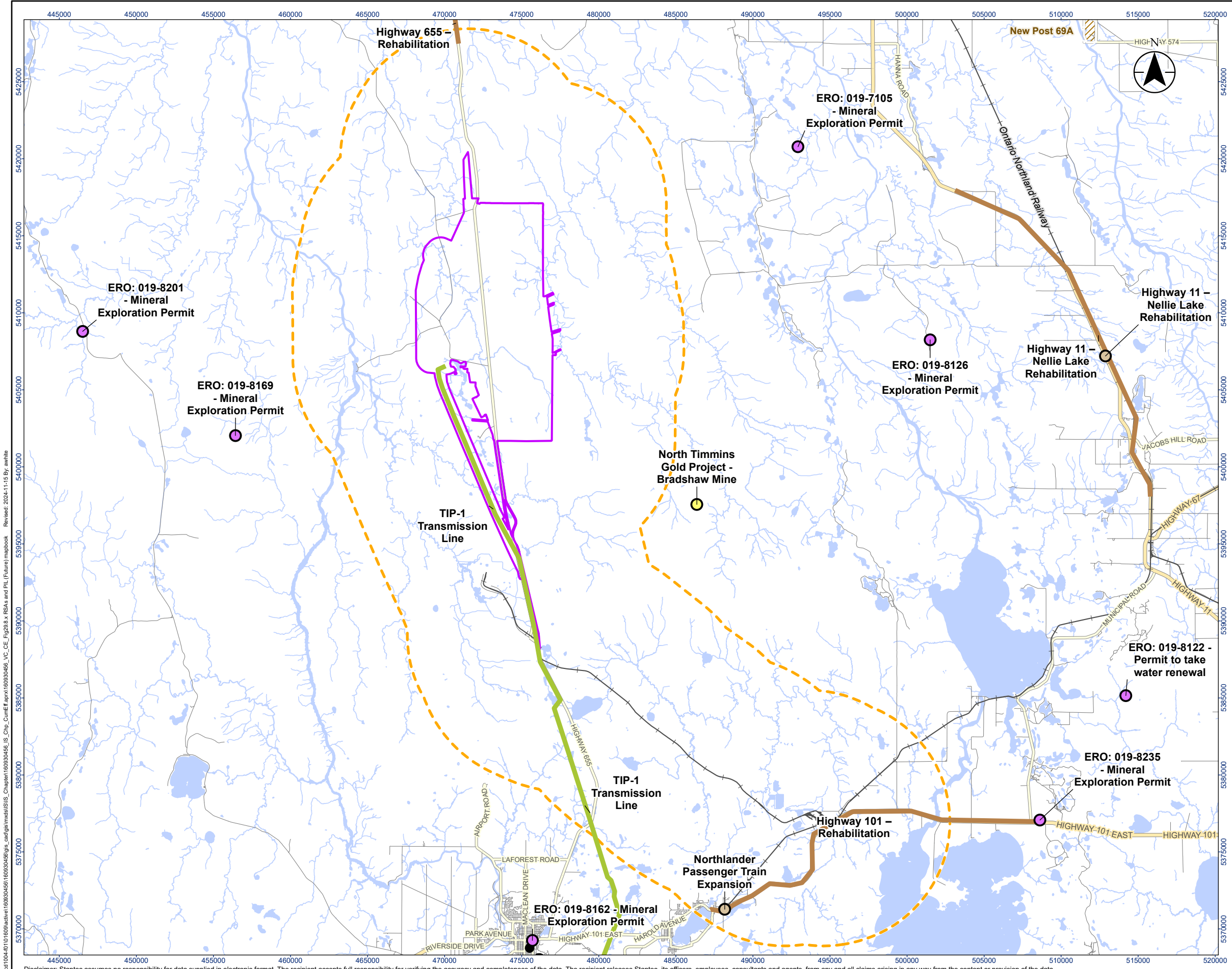
Client/Project: Canada Nickel Company (CNC)  
 Crawford Nickel Project

Figure No.: **29.8.1**  
 Title: **Future Physical Activities and Regional Study Area for Geology and Geologic Hazards/Soil**

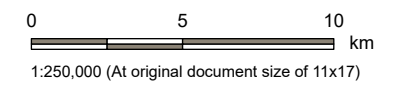
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 Revised: 2024-11-15 By: awhite







- Legend**
- Project Area
  - Limit of all RSAs
  - Regional Study Area
- Future Physical Activities**
- Exploration
  - Mining
  - Power
  - Transportation
  - Energy
  - Transportation
- Base Features**
- Expressway / Highway
  - Major Road
  - Minor Road
  - Railway
  - Watercourse
  - First Nation Reserve
  - Municipal Boundary
  - Waterbody



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
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  3. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



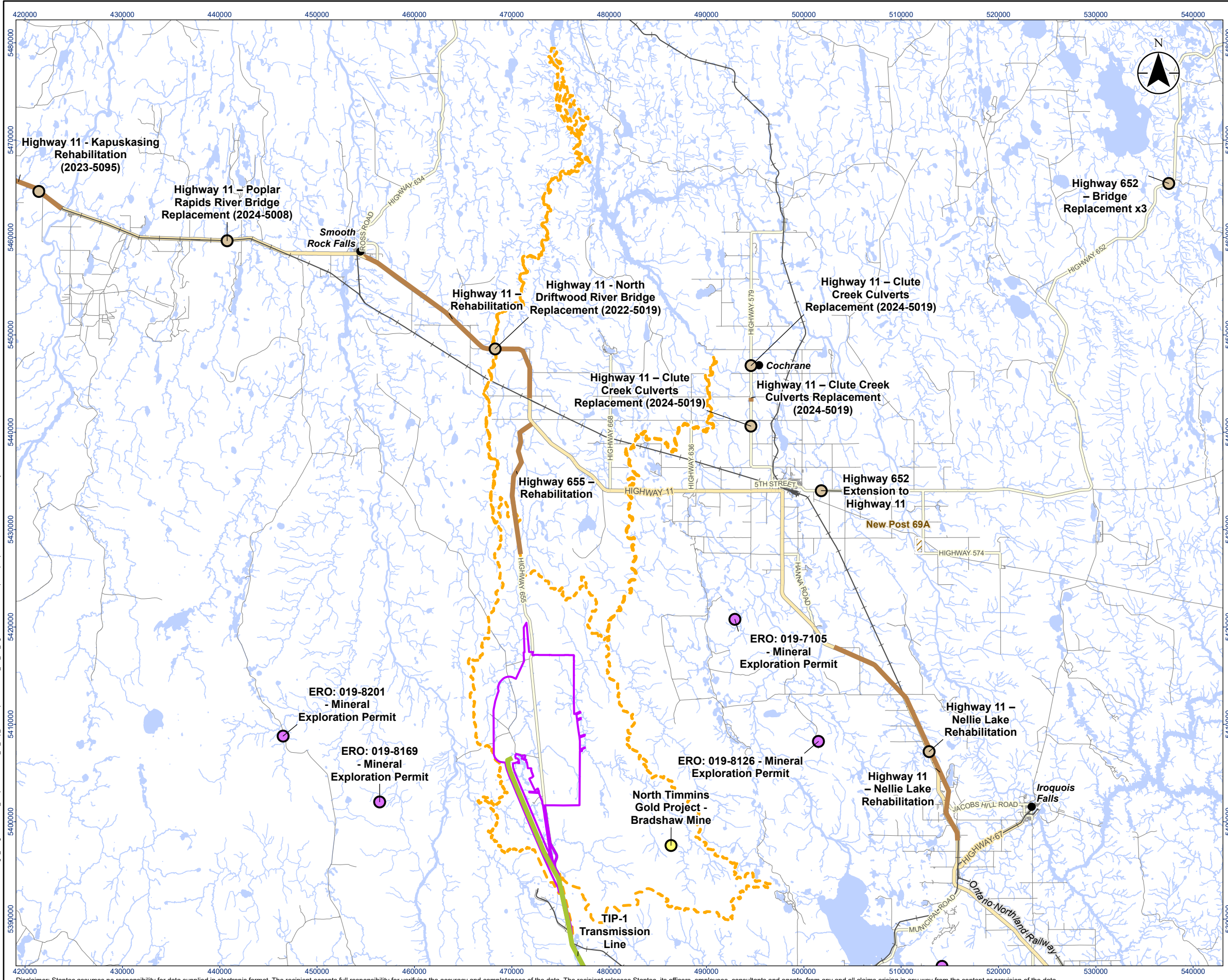
Project Location: Timmins, Ontario  
 Prepared by: awhite on 2024-11-15

Client/Project: Canada Nickel Company (CNC)  
 Crawford Nickel Project

Figure No. **29.8.4**  
 Title: **Future Physical Activities and Regional Study Area for Acoustic Environment**

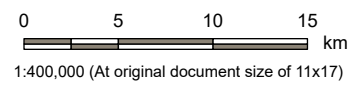
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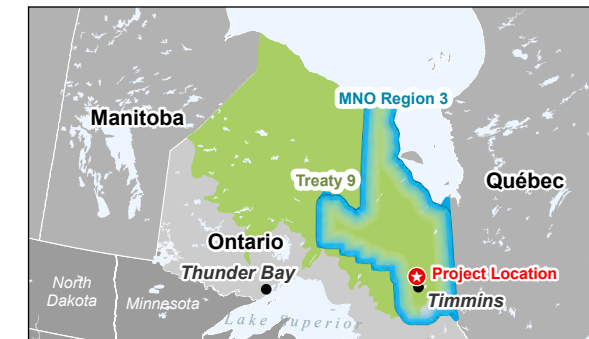


Legend

- Project Area
  - Limit of all RSAs
  - Regional Study Area
- Future Physical Activities**
- Exploration
  - Mining
  - Transportation
  - Energy
  - Transportation
- Base Features**
- Expressway / Highway
  - Major Road
  - Minor Road
  - Railway
  - Watercourse
  - First Nation Reserve
  - Municipal Boundary
  - Waterbody



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
  2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.
  3. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



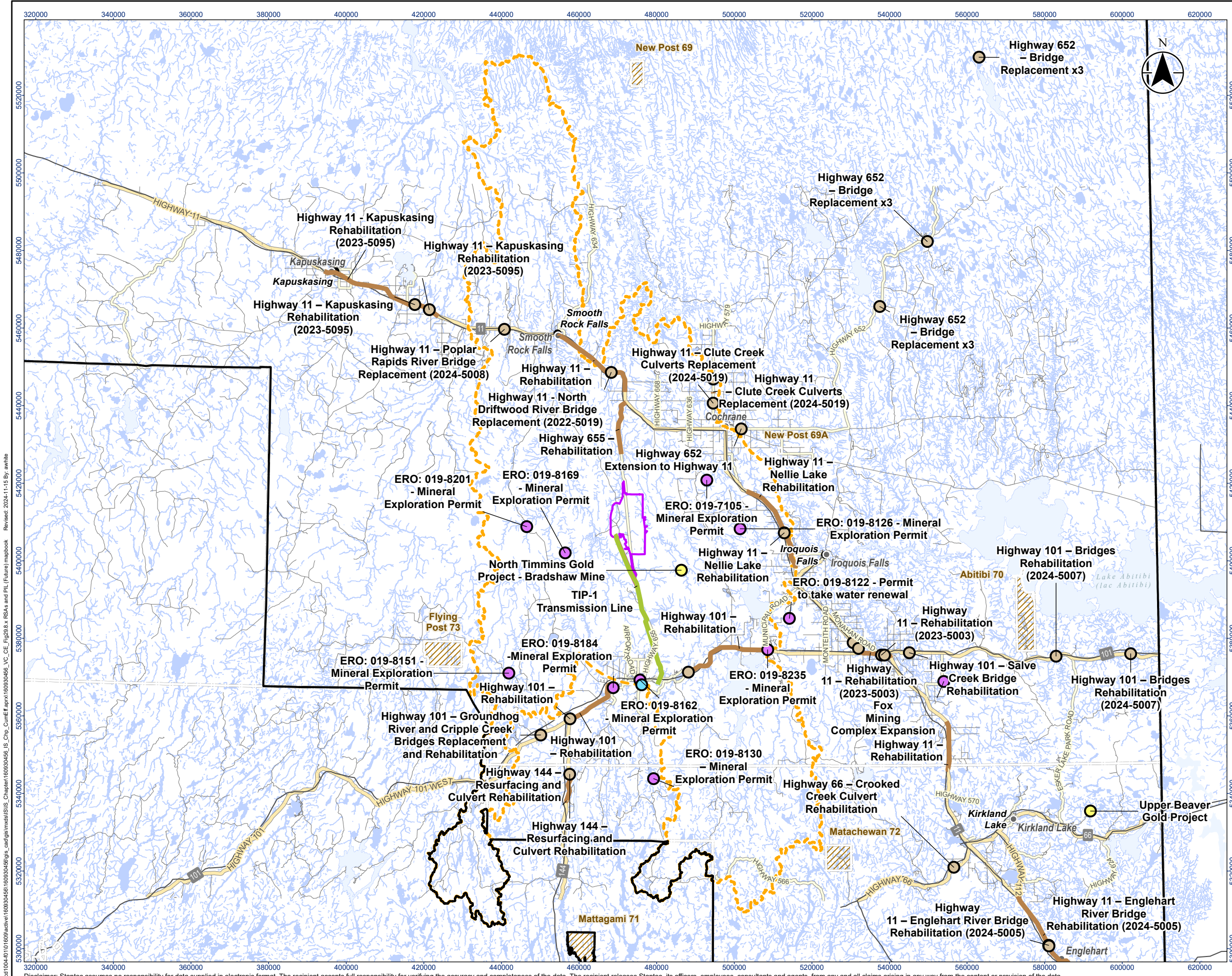
Project Location: Timmins, Ontario  
 Prepared by: awhite on 2024-11-15

Client/Project:  
 Canada Nickel Company (CNC)  
 Crawford Nickel Project

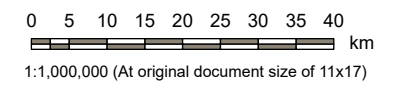
Figure No.  
**29.8.6**

Title  
**Future Physical Activities and Regional Study Area for Surface Water**

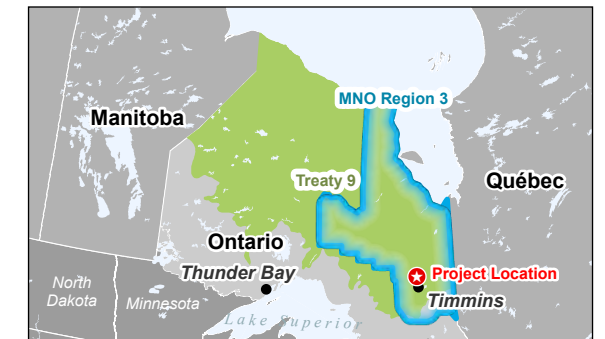
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 \s1004-101009\active\160930456\160930456\gis\_cad\gis\mxd\160930456\160930456\_NC\_CE\_Fig29.8.x\_RSAs and PLS (Future) mxd\book



- Legend**
- Project Area
  - Limit of all RSAs
  - Regional Study Area
- Future Physical Activities**
- Exploration
  - Mining
  - Power
  - Transportation
  - Energy
  - Transportation
- Base Features**
- Expressway / Highway
  - Major Road
  - Minor Road
  - Railway
  - Watercourse
  - First Nation Reserve
  - Municipal Boundary
  - Waterbody



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
  2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.
  3. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



Project Location: Timmins, Ontario  
160930456 REVA  
Prepared by: awhite on 2024-11-15

Client/Project:  
Canada Nickel Company (CNC)  
Crawford Nickel Project

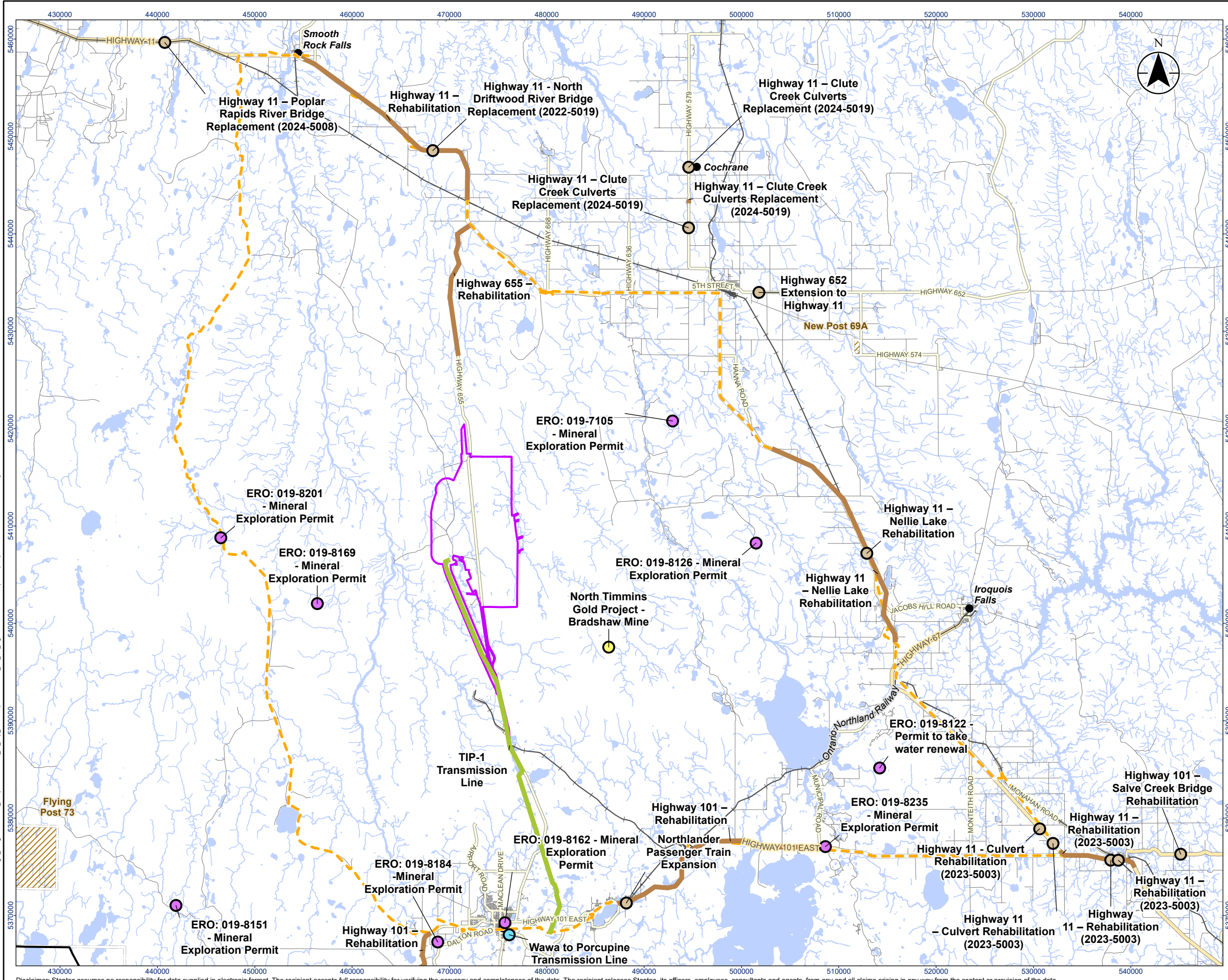
Figure No.  
**29.8.7**

Title:  
**Future Physical Activities and Regional Study Area for Vegetation, Riparian, and Wetland Environments**

V:\1004-10109\active\160930456\gis\_cad\gis\mxd\160930456\_160930456\_NC\_CE\_Fig29.8.x\_RSAs and PL (Future) mabook  
 Revised: 2024-11-15 By: awhite

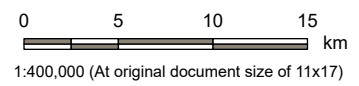


V:\1004-10109\active\160930456\160930456\GIS\_Chapter\160930456\_IS\_Chp\_Fig28.8.x\_RSAs and PLS (Future) mabook Revised: 2024-11-15 By: awhite



**Legend**

- Project Area
- Limit of all RSAs
- Regional Study Area
- Future Physical Activities**
- Exploration
- Mining
- Power
- Transportation
- Energy
- Transportation
- Base Features**
- Expressway / Highway
- Major Road
- Minor Road
- Railway
- Watercourse
- First Nation Reserve
- Municipal Boundary
- Waterbody



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
  2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.
  3. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.

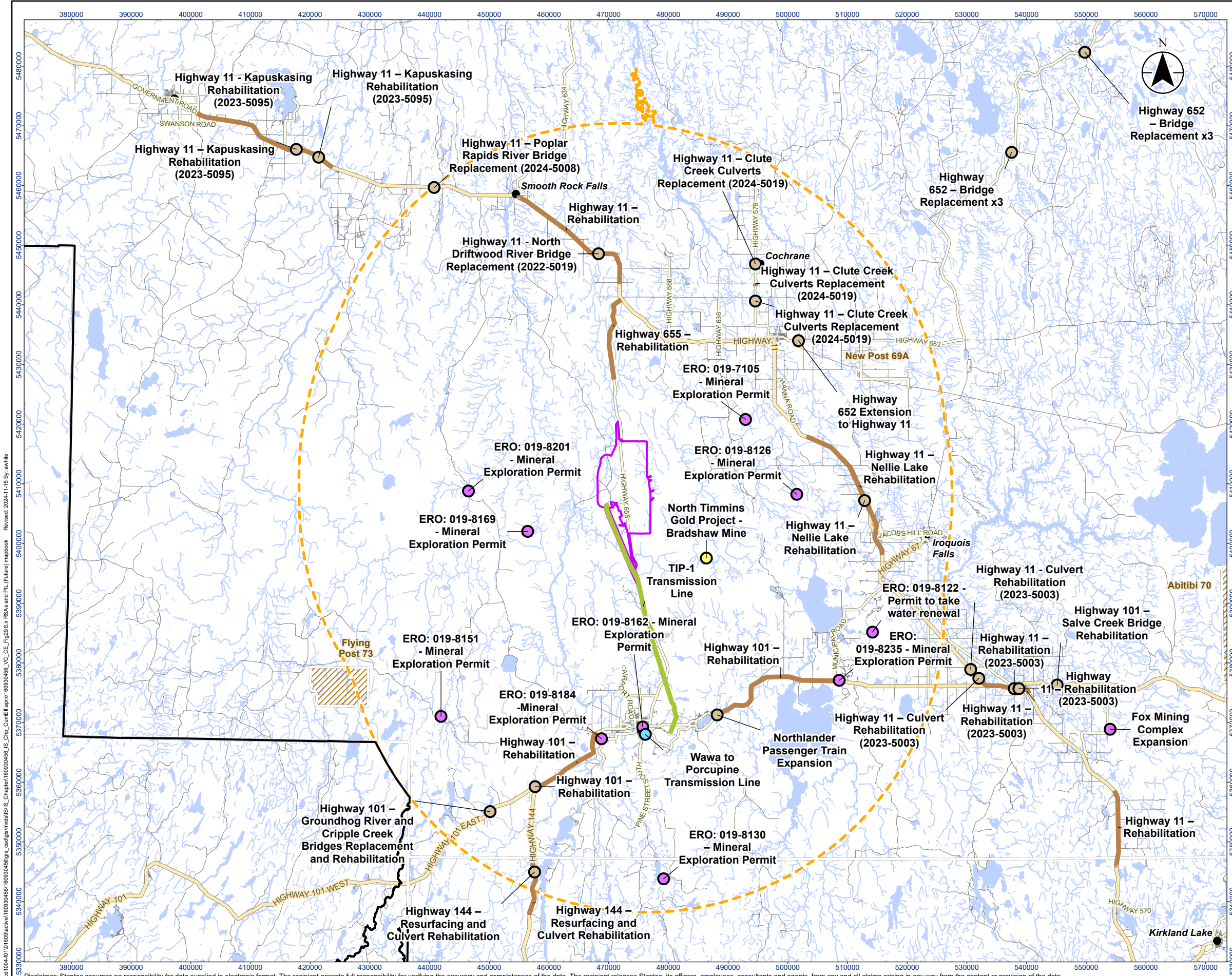


Project Location: Timmins, Ontario  
 Prepared by: awhite on 2024-11-15  
 160930456 REVA

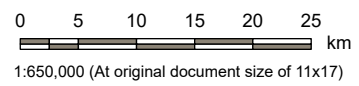
Client/Project:  
 Canada Nickel Company (CNC)  
 Crawford Nickel Project

Figure No.  
**29.8.9**

**Future Physical Activities and Regional Study Area for Wildlife and Wildlife Habitat/Birds and Bird Habitat**

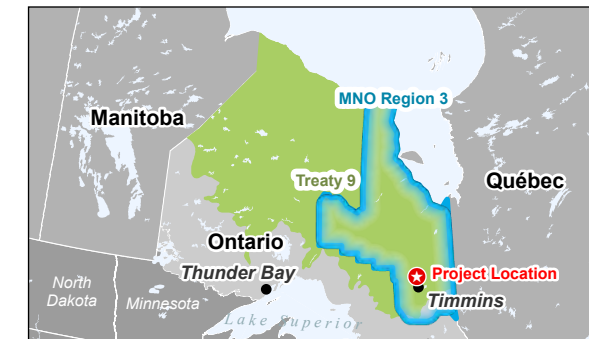


- Legend**
- Project Area
  - Limit of all RSAs
  - Regional Study Area
- Future Physical Activities**
- Exploration
  - Mining
  - Power
  - Transportation
  - Energy
  - Transportation
- Base Features**
- Expressway / Highway
  - Major Road
  - Minor Road
  - Railway
  - Watercourse
  - First Nation Reserve
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**Notes**

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3. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



Project Location: Timmins, Ontario  
 Prepared by: REVA (160930456) / awhite (2024-11-15)

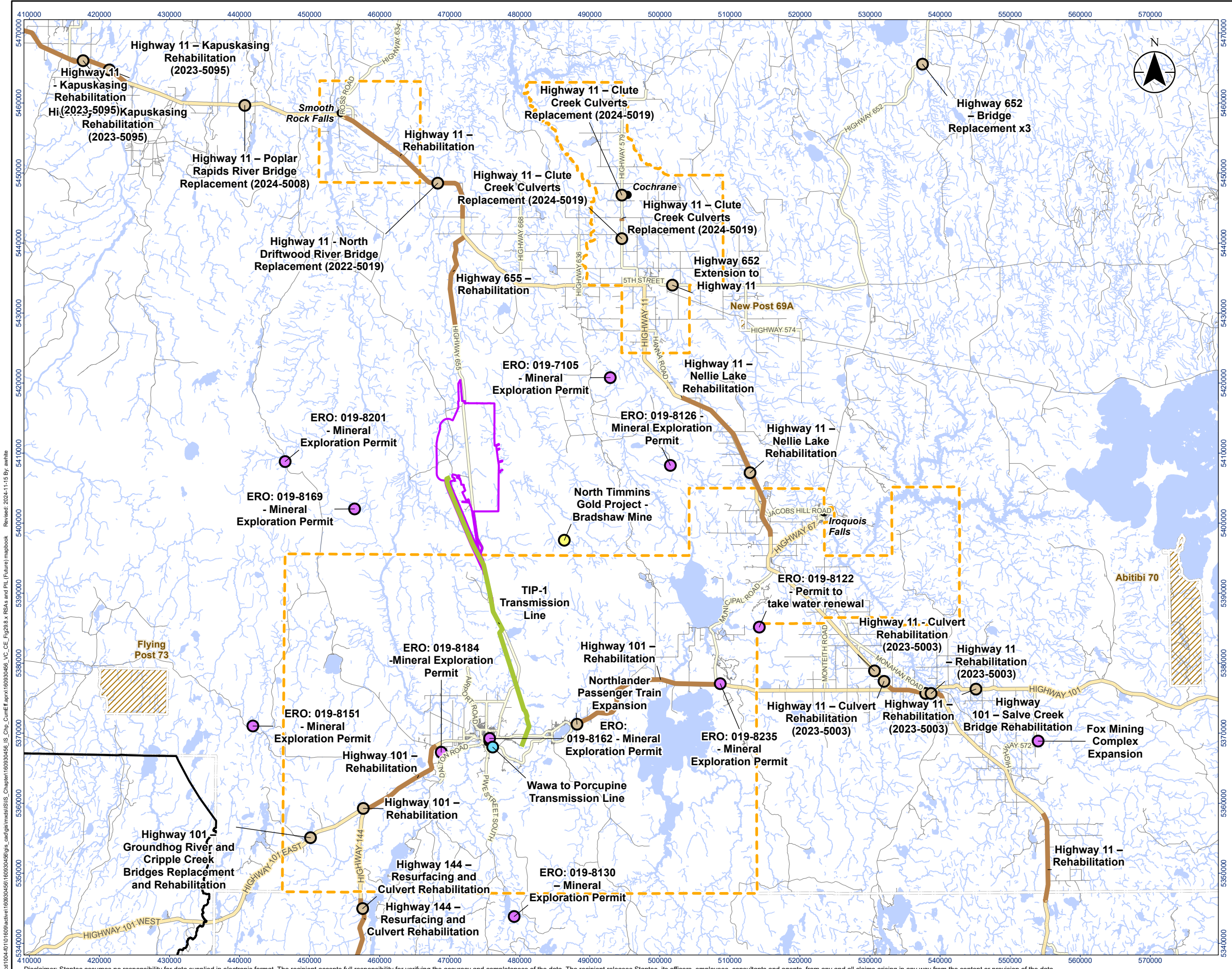
Client/Project: Canada Nickel Company (CNC) Crawford Nickel Project

Figure No. **29.8.10**

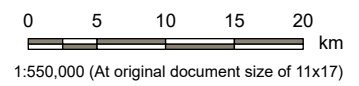
Title: **Future Physical Activities and Regional Study Area for Health - Biophysical Determinants**

V:\1004-1010\1009\active\160930456\160930456\gms\_cad\gms\mxd\BIBIS\_Chapter\160930456\_IS\_Chp\_CumE\160930456\_NC\_CE\_Fig29.8.x\_RSAs and PAs (Future) mxdbook Revised: 2024-11-15 By: awhite

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- Legend**
- Project Area
  - Limit of all RSAs
  - Regional Study Area
- Future Physical Activities**
- Exploration
  - Mining
  - Power
  - Transportation
  - Energy
  - Transportation
- Base Features**
- Expressway / Highway
  - Major Road
  - Minor Road
  - Railway
  - Watercourse
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  - Municipal Boundary
  - Waterbody



- Notes**
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  3. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



Project Location: Timmins, Ontario  
 Prepared by: awhite on 2024-11-15

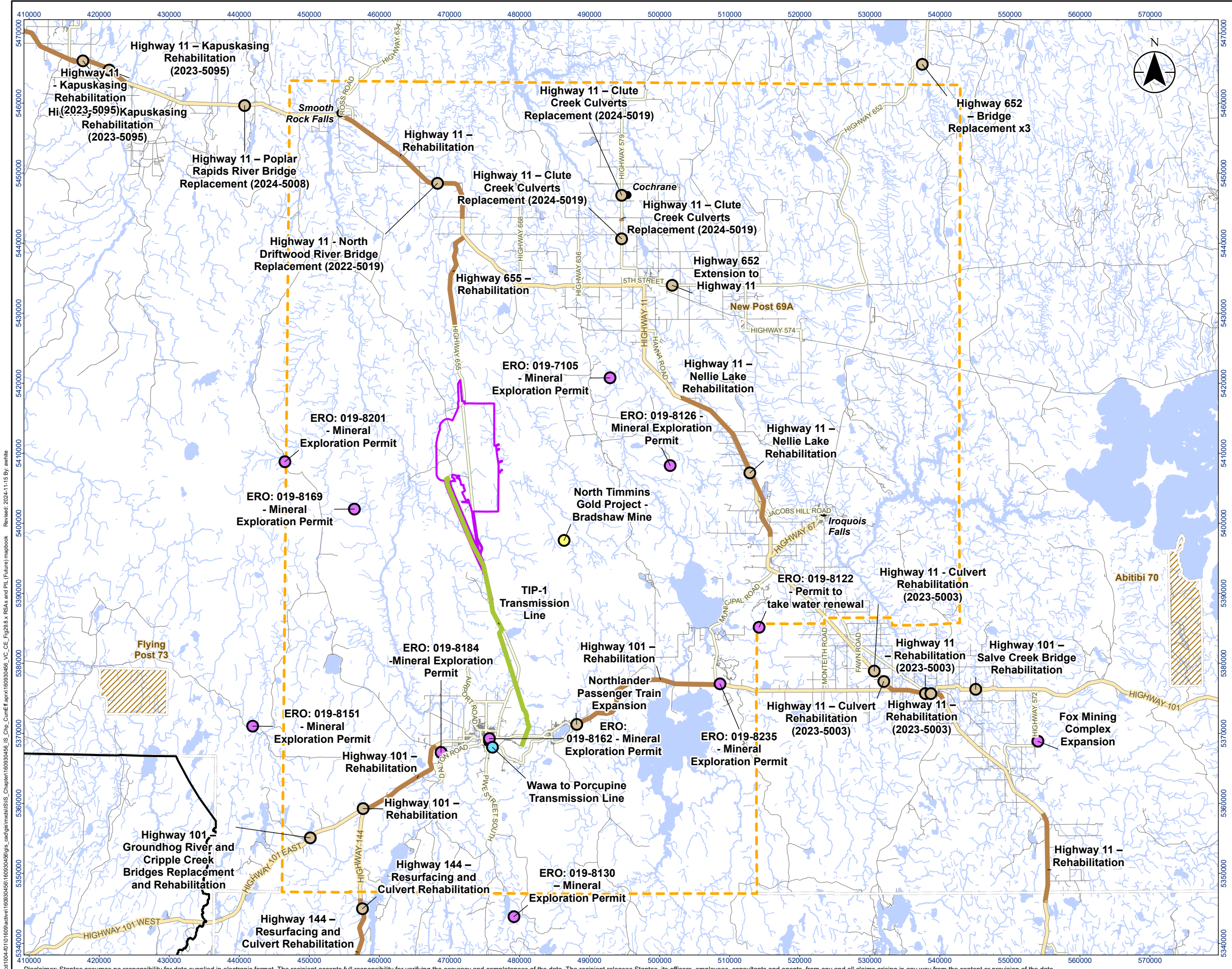
Client/Project: Canada Nickel Company (CNC) Crawford Nickel Project

Figure No. **29.8.11**

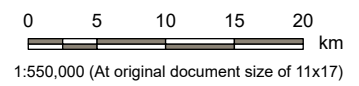
Title: **Future Physical Activities and Regional Study Area for Social Conditions - Services and Infrastructure**

V:\1004\101069\active\160930456\160930456\gms\_cad\gms\mxd\160930456\_160930456\_NC\_CE\_Fig29.8.11\_RSAs and PLS (Future) mxd  
 Revised: 2024-11-15 By: awhite

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- Legend**
- Project Area
  - Limit of all RSAs
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  - Mining
  - Power
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  - Energy
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- Notes**
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  3. First Nation Reserves shown on the figure include only those identified for communities listed in the Crown Consultation List for the Project.



Project Location: Timmins, Ontario  
 Prepared by: awhite on 2024-11-15

Client/Project: Canada Nickel Company (CNC)  
 Crawford Nickel Project

Figure No. **29.8.12**  
 Title: **Future Physical Activities and Regional Study Area for Social Conditions - Land and Resource Use**

V:\1004-10109\active\160930456\160930456\GIS\_Chapter\160930456\_Chp\_CumE\160930456\_NC\_CE\_Fig29.8.x\_RSAs and PLS (Future) mabook Revised: 2024-11-15 By: awhite