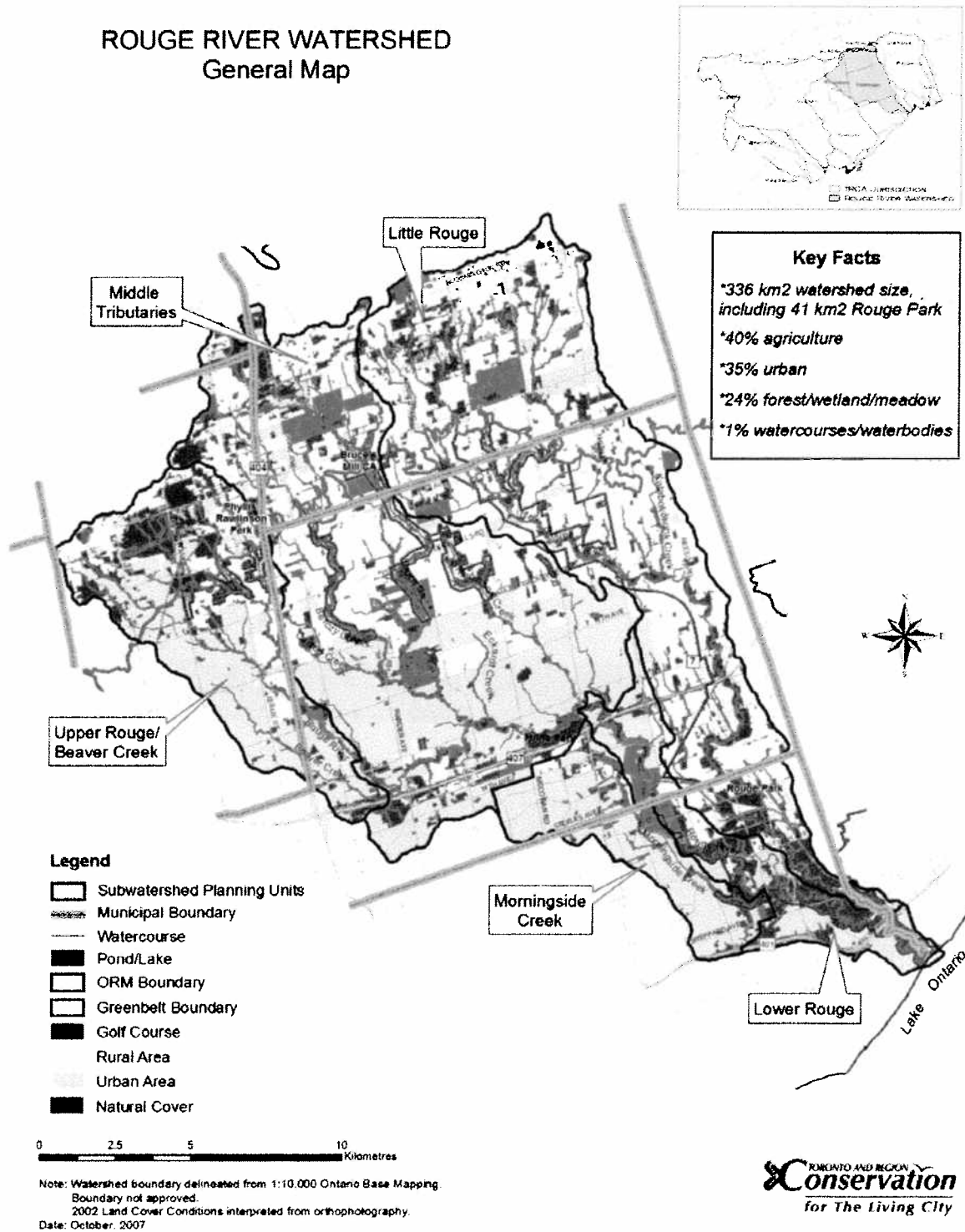


Figure 1-1: Rouge River Watershed General Map





Rouge River Watershed Plan

Towards a Healthy and Sustainable Future

FINAL DRAFT

Report of the Rouge Watershed Task Force
2007

Toronto and Region Conservation Authority

 **TORONTO AND REGION
Conservation**
for The Living City

Member of

**Conservation
ONTARIO**
Nature's Champions


Rouge Park

EXECUTIVE SUMMARY

The Rouge River watershed is an **extraordinary resource** in Southern Ontario, treasured and enjoyed by residents and visitors alike. It spans 336 km² of land and water in the Regions of York and Durham, Cities of Toronto and Pickering, and Towns of Markham, Richmond Hill and Whitchurch-Stouffville. It includes all the lands that drain to the Rouge River and its tributaries, including the Little Rouge River, starting in the hills of the Oak Ridges Moraine and flowing south to Lake Ontario (see Figure 1-1).

Why do we need this watershed plan? If you live, work or play in the Rouge River watershed, you depend on its health in a number of ways. The Rouge watershed is a source of your drinking water – whether you rely on wells or water 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.

Increasing concerns about the health of our cities and countryside, the safety of our drinking water and the future of the Oak Ridges Moraine have led to a number of initiatives towards sustainable living in Ontario, the Greater Toronto Area (GTA) and the Great Lakes Region. Actions taken in the Rouge watershed can provide a model for actions in other watersheds, as well as influence the environmental health of larger systems.

This watershed plan was prepared by a multi-stakeholder task force that includes representatives from all levels of government agencies, private businesses, not-for-profit organizations and the public and is coordinated by TRCA and Rouge Park (see Appendix C). The plan has a strong technical foundation, based on decades of monitoring of environmental conditions combined with a leading edge approach to modelling of potential future conditions. A series of management summits was held to convene experts who could help identify best practices and recommendations to achieve the objectives of the Rouge Watershed Task Force.

The guiding framework for this watershed plan comprises an overall goal, a set of principles, nine goals and 22 objectives with specific targets. Our overall goal is:

To work towards a healthy and sustainable Rouge watershed by protecting, restoring and enhancing its ecological and cultural integrity within the context of a regional natural heritage system.

Our goals, objectives and targets address:

- Groundwater
- Surface water
- Stream form
- Aquatic system
- Terrestrial system
- Air quality and climate change

- Cultural heritage
- Nature-based recreation
- Sustainable land and resource use

One of the foundations of this plan is the Rouge River *State of the Watershed Report, 2007* which provides a wealth of recent information about natural and cultural resources and human activities in the watershed. Land use in the Rouge watershed today is approximately 40% rural, 35% urban, 24% natural cover and 1% open water. The lower watershed is dominated by Rouge Park, with a small but well established area of urban development to the west. The middle and western parts are experiencing rapid urban expansion and have sparse natural cover except in Rouge Park. The upper and eastern portions of the watershed are primarily rural and agricultural with some small towns and villages.

The Rouge watershed represents a rich inheritance for current and future communities. The Little Rouge River watershed is still relatively undeveloped with considerable natural cover and a water balance typical of a rural watershed. The aquatic systems in the upper Little Rouge and parts of the Main Rouge are healthy enough to support cold- and cool-water communities including species of concern such as reddsides and brook trout. Natural habitats support a high diversity of plants and animals, including many that are rare or at risk (such as the nationally threatened Jefferson salamander, provincially significant Cooper's hawk and regionally rare one flower cancer-root). Major blocks of publicly owned lands have been reserved for conservation and greenspace purposes, most notably the 41 square kilometre Rouge Park. The Rouge watershed also has a rich cultural heritage, including many archaeological and historic sites, landscapes, stories and artifacts from earlier inhabitants as well as the diverse cultures of present day communities.

Unfortunately, there are signs of stress. Decades of urban development have resulted in harmful changes that exceed the carrying capacity of natural systems. These changes include increased surface runoff, more water pollution, greater annual flow volumes in rivers and streams, increased erosion and sedimentation, channel instability, loss of biodiversity, and greater incidence of smog. They are signs that the ability of the air, land and water to absorb the negative impacts of human activities is strained and cannot be sustained over the long term unless fundamental changes are made. Rehabilitation of infrastructure and restoration of natural habitats to address these issues is underway, but these measures are expensive and time consuming.

To help us understand how the watershed might react to changes in land use, environmental management and climate in the future, we undertook a multi-faceted process of analysis and synthesis. This included modelling studies to compare eight potential scenarios, combined with examination of existing conditions and trends in the watershed, a review of watershed research in other areas, and the best professional judgement of a range of experts in many fields.

What can we expect in future? We discovered that if future development proceeds with current approaches to community design and stormwater management, it will not be possible to maintain current watershed conditions, let alone improve them. If development practices are changed to use the best foreseeable community designs and management techniques, it may be possible to maintain and in some cases enhance current conditions. However many of the new designs and technologies for sustainable urban development are still evolving and being

tested so we recommend that where permitted, development should proceed with caution. Evaluation should be undertaken, with extensive and meaningful public consultation, to assess how well watershed objectives and targets are being met and recommend adjustments to development practices when necessary.

Fortunately, the Rouge watershed offers many unique opportunities, including the assembly and renaturalization of lands as part of Rouge Park and the continuation of agriculture on public and private lands. Watershed municipalities are already working to address the negative impacts of existing developments and are among the leaders in promoting sustainable practices. These opportunities provide valuable tools to help address concerns with current watershed conditions, manage impacts from future land use changes and adapt to the uncertainties associated with global climate change.

The pathway to a healthy 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. These strategies encompass three broad themes:

- 1) **Establish the targeted 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, improved quality of life, and greater resilience to urban growth and climate change. It can be accomplished by protecting existing valued assets, securing additional lands, regenerating degraded areas and improving stewardship of public and private lands.
- 2) **Build sustainable communities:** We have identified more sustainable approaches to urban form, infrastructure, transportation and resource use that will contribute to overall improved 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, measures to maintain or restore 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. Development, where permitted, should 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 our objectives and targets for the watershed.
- 3) **Recognize and develop a regional open space system:** The Rouge watershed has the basis for a significant, inter-connected regional open space system including Rouge Park and regional trails, conservation areas and major municipal parks. We recommend that this system be further developed to reach its potential to provide nature-based recreation experiences for a growing population, support for healthy communities, interpretation of natural and cultural heritage, linkages with local neighbourhoods and connections to surrounding watersheds.

An important prerequisite for action will be to increase awareness among watershed residents, businesses, developers and agencies of the importance of the watershed, its water cycles, natural systems and cultural heritage. We recommend a long-term outreach program to provide information and understanding, explain how people can act on this knowledge, and inspire action. Our social marketing study, *Action Plan for Sustainable Practices*, showed that

there is a modest basis of understanding and support for sustainability, but the public needs more specific information, marketing campaigns and assistance to inspire action. It also highlighted a number of issues that reduce opportunities for businesses to adopt sustainable practices, therefore we plan to remove barriers and provide incentives for the business community.

The coordinated efforts of government agencies and community leaders are also crucial to the success of this watershed plan. They have many complementary tools available, including plans and policies, permits and regulations, enforcement, infrastructure operations and maintenance, stewardship and regeneration programs, and education and awareness initiatives. More details about how these existing tools can be used to help implement the watershed plan are provided in the *Implementation Guide*.

We are standing at a crossroads. In one direction lies a future modelled on the past, with 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. In the other direction is a future with healthy natural systems and a rich natural and cultural heritage, supporting a higher quality of life for our communities. This plan outlines the key steps to achieve the best possible future for ourselves and our grandchildren. We hope you will support it and become a partner in its implementation.

APPENDIX F: SUMMARY OF RECOMMENDATIONS

See Chapter 5 for rationale, background and more details. Key recommendations are highlighted in bold, with supporting recommendations in normal text. *Lead responsibility refers to the partner(s) who would have the mandate and/or be in the best position to lead action on the recommendation. We understand that a number of other partners may be involved to ensure a successful outcome, and the suggested lead role does not preclude other partners from initiating action on any aspect of the recommendation.* More details about how to implement these recommendations can be found in the *Rouge River Watershed Plan Implementation Guide*.

		Recommendation	Lead responsibility
WATER (Section 5.3)			
1	Protect recharge	Identify and protect key recharge and discharge areas as well as subsurface flow direction through municipal plans, policies and regulations (see Figure 3.3, additional figures will be developed).	Municipalities
2		Protect or enhance infiltration, a key element in managing water balance: <ul style="list-style-type: none"> • Municipal plans, policies and regulations should identify and protect key recharge and discharge areas as well as subsurface flow directions. • Protect local recharge areas for those reaches (Robinson Creek, Morningside Creek and upper Main Rouge River) that are heavily reliant on local sources. • Protect regional recharge in those areas with recharge greater than 200 mm/yr. These include two notable areas that lie outside the Rouge Watershed boundary (in north-east Humber Watershed and East Holland Watershed in Lake Simcoe Region). • Review opportunities early in the development planning process to set aside key recharge areas for inclusion in the natural heritage system. Undertake this broad site planning and optimization of site design through larger scale studies, for example at a sub-watershed scale. 	Province (ORM Conservation Plan), TRCA, Lake Simcoe Region Conservation Authority, Town of Whitchurch Stouffville, Town of Richmond Hill, Town of Markham and Region of York.
3	Increase natural cover	Implement the targeted terrestrial natural heritage system identified in Section 5.4.2	TRCA, Rouge Park, municipalities
4		Implement natural cover improvements as quickly as possible in the upper Main Rouge and middle tributaries in advance of future urbanization. In the Little Rouge subwatershed, begin with the headwaters of	TRCA, Rouge Park, municipalities

		the tributary that flows through the Town of Whitchurch-Stouffville and in Rouge Park along the Little Rouge River.	
5		Support the Town of Markham's OPA 140 to implement the Rouge North Management Plan and the Rouge North Implementation Manual's "ecological criteria" in the middle reaches of the watershed, outside the Greenbelt Plan's protected countryside.	Province
6		Support the principle of the Markham Small Streams Study and undertake further work to simplify its implementation through development planning.	Town of Markham
7	Improve sustainability of development design	Encourage behavioural shifts and innovative urban design forms that minimize impervious areas and aim to maintain pre-development rates of infiltration, evapotranspiration and surface run-off	Province, Association of Municipalities of Ontario, Conservation Ontario, TRCA, municipalities
8		Consider a policy for "no net loss of topsoil", as a means of reducing loss of soil moisture storage capacity.	Municipalities
9		Develop alternative development standards for sustainable community design.	Province, with Association of Municipalities of Ontario and Conservation Ontario and TRCA
10		Stormwater management strategies for future urban expansions should consider the sub-watershed scale, in addition to impacts to receiving tributaries.	Municipalities
11	Improve erosion and sediment control and site restoration	Adopt policies that minimize the amount of exposed land per sub-watershed by directing the phasing of construction activity.	Municipalities
12		Improve control of land disturbance: <ul style="list-style-type: none"> Review and strengthen where necessary bylaws regulating land disturbance. Restrict topsoil stripping until draft plan approval and ensure sites are stabilized within 30 days of disturbance. Increase inspection and enforcement of bylaws regulating land disturbance. 	Municipalities
13		Adopt the <i>GTA Erosion and Sediment Control Guidelines for Urban Construction</i> .	Province, municipalities
14		Conduct regular training seminars for municipal and CA staff, consultants, and contractors to promote awareness of best practices and application and testing of innovative, environmentally-friendly products for erosion control and site restoration.	Municipalities and TRCA
15		Develop new provincial standards for technologies and practices to encourage product manufacturers to improve them (e.g.	Province

		filtering capacity of sediment fences).	
16		Improve site maintenance and restoration during and following construction.	Developers, municipalities
17		Adopt a policy requiring replacement of topsoil and subsoil and reduce on-site compaction, to ensure the site is amenable to restoration.	Municipalities
18		Require use of native species in site restoration planting plan and require sign-off by qualified professional on "as-installed" site.	Municipalities
19		Review and identify mechanisms for requiring long-term monitoring and replacement of stabilization measures until sites are restored as planned.	Municipalities and TRCA
20	Implement stormwater retrofits	<p>Retrofit existing urban areas (lot level, conveyance and end-of-pipe) where possible:</p> <ul style="list-style-type: none"> • Emphasize infiltration over evapotranspiration, especially in sub-watersheds of upper Main Rouge, Robinson Creek and Morningside Creek. • Develop and adopt innovative technologies to accomplish infiltration in areas of low permeable soils. • Apply other, non-infiltration strategies including naturalization of residential properties, rain gardens, rain harvesting and green roofs on commercial /industrial /institutional properties with extensive impervious surfaces. • Municipalities should formalize programs to monitor the performance of existing stormwater management ponds and identify "recommissioning opportunities" through minor modifications that could optimize their performance with respect to water quality and erosion control. • Review and confirm the effectiveness of end-of-pipe retrofits for the Beaver Creek subwatershed. In five years following verification of the benefits of all potential retrofit and recommissioning initiatives on Beaver Creek and other subwatersheds, based on additional flow data and new calibrated hydrologic models. Undertake a subwatershed based detailed design study for end-of-pipe retrofits and improved stormwater management. • Implement other end-of-pipe retrofits as identified in the <i>City of Toronto Wet Weather Flow Management Plan</i> and stormwater retrofit studies of the Towns of Markham and Richmond Hill, as opportunities arise, such as during 	Municipalities, property owners

		maintenance projects.	
21		Review municipal engineering standards and make revisions and upgrades where possible to ensure that they allow adequate flexibility to meet stormwater management objectives (e.g. road drainage measures, plumbing code changes to encourage rain water harvesting and grey water use).	Municipalities, Municipal Engineers Association
22		<p>Implement the <i>Action Plan for Sustainable Practices</i>, Freeman Associates, 2006.</p> <p><u>Residential landowners:</u></p> <ul style="list-style-type: none"> • A multi-pronged marketing campaign in the GTA. • Partners include municipalities, NGOs and retailers. • Components of the campaign could include a poster campaign, advertising in community newspapers, direct mailings, point of purchase displays, workshops, demonstration projects, tours and garden competitions. • Builders should be encouraged to include low maintenance landscaping with native plant species as an option available for new homes. <p><u>Businesses:</u></p> <ul style="list-style-type: none"> • Streamlined approvals process for projects that go beyond regulatory requirements. • Regulatory changes. • Financial incentives such as no-interest loans and grant programs. • Information tools such as a guide book, workshop, demonstration projects and email advice ("ask an expert"). • Awards program to provide visibility and profile. • Corporate leaders program. 	Municipalities and TRCA
23	Maintain stormwater infrastructure	Continue to develop and implement operation and maintenance plans for stormwater management infrastructure (ponds, catchbasins, swales, oil/grit separators and retrofit programs)	Municipalities
24		<p>Investigate innovative financing mechanisms for stormwater infrastructure maintenance and upgrades/retrofits, such as:</p> <ul style="list-style-type: none"> • Stormwater management fees associated with municipal water and sewer bill. • Credits for property owners who undertake good stormwater management practices. 	Municipalities
25	Prevent pollution	Prevent and reduce the release of pollutants in urban and rural areas	Province, municipalities, landowners
26		<p>The Province should:</p> <ul style="list-style-type: none"> • Develop guidelines for inland fill operations 	Province

		<p>to ensure acceptable fill quality and location.</p> <ul style="list-style-type: none"> • Adopt ecological policy, criteria and guidelines that address water temperatures and chloride. • Continue to develop and implement a rural water quality stewardship program to address priority contaminant sources and support nutrient management standards under the Nutrient Management Act. 	
27		Link stewardship agreements to leases for publicly owned farmlands in the Rouge Watershed	Federal and Provincial governments, Rouge Park, TRCA
28		<p>Municipalities should:</p> <ul style="list-style-type: none"> • Develop monitoring programs to track the amount, timing and distribution of road salt applications • Review and implement snow disposal and road salt management plans. • Provide routine staff training for spills prevention and control programs. • Adopt bylaws limiting the cosmetic use of pesticides (City of Toronto and Markham already done this). • Encourage programs to control, minimize and treat run-off (e.g. green roofs). • Promote education and awareness programs, such as Yellow Fish Road, Healthy Yards etc in cooperation with TRCA, Rouge Park and other community partner groups. • Naturalize stormwater ponds to discourage use by Canada geese and provide educational signage advising the public not to feed the geese • Retrofit existing stormwater management facilities to incorporate water quality and erosion control as opportunities arise. • Ensure that sewer use by-laws are up to date including application to storm sewers and regional roads, requirements for the preparation of pollution prevention plans, and provisions for the establishment of an inspection program. • Establish award incentives for each target audience (i.e. residents, businesses, government), such as "Most Environmentally-Friendly Design". • Establish an Integrated Pesticide Management (IPM) Program for golf courses and cemeteries. 	Municipalities
29	Manage flood risks	Continue to be consistent with the Provincial Policy Statement regarding public health and	Municipalities

		safety (natural hazards)	
30		Undertake an updated hydrologic and hydraulic study to evaluate the effects on flooding and to confirm the level of stormwater management control before expanding urban land use boundaries beyond those reflected in the existing Official Plans.	Municipalities, TRCA
31		Work with municipalities, the Province and developers to reconcile the conflict inherent in intensifying development in flood prone areas, through appropriate flood studies, flood remediation and flood proofing measures, and seeking opportunities for intensification outside the floodplain.	TRCA
32		Undertake a flood risk reduction study to improve hydraulic capacity of road and rail crossings in the Markham SPA.	Town of Markham, TRCA
33		TRCA should: <ul style="list-style-type: none"> • Track advances in the prediction of regional and local climate change and re-assess local flood risks and management measures. • Continue to operate the flood forecasting and warning program. • Continue to develop and enhance the real time precipitation and stream gauge network. • Continue to maintain and upgrade the flood vulnerable site database response model to assist municipal emergency response. • Educate homeowners regarding flood risks associated with improper practices such as backyard dumping and impediments to water movement • Implement active and passive re-vegetation programs to promote attenuation of flood flows. 	TRCA
34		<ul style="list-style-type: none"> • Develop flood emergency response plans at the municipal level 	Municipalities
35	Protect stream form	Protect natural stream form, using the Rouge Park Management Plan, Rouge Park North Management Plan, TRCA's Valley and Stream Corridor Management Program, and Markham's Small Streams Study (for any proposed development, whichever of the policies is more restrictive shall apply)	Municipalities
36		Opportunities should be investigated to acquire lands in strategic locations to allow stream corridors to evolve naturally, without impacting property or infrastructure.	Municipalities, TRCA, Rouge Park
37		Road crossings over watercourses should be sited at appropriate locations to minimize	Municipalities, utilities

		potential for alterations to channel form and allow for natural movement of the channel within the floodplain (for example, not on a meander), avoid or reduce channel lowering, relocate to maintain channel forms, monitor channel stability and guide restoration of channels using bioengineering. TRCA's draft Stream Crossing Guidelines will provide more specific design details.	
38		Planning for new infrastructure should avoid placing infrastructure in valleys in order to allow room for natural movement of the channel across the floodplain.	Municipalities
39		Maintain an inventory of "at-risk" infrastructure, conduct regular monitoring, and undertake proactive planning for remediation projects incorporating opportunities for net gain in achieving objectives of this watershed plan.	Municipalities
40	Monitor, evaluate and adjust	Review and update existing monitoring programs to provide feedback on implementation of the Rouge River Watershed Plan and inform adaptive management	TRCA
41		Promote, test and evaluate innovative approaches and technologies: <ul style="list-style-type: none"> • Commit long term support to the TRCA's Sustainable Technologies Evaluation Program (STEP) as a forum for coordinated performance monitoring and evaluation among a number of agencies and private partners • Develop policies, guidelines and design standards/specifications for new technologies such as green roofs and permeable pavement, and assess barriers to implementation • Arrange for third-party verification of technology performance • Implement and evaluate pilot projects using innovative technologies • Communicate results through web seminars and publications 	TRCA
42		Monitor the effects of new and retrofitted urban development design and stormwater management practices and implement adaptive management where necessary: <ul style="list-style-type: none"> • Require developers to undertake or contribute to compliance monitoring and enforcement to ensure stormwater management facility performance targets are met • Conduct monitoring studies at the technology scale and subwatershed 	TRCA

		<p>scale to determine the extent to which community design standards and innovative stormwater management practices mitigate the cumulative effects of urban development on the water balance and aquatic systems</p> <ul style="list-style-type: none"> • Develop targets for identifying and monitoring the maintenance of a natural range in variation of flow regime (e.g. ratio of baseflow to average annual flow). Review and update targets periodically, based on long term monitoring data • Monitor on a long-term basis baseflow, stream flows, groundwater levels, and precipitation in the Rouge watershed, as part of the Regional Watershed Monitoring Network • Evaluate all impacts of environmental change (including climate change) on baseflows and revise the management recommendations and criteria of this watershed plan as necessary • Adopt modified management strategies, criteria and guidelines, as necessary 	
43		Continue data collection in the Rouge Watershed to track changes resulting from global climate change and undertake additional watershed-based hydrologic modeling when data become available from the regional scale climate models that are currently being developed for the Region	TRCA
NATURE (Section 5.4)			
Aquatic System (5.4.1)			
44	Protect habitat and maintain flow conditions	Protect small streams from landform alterations and from changes to the amount and seasonal distribution of groundwater contributions.	MNR, TRCA, municipalities
45		Implement lot level stormwater management during new development and retrofit existing developed areas	Municipalities
46		Increase and improve natural cover along stream corridors and on tableland	MNR, TRCA, Rouge Park, municipalities
47		Enhance aquatic habitats using natural channel design principles	MNR, TRCA, Rouge Park, municipalities
48		Increase management attention to non-fish components of aquatic ecosystems, including benthic invertebrates and breeding areas for resident insects, amphibians and reptiles. Use this information to inform aquatic management decisions and for interpretive purposes for Rouge Park.	MNR, TRCA, Rouge Park

49	Optimize fish passage for native fish species	Mitigate barriers identified in the Rouge River Fisheries Management Plan	MNR, TRCA
50	Install/maintain barriers to partition species or exclude invasive species	Install/maintain barriers identified in the Rouge River Fisheries Management Plan	MNR, TRCA
51		Identify areas of unexploited native fish communities, such as those reaches that have been isolated by barriers, for interpretive and research benefits.	MNR, TRCA, Rouge Park, Universities
52	Improve recreational fishing opportunities	Implement recommendations of the Rouge River Fisheries Management Plan regarding stocking, regulations, access and facilities, including: <ul style="list-style-type: none"> • Conduct a thorough creel survey to define the fishery and assess fishing pressure throughout the watershed. • Promote viewing opportunities for fish. • Prohibit private stocking in the watershed • Work toward a native gene pool for key Rouge River native species. 	MNR, TRCA, Rouge Park
53	Continue and improve monitoring	To address current data gaps, consider additional aquatic monitoring stations in Fish Management Zones 3 (Bruce Creek), 5 (Main Rouge through Markham including Eckhardt Creek), and 10 (Beaver Creek and Upper Main Rouge).	MNR, TRCA
Terrestrial System (5.4.2)			
54	Secure the targeted system	Increase protected natural cover from 24% to 31% of the Watershed with the following priorities as illustrated on Figure 5.1: <ol style="list-style-type: none"> 1. Locations in potential urban growth areas. 2. Locations in the Greenbelt. 3. Natural core and linkage areas designated in the ORM Plan. 4. Areas of redevelopment in existing urban areas. 5. Consolidation of Rouge Park lands. Additional emphasis should be placed on areas where natural cover will achieve multiple watershed benefits, as identified in other sections of this plan (e.g. reduced erosion, aquatic habitat etc.).	TRCA, Rouge Park, municipalities, Transport Canada, Province, NGOs, private landowners
55		Identify the targeted natural heritage system for the Rouge Watershed in official plans and adopt policies to protect and restore natural cover	Municipalities

56		Apply the principle of “net gain” to provide compensatory habitats to replace features and habitats that cannot be retained during private development as well as infrastructure and other public sector projects.	All levels of government
57		Adapt existing natural heritage policies and strategies to reflect priorities of the Rouge River Watershed Plan	All government agencies and NGOs
58		Apply the Rouge Park ecological criteria and define the Rouge Park and Greenbelt boundary to inform and provide a foundation for growth planning exercises.	Municipalities, Province, TRCA, Rouge Park
59		Continue monitoring, including: <ul style="list-style-type: none"> • The Regional Watershed Monitoring Network including remote sensing, biological field inventories and community volunteer-based monitoring. • Rouge Park plant and animal monitoring such as the winter bird survey and breeding bird surveys. • Ecological restoration success. 	TRCA, Rouge Park
60	Restore and enhance natural cover	Restore existing public and private lands to increase the quality of natural cover <ul style="list-style-type: none"> • Within each of the priority areas for securement noted above, further priority should be assigned to restoring targeted areas where natural cover expansion will also achieve other watershed benefits as identified in the strategies for water and aquatic systems (e.g. riparian zones, groundwater recharge areas, and subwatersheds where reductions in surface runoff are required to improve water balance and reduce erosive flows). • Restoration activities should focus on the most vulnerable areas (for example the woodlot near Warden and 16th that has high species diversity but has recently become fragmented). • Assignment of priorities should consider the importance of maintaining agricultural land use in the Watershed and avoid productive farmlands (see Section 5.5.2). 	All government agencies, Rouge Park, NGOs, property owners
61		Encourage and provide resources for Rouge Park to accelerate its restoration plans.	Rouge Park partners
62		Investigate opportunities to develop a stewardship priorities map for private lands in the Greenbelt	TRCA, Rouge Park
63		Provide education, information, incentives and awards for private landowners	TRCA, Rouge Park, NGOs
64		Investigate incentive opportunities for rural areas including: <ul style="list-style-type: none"> • Grant programs (especially for the 	TRCA, Rouge Park, municipalities

		<p>targeted system on rural lands outside the ORM and Greenbelt as they are subject to a greater range of alternative uses that compete with natural cover).</p> <ul style="list-style-type: none"> • Stronger penalties for non-compliance with municipal tree preservation or natural heritage protection by-laws and policies. • Tax incentives, such as the Managed Forest Tax Incentive Program and Conservation Land Tax Incentive Program. • Land donations and conservation easements with associated tax relief and other financial benefits. 	
65		<p>Public landowners, such as Rouge Park, TRCA, all three levels of government, school boards and other agencies should continue to set an example and provide or obtain adequate resources for natural heritage protection, stewardship and restoration on their lands. This should include:</p> <ul style="list-style-type: none"> • Aggressive planting programs to increase natural cover. • Provision of at least 7 metres buffer between mown areas and watercourses. 	Public landowners
66	Manage the matrix	Improve stewardship of public and private lands	TRCA, Rouge Park, municipalities
67		<p>Incorporate elements in developments and infrastructure to support natural heritage:</p> <ul style="list-style-type: none"> • New urban areas and infill developments should incorporate design elements, such as buffers and barrier plantings, which improve the interface with existing natural areas. • Naturalization should be included in the landscape design of larger public and private properties such as industries, institutions, golf courses, transportation corridors and large residential lots. • Smaller properties, commercial areas and streetscapes can emphasize the use of native plants and environmentally friendly gardening practices. 	Municipalities, TRCA
68		Educate pet owners to control the movement of pet cats and dogs to reduce access to wildlife and their habitats.	Residents, municipalities
69		<p>Reduce the occurrence of invasive alien species through:</p> <ul style="list-style-type: none"> • Public education and greater involvement of groups (e.g. scouts and guides) in removal projects. • Development of educational materials about invasive alien species for 	Municipalities, TRCA, Rouge Park, NGO's

		<p>horticultural and nursery industries and retail outlets.</p> <ul style="list-style-type: none"> Partnerships among municipal parks departments and other experts to facilitate information sharing about research and effectiveness of control and removal methods. 	
70		<p>Promote stewardship of public and private lands with a variety of existing and new tools, including:</p> <ul style="list-style-type: none"> Rouge Park Stewardship Program Public awareness and marketing programs (see summary of <i>The Action Plan for Sustainable Practices</i> in the Water Strategy, section 5.3). Public awareness and marketing programs, including backyard certification and awards. Increased enforcement of regulations regarding tree cutting, floodplain filling, dumping etc Municipal policies to promote improved soil, water and air quality in urban environments to improve the success of native species and green infrastructure. Outreach and education programs for the horticultural industry regarding native plant materials and invasive species. 	TRCA, municipalities, Rouge Park
PEOPLE (Section 5.5)			
Urban land use (5.5.1)			
71	Implement sustainable urban form	Apply sustainability principles and measures to urban form at all scales – watershed, community and building site – as detailed in <i>Development of a Sustainable Community Scenario for the Rouge River Watershed</i> (TRCA 2007).	TRCA, Rouge Park, municipalities
72		<p>At the watershed scale:</p> <ul style="list-style-type: none"> Implement the targeted natural heritage system for the Rouge Watershed <p>Continue policy protection for natural heritage and agricultural lands afforded by the Provincial Policy Statement, Greenbelt and Oak Ridges Moraine legislation, TRCA's Valley and Stream Corridor Program, as well as Rouge Park's Management Plans.</p>	TRCA, Rouge Park, Province, municipalities
73		<p>At the community scale, apply innovative design to achieve pedestrian-oriented, ecologically sustainable, mixed use communities:</p> <ul style="list-style-type: none"> Protection and enhancement of natural 	Municipalities

		<p>systems (see water and nature strategies)</p> <ul style="list-style-type: none"> • Protection and interpretation of cultural heritage (see cultural heritage strategies) • Securement of additional public sector lands for infiltration and stormwater management to complement the lot level practices (e.g. along road rights of way, along trails, in parks, on municipal properties) • Re-use of stormwater, for example for irrigation of landscapes • Renewable energy sources and district energy schemes • Smaller lot sizes and increased building density • Mixed use development to reduce travel needs • Sustainable transportation (e.g. transit, cycling and walking) • Pedestrian scale streetscapes that promote walking and social interaction • Retrofitting of existing urban areas and design of new ones to increase ecological values and reduce resource use (see relevant watershed plan targets in the accompanying <i>Implementation Guide</i>) • Certification programs such as LEED for neighbourhoods or Green Globes 	
74		<p>At the building site scale, minimize resource use, maintain water budget and improve environmental quality with:</p> <ul style="list-style-type: none"> • Lot level stormwater management (see water strategies) • Minimal impacts on adjacent natural heritage system • Policies to ensure that all new public and commercial buildings are designed to achieve LEED (Leadership in Energy and Environmental Design) or similar certification and that all existing buildings are retrofitted to improve performance (e.g. public buildings should achieve LEED Gold or higher) • Incentives for builders to promote green building design • Building orientation to maximize sunlight, passive solar energy, wind shelter and natural ventilation • Landscaping to reduce energy needs • Dual plumbing to use recycled water for toilet flushing or irrigation. • Building design for multiple uses and diverse densities to increase life span and 	Municipalities

		maximize land use efficiency	
75		<p>Implementation of sustainable urban form should include:</p> <ul style="list-style-type: none"> • Strategies to ensure review and approval processes accommodate non traditional innovative design components • Increased awareness among developers and builders of new approaches and successful experiences from other jurisdictions • Increased awareness and information for homebuyers to help them make sustainable purchasing decisions. • Encouragement for residents to make sustainable choices in all aspects of their lifestyles. • Recognition, celebration and promotion of sustainable practices through recognition awards for residents, businesses, agencies and institutions. 	TRCA, Rouge Park, municipalities, GTHA-UDI, NGOs
76	Implement sustainable infrastructure	Establish baseline environmental conditions early in the planning stages and make informed choices among alternatives to avoid or minimize impacts to natural systems and achieve net gain wherever possible through innovative design	All government agencies
77		<p>Specific recommendations:</p> <ol style="list-style-type: none"> 13. an Environmental Assessment (EA) be undertaken for the possible complete project so that the public and approving agencies see the possible overall and cumulative impacts; 14. the construction of any underground service should strive to minimize or avoid groundwater and surface water withdrawals and transfer of water across watersheds; 15. carrying capacity, need (sizing) and "alternatives to" the undertaking must be fully assessed to avoid impacts wherever possible through demand management and innovative alternatives and application of precautionary principle; 16. all options for different horizontal and vertical alignments be considered for their cumulative impact(s) on underground aquifers; 17. all construction options be explored to demonstrate to the public and agencies that the proponent has considered viable alternatives; 18. the decision making matrix be clearly defined to balance the needs of the 	All government agencies

		<p>various stakeholders and ensure the principle of the 'Quadruple Bottom Line';</p> <p>19. the preferred solution clearly identify the impacts on the underground water regime and that the construction tender documents include the requirements;</p> <p>20. any changes in undertaking design or construction technique should require further public and agency notice and consultation and an addendum to the EA;</p> <p>21. the construction method be monitored to ensure that the predicted impacts are not exceeded by the actual impacts;</p> <p>22. the proponent adjust the construction phase if the monitoring determines that any predicted negative impacts have been exceeded;</p> <p>23. after construction is completed the proponent verify that environmental conditions have been restored, or improved, to those that existed before construction started; and</p> <p>24. a performance bond of sufficient magnitude be held by the MOE and/or TRCA or other appropriate public body to ensure that conditions are restored or improved, if the proponent fails in their obligations.</p>	
78		Ensure that groundwater is not diverted to surface water via such mechanisms as foundation drains connected to stormwater ponds or groundwater-based water supplies connected to Lake Ontario-based sewage treatment systems.	All government agencies
79		Environmental agencies, including DFO, MOE, MNR and TRCA, should continue to work with York Region to monitor aquifer water levels over the long term and ensure that the aquifer recovers from the dewatering undertaken to facilitate construction of the York Durham Sewer System.	Region of York, DFO, MOE, MNR, TRCA
80	Implement sustainable transportation	<p>Implement transportation strategies of York Region, Durham Region and City of Toronto, with emphasis on transit, cycling and pedestrian components, including:</p> <ul style="list-style-type: none"> • strategic transportation corridor and network planning studies and systems planning before environmental assessments are undertaken for specific projects, • comprehensive transportation planning and coordination among jurisdictions, • planning for transportation early in the 	Municipalities, Province

		<p>growth planning process so that all opportunities can be taken to reduce the number of crossings of stream and other natural heritage corridors, and</p> <ul style="list-style-type: none"> • application of the recommendations listed under “sustainable infrastructure” for the planning of transportation infrastructure. 	
81	Agriculture (5.5.2)	Implement the GTA Agricultural Action Plan	Municipalities, regional federations of agriculture
82	Provide GTA-wide services for local farm businesses	<p>These services should include:</p> <ul style="list-style-type: none"> • Develop new products for local niche markets (e.g. new Canadians, specialty and gourmet restaurants) • Promote best management practices, awareness of resource materials and grant opportunities • Assist farmers to address requirements for nutrient management, source water protection, environmental farm plans, natural heritage stewardship etc. • Facilitate complementary activities based on agriculture, such as farm vacations, bed and breakfast, tours, recreation/entertainment ventures, farm markets etc. 	GTA Agricultural Action Plan implementation committee
83	Support local food and increase public awareness	<p>Support local food production and purchase and increase public awareness about sustainable agriculture:</p> <ul style="list-style-type: none"> • Watershed stakeholders, particularly institutions and businesses with significant buying power (e.g. schools, colleges, universities, hospitals, hotels and restaurants) should participate in “local food first” programs • Provide recognition and profile for institutions, restaurants and businesses that feature local food selections • Educate the public and food industry about: <ul style="list-style-type: none"> – Values of maintaining viable farms in the Watershed – Importance of respecting the business needs of agricultural enterprises – Links between local foods and their contribution to health – Translate education, awareness and marketing materials into languages spoken in Toronto Region watersheds 	Municipalities, regional federations of agriculture, restaurant associations, TRCA
84	Implement land use policies to support	<p>These policies should:</p> <ul style="list-style-type: none"> • Encourage compact urban development, infill and re-development • Maintain firm urban/rural boundaries 	Province, municipalities

	agriculture	<ul style="list-style-type: none"> • Improve transit and travel demand management 	
85	Support agricultural vitality on public lands	<p>This support should include:</p> <ul style="list-style-type: none"> • Continue the Rouge Park policy of identifying and preserving working farms through agricultural heritage zoning in its management plans. • Provide longer term leases (e.g. at least 10 years) • Demonstrate cultivation of new products for local niche markets, with appropriate research partners • Demonstrate best management practices • Establish community gardens for urban residents • Provide sites for farm markets • Coordinate farmland initiatives with other publicly owned agricultural lands in the GTA 	Public landowners
86	Resource use (5.5.3)	Increase resource conservation, sustainable sources and responsible waste management	All levels of government
87	Increase water efficiency and conservation	<p>Region of York, Region of Durham and City of Toronto should continue their water efficiency programs with targets for water conservation. The targets and other information provided in this watershed plan should be used as a guide in any future updates of the water supply and water efficiency strategies.</p>	Region of York, Region of Durham and City of Toronto
88		<p>Support the continued implementation of the Region of York's <i>Water for Tomorrow</i> program, Durham Region's <i>Water Efficient Durham</i> and the City of Toronto's <i>Water Efficiency Program</i>.</p> <ul style="list-style-type: none"> • Consider the role of rain-harvesting as a water conservation mechanism. • Monitor indoor and outdoor water use over time. • Monitor rates of water use by local service area and evaluate trends over time. • Consider pricing incentives as a potential component in future updates to water efficiency plans. • Incorporate relevant findings and recommendations from the <i>Action Plan for Sustainable Practices</i> to improve rates of participation in water conservation programs by residents and businesses. • Raise awareness of water conservation practices and technologies through partnerships with schools and community groups (e.g. ultra low flush toilets, low flow shower heads, rain sensor switches) 	Municipalities, MMAH, GTHA-UDI

		<p>for automated irrigation systems).</p> <ul style="list-style-type: none"> • Adopt policies that allow rainharvesting and use within buildings for non-potable uses. • Improve public confidence in the public water supply to reduce demand for bottled water. • Investigate water pricing in combination with stormwater management fees as tools to provide incentives for more efficient water use (e.g. use of rainwater on site as a resource to offset potable water needs). • Renaturalize lawns and parks with use of native species that are more drought tolerant. 	
89		Ensure that all required water users have a valid permit to take water and monitor their withdrawals, and that applications for permit renewals are reviewed regularly for consistency with the directions of this watershed plan.	MOE
90		Use baseline baseflows defined in this watershed plan to determine the baseflow threshold below which no surface water may be drawn from a watercourse unless detailed studies are undertaken to support other withdrawal volumes.	TRCA, MOE
91	Reduce energy use and increase non-fossil fuel alternatives	<p>Reduce energy use and increase reliance on non-fossil fuel, green power sources.</p> <ul style="list-style-type: none"> • Promote partnerships between utilities and municipalities to facilitate the use of district energy schemes and renewable energy sources as part of the community design. • Encourage public transit use, walking, cycling and other alternatives to the private vehicle. • Provide incentives for use of hybrid or non-fossil fuel powered vehicles. • Continue the GTA Mayors' Megawatt Challenge • Retrofit buildings to be 30% more energy efficient than the model National Energy Code for Buildings. • Require new homes to meet EnergyStar Certification requirements or an EnerGuide rating greater than 80. • Increase application of energy conservation practices (e.g. visual monitoring systems that allow users to see energy use; discontinue bulk metering, photosensor and motion sensor controls; lower speed limits for commercial vehicles 	Municipalities, utilities, GTHA-UDI

		and transit). <ul style="list-style-type: none"> Promote in house, grid-tied energy generation capacity using renewable energy sources, with surplus energy purchased by the utility at the market rate. 	
92	Reduce waste	Reduce the amount of waste generated and re-use "waste" as a resource: <ul style="list-style-type: none"> Reduce, recycle and re-use. Reduce packaging. Foster partnerships between waste generators and waste re-users. Re-use or recycle construction and demolition waste to meet or exceed the Canadian Green Building Council's target for 20% or less construction waste to landfills (currently 35% goes to landfills). Establish programs to test the performance of products made with re-used materials. Incorporate recycling areas throughout buildings with a central collection area to make source-separation convenient. Standardize requirements for minimum recycled aggregate material. 	Municipalities, GTHA-UDI
Air quality and climate change (5.5.4)			
93	Undertake a vegetation impacts study	We recommend a GTA-wide study to determine the economic and ecological impacts of poor air quality on local agricultural crops, urban forests and natural heritage.	Universities
94	Reduce vehicle use and other emissions	As described in Section 5.5.1 on Urban Land Use, we recommend more sustainable approaches to urban form and transportation that include measures to reduce vehicle use and to encourage clean, renewable forms of energy generation and district energy schemes.	Municipalities
95	Enhance natural vegetation sinks	As described in Section 5.4.2, we recommend strategies to secure, restore and enhance natural cover. These would result in a significant increase in the amount of vegetation in the Watershed with corresponding benefits in terms of the uptake of carbon and air pollutants.	Municipalities, TRCA, Rouge Park
96	Nature-based recreation (5.5.5)	Increase opportunities for public enjoyment that are compatible with, and raise awareness of, the Watershed's natural and cultural heritage	TRCA, Rouge Park, municipalities
97		Recognize the regional system for nature-based recreation and establish a multi-partner program with long term funding commitments and a funding formula to support maintenance and reinvestment in existing properties as well as further expansion and	Region of York, local municipalities, TRCA, and Rouge Park

		development of the system.	
98	Implement inter-regional trail network	<p>Implement an inter-regional trail network, as proposed on the <i>Rouge River Watershed Trails Plan</i> (Figure xx). It should include:</p> <ul style="list-style-type: none"> • Integration of local community trail plans with the inter-regional trail system. • Completion of community trail plans early in the planning process for greenfield development areas. Funding for implementation should be allocated from development charges. • Cooperation with neighbouring jurisdictions to establish greenspace and trail connections to adjacent watersheds. • Collaboration with golf course operators, farmers and other private landowners to ensure compatibility of public uses on or adjacent to their properties and to secure trail easements where appropriate. • Public consultation on trail alignment and design. 	TRCA, Rouge Park, Town of Markham, Town of Whitchurch-Stouffville
99	Develop recreation strategy for Northern Countryside	<p>Develop a recreation strategy for the Northern Countryside including:</p> <ul style="list-style-type: none"> • Delineation of trail routes as part of the inter-regional trail network. • Definition of unique public use experiences and opportunities. • Assess the road system to identify opportunities for scenic corridors. • Identification of opportunities to interpret natural and cultural heritage. • Management approaches to optimize user experience and avoid problems associated with over use or inappropriate use. 	Rouge Park, TRCA, Town of Whitchurch-Stouffville
100	Protect urban wilderness experience of Rouge Park	<p>Protect the urban wilderness experience of Rouge Park:</p> <ul style="list-style-type: none"> • Educate park users and local decision-makers about natural and cultural resources, watershed functions and the impacts of human activities • Intensify Rouge Park's efforts to control impacts of public use before the Inter-regional Trail system is completed. • Develop education, awareness and interpretive materials for the lower Rouge Watershed and Rouge Marsh complex before connections are made with the Waterfront Trail. 	Rouge Park, TRCA, municipalities
101	Balance public access and resource	Develop a plan to achieve a balance between public access and protection of sensitive ecological and cultural heritage resources	TRCA, municipalities

	protection	<p>including:</p> <ul style="list-style-type: none"> • Policies and guidelines for the phasing out or relocation of public uses that are incompatible with the objectives of this watershed plan and Rouge Park's management plans. • Decommissioning of unauthorized trails. • Development of policies and enforcement of regulations for unauthorized or incompatible uses and harmonization of appropriate by-laws among municipalities. • Standards of practice for public use operators, such as environmental management systems for public agencies, Audubon Program or equivalent for golf courses, and Environmental Farm Plans for agri-tourism businesses. • Monitoring of trail use and participation rates in other activities such as bird-watching, boating, fishing and picnicking to assist in planning and regulating public activities. 	
102	Interpret natural and cultural heritage	<p>Heritage interpretation:</p> <ul style="list-style-type: none"> • The Rouge Park Management Plan (1994), Rouge North Management Plan (2001) and Little Rouge Corridor Management Plan (2006) should be consolidated to provide one comprehensive planning document for Rouge Park. • Public use strategies should be incorporated into the Master Plan for Transport Canada's Green Space lands where appropriate and compatible with Rouge Park and other adjacent lands. • TRCA should complete and implement the master plans for Bruce's Mill Conservation Area and the Oak Ridges Corridor Park. • Municipalities should provide adequate lands for sportsfields and other active recreation facilities outside Rouge Park, without negatively impacting other natural and cultural heritage landscapes. 	TRCA, Rouge Park, municipalities
103	Establish management and operational agreements	<p>Establish management and operational agreements for Rouge Park and other public lands in York Region including:</p> <ul style="list-style-type: none"> • Clear maintenance and enforcement responsibilities. • Sufficient financial and other resources among Rouge Park, TRCA, York Region 	York Region, local municipalities, Rouge Park, TRCA

		and local municipalities.	
104	Form community partnerships	Form community partnerships for implementation: <ul style="list-style-type: none"> To assist with raising public awareness, creating a trail association, special events, fundraising, recruiting volunteers for restoration projects and ecological monitoring Include NGOs, user groups (e.g. trails, fishing, heritage etc), organized First Nations representatives, residents and ratepayers associations. 	TRCA, Rouge Park, municipalities
105	Cultural heritage (5.5.6)	Improve recognition, preservation and celebration of cultural heritage	TRCA, Rouge Park, municipalities
106	Investigate and conserve cultural heritage prior to land use change	Investigate and conserve cultural heritage prior to changes in land use, including development, trail creation and reforestation, in accordance with the requirements of the Ontario Heritage Act (2005). This should include: <ul style="list-style-type: none"> Incorporation of heritage buildings into proposed developments rather than being demolished. Recognition of cultural heritage landscapes (eg countryside roads such as 14th Avenue, Reesor Road and Twyn Rivers Drive, agricultural communities, clusters of century homes and 20th century ethnic architecture) in municipal plans. Retention of Aboriginal archaeological sites as green spaces with limited investigative excavations. Encouragement of Ontario Heritage Trust to investigate properties with both cultural and natural heritage values for their Natural Spaces Land Acquisition and Stewardship Program. When appropriate, re-locate heritage buildings to the Markham Heritage Village. Storage of oral and archival histories and other reference materials about the Rouge Watershed in the Rouge Park office or another centralized location. 	Rouge Park, municipalities
107	Establish a comprehensive communication plan with Aboriginal groups	Develop a communications plan including: <ul style="list-style-type: none"> Identification of key stakeholder groups and contacts Partnership opportunities for interpretation and awareness programs, viewing of artifacts, program development, education and events. 	Aboriginal community, Ministry of Culture, TRCA, Rouge Park, municipalities

108	Fill gaps in archaeological knowledge	Develop a program to fill gaps in our archaeological knowledge and improve our understanding of early human cultures. A communications plan could identify key stakeholder groups and contacts as well as partnership opportunities for interpretation and awareness programs, viewing of artifacts, program development, education and events. It would benefit current non-Aboriginal residents and visitors as well as those Aboriginal groups with ancestral ties and other interests in the Rouge area. TRCA and its partners should be proactive and set an example by encouraging the Ontario Ministry of Culture to establish a system of Nation- to-Nation two-way meaningful consultation, that individual archaeologists and First Nations and Métis communities can follow to share information with each other.	TRCA
109		Establish a permanent repository for the storage of archaeological artifacts, with participation by Aboriginal representatives: <ul style="list-style-type: none"> • Include secure artifact storage and community-friendly spaces, including places for researchers to work, artifact layout space, and flexible areas for public use. • Funding should include box levies on the remover (eg landowner or project proponent) of the artifact. • Encourage a trustee approach if ownership (eg of Aboriginal artifacts) is an issue. 	TRCA, Aboriginal Community, Markham Museum
110	Develop active and participatory programs to increase awareness	Develop active and participatory programs to provide learning opportunities and increase awareness of cultural heritage, including: <ul style="list-style-type: none"> • Special attention to reaching out to new Canadians. • Incorporation of living culture, such as photography, drawing, painting and performance arts. • User-pay approaches to support these programs. 	Schools, TRCA, Rouge Park, Markham Museum and other local museums
111		Develop community-based projects to incorporate cultural heritage values and themes into the local community fabric, including the following priorities: <ul style="list-style-type: none"> • Determine appropriate teaching sites for archaeological field schools at a Pre-Contact site, with Aboriginal consultation and approval, and on a Post-Contact site, with community 	Municipalities, TRCA, Aboriginal Community

		<p>consultation and approval, partnered with the TRCA Archaeology Program, the Ontario Heritage Trust, the Ontario Archaeological Society, local school boards, and other stakeholder organizations.</p> <ul style="list-style-type: none"> • Designation of Heritage Conservation Districts and Cultural Heritage Landscapes under the Ontario Heritage Act. • Provide expertise and resources to local ethnic groups to establish forms of public recognition of their culture in the watershed, including First Nations Métis, and the Mennonite community as well as other 19th - 21st century ethnic communities and influences. <p>Other recommended initiatives include:</p> <ul style="list-style-type: none"> • Recognition of the eastern Carrying Place Trail with interpretive signage on contemporary trails. • Promotion of links between human and natural heritage, for example with interpretive signs about the influences of human activities on historic and current environments. • Signage for communities, streets and public buildings with historic names, trail guides/maps and public art. • Protection and interpretation of cultural features that also serve as wildlife habitat (eg barn owls shelter in active farm buildings, turkey vultures nest in old silos or barns). • Celebration of agriculture and community gardens as an expression of culture, in addition to their roles in food production and land/water stewardship. • Involvement of existing programs such as the Stouffville Public Library's lecture series. 	
112		<p>The heritage character of Cedar Grove and Locust Hill should be maintained through designation as a historic area and development of interpretive programs.</p> <ul style="list-style-type: none"> • Existing heritage buildings could be restored for adaptive re-use and additional heritage buildings could be moved to the area. • New lease arrangements or ownership models should be 	Town of Markham

		considered to foster a sense of community.	
113		Assist schools with program opportunities and materials to implement the new (2006) Ontario school curriculum on Aboriginal and pioneer life. <ul style="list-style-type: none"> Explore opportunities for TRCA's archaeological field school to contribute to the new curriculum and develop a sustainable funding plan. 	TRCA
114		Conduct a feasibility study for continuing education courses for adults to learn practical skills such as archaeological fieldwork, artifact analysis and site interpretation, and archival research.	TRCA
115	Develop a living cultural heritage program	A living cultural heritage program should be developed to enhance interpretive and tourism opportunities in the watershed. It should: <ul style="list-style-type: none"> Draw upon the databases and inventories of cultural heritage, including built structures and landscapes. Identify architectural assets in need of restoration and look for opportunities to revitalize heritage properties by forming partnerships to increase revenue and find adaptive re-use, such as pubs, restaurants, community centres, and art centres. 	Municipalities, Rouge Park
IMPLEMENTATION (Chapter 6)			
116	Existing policies and programs	Use the information and recommendations of the watershed plan to inform their ongoing programs and decision making. The five year workplan (to be developed) will provide an opportunity to set priorities and coordinate actions.	All Watershed partners
117	Provincial initiatives	Use the watershed plan to support and provide more specific guidance to implement Provincial initiatives	All Watershed partners
118		As per section 3.2.6 of the <i>Greenbelt Plan</i> , recognize the <i>Rouge River Watershed Plan</i> as a guiding document that builds on and supports the <i>Rouge North Management Plan</i> and <i>Rouge North Implementation Manual</i> .	Province, municipalities, TRCA, Rouge Park
119		Ministry of Public Infrastructure and Renewal and other relevant agencies should address the <i>Rouge River Watershed Plan's</i> recommendations through Implementation Analysis & Sub-Area Assessment (s.5.3/p. 35 of <i>Growth Plan for the Greater Golden Horseshoe</i>), in keeping with special status accorded the Rouge lands through the <i>Greenbelt Plan's</i> section 3.2.6	Ministry of Public Infrastructure and Renewal

120		Recognize and act on the <i>Rouge River Watershed Plan's</i> recommendations as per section 24 of the <i>Oak Ridges Moraine Conservation Plan</i> , which states: "The objectives and requirements of each watershed plan are to be incorporated into the municipality's official plan, and major development commenced after April 23, 2007 is prohibited unless it conforms with the watershed plan."	Region of York, Town of Whitchurch-Stouffville, Town of Richmond Hill, and Town of Markham
121		Address the Rouge River Watershed Plan's recommendations in the fulfillment of source water protection planning requirements of the Clean Water Act	TRCA
122	Stewardship and regeneration	Develop a coordinated program among various partners to accelerate securement and expansion of the terrestrial natural heritage system with a focus on: <ul style="list-style-type: none"> • securing the 14 % (1400 ha) of the targeted system that is currently not protected by other policy mechanisms within 5 years, and • achieving an increase in natural cover by 10% (net 2.4% of watershed or about 270 ha) over 2002 levels within 5 years 	TRCA
123		Develop a coordinated program among various partners to accelerate implementation of lot level stormwater management retrofits, in conjunction with a social marketing pilot project focusing on residential and business sectors in the Rouge Watershed.	TRCA, Municipalities
124	Education and awareness	Coordinate partners' activities for education and awareness to ensure consistent messaging, avoid duplication and facilitate integration of funds and other resources.	TRCA, Rouge Park
125	Enforcement	Increase enforcement capacity among responsible agencies (e.g. TRCA, municipalities, MNR, MOE, DFO) including: <ul style="list-style-type: none"> • identify and secure necessary resources, • investigate means to improved partnering among relevant agencies, • post signage using universal symbols and/or in multiple languages about permitted and non-permitted activities, • promote public awareness of who to call and facilitate referrals of mis-directed calls, • adopt protocols for feedback to the public on actions taken. 	TRCA, municipalities, MNR, MOE, DFO
126	Operations and Maintenance	Property managers should consider ways they can incorporate the watershed plan's directions into their ongoing practices and programs. For example, naturalization schemes could be adopted as part of	Municipalities, Province, Golf courses, cemeteries

		landscaping practices.	
127		Continue to develop and implement operations and maintenance programs for stormwater management infrastructure	Municipalities
128		Establish management and operations agreements for Rouge Park and other public lands in York Region including clear maintenance and enforcement responsibilities (see Nature based recreation above).	York Region, local municipalities, Rouge Park, TRCA
Monitoring			
129		<p>Increase terrestrial natural heritage monitoring including:</p> <ul style="list-style-type: none"> expanded winter bird and breeding bird surveys and; additional monitoring of ecological restoration success. 	TRCA, community volunteers
130		<p>Improve monitoring of participation rates for nature-based recreation:</p> <ul style="list-style-type: none"> monitor trail use; and track participation rates in other related recreational activities, such as fishing, picnicking etc. 	Municipalities, TRCA, community groups
		Evaluation of innovative technologies: See strategies for water (Section 5.3) regarding the Sustainable Technologies Evaluation Program (STEP)	TRCA
131		Ambient watershed conditions and long-term trends: Enhance the Regional Watershed Monitoring Network (RWMN)	TRCA
132		<p>Additional funding partnerships should be sought to install nests of groundwater monitoring (water level and groundwater quality) wells at additional sites in the watershed to improve spatial coverage and at various depths to improve knowledge of each of the three major aquifers. There are currently only three groundwater monitoring wells within the Provincial Groundwater Monitoring Network in the Rouge and we recommend adding three new locations with nests of 2-3 wells at each location. They should be located to assess water level changes in aquifers that discharge at surface water flow gauge locations as well as to facilitate the assessment of both regional and local effects of urban development and land conservation. Potential locations include:</p> <ul style="list-style-type: none"> North-east corner of the watershed on the Oak Ridges Moraine (3 wells) Near Major Mackenzie Drive and 	Province, TRCA

		<p>McCowan (3 wells); Assume York Region's wells as part of the RWMN, once their project monitoring is complete.</p> <ul style="list-style-type: none"> Lower Rouge south of the Iroquois shoreline (2 wells) 	
133		<p>Improve monitoring of precipitation:</p> <ul style="list-style-type: none"> Install additional rain gauges in the northeast, middle and southern parts of the watershed to supplement the data from the Buttonville Airport gauge and address the need for subwatershed-level data for calibration of hydrologic models. Coordinate with similar efforts to augment the rain gauge network in neighbouring watersheds. 	TRCA
134		<p>Implement additional stream flow gauges at the following locations to improve hydrologic modeling capability, floodplain mapping and flood flow prediction, as well as for tracking the hydrologic impact of any new upstream development:</p> <ul style="list-style-type: none"> Install one additional stream flow gauge on the Main Rouge River downstream of the Morningside Creek confluence and the Little Rouge River south of Finch Avenue to facilitate watershed-scale calibration of models. Install one additional stream flow gauge on each of the major headwater tributaries ("Middle Tributaries") to assist in subwatershed-scale calibration and analysis. Gauges should be located on Beaver Creek, Upper Rouge River upstream of the Beaver Creek Confluence, Berczy Creek, Bruce Creek, and Robinson Creek as close to the confluences with the Main Rouge as possible. <p>There may also be opportunities to restore decommissioned WSC gauges on the Main Rouge and to formalize temporary gauges established for the YDSS and North Leslie projects.</p>	TRCA
135		<p>Implement the following improvements to monitoring of stream form:</p> <ul style="list-style-type: none"> Establish additional fluvial geomorphology monitoring sites just downstream of the area of future urban expansion in order to track the effects of development on erosion and channel 	TRCA

		<p>form at a local and subwatershed scale. These should be established as soon as possible to determine an existing conditions baseline and should be monitored annually, probably for at least 20 years.</p> <ul style="list-style-type: none"> • Establish reference sites upstream of the developing areas. Locations to consider include Bruce Creek, Berczy Creek, Robinson Creek, and the Little Rouge River just upstream of Major Mackenzie Drive, plus corresponding reference sites for all of these upstream of the areas of potential future development. • Enhance the current monitoring protocol applied at the established fluvial geomorphic monitoring sites (i.e. additional cross-sectional surveys, greater frequency). 	
136		<p>Adaptive management: Develop an adaptive management program for the Rouge Watershed that will use feedback from monitoring activities to make adjustments to policies, plans and programs to ensure that our goals, objectives and targets are met. It should include:</p> <ul style="list-style-type: none"> • A review of the adequacy of existing and enhanced monitoring mechanisms (e.g. RWMN and requirements for compliance monitoring by proponents • Definition of analytical, assessment and reporting protocols • Definition of triggers for initiating policy or planning adjustments • Identification of the mechanisms and procedures for engaging watershed partners in a process for amending the watershed plan 	TRCA
137	Implementation Oversight	<p>Implement a Rouge River Watershed Plan Implementation Committee - with representation from all key stakeholders in the Watershed - to guide implementation of the Plan. The Committee should:</p> <ul style="list-style-type: none"> • Report to the TRCA Board and the Rouge Park Alliance • Be given a terms of reference, mandate and duration of term at which time the membership and terms of reference would be confirmed and updated; • Report regularly on progress with the implementation of the Rouge River Watershed Plan. 	TRCA, Rouge Park