

# DISTRICT OF LAKELAND – EMMA LAKE NUTRIENT STUDY

PREPARED FOR DISTRICT OF LAKELAND NO.521

## INTRODUCTION

Nutrient loads, as evidenced by excessive plankton growth, have become increasingly evident at Emma and Christopher Lake over the past several summers. These nutrient loads may be tied to a variety of anthropogenic sources including lawn and garden fertilizers, septic tank seepage, and increased storm water and inorganic nutrient runoff. Significant attempts have been made to address these sources through public information and education campaigns; however, little consideration has been directed at the contributing effect of sediment resuspension by boats.

## NUTRIENT MIXING EFFECTS AND LAKE MAPPING

Wakeboard boats, in particular, are designed to create waves necessary for wakeboarders to “catch air” or for surfers to maintain themselves without assistance of a tow rope. In either case the boats are designed to generate waves that can either stir up sediments or contribute to shoreline erosion. The District of Lakeland (Lakeland) and Saskatchewan Polytechnic (SaskPoly) wish to examine the effects of boats on substrate resuspension in shallow water and the resultant impact this might have on eutrophication and plankton growth. The research would focus on Emma Lake and would consider boats in the context of other possible sources of sediment and nutrient contamination. Significant sampling efforts would be required to map water transparency and biological oxygen demand (BOD) throughout the entire lake area. Direct correlations between cabin developments, boat traffic, and point sources of overland runoff should become apparent if any of these are causal in nature.

## SHORELINE DEGRADATION AND WATERFOWL NESTING

The research would also look at the impacts of boat traffic on wind and wave protected shorelines. These protected areas are usually well vegetated and serve as preferred nesting sites for waterfowl. By acting as an unnatural source of wave generation, wakeboard boats have the capacity to destroy these shorelines and drown any floating nests they may harbour. This aspect of the research would monitor waterfowl nesting and feeding activity in the context of boat traffic and wave generation. A key component would involve some mechanism for observing wave action relative to control areas where boat traffic is either restricted or inaccessible.

## PROPOSED METHOD OF RESEARCH

This study would be undertaken by one or more Saskatchewan Polytechnic Natural Resource Technology students. Lakeland would provide funding for the summer research work, but significant support would also be provided by Saskatchewan Polytechnic. This might involve in-kind support in the form of expertise and equipment. As well, \$5000 would be requested through internal SaskPoly funding mechanisms to try and offset costs to the student researcher for data analysis and write-up in the fall. This funding is potentially available through internal SARP or SIF research grants. Although there is no guarantee, we remain optimistic that a project of this nature would be successful with this request. Alternatively, this project would be an excellent candidate for an Applied Research Scholarship.

