

2.1 Physical and Biological Description Matabitchuan River Watershed

2.1.1 Physical Description

The Matabitchuan River system watershed has a total area of about 933 km² and is a tributary system to Lake Temiskaming and the Ottawa River Drainage Basin. The Matabitchuan Watershed is bounded by the Montreal River watershed to the north and to the Lake Temagami watershed to the south and west, (Lake Huron Drainage Basin.) The main tributaries include: Net, Cassels, Rabbit, Fourbass Lakes and the Matabitchuan River. There is one generating station, the Matabitchuan GS and three water control dams on the system. A large portion of the Matabitchuan watershed is located within the municipal boundaries of Temagami.

Beginning in the north western region of the watershed, headwater tributaries for Net Lake include: Snare, Jackpine, Mountain, Thieving Bear, Kanichee and Rib Lakes. Net Lake is located approximately six km north of the Town of Temagami on Highway 11. Water levels for the lake are controlled by a two-sluice gate / weir concrete dam located at the outflow of the lake into Net Creek. The dam is owned and operated by the Ministry of Natural Resources. The dam, originally a timber crib structure built by the Temagami Timber Company in 1920, was replaced with the current concrete dam by the MNR in 1974. The Net Creek Dam is operated for social / environmental considerations, to a regulated water level of 296.16 m.

The lake provides recreational and economic opportunities for residents, cottagers and at present, one tourist camp operator; in addition to supplying domestic water for the Temagami North Town site. There are important walleye spawning sites located on Net Lake and Net Creek which require that the dam is managed to balance the spawning needs for both upstream and downstream.

From Net Lake, Net Creek has a fairly short run before it empties into Cassels Lake, which itself has several smaller tributary connecting lakes, including: Obashkong, Gosselin and Snake Island Lakes. Cassels Lake then joins with Rabbit Lake to form the current storage lake reservoir system. These levels are controlled by the Rabbit Lake Dam, which is owned and operated by Ontario Power Generation Inc. Originally a timber crib structure built by the Mines Power Limited Company at the outlet of Rabbit Lake in 1910, it was rebuilt in 1927 by the Northern Ontario Light and Power Company, and then replaced by Ontario Hydro with a concrete structure in 1957. It has a normal operating range of 286.0 to 292.18 metres.

The combined storage reservoir capacity of these lakes provide an important source of water power generation supply to the Matabitchuan Generation Station throughout the year and especially during the winter draw down period. The system also plays a role in flood mitigation for both the local watershed and the Ottawa River.

Cassels and Rabbit Lakes are high profile recreation and cottage development lakes with a growing social/economic importance to the Temagami Area. Over the years, operational constraints have been developed to address the social, economic and environmental needs of the lake users, as the area has transformed from an earlier emphasis on primary industrial use (logging and waterpower) to a greater emphasis of the environmental uniqueness and social development of the area. For environmental preservation purposes the Ontario Government has created two conservation reserves; the White Bear Forest Conservation Reserve, and the Rabbit Lake West Conservation Reserve. In addition to boating, there are several historic canoe routes important to the local tourism economy and their cultural heritage value.

North Milne Lake is located in the south western corner of the watershed and is a very small tributary source for Rabbit Lake. Headwaters originate with Wilson and Christy Lakes which flow into North Milne Lake, through Hornet Lake and Rabbit Creek to the Southwest Bay of Rabbit

Lake. The North Milne Lake Dam was originally built by the Department of Public Works in 1958. It is presently owned and operated by the Ministry of Natural Resources, and operated to a regulated water level of 310.25 metres. Plans are to replace this structure with a new self-regulating control dam (weir) in the near future.

From the Rabbit Lake Dam at Outlet Bay, Rabbit Lake empties into the Matabitchuan River, where after several kilometres the river widens into Fourbass Lake which is the head pond reservoir lake for the Matabitchuan Generating Station. There are several cottages located on Fourbass Lake. Recreational use is generally limited to canoeists and occasional fishermen due to the remote location. In the spring, Fourbass Lake levels are managed for the protection of walleye spawning at the outlet of Cooper Lake flowing into Fourbass Lake.

The Matabitchuan GS site is unique in that it has an operating head of 95 metres which is second only to Eugenia GS in Ontario. Power output is directly proportional to head and flow rate. This facility was constructed in 1910 to supply power to the Cobalt mining camp. The generating station's intake and control dam are approximately one kilometre apart, with the control dam / spillway located on the northwest corner of Fourbass Lake following the original river course. Water from Fourbass Lake flows through the generating station turbines and the control dam / spillway. There is an important walleye and red-finned (redhorse) sucker spawning site located adjacent to the GS in the riverbed spillway. As this site is up gradient to the GS tailrace there is a minimum flow constraint in place for the control dam to provide a required flow over the spawning site. The water level of the Matabitchuan River from the GS tailrace outflow to the mouth of the river at Lake Timiskaming is affected by the respective water level of Lake Timiskaming. While the spillway riverbed stretch is a combination of bedrock and large boulders, the lower meandering section of the river downstream of the station is primarily fine sandy/ clay soils.

2.1.2 Surficial Geology

The Matabitchuan River system area is characterized by rugged Precambrian shield topography, with ridges and hills interspersed with lakes, streams, wetlands, moraines and other meltwater features left as a result of the Wisconsin glaciation.

Surficial sediments for the Matabitchuan River system include:

- Till Veneer – thin and discontinuous till; may include extensive areas of rock out crop
- Till Blanket – thick and continuous till
- Undivided – rock with minor Quaternary deposits.
- Glacial Plain – sand and gravel; deposited as outwash sheets, valley trains and terrace deposits



Figure 2.3: Typical River Geology
(Courtesy of MNR)

2.1.3 **Forests**

The planning area is situated in the transition area between the Great Lakes/St. Lawrence and Boreal Forest Regions. A wide variety of tree species grow in the area, including white birch, poplar, balsam fir, jackpine and black spruce which are typical of the Boreal Forest Region, and white pine, red pine, maple, yellow birch and white spruce which are typical of the Great Lakes/St. Lawrence Forest Region.



Figure 2.4: Aerial Photo of Rabbit Point, Rabbit Lake
(Courtesy of MNR)

2.1.4 Fisheries

The river system and associated reservoir lakes are a combination of cold and cool water fisheries. The primary species found within the Matabitchuan River system are: walleye, lake trout, northern pike, smallmouth bass, whitefish, burbot (ling), yellow perch, cisco and white suckers. A more complete list of fish species is presented in section 2.3. Walleye are present throughout the river system and they are extremely important to the local tourism economy as the most sought after of the fish species by the recreational sport fishery. Fishery management efforts have primarily concentrated on maintaining healthy walleye and trout populations. This has resulted in the development of operating constraints to protect and enhance the walleye and trout spawning.



Figure 2.5: Index Netting Lake Trout
(Courtesy of MNR)

2.1.5 Wildlife

The planning area contains wildlife habitat that supports a wide variety of species. Some of these are: moose, wolf, lynx, bear, marten, beaver, deer in some locations, and a variety of resident and migratory birds. Through a recent re-introduction program, Peregrine falcons are being re-established in the area. Important game species include moose, bear, grouse and, in the northeastern portion of the planning area, deer. Commercial trapping activity is based on beaver, marten, lynx and other typical fur bearers. A list of common wildlife found in the watershed can be found in section 2.4.



Figure 2.6: Otter
(Courtesy of MNR)

2.1.6 Natural Heritage – Protected Areas System

Natural Heritage has been formally protected within three conservation reserves in the Matabitchuan River system.

As part of the provincial parks and protected areas system, the conservation reserve designation protects representative natural heritage features while allowing more traditional non-consumptive uses to continue. Natural heritage features protected within conservation reserves include such values as; old growth forests, provincially significant vegetative communities, ecosystems, unique habitats and/or significant earth science features. In addition, protected areas contribute to the social economic fabric of this region as places where natural heritage appreciation, recreation and tourism activities can occur. Industrial activities such as hydro, mining and forestry are excluded from these protective landscapes.

Conservation reserves adjacent to the Matabitchuan River system include the Matabitchuan River Conservation Reserve, Rabbit Lake West Conservation Reserve and White Bear Forest Conservation Reserve.

Section 2.2 describes these conservation reserves in more detail.

2.1.7 Recreation

Significant recreation values are present throughout the river system including an extensive canoe route network, boating, cottaging, tourist camps and outfitters, angling and hunting. Numerous trails in the area include those for hiking, snowmobiling and cross-country skiing.



Figure 2.7: Canoeing
(Courtesy of MNR)

2.1.8 Cultural Heritage

Cultural heritage values are also numerous and widely spread across the planning area. Native heritage sites and landscapes are well documented and kept on file at MNR offices. Logging, mining and settlement themes are also well represented in the area through cultural heritage sites and landscapes.



Figure 2.8 Historic Fishing and Canoeing
(Courtesy of Timmins Museum)



Figure 2.9 Historic Water Travel
(Courtesy of Timmins Museum)