
Wet Weather Flow Management

Policy



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1.0 Introduction

Lake Ontario plays an essential role in the health and well being of residents of the City of Toronto. Lake Ontario provides the City of Toronto with a safe and abundant source of drinking water and a wide range of recreational opportunities that include swimming, boating, fishing, birding, cycling and hiking. To sustain these economic, social, cultural and environmental benefits, the water quality of Lake Ontario and its tributary watersheds must be protected and improved.

The water quality of Lake Ontario is directly dependent on the health of the rivers and creeks that feed into it. The rivers and creeks within the jurisdictional boundaries of the City of Toronto form part of six watersheds. These watersheds are identified from west to east as the Etobicoke Creek, Mimico Creek, Humber River, Don River, Highland Creek and the Rouge River. Over time, Lake Ontario and its contributing watersheds have been severely degraded by human activity in particular, through the release of various pollutants into the natural environment. Wet weather flow is a significant source of this pollution.

Wet weather flow consists of stormwater runoff, combined sewer overflows and snowmelt (i.e. stormwater either runoff or infiltration). As stormwater washes over land it picks up contaminants; stormwater is typically discharged untreated, polluting watercourses and the waterfront. During heavy rainfall or snowmelt, large amounts of stormwater combine with sanitary sewage in older areas of the former cities of Toronto, York, East York and Scarborough serviced by combined sewers. Those high flows also impact the City's sewage treatment plants causing the system to overload and discharge untreated sanitary sewage into the City's watercourses and into Lake Ontario. In pervious areas of the City, rainfall and snowmelt may also infiltrate into the ground.



During dry weather conditions, groundwater supplies baseflow to watercourses and Lake Ontario. As well, groundwater infiltrates into storm sewers which then discharge to watercourses and Lake Ontario. In some cases, illicit sanitary sewer connections to storm sewers, discharge domestic sewage or industrial waste to the nearest watercourse or to the waterfront.

Human activity affects the quality and quantity of runoff. In urban areas, for example, buildings and paved streets increase the amount of hard surfaces and in turn reduce opportunities for natural infiltration. These hard surfaces decrease water quality by providing increased opportunity for pollutants to accumulate (e.g. oil, grease, and exhaust emissions from vehicles), which are washed off during rainfall events polluting ground and surface waters. As well, hard surfaces generate increased levels of runoff, which causes downstream flooding and erosion.



Natural systems across the City provide important water quality and quantity benefits. Natural areas are permeable which, allows runoff to infiltrate the ground, thus reducing the requirement for structural stormwater management solutions. As well, evapotranspiration in terrestrial and riparian vegetation, within the built human environment, reduces the volume of stormwater. Reduction of the volume of overland flow protects the geomorphology of streams and reduces the stress to the aquatic ecosystem. There are a number of significant natural terrestrial ecosystems in the City such as Rouge Park, High Park, and Earl Bales Park where watercourses have been impacted by wet weather flow causing valley instability. Natural ecosystems, such as these with mature vegetation reduce the volume of runoff creating benefits to receiving waters.

Through the Wet Weather Flow Management Master Plan (WWFMMP) targets have been established to improve environmental conditions in area surface waters and groundwater. The plan identifies measures and projects to be implemented over a 25-year time frame to achieve these targets.

Purpose

The purpose of this document is to address the WWFMMP findings in policy form and to recognize best management practices for public undertakings and the servicing of private developments in order to meet these targets. Best Management Practices include source, conveyance and end-of-pipe solutions with a focus on the natural systems approach. Augmented by public education and outreach initiatives as well as operational and maintenance practices, the policy attempts to direct and encourage citizen and staff involvement. The Policy approaches the management of wet weather flow on a watershed basis and supports the development of watershed and subwatershed plans covering the watersheds within the jurisdiction of the City of Toronto.

At the heart of wet weather flow management is the concept that rainwater and snowmelt are valuable resources. These resources need to be managed at the point of impingement (roofs, lawns, driveways, sidewalks, roadway and natural areas) to maximize their benefit before turning into stormwater runoff. Stormwater runoff discharges directly to area watercourses and the waterfront impacting aquatic ecosystems and beneficial uses of surface waters. It also infiltrates into groundwater, in pervious areas.

The Wet Weather Flow Management Policy has been developed based on practical experiences in the former municipalities of Etobicoke, York, East York, Toronto, North York and Scarborough and international research.

This policy reflects the recommendations and targets contained in the Wet Weather Flow Management Master Plan and will be supported by Wet Weather Flow Management Guidelines to be developed as a companion document to guide the design and implementation of stormwater management measures. The purpose of the policy is to support the implementation of the Wet Weather Flow Management Master Plan by setting out what actions the City intends to undertake and what actions the City will require or encourage of others. The management of wet weather flow is referenced in the City's Official Plan, which provides the policy context for incorporating wet weather best management practice solutions into the development review process.

Responsibility

The administrative responsibility for implementing the policy rests with the Commissioner of Works and Emergency Services.

"The ultimate test of man's conscience may be his willingness to sacrifice something today for future generations whose words of thanks will not be heard."

- Gaylord Nelson, former governor of Wisconsin, founder of Earth Day

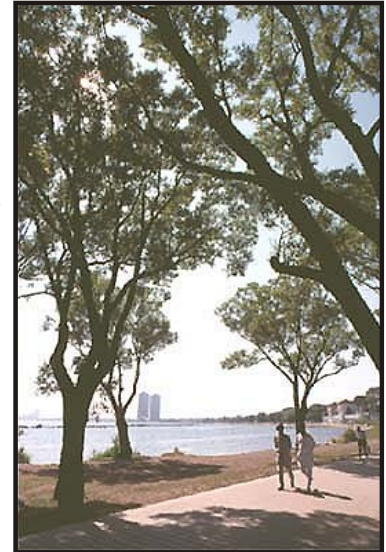


2.0 Context

Master Plan Framework

Under the Environmental Assessment Act and regulations of the Province of Ontario, the Master Planning Process provides the framework for assessing the environmental benefits derived from examining alternatives for wet weather flow management. Based on intensive technical analysis and through input from the Wet Weather Flow Management Master Plan Steering Committee, the City has developed a Master Plan composed of two parts. A preferred strategy is intended to achieve Provincial Water Quality Objectives and other ambitious targets. While the preferred strategy may require a century to implement, the second part, a 25 year implementation plan has been developed consisting of accelerated projects and programs.

The Wet Weather Flow Management Master Plan (WWFMMP) provides an integrated work program for managing wet weather flow in the City of Toronto using a natural system approach where practical, and complemented by an environmental engineering system approach. The Plan developed on a watershed basis crosses the six watersheds and the waterfront within the jurisdictional boundaries of the City and establishes priorities for wet weather flow management. The City will plan and implement projects within its jurisdiction. Residents and businesses can also assist voluntarily through their everyday activities. The elements of the Wet Weather Flow Management Master Plan are divided geographically by watershed and are referred to by study area:



- Study Area 1: Combined Sewer Service Area
- Study Area 2: Mimico & Etobicoke Creek Watershed
- Study Area 3: Humber River Watershed
- Study Area 4: Don River Watershed
- Study Area 5: Rouge River & Highland Creek Watershed

The Plan is based on extensive computer modeling analysis, which considered the relationship between upstream and downstream land uses and receiving waters, but focuses on measures that can be implemented within the City of Toronto.

City Initiatives Previous To the WWFMMP

Since the 1980's the lower tier cities, which now make up the City of Toronto, developed stormwater policies and undertook a number of pollution control planning studies, water quality management plans, sewer system master plans and subwatershed plans. They participated in watershed rejuvenation with the Toronto and Region Conservation Authority and the Waterfront Regeneration Trust to achieve the Remedial Action Plan.

The Wet Weather Flow Management Master Plan (WWFMMP) arose from the Environmental Assessment Advisory Committee report of 1994 on bump-up request for the City of Toronto's proposed Western Beaches Storage Tunnel. That report identified the need for Wet Weather Flow Master planning on a watershed basis to restore



'beneficial' uses within the watersheds. 'Beneficial' uses include being able to swim at Toronto beaches, fish in area waters and enjoy the economic spin-off that results from a healthy aquatic ecosystem. In 1995 Metro Council adopted a report, which endorsed the undertaking of the Wet Weather Flow Management Master Plan and the Province subsequently issued an exemption order allowing the Western Beach Storage Tunnel to proceed.

In 1998, mediation was undertaken to resolve outstanding issues regarding the Environmental Assessment for the Main (Ashbridges Bay) Wastewater Treatment Plant. One of the recommendations in the Mediator's Report was that the Wet Weather Flow Management Master Plan should be guided by the principles set out in the mediator's report, including minimizing the hydraulic impacts to the Main (Ashbridges Bay) Treatment Plant.

The former City of Toronto established the Storm Water Group in response to a request by the Ontario Ministry of Environment in connection with an Exemption order under the Environmental Assessment Act for the Western Beaches Storage Tunnel. The purpose of the group was to investigate alternative methods to reduce storm water runoff, combined sewer overflows and minimize the impacts of water pollution from the City sewer system using non-structural methods.

International Initiatives - Toronto and Region Remedial Action Plan

In 1987 the International Joint Commission identified Toronto as one of 43 areas of concern around the Great Lakes where efforts are required to restore environmental quality. Toronto was listed because area surface waters were degraded largely by stormwater and combined sewer overflow discharges. As a result, a Remedial Action Plan (RAP) was prepared for the restoration of beneficial uses in area watercourses and the waterfront in Toronto. The Wet Weather Flow Management Master Plan builds on the Remedial Action Plan guiding the restoration of environmental quality to delist Toronto as an area of concern.

City Plans

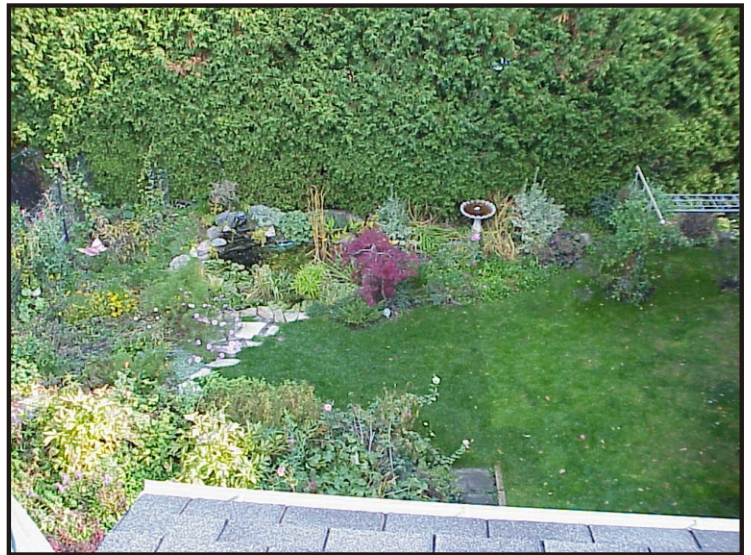
The City of Toronto Council's Strategic Plan, dated January 2002, sets out a number of goals which this Wet Weather Flow Management Policy (WWFM Policy) supports, namely Environmental Sustainability and City Building. The Environmental Plan is a strategic document adopted by City Council and contains recommendations to lead the City in the direction of environmental sustainability. One of the key recommendations of the Environmental Plan was to complete the Wet Weather Flow Management Master Plan and implement it as quickly as possible. The Wet Weather Flow Management Master Plan helps achieve other Environmental Plan recommendations such as to Restore the Health of Rivers, Streams and the Waterfront. The Official Plan sets out the City's framework for decisions about development in the City and contains references to wet weather flow management principles.

The Wet Weather Flow Management Policy provides direction on how to manage wet weather flow on a watershed basis and in a manner that recognizes rainwater and snowmelt as a resource. Improved management of wet weather flow will restore the health of Toronto's watercourses and the nearshore area of Lake Ontario. Combined, these documents provide the framework to address problems associated with wet weather flow.



This Policy harmonizes the stormwater policies across the City of Toronto and replaces the policies of the former City of Etobicoke, *Storm Water Management Policy*, September 1992 and former City of North York, *Stormwater Management Policy*, November 1995 and the former City of Scarborough, *Drainage Policy*, January 1996. The former City of Toronto had endorsed reports on stormwater issues specifically *Progress Report of the Storm Water Group* (1997) and *Sewer System Progress Report No. 4*, September 1989 but these are not considered policies. The former City of Scarborough Drainage Policy's technical guidelines will continue to apply until replaced by future Wet Weather Flow Management Guidelines.

Wet Weather Flow Management Guidelines are necessary to support the policy. The guidelines are intended to document the technical requirements for on-site stormwater quantity and quality control. They will guide the development industry and in-house staff in ensuring that the level of stormwater management control provided in the future is in accordance with the Master Plan. They will also set out how cash-in-lieu will be calculated and the conditions under which it will be applied.



After Council approval of the Policy, a City staff team led by Works and Emergency Services, and including representation from the affected departments: WES, UDS, EDCT and Legal will develop the Guidelines and By-laws(s) which may be necessary (e.g. construction sediment and erosion control by-law) with a report back to Works Committee in 2004.

3.0 Vision, Principles, Goal and Objectives



3.1 VISION

Wet Weather Flow will be managed on a Watershed basis in a manner that recognizes rainwater and snowmelt as a resource to be utilized to improve the health of Toronto's Watercourses and the near shore zones of Lake Ontario and enhance the natural environment of Toronto's Watersheds.

3.2 PRINCIPLES

- (1) **Recognize** rainwater and snowmelt as a valuable resource. Manage rainwater where it falls, on the lots and streets of our City, before it enters a sewer.
- (2) **Manage** wet weather flow on a watershed basis using an Ecosystem Approach.
- (3) **Implement** a hierarchy of Wet Weather Flow practices starting with "at source", then "conveyance", and finally "end-of-pipe" solutions.
- (4) **Inform and Educate** Toronto's communities about Wet Weather Flow issues and involve the public in developing solutions.

3.3 GOAL

Reduce and ultimately eliminate the adverse effects of Wet Weather Flow on the built and natural environment in a timely and sustainable manner, and achieve a measurable improvement in Ecosystem health of the Watersheds.

"Plans to protect air and water, wilderness and wildlife are in fact plans to protect man."

- Stuart Udall

3.4 OBJECTIVES

3.4.1 Water Quality

- a) **Meet** or exceed guidelines for water and sediment quality: Contribute to achieving federal, provincial and municipal water and sediment quality objectives and guidelines in area watercourses and along the Waterfront.
- b) **Eliminate** toxic substances through pollution prevention: Contribute to the virtual elimination of toxic substances in groundwater and surface water utilizing the principle of pollution prevention at source.
- c) **Improve** water quality in rivers and the lake for body-contact recreation: Improve water quality for body-contact recreation in rivers, the lake and recreational areas, and reduce the need for posting of beaches by the Medical Officer of Health.
- d) **Improve** aesthetics: Contribute to eliminating objectionable deposits, nuisance algae growth, unnatural colour, turbidity and odour in order to improve the aesthetics of area surface waters.

3.4.2 Water Quantity

- a) **Preserve** and re-establish the natural hydrologic cycle: Contribute to the re-establishment of a more natural hydrologic process to protect and restore groundwater and surface water resources, based on maximizing permeability and minimizing runoff at source.



- b) **Reduce** erosion impacts on habitats and property: Manage Wet Weather Flows to reduce erosion impacts on stream and riparian habitats on public and private properties and open spaces.
- c) **Eliminate** or minimize threats to life and property from flooding.

3.4.3 Natural Areas & Wildlife

- a) **Protect**, enhance and restore Natural Features and Functions: Contribute to the protection, enhancement and restoration of Natural Features and Functions such as habitat Wetlands, riparian and other ecological corridors.
- b) **Achieve** healthy aquatic communities: Contribute to achieving healthy aquatic communities including warmwater or coldwater fisheries as appropriate.
- c) **Reduce** fish contamination: Contribute to reducing Fish Consumption Advisories due to local wet weather sources.

3.4.4 Drainage Systems

- a) **Eliminate** discharges of sanitary sewage: Eliminate discharges of sanitary sewage to Receiving Waters including those associated with Combined Sewer Overflows (CSOs), sanitary sewer overflows (SSOs), treatment plant by-passes, illegal cross-connections, and spills.
- b) **Reduce** infiltration and inflow into sanitary sewers: Reduce sanitary sewer infiltration and inflows according to City design standards.
- c) **Reduce** basement flooding: Manage Wet Weather Flow to reduce basement flooding.

"Treat the Earth well. It was not given to you by your parents. It was loaned to you by your children."

- Kenyan Proverb



4.0 Policy Statements



4.1 GENERAL POLICY STATEMENT

The City will:

- (1) Meet or exceed Federal and Provincial legislative requirements related to Wet Weather Flow management.
- (2) Undertake further area Subwatershed Plans, following the guidance provided in relevant Ministry of the Environment documents, listed in the reference section, to plan implementation of the Wet Weather Flow Management Master Plan.
- (3) Participate with Toronto and Region Conservation Authority in Watershed management plans, which implement enhanced Wet Weather Flow management.
- (4) Participate in and promote further applied research in Wet Weather Flow issues to foster continual improvement in technology and Wet Weather Flow program effectiveness.
- (5) Strive to achieve terrestrial and aquatic habitat targets and water quality and quantity control targets as recommended in the Wet Weather Flow Management Master Plan.
- (6) Strive to preserve, re-establish the natural hydrological cycle in collaboration with approval agencies, upstream municipalities in the watershed and property owners in the City of Toronto.
- (7) Practice infiltration and storage of rainwater, pollution prevention and reuse of Stormwater at source wherever possible through such measures as downspout disconnection, rain barrels, rain gardens, and lot grading changes. This will be done while not increasing the risk of Vector Transmitted Diseases, soil saturation or problems associated with basement or surface flooding.
- (8) Strive to reduce and ultimately eliminate all sources (i.e. cross connections) of dry weather pollution.
- (9) Work with all stakeholders including but not limited to residents, businesses, scientific and academic institutions, community groups and environmental groups to implement the Wet Weather Flow Management Master.
- (10) Develop Wet Weather Flow Management Guidelines to support the implementation of the Wet Weather Flow Management Policy and Wet Weather Flow Management Master Plan.
- (11) Utilize the Hierarchical Approach, to manage Wet Weather Flow. Practically, this means consider Source Control measures first, followed by Conveyance Control measures before considering End-of-Pipe Control solutions.
- (12) Consider Natural Systems Solutions to mitigate Wet Weather Flow impacts and implement wherever possible.
- (13) Use public education and communication tools to raise public awareness and participation.

"Stormwater runoff rivals or exceeds discharges from factories and sewage plants as a source of pollution throughout the United States."

- Natural Resources Defense Council



- (14) Work with the Toronto and Region Conservation Authority and Federal and Provincial agencies to achieve the Toronto and Region Remedial Action Plan (R.A.P.) goal of restoring beneficial uses in Toronto, which is one of the areas of concern in the International Joint Commission's Great Lakes Water Quality Agreement.
- (15) Work to restore the beneficial uses, such as swimming and fishing in area Watercourses and at the waterfront, for residents and visitors.
- (16) Undertake management of Wet Weather Flow in consideration of other city objectives.
- (17) Undertake repairs, when emergency work is necessary, to prevent the release of sewage and spills of hazardous substances to Receiving Waters in a manner that minimizes impact to the environment, uses due diligence principles and is in compliance with Federal, Provincial and Conservation Authority requirements.
- (18) Require applicants requesting development approval to demonstrate that the development achieves the water quality and water quantity control targets of the Wet Weather Flow Management Master Plan, to the best of the applicant's ability.

4.2 QUALITY AND QUANTITY POLICY STATEMENT

4.2.1 General

The City shall :

- (1) Manage, and reduce to the extent possible, the volume of Stormwater entering the sewer system to minimize the impact on Receiving Waters.
- (2) Implement pollution prevention measures, which protect the quality of Wet Weather Flow as recommended in the Wet Weather Flow Management Master Plan.
- (3) Integrate Wet Weather Flow management techniques such as Best Management Practices (BMP's) and measures which have a low impact on ground and surface water into all City undertakings and approve land development servicing to minimize problems associated with Wet Weather Flow quality and quantity. This integration should use a Hierarchical Approach of Source Control, Conveyance Controls and End of Pipe Controls, to meet recommended targets of the Wet Weather Flow Management Master Plan.
- (4) Implement Best Management Practices, to optimize the quantity and avoid degrading the quality of Wet Weather Flow.
- (5) Strive to detain or retain Stormwater at lot level on public property.
- (6) Require the property owner of BMP facilities, located on their own land, to be responsible for future maintenance.
- (7) Implement infiltration Best Management Practices, to the extent that soil conditions and groundwater levels permit, to mitigate the adverse impacts of Wet Weather Flow, with special consideration given to avoiding basement flooding, slope destabilization, groundwater contamination, and Infiltration/Inflow into the sanitary or Combined sewer system.



- (8) Promote and encourage the development of new Wet Weather Flow management technologies and pilot projects that improve the quality of Wet Weather Flow and/or mitigate the impact of Stormwater flow.
- (9) Incorporate in all municipal undertakings related to Wet Weather Flow management and secondary benefits, such as aesthetic, recreational, ecological, educational and economic benefit.
- (10) Seek to reduce and ultimately eliminate basement flooding.

4.2.2 Components of the Hierarchical Approach

The City will use a Hierarchical Approach to manage Wet Weather Flow as described in detail below:

4.2.2.1. Source Control

Source Controls at the lot level are the preferred method for controlling the impacts of Wet weather flow. Source control should be implemented in locations identified in the Wet Weather Flow Management Master Plan. Infiltration methods shall be utilized, to the extent subsoil conditions permit.

4.2.2.2. Conveyance Control

Conveyance Controls, such as infiltration systems, should be implemented to the extent site conditions and subsoil conditions permit in areas identified by the Wet Weather Flow Management Master Plan:

- i. Where the City's sewer system is reconstructed, or in conjunction with road reconstruction projects.
- ii. Where new roads are built.

Where roadside ditches exist, these ditches should be retained and enhanced to achieve the targets in the Wet Weather Flow Management Master Plan. Where the retention of roadside ditches is not possible, infiltration or exfiltration techniques or equivalent Wet Weather Flow management measures shall be implemented, where feasible to achieve water quality and quantity control targets consistent with the Wet Weather Flow Management Master Plan.

4.2.2.3 End-of-Pipe Control

End-of-Pipe Controls should be implemented at the outfall where conveyance systems discharge to surface water or groundwater and where Source Control and Conveyance Controls are unable to achieve the necessary level of Stormwater quality and quantity control targets set out in the preferred strategy in the Wet Weather Flow Management Master Plan.

Spill containment devices will be required for all facilities where the discharge is to surface or is infiltrated.





4.2.2.4 *Other Management Measures*

The City will enhance operations and maintenance practices for Dry Weather Flow mitigation through Sewer Cross Connection detection and related techniques, and Inflow/Infiltration management as set out in the Wet Weather Flow Management Master Plan.

The City shall require property owners to protect the City's Conveyance Control systems and End-of-Pipe Control facilities from spills from Private Properties.

4.3 **RELATED NATURAL AREAS & WILDLIFE POLICY STATEMENT**

Natural Features and Functions, including habitat that supports wildlife, also protect and enhance Wet Weather Flow functions. The following actions are required to sustain this relationship.

The City will:

- (1) Preserve, re-establish or rehabilitate natural features. Where existing areas are degraded or where already lost, the City will reclaim these areas in an environmentally sustainable manner, using an Ecosystem approach.
- (2) Rehabilitate degraded aquatic and terrestrial habitat, including riparian areas using natural and native species.
- (3) Preserve the natural heritage system and riparian areas, which sustain aquatic and terrestrial habitats as a balanced Ecosystem.
- (4) Enhance Riparian Areas (e.g. planting native vegetation along banks and creating canopy cover), in consultation with appropriate agencies, to mitigate erosion, control water quantity and improve water quality, through filtration and infiltration. In such areas, control public use and discourage encroachment.
- (5) Strive to preserve, re-establish and rehabilitate vegetative cover in the natural and urban areas to maintain hydrologic and environmental benefits, such as the moderation of water and ambient air temperatures affecting aquatic and terrestrial life.
- (6) Attempt to locate new infrastructure (e.g. water and wastewater systems, transportation and utilities) outside natural areas and valleys.
- (7) Where access trails and utility roads are required within Conservation Authority fill regulated area and Environmental Significant Areas (ESA's) designated by Toronto and Region Conservation Authority, consult with Toronto and Region Conservation Authority and within Provincially Significant Areas and Areas of Natural and Scientific Interest (ANSI), consult with Ontario Ministry of Natural Resources/federal Department of Fisheries and Oceans.
- (8) Link vegetation on tableland to valleys and ravines and expand natural vegetation on tableland areas where possible, to improve the health and integrity of aquatic/terrestrial habitats, subject to ecological viability confirmed through the preparation of appropriate environmental impact studies.

"The real substance of conservation lies not in the physical projects of government, but in the mental processes of citizens."

- Aldo Leopold



- (9) Create new Wetlands where appropriate and when opportunities arise in accordance with the Wet Weather Flow Management Master Plan and form a balanced Ecosystem that minimizes Vector-Transmitted Diseases.
- (10) Protect existing infrastructure (buried pipes) and allow renewal of infrastructure, and installation of new Stormwater management facilities in ways which have the least impact on natural areas and wildlife.
- (11) Site new Stormwater management facilities to respect the natural heritage features identified in the City's natural heritage system, set out in the Official Plan, recognizing there may be situations where both siting of facilities and operations and maintenance access to the facility may be required. For existing facilities, it is important that all possible measures should be undertaken to avoid damage to natural heritage.
- (12) Encourage private stewardship of valleys, ravines and natural areas, which support water quality improvements and optimized water quantity.

"We cannot solve the problems that we have created with the same thinking that created them."

- Albert Einstein

4.4 DRAINAGE SYSTEMS POLICY STATEMENT

The City will require adequate Major and Minor Drainage Systems complemented by effective Wet Weather Flow quality and quantity controls:

4.4.1. Major Drainage System

4.4.1.1 Overland Flow Routes

The City will:

- (1) Ensure flows that exceed the capacity of the Minor Drainage System are routed away from buildings to approved right-of-ways or Public Properties.
- (2) Maintain unobstructed overland flow routes between adjacent developments.
- (3) Ensure Major Drainage System flows are afforded water quality protection, wherever possible.

4.4.1.2 Valleys and Watercourses

Where the City has jurisdiction, the City will seek to:

- (1) Preserve, re-establish and rehabilitate valleylands and Watercourses, including Wetlands, headwater areas, ravines, and groundwater recharge areas.
- (2) Rehabilitate Watercourses using the best available technology (natural channel design and bioengineering techniques) and reclaim or restore buried, diverted, hard lined or channelized Watercourses, where practical.





- (3) Preserve Watercourses in their natural location and only consider alteration of Watercourses where it can be demonstrated to provide an environmental benefit, and after necessary approvals have been obtained from other levels of government and demonstrate consistency with Watershed and fisheries management plans
- (4) Minimize surface and subsurface infrastructure, which disrupts the valleylands, natural Wetlands and Watercourses.
- (5) Strive to ensure all valleys and Watercourse lands come into City or Toronto and Region Conservation Authority ownership, if possible.
- (6) Strive to reconnect cutoff or disconnected riparian flow, where possible.

4.4.2 Minor Drainage System

The City will:

- (1) Design and construct storm sewers and outfalls in a manner to minimize impacts on the natural environment.
- (2) Apply natural channel design and bioengineering methods for the Stormwater conveyance system and storm sewer outfalls.
- (3) Reduce and ultimately eliminate sanitary Sewer Cross Connections.



4.4.3 Combined Sewer System

The City will:

- (1) Minimize the volume of Stormwater discharging to existing Combined Sewers consistent with the Wet Weather Flow Management Master Plan.
- (2) Reduce and ultimately eliminate Combined Sewer Overflows.

4.5 POLICY STATEMENT FOR EXISTING DEVELOPED AREAS

The City shall undertake actions to improve the quality and optimize the quantity of Wet Weather Flow related to existing developed areas and advocate businesses and residents to voluntarily implement Wet Weather Flow control measures.



4.6 POLICY STATEMENT FOR DEVELOPMENT

4.6.1 Public Sector Undertakings

The City shall:

- (1) Provide leadership, motivation and innovation in the implementation of the Wet Weather Flow Management Master Plan.
- (2) Ensure all public sector undertakings in the City, including those jointly funded with the private sector or implemented by the City directly, comply with the Wet Weather Flow Management Master Plan.
- (3) Advocate with other levels of government, such as the Department of Fisheries and Oceans, Ministry of Natural Resources, the Ministry of Environment, and Toronto and Region Conservation Authority to ensure their undertakings are consistent with the Wet Weather Flow Management Master Plan.

4.6.2 Private Sector Servicing Undertaking

4.6.2.1 *Plans, Drawings and Studies Required*

The City will require the owners of lands, submitting development applications to:

- (1) Provide Stormwater Management Plans and/or Stormwater Servicing Drawings for development applications that are based on achieving the level of control consistent with the Wet Weather Management Flow Master Plan.
- (2) Ensure that such Stormwater Management Plans and Stormwater Servicing Drawings to follow the Hierarchical Approach set out in the Wet Weather Flow Management Master Plan.
- (3) Provide studies, which demonstrate that the proposed development minimizes the impact of development on Riparian Areas.
- (4) Construct and monitor erosion and sediment controls on sites, which have the potential to discharge sediments to downstream sewers and/or waterbodies.

4.6.2.2 *Cash-in-Lieu*

It is recognized that site conditions for certain types of development may preclude the feasibility of achieving all of the Wet Weather Flow Management Master Plan requirements. The City may consider cash-in-lieu, at the discretion of the Commissioner, to the extent the applicant is not able to achieve the level of control consistent with the Wet Weather Flow Management Master Plan. Cash-in-lieu funding collected will be used to implement projects contained within the Wet Weather Flow Management Master Plan for the corresponding Watershed/waterfront drainage basin in which they are collected.



4.7 POLICY STATEMENT FOR COMMUNITY INVOLVEMENT

The City will:

- (1) Disseminate information and educational material to residents, businesses and community stakeholders so that they can understand the impacts of Wet Weather Flow and become aware of measures that they can implement to achieve levels of Source Control advocated in the Wet Weather Flow Management Master Plan and support the City in the implementation of the Wet Weather Flow Management Master Plan.
- (2) Develop public education and participation activities to include all communities.
- (3) Encourage volunteers, including non-governmental organizations (NGO's) to undertake projects that support the restoration, rehabilitation and reclamation of natural Wetlands, Watercourses, valleys, ravines, and aquatic and terrestrial habitat. Funding will be made available to assist with community outreach activities, which support the implementation of the Wet Weather Flow Management Master Plan.
- (4) Encourage property owners to voluntarily implement wet Weather Flow control measures, where requirements cannot be imposed.
- (5) Develop partnerships with other agencies and community groups to coordinate public education, outreach and stewardship programs and activities, where possible, in support of the Wet Weather Flow Management Master Plan.



4.8 STORMWATER POLICIES HARMONIZED



The Stormwater policies of the former cities of Etobicoke and North York are no longer in effect. The *Drainage Policy* of the former City of Scarborough remains in effect except where it is in conflict with the Wet Weather Flow Management Policy, which prevails.



Glossary

BMP or Best Management Practices	State of the art methods or techniques used to manage the quantity and improve the quality of wet weather flow. BMPs include Source Controls, Conveyance Controls and End-of-Pipe Controls.
City	The City of Toronto.
Combined Sewer	A wastewater collection system, which conveys sanitary wastewater (domestic, commercial and industrial wastewater) and Stormwater runoff through a single-pipe system to a treatment works.
CSO or Combined Sewer Overflow	A discharge to the environment from a Combined Sewer system that occurs as a result of a precipitation event when the capacity of the interceptor sewer or treatment plant is exceeded. It consists of a mixture of sanitary wastewater and Stormwater runoff.
Commissioner	The Commissioner of Works and Emergency Services.
Conveyance Control	A structural Best Management Practice that is located within the drainage system where flows are concentrated and are being conveyed along a corridor. Conveyance Controls include but are not limited to pervious pipes, roadside ditches, and other similar systems.
Dry Weather Flow	Sewage flow resulting from both sanitary wastewater (combined input of industrial, domestic and commercial flows) and infiltration and inflows from foundation drains or other drains occurring during periods with an absence of rainfall or snowmelt.
Ecosystem	A biological community, including humans and their natural environment.
End-of-pipe Control	A structural Best Management Practice that is located at the end of a flow conveyance route. End-of-Pipe Controls on surface and below ground but are not limited to wet ponds, constructed wetlands and other similar systems.
Existing Developed Areas	Areas of the City, which have been altered to accommodate recreational, residential, industrial, commercial, institutional or utility corridor usage.



Fish Consumption Advisories	Advisories issued by the Ontario Ministry of Environment to limit the amount of fish consumed for specific fish species caught in a specific water body, where the contaminant content of the fish exceed tissue quality guidelines.
Hierarchical Approach	Implementation of Wet Weather Flow measures following a Hierarchical approach in the following order: Source Control measures, Conveyance Control measures and End-of-Pipe Control treatment to achieve the water quality and water balance target for lot level development of the preferred strategy. In some guidance documents for Stormwater quality management, this is also known as the treatment train approach.
I/I or Infiltration/Inflow	Inflow and/or infiltration of water into a sewer.
Major Drainage System	That storm drainage system which carries the total runoff of the drainage system less the runoff carried by the Minor Drainage System (storm sewer). The Major Drainage System will function whether or not it has been planned and designed, and whether or not developments are situated wisely with respect to it. The Major Drainage System usually includes many features such as streets, gullies, and Major Drainage System channels.
Minor Drainage System	That storm drainage system which is frequently used for collecting, transporting, and disposing of snowmelt, miscellaneous minor flows, and storm runoff up to the capacity of the system. The capacity should be equal to the maximum rate of runoff to be expected from the minor design storm which may have a frequency of occurrence of one in 2, 5, or 10 years. The minor system may include many features ranging from curbs and gutters to storm sewer pipes and open drainage ways.
Natural Features and Functions	Landforms and ecologically sensitive areas including Wetlands, Areas of Natural and Scientific Interest (ANSI), defined in accordance with provincial guidelines, natural heritage areas, kettle lakes, streams and sensitive groundwater recharge and discharge areas and the ecological functions and water transport and water cleansing functions provided by these features.



Natural Systems Solutions/Approach	Projects following the philosophy in which terrestrial and aquatic vegetation provide the ability to cleanse water of its contaminants.
Official Plan	The Official Plan adopted by the City.
Private Property	Land owned by private individuals or companies.
Public Property	Land owned by the City Toronto or any other level of government, public agency or institution (such as: Toronto and Region Conservation Authority, Toronto Transit Commission, school boards).
Riparian Areas	Areas adjacent to a watercourse that are saturated by groundwater or intermittently inundated by surface water at a frequency and duration sufficient to support the growth of vegetation typically adapted for life in saturated soil.
Receiving Waters	Watercourses and Lake Ontario, to which Stormwater and Combined Sewer Overflows discharge.
Sewer Cross Connection	Sanitary sewer connection to a Stormwater pipe.
SSO (Sanitary Sewer Overflow)	A discharge to the environment of raw or inadequately treated sewage from municipal sanitary sewer systems that usually occurs as a result of a precipitation event.
Source Control	A practice or structural measure that is usually implemented at the beginning of a drainage system or at the lot level, to reduce the volume of runoff and minimize the concentration of pollution in overland flow from private property and prevent pollutants from entering Stormwater runoff or other environmental media, as described by the Ministry of the Environment.
Subwatershed	The drainage area of one or more contributing Watercourses to a river.
Subwatershed Plan	The result of a study undertaken within the drainage area of one or more Watercourses of a specific river following the guidance presented in the Ministry of the Environment Stormwater Management Planning and Design Manual (i.e. Humber Creek Subwatershed within the Humber River Watershed).



Stormwater	Surface runoff, resulting from rain or snowmelt events.
Stormwater Management Plan	The result of a study by a qualified professional which demonstrates how the combination of Source Control, Conveyance Control and if necessary End-of-Pipe Control facilities achieve the Wet Weather Flow management criteria of the Wet Weather Flow Management Master Plan.
Stormwater Servicing Drawing	A drawing or series of drawings prepared by a qualified municipal engineering consultant illustrating how Stormwater will be managed.
Vector Transmitted Disease	A disease that is transmitted from person to person or animal to person via an insect or organism.
Watercourse	(a) A natural well-defined channel produced wholly or in part by a definite flow of water, and through which water flows continuously or intermittently. Also, a ditch, canal, aqueduct, or other artificial channel for the conveyance of water to or away from a given place, as for the draining of a swamp. (b) A stream or current of water. Legally, a natural stream arising in a given drainage basin but not wholly dependent for its flow on surface drainage in its immediate area, flowing in a channel with a well-defined bed between visible banks or through a definite depression (as a ravine or swamp) in the surrounding land, having a definite and permanent or periodic supply of water (the stream may be intermittent), and usually, but not necessarily, having a perceptible current in a particular direction and discharging at a fixed point into another body of water. (c) A legal right permitting the use of a flow of a stream (especially of one flowing through one's land) or the receipt of water discharged upon land belonging to another.
Watershed	The drainage area of a river.
Watershed Plan	The result of a study undertaken within the drainage area of a specific river following the guidance presented in the Ministry of the Environment Stormwater Management Planning and Design Manual (i.e. Humber River Watershed).



Wetland

A vegetated area such as a bog, fen, marsh, or swamp, where the soil or root zone is saturated for part of the year.

Wet Weather Flow

Stormwater runoff generated by either rainfall or snowmelt or flow resulting from sanitary wastewater that enters the Combined Sewer system; infiltration and inflows from foundation drains or other drains resulting from rainfall or snowmelt.

WWFM Guidelines

Wet Weather Flow Management Guidelines prepared to support the Wet Weather Flow Management Master Plan. These guidelines provide the technical and quantitative tools needed to support the WWFM Policy and the Wet Weather Flow Management Master Plan, and are based on recent performance monitoring data and synthesis and provincial and international wet weather flow technical guidelines, standards and Manuals of Practice.



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