Storm Water Management Report

Storm water management report is an evaluation prepared by an experienced, qualified professional engineer to address the effects of the proposed development on the natural environment and municipal storm and sewer infrastructure. A storm water management report provides mitigative measures to reduce the impacts of increased sediment erosion, higher and faster peak flows and pollutant containment loads on the receiving storm water network.

Our well experienced, qualified professional engineer licensed in the Province of Ontario, specializing in Storm Water Management, prepares Storm Water Management Report to support Zoning By-law Applications, Plans of Subdivision and Condominium, Consent to Sever and Site Plan Control Applications and to obtain building permits in Ontario including City of Toronto, Durham Region, Halton Region, Peel Region, York Region, Hamilton (City of Hamilton), Oshawa (City of Oshawa), Pickering (City of Pickering), Clarington (Municipality of Clarington), Ajax (Town of Ajax), Whitby (Town of Whitby), Brock (Township of Brock), Scugog (Township of Scugog), Uxbridge (Township of Uxbridge), Burlington (City of Burlington), Halton Hills (Town of Halton Hills), Milton (Town of Milton), Oakville (Town of Oakville), Brampton (City of Brampton), Mississauga (City of Mississauga), Caledon (Town of Caledon), Vaughan (City of Vaughan), Aurora (Town of Aurora), East Gwillimbury (Town of East Gwillimbury), Georgina (Town of Georgina), Markham (City of Markham), Newmarket (Town of Newmarket), Richmond Hill (City of Richmond Hill), Whitchurch-Stouffville (Town of Whitchurch-Stouffville), Bradford West Gwillimbury (Town of Bradford-West Gwillimbury), King (Township of King) and Conservation Authorities including Toronto and Region Conservation Authority, Central Lake Ontario Conservation Authority, Credit Valley Conservation Authority, Conservation Halton, Lake Simcoe Region Conservation Authority, and Hamilton Conservation Authority.

Our well experienced, qualified professional engineer licensed in the Province of Ontario prepares and stamps a storm water management report to evaluate the effects of a proposed development on the storm water and drainage system, and to recommend how to manage storm water and snowmelt for the proposed development. A storm water management report may be a stand-alone document or combined with a Functional Servicing Report.

The storm water management report designed and stamped by our well experienced, qualified professional engineer licensed in the Province of Ontario is consistent with the requirements of the Storm Drainage and Storm Water Management Policies and Design Guidelines. A map of existing topography and pre-development catchments including external contributing areas are included in a storm water management report prepared by our well experienced, qualified professional engineer licensed in the Province of Ontario. Floodplain limits of all watercourses, including the erosion hazard are identified in a storm water management report designed and stamped by our well experienced, qualified professional engineer licensed in the Province of Ontario.

A plan of the sewer system, storm water management facilities and overland flow routes, pre-development and post-development catchments including area and runoff coefficients are included in a storm water management report designed by our qualified licensed engineer.

A storm water management report prepared by our well experienced professional engineer describes the methodology and existing conservation authority watershed criteria and the summary of applicable municipal criteria to be met. If required, a storm water management report stamped by our well experienced, qualified professional engineer licensed in the Province of Ontario would identify revised pipes and proposed catchbasin inlet controls.

A storm water management report designed by our well experienced and qualified engineer verifies to confirm that major overland flow routes do not impact properties and that road gutter flows are within municipal parameters and includes a summary of how all municipal and watershed storm water management criteria has been satisfied. A storm water management report stamped by our qualified and certified engineer outlines the operations, maintenance, and monitoring program for the stormwater management facilities, including Oil Grit Separators (OGS) and Low Impact Developments (LIDs), Phosphorus budget and water balance in accordance with the relevant conservation authority guidelines.

The following are typically included a storm water management report prepared by our licensed professional engineer

- Detail input parameters to the hydrologic model
- Complete computer output/input printouts (computer files)
- Electronic datafiles of input and output for pre and post development conditions
- Summary of computer output results in a simplified tabular format
- Any low impact developments (LIDs) and their function
- Relevant hydrogeological information

If required, our licensed engineer prepares Erosion and Sediment Control Plan to supplement a storm water management report.

Our licensed professional engineer consults with the Conservation Authority to ensure that all the requirements of the conservation authority are incorporated into the first draft of a storm water management report.

Several conservation authorities have a Phosphorus Offsetting Policy that may be applicable to a storm water management report.

Storm water management report prepared by our licensed professional engineer addresses water resource concerns for a proposed development to ensure that ground water and baseflow characteristics are preserved; water quality will be protected; the watercourse will not undergo undesirable and costly geomorphic change; there will not be any increase in flood damage potential; and ultimately, that an appropriate diversity of aquatic life and opportunities for human uses will be maintained.

Storm water runoff is different from wastewater, which flows into sanitary sewers from household drains. Storm water refers to rainwater and melted snow that flows over roads, parking lots, lawn and other sites. Under natural conditions, storm water is intercepted by vegetation and then absorbed into the ground and filtered and eventually replenishes aquifers or flows into streams and rivers. Later, part of it is returned to the atmosphere in the form of evapotranspiration. When an area is converted from a natural area to an urbanized area, the volume of storm water that runs off the land increases due to the addition of impervious hard surfaces.

In urbanized areas impervious surfaces such as asphalt pavements and roofs prevent storm water from naturally soaking into the ground. Instead, the storm water runs rapidly into storm drains, municipal sewers and drainage ditches into streams, rivers and lakes and on its way, it picks up pesticides, road salts, heavy metals, oils, bacteria, and other harmful pollutants and transports them through municipal sewers into streams, rivers and lakes.

The sheer force and volume of polluted storm water runoff causes:

- Increased downstream flooding risks
- Riverbank and bed erosion
- Increased turbidity
- Aquatic Habitat destruction
- Changes in the stream flow regime
- Combined sewer overflows
- Infrastructure damage
- Contaminated streams, rivers, and lakes.

In order to mitigate the undesirable impacts of urbanization on watercourses and associated infrastructure storm water management practices need to be implemented:

- To preserve the natural hydrologic balance in newly developing areas and re-establish it, wherever possible, in already developed areas;
- To protect and enhance quality of storm water discharged to lakes and streams; and
- To reduce the volume and frequency of combined sewer overflows in older urban areas.

Rapid urban expansion and associated construction activities are a significant source of stress to the natural environment. Construction activities accelerate natural processes of erosion and sedimentation as vegetation is stripped away and soils are left exposed. Consequently, storm water runoff from these sites contains high levels of sediment and associated contaminants. Implementation of adequate water quality controls at construction sites is crucial to ensuring downstream receiving waters and aquatic habitats are adequately protected.

Storm water management involves storing and directing stormwater runoff in urbanized areas to control flooding, erosion and water quality. This storm water management practice protects communities, municipal infrastructure like roads, sidewalks and trails and local waterways. The objective of storm water management is to slow the release of storm water runoff into natural systems.

If required, soak-away pit/infiltration trench/infiltration gallery/dry well are incorporated into the storm water management design where the geotechnical report indicates the subsurface soils have a minimum percolation rate of 15 mm/hr. The volume of the soak-away pit/infiltration trench/infiltration gallery/dry well is designed by licensed professional engineer o hold the 25 mm storm over the entire proposed roof area. In order to assess feasibility of infiltrating roof runoff, boreholes or test pits must be drilled/excavated to a minimum of 5 m below grade. A minimum of two observation wells are installed to soak-away pit/infiltration trench/infiltration gallery/dry well for inspection / maintenance purposes. Our licensed professional engineer always proposes a minimum cover of 1.2 m is for soak-away pit/infiltration trench/infiltration gallery/dry well to protect against frost penetration. A minimum separation of 1 m is required from the bottom of the soak-away pit/infiltration trench/infiltration gallery/dry well to the high groundwater level. Soak-away pit/infiltration trench/infiltration gallery/dry well must have an overflow system.

One way of managing storm water runoff is using storm water management ponds. Storm water management ponds can be 'dry'- filling up during a storm, or 'wet'- having a permanent pool of water. The storm water management ponds are designed to hold back storm water and release it slowly to natural waterways. Wet storm water management ponds also allow sediment to settle to the bottom of the storm water pond instead of traveling to a local stream. Storm water management ponds are so well integrated into the landscape that too many people they appear to be natural ponds. However, storm water management ponds do require maintenance to keep them working properly, such as sediment removal or cleaning of catch basins. Sometimes older storm water ponds need to be replaced with newer, more efficient designs.

Without stormwater management, runoff from urbanized areas would flood communities and roads, cause stream erosion and destroy aquatic habitat. In August of 2005, the City of Toronto experienced a major storm event which resulted in the collapse of part of Finch Avenue West. The storm was so intense that the Black Creek culvert under Finch Avenue West was unable to handle the amount of storm water runoff flowing through it.

More recently, the south end of Don Valley Parkway in the City of Toronto was flooded in May of 2013. The Don River overflowed its banks and spilled onto the Don Valley Parkway. This caused major delays for the morning commute. Runoff from this storm also caused basement flooding in many homes.

On July 8, 2013, a record breaking 126 mm of rainfall was recorded at Pearson International Airport within a 24-hour period. This was more rainfall than Hurricane Hazel in 1954. This extreme rainfall event caused the closure of highway ramps, parks, and offices, storm water flooded streets and basements and caused major electrical outages in certain parts of Toronto.

Lakes and local streams also suffer from storm water runoff. Storm water that rushes uncontrolled from urban pavements causes streams to rise faster and more dangerously than those in rural areas. The force of the water during rain events scours stream bottoms, erodes banks, harms fish habitat and increases pollutants such as phosphorus and heavy metals. Storm water picks up dirt, oil, grease, road salt, fertilizers, pesticides and bacteria from urbanized areas. During its journey over pavements, stormwater also becomes warmer which is harmful to fish.

Storm water management is required to release runoff into natural waterways slowly, imitating the water cycle before urbanization. Storm water ponds are also important because they provide an opportunity for sediment and pollutants attached to the sediment to become trapped in the storm water management pond bottom, rather than moving into the local streams.

Storm water management report evaluates the effects on the storm water and drainage system, and to recommend how to manage rainwater and snowmelt, consistent with the Municipal Wet Weather Flow Management Policy and while also meeting regional, provincial and federal regulations.

The level of detail for the storm water management report depends on the type and scope of application, the size of the development and the types of storm water management schemes proposed.

For example, a storm water management report for a Plan of Subdivision will typically be more complex than a storm water management report in support of a Site Plan Control application.

Our fee for typical Storm Water Management Report in support of a Site Plan Control application. for multi residential, commercial, industrial and institutional projects in Ontario including City of Toronto, Durham Region, Halton Region, Niagara Region(Niagara Falls, Port Colborne, St. Catharines, Thorold, Welland, Fort Erie, Grimsby, Lincoln, Niagara-on-the-Lake, Pelham), Peel Region, York Region, Waterloo Region (Kitchener, Cambridge, Waterloo), County of Brant (Brantford, Paris), Dufferin County (Shelburne), Haldimand County (Caledonia, Dunnville, Hagersville, Jarvis and Cayuga), Kawartha Lakes (Bobcaygeon, Fenelon Falls, Lindsay, Omemee, Sturgeon Point, Woodville), Northumberland County (Cobourg, Port Hope, Trent Hills, Brighton, Alnwick, Cramahe), Peterborough County, Simcoe County (Collingwood, Innisfil, Midland, New Tecumseth, Penetanguishene, Wasaga Beach, Adjala–Tosorontio, Clearview, Essa, Oro-Medonte, Ramara, Severn, Springwater, Tay, Tiny), Wellington County (Guelph, Eramosa, Erin, Puslinch), Oxford County (Woodstock, Tillsonburg, Ingersoll, Norwich), Hamilton (City of Hamilton), Oshawa (City of Oshawa), Pickering (City of Pickering), Clarington (Municipality of Clarington), Ajax (Town of Ajax), Whitby (Town of Whitby), Brock (Township of Brock), Township of Scugog (Port Perry), City of Peterborough, Uxbridge (Township of Uxbridge), Burlington (City of Burlington), Halton Hills (Town of Halton Hills), Milton (Town of Milton), Oakville (Town of Oakville), Brampton (City of Brampton), Mississauga (City of Mississauga), Caledon (Town of Caledon), Vaughan (City of Vaughan), Aurora (Town of Aurora), East Gwillimbury (Town of East Gwillimbury), Georgina (Town of Georgina), Markham (City of Markham), Newmarket (Town of Newmarket), Richmond Hill (City of Richmond Hill), Whitchurch - Stouffville (Town of Whitchurch-Stouffville), Bradford-West Gwillimbury (Town of Bradford West-Gwillimbury), King (Township of King), Barrie (City of Barrie) and (Orillia) City of Orillia and Conservation Authorities including Toronto and Region Conservation Authority, Central Lake Ontario Conservation Authority, Credit Valley Conservation Authority, Conservation Halton, Lake Simcoe Region Conservation Authority, Grand River Conservation Authority, Nottawasaga Valley Conservation Authority, Niagara Peninsula Conservation Authority, and Hamilton Conservation Authority is $2,475^{+HST}$.

Our fee for typical Storm Water Management Report in support of a for a Plan of Subdivision or condominium projects in Ontario including City of Toronto, Durham Region, Halton Region, Niagara Region(Niagara Falls, Port Colborne, St. Catharines, Thorold, Welland, Fort Erie, Grimsby, Lincoln, Niagara-on-the-Lake, Pelham), Peel Region, York Region, Waterloo Region (Kitchener, Cambridge, Waterloo), County of Brant (Brantford, Paris), Dufferin County (Shelburne), Haldimand County (Caledonia, Dunnville, Hagersville, Jarvis and Cayuga), Kawartha Lakes (Bobcaygeon, Fenelon Falls, Lindsay, Omemee, Sturgeon Point, Woodville), Northumberland County (Cobourg, Port Hope, Trent Hills, Brighton, Alnwick, Cramahe), Peterborough County, Simcoe County (Collingwood, Innisfil, Midland, New Tecumseth, Penetanguishene, Wasaga Beach, Adjala–Tosorontio, Clearview, Essa, Oro-Medonte, Ramara, Severn, Springwater, Tay, Tiny), Wellington County (Guelph, Eramosa, Erin, Puslinch), Oxford County (Woodstock, Tillsonburg, Ingersoll, Norwich), Hamilton (City of Hamilton), Oshawa (City of Oshawa), Pickering (City of Pickering), Clarington (Municipality of Clarington), Ajax (Town of Ajax), Whitby (Town of Whitby), Brock (Township of Brock), Township of Scugog (Port Perry), City of Peterborough, Uxbridge (Township of Uxbridge), Burlington (City of Burlington), Halton Hills (Town of Halton Hills), Milton (Town of Milton), Oakville (Town of Oakville), Brampton (City of Brampton), Mississauga (City of Mississauga), Caledon (Town of Caledon), Vaughan (City of Vaughan), Aurora (Town of Aurora), East Gwillimbury (Town of East Gwillimbury), Georgina (Town of Georgina), Markham (City of Markham), Newmarket (Town of Newmarket), Richmond Hill (City of Richmond Hill), Whitchurch - Stouffville (Town of Whitchurch-Stouffville), Bradford-West Gwillimbury (Town of Bradford West-Gwillimbury), King (Township of King), Barrie (City of Barrie) and (Orillia) City of Orillia and Conservation Authorities including Toronto and Region Conservation Authority, Central Lake Ontario Conservation Authority, Credit Valley Conservation Authority, Conservation Halton, Lake Simcoe Region Conservation Authority, Grand River Conservation Authority, Nottawasaga Valley Conservation Authority, Niagara Peninsula Conservation Authority, and Hamilton Conservation Authority is $4,975^{+HST}$.

Low Impact Development is a storm water management strategy that seeks to mitigate the impacts of increased runoff and storm water pollution. Low Impact Development comprises a set of site design strategies and distributed structural best management practices that harvest, filter, evapo-transpire, detain and infiltrate storm water. Our Low Impact Development practices include

- Integrate storm water into Planning (Multi Disciplinary Approach)
- Focus on runoff prevention (innovative planning, LID practices)
- Treat storm water at the source as a resource (respect natural flow paths)
- Create multifunctional landscapes (site aesthetics, energy, conserve potable water, wildlife, parks)
- Educate and maintain (legal agreements, maintenance plans)

Upon receiving all required documents and information, the storm water management reports will be ready in 10 business days. Upon receiving all required documents and information, expedited storm water management reports which can be prepared within 5 business days will be subjected to a 35% surcharge.

All design drawings and reports for the storm water management reports are endorsed by a Professional Civil Engineer, specializing in Municipal Hydrology.

As the site grading, erosion control and storm water management designs are inter-related it is recommended that the engineer that designed the site grading also develop the storm water management report.

Still have questions?

Call Us Anytime **(24/7)**

LAND & BUILDING EXPERTS
647 340 8649 (Land Line)

Text Messages
416 727 8336

Email: **landbuildex@gmail.com**

We offer Site Grading and Erosion Control Plans and Storm Water Management Reports to obtain site plan approval and building permits in Ontario including City of Toronto, Durham Region, Halton Region, Niagara Region(Niagara Falls, Port Colborne, St. Catharines, Thorold, Welland, Fort Erie, Grimsby, Lincoln, Niagara-on-the-Lake, Pelham), Peel Region, York Region, Waterloo Region (Kitchener, Cambridge, Waterloo), County of Brant (Brantford, Paris), Dufferin County (Shelburne), Haldimand County (Caledonia, Dunnville, Hagersville, Jarvis and Cayuga), Kawartha Lakes (Bobcaygeon, Fenelon Falls, Lindsay, Omemee, Sturgeon Point, Woodville), Northumberland County (Cobourg, Port Hope, Trent Hills, Brighton, Alnwick, Cramahe), Peterborough County, Simcoe County (Collingwood, Innisfil, Midland, New Tecumseth, Penetanguishene, Wasaga Beach, Adjala–Tosorontio, Clearview, Essa, Oro-Medonte, Ramara, Severn, Springwater, Tay, Tiny), Wellington County (Guelph, Eramosa, Erin, Puslinch), Oxford County (Woodstock, Tillsonburg, Ingersoll, Norwich), Hamilton (City of Hamilton), Oshawa (City of Oshawa), Pickering (City of Pickering), Clarington (Municipality of Clarington), Ajax (Town of Ajax), Whitby (Town of Whitby), Brock (Township of Brock), Township of Scugog (Port Perry), City of Peterborough, Uxbridge (Township of Uxbridge), Burlington (City of Burlington), Halton Hills (Town of Halton Hills), Milton (Town of Milton), Oakville (Town of Oakville), Brampton (City of Brampton), Mississauga (City of Mississauga), Caledon (Town of Caledon), Vaughan (City of Vaughan), Aurora (Town of Aurora), East Gwillimbury (Town of East Gwillimbury), Georgina (Town of Georgina), Markham (City of Markham), Newmarket (Town of Newmarket), Richmond Hill (City of Richmond Hill), Whitchurch - Stouffville (Town of Whitchurch-Stouffville), Bradford-West Gwillimbury (Town of Bradford West-Gwillimbury), King (Township of King), Barrie (City of Barrie) and (Orillia) City of Orillia and Conservation Authorities including Toronto and Region Conservation Authority, Central Lake Ontario Conservation Authority, Credit Valley Conservation Authority, Conservation Halton, Lake Simcoe Region Conservation Authority, Grand River Conservation Authority, Nottawasaga Valley Conservation Authority, Niagara Peninsula Conservation Authority, and Hamilton Conservation Authority.