












CRAWFORD NICKEL PROJECT

Baseline Conditions of Valued Components

| Valued Component (VC) | Summary of Baseline Data collected to-date |
|--|--|
| Geology & Geological Hazards  | <ul style="list-style-type: none"> The Project site is part of the Blake River Assemblage, consisting mainly of mafic to felsic calc-alkaline volcanic rocks with local tholeiitic mafic volcanic units and an iron formation cap which is typically iron poor chert-magnetite; this assemblage (volcanic episode) is host to the Crawford Ultramafic Complex on the property (Crawford and Lucas townships) and other ultramafic sills in the area. Regional lithologies consist mainly of tholeiitic mafic volcanic rocks with isolated units of tholeiitic felsic volcanic rocks and turbiditic sedimentary rocks. Serpentinization of the ultramafic rocks has resulted in the formation of chrysotile (a form of asbestos) within the deposit. The site is in an area of relatively low seismic activity and no earthquake of magnitude > 3 have occurred within the region in the past 40 years. Three sub-parallel fault lines cross the Project. Some soil surface erosion and gulying occur along some slopes, however, no major ground or rock instability such as landslides were identified within the Project site. Riverbank erosion and flooding occur locally along watercourses, predominantly along Jocko Creek. Baseline geochemical characteristics predicted for waste rock, tailings, and overburden are anticipated to have low acid generation potential and low metal leaching potential. |
| Topography, Soil & Sediment  | <ul style="list-style-type: none"> The topography, soil and sediment conditions of the Project site are a result of glacial and post-glacial history. The Project is located in an area of gently rolling topography typical of the glaciated Canadian Shield. Site elevations range from about 265 and 290 metres above sea level (masl), with topographic relief averaging about 15 m. Terrain mapping conducted as part of the baseline program indicates that the dominant surficial material type consists of till deposits (i.e., sand, clay, loose gravel, and boulders) and glaciolacustrine sediments (predominantly silt and clay), then followed by glaciofluvial deposits (sand and gravel). The thickness of the till varies from less than 10 m to as much as 85 m. Organic deposits (fens, bogs) are very frequent through the landscape, and are associated with the poor drainage. Areas of exposed bedrock are present; however, as a very minor components of the landscape. An esker (glacial formation) runs north/south through the central-west portion at approximately 290 masl. Material from this deposit is being used as granular aggregate, as expressed by the presence of several gravel pits. Soil types consist predominantly of the following: <ul style="list-style-type: none"> Poorly drained Ford orthic humic gleysol (silt loam to silty clay loam calcareous till) and Harley Fibric Mesisol (fibric over mesic organic material more than 160 cm thick) Moderately poorly drained Audrey Orthic Humic Gleysol (silt loam to silty clay loam calcareous till) Poorly drained Sunstrum Terric Mesisol (mesic organic material 4-160 cm thick over mineral soil) and Larder Typic Humisol (humic organic material more than 160 cm thick) |
| Atmospheric (air quality and light)  | <ul style="list-style-type: none"> Air quality monitoring data is generally consistent with what would be expected for a remote location and with regional data. The baseline concentrations for particulate matter, nitrogen dioxide, sulphur dioxide, volatile organic compounds, silica, diesel particulate matter, asbestos, and metals were measured at low concentrations or below detectable levels. There were two (2) measured exceedances of the 24-hour Ambient Air Quality Criteria for PM₁₀ (particulate matter less than 10 microns in diameter), and occasional elevated concentrations of fine particulate matter (PM_{2.5}) (less than 2.5 microns in diameter), which may have been influenced by wildfires. There are no anthropogenic lights sources within the Preliminary Project Area, excluding limited light generated by vehicle traffic along Highway 655, which is consistent with remote locations. |
| Acoustic Environment (Noise and Vibration)  | <ul style="list-style-type: none"> The area around the Project is predominantly forested wilderness, with some mineral exploration, recreational, and forestry activities as well as road traffic along Highway 655. The acoustic environment is relatively quiet in these areas and is comprised mainly of natural sound from wind, wildlife, insects, etc. Areas closer to Highway 655 and industrial areas (i.e., rail traffic) south of the Project are more influenced by anthropogenic sounds. |
| Groundwater  | <ul style="list-style-type: none"> Locally, groundwater is present at or near the surface in wetland areas. Regional groundwater flow is generally in a south to north direction. An esker located along the western edge of the Preliminary Project Area is likely a regional groundwater recharge zone. Two water supply wells have been identified in the Preliminary Project Area. |
| Surface Water  | <ul style="list-style-type: none"> The preliminary Project Area drains into the subwatersheds of the North Driftwood River, West Buskegau River, and Jocko Creek. Jocko Creek drains into the Mattagami River and the North Driftwood and West Beskagau Rivers drain into the Abitibi River. Both the Matagami and Abitibi Rivers flow northward into Hudson Bay. The Mattagami River is approximately 3.75 km west of the Preliminary Project Area. Watercourses generally consist of slow flowing and low-gradient channels. Sampled water quality generally indicates circumneutral pH, low to moderate hardness, and have low concentrations of nutrients (i.e., nitrate, nitrite, ammonia) and anions (e.g., chloride, sulphate). Levels of total suspended solids and total dissolved solids are low. Similarly, concentrations of total and dissolved metals are very low, often at or below analytical detection limits, with results for most parameters consistently below applicable water quality guidelines for the protection of aquatic life. Brush and grasses dominate the banks of watercourses, which include shallow root zones. Multiple active beaver dams exist in the area. |



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| Vegetation, Riparian and Wetland  | <ul style="list-style-type: none"> The Project is located in the Lake Abitibi Ecoregion (Provincial classification), which consists of mixed forest (29.5%), coniferous forest (28.1%), sparse forest (10.8%), and deciduous forest (7.2%), with 7.8% classified as cutover and 6.7% covered by water. A total of 310 species of vascular and nonvascular plants were identified (including provincially rare plants). Of the species present, 89% are native to Ontario, and 11% are non-native species during field investigations. The only vegetation Species at Risk identified during surveys is Black ash, which is listed as a provincially “endangered” species under the Endangered Species Act. Twenty-eight distinct plant communities (upland and wetland) were recorded, including fens, bogs, swamps, marshes, and coniferous forests. Coniferous forest and swamp communities dominate the area. |
| Fish and Fish Habitat  | <ul style="list-style-type: none"> Within the Preliminary Project Area, fish habitat is comprised of various ponds, lakes, streams and rivers within the North Driftwood River, West Buskegau River, and Jocko Creek watersheds. Local fish communities encountered during the three years of sampling are typical of northeastern Ontario and are generally characterized as cool water thermal regimes. A total of 24 species of fish were confirmed through sampling efforts. Lake sturgeon (special concern under the Species at Risk Act) is confirmed to be present in the Mattagami River by eDNA testing; however, no other aquatic Species at Risk were encountered during sampling. Upper trophic level panfish (i.e., Yellow Perch) and sportfish (i.e., Northern Pike) species are found in the lakes near the Project. Much of the existing fish habitat near and within the Preliminary Project Area is comprised of ponded habitats created by beaver activity with fish communities dominated by small-bodied baitfish species. |
| Birds and Bird Habitats  | <ul style="list-style-type: none"> The forested and wetland habitats provide for a variety of bird species to carry out their lifecycle. 89 bird species were visually observed during targeted breeding bird surveys, including various raptors, waterfowl, waterbirds, marsh birds, shorebirds, forest birds, and other land birds. An additional 24 bird species were identified incidentally during other surveys (e.g., migrating individuals). Seven SAR birds have been confirmed in the area, including: <ul style="list-style-type: none"> Chimney Swift – Threatened provincially and federally Common Nighthawk – Special Concern provincially and federally Olive-sided Flycatcher – Special Concern provincially and federally Canada Warbler – Special Concern provincially and Threatened federally Rusty Blackbird – Special Concern provincially and federally Lesser Yellowlegs - Threatened provincially and recommended for threatened status federally Bald Eagle - Special Concern provincially and not at risk federally |
| Wildlife and Wildlife Habitat  | <ul style="list-style-type: none"> The forested and wetland habitats provide for a variety of wildlife species to carry out their lifecycle. 16 mammal species were observed during targeted surveys including furbearers (e.g., Beaver, River Otter, Lynx, American Marten, Snowshoe Hare, Red Fox), large mammals (Moose, Northern Grey Wolf, Black Bear) small rodents (Meadow Vole, Woodland Jumping Mouse, Red Squirrel) and bats (Little Brown Myotis, Silver-haired Bat, Hoary Bat, Big Brown Bat) Two wildlife SAR have been confirmed in the area, including: <ul style="list-style-type: none"> Little Brown Myotis – Endangered provincially and federally - Blanding’s Turtle – Threatened provincially and endangered federally Caribou are listed as federally and provincially Threatened. No Caribou were observed in (and are considered absent from) the Preliminary Project Area at this time. The Project is located within the Kesagami Caribou range, the southern extent of which overlaps with the northern end of the site. |
| Climate Change  | <ul style="list-style-type: none"> The wettest month of the year occurs in July with 91.7 mm of mean monthly total precipitation. The month of February is typically the driest month of the year with an average total precipitation of 42.3 mm. Statistically significant downward trend of -15.6 mm per decade was found for annual total precipitation indicating a shift to drier conditions with heavier precipitation events in October (significant upward trend of 4.6 mm per decade). Rainfall dominates the extreme events when combined with snowmelt. The warmest month on average is the month of July with a mean temperature of 17.5 °C and the coldest is the month of January with a mean temperature of -16.8 °C. Annual temperature was found to have statistically significant upwards trend of 0.2 °C per decade and increasing in both winter and summer months. Trends in temperature extremes are consistent with that of a warming climate. Southerly wind direction is the most common, accounting for 12%-13% of the hourly wind speeds but is dominated by relatively calm wind speeds between 1-3 m/s (3.6 to 10.8 km/h); windspeeds falling between westerly and northerly directions are not as frequent (8%-9% across cardinal directions), however these directions contain the greatest frequency of higher windspeed values more than 5 m/s or 18 km/h. |

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|  <p>Health Conditions</p> | <ul style="list-style-type: none"> The assessment of human health through the Impact Assessment process is based on the principle that health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. To conduct a baseline assessment, baseline data from, but not limited to, the following VCs is needed: acoustics (noise and vibration), atmosphere (air quality), climate change, surface water (water quality), socio-economic (social and economic determinants), Indigenous interest, soil and terrain (soil quality), and terrestrial environment (country foods and environmental health). Aside from the aforementioned VCs where available <u>biophysical baseline health</u> data have been provided, additional collection of environmental media relevant to country foods and characterization of chemicals of concern in these media have begun. In terms of baseline country food evaluation, a variety of vegetation types (e.g., grasses, leaves, and berries for a total of 65 samples), fish (3 species for a total of 17 samples) and wild game birds (2 species and 2 samples) have been collected and are being analyzed for chemicals of concern (specifically, aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, calcium, cesium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, mercury, methylmercury, molybdenum, nickel, phosphorus, potassium, rubidium, selenium, sodium strontium, tellurium, thallium, tin, uranium, vanadium, zinc, and zirconium). For small and large game meat such as rabbit and moose, which were identified as important food items for First Nations in the study area, the baseline concentration of metals in these food items will be predicted using mathematical modeling based on the diet of these animals. Collection of <u>social determinants of health</u> data and characterization for each community where information is available has also begun. These data include rates of sexually transmitted infections, injuries and chronic disease, rates of gender-based violence, mental health status, and other community-relevant health information, which are disaggregated where possible for various population groups (e.g., Indigenous, women, youth, and Elders). To inform the social determinants of health, health conditions and health outcomes, statistics have been collected via a desktop analysis. Health and social statistics were extracted from publicly available information including: Statistics Canada Incident-based Crime Statistics, Timmins Police Service, Canadian Community Health Survey, and Surveillance data from Public Health Ontario. Grey and peer-reviewed literature were also used to inform and supplement indicators. Sources included reports from: The National Inquiry into Missing and Murdered Indigenous Women and Girls (2019), National Collaborating Centre for Determinants of Health (NCCDH), National Collaborating Centre for Indigenous Health (NCCIH), Government of Canada, Porcupine Health Unit, Statistics Canada, Women and Gender Equality Canada, and World Health Organization. Where possible, information was collected at the health region level, or specific to locations in the LSA/RSA. Results from this assessment, in part, are provided below in the Social Conditions, Economic Conditions and Indigenous Peoples VC section. |
|  <p>Social Conditions</p> | <p><u>Population:</u></p> <ul style="list-style-type: none"> Communities in the local area include the City of Timmins and the Towns of Cochrane, Iroquois Falls, and Smooth Rock Falls, as well as five First Nations: Apitipi Anicinapek Nation, Flying Post First Nation, Matachewan First Nation, Mattagami First Nation, and Taykwa Tagamou First Nation. The local population decreased 1.4% between 2016 and 2021; however, all First Nations communities have increased over this time (18.4%). <p><u>Housing, Services and Infrastructure</u></p> <ul style="list-style-type: none"> Most homes (74.8%) were occupied by owners in 2021 (rather than renters), and the majority (67.0%) of homes were single detached houses. The average home value is \$195,775, which increased from \$165,955 in 2016. Studies indicate there is sufficient supply of permanent or home ownership housing in the District of Cochrane but a low supply of new rental housing, and in particular multi-residential rentals (Housing Services Corporation and CDSSAB 2019¹). The Cochrane District Social Services Administration Board, who is responsible for the administration and funding of social housing and homelessness programs, provides oversight of 2,428 housing units. 276 people were identified as homeless within the Cochrane District in 2023. Homelessness is experienced in the region more often by members of vulnerable groups, such as youth, seniors, Indigenous people, visible minorities, person with disabilities, and low-income families. Local communities are served through water and sewage systems, although water and sewer systems in some Indigenous communities are operating beyond their capacity (MCFN 2022²). The City of Timmins is served by the Timmins Fire Department, while the remainder of the area is served by various volunteer fire departments. The City of Timmins is served by its local police force, while the remainder of the area is served by the Ontario Provincial Police. Surrounding Indigenous communities are served by the Cochrane detachment of the Nishnawbe Aski Police Service. Several universities and colleges occur within the area, including Northern College (Cochrane and Timmins), Contact North (Cochrane and Iroquois Falls), Northern College, College Boreal, Algoma University, Université de Hearst, and College Universitaire. There are four local school boards providing primary and secondary education, as well as two adult based education centres (Adult Learning Centre and Centre D'alphabetisation au Pied de la Lettre). There are 13 childcare centres in Timmins (8), Cochrane (2) and Iroquois Falls (3) and Timmins Native Friendship Centre. |

¹ Housing Services Corporation and CDSSAB. 2019. 2019 Community Profile- Housing Needs Assessment, District of Cochrane, Informing the Update to the 10 Year- Housing Plan. Available at: https://www.cdssab.on.ca/images/support/HS/Community_Profile_Needs_Assessment_Study_FINAL_Dec_10_2019.pdf

² MCFN (Moose Cree First Nation). 2022. Upgrades to the Water Treatment Plant and Sewage Lagoon. Available at <https://www.moosecree.com/upgrades-to-the-water-treatment-plant-and-sewage-lagoon%EF%BF%BC/>

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|  | <ul style="list-style-type: none"> The area is served by three airports (Timmins, Cochrane and Iroquois Falls), with the largest being Victor M. Power Airport in Timmins, a rail network operated by the Ontario Northland Transportation Commission (ONTC) with a station in Cochrane, and a bus service operated by ONTC with stations in Timmins, Cochrane, Iroquois Falls, and Smooth Rock Falls. Highway 655 bisects Preliminary Project Area, which is connected to Highway 11, the Trans-Canada Highway to the north and to Highway 101 to the south. <p><u>Land and Resource Use</u></p> <ul style="list-style-type: none"> Project Area is mostly owned by private entities and some Crown land. Surrounding the Project Area, the majority of land parcels are Provincial Crown land with the remainder consisting of federal government, municipal government, First Nation Reserves, and private land parcels. Hunting, outfitting, and trapping occur within the area with opportunities (e.g., bear management areas, trapping areas). Recreation and tourism are an important industry in the region focused on the natural environment. Opportunities relate to various attractions, provincial parks and natural areas, recreation and scenic values, heritage sites, outdoor trails (e.g., hiking, snowmobile, ATV), recreational fishing, and potential recreational navigation use. Camping opportunities occur throughout the area at several (6) Provincial Parks and private campgrounds, with the Big Water Campground located closest to the Project. Outdoor recreational activities in the area include paddling, fishing, camping, hiking and biking trails, golfing, all-terrain vehicle (ATV) trails, outfitters, outdoor experiences, tours, provincial parks, and winter activities that include snowmobiling, Nordic skiing, and snowshoeing. The City of Timmins serves as a regional service and distribution centre for natural resource extraction and industries in Northeastern Ontario related to lumbering, and mining focusing on gold, zinc, copper, nickel, and silver. |
|  | <ul style="list-style-type: none"> The Local Study Area (LSA) experienced a total population decline between 2016 and 2021 with a 1.4% decrease, respectively, while the total provincial population increased 5.5%. The Indigenous population in the LSA increased by 18.4% over this time. 48.0% of the local population had completed post-secondary education, with women+³ accounting for a greater proportion (60.8%) having obtained a college or university certificate, diploma, or degree, while men+ accounting for a greater proportion having obtained an apprenticeship or trades certificate or diploma (79.9%) In 2021, the LSA for economic conditions total labour force participation rate (60.1%) was higher than the RSA average (58.0%). The participation rate among the Indigenous population was higher compared to the total population, as was the unemployment rate. There were minor variations in labour force participation rates observed between men+ (63.7%) and women+ (56.5%). The top industries for employment in the LSA include health care and social assistance, mining quarrying and oil and gas production, and retail trade. Sales and service occupations make up the highest number of total and Indigenous labour force workers, predominantly women+ (61.0% of total population and 62.9% of Indigenous population, respectively), followed by trades, transport and equipment operators, predominantly worked by men+ (90.9% respectively) and Indigenous (86.4% respectively) populations. |
|  | <ul style="list-style-type: none"> The Project is located within the boundaries of Treaty 9 and Métis Nation of Ontario Region 3. As per IAAC's understanding, interests and rights of the following Indigenous groups may be affected by the Project and for which an assessment of effects will be conducted: <ul style="list-style-type: none"> ○ Apitipi Anicinapek Nation ○ Flying Post First Nation ○ Matachewan First Nation ○ Mattagami First Nation ○ Taykwa Tagamou Nation ○ Métis Nation of Ontario Region 3 Canada Nickel continues to engage with potentially affected Indigenous groups to understand the culture and history of Indigenous interests and rights in the local and regional area of the Project. Information gathered through ongoing engagement will be used to inform baseline conditions, identify impacts through effects pathways, and define mitigation measures as appropriate. Feedback received, including Indigenous knowledge, will be validated with participating Indigenous groups to reflect and appropriately consider this information in the Impact Statement. Based on the Stage 1 Archaeological Assessment (AA) completed for this Project, and based on feedback received from a 3rd party review of the Stage 1 AA, limited areas of the site have archeological potential, which will be targeted for the completion of a Stage 2 archeological assessment, where required. |

³ The term Women+ embraces women, transgender, and non-binary individuals