

2.12 Fairbank Lake and Cameron Creek Subwatersheds



General Description

- **Total Area:** 152.2 km² (Fairbank Lake: 48.5 km², Cameron Creek: 103.7 km²)
- **Drainage:**
 - **Cameron Lake:** Most water within this subwatershed flows south into Cameron Lake where it is then discharged into the Vermilion River system, via Vermilion Lake. The length of the main channel is 33.2 km, with a maximum channel elevation of 418.4 m.a.s.l., a minimum channel elevation of 255.8 m.a.s.l. and a slope of 4.89 m/km.
 - **Fairbank Lake** drains south into Fairbank Creek where it is joined by several small lakes within the subwatershed. It continues to flow southeast outside of this subwatershed for quite a distance, where it eventually joins the Vermilion River just downstream of the confluence with McCharles Lake. The length of the main channel is 17.7 km, with a maximum channel elevation of 355.9 m.a.s.l., a minimum channel elevation of 268.5 m.a.s.l. and a slope of 4.93 m/km.
- **Topography:** Topography typical of Northern Ontario is observed within these subwatersheds, with steep bedrock outcrops surrounding flat low-lying valleys and wetlands.
 - The Cameron Creek subwatershed has a mean elevation of 347.7 m.a.s.l. with a maximum elevation of 499.4 m.a.s.l.
 - The Fairbank Lake subwatershed has a mean elevation of 306.13 m.a.s.l., with a maximum elevation of 371.1 m.a.s.l.
- **Geology:**
 - **Bedrock Geology:** The Sudbury Igneous Complex (SIC) makes up most of the bedrock within both subwatersheds. While Fairbank is almost entirely covered by SIC, the Cameron Creek subwatershed also falls within the 'valley' of the Sudbury structure, to the east, and Precambrian bedrock of the Superior Province, to the northwest and southwest.
 - **Quaternary Geology:** The Fairbank Lake subwatershed is almost entirely underlain with bedrock, while the Cameron Creek subwatershed also consists mainly of bedrock, but also has sizeable areas of glaciofluvial gravels and sands.
- **Soils:** Similar to the geology, stable bedrock is the main surface substrate, with sandy loams and silty loams playing secondary roles. A large area to the northwest of the Cameron Creek subwatershed is missing soil data for this review.
- **Groundwater:**
 - Highly Vulnerable Aquifers (HVA) were identified along the western border of Cameron Creek subwatershed as well as in the northwest extent of Fairbank Lake subwatershed, in the vicinity of Fairbank Lake.
 - Very few Significant Groundwater Recharge Areas were identified in either subwatershed. Only a small area on the southeast side of Fairbank Lake is present.

- **Land Cover:**
 - Lakes cover an area of 20.0 km², 13.1 % of the subwatershed.
 - Wetlands cover an area of 16.6 km², 10.9 % of the subwatershed.
 - Forest covers an area of 109.2 km², 71.8 % of the subwatershed.
- **Land Use Type:**
 - **Zoning:** 74.4 km² (48.9%) of these subwatersheds fall under the City of Greater Sudbury's Zoning By-law. Of that area, 36.6km² (49.1%) is industrial, 34.5 km² (46.3%) is rural and 2.14 km² (2.9%) is seasonal. The remainder are small areas designated as park, open space and commercial lands.

Indigenous Communities and Traditional Territories

- These subwatersheds fall within the Robinson-Huron Treaty Area #61, of 1850.
- The community of Atikameksheng Anishnawbek First Nation is located southeast of these subwatersheds.
- These subwatersheds also lie within the traditional territory of both the Atikameksheng Anishnawbek First Nation and the Wahnapiitae First Nation.
- They also fall within the Mattawa/Lake Nipissing Métis traditional territory, Region 5.

Development Pressure

Overall: Low. These subwatersheds remain mostly undeveloped. The Fairbanks Lake subwatershed is often used for recreational purposes, with several seasonal dwellings and a provincial park along its shores. Cameron Creek has limited access, with only a single road and a variety of trails running throughout. Forest cover, lakes and wetlands make up the majority of its landcover with urban development, mining and forestry having minimal impacts.

- **Settlement Area:** There are no official settlement areas identified in these subwatersheds.
- **Municipal Wastewater Facilities:** There are no municipal wastewater facilities within these subwatersheds.
- **Forestry:** Both subwatersheds fall within the Sudbury Forest. There are 2 areas identified in the Cameron Creek Subwatershed, in the 2020-2030 Sudbury Forest Management Plan. One at the north end of the subwatersheds extent and a second larger area just west of Vermilion Lake.
- **Aggregates:** There are no active or inactive aggregate operations identified within these subwatersheds.
- **Mining:**
 - Currently, there are no producing mines. Historically, there was 1 mine, the Victoria Project which operated until 1923 and known to still contain reserves or resources. The property was acquired by KGHM in 2002 and has plans to mine copper and nickel in the future.
 - One exploration activity was documented in December of 2023, at the Victoria Project.
 - There are currently no active Mining Plans and Permits registered to this subwatershed.

There are several expired mining plans and permits along the western border of the Cameron Creek subwatershed, suggesting that this area may be of mining interest.

Recreational Use

- The many rivers and lakes and the surrounding natural lands have a wide variety of uses including canoeing, kayaking, swimming, camping, recreational and fishing.
- Fairbank Lake has many seasonal residents and a provincial park, making this lake a popular location for recreational activities.
- There is an abundance of unofficial trails running through both watersheds, often used recreationally by off-road vehicles and snowmobiles. The area is commonly used for berry picking, crown-land camping, hunting and general nature appreciation.

Water use

- There is 1 Permit to Take Water registered to the Ministry of Natural Resources and Forestry for operation of the provincial park.

Notable Waterbodies

- **Fairbank Lake** is a spring-fed lake with an area of 705.1 ha and a maximum depth of 43 m. The lake has 94 permanent residents and 323 seasonal residents. Fairbank Lake has been identified as a 'Lake Trout Lake' in the City of Greater Sudbury's Official Plan, eliciting enhanced management and protection of lake water quality.
- **Skill Lake** is a small lake measuring 112.70 ha. The lake has only 2 permanent residents and 6 seasonal residents.
- **Cameron Lake** is a small lake, measuring 101.6 ha with a maximum depth of 14 m. There does not appear to be any residents on this lake.
 - **Other Lakes:** Ethel Lake, Bass Lake, West Cameron Lake, Mosquito Lake, and Cascaden Lake

Previously Identified Management Issues

- **Flooding – Fairbank Creek:** Following flood line mapping delineation in 1984, it was identified that flooding in the Fairbank Creek area is affected by man-made bottlenecks such as railways and road crossings, and that neither structural nor non-structural means are available which would significantly reduce the potential for flooding at a reasonable cost. (Fairbank Creek Flood Line Mapping, 1986).

Natural Hazard Identification and Regulation

Hazards and features regulated by Conservation Sudbury include flood and erosion hazards, wetlands, unstable soils, rivers, streams, creeks, and small inland lakes. More on these regulations can be found in the Conservation Authorities Act, O. Reg. 686/21 that addresses the risks of natural hazards.

Floodplain mapping:

- Floodplain mapping for Fairbank Creek was completed in 1986 identifying flood lines for the Timmins storm. Much of the area of focus, however, was downstream of Ethel Lake, outside of this subwatershed.
- In the absence of floodplain mapping, flood hazards are estimated based on site conditions. Typically, the extent of the flood hazard is estimated at 1.2 m above the bankfull or high-water elevation.

Erosion hazard mapping:

- Currently, erosion hazards are evaluated based on the general guidance from the MNRF for confined and unconfined systems.

Water Control Structure

- Ethel Lake Dam is a private dam at the outlet of Ethel Lake, historically owned by Vale Canada Ltd. From the dam, Fairbank Creek flows towards the Vermilion River. It also marks the boundary of the Fairbank Lake subwatershed and the Lower Vermilion River subwatershed.

Drinking Water Source Protection

- There are no municipal drinking water sources within these subwatersheds.
- The entirety of Cameron Lake subwatershed, which drains to Vermilion Lake, is located within the headwaters of the Vermilion River Drinking Water System, a municipal drinking water source. As such, all watercourses within this subwatershed and the lands immediately around them are classified as Intake Protection Zone 3 as the water ultimately drains towards the Vermilion River drinking water intake.

Water Quality Indicators**Surface Water:**

- Very little data is available for these subwatersheds as they are fairly undeveloped with few disturbances.
- Fairbank Lake is identified as eutrophic by the City of Greater Sudbury's Lake Water Quality Monitoring Program, while Skill Lake is identified as a mesotrophic Lake.
- Water quality collected more recently from Ethel Lake was good with some exceedances of metals at various depths. (Victoria mine Project Description Report Summary, 2019)

- Water quality in Fairbank Creek had low metal concentrations comparable to upstream control sites for copper and nickel, with infrequent exceedances. (Victoria mine Project Description Report Summary, 2019)

Groundwater: There are currently no known sources of groundwater data within this subwatershed.

Significant Features

- **Fairbank Provincial Park** is a 105-ha area established in 1958 on the shores of Fairbank Lake, providing 160 campsites for visitors to experience the interesting features of the area, including the unique geology of the Sudbury Igneous Complex, the Fairbank fault, and the nature of the surrounding area.
- There are no conservation reserves or ANSI ecological areas of interest.
- Wildlife Values:
 - There are 80 moose related wildlife value areas, covering a total area of 8.02 km².
 - There are 4 Great Blue Heron sites identified.
- Endangered Species:
 - Threatened: Eastern Whip-poor-will
 - Special Concern: Snapping Turtle, Eastern Milkshake, Bald Eagle, Golden-Winged Warbler, Canada Warbler and Common Nighthawk

Management and Stewardship

- **Atikameksheng Anishnawbek First Nation** and **Wahnapiatae First Nation:** Their traditional territories include the area within these subwatersheds. They are land holders of the area and, as such, are stewards of the land.
- **Fairbank Lake Camp Owners' Association**

Data available

- **City of Greater Sudbury:** Lake Water Quality Program collects spring total phosphorus data from Fairbank Lake and Skill Lake.
- **Lake Partner Program:** Fairbank Lake and Skill Lake have both been sampled for total phosphorus and occasionally secchi depth as part of this provincially run, volunteer-based program.








Supporting Documents

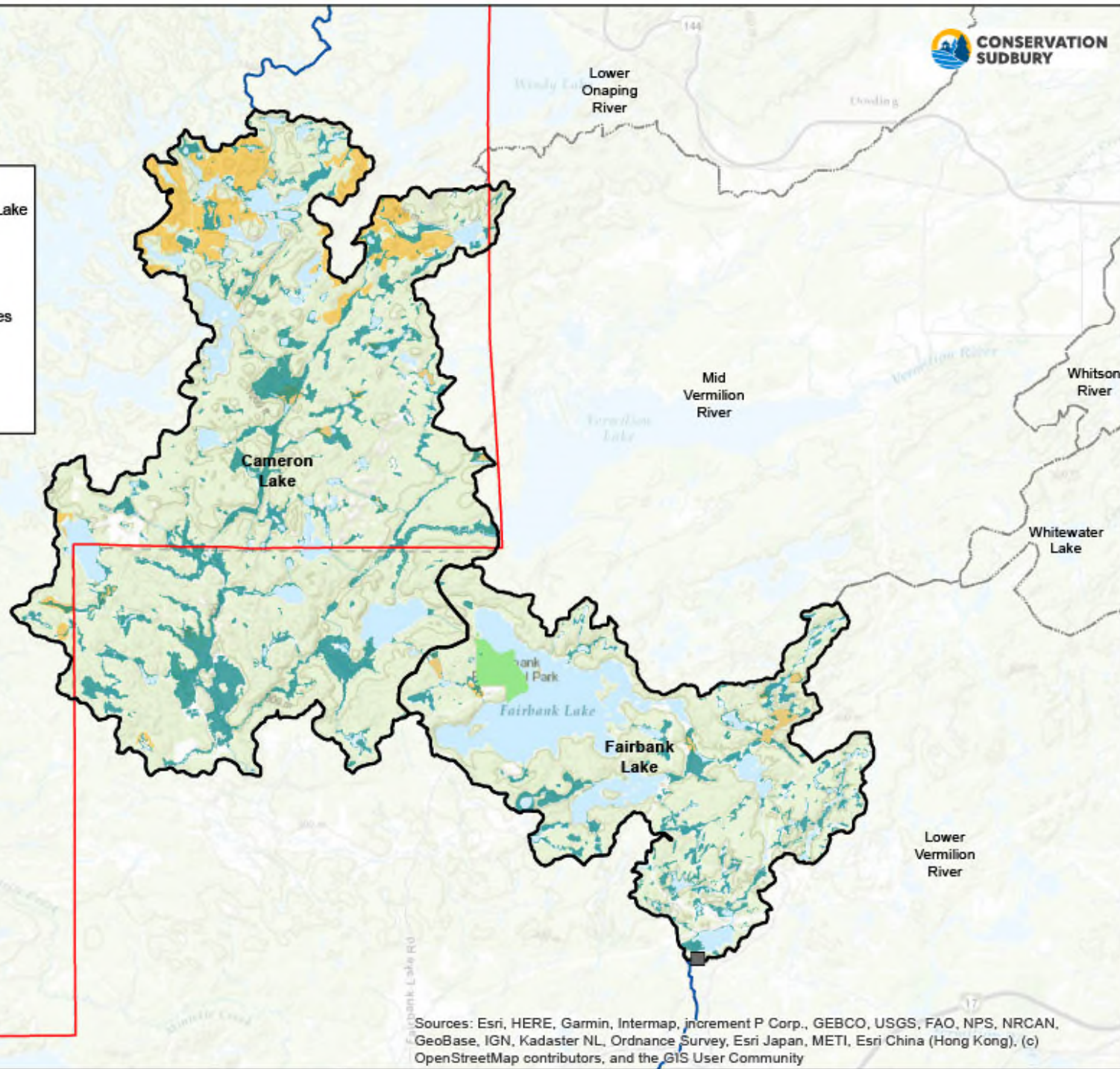
KGMN, **Victoria Mine Project Description Report Summary**, May 2019.

Ontario Ministry of Natural Resources, Ontario Parks, **Fairbank Park Management Plan**, October 2001.



Legend

-  Cameron Lake & Fairbank Lake Subwatersheds
-  Municipal Boundary
-  NDCA Jurisdiction
-  Provincial Park and Reserves
-  Wetlands
-  Wildlife Area
-  Dams



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community