

**Lake Winnipeg South Basin  
Sensitive Habitat Inventory and Mapping  
(SHIM) 2011-12**

**SECTION C:  
SHIM 2011 RECOMMENDATIONS**

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## **PREFACE:**

### Lake Winnipeg Foundation Sensitive Habitat Inventory and Mapping (SHIM) Project 2011-2012

Lake Winnipeg Foundation Inc. (LWF), a charitable, non-government organization, was established in 2005 to promote the restoration and protection of Lake Winnipeg and its watershed. In 2010, the Lake Winnipeg Basin Stewardship Fund (LWBSF) presented an opportunity for the LWF to propose a project that would enhance research and monitoring capacity to assist in decision making for Lake Winnipeg. Based on an ecosystem assessment model developed by the Community Mapping Network in British Columbia (Mason and Knight, 2001; Mason and Booth, 2004) and applied to several provincial lakes, a proposal “Sensitive Habitat Inventory and Mapping of Foreshore Areas of Lake Winnipeg South Basin and Development of Shoreline Management Guidelines” was prepared by the LWF and submitted to the LWBSF.

With funding awarded by the LWBSF and additional support from Thomas Sill Foundation, Fisheries and Oceans Canada, and the Small Change Fund, the LWF coordinated the Lake Winnipeg SHIM project. The team of environmental specialists assembled by the LWF undertook field data collection, data analyses, report preparation, data product development, and project management and included: Terra Limnic Consulting (Winslaw, BC), Native Plant Solutions (DUC, Winnipeg, Mb), Aquatic Environmental Services (St. Andrews, Mb); Whelan Enns Associates Inc. (Winnipeg, Mb), Benson Fishers (Gimli, Mb), University of Manitoba, and Washington State University.

In addition to providing science-based information on Lake Winnipeg south basin shorelines, SHIM will help to locate point and non-point nutrient sources, identify priority aquatic ecosystems that support nutrient reduction and sequestration, and achieve overall nutrient load reductions to the lake, the ultimate goal of the LWBSF program. Scientific studies indicate that most nutrients to Lake Winnipeg come from sources closest to the Lake (State of Lake Winnipeg 1999 to 2007). Communities and infrastructure situated directly adjacent to Lake Winnipeg, pose significant risks to water quality from nutrient and contaminant loading and to fish and wildlife from shore habitat alteration, disruption, or destruction.

Creating a baseline inventory of existing Lake Winnipeg south basin shoreline conditions is the first step in preparing an integrated master plan for any future sustainable development options. All shoreline activities require that regulators have access to science-based information, to guide decisions for the protection, rehabilitation or development of shoreline areas. The Lake Winnipeg SHIM is a first attempt to provide some of this missing information.

Alex Salki,  
Lake Winnipeg Foundation

## **PRIMARY RECOMMENDATIONS:**

Lake Winnipeg shorelines, especially the Lake Winnipeg south basin shoreline, have not to date received the study, inventory, and assessment essential for the management and protection needed for the future of the Lake. Maintaining and improving the health of Lake Winnipeg requires these multiple strategies. This initial demonstration of Shoreline Habitat Inventory Mapping for Lake Winnipeg’s south basin shoreline is an important step in arriving at the scientific and technical basis needed to improve the future of the Lake’s shorelines.

Further SHIM technical projects for Lake Winnipeg shorelines, with further confirmation of best SHIM methods for Lake Winnipeg, will contribute to our knowledge of the lake while also assisting in methods for decision making for management and protection of shorelines and shoreline species.

Several recent studies and reports have made it clear that steps to reverse the decline in Lake Winnipeg's health are urgent. The Lake Winnipeg Foundation shares this sense of urgency about our Great Lake. SHIM information and data will inform stakeholders, levels of government, land owners, and the scientific community. This first SHIM, in Lake Winnipeg's south basin, points to changes in shoreline and inputs practices needed to assist in reducing nutrients and eutrophication.

Please review our first set of SHIM recommendations. The 2011 year was the highest water year for Lake Winnipeg in recent record keeping, due to flooding across Manitoba. Follow up spring and fall field inventories and mapping of the south basin to supplement the initial summer 2011 SHIM survey of Lake Winnipeg will make a significant contribution to our understanding of Lake Winnipeg.

The Lake Winnipeg Foundation will be available to discuss its findings, methods and approaches for future SHIM in Lake Winnipeg and Manitoba Lakes from this first SHIM project.

## **RECOMMENDATIONS PROCESS:**

Recommendations were provided by: members of the shoreline inventory field team based on their shoreline activity in summer 2011, members of the Lake Winnipeg Foundation board, and members of the Science Advisory Committee to the Lake Winnipeg Foundation. The summer 2011 SHIM project is the start of an ongoing shoreline inventory, and these recommendations are offered as insights from the first demonstration project. They are not intended to be a complete set of recommendations for the south basin shoreline. Certain recommendations pertain to more than one category or type of recommendation, so their placement is discretionary. Categories and recommendations were reviewed using frequency analysis.

## **RECOMMENDATIONS: SHIM 2011 PROJECT:**

### **Planning & Development**

1. Environmental Assessment standards for specific types of shoreline, for both medium and large projects, need to be put in place by levels of government. These would be combined with public information and education as to requirements.
2. The above recommendation applies especially to sensitive habitats, designated and protected shorelines, and listed or at risk species sites.
3. A development guideline that identifies acceptable activities in the various shoreline types, and specific shoreline segments would assist in decision making.
4. Foreshore mapping and survey of shorelines and waterways needs to be available in advance of development decisions.
5. Sensitive habitats, conservation zones, protected shorelines should not be threatened or impacted by new development.
6. These environmentally sensitive areas and habitats identified in SHIM surveys need to be included and accounted for in land use planning policies, requirements for municipal or community plans, local bylaws, and any land use decisions.
7. Habitat mitigation and compensation for any risk of degradation or alteration of sensitive habitats should occur prior to, or at the very least, as a condition of approval of shoreline-altering projects.

## **Pollution, Nutrients & Climate Change**

1. Nutrients infiltrating the south basin can be reduced by increasing setback requirements and restoring native vegetation.
2. Agricultural drains must discharge into wetlands (natural or engineered) prior to reaching Lake Winnipeg, in order to reduce nutrients and other pollutants arriving at shorelines.
3. Climate change will increase probability that Lake Winnipeg will more frequently exceed the high and low water levels experienced in the past, with greater erosion, and longer open water seasons. Adaption to “new normal” conditions requires improving shoreline protection, increasing cottage setbacks and raising elevations for buildings and wastewater treatment facilities.
4. Study of potential climate change impacts on future lake levels and potential links to littoral fish habitat productivity will assist in shoreline decision making, and sustainability of the Lake Winnipeg fishery.

## **Property Owners**

1. Provide and implement a lake foreshore stewardship/best management practices guide for lakeshore landowners.
2. Develop and implement a landowner shoreline habitat restoration guide and hold workshops for interested landowners to help restore degraded shoreline, and fish and wildlife habitats.
3. A standard for acceptable shoreline erosion protection practices should be provided to property owners, residents and municipalities, with follow up assessment built in.
4. Long-term sustainability of retention walls and rip-rap, should be part of a shoreline erosion practices standard.
5. Any new properties will need limits as to clearing of shoreline vegetation upslope of the high water mark.
6. Any allowable clearing of shoreline vegetation should be based on the unique characteristics of each location.
7. Property owners’ current shoreline erosion protection projects should be documented.
8. Boating speed restrictions should be considered and any current restrictions should be enforced to prevent wake damage to adjacent wetlands and fish and wildlife habitats.

## **Property & Structures**

1. Setback requirements appear insufficient and should be increased for the health of shoreline habitats and species.
2. Shoreline setbacks for cottages should be calculated based on average high-water mark of Lake Winnipeg and the unique features/characteristics in that particular location (i.e., degree of slope, parent material, foreshore substrate characteristics, wind vetch, existing vegetation, etc.).
3. Review erosion protection structures in the south basin to identify the most effective strategies.
4. Construction of erosion protection structures must consider neighboring lands to avoid any negative effects. .
5. Neighboring or communal erosion protection plans needs to conform to standards, and the application of best practices
6. Shoreline reinforcement structures must not interfere with or impede growth and reproduction of fish populations.
7. Impacts of erosion protection activity on Lake Winnipeg need to be documented.
8. Building permits should be required for any shoreline structure, including shoreline erosion protection structures. Building permit applications should include engineering drawings and studies.
9. The type of shoreline and soil composition present should be part of an erosion protection plan.
10. Decisions for cottage development should be based on no impact and no loss of wetlands.

## **Science, Studies & Monitoring**

1. Consider study of south basin physical shoreline processes including sediment supply, current and projected impacts of long term shoreline development (e.g. full build out) of private and crown lands.
2. Continue SHIM projects for further Lake Winnipeg shorelines, and for comparable inventory on same shoreline segments.
3. Study the link between regulation of lake levels, current and historic (pre-regulation) shoreline erosion, frequency and causes, of shoreline erosion.
4. Continued SHIM projects, including comparative for the same shoreline segments, will contribute urgently needed information to assist in decision making.
5. Develop a citizen-science monitoring program to track long-term trends in habitat quality, vegetation, and fish and wildlife populations.

## **Shoreline Erosion**

1. Establish a shoreline erosion project compliance-monitoring program to determine if current advice and recommendations of DFO and the Shoreline Erosion Technical Committee are being observed.
2. Review current shoreline erosion protection techniques and develop shoreline erosion project standards and guidelines for the protection of fish and wildlife habitats.
3. Lands at high risk of erosion need to be identified with information communicated to land planners/managers, property owners, and local/provincial government representatives.
4. An exterior body separate from south basin municipalities is needed to guide all south basin erosion protection planning.

## **Shoreline Habitat**

1. Review the value of shore types such as gravel and sand beach shore types to calibrate their relative habitat value for Manitoba fish species.
2. Increase intact, vegetated shorelines to help protect against shoreline loss and ongoing erosion.
3. A minimum required percentage of the shoreline, owned by current landowners, should be covered by local vegetation (i.e. shrubs and trees) to promote and secure a long-term solution to shore erosion.
4. Provincial grants should be available to landowners wanting to replant their shoreline.
5. Improve shoreline vegetation and development setbacks to ensure stable shoreline features and fish habitats

## **Shoreline Protection (conservation zones, significant biological areas, protected shoreline)**

1. Establish characteristics and criteria for important biological areas and at risk habitats and species in Lake Winnipeg, so levels of government can cooperate in their protection.
2. Designate all wetlands, wetland/beach ridges, stream mouths and sand spits and islands as conservation zones with high biological diversity and important habitats etc.

## **Shoreline Species (Fish, Wildlife, Vegetation)**

1. Establish sand and gravel beach fish habitat indicator sites and design and implement a long-term fish monitoring program.
2. Design and implement a wildlife long term monitoring program.
3. Review use of shoreline modifications by fish and implement any design changes necessary to address unmitigated impacts.
4. Conduct detailed assessments of biologically productive areas so they may be more accurately delineated, and mapped
5. Shoreline reinforcements and erosion protection projects need to be constructed to support fish populations as well as to stabilize shorelines.

## **Wetlands, Streams, Tributaries, Drains**

1. Design and implement a fish and wildlife-monitoring program to determine if current wetland developments achieve habitat protection goals and standards.
2. Agencies responsible for reviewing and approving existing wetland development proposals (federal, provincial and municipal) should ensure all environmental values (site specific and basin wide) are addressed in the approval process.
3. Stream mouths should be delineated, mapped and designated as conservation zones.
4. Development should be restricted for a minimum of 250 meters on either side of the channel or to a natural feature (i.e. wetland, topographic break, existing development or vegetation change).
5. Drainage pipes and ditches flowing into Lake Winnipeg need to be assessed and evaluated for their impact to water quality and lake health.
6. Decisions for cottage development should be based on no water quality or habitat impacts and no loss of wetlands.
7. An immediate ban on any wetland alteration adjacent to the Lake Winnipeg south basin shoreline should be in place to ensure no further loss of wetlands.

## **Lake Winnipeg Stewardship Board**

The LWSB Final Report “Reducing Nutrient Loading to Lake Winnipeg and Its Watershed” (December 2006) provided 38 Recommendation Areas to the Minister of Water Stewardship. Four recommendations within four areas relate to the objectives of the Lake Winnipeg Foundation Lake Winnipeg Sensitive Habitat Inventory and Mapping (SHIM) project. Therefore these are included with recommendations for the SHIM 2011 project, and reflect concerns identified during the project.

### **Recommendation 1.0. Public Education on Water Quality Issues**

1.3 A public education program should promote a community-to-community awareness and clearly identify the contribution that all communities, such as urban dwellers, waterfront property owners, agricultural producers, industry, and First Nation communities, must make to reducing nutrient loading.

### **Recommendation 3.0. A Scientific Basis for the Protection of Lake Winnipeg**

3.2 The Province of Manitoba should substantially increase its investment in the development of expertise within the scientific community in the areas of hydrological and contaminant transport mechanisms at the land-water interface.

### **Recommendation 6.0. Integrated Watershed Management Planning**

6.5 Watershed management districts should be responsible for managing all drainage issues within their jurisdictions, including in-field drainage activities and the drainage of natural wetlands.

### **Recommendation 12.0. Environmental Planning for Urban, Rural and Cottage Development**

12.7 The Province of Manitoba should consider establishing regulations, such as minimum set-back distances from shorelines for new developments, to prevent significant disturbances which would result in increased erosion along lakes and waterways.