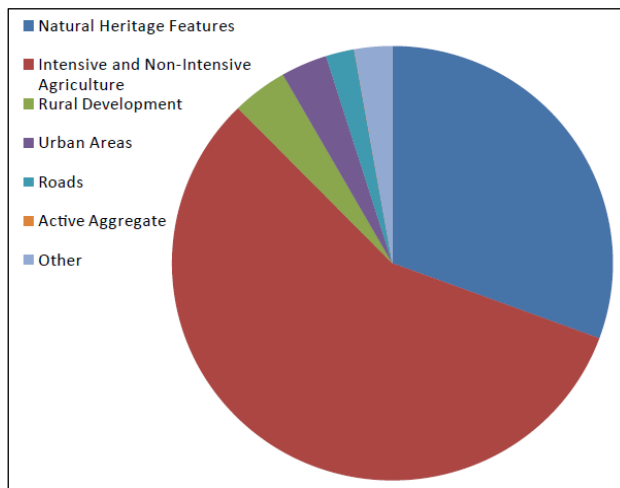


West Holland River Subwatershed Plan Executive Summary

The West Holland River occupies 354 km² of lands immediately to the southwest of the tip of Lake Simcoe's Cook's Bay. Originating on the Oak Ridges Moraine, the headwaters of the subwatershed flow through mainly forested and agricultural areas before entering the Holland Marsh. The system then flows past the Town of Bradford, and then past forested and agricultural areas before discharging into the lake. The subwatershed supports some of Ontario's most productive vegetable farming operations. Many of these are found in the Holland Marsh polder, a former wetland area that has been drained, with water levels that are carefully controlled by a series of canals and pumping stations. The subwatershed jurisdiction is shared by York Region and Simcoe County. The municipalities that fall within its boundaries are King (including the communities of Schomberg, Lloydtown, Kettleby, and Snowball), Caledon, New Tecumseth, Bradford West Gwillimbury, and Newmarket.



Aerial view of the Holland Marsh polder



Land use breakdown for the West Holland subwatershed

The land within the West Holland River subwatershed provides a number of benefits to the river, to Lake Simcoe, and to its residents and visitors. A breakdown of land use is shown to the left. Thirty-one percent of the subwatershed area is occupied by natural areas which absorb rain and snow melt, maintain groundwater levels and baseflow, help to prevent flooding and erosion, and improve water quality. These areas also provide habitat for a wide variety of species, as well as numerous nature-based recreation opportunities. In addition, the West Holland's agricultural areas, which occupy 57% of the subwatershed, provide a close-to-market supply of fresh vegetables, as well as opportunities for infiltration. The West Holland's natural features and

greenspaces provide its urban residents with the connection with nature that many of them value. In a study undertaken to estimate the value of the services provided by the subwatershed's ecosystem, it was found that it would cost over \$90 million to replace these natural services with man-made solutions. Given the immense intrinsic and monetary value of the subwatershed's features, the completion of this subwatershed plan is an important step in ensuring that these services continue to be performed economically, while balancing the other demands on the subwatershed such as urban growth, agriculture, industrial, and recreational uses in a truly integrated fashion.

In spite of the benefits provided by its natural areas, the West Holland River is showing signs of stress from some of its land uses. For example, in both the 2008 Watershed Report Card and 2009 Report Card Update, the West Holland River received a 'D' for phosphorus concentration,

with the highest average concentration in the Lake Simcoe watershed, of those systems where monitoring occurs. The amount of forest cover, interior habitat and riparian buffers are also less than what would be expected in a healthy system, and the fish and benthic invertebrate communities are also showing signs of stress. Much of this state can be attributed to the very large extent of agricultural land use in the subwatershed, as well as several urban areas located within the system. Impacts from the agricultural areas include the removal of riparian vegetation; the input of sediment-laden sediment which impacts both water quality and the habitat of fish and benthic invertebrates; the use of large volumes of water for irrigation, and the changes to the hydrology of the system by the artificially maintained polder system; channelization; and the rapid conveyance of stormwater directly to area watercourses by tile drainage. In the West Holland's urban areas, impacts from the high level of impervious surfaces include decreased infiltration of rain and melt water, which can result in low groundwater levels and reduced baseflow in area watercourses; impacts to water quality as contaminants are carried with stormwater runoff; instability and erosion of streambanks; effects on stream habitat such as sediment deposition or disruption of natural riffle-pool sequences, resulting in changes to the composition of aquatic communities; and impacts on biodiversity. These impacts can be particularly detrimental in those areas of the subwatershed that lack stormwater controls. In addition, there are issues associated with other activities in the subwatershed such as recreation and industrial uses, including water consumption, the introduction of invasive species, and the input of nutrients and other contaminants into area watercourses. The cumulative effects of these activities have caused the West Holland to become one of the most stressed subwatersheds in the Lake Simcoe watershed, and one of the largest contributors to Lake Simcoe's phosphorus loads.



Before (top) and after (bottom) a riparian planting project in the Holland Marsh

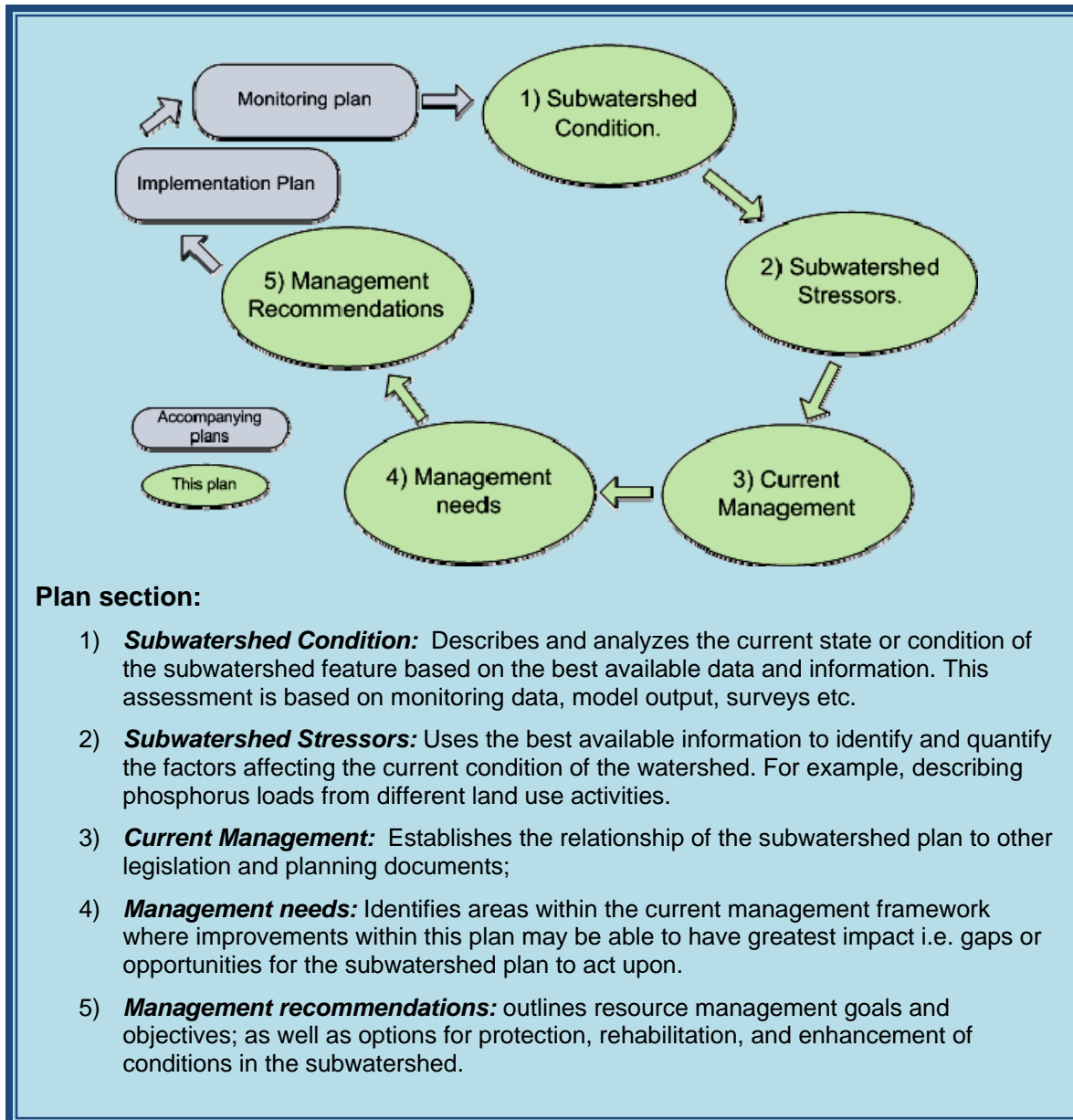
There have been numerous successes in improving the conditions in the West Holland River subwatershed. Initiatives such as the completion of streambank erosion control projects, tree plantings, establishment of riparian vegetation (see photos at left), and other BMPs will help to improve conditions with respect to bank stability, water quality and quantity, and aquatic and terrestrial natural heritage in the subwatershed.

The West Holland subwatershed is scheduled to experience some growth in the coming years. The Provincial Places to Grow Plan identifies that population and employment growth will occur in the Lake Simcoe watershed. Provincial growth forecasts have been allocated to all municipalities in York Region, as well as to a number of municipalities in Simcoe County. According to the Town of Bradford West Gwillimbury Official Plan (2002 consolidation) the population is expected to increase from 24,000 residents (2006 census) to close to 48,000 by 2026. The population of King Township is also expected to grow by approximately 15,000 residents (York Region draft Official Plan, 2009). Along with the housing that will have to be built to accommodate these new subwatershed residents, new

employment lands, shopping centres, and schools will also be required to meet their needs. In addition to the above, in order to service these increases in population and employment, critical

municipal infrastructure projects, including roads, municipal sewers and treatment facilities and water supply systems will also need to be built, maintained, and expanded in the subwatershed. This will result in increased levels of impervious surfaces and its associated impacts, combined with a reduction in the natural features that help to mitigate these impacts. These changes, as well as the unknown impacts that climate change may bring to the subwatershed, will have a significant effect on the health of the subwatershed if measures are not taken to mitigate them.

To build on the successes of the projects initiated so far, and to mitigate impacts of the changes that are to come, a comprehensive, integrated subwatershed plan is needed for the West Holland River subwatershed. The plan that follows is intended to provide the blueprint for the conservation authority, the municipalities, and subwatershed stakeholders to move forward and continue the important work that has been completed in order to mitigate the impacts of land use changes and improve conditions in the subwatershed. It includes chapters dedicated to each of five subwatershed parameters, these being water quality, water quantity, aquatic habitat, fluvial geomorphology and terrestrial natural heritage, although it is acknowledged that all of these parameters are related and certainly interact with each other. Each chapter is loosely structured around a state-pressure- response framework, in that each chapter firstly describes the current condition (state), secondly describes the stressors likely leading to the current condition (pressure), and finally recommends management responses in the context of the current management framework (response) (See text box below).



The management responses (high level recommendations) fall into eight broad categories, these being:

- A. Planning and Policy
- B. Use of Better Management Practices
- C. Changing the Way Things Are Done 'On the Ground'
- D. Applied Research and Science
- E. Monitoring (Surveillance, Compliance, and Reporting)
- F. Management, Rehabilitation, and Restoration
- G. Adaptive Response (Climate, Social, Political)
- H. Communications

From these recommendations fall a number of detailed recommendations, the implementation of which will help to meet the plan's goals and objectives. These detailed recommendations will form the implementation plan, a document which will assign responsibilities, develop timelines, estimate costs, and set priorities for undertaking the actions that will need to be taken in the West Holland subwatershed. Input from the subwatershed municipalities, conservation authority staff, stakeholders and members of the public will be incorporated through the process of developing the implementation plan. Implementing the recommended actions of this plan is a huge undertaking with respect to both the funding and human resources that will be needed, and will require assistance from all of these subwatershed partners.

Undertaking the actions outlined in the implementation plan will help to protect the existing natural resources, facilitate informed planning decisions, and improve the efficiency of the development review process. An over-arching concept to keep in mind throughout the subwatershed planning process is that it is far more beneficial, both financially and ecologically, to protect resources from degradation than to rehabilitate them once they have been damaged. These plans support this concept, and provide alternatives for instances where it may not be possible to maintain the West Holland's resources in their natural state.

The implementation plan will identify actions to be undertaken in both the short and the long term. However, the subwatershed plan will be reviewed on a regular basis as part of the adaptive management framework to ensure the effectiveness of the actions being undertaken. Depending on the state of the subwatershed, the subwatershed and implementation plan may be updated at that point in order to incorporate the most up to date information on the subwatershed state and to incorporate any new tools, technologies, and practices that may be used. By undertaking these regular evaluations and updates, the partners can ensure that all of the necessary steps are being taken in order to achieve the goal of a healthy West Holland River subwatershed.



Participation from subwatershed stakeholders will be important for developing the implementation plan