Lakeshore Capacity Study and
Development Policies for
RagaIn-White Lake: Trophic
Status and Lake Trout

Habitat _ Jennifer Kellv Executive Summary

Phosphorus is the limiting nutrient for algae and weed production in lakes. When these aquatic plants die, their decomposition causes dissolved oxygen depletion, making it unavailable for lake trout who require it for survival. Lake trout are highly sensitive to changes in their habitat, therefore trout health serves as a good indicator of lake trophic status.

Lakeshore development causes accelerated phosphorus loading from runoff and septic systems. Consequently, phosphorus is the limiting factor for development
do
warm water species, including temperature and dissolved oxygen requirements.

The trophic status model is a tool that planners can use to predict development capacity based on phosphorus objectives (currently 10ug/l) while the optimal trout habitat model bases predictions on trout habitat. The models are applied to Raglan-White Lake which is a lake trout lake and cottaging destination located in Renfrew County. Rag lan-White lake is currently managed as a holding basin for artificially stocked lake trout. A water quality objective of20% optimal habitat of total volume is set for lake trout lakes. Optimal habitat is defined as the zone where water is 10 degrees Celsius or colder and dissolved oxygen concentration is 6 milligrams per litre or greater. Using different development scenarios, the capacity for lakeshore development is calculated based on these water quality objectives.

The models should be applied within a broader planning context that includes local socio-economic issues. Cottage construction and cottage-related activities brings a multitude of financial benefits to municipalities. Direct revenues from property taxes as well as indirect spending on the part of lake users such as recreational anglers are complimented by non-market benefits such as a pristine environment. At the same time, the costs of cottaging should not be overlooked. Excessive

development invariably counteracts most of the benefits from cottage development and recreational activity while reducing water quality. The trophic status and optimal habitat models are the first step in determining the most socially efficient carrying capacity for development as they give planners insight as to physical lake capacity.

Several recommendations are made to the municipality and the Ministry ofNatural Resources who manages the crown land along the lake. These include: incorporating water quality objectives and development capacity limits into the Township Official Plan; setting aside a vegetation corridor along the shoreline, establishing long term regulations for septic systems and requiring environmental evaluation for new development on an individual lot basis.

Implementation of these recommendations should not be compromised by local political pressures otherwise, model results and recommendations lose their effectiveness. Overall, both models are considered to be useful tools for assisting planners and decision-makers in setting development policies along lakeshores.