

HUMBER RIVER WATERSHED PLAN: PATHWAYS TO A HEALTHY HUMBER

At Authority Meeting #5/08, of Toronto and Region Conservation Authority (TRCA), held on June 27, 2008, Resolution #A137/08, in regard to Humber River Watershed Plan: Pathways to a Healthy Humber, was unanimously approved as follows:

WHEREAS the Province of Ontario's Oak Ridges Moraine Conservation Plan (2002) requires every upper-tier and single tier municipality to prepare watershed plans for every Oak Ridges Moraine stream that originates within the municipality's area of jurisdiction; and

WHEREAS the Toronto and Region Conservation Authority staff has completed a final draft Humber River Watershed Plan on behalf of watershed municipalities which updates the 1997 Humber River Watershed Strategy, Legacy: A Strategy For A Healthy Humber, meets watershed planning requirements of the Oak Ridges Moraine Conservation Plan (2002), and augments management direction provided by the City of Toronto's Wet Weather Flow Management Master Plan for upstream municipalities;

THEREFORE LET IT BE RESOLVED THAT the Humber River Watershed Plan, Pathways to a Healthy Humber, dated June 2008, be approved;

THAT staff be directed to work with partners to implement the plan;

THAT staff be directed to use the Humber River State of the Watershed Reports, Humber River Watershed Scenario Modelling and Analysis Report, Action Plan for Sustainable Practices and Humber River Watershed Plan Implementation Guide as reference documents to inform and guide ongoing work and long term work planning and budget preparation;

THAT copies of the Humber River Watershed Plan be circulated to municipalities within the Humber River watershed and their Councils be asked to adopt the plan and commit to work with the Toronto and Region Conservation Authority (TRCA) to implement the recommendations appropriate to their municipality;

THAT copies of the Humber River Watershed Plan be circulated to the Humber Watershed Alliance, provincial and federal governments as well as all other relevant organizations and interest groups and they be asked to provide ongoing support for the implementation of the principles, objectives and relevant recommendations of the plan;

THAT copies of the Humber River State of the Watershed Reports, Humber River Watershed Scenario Modelling and Analysis Report, Action Plan for Sustainable Practices and Humber River Watershed Plan Implementation Guide be circulated to watershed municipalities and made available to other partner organizations and they be encouraged to use these reference documents to inform and guide their ongoing work;

THAT copies of the Humber River Watershed Plan be circulated to local libraries and copies of the plan and all supporting documents be posted on the TRCA web site;

THAT staff be directed to work with watershed municipalities and other partners to develop five year workplans and budgets for top priority projects identified in the Humber River Watershed Plan Implementation Guide and incorporate them into the annual capital budget process;

THAT the revised Conformity Assessment for the Humber River Watershed Plan in Attachment 3 and the watershed planning documents referenced in the conformity assessment be deemed to fulfill the watershed planning requirements of the Oak Ridges Moraine Conservation Plan (ORMCP; 2002) and be approved for use in the review of major development proposals on the Oak Ridges Moraine and that the regional and local municipalities, Province, and Conservation Authorities Moraine Coalition (CAMC) be so advised;

THAT staff meet with representatives of the Aboriginal community to discuss the Humber River Watershed Plan and ways they wish to be involved in its implementation;

THAT the Humber Watershed Alliance assist staff with reporting on progress in the implementation of the Humber River Watershed Plan;

AND FURTHER THAT staff convene up to 3 meetings per year with municipal staff and other stakeholder representatives from the Humber watershed, and in conjunction with other watershed groups where appropriate, to facilitate partnerships and track progress in implementation.

Item 7.1

TO: Chair and Members of the Authority
Meeting #5/08, June 27, 2008

FROM: Deborah Martin-Downs, Director, Ecology

RE: HUMBER RIVER WATERSHED PLAN: PATHWAYS TO A HEALTHY HUMBER

KEY ISSUE

Approval of Humber River Watershed Plan and immediate steps to facilitate its implementation.

RECOMMENDATION

WHEREAS the Province of Ontario's Oak Ridges Moraine Conservation Plan (2002) requires every upper-tier and single tier municipality to prepare watershed plans for every Oak Ridges Moraine stream that originates within the municipality's area of jurisdiction; and

WHEREAS the Toronto and Region Conservation Authority staff has completed a final draft Humber River Watershed Plan on behalf of watershed municipalities which updates the 1997 Humber River Watershed Strategy, Legacy: A Strategy For A Healthy Humber, meets watershed planning requirements of the Oak Ridges Moraine Conservation Plan (2002), and augments management direction provided by the City of Toronto's Wet Weather Flow Management Master Plan for upstream municipalities;

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THAT copies of the Humber River Watershed Plan be circulated to local libraries and copies of the plan and all supporting documents be posted on the TRCA web site;

THAT staff be directed to work with watershed municipalities and other partners to develop five year workplans and budgets for top priority projects identified in the Humber River Watershed Plan Implementation Guide and incorporate them into the annual capital budget process;

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THAT staff meet with representatives of the Aboriginal community to discuss the Humber River Watershed Plan and ways they wish to be involved in its implementation;

THAT the Humber Watershed Alliance assist staff with reporting on progress in the implementation of the Humber River Watershed Plan;

AND FURTHER THAT staff convene up to 3 meetings per year with municipal staff and other stakeholder representatives from the Humber watershed, and in conjunction with other watershed groups where appropriate, to facilitate partnerships and track progress in implementation.

BACKGROUND

Purpose and Role of the Watershed Plan

In 2003, TRCA entered into a five year work program with York Region, Peel Region and the City of Toronto to prepare a watershed plan for the Humber River. This initiative was to assist York and Peel Region municipalities in fulfilling the Oak Ridges Moraine Conservation Plan (ORMCP) requirement to have watershed plans completed by April 2007. The study was also designed to update the 1997 watershed strategy, Legacy: A Strategy For A Healthy Humber, augment the City of Toronto's Wet Weather Flow Management Master Plan by providing direction for upstream municipalities, identify high priority remedial actions that address goals of the Remedial Action for the Toronto and Region Great Lakes Areas of Concern, and apply TRCA's vision for The Living City at a watershed scale.

The goal of the watershed planning study was to make long term strategic recommendations for the protection and enhancement of watershed health, based on an integrated understanding of watershed systems and technical analysis of issues, opportunities and management strategies and their predicted effects on the watershed. The watershed planning approach is well-recognized in legislation and local plans and policies, although it is only the ORMCP which requires municipalities to undertake watershed plans and incorporate their objectives and requirements into municipal official plans and ensure that major development on the Oak Ridges Moraine conforms with the watershed plan .

The watershed plan is intended to inform and guide municipalities, provincial and federal governments and TRCA as they update their policies and programs for environmental protection, conservation, and restoration within the contexts of land and water use, and the planning of future urban growth. The plan also provides direction to local non-governmental organizations and private landowners with regard to best management practices and opportunities for environmental stewardship.

Watershed Planning Process

At Authority Meeting #6/04, held on June 25, 2004, Resolution #A191/04 was adopted, giving approval to an overall workplan for the watershed planning study. The workplan outlined a three-phased approach, including:

- 1) initial scoping and characterization of current conditions;
- 2) analysis of current and potential future stresses on the watershed and evaluation of various management strategies; and
- 3) preparation of the watershed management plan and implementation framework.

Opportunities for public and stakeholder consultation throughout the process were recognized as an essential component of the work program.

The scope of technical study components addressed the core ORMCP requirements (e.g. water, natural heritage) and acknowledged that “other” study components such as cultural heritage and nature-based recreation were to be included to address local watershed interests and issues.

In 2005, the province released a series of draft technical guidelines addressing various aspects of the ORMCP, including one on watershed planning. The guidelines were finalized in 2007. The watershed planning guideline, while quite general, advocates the same planning process that TRCA and its partners have followed.

New Approaches

TRCA has been a leader in advancing the science of integrated watershed planning in order to produce state-of-the-art watershed planning products that will provide a sound basis for effective management decisions. Some of the innovative aspects of this work included:

- Modelling and analysis of the watershed’s response to future land use and management scenarios, including various extents and forms of urban growth, stormwater retrofits, expanded natural cover and climate change;

- An integrated, interdisciplinary analysis that has improved our understanding of the watershed system and its sensitivities (e.g. interaction of surface and groundwater; effects of terrestrial natural heritage on hydrology, etc.);
- Development and application of linked modelling tools to support the above-noted analysis;
- Development of a science-based methodology for prioritization of regeneration actions;
- Social marketing studies in support of more strategic implementation recommendations for lot level practices in business and residential sectors;
- Development of an Implementation Guide to accompany the Watershed Plan, including a policy component that will assist municipal planners in applying the plan's science and strategic recommendations; and
- Ongoing commitment to community engagement in the planning process.

Supporting Documents

The following principle documents support the Humber River Watershed Plan:

A series of ten (10) *Humber River State of the Watershed Reports (TRCA, 2008)* document the current watershed conditions and issues in relation to the watershed objectives, according to the theme areas: Air Quality, Aquatic System, Cultural Heritage, Fluvial Geomorphology, Geology and Groundwater Resources, Land and Resource Use, Nature-based Recreation, Surface Water Quality, Surface Water Quality, and Terrestrial System. Drafts of these reports and ratings of current conditions provided input to the 2007 Watershed Report Card, *Listen To Your River: A Report Card on the Health of the Humber River Watershed (TRCA, 2007)*.

Humber River Watershed Scenario Modelling and Analysis Report (TRCA, 2008) summarizes the predicted watershed response to future land use and management scenarios. This work identified the relative effectiveness of various management strategies, and provided a basis for recommendations in the Watershed Plan.

Humber River Watershed Plan Implementation Guide (TRCA, 2008) organizes the Watershed Plan recommendations according to the relevant implementation tools and assembles additional information to inform initial action. The Guide summarizes a proposed workplan of implementation projects, within the context of existing programs and likely implementing partners.

Action Plan for Sustainable Practices – Implementation Strategies for the Residential and Business Sectors in the Greater Toronto Area (Freeman Associates, 2006), a social marketing based study which recommended strategies for accelerating the uptake and adoption of sustainable practices, with a focus on lot level stormwater management and naturalization. These key strategies were included in the Watershed Plan.

Consultation on Draft Humber River Watershed Plan and Supporting Documents Consultation Mechanisms

TRCA staff has conducted a program of consultation for the plan. A series of seven reports and three presentations were brought to the Humber Watershed Alliance at milestone points in the watershed planning process. Copies of the first draft Watershed

Plan were sent out in June 2007 to senior study contacts within key departments of each watershed municipality, provincial and federal government agencies, the Humber Watershed Alliance and other interested stakeholders. Copies of the final draft Watershed Plan and Implementation Guide were sent out in April 2008 to the same groups. Information was provided about the availability of other supporting documents (downloadable from TRCA's web site or available upon request in hard copy or CD) and upcoming consultation sessions. An offer was extended to have TRCA staff attend meetings or provide presentations to facilitate reviews. Comments and an indication of support in principle for the Watershed Plan were requested by May 9, 2008, although this deadline was extended to June 3, 2008 in several instances.

Half-day "government" consultation sessions were held on March 30 and October 9, 2007 and April 23, 2008, involving staff representatives from watershed municipalities and provincial and federal government departments. There was general support for the strategic directions of the Watershed Plan and good dialogue about how to move forward to implementation at each meeting.

Three public open houses were held at locations around the watershed, including Caledon (November 19, 2007), Toronto (November 21, 2007) and Vaughan (November 22, 2007). A total of about 50 people attended. These sessions were advertised via notices placed in major community newspapers throughout the watershed.

Feedback Received

In summary, most of the feedback received was very supportive, acknowledging the scientific basis for the plan, the innovative and comprehensive planning approach, and the action-oriented implementation directions.

The most significant comments pertained to:

- the need for clarification of the role of the Watershed Plan, in terms of the authority under which it is to be implemented (explanatory text has been added in response to this comment);
- the need for flexibility in implementation, particularly regarding how recommendations will be incorporated into policies and programs;
- the need for further analysis and refinement of the recommended target terrestrial natural heritage system as part of planning and implementation initiatives at more detailed scales;
- the need for sustainable funding mechanisms to support implementation of municipal stormwater infrastructure and nature-based recreation system recommendations;
- the need to establish new partnerships with business improvement associations, chambers of commerce and other community groups as a crucial step in moving forward with implementation initiatives;
- the need to evaluate recommendations within the context of provincial direction for intensification and sustainability; and
- the need to assess the economic implications of implementing the Watershed Plan integral recommendations.

A few other comments identified the need for minor points of clarification and updated references to current initiatives of implementing partners. These edits have been incorporated into the final document brought forward for approval.

Aboriginal Community

TRCA staff attempted to engage Aboriginal communities to be involved in preparing and reviewing the Watershed Plan but were unable to identify representatives who were able to participate. Staff believe that involvement of the Aboriginal community in the implementation of the Watershed Plan will be very important to its success, particularly considering the rich cultural heritage of the watershed. Staff is currently working in consultation with First Nations representatives on a protocol to identify proper First Nations contacts, means of communication, interests in TRCA projects and preferences for participating in future watershed planning and implementation activities.

Expert Peer Review

It had been our original intent to conduct an expert peer review on the final draft plan and supporting documents (in addition to the peer review that was conducted on the draft State of the Watershed Reports and Study Workplan). However, given the time required by staff to complete all background reports in conjunction with other concurrent watershed planning studies, TRCA staff has considered the relative benefits of additional peer review in relation to the further delays this would cause in finalizing and initiating implementation of the plan. We have considered the fact that we have already conducted peer review on core components of the watershed planning work, specifically:

- MODFLOW groundwater model was developed and reviewed by the multi-partner “YPDT groundwater group”;
- The water budget model used in the Humber watershed planning study is consistent with a TRCA jurisdiction-wide water budget model developed as part of the CTC Source Water Protection program, which has been favourably peer reviewed by an independently-contracted expert;
- the TRCA’s Regional Terrestrial Natural Heritage Strategy which formed the basis for the Humber watershed target terrestrial system has been peer reviewed; and
- the Duffins Creek watershed planning process, which the Humber study followed, was favourably peer reviewed and has been cited by the province and others as a state-of-the-art model.

We have involved external expertise in workshops as part of the plan development, and the plan itself and the supporting documents have been circulated for public and agency review and comment. Modelling of similar issues in neighbouring watersheds (i.e. Credit River, Rouge River) is showing similar watershed responses, and therefore we feel our work is further supported by these findings. Finally, we have acknowledged assumptions and areas of uncertainty in the modelling throughout the plan and supporting documents, and we are committed to facilitate further work in those areas. Based on these considerations, we believe our work is defensible and we would prefer to proceed to final approval to allow implementation of the many “no regrets”, urgent recommendations which have many benefits. The plan is a living document, which can be updated in the future, as new science and approaches emerge.

Humber River Watershed Plan – Key Recommendations

The Watershed River Watershed Plan has concluded that a “business-as-usual” approach to future development will result in continued losses of environmental quality, biodiversity and cultural heritage, along with considerable costs to address the health, social and economic consequences of degraded environmental conditions and damaged infrastructure. A healthy, more resilient Humber watershed that supports a high quality of life for our communities is within reach only if opportunities to protect and restore healthy natural systems, build more sustainable communities, and enhance the regional open space system are acted upon. (see Attachment 1 – Watershed Plan Executive Summary). The plan sets out a number of strategic recommendations to protect and enhance valued resources, regenerate damaged systems and build more sustainable communities. These strategies fall into three broad categories:

- Expand the terrestrial natural heritage system
- Build sustainable communities (by improving water management and promoting sustainable practices overall)
- Recognize the distinctive heritage of the Humber through an enhanced regional open space system.

The recommended management strategies are as follows:

Environment

Water

- 1) Protect recharge and discharge
- 2) Increase natural cover
- 3) Improve sustainability of development design
- 4) Improve erosion and sediment control and site restoration
- 5) Implement stormwater retrofits
- 6) Maintain stormwater infrastructure
- 7) Prevent pollution
- 8) Manage flood risks
- 9) Protect stream form
- 10) Monitor, evaluate and adjust

Air Quality and Climate Change

- 1) Reduce vehicle use and other emissions
- 2) Enhance natural vegetation sinks
- 3) Undertake a vegetation impacts study

Aquatic System

- 1) Maintain or restore natural stream flow patterns and protect aquatic habitats
- 2) Optimize fish passage for native fish species
- 3) Support the draft Redside Dace Recovery Strategy
- 4) Improve recreational fishing opportunities

Terrestrial System

- 1) Secure a targeted system
- 2) Restore and enhance natural cover
- 3) Manage the matrix

Society

Cultural Heritage

- 1) Investigate and conserve cultural heritage prior to changes in land use
- 2) Establish a comprehensive communication plan with Aboriginal groups
- 3) Fill gaps in archaeological knowledge
- 4) Develop active and participatory programs to increase awareness
- 5) Develop a living cultural heritage program
- 6) Maintain the designation of the Humber River as a Canadian Heritage River

Nature Based Recreation

- 1) Recognize and enhance the regional system for nature-based recreation
- 2) Complete the inter-regional trail network
- 3) Establish public access to a northern gateway to the Humber watershed
- 4) Protect the unique experiences of the Humber watershed greenspace system
- 5) Develop plans to balance public access and resource protection
- 6) Interpret natural and cultural heritage
- 7) Form community partnerships for implementation

Economy

Urban Land Use

- 1) Protect significant landforms
- 2) Implement sustainable urban form
- 3) Implement sustainable infrastructure
- 4) Implement sustainable transportation

Agriculture

- 1) Provide GTA-wide services for local farm businesses
- 2) Support local food and increase public awareness about sustainable agriculture
- 3) Implement policies to support agriculture

Resource Use

- 1) Increase water efficiency and conservation
- 2) Reduce energy use and increase non-fossil fuel alternatives
- 3) Reduce waste

Implementation Guide – Top Priority Implementation Projects

The Implementation Guide organizes the Watershed Plan recommendations according to relevant implementation tools (e.g. policy, regeneration, land securement, stewardship and education, operations and maintenance, enforcement and monitoring) and identifies top priority projects for initial implementation (see Attachment 2 - Implementation Guide Executive Summary).

Like the Watershed Plan, the Implementation Guide is intended to inform and guide. The proposed projects contained in the Guide are meant to serve as a basis for discussion among implementing partners and as a source for the further development of individual partners' own long term work plan and budget preparations. Upon approval of the Humber River Watershed Plan, TRCA will initiate discussion with key implementing partners to develop five year workplans and budgets for the top priority projects, and incorporate them in capital budgets.

Revised ORMCP Conformity Assessment

At Authority Meeting #7/07, held on September 28, 2007, Resolution #A209/07 was passed as follows:

THAT the conformity assessment for the Humber River Watershed Plan and the watershed planning documents referenced in the conformity assessment be deemed to fulfill the watershed planning requirements of the Oak Ridges Moraine Conservation Plan (ORMCP; 2002);

THAT the conformity assessment for the Humber River Watershed Plan and the watershed planning documents referenced in the conformity assessment be approved for use by the appropriate implementation authority on an interim basis in the review of major development proposals on the Oak Ridges Moraine until such time as municipal consultation is completed and a final watershed plan is brought back to the Authority for approval;

AND FURTHER THAT the regional and local watershed municipalities and the Conservation Authorities Moraine Coalition be so advised.

Staff have revised the conformity assessment, based on the final watershed planning document references (see Attachment 3 – ORMCP Watershed Planning Requirements Conformity Assessment for Humber River Watershed). Staff recommends that the revised conformity assessment and the final watershed planning documents referenced therein be approved for use in the review of major development proposals on the Oak Ridges Moraine portion of the Humber River watershed.

DETAILS OF WORK TO BE DONE

TRCA staff will take the following steps to facilitate the transition from plan to action:

- Design the desk-top-published version of the Humber River Watershed Plan document and distribute it to watershed partners;
- Meet with Aboriginal Community leaders to discuss the Watershed Plan and ways they may wish to be involved in its implementation;
- Meet with municipal staff and other key implementing partners to incorporate top priority projects in future years workplans and budgets;
- Meet with municipal staff and other stakeholders to initiate the plan for hosting a 2009 multi-stakeholder forum to identify priorities, associated budgets and responsibilities for the implementation of the Watershed Plan; and
- Include projects that implement the Humber River Watershed Plan recommendations, in annual capital budgets

Many municipalities, other agencies and local groups, have already begun to use the Watershed Plan to inform their ongoing projects and new initiatives.

FINANCIAL DETAILS

Total funding in the amount of \$1,500,000 over 5 years was provided for the Humber River Watershed Plan by the Regional Municipality of York, Regional Municipality of

Peel and City of Toronto as part of the municipal capital budgets for TRCA. Additional grants totaling \$50,000 were provided by Environment Canada's Great Lakes Sustainability Fund in support of the regeneration plan component of the Implementation Guide and social marketing research. In addition, the Remedial Action Plan Memorandum of Understanding funding indirectly supports the development of these plans.

Implementation funding for TRCA activities will be subject to capital allocations for 2009 and beyond.

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Date: June 12, 2008

Attachments: 3

Attachment 1

Humber River Watershed Plan Pathways to a Healthy Humber

EXECUTIVE SUMMARY

The Humber River watershed is an extraordinary resource. It spans 903 square kilometers, from the headwaters on the Niagara Escarpment and Oak Ridges Moraine down through fertile clay plains to the marshes and river mouth on Lake Ontario. The watershed provides many benefits to the people who live in it. It is a source of drinking water drawn from wells or from Lake Ontario. Unpaved land absorbs water from rain and snowfall to replenish groundwater and streams and reduce the negative impacts of flooding and erosion. Healthy aquatic and terrestrial habitats support diverse communities of plants and animals. Agricultural lands provide local sources of food and green spaces provide recreation opportunities. A rich human heritage affords links to the past that enrich and inform our lives today. The natural beauty of the forests, meadows, farmlands, wetlands, rivers and creeks provides urban dwellers with solace, renewal and contact with nature.

However, this magnificent resource is under stress from human activities. The Humber Watershed Alliance, formed in 1994 to coordinate and promote activities to improve watershed health, gave the watershed an overall C grade in *Listen to Your River: A Report Card on the Health of the Humber River Watershed, 2007*. This grade was based on an average of the results for 26 indicators of watershed health that illustrate a wide range of conditions: from a very good rating for the protection of significant landforms to a failing grade for stormwater management. Conditions also vary considerably in different parts of the watershed, with generally higher grades in the upper, more rural parts of the watershed, and lower grades in the highly urbanized lower portions. This review of watershed health emphasized the need to continue working to protect what is valuable and restore what is degraded.

Issues identified in the report card include many harmful effects of urbanization on water balance, water quality, natural cover, aquatic and terrestrial communities, cultural heritage and air quality. These effects include increased surface runoff, more water pollution, greater annual flow volumes in rivers and streams, increased erosion and sedimentation, channel instability, smog, and losses of cultural heritage and biodiversity. All upland forest connections have been severed in the cities of Toronto, Brampton and the southern portions of both Vaughan and Caledon and more natural vegetation is scheduled for removal, according to current urban development plans. Only 25% of the urban area in the watershed has some level of stormwater management. The quality of fish habitat is deteriorating in many of the watershed's rivers and streams.

Successes include the 1999 designation of the Humber as a Canadian Heritage River, recognizing its importance in the history of First Nations peoples, the early Euro-Canadian explorers and settlers of Upper Canada as well as its contribution to the development of the country. Provincial initiatives including the *Niagara Escarpment Act*,

Oak Ridges Moraine Conservation Act, Greenbelt Act, Places to Grow Act, 2005 Ontario Provincial Policy Statement, Ontario Heritage Act and the recently adopted *Ontario Regulation 166/06* for conservation authorities all provide increased protection for landforms, environmental and cultural resources and agricultural lands. In addition, many protection, stewardship and regeneration projects have been implemented. Over 400,000 trees and shrubs were planted and 8.8 ha of new wetlands were created in the watershed between 2001 and 2006. The removal of in-stream barriers is allowing rainbow trout, brown trout and Atlantic salmon to return to spawning grounds in the Humber River for the first time in more than 150 years. The recent creation of the Oak Ridges Corridor Park in Richmond Hill is protecting 428 hectares of land from development and retaining the last remaining natural linkage between the western and eastern parts of the Oak Ridges Moraine.

The Humber watershed will experience further, major changes in land use over the next few decades. Approved official plans allow for an additional 8845 hectares of new urban lands beyond 2002 land uses, increasing the amount of the watershed that is urbanized from 27% to 36%. Once these plans are implemented, there will probably be further development in some watershed municipalities up to the boundaries of the *Greenbelt Plan* and *Oak Ridges Moraine Conservation Plan*. A large amount of commercial development is projected to occur along the east branches of the West Humber (Brampton and Caledon) and in the Rainbow Creek and Purpleville Creek subwatersheds (Vaughan). The proposed expansion of the 400 series of Provincial highways includes an anticipated extension to Highway 427 through the central part of the watershed. Trends in municipal servicing may result in a shift from groundwater supplies to lake-based water supplies, for example in Kleinburg and King City.

The population size and diversity of the Humber watershed continues to expand. In 2001 (based on census data) there were approximately 670,000 people living in the watershed, an increase of 37% from 1995. Much of this population growth, and associated urban development, has occurred within the City of Vaughan, Town of Richmond Hill and City of Brampton. The growing population and cultural diversity of the watershed may create demands for different types of nature-based recreation and cultural heritage interpretation activities as well as new approaches to community involvement in stewardship and outreach education programs.

What is the role of the watershed plan? The watershed plan is intended to inform and guide municipalities, provincial and federal governments, TRCA, non-governmental organizations and private landowners as they update their policies and practices for environmental protection and stewardship.

This updated watershed plan is part of an adaptive management approach to address these challenges. Since the publication of *Legacy: A Strategy for a Healthy Humber* in 1997, much has been learned about the Humber watershed from monitoring, research and the experiences of watershed partners. This plan updates the watershed management strategies in *Legacy* in light of new information, a stronger scientific foundation and better understanding of the effects of human actions on the ecosystem. There is also a need to respond to a number of recent policy and planning initiatives, including the *Oak Ridges Moraine Conservation Plan*, *Growth Plan for the Greater Golden Horseshoe*, *Clean Water Act*, City of Toronto's *Wet Weather Flow Management Master Plan*, stormwater retrofit studies of other municipalities, and TRCA's vision for The Living City.

The guiding framework for this watershed plan comprises a set of principles and 30 objectives with specific targets for watershed conditions. They address:

- **Environment:** stream form, groundwater, surface water, air, aquatic system, terrestrial system
- **Society:** cultural heritage, nature-based recreation
- **Economy:** land use, resource use

Nine potential future scenarios were developed and examined in relation to existing conditions to provide an understanding of how the watershed might react to changes in land use and environmental management in the future. This process revealed that if future development proceeds with current approaches to community design and stormwater management, it will not be possible to maintain current conditions, let alone improve them. Instead, there will be additional deterioration of environmental conditions, biodiversity and damage to infrastructure and property. Further, the analysis showed that even if the most innovative sustainable community measures are applied, this deterioration cannot be completely prevented throughout the watershed. The anticipated effects of climate change may exacerbate these concerns.

The pathway to a healthier, more resilient watershed that emerged from this analysis is based on a comprehensive and inter-dependent set of strategies that will protect and enhance valued resources, regenerate damaged systems, and build more sustainable communities. This will help to increase the resilience of natural systems to human activities and climate change. It will also create healthier places for people and wildlife and stronger support for economic activities.

The recommended management strategies fall into three broad categories:

- 1) **Protect and expand the terrestrial natural heritage system:** Figure 5.2 illustrates an expanded natural heritage system that provides multiple benefits, including biodiversity and habitats, water balance maintenance and restoration, opportunities for nature-based recreation, carbon sequestration, improved quality of life, and greater resilience to urban growth and climate change. This system can be accomplished by protecting existing valued assets, securing additional lands, regenerating degraded areas, and improving stewardship of public and private lands. The first priority is the lands in the potential greenfield development areas outside the Niagara Escarpment, Oak Ridges Moraine and Greenbelt. The second priority is the protected countryside areas of the

Greenbelt and Oak Ridges Moraine Conservation Plans and the rural area of the Niagara Escarpment Plan; and the third priority is in natural core and linkage areas of the Oak Ridges Moraine Conservation Plan and natural areas of the Niagara Escarpment Plan.

- 2) **Build sustainable communities:** More sustainable approaches to urban form, infrastructure, transportation and resource use are proposed in order to contribute to increased environmental integrity and quality of life. They should be applied to new communities, as well as to the intensification or redevelopment of existing ones. Some of the key features include reduced imperviousness, rainwater harvesting and other measures to maintain or restore predevelopment water balance, design features to facilitate sustainable choices (e.g. energy conservation, reduced vehicle use, support for local agricultural products) and protection and adaptive re-use of cultural heritage features. Erosion and sediment control practices must be improved to protect watercourses, especially in areas of intense urban growth. Development should be designed to proceed at a pace and extent that allows sufficient time to adopt, test and evaluate the effectiveness of new technologies and to make adjustments if the results do not meet the objectives and targets for the watershed.

- 3) **Recognize the distinctive heritage of the Humber through an enhanced regional open space system:** The Humber watershed has the basis for a significant, linked regional open space system including inter-regional trails, conservation areas, major municipal parks, and cultural heritage features and landscapes. Greater collaboration is needed between public and private sector partners to improve links between nature-based recreation and cultural heritage destinations and experiences and to facilitate better planning and management of the system. This system should be further developed to reach its potential to provide experiences for a growing population and support healthy communities, interpretation of natural and cultural heritage, links with local neighborhoods and connections to surrounding watersheds and regions. The status of the Humber as a Canadian Heritage River is a remarkable designation that should be promoted. Completion of a contemporary trail along the historic Carrying Place portage route that follows a spectacular river valley system would help to highlight and connect people with the natural and cultural heritage assets of the watershed.

To accomplish the management strategies, a **collaborative, integrated approach** is required. This begins with increased awareness to ensure that watershed residents, businesses, developers and agencies understand the importance of the watershed, its water cycle, natural systems and cultural heritage. The coordinated efforts of government agencies and community leaders must be applied to plans and policies, permits and regulations, enforcement, infrastructure operations and maintenance, stewardship and regeneration programs, and education and awareness initiatives.

Many challenges lie ahead on the pathway, but a **healthy, sustainable Humber watershed** is within reach. This plan shows that a “business-as-usual” approach to future development will result in continued losses of environmental quality, biodiversity

and cultural heritage, along with considerable costs to address the health, social and economic consequences of degraded environmental conditions and damaged infrastructure and property. Instead, there are opportunities to create a better future, with healthy natural systems and a rich natural and cultural heritage, supporting a high quality of life for our communities. With the guidance offered in this plan, a concerted effort by all watershed partners can bring these opportunities to fruition.

Attachment 2

Humber River Watershed Plan Implementation Guide

EXECUTIVE SUMMARY

Introduction

The *Humber River Watershed Plan – Pathways to a Healthy Humber (2008)*, was prepared by the Toronto and Region Conservation Authority (TRCA), in partnership with municipal, provincial and federal government representatives and other stakeholders including the Humber Watershed Alliance. The Watershed Plan provides guidance to local, regional and provincial governments and TRCA as they update their policies and programs for environmental protection, conservation, and restoration within the contexts of land and water use, and the planning of future development. It also provides direction to local non-governmental organizations and private landowners with regard to best management practices and opportunities for environmental stewardship. The Watershed Plan is based on a strong understanding of current conditions developed through analysis of environmental monitoring information, combined with leading edge approaches to predicting potential future conditions that involved modeling and expert input. A series of management summit workshops were also held to develop recommendations that address key watershed management issues.

The Watershed Plan shows that a “business-as-usual” approach to future development will result in continued losses of environmental quality, biodiversity and cultural heritage, along with considerable costs to address the health, social and economic consequences of degraded environmental conditions and damaged infrastructure and property. A healthy, more resilient Humber watershed that supports a high quality of life for our communities is within reach only if opportunities to protect and restore healthy natural systems, build more sustainable communities, and enhance the regional open space system are acted upon.

Purpose of the Implementation Guide

The purpose of this guide is to facilitate implementation of the recommendations contained in the *Humber River Watershed Plan* by planners, consultants, managers, businesses, community groups, residents and other watershed stakeholders. The Guide organizes the Watershed Plan recommendations according to relevant implementation tools (Policy; Regeneration; Land Securement; Stewardship and Education; Operation and Maintenance; Enforcement; and Monitoring) and assembles additional information to inform initial action. The Guide outlines a 10 year work plan of implementation projects, within the context of existing programs and likely implementing partners. Like the Watershed Plan, the Implementation Guide is intended to guide on-going implementation and updating or development of programs and policies. The proposed projects contained in this Guide are meant to serve as a basis for discussion among implementing partners and as a source of ideas for further development of individual partners’ own long term work plan and budget preparations.

Strategic Watershed Management Direction

The *Humber River Watershed Plan* concludes that the watershed is at a critical crossroads in that it continues to support many unique natural and cultural heritage values, and yet a number of present and anticipated stresses will challenge the ability to sustain present conditions. The Watershed Plan identifies three strategic management directions for the protection and enhancement of the watershed:

1. Protect and expand terrestrial natural cover

Protect, restore and enhance natural cover in a target terrestrial natural heritage system. This action is especially important in areas upstream of existing and future urban growth, from a water management and erosion control imperative, and for parts of the target system vulnerable to loss or impact from urban growth, and from a habitat biodiversity standpoint. It will also contribute to serving the growing demand for nature-based recreation and provide greater resilience to climate change. Land use policy, regeneration and land securement projects are the primary implementation mechanisms to achieve this set of recommendations.

2. Build more sustainable new communities and retrofit older ones to improve their sustainability by improving water management and promoting more sustainable practices overall.

a) Improve Water Management

Manage for pre-development water balance (i.e., runoff volume control and maintenance of infiltration) by protecting natural heritage systems, naturalizing urban landscaping, using innovative lot level and conveyance stormwater management technologies, and rain harvesting. This set of actions is critical to water management and the associated health of the aquatic system.

b) Promote Sustainable Practices Overall

Facilitate the use of these innovative water management approaches by promoting improved urban form, green buildings and sustainable behaviour, and at the same time address a broad range of other objectives for the sustainable community. Of particular interest is the need to accelerate the shift to the adoption of more sustainable practices – through education/ awareness, testing, and demonstrating new technologies. A co-ordinated combination of new policies, “retrofit” type regeneration projects, improved operations and maintenance programs, stewardship/education, and monitoring initiatives will be necessary.

3. Recognize the Humber’s distinctive heritage through an enhanced regional open space system

Further develop the regional open space system to support healthy communities and a growing population by securing additional lands for greenspace, expanding the trail network, and creating new opportunities for interpretation and celebration of natural and cultural heritage. Promote the distinctive experiences of the hills of the headwaters, kettle lakes and Humber valley wilderness as part of marketing campaigns for local businesses and attractions. Cultural heritage features and

landscapes are increasingly playing a role in recreation (e.g., rural heritage settings, adaptive re-use of heritage buildings) and opportunities to integrate them with the regional open space system should be considered. Active and participatory education programs were identified as a strategic means of engaging the public and raising awareness of these issues and several regeneration capital works initiatives have been identified to address this set of recommendations.

Top Priority Implementation Projects

This Implementation Guide outlines a 10 year work plan of implementation projects addressing all recommendations of the watershed plan, and is organized according to primary implementation mechanisms:

- Policy;
- Regeneration;
- Land Securement;
- Stewardship and Education;
- Operations and Maintenance;
- Enforcement; and
- Monitoring.

The following list of top priority implementation projects and actions has been selected with consideration for their collective ability to address the three strategic management directions noted above, in an expeditious and mutually supportive way. They are not listed in any particular order. The reference numbers in brackets (i.e., 1-8) are the respective project numbers, as listed in the implementation work plan tables within the Guide, where additional information is provided.

Policy and Related Special Studies

1. Municipalities and TRCA should work together to investigate ways to incorporate the following **new policy directions** into their planning documents (see **Table 1.1** for details and Table 1.2 - project 1-1):
 - a) Identify a **target terrestrial natural heritage system** (TNHS) based on the system recommended in the *Humber River Watershed Plan* and adopt policies to protect and restore natural cover.
 - b) Manage for pre-development **water balance** (i.e., reduce excess runoff volume, maintain or restore natural levels of infiltration and evaporation) with particular emphasis on areas confirmed as **significant recharge areas**.
 - c) Develop strategies and policies to promote **sustainable urban form**, including sustainable infrastructure, transportation and resource use.
 - d) Conduct **Master Environmental Servicing Plans** (MESPs) in a subwatershed context to establish the environmental features, functions and linkages as part of the growth planning process rather than limiting them to political or land ownership boundaries.

- e) Recognize, maintain and enhance a linked **regional open space system** that provides the basis for recreational experiences of the distinctive natural and cultural heritage of the watershed.
 - f) Conduct **comprehensive flood risk assessment plans** where intensification is proposed in a flood vulnerable area or Special Policy Area.
 - g) Support **stormwater retrofits** in existing developments and redevelopment projects (including road reconstruction).
 - h) Adopt policy to implement the Greater Golden Horseshoe Area Conservation Authorities' **Erosion and Sediment Control Guideline for Urban Construction** and update municipal Erosion and Sediment Control by-laws and Fill by-laws as necessary.
 - i) Adopt policy to recognize and implement the **Humber River Fisheries Management Plan**.
 - j) Support **updated and expanded monitoring** programs, including ambient monitoring, requirements for pre-development baseline monitoring, and the promotion and testing of new technologies and their cumulative effects.
2. ORM Municipalities – recognize the Humber River Watershed Plan in their official plans, as required by the **Oak Ridges Moraine Conservation Plan** (1-7).
 3. ORM municipalities and TRCA should prepare a **major development proposal review checklist** that specifies the information to be included in a development application and criteria to determine ORMCP conformity (1-8).
 4. MPIR, MMAH, MOE, municipalities, TRCA, AMO, CO, BILD - Establish **development standards for sustainable community design** for application to new development proposals or urban expansions (1-3).
 5. TRCA, municipalities and other approval agencies - Develop a strategy/procedure for **streamlining approvals for innovative designs** (1-4).
 6. TRCA, BILD, municipality - Promote a **sustainable greenfield neighbourhood demonstration project** (1-5).
 7. TRCA – Undertake a continuous simulation and event-based hydrologic modelling study to determine the most conservative approach to sizing SWM ponds for flood control in future growth areas (1-11).
 8. TRCA, municipalities – Undertake a scoped economic assessment of the implications of implementing the Watershed Plan integral recommendations, including valuation of ecosystem services, preparation of a methodology for applying the net gain approach, and development of recommendations for applying fairness and equity in implementation (1-18).

Regeneration

1. All partners – **Increase natural cover:** 1) in Oak Ridges Corridor Park, Nashville Resource Management Tract, Bolton Resource Management Tract and Claireville Conservation Area - implement existing restoration plans (2-1); 2) in Whitebelt - prepare restoration implementation plans for the natural heritage system identified in municipal plans and co-ordinate with developers (2-2); and 3) in Headwaters - prepare restoration implementation plans for targeted lands in priority areas and implement prior to urban development (2-3).
2. TRCA, municipalities – **Develop sustainable neighbourhood retrofit action plans** (2-8)
3. Toronto and Vaughan – **Undertake projects identified in stormwater retrofit plans** in Black Creek, Rainbow Creek, Lower Humber and West Humber subwatersheds. Projects in combined sewer areas should be undertaken first (2-9)
4. TRCA, NGOs - Continue restoration work in the **Humber Marshes and Humber Estuary** to increase wetland cover and improve aquatic habitat (2-11).
5. MNR, TRCA, Ontario Streams - **Further modify the eight (8) in-stream barriers** along the main channel between Bloor St. and Highway 401, to improve passage for jumping and non-jumping species, including repairing and improving the Raymore Park Fishway, upon completion of structural and fish passage assessments (2-12, 7-23).
6. Ministry of Culture and partners – **Establish a facility for archaeological artifact storage and document collections** that is accessible to researchers; secure funding for capital and operations (2-22).
7. TRCA, Ministry of Culture, Aboriginal groups - **Increase awareness of Carrying Place Trail heritage** by creating educational resources (e.g., book, video, webpage) and interpretive signs on contemporary trails (2-23).

Land Securement

1. TRCA – **Update priority list for land securement** within the Humber watershed based on the Humber River Watershed Plan’s recommended priorities within the TNHS and for further development of the system of inter-regional trails and public greenspace (3-1, 3-4).
2. TRCA and municipalities - Work with MPIR to investigate mechanisms, as may be necessary beyond planning measures, to **secure the target TNHS lands in potential urban growth areas** (i.e., “whitebelt”) that do not have any legislated protection from urban development (estimated to be 446 hectares) (3-2).

3. TRCA, municipalities, NGOs – **Secure lands** to establish the missing link in the Humber Trail between Steeles Ave. and Hwy. 7 along the main branch (3-5).
4. TRCA, municipalities, NGOs – Undertake a **land securement strategy** for the proposed East Humber Trail (3-6).
5. TRCA, Municipalities, NGOs – Undertake a study to: confirm the location of the historic Carrying Place trail; **identify a conceptual route for the proposed contemporary Carrying Place Trail** that connects the proposed East Humber Trail to a proposed northern gateway to the Humber greenspace system near Hackett Lake; and develop a strategy for the associated land securement and trail implementation (3.7).

Stewardship and Education

1. TRCA and municipalities – Deliver **technology transfer workshops, seminars and materials** for sustainable technologies, innovative stormwater management, erosion and sediment control, and sustainable urban form (4-1, 4-2, 4-8, 4-9).
2. TRCA, municipalities and others – Develop a co-ordinated program to **accelerate implementation of lot level retrofits** (rain gardens, permeable paving, rain barrels/cisterns and native plant landscaping) in priority areas by the business and residential and institutional sectors including resources for promoting rain gardens (2-8, 4-12, 4-14, 4-21).
3. TRCA, MNR, municipalities, community groups – Co-ordinate the development of educational materials on **invasive species removal** techniques and engage volunteer groups to help in monitoring and removal (4-18)
4. Municipalities, utilities, TRCA – Develop an outreach program based on the results from the Renewable Energy Road Map to promote the **uptake of renewable energy technologies** (4-35).
5. Ministry of Education, Boards of Education, TRCA – Encourage all Boards of Education in the Humber watershed to participate in the **Ontario Ecoschools Program** and schools to achieve certification (4-54).
6. TRCA, NGOs, municipalities - Organize **annual community festivals or events** and provide opportunities to learn about and celebrate the natural and cultural heritage of the Humber River watershed (4-38).
7. TRCA and others – Develop a pilot project for Ontario **history and archaeology seminars for adults**, featuring Humber sites. Special attention to reaching out to new Canadians and descendents of the watershed as target audience (4-42).
8. TRCA and others - Develop a **communications plan** in partnership with Aboriginal groups to identify key groups and contacts, protocols for consultation and opportunities for cultural heritage interpretation, education and awareness programs, storing and viewing of artifacts, and special events (4-51).

9. Municipalities, federal and provincial agencies, institutions and businesses - Adopt a local food procurement policy (4-59).

Operations and Maintenance

1. Municipalities, TRCA – Prepare or update comprehensive stormwater management master plans for enhanced controls and low impact development in existing urban areas and new developments (5-1).
2. Municipalities, TRCA – Develop guidelines for designing and establishing municipal **SWM facility maintenance programs**, including monitoring, rehabilitation and financing mechanisms (5-2, 5-3, 5-4).
3. Municipalities – Conduct assessments of **sediment accumulation in SWM ponds** and develop a prioritized list of clean out projects (5-4).
4. Toronto, Vaughan – Undertake **urban storm sewer outfall studies** to identify high priority sources of bacteria and phosphorus. Focus on Lower Humber and West Humber subwatersheds (5-5).
5. Municipalities – Undertake retrofits of conveyance and end-of-pipe stormwater measures as part of **road reconstruction projects** to provide improved water quantity and quality control (5-6).
6. TRCA – Update the **Claireville Dam operations manual** (5-22).
7. TRCA, municipalities – Undertake an annual proactive program of EA projects to **implement high priority flood risk remediation projects** identified through the *TRCA Flood Protection and Remedial Capital Works Prioritization Project* (5-23).
8. TRCA, municipalities – Prepare **flood emergency response plan** for Special Policy Areas and flood vulnerable areas, including an inventory of hazards, prioritization, and emergency response protocol (5-24).
9. TRCA – **Track advances in the prediction of regional and local climate change** and reassess local flood risks and water management programs (5-25).

Enforcement

1. Various agencies, municipalities - Develop **inter-jurisdictional compliance protocols** for poaching (wildlife), erosion and sediment control, tree cutting, topsoil and land disturbance, dumping, trespassing, and encroachment). Identify gaps in regulatory capability and capacity. Identify options for addressing gaps. Develop resources and implementation plan (6-2).

Monitoring

1. TRCA and partners - Identify technologies that show promise and monitor their performance using **Sustainable Technologies Evaluation Program (STEP)** – i.e., Rainwater collection and re-use, permeable pavement, groundwater and soil contamination risk with infiltration technologies, etc. and long term performance and maintenance costs of any green technology (7-1, 7-2).
2. TRCA and partners - Launch a **cumulative effects (i.e., effectiveness) monitoring program** to assess the effectiveness of innovative development design in mitigating predicted impacts (7-6).
3. TRCA, municipalities- Review recommendations for additional monitoring in the Humber watershed as part of the 5 year review and **update of the Regional Watershed Monitoring Program (RWMP)** (7-7, 7-11, 7-12, 7-14, 7-17, 7-19).
4. York, Peel, Durham and Toronto – Conduct new gravity survey of Laurentian bedrock channel between Weston Rd. and Jane St. in Vaughan through YPDT Groundwater Management Project (7-13).
5. MNR, volunteers, TRCA - Develop a **volunteer based detection and response program for aquatic invasive species** (i.e., Round goby, rusty crayfish) (7-21).
6. MNR, TRCA – Evaluate the **effectiveness of in-stream barrier mitigation** and aquatic species partition barrier projects (7-22).
7. Municipalities – Develop and implement a program to **monitor trail use and participation rates** in other related recreational activities (7-25).

Tracking Progress

TRCA is proposing to convene an annual multi-stakeholder forum to report on progress at implementing the Watershed Plan and confirm priorities for the following year. Particular attention will be given to the status of top priority implementation projects recommended in this Implementation Guide. Other unanticipated opportunities will be considered as well, based on criteria such as partner contributions, expected outcomes and future benefits. Changes and trends in watershed conditions will be monitored through programs such as the Terrestrial Natural Heritage Program and Regional Watershed Monitoring Program. Results will be periodically reported by TRCA with the assistance of the Humber Watershed Alliance through the publication of progress reports, report cards and other appropriate media.

Attachment 3

**ORMCP Watershed Planning Requirements –
Conformity Assessment for the Humber River Watershed**

Subsection	Requirement	Conformity Assessment	Document Reference
24.(1)	Every upper-tier municipality and single-tier municipality shall, on or before April 22, 2003, begin preparing a watershed plan, in accordance with subsection 24.(3), for every watershed whose streams originate within the municipality's area of jurisdiction.	<p>Watershed planning and on-going watershed management have been activities the Toronto and Region Conservation Authority (TRCA) has carried out in partnership with its municipalities for a number of years. Therefore a watershed plan was deemed to have been initiated prior to April 22, 2003, acknowledging that some study components required updating to varying degrees.</p> <p>A watershed planning study was initiated by the TRCA, in partnership with the Region of York, Region of Peel, and City of Toronto and area municipalities for the Humber River watershed on June 25, 2004.</p> <p>A final draft of the <i>Humber River Watershed Plan</i> was completed on March 25, 2008. Approval of the final <i>Humber River Watershed Plan</i> by the Authority was granted at the June 27, 2008 meeting by resolution #A137/08.</p>	<p>A workplan to fulfill the watershed planning requirements of the ORMCP and direction to initiate the Humber River Watershed Planning Study according to the initial work program was approved by the Authority on Sept. 26, 2003 (Authority Res. #A196/03).</p> <p>A detailed workplan for the Humber River Watershed Planning Study was approved by the Authority on June 25, 2004 (Authority Res. #A191/04)</p> <p>Approval of the final <i>Humber River Watershed Plan</i> by the Authority was granted at the June 27, 2008 meeting by resolution #A137/08.</p>
24.(3)	A watershed plan shall include, as a minimum, (a) a water budget and conservation plan as set out in section 25;	See conformity assessments for sections 25.(1) and 25.(2).	See document references for sections 25.(1) and 25.(2).
24.(3) cont'd	(b) land and water use and management strategies;	The <i>Humber River Watershed Plan</i> describes recommended management strategies regarding existing and future land and water use that will help to protect the ecological and hydrological features and functions of the watershed, including the portions in the Oak Ridges Moraine Area. Key strategies include the need to protect and expand natural cover and build sustainable communities, particularly with an aim to maintain or restore pre-development water balance.	See section 5 (Strategies) of the <i>Humber River Watershed Plan</i> .

Subsection	Requirement	Conformity Assessment	Document Reference
24.(3) cont'd	(c) a framework for implementation, which may include more detailed implementation plans for smaller geographic areas, such as subwatershed plans, or for specific subject matter, such as environmental management plans;	Implementation direction and initial considerations for priority actions and areas accompany the management strategies in the <i>Humber River Watershed Plan</i> . The <i>Implementation Guide</i> provides more detailed implementation direction for policy, regeneration projects, etc. including supportive maps and criteria.	See section 5 (Strategies) of the <i>Humber River Watershed Plan</i> . See <i>Humber River Watershed Plan Implementation Guide</i>
24.(3) cont'd	(d) an environmental monitoring plan;	The <i>Humber River Watershed Plan</i> includes recommendations regarding changes or enhancements to existing environmental monitoring programs and other area, site or issue-specific monitoring requirements.	See section 5.3.1 of the <i>Humber River Watershed Plan</i> and section 7 of the <i>Humber Watershed Plan Implementation Guide</i> for recommended enhancements to existing monitoring programs.
24.(3) cont'd	(e) provisions requiring the use of environmental management practices and programs, such as programs to prevent pollution, reduce the use of pesticides and manage the use of road salt; and,	The <i>Humber River Watershed Plan</i> includes recommendations regarding environmental practices and programs. The <i>Humber River Watershed Plan Implementation Guide</i> further identifies practices and policies applicable to the land use planning and development process. Many Humber watershed municipalities already require the use of environmental management practices (e.g., by-laws to control idling, dumping, filling, pesticide use, sewer use, and tree cutting, and salt management plans)	See section 5 (Strategies) of the <i>Humber River Watershed Plan</i> . See <i>Humber River Watershed Plan Implementation Guide</i> Also see endnotes for list of relevant municipal by-laws and salt management plans. ²
24.(3) cont'd	(f) criteria for evaluating the protection of water quality and quantity, hydrological features and hydrological functions.	The <i>Humber River Watershed Plan</i> includes a framework of watershed objectives, indicators and targets to be used to track or evaluate long term watershed health. The accompanying <i>Implementation Guide</i> sets out recommended policies for the review of land use proposals regarding protection of groundwater and surface water quality and quantity, hydrological features and functions, as well as terrestrial features and functions and aquatic communities and habitat.	See Appendix C of the <i>Humber River Watershed Plan</i> for a summary of watershed objectives, indicators and targets used to track or evaluate watershed health. See <i>Humber River Watershed Plan Implementation Guide</i> for a compilation of all policies and maps showing where the policy recommendations apply.
24.(4)	Major development is prohibited unless, (a) the watershed plan for the relevant watershed, prepared in accordance with subsection 24.(3), has been completed;	A final draft of the <i>Humber River Watershed Plan</i> was completed on March 25, 2008. Approval of the final <i>Humber River Watershed Plan</i> by the Authority was granted at the June 27, 2008 meeting by resolution #A137/08.	Approval of the final <i>Humber River Watershed Plan</i> by the Authority was granted at the June 27, 2008 meeting by resolution #A137/08.
24.(4) cont'd	(b) the major development conforms with the watershed plan; and	See conformity assessment for section 24.(3)	See document references for section 24.(3)

Subsection	Requirement	Conformity Assessment	Document Reference
24.(4) cont'd	(c) a water budget and conservation plan, prepared in accordance with section 25 and demonstrating that the water supply required for the major development is sustainable, has been completed.	See conformity assessments for sections 25.(1) and 25.(2).	See document references for sections 25.(1) and 25.(2)
24.(8)	An application for major development to which this subsection applies shall not be approved unless, (a) the relevant municipality has complied with clause (c) of subsection 24.(4); or	See conformity assessment for section 24.(4)	See document references for section 24.(4)
24.(8) cont'd	(b) the applicant, (i) identifies any hydrologically sensitive features and related hydrological functions on the site and how they will be protected, (ii) demonstrates that an adequate water supply is available for the development without compromising the ecological integrity of the Plan Area, and (iii) provides, with respect to the site and such other land as the approval authority considers necessary, a water budget and water conservation plan that, (A) characterizes groundwater and surface water flow systems by means of modelling, (B) identifies the availability, quantity and quality of water sources, and (C) identifies water conservation measures.	For any applications received prior to completion of watershed plans, in accordance with the <i>Oak Ridges Moraine Conservation Plan</i> , conformity will have been reviewed and confirmed through applicant submitted studies.	

Subsection	Requirement	Conformity Assessment	Document Reference
25.(1)	Every upper-tier municipality and single-tier municipality shall, on or before April 22, 2003, begin preparing a water budget and conservation plan, in accordance with subsection 25.(2), for every watershed whose streams originate within the municipality's area of jurisdiction.	<p>A water budget study was initiated in January 2003 by the TRCA, in partnership with the Region of York, Region of Peel, and City of Toronto and area municipalities for the Humber River watershed in advance of the overall Humber River Watershed Planning Study.</p> <p>The Region of York's Water for Tomorrow program outlines specific goals for both education and water conservation measures as outlined in the initial scope of work. The Water Efficiency Master Plan Update recommends new and/or updated programs for public education and water conservation measures. New goals for education and water conservation measures will be set once the program implementation plan is completed and approved by council.</p> <p>The Region of Peel's Water Conservation Plan was initiated in 2002 and completed in May 2004. The objectives of the plan are to reduce average annual day demand by 10 per cent, peak day demand by 10 per cent, and wastewater flows by 7 per cent, of projected 2015 levels. Key components of the Region's water efficiency efforts include public education through Water Smart Peel, rebate programs and other incentives. The programs are targeted to residents throughout the Region.</p> <p>The City of Toronto completed a water efficiency plan in 2002. The plan targets a reduction of peak day water demands by 275 ML/day or approximately 14% projected 2011 levels, and a reduction of wastewater flow by 86 ML/day, by 2011.</p>	<p>See TRCA 2003 Capital Budget Workplan and Authority approval to hire consultants to undertake a study terms of reference.</p> <p>Approval to initiate the Humber River Watershed Planning Study according to a general workplan, including a water budget study component, was granted at the Sept. 26, 2003 meeting of the TRCA (Authority Res. #A196/03) and further approval of a detailed workplan was granted on June 25, 2004 (Authority Res. #A191/04).</p> <p><i>York Region Water Efficiency Master Plan Update, 2007.</i></p> <p><i>Regional Municipality of Peel Water Efficiency Plan – Final Report, Region of Peel, 2004.</i></p> <p><i>Water Efficiency Plan, City of Toronto Works and Emergency Services, 2002.</i></p> <p>Approval of the final <i>Humber River Watershed Plan</i> by the Authority was granted at the June 27, 2008 meeting by resolution #A137/08.</p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2)	<p>A water budget and conservation plan shall, as a minimum,</p> <p>(a) quantify the components of the water balance equation, including precipitation, evapotranspiration, groundwater inflow and outflow, surface water outflow, change in storage, water withdrawals and water returns;</p>	<p>The <i>Humber River Watershed Plan</i> includes a quantitative description of the major components of the water balance equation on an average annual basis over the watershed surface area. The water budget was developed based on available information regarding land use, vegetation, surficial soil characteristics, topography, stream flow at permanent stream gauges, permitted water withdrawals and spatial variations in long term average precipitation, temperature and evaporation across the watershed. It was developed using Precipitation Run-off Modelling System (PRMS) software. The PRMS model generated recharge estimates for input to the groundwater flow model (MODFLOW software), developed through the York- Peel-Durham-Toronto partnership (YPDT), which was used to estimate the groundwater component of the water budget.</p>	<p>Section 3.2.3 of the <i>Humber River Watershed Plan</i> describes the overall water budget for the watershed.</p> <p>The <i>Humber River Watershed Scenario Modelling and Analysis Report</i> provides a more detailed description of the existing water budget, including maps and tabular summaries, and the predicted effects of future land and water use and management scenarios on water budget components.</p>
25.(2) cont'd	<p>(b) characterize groundwater and surface water flow systems by means of modelling;</p>	<p>The groundwater flow system of the Humber River watershed has been characterized by development and calibration of a groundwater flow model that utilizes MODFLOW software, developed through the York-Peel-Durham-Toronto partnership (YPDT).</p> <p>The surface water flow system of the Humber River watershed has been characterized by development and calibration of a hydrologic model based on Hydrologic Simulation Program – Fortran (HSPF) software. This model was originally developed by the City of Toronto in support of work on the Toronto Wet Weather Flow Management Plan, and was refined for TRCA to support work on the <i>Humber River Watershed Plan</i>.</p>	<p>See section 3.2.3 of the <i>Humber River Watershed Plan</i> and section 4.0 of the <i>Humber River State of the Watershed Report – Geology and Groundwater Resources</i> for a characterization of the groundwater flow system.</p> <p>See section 3.2.4 of the <i>Humber River Watershed Plan</i> and section 5 of the <i>Humber River State of the Watershed Report – Surface Water Quantity</i> for a summary of the surface water flow system.</p> <p>The <i>Humber River Watershed Scenario Modelling and Analysis Report</i> provides more detailed descriptions of the existing surface and groundwater flow systems, including maps and tabular summaries, and the effects of future land and water use and management scenarios on these systems.</p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2) cont'd	(c) identify, (i) targets to meet the water needs of the affected ecosystems, (ii) the availability, quantity and quality of water sources, and (iii) goals for public education and for water conservation;	<p>The <i>Humber River Watershed Plan</i> includes criteria in the form of maps and targets (both quantitative and qualitative) for the protection of groundwater and surface water quality and quantity, hydrological features and functions, as well as terrestrial features and functions and aquatic communities and habitat.</p> <p>Water efficiency plans or programs of the Region of York, Region of Peel and City of Toronto have set goals for water conservation and public education.</p>	<p>See 24.(3)(f) above for watershed targets.</p> <p>See section 4 of the <i>Humber River State of the Watershed Report – Geology and Groundwater Resources</i> and section 5 of the <i>Humber River State of the Watershed Report – Surface Water Quantity</i> for summaries of information on the availability and quality of water sources.</p> <p>Section 5.5.3 of the <i>Humber River Watershed Plan</i> addresses water conservation and supports continuation of municipal water efficiency and public awareness programs.</p> <p>See York Region <i>Water Efficiency Master Plan Update</i> (2007)</p> <p>See section 2.0 of Peel Region's <i>Water Efficiency Plan</i> (2004)</p> <p>See section 1.0 of City of Toronto's <i>Water Efficiency Plan</i> (2002)</p>
25.(2) cont'd	(d) develop a water-use profile and forecast;	<p>The Region of York, Region of Peel and City of Toronto have developed water-use profiles and forecasts as part of studies to update their water master plans. The forecasts consider the effect of planned water conservation measures on future demand.</p> <p>Drawing on this information, a watershed-based water use profile and forecast was developed as part of preparing the <i>Humber River Watershed Plan</i>.</p>	<p>See section 4.0 of York Region's <i>Long Term Water Project Master Plan Update, April 2004</i> for water use forecast.</p> <p>See Peel Region's <i>Water Efficiency Plan</i> (2004) for water use forecast.</p> <p>See City of Toronto's <i>Water Efficiency Plan</i> (2002) for water use forecast.</p> <p>See section 5.3 of the <i>Humber River State of the Watershed Report – Surface Water Quantity</i> for the watershed-based water use profile.</p> <p>Also see section 5.3 of the <i>Humber River State of the Watershed Report – Geology and Groundwater Resources</i> for a summary of groundwater takings in the Humber River watershed.</p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2) cont'd	(e) evaluate plans for water facilities such as pumping stations and reservoirs;	<p>A watershed-scale evaluation of the predicted effects of forecasted water and land use on groundwater levels was completed in support of the <i>Humber River Watershed Plan</i>. Based on this evaluation, appropriate land and water use management strategies have been provided in the watershed plan.</p> <p>Further plans for any such facilities are evaluated by municipalities as part of environmental assessment studies and/or updates to water supply master plans and will be reviewed in the context of watershed-based information from the <i>Humber River Watershed Plan</i>, supporting technical reports and available databases.</p>	<p>See section 5 (Strategies) of the <i>Humber River Watershed Plan</i> for management strategies.</p> <p>The <i>Humber River Watershed Scenario Modelling and Analysis Report</i> provides a summary of predicted effects of forecasted water and land use on groundwater levels.</p> <p>York Region's <i>Long Term Water Project Master Plan Update</i>, April 2004</p>
25.(2) cont'd	(f) identify and evaluate, (i) water conservation measures such as public education, improved management practices, the use of flow restricting devices and other hardware, water reuse and recycling, and practices and technologies associated with water reuse and recycling, (ii) water conservation incentives such as full cost pricing, and (iii) ways of promoting water conservation measures and water conservation incentives;	<p>All upper-tier and single-tier municipalities in the Humber River watershed have developed water efficiency plans and programs that identify and evaluate water conservation measures, incentives and ways of promoting water conservation measures and incentives. The <i>Humber River Watershed Plan</i> supports the recommendations of the municipal water efficiency plans and programs and describes management strategies that would further contribute to achieving the objectives and targets of these plans/programs.</p>	<p>See section 5.5.3 of the <i>Humber River Watershed Plan</i>.</p> <p>See sections 5.0 and 6.0 of York Region's <i>Water Efficiency Master Plan Update (2007)</i> for the identification, evaluation and recommendation of water conservation measures and education.</p> <p>See sections 6.0 and 9.0 of Peel Region's <i>Water Efficiency Plan (2004)</i>.</p> <p>See sections 4.0 and 6.0 of City of Toronto's <i>Water Efficiency Plan (2002)</i>.</p>
25.(2) cont'd	(g) analyse the costs and benefits of the matters described in clause (f);	<p>All upper-tier and single-tier municipalities in the Humber River watershed have developed water efficiency plans and programs that analyse the costs and benefits of their recommended water conservation measures, incentives and promotion strategies.</p>	<p>See Section 5.2.3 of York Region's <i>Water Efficiency Master Plan Update(2007)</i> for the cost analysis of water conservation measures</p> <p>See section 8.0 of Peel Region's <i>Water Efficiency Plan (2004)</i></p> <p>See section 5.0 of City of Toronto's <i>Water Efficiency Plan (2002)</i></p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2) cont'd	(h) require the use of specified water conservation measures and incentives;	<p>York Region's Water for Tomorrow program used specific water conservation measures and incentives as part of the original capital plan. The Water Efficiency Master Plan Update also recommends the use of specific water conservation measures and incentives.</p> <p>The Region of Peel and City of Toronto water efficiency plans also use specific water conservation measures and incentives such as system leak detection, computer controlled irrigation, watering restrictions, toilet replacement, clothes washer replacement, and indoor and outdoor water audits.</p>	<p>See section 6.0 of York Region's <i>Water Efficiency Master Plan Update</i> (2007) for the recommended program strategy.</p> <p>See section 6.0 of Peel Region's <i>Water Efficiency Plan</i> (2004.)</p> <p>See section 4.0 of City of Toronto's <i>Water Efficiency Plan</i> (2002).</p>
25.(2) cont'd	(i) contain an implementation plan for those specified measures and incentives that reconciles the demand for water with the water supply;	<p>York Region developed an implementation plan for the program as part of the scope of work in 1998. The Water Efficiency Master Plan Update has recommended an updated program strategy. An implementation plan for the updated program is being developed.</p> <p>The Peel Region and City of Toronto water efficiency plans include implementation schedules.</p>	<p>See Section 6.0 of York Region's <i>Water Efficiency Master Plan Update</i> (2007) for the recommended program strategy</p> <p>See section 9.0 of Peel Region's <i>Water Efficiency Plan</i> (2004).</p> <p>See section 6.0 of City of Toronto's <i>Water Efficiency Plan</i> (2002).</p>
25.(2) cont'd	(j) provide for monitoring of the water budget and water conservation plan for effectiveness.	<p>York Region's <i>Water Use Efficiency Master Plan Update</i>, Peel Region's <i>Water Efficiency Plan</i> and City of Toronto's <i>Water Efficiency Plan</i> recommend monitoring and evaluation programs be implemented.</p> <p>The <i>Humber River Watershed Plan</i> includes recommendations regarding changes or enhancements to existing environmental monitoring programs and other area, site or issue-specific monitoring requirements that provide for, or improve capacity for monitoring of the water budget (e.g., additional climate stations, stream gauges, groundwater monitoring wells etc.).</p>	<p>See Section 9.0 of York Region's <i>Water Efficiency Master Plan Update</i> (2007)</p> <p>See section 9.0 of Peel Region's <i>Water Efficiency Plan</i> (2004).</p> <p>See section 6.0 of City of Toronto's <i>Water Efficiency Plan</i> (2002).</p> <p>See section 5.3.1 of the <i>Humber River Watershed Plan</i> and section 7 of the <i>Humber Watershed Plan Implementation Guide</i> for recommended enhancements to existing monitoring programs.</p>

Subsection	Requirement	Conformity Assessment	Document Reference
27.(1)	Except with respect to land in Settlement Areas, all development and site alteration with respect to land in a subwatershed are prohibited if they would cause the total percentage of the area of the subwatershed that has impervious surfaces to exceed, (a) 10 per cent; or	The Humber River Watershed Planning Study assessed the current and projected future percent impervious cover for each Oak Ridges Moraine subwatershed (based on methods suggested in draft Technical Paper #13 which exclude Settlement Areas, utilizing subwatershed boundaries defined in draft Technical Paper #9). These estimates indicate that no Oak Ridges Moraine subwatersheds in the Humber River watershed exceed the 10% impervious cover criteria for current conditions (based on 2002 land use), nor will they exceed 10% upon build-out of municipal official plans approved as of January 2005.	See <i>Humber River Watershed Oak Ridges Moraine Subwatersheds Assessment Technical Brief</i>
27.(1) cont'd	(b) any lower percentage specified in the applicable watershed plan.	No lower percentage has been specified.	N/A

Endnotes:

2.
 - City of Brampton Fill By-law, By-law 143-95.
 - City of Brampton Refuse By-law, By-law 381-2005.
 - City of Brampton Sewage By-law, By-law 90-75.
 - City of Brampton Salt Management Plan, 2005.
 - City of Brampton Tree Preservation By-law, Bylaw 38-2006.
 - City of Brampton Woodlot Conservation By-law, By-law 70-2001 as amended by By-law 402-2005.
 - City of Toronto Municipal Code, Chapters 455 (Filling and Grading), 517 (Idling of Vehicles and Boats), 548 (Littering and Dumping of Refuse), 612 (Pesticides, Use of), 658 (Ravine Protection), 681 (Sewers), and 813 (Trees),
 - City of Toronto Salt Management Plan, 2004.
 - City of Vaughan Fill By-law, By-law 189-96 as amended by By-law 265-2006.
 - City of Vaughan Idling of Vehicles By-law, By-law 170-2004.
 - City of Vaughan Littering and Dumping By-law, By-law 3-2004.
 - City of Vaughan Private Property Tree Protection By-law, By-law 185-2007 as amended by By-law 205-2007.
 - City of Vaughan Sewer Use By-law, By-law 12-74.
 - City of Vaughan Tree Protection By-law (Public Property), By-law 95-2005.
 - Dufferin County Forest Conservation By-law, By-law 2006-15.
 - Dufferin County Salt Management Plan, 2005.
 - Region of Peel Salt Management Plan, 2007.
 - Region of Peel Sewer Use By-law, By-law 90-90.
 - Simcoe County Tree-cutting By-law, By-law 5289.
 - Simcoe County Anti-dumping By-law, By-law 4805.
 - Town of Caledon Dumping on Private or Municipal Property By-law, 87-100.
 - Town of Caledon Fill By-law, By-law 2007-59.
 - Town of Caledon Healthy Horticultural Landscapes By-law, By-law 2003-81 as amended by By-law 2005-82.
 - Town of Caledon Salt Management Plan, 2005.
 - Town of Caledon Woodlands Conservation By-law, By-law 2000-100.
 - Town of Richmond Hill Salt Management Plan, 2005.
 - Town of Richmond Hill Tree Preservation By-law (Private Property), By-law 41-07.
 - Town of Richmond Hill Water Use Restrictions By-law, By-law 157-05.
 - Township of King Water Restriction By-law, By-law 75-43.
 - York Region Salt Management Plan, 2004.
 - York Region Sewage By-law, By-law S-0064-2005-009.
 - York Region Trees By-law, By-law TR-0004-2005-036.