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EARL BALES PARK STORMWATER MANAGEMENT FACILITY AND WATER SUPPLY SYSTEM

Van Haren, Steven^{1,2}

¹ Water Resources, Canada

² vanharens@mmm.ca

A short executive summary: The Earl Bales Park Stormwater Management Facility and Water Supply system is the first in a series of responses to a forward-looking strategy the City of Toronto has implemented to tackle sources on non-point impacts contained in uncontrolled runoff from historic development areas.

The project is a large Stormwater Management Pond facility coupled with storm sewer redirections designed to provide water quality improvements to untreated stormwater discharges from the approximate 550 ha. area encompassed by Downsview Airport to Bathurst Street and Steeles Avenue to Highway 401. This facility will provide a measurable reduction in sediment, bacterial, and excess nutrient loadings to the Don River and eventually to Lake Ontario, enhancing fish habitat and reducing the taking of river water for human purposes. In addition, the facility reduces erosion in the adjacent valley lands by removing sources of excess flow energy.

Various original and innovative aspects of the project include early stakeholder partnering and public outreach to facilitate the expansion of the facility beyond the strict property lines, allowing for sufficient facility scale for maximized water quality treatment and additional benefits such as cut/fill balancing, minimizing the project's overall carbon footprint (by requiring less off-site trucking). In addition, the project has implemented many public amenities such as pond interior walkways and aesthetic retaining walls and observation platforms to facilitate an increased public presence in the area that was a previously little used trail.

The pond is designed as an outdoor laboratory to provide feedback on pond water quality improvement performance, flow rates and benefits of large-scale rainwater harvesting. Over time, the project will build up a significant set of data on pond performance from the included sampling huts at the inlet and outlet areas. The data collected will include information on Total Suspended Solids removal, E. coli die-off, nitrogen and phosphorus uptake, etc.

The project is designed to remove particulate matter such as Total Suspended Solids and related absorbed excess nutrients from raw stormwater discharges by settling, enhancing overall water quality of flow by displacing these pollutants from the Don River. This facility provides a measurable reduction in sediment, excess nutrients and coliform bacterial loadings to the Don River and eventually to Lake Ontario, enhancing fish habitat and reducing the taking of river water for human purposes. In addition, the pond will provide a 45 million litre reservoir volume of treated stormwater to replace the Don River as a water source for irrigation and snow-making in the nearby Don Valley Golf Course and Earl Bales Park ski hill, respectively.

This feature allows for less overall disruption to the Don River by removing the water intakes. Lastly, the entire facility removes erosive energies in the adjacent, severely damaged ravines from intense stormwater discharges by connecting the storm outfalls currently in the Wallenberg and Timberlane ravines to the trunk storm sewer, allowing for a reduced valley flow during intense storm events.

The project demonstrates the responsible use of public land to achieve collective benefits by applying creative stewardship principles, integrating common and well understood processes with innovative ideas, such as season complementary rainwater harvesting, and dual uses for single water main pipes to provide a large and easily accessible example of positive approaches to the remediation of current environmental impacts. The principles involved are easily scalable to smaller or larger facilities in similar settings, and many design features will provide feedback on operational characteristics, providing key input for future applications. While some of the secondary features may not directly transfer due to the unique location of the project, virtually all of the primary functions can be replicated in other areas with similar configurations of pipe outfalls in public lands.

Community benefits extending from the project include an accessible, open water based park amenity in an underutilized corner of Earl Bales Park, a golf course based water feature and reliable alternative water supplies for non-potable public uses. Other benefits include local improvements to public spaces by reducing erosive damage in adjacent ravines used as hiking trails and urban wildlife habitat. Economic benefits include reduced expenditures on future maintenance activities for ravine, watercourse and ultimately, Lake Ontario restoration by removing the source of the damaging events.