FEBRUARY 20, 2015

Prospect Park Well Field Re-rating & Water Purification Plant Expansion

CLASS EA ENVIRONMENTAL STUDY REPORT

Prepared for:

Halton REGION

Region of Halton
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PROSPECT PARK WELL FIELD RE-RATING AND WATER PURIFICATION PLANT EXPANSION CLASS ENVIRONMENTAL ASSESSMENT ENVIRONMENTAL STUDY REPORT

Prepared for:

REGIONAL MUNICIPALITY OF HALTON
1075 North Service Road
Oakville, Ontario
L6M 3L1

Attention: Norman Cato

Prepared by:

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ES 1. EXECUTIVE SUMMARY

ES 1.1 Introduction and Background

The Regional Municipality of Halton (the Region) initiated this Class Environmental Assessment (Class EA) Study to develop the preferred alternative design concept for the Prospect Park Well Field Re-rating and Water Purification Plant (WPP) Expansion. This Class EA Study continues from the existing and previously completed Sustainable Halton Water and Wastewater Master Plan (AECOM, 2011), and is being conducted in accordance with the process outlined in the Municipal Engineers Association "Municipal Class Environmental Assessment" for a Schedule C undertaking.

The Acton water supply system consists of the Prospect Park, Davidson, and Fourth Line Well Fields, and the Prospect Park WPP. The Prospect Park WPP water supply is obtained from the underlying aquifer via two drilled groundwater wells (Prospect Park Well No.1 and Well No.2). These wells provide approximately 40 percent of the water supply to the Acton Drinking Water System. The raw groundwater is pumped from each of the wells into the associated pumphouse and conveyed to the Prospect Park WPP.

The Prospect Park WPP treatment process consists of pre-oxidation using chlorine and greensand manganese pressure filtration for removal of manganese and iron, UV for primary disinfection, fluoridation utilizing hydrofluosilicic acid, and chlorination for secondary disinfection. The treated water is discharged to an in-ground reservoir for chlorine contact before it is pumped into the distribution system.

The study area includes the Prospect Park Well Field and WPP, located on Lot 28, Concession II, Halton Hills, Ontario, as well as Fairy Lake and the surrounding residential areas as shown in Figure ES.1.

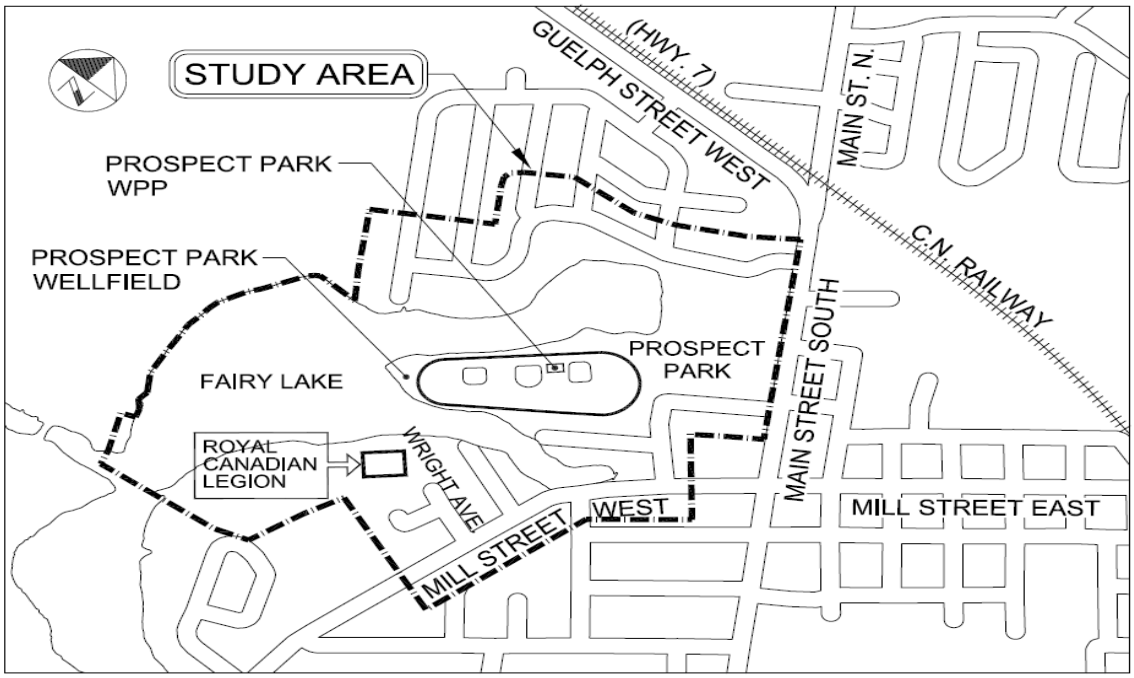

Figure ES.1 Study Area

Key issues and investigations addressed in this project include:

- Assessment of Existing Conditions and Future Needs;
- Alternative Design Concepts for the Prospect Park WPP Expansion; and
- Prospect Park Well Field Impact Assessment.

ES 1.2 Design Basis

Table ES.1 presents the future service population and water demand requirements developed in the Master Plan.

Table ES.1 Projected Population and Water Demand Requirements in the Acton Service Area

	2011	2016	2021	2026	2031
Projected Population for Acton Service Area	10,036	9,796	10,379	12,874	13,981
Projected Water Demand (MLD)	5.48	5.66	6.26	7.67	8.34
Existing Acton Well Water Actual Maximum Daily Supply (MLD)					
Fourth Line Well Field (1 well)	1.3				
Davidson Well Field (2 wells)	2.4 (1)				
Prospect Park Well Field (2 wells)	1.8 (2)				
Total	**5.5**				

Notes:

1. Does not include 483 m^3/d for Acri ponds.
2. Prospect Park well is restricted to a daily maximum of 1,137 m^3/d during the spawning season (Oct 1 - May 31).

ES 1.3 Preferred Alternative Solution

The Master Plan identified the expansion of the groundwater supply as the preferred water servicing strategy for Acton. Components of the preferred strategy include:

- Increased water taking at the Prospect Park and Fourth Line Well Fields;
- Expansion of the Prospect Park Water Purification Plant;
- Expansion of the Third Line Reservoir;
- Development of a new well field supply north of Acton;
- Consider potential Artificial Recharge Program to Black Creek / wetlands; and
- Upgrades to local infrastructure.

ES 1.4 Preferred Design Concept

Various design concepts that meet the study objectives and would fulfil the capacity needs at the existing WPP were developed. XCG Consultants Ltd. (XCG) previously conducted a desktop capacity assessment of the Prospect Park WPP which identified that the major unit process limiting capacity at the WPP is filtration. As such, all alternative design concepts evaluated include expansion of the filtration system at the Prospect Park WPP, although the configuration of the filters differed.

The alternative design concepts were evaluated and based on the evaluation results, the provision of three new taller filters was identified as the preferred design concept. Major construction works required as part of this design concept include:

- Construction of three new filters and decommissioning of the existing filters to provide water servicing for growth in the Town of Acton.
- Expansion of the west side of the building using the existing blow-out wall to accommodate the new filters.
- Modifications to the existing building including a new scrubber room, a new chlorine room, a new electrical room, a retrofitted potassium permanganate room, a new laboratory, a retrofitted fluoride room, and additional standby power.

ES 1.5 Mitigation of Impacts

Various mitigation measures have been suggested to minimize potential impacts on the natural, social, and cultural environments resulting from implementation of the preferred design concept. Construction will have some potential short-term environmental and social impacts including noise, vibration, dust, and traffic. During construction, mitigating measures will be employed wherever possible to minimize impacts. Excavation during construction will be performed in an orderly and efficient manner to minimize disturbances from noise, vibration and dust. A preconstruction public meeting could be held to inform the public of the scale of the proposed construction, the schedule, and to receive comments. Contingency measures are in place at the facilities to address accidents or malfunctions.

Monitoring is required as environmental conditions may change and to ensure that mitigation measure remain effective and continue to minimize the impacts of works taking place on the environment. Mitigation measures and associated monitoring will be further developed and detailed during the design and construction phases.

ES 1.6 Public, Agency, Stakeholder, and Aboriginal Consultation

Members of the public and those on the project mailing list, which included agencies, stakeholders and Aboriginals, were provided with project notifications through direct mail outs at key points in the Class EA Study. These notifications were also published in the local (Acton) newspaper. Residents/Property Owners located within the study area also received project notifications. A summary of major public consultation activities is as follows:

- A Public Information Centre (PIC) was held from 6:30 pm to 8:30 pm on March 20, 2013 at the Royal Canadian Legion in Acton, Ontario. The PIC was drop-in format with display boards available for viewing and an opportunity for one-on-one discussions with project team members. Members of the project team, including Halton Region and consultant representatives, were available to provide and discuss information on the study, and to receive comments and input. Comments received from the public were addressed as required.
- A project contact list was maintained throughout the Class EA Study. The contact list included agencies, stakeholders, and members of the public. This list was used for the mailing of all study notifications.

- Comments received from stakeholders throughout the Class EA Study were addressed accordingly.
- A Notice of Completion was issued on February 26, 2015.

ES 1.7 Completion of Class Environmental Assessment

The publication of this Environmental Study Report (ESR) represents the conclusion of Phase 4 of the Class EA process, including public and agency consultation. The ESR will be placed on public record by issuing a Notice of Completion and interested individuals will have 30 days to provide comments. If comments arise that cannot be resolved or mitigated in discussions with the Regional Municipality of Halton within the 30 day period, a person/party may request the Minister of the Environment to issue a Part II Order for an individual EA. The request must be directed to the Minister of the Environment at the following address:

Minister of the Environment and Climate Change
77 Wellesley Street West
11th Floor, Ferguson Block
Toronto, Ontario M7A 2T5

A copy of all requests is to be forwarded to the Regional Municipality of Halton at the following address:

Mr. Norman Cato
Project Manager
Regional Municipality of Halton
1075 North Service Road W., Unit 27
Oakville, Ontario L6M 3L1
Phone: 905-825-6000 ext. 7433
Toll Free: 1-866-442-5866
TTY: 905-825-9833
Fax: 905-825-0267
Email: norman.cato@halton.ca

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1. INTRODUCTION

The water supply for the Town of Acton (the Town) currently consists of three well fields that are owned and operated by the Region of Halton (the Region): Prospect Park Well Field, Davidson Well Field, and the Fourth Line Well Field. The Prospect Park Well Field and Water Purification Plant (WPP), located in Halton Hills, currently provide approximately 40 percent of the Town's average daily water supply.

The Region plans to expand production from the Prospect Park Well Field from the current permitted seasonal limits of 1,137 m^3/d (October to April) and 2,273 m^3/d (May to September) to 3,500 m^3/d year round to ensure a safe and reliable water supply to the Town.

The Sustainable Halton Water and Wastewater Master Plan (Master Plan) identified the expansion of the Prospect Park WPP and rerating of the wellfield as a component of the preferred water servicing strategy for Acton to expand the groundwater supply to the community. This project is a "Schedule C" activity under the Municipal Class Environmental Assessment (Class EA) process (Municipal Engineers Association, June 2000, as amended in 2007 and 2011). XCG Consultants Ltd. (XCG) was retained by the Region to identify and evaluate alternatives for the expansion of the Prospect Park WPP in accordance with Phases 3 and 4 of the Class EA process, including conducting a review of previous studies and programs and the preparation of an Impact Assessment Report to support the increase in water takings. Phases 1 and 2 of the Class EA process were completed through the Master Plan process (AECOM, 2011).

1.1 Study Area

The study area includes the Prospect Park Well Field and Water Purification Plant, located on Lot 28, Concession II, Halton Hills, Ontario, and is illustrated in Figure 1. The Prospect Park well field is located in the southwest part of Acton, at the end of a peninsula that extends into Fairy Lake. The Town owns the park lands, and the WPP is constructed on an easement allocated to the Region.

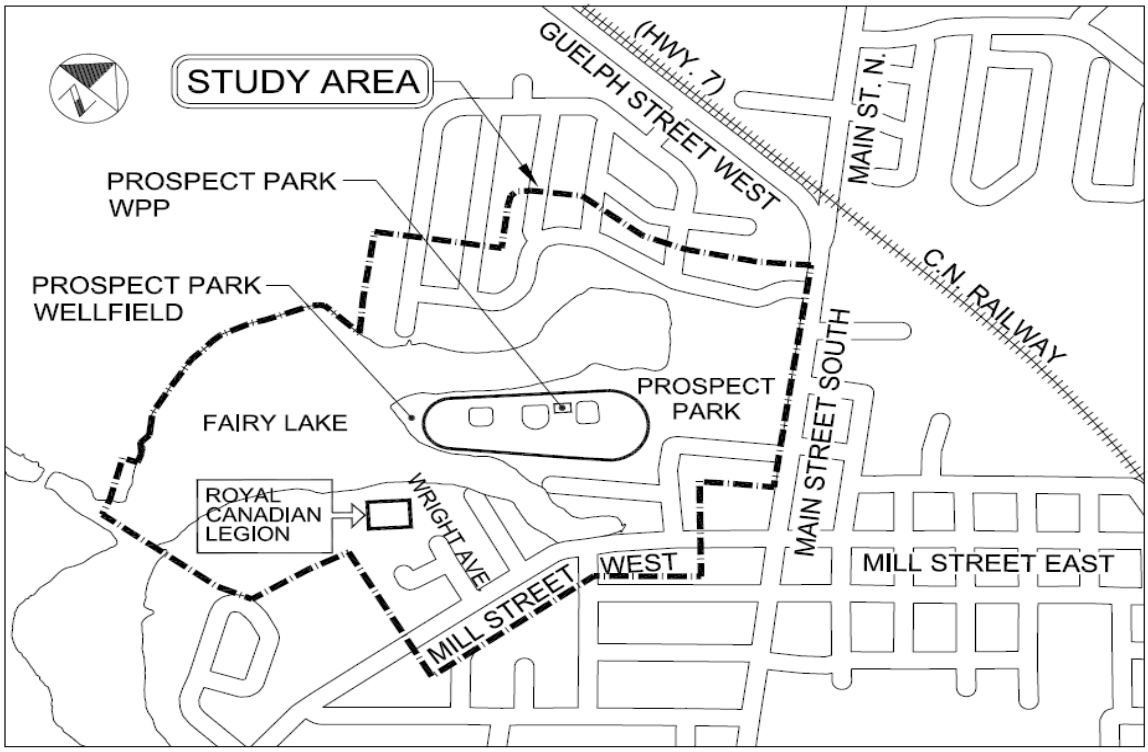

Figure 1 Study Area

1.2 Municipal Class Environmental Process

The Municipal Class EA is an approved process that municipal proponents follow in order to meet the requirements of the Ontario Environmental Assessment Act (EA Act). The Class EA process includes the evaluation of the environmental impacts of alternative solutions to a project and alternative methods of carrying out a project. It includes mandatory requirements for public consultation and provides a streamlined EA process for the assessment of smaller recurring projects, such as water and wastewater infrastructure projects.

The Municipal Class EA process is a five phase process, as illustrated in Figure 2.

Phase 1 involves the development of the problem or opportunity statement that is to be addressed through the subsequent phases.

In Phase 2, alternative solutions are identified and evaluated relative to their impact on the environment and a preferred solution is identified. There is a mandatory requirement to consult with the public during Phase 2.

In Phase 3, alternative design concepts that might be utilized to implement the preferred solution are evaluated. There is a second mandatory point of consultation during Phase 3.

During Phase 4 the planning and design process which was undertaken in the previous phases is documented in an Environmental Study Report (ESR). The ESR is placed on the public record for a minimum of 30 calendar days for public review and comment. A Notice of Completion is also issued. There is an opportunity for persons to request that the Minister of the Environment issue a Part II Order for the project. If there are no objections

or any objections are resolved in Phase 4, the project can proceed to final design and construction in Phase 5.

There are four categories of projects that require increasing levels of activity under the Class EA process.

- **Schedule A** projects are limited in scale, have minimal adverse environmental effects and include a number of municipal maintenance and operational activities. These projects are pre-approved and may proceed to implementation without following the full Class EA planning process.
- **Schedule A +** projects are pre-approved and require the public to be informed of the project prior to implementation. If the public has any comments, they should be directed to the municipal council where they would be addressed.
- **Schedule B** projects have the potential for some adverse environmental effects and are subject to a "screening" process. Schedule B projects can proceed to implementation after completion of Phases 1 and 2 of the Class EA process and following public notification of completion.
- **Schedule C** projects have the potential for significant environmental effects and must proceed under the full planning and documentation procedures specified in the Municipal Class EA.

The Prospect Park Well Field Re-Rating and WPP Expansion project is a Schedule C project under the Municipal Class EA process. Phases 1 and 2 of the Class EA process were completed as part of the Sustainable Halton Water and Wastewater Master Plan. Therefore, this study completes Phases 3 and 4 of the Municipal Class EA process.

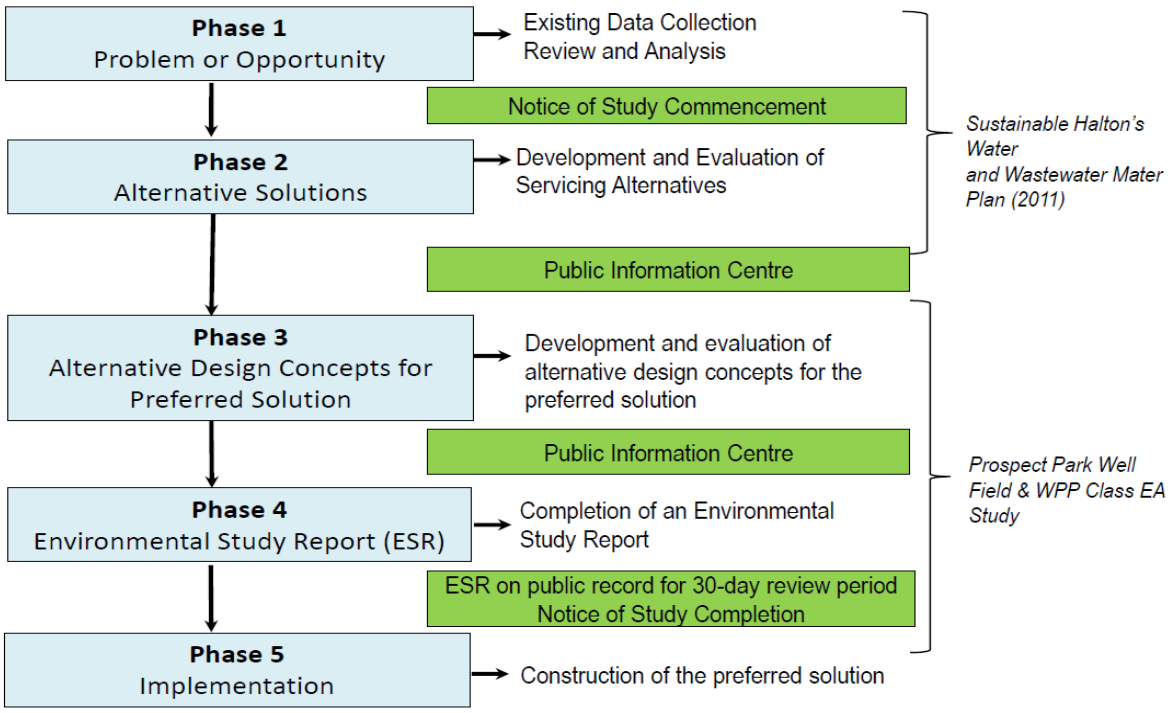

Figure 2 Municipal Class EA Process

2. STUDY OBJECTIVE

2.1 Problem Statement

The purpose of this project is to identify the most cost-effective, environmentally sound, and sustainable approach to increase the water taking at the Prospect Park Well Field from 2,273 m^3/d to 3,500 m^3/d (year round) and expand the Prospect Park WPP rated capacity from 2,300 m^3/d to 3,500 m^3/d in order to provide additional servicing to support future growth in Acton to 2031.

2.2 Justification and Need for the Project

The Master Plan identified the expansion of the groundwater supply as the preferred water servicing strategy for Acton. Components of the preferred strategy include:

- Increased water taking at the Prospect Park and Fourth Line Well Fields;
- Expansion of the Prospect Park Water Purification Plant;
- Expansion of the Third Line Reservoir;
- Development of a new well field supply north of Acton;
- Consideration of potential Artificial Recharge Program to Black Creek / wetlands; and
- Upgrades to local infrastructure.

Table 1 presents the future service population and water demand requirements developed in the Master Plan.

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Notes:

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3. EXISTING CONDITIONS

This section describes the existing natural and socio-economic environment in the study area and provides detailed information on the existing Prospect Park WPP. Figure 3 is a satellite image that shows the land use of the site and surrounding area. Figure 4 presents the Town of Acton Land Use Plan from the *Town of Halton Hills Official Plan, 2008.*

Figure 3 Surrounding Area of the Prospect Park WPP

3.1 Natural Environment

The prominent natural feature in the study area is Fairy Lake. The following subsections provide summary information on the physiological, biophysical, watercourse, woodlot, wetland, and terrestrial features located within and in close proximity to the study area.

3.1.1 Physiography

According to the Map 2556 entitled "Quaternary Geology of Ontario – Southern Sheet," published by the Ministry of Northern Development and Mines (1991), the subject site is located in a physiographic region of glaciofluvial ice-contact deposits consisting of gravel and sand, minor till that includes esker, kame, end moraine, ice-marginal delta, and subaqueous fan deposits. According to Map 2544 entitled "Bedrock Geology of Ontario – Southern Sheet," the bedrock in the area generally consists of sandstone, shale, dolostone, and siltstone of the Amabel Formation. According to Map P.2715 entitled "Physiography of Southern Ontario," published by the Ontario Ministry of Natural Resources (1984), the area generally consists of a spillway.

SCHEDULE A6

TOWN OF HALTON HILLS OFFICIAL PLAN

ACTON LAND USE

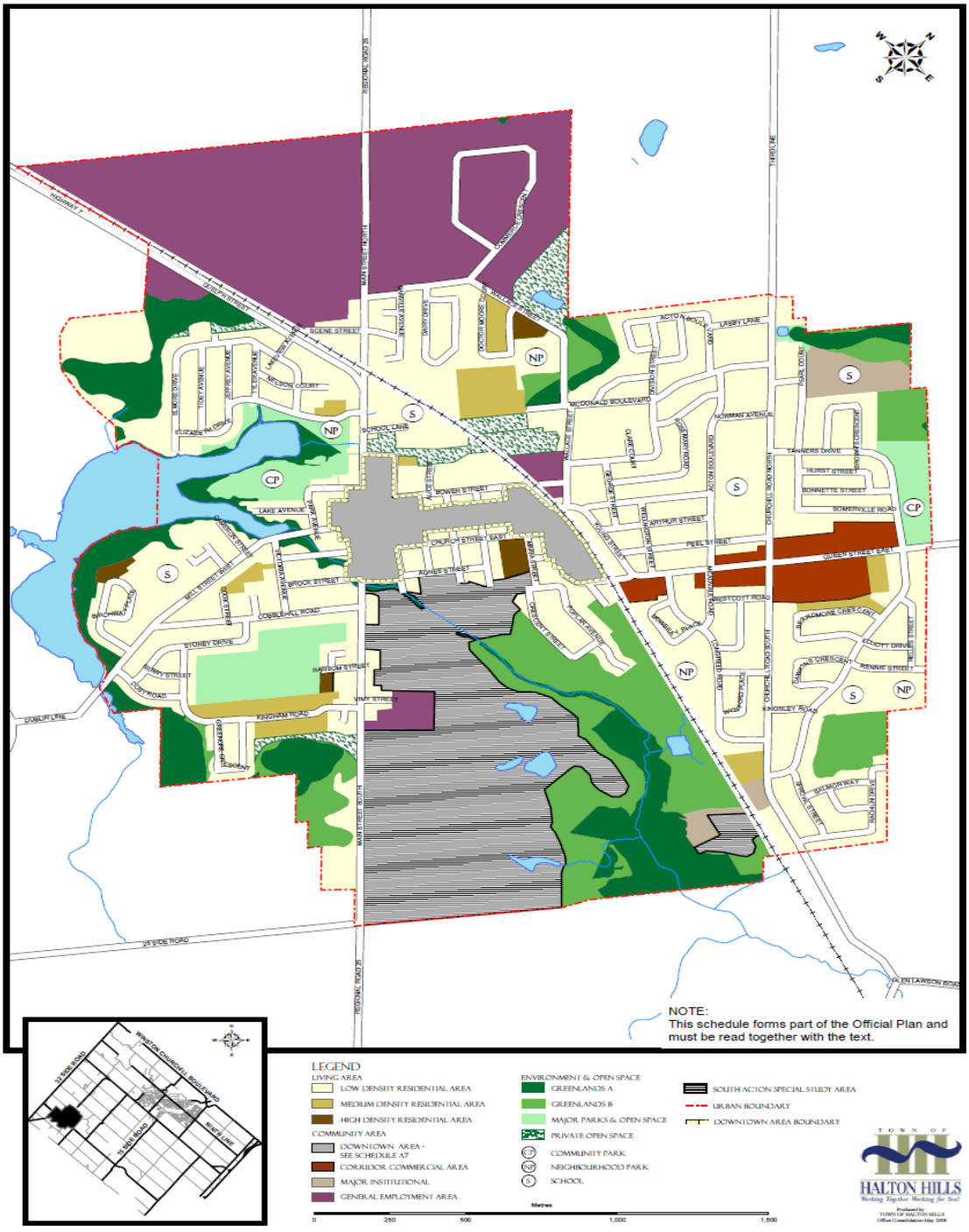


Figure 4 Town of Halton Hills Official Plan - Acton Land Use

3.1.2 Biophysical Environment

3.1.2.1 General

There are no Areas of Natural and Scientific Interest (ANSI) within the study area.

Significant natural features within relative proximity to the study area include the Blue Springs Creek Wetland Life Science ANSI, Black Creek at Acton Wetland Complex, and Acton-Silver Creek Wetland Complex. Fairy Lake and the Fairy Lake Marshes are designated by Credit Valley Conservation (CVC) as components of the Eramosa River-Blue Spring Creek Wetland Complex (Golder, 2012).

Fairy Lake is considered a provincially significant wetland with parcels of woodlands located to the north, south and west. Figure 5 presents natural areas from the *Town of Halton Hills Official Plan, 2008.*

Fairy Lake Marsh is located approximately 1.5 km from the study area. Fairy Lake Marsh is designated a provincially significant wetland complex by the Ontario Ministry of Natural Resources (OMNR). The area and its extension are important natural features supporting a number of provincially and locally rare species (NHIC, 2013).

The Acton Swamp Life Science ANSI is located approximately 2 km from the study area. The area is designated by the OMNR as a provincially significant wetland and is part of the Halton-Escarpment wetland complex. This wetland serves as an important water storage area, with groundwater discharging into tributaries of the Credit River and Sixteen Mile Creek (NHIC, 2013).

3.1.2.2 Fen within Eramosa-Blue Springs PSW Complex

Upstream of Mill Street there is a wetland area which has been confirmed by MNRF and CVC staff to contain a fen community. CVC has indicated that "fens are dependent on groundwater and therefore the potential impacts of the increase in water taking needs to be assessed and a monitoring/contingency plan may need to be developed".

Other elements affecting the hydrology of the fen area include Beaver activity within the wetland downstream of the fen and a proposal to replace the culvert that conveys Mill Street over the stream that drains the subject wetland into Fairy Lake.

The fen is located approximately 1km from the well field.

The findings of the study completed by Golder (2012) indicated that the fen is located approximately 500 m outside of and beyond the 10 cm shallow groundwater contour. The Golder (2012) study concluded that changes in this section of the study area will be small and unlikely to create a measurable effect.

Given the potentially complex hydrology of the wetland due to the influences of beavers and the Mill Street culvert, it is recommended that monitoring of the groundwater contribution to the fen prior to implementing the proposed increase in pumping be conducted to obtain a baseline data set. Since the maximum pumping is not expected to occur for many years, there is ample time to obtain data on groundwater contributions.

The need for vegetation monitoring data should be considered once several years of baseline groundwater data are available. At the time the need for vegetation data is being considered, the status of beaver dams in the wetland upstream of Mill Street should be reviewed.

The greenbelt also occupies a portion within and surrounding the study area. The Greenbelt Plan identifies lands and ecological features to be preserved and enhanced. This section of the greenbelt includes an agricultural system, a natural system, and settlement areas and areas within the Niagara Escarpment Plan.

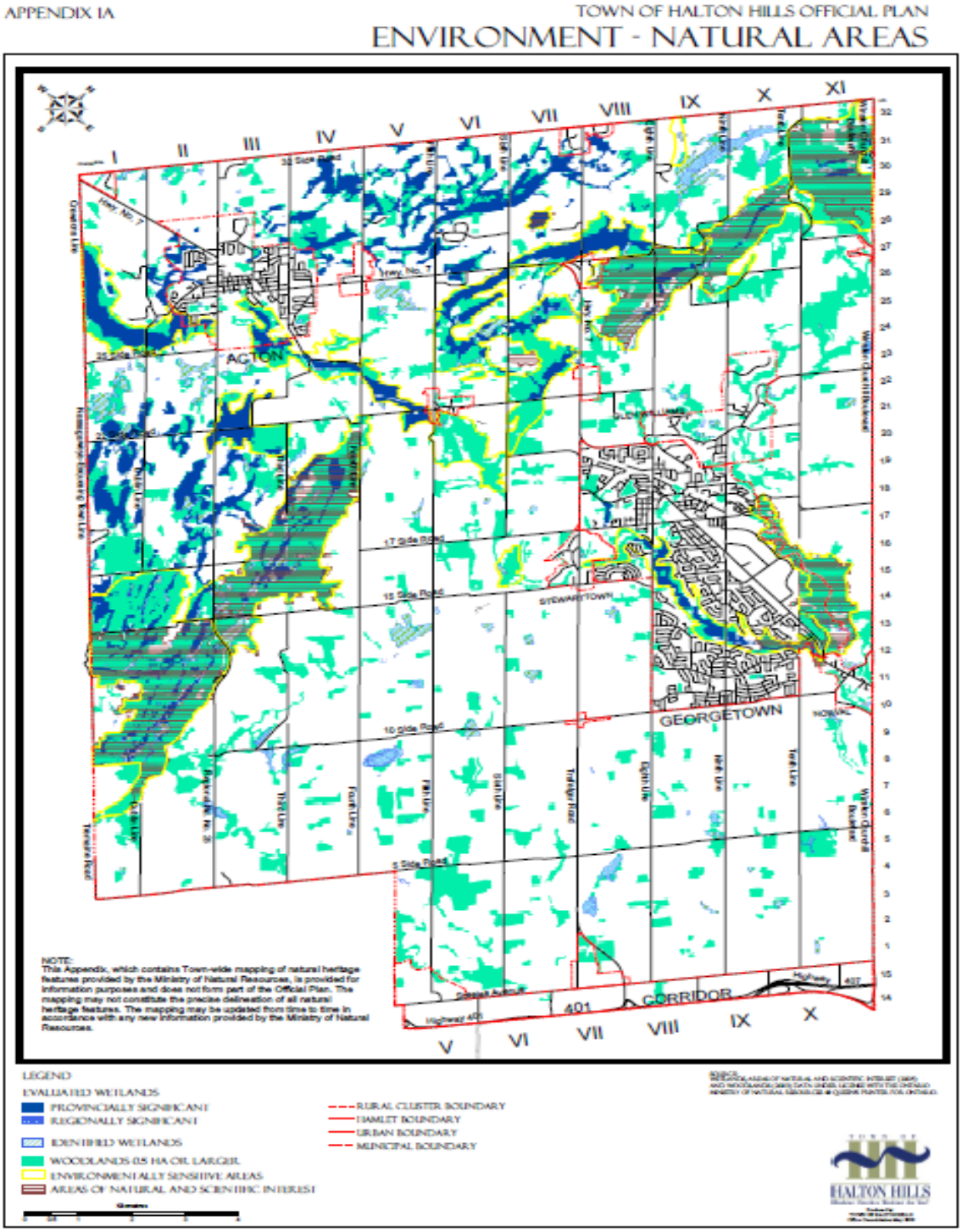


Figure 5 Town of Halton Hills Official Plan - Environment Natural Areas

3.1.3 Water Quality

Fairy Lake water quality is characterized as moderate to poor due to low concentrations of dissolved oxygen, elevated nutrient concentrations, and above average bacterial counts from fertilizers, faeces, and other non-point sources of pollution entering the lake through surface runoff (AECOM, 2009).

3.1.4 Vegetation and Flora and Wildlife

Aquatic vegetation in Fairy Lake consists of native and non-native (invasive) species, including eurasian milfoil (*Myriophyllum specatum*), crispy-leaved pondweed (*Potamogeton crispus*), and common reed (Phrasgmites australis) (AECOM, 2009). Fairy Lake supports Richardsons Pondweed, a regionally rare plant species (Golder, 2012).

CVC records show Fairy Lake supports several warmwater fish species including the northern pike (*Esox Lucius),* largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieui*), black crappie, pumpkinseed, brown bullhead (*Ameiurus nebulosus*), suckers (*Catostomidae spp.),* and carp (*Cyprinus carpio*) (Golder, 2012).

Previous surveys by Dillon Consulting conducted in 2005 (Dillon, 2007) confirmed the presence of the midland turtle (*Chrysemys picta),* snapping turtle (*Chelydra serpentine*), wood frog (*Rana sylvatica*), spring peeper (*Pseudoacris crucifer*), leopard frog (*Rana pipiens*), green frog (*Rana clamitans*), grey tree frog (*Hyla versicolour*), and American toad (*Bufo americanus*) within the area of Fairy Lake. In 2010, a CVC study failed to identify the grey treefrog within the area of Fairly Lake (Golder, 2010).

3.1.4.1 Blanding's Turtle

There is a historical Summer record of a Blanding's Turtle at a location approximately 1km from the proposed construction site for the expansion of the water purification plant.

Since the construction site is surrounded by manicured grass in an urban park setting there is no potential for direct impact on this species during construction.

Much of the available habitat around Fairy Lake and adjacent marshes is subject to natural fluctuations in water levels due to natural precipitation regimes; as a result, it is predicted that a maximum change in Fairy Lake water levels of 5 cm at maximum proposed future pumping rates would not affect the Blanding's Turtle.

In September 2014, the Region of Halton submitted a completed Information Gathering Form for activities that may affect species or habitat protected under the Endangered Species Act to the Ontario Ministry of Natural Resources and Forestry (MNRF). On October 17, 2014 the MNRF indicated that the Ministry currently does not have concerns with the proposed undertaking. A copy of the correspondence received from MNRF is provided in Appendix F.

3.1.4.2 Other Impacts to Wetlands on and Adjacent to Fairy Lake

The aquatic and wetland habitats in Fairy Lake are dynamic and subject to a complex mix of factors, such as seasonal and annual variation in precipitation. Fluctuations in water levels are a typical feature of such water bodies that are managed to achieve a number of objectives. Prior to 1986, declines in lake level of 80 cm are thought to have occurred. In 1989 water level declines in Fairy Lake of 40 cm were documented (Gartner Lee, 1993).

The present day aquatic and wetland communities have adapted to considerable fluctuations in water levels over a period of many decades. The maximum 5 cm decline in water levels predicted to be associated with the proposed future groundwater well pumping volumes is very small in comparison to historical water level fluctuations. Annual precipitation variation is expected to be responsible for even greater water depth fluctuations.

No detectable impacts on wetlands in and adjacent to Fairy Lake are expected from the predicted reduction in lake levels associated with future well pumping.

3.1.4.3 Impacts to Black Creek Fisheries and Wetlands

Under current conditions, flow over the dam at Fairy Lake ceases in late Spring until Autumn. Dates with no outflow from Fairy Lake depend on precipitation conditions during specific years. The PPGSS (Golder, 2012), which was conducted with pumping rates similar to those proposed for the well field expansion, concluded that outflow from Fairy Lake would cease two weeks earlier in the Spring and would extend two weeks longer into the Autumn at the higher water takings.

The features and functions of concern downstream of Fairy Lake are the Black Creek PSW and the Brook Trout population in Black Creek.

The PPGSS (Golder, 2012) has predicted that there will be no groundwater drawdown impact in the area of the Acton WWTP, from the proposed maximum well pumping. As a result, there would be no groundwater effects on existing wetlands and fish associated with Black Creek near the WWTP.

The Brook Trout present in Black Creek are supported by groundwater upwelling located downstream of the Acton WWTP, toward Third Line, and these groundwater sources are not expected to be affected by the proposed increased pumping at the Prospect Park well field.

Beavers are present along Black Creek, between Fairy Lake and the Acton WWTP (Dillon, 2011). Damming of the creek by beavers adds an additional complication to flow maintenance in Black Creek at the Acton WWTP.

The Fairy Lake dam is currently not actively operated to control flow volumes in Black Creek (Warren Harris pers. comm. November 2014). The existing stop logs are each approximately 30 cm in height. A number of private docks and other shoreline structures are currently present around the perimeter of Fairy Lake. If active efforts were undertaken to manipulate flow volumes out of Fairy Lake, several private properties could be affected.

Prior to attempting to manage the Fairy Lake dam to increase discharge to Black Creek in Summer, a thorough review of the technical feasibility and potential effectiveness of increasing flows should be undertaken. Since late Spring flows are principally a function of precipitation in the preceding months, managed flows would also largely be a function of weather; as is currently the case. Increasing early to late Spring storage capacity in Fairy Lake may not be feasible due to the constraints posed by the numerous private docks and structures present.

Since there is no predicted impact on wetlands and fish along Black Creek in the area to the Acton WWTP it may not be necessary to determine the feasibility of effective flow management by manipulating the Fairy Lake dam.

3.1.4.4 Water Level Management to Avoid Impact on Northern Pike Movement through the Mill Street Culvert

There are two elements to consider regarding Northern Pike reproduction in the study area:

1. Early Spring season (April to early May) movement of adults upstream through the Mill Street culvert; and
2. Movement of young-of-the-year downstream through the Mill Street culvert, probably in late July through early September.

The CVC has indicated that efforts should be made to ensure that neither of the two pike reproduction movements are impacted by the predicted 5 cm drop in Fairy Lake Summer water levels associated with the future proposed pumping volumes.

It is unlikely that Fairy Lake water levels in April to early May will be affected by the increased pumping because the maximum water level declines are expected to occur later in the Summer. Also, it is anticipated that the Spring season elevation of water leaving the marsh through the culvert will be higher than that in Fairy Lake. A small decline in the Fairy Lake elevation would therefore not prevent pike from moving into the marsh.

Movement of any young-of-the-year Northern Pike from the wetland located upstream of Mill Street might occur seasonally at the time when Fairy Lake levels decline due to future well pumping at the proposed rates.

Without existing data on Summer and early Autumn water surface and watercourse bottom elevations upstream, within, and downstream of the Mill Street culvert, it is not possible to predict whether young-of-the-year pike would potentially be stranded in the marsh upstream of Mill Street, if Fairy Lake levels drop by up to 5 cm.

The Town of Halton Hills has undertaken a project to replace the Mill Street culvert. Once the water level and creek bottom elevation data are collected, it may be possible to design the new Mill Street culvert in such a manner that pike movement would continue even if Fairy Lake levels dropped an additional 5 cm in Summer.

It is recommended that in 2015:

1. Monitoring be undertaken to determine the timing and size of any Northern Pike movement through the Mill Street culvert; and
2. Data on seasonal water surface elevations and flows, and wetland, culvert and Fairy Lake bottom elevations in the Mill Street culvert area be collected along with any other data that a hydrologist would need to advise on designing the Mill Street culvert to accommodate pike movement if Fairy Lake surface Summer levels dropped an additional 5 cm due to increased groundwater well pumping.

3.1.5 Hydrogeology and Hydrology

A conceptual hydrogeological model for the Prospect Park area has been developed as part of the PPGSS and the Tier 3 Study-Conceptual Model. The interpretation includes the following components:

- Horizontal groundwater in the Prospect Park area occurs in the Prospect Park overburden aquifer and in the Gasport Formation bedrock aquifer;

- Groundwater recharge occurs through precipitation infiltrating surficial areas of the Prospect Park aquifer or through drainage/precipitation infiltrating through surficial glacial till; and
- Due to the relatively low permeability of the bedrock formations which underlie the Gasport Formation, seepage losses to these formations are negligible in comparison to the water surplus of the Black Creek Catchment Area (Golder, 2012).

Groundwater elevations in the Gasport Formation and the Prospect Park aquifer were simulated in the Halton Tier 3 groundwater model (AECOM and AQR, 2012). Golder (2012) produced groundwater flow mapping in the area of the Prospect Park aquifer by combining the simulated groundwater contours from the Tier 3 model with field measurements collected from Region monitoring wells. The groundwater flow pattern generally follows the bedrock topography in the Prospect Park area, with groundwater flow in the aquifer generally converging toward the buried bedrock valley, with an easterly flow component.

Additional information on the hydrogeologic units present in the area of the Prospect Park well field and corresponding estimates of hydraulic conductivity/transmissivity provided in some of the background reports are summarized in the Impact Assessment Report, which is included in Appendix D.

The Town of Acton is located within the middle watershed of the Credit River. CVC is responsible for the Credit River watershed. Mapping indicates that there are five tributaries that discharge into Fairy Lake. Two of the tributaries flow into the lake from the north. Based on available mapping, at least one of these tributaries appears to originate from the Acton-Silver Creek wetland complex located approximately 2 km to the north of the lake. A third tributary flows into the lake from the northwest. The two remaining tributaries flow into the lake from the south; one of these (the southeast tributary) includes a wetland area referred to as the Fairy Lake Marsh. The Fairy Lake Marsh wetland area appears to merge with the Eramosa River-Blue Springs Creek Wetland Complex further west; a surface water divide is evident in the wetland area between the Fairy Lake Marsh tributary and Blue Springs Creek.

The Black Creek catchment area flows in an easterly direction and drains into the Credit River. The Prospect Park Well Field is located within the Black Creek catchment area. A total of eight Black Creek tributaries flow into Fairy Lake. The Black Creek at Acton wetland complex is located about 1.5 to 2 km to the east of Fairy Lake. Fairy Lake and Fairy Lake Marsh are components of the Eramosa River-Blue Springs Wetland Complex.

3.1.6 Local Surface Water Features

The Prospect Park Well Field is located on the shore of Fairy Lake. Fairy Lake is a man-made feature created in the 1830s by damming Black Creek to provide a permanent storage based water supply to the Beardmore Tannery. The Fairy Lake dam is located at the northeast arm of the Lake, near the intersection of Mill Street West and Victoria Street. Black Creek flows eastward below the dam and discharges to the Credit River system. The discharge of the dam is controlled by a series of stop logs that can be adjusted to regulate the elevation of Fairy Lake, currently set at an elevation of 345.36 m above sea level (ASL).

There are currently no agreements in place between the Region, the Town of Halton Hills, and CVC regarding responsibility for the operation of the dam.

Fairy Lake is approximately 25 ha in size, and is generally shallow, with reported depths ranging from 1 to 7 m, and an average depth of about 3 m. Approximately 50 percent of its volume is found in the top 1 m of depth. Fairy Lake has been described as having a warm-water fishery, with generally high levels of nutrient concentrations and aquatic vegetation, with water quality that was considered low to moderate (Golder, 2012).

The Region operates the Acton WWTP, which is located adjacent to Black Creek, approximately 1.8 km downstream of the Fairy Lake Dam. The average outflow from the Acton WWTP is approximately 4,500 m^3/day. Upstream of the Acton WWTP, portions of Black Creek and associated tributaries to Fairy Lake have been characterized as intermittent with respect to flow (Golder, 2012).

Water from Fairy Lake overflows the dam during a significant portion of the year.

Staff gauge measurements have been recorded since October 1990 at the Fairy Lake Dam by the Region. The staff gauge measurements record the water depth at Fairy Lake twice per week and are used to monitor changes in the lake levels. Figure 6 presents the changes in Fairy Lake levels from 1990 to 2012. Generally, there is no overflow to Black Creek in the summer when the lake level is below the weir elevation.

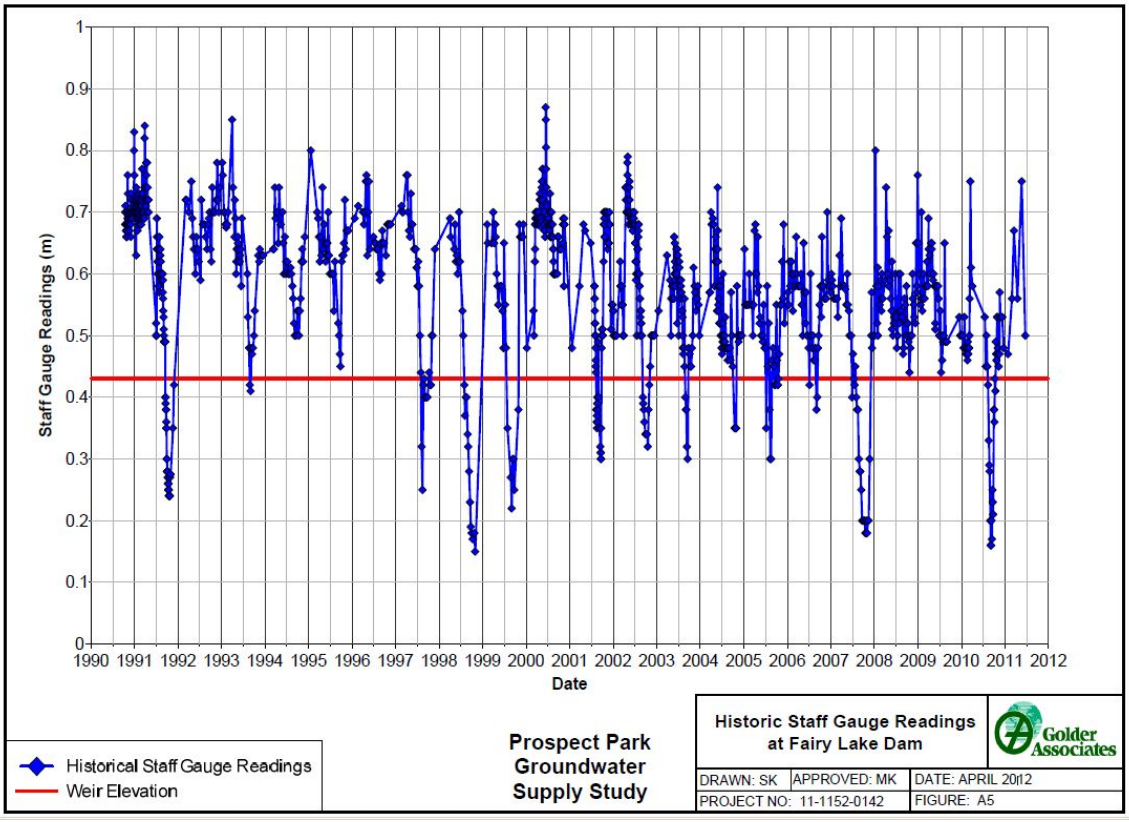


Figure 6 Historic Staff Gauge Readings at Fairy Lake Dam (Golder, 2012)

Information provided in the Prospect Park Well Field Groundwater Supply Study (PPGSS) (Golder, 2012), suggests that outflow from Fairy Lake to the Acton WWTP outfall in Black Creek is intermittent during the summer months due to the lack of available water surplus. Streamflow in this reach is largely dependent on the overflow of Fairy Lake dam, and therefore sensitive to normal seasonal variations in water surplus for the Black Creek catchment area reporting to the lake. The intermittency of flow readings at the Fairy Lake dam was characterized in the PPGSS.

A review of the water budget details presented in the *Fairy Lake Water Quality Study* (AECOM, 2009) suggests that under current conditions, the lake overflows are dependent on surface water inflows. The effects of the decrease in surface water levels are more pronounced under more severe dry weather conditions.

Beavers are present along Black Creek, between Fairy Lake and the Acton WWTP (Dillon, 2011). Damming of the creek by beavers adds an additional complication to flow maintenance in Black Creek at the Acton WWTP.

The Fairy Lake dam is currently not actively operated to control flow volumes in Black Creek (Warren Harris pers. comm. November 2014). The existing stop logs are each approximately 30 cm in height. A number of private docks and other shoreline structures are currently present around the perimeter of Fairy Lake. If active efforts were undertaken to manipulate flow volumes out of Fairy Lake, several private properties could be affected.

Prior to attempting to manage the Fairy Lake dam to increase discharge to Black Creek in Summer, a thorough review of the technical feasibility and potential effectiveness of increasing flows should be undertaken. Since late Spring flows are principally a function of precipitation in the preceding months, managed flows would also largely be a function of weather; as is currently the case. Increasing early to late Spring storage capacity in Fairy Lake may not be feasible due to the constraints posed by the numerous private docks and structures present.

3.2 Socio-Economic Environment

The following sections provide summary information on existing and planned land uses within the study area, as well as existing heritage and archaeological resources.

3.2.1 Existing and Future Land Uses

The Town of Acton is designated as the Acton Urban Area in the Town of Halton Hills Official Plan. The land use in the Town of Acton is a mixture of residential, commercial, institutional, and greenlands.

The Prospect Park WPP and Well Field study area consists of the property where the Prospect Park WPP is located and surrounding area. The Prospect Park WPP and Well Field are located on the west side of Acton, in a community park on a peninsula extending into Fairy Lake. In the Official Plan, the site of the Prospect Park WPP is designated greenlands and the surrounding area is designated low density residential with a parcel of land designated as medium density residential. Fairy Lake is located to the west, north and south of the study area.

The Official Plan promotes the development of industrial uses and encourages general industrial development in the Acton Urban Area (Halton Hills, 2008). Future land uses in and adjacent to the study area are expected to be consistent with existing land uses.

Further, Fairy Lake is considered an important recreational and sport fishing location (Golder, 2012).

3.2.2 Heritage and Archaeological Resources

During the development of the Master Plan, a *Master Plan of Archaeological Resources of the Regional Municipality of Halton 2008 Update* was completed by Archaeological Services Inc. Two historic structures and a cemetery are located at the eastern border of the study area near Main Street. The archeological survey identified a historic structure located at the study area southern border near Park Avenue. The survey identified a large cemetery located south of the study area in the Town of Acton.

Immediately east of the project study area, the Acton downtown is designated as a Historic Settlement.

3.3 Technical Environment

This section summarizes the existing technical environment of the study area. A copy of the Drinking Water Works Permit (No. 004-202) is provided in Appendix A and identifies limitations to water takings. A more detailed description of the technical environment is provided in Technical Memorandum No.1 - Assessment of Existing Conditions and Future Needs for Prospect Park WPP, provided in Appendix B.

3.3.1 Existing Well Field and Water Purification Plant

The Prospect Park Well Field and WPP is part of the Acton Drinking Water System. The Prospect Park system was commissioned in 1990 with upgrades completed in 2003 to the water supply and treatment process. The Region is responsible for operation of the water supply, water treatment system and distribution system, and performance of maintenance activities.

The water supply to the plant is obtained from the underlying aquifer via two drilled groundwater wells (Prospect Park Well No.1 and Well No.2). These wells provide approximately 40 percent of the water supply to the Acton Drinking Water System. The wells are located within two separate pumphouse buildings adjacent to Fairly Lake in the Black Creek Drainage Basin.

UTM Coordinates

Well No.1 and Pumphouse:
NAD 83, Zone 17
Easting 576819.00 m
Northing 4830867.00 m

Well No.2 and Pumphouse:
NAD 83, Zone 17
Easting 576802.96 m
Northing 4830882.81 m

Prospect Park Well No. 1 (PP1) was originally constructed in 1973 and has been in operation as a municipal water supply source for the Town of Acton since the early 1990s. PP1 was rehabilitated in 2010 by Lotowater Technical Services Inc. (Golder, 2011), at which time a 250 mm diameter stainless steel liner was installed in PP1 to address corrosion and other problems that had developed with the original well casing. The well screen is reported to be set at a depth interval from 18.8 to 24.4 m below the pump house floor (Lotowater, 2010). In 2011, a new submersible pump was installed in PP1 and tested at flow rates of up to 40 L/s.

Prospect Park Well No. 2 (PP2) was constructed in 2002 with a reported screen setting of 17.1 to 23.2 m below surface (IWS, 2003). PP2 is equipped with a 300 mm diameter well casing. The well capacity was rated at 4,579 m^3/day (53 L/s) at the time of well construction (IWS, 2003).

Both wells have a well pump rated at 53 L/s (at 82.3 m TDH). PP1 pump is equipped with a variable frequency drive. Both wells are considered to be extracting groundwater under direct influence (GUDI) of surface water with effective in-situ filtration. The raw groundwater is pumped from each of the wells into the associated pumphouse and transferred to the Prospect Park WPP. Well Pumphouse No.1, constructed in 1990, is equipped with a flow meter to monitor the flow entering the WPP and a pre-chlorination system. Well Pumphouse No.2, constructed in 2003 to function are an alternate source to Well No.1, is capable of pre-chlorination via the Well No.1 Pumphouse chlorination system. The raw water from Well No.1 and No.2, after pre-chlorination, is pumped approximately 300 meters from the pumphouses to the WPP.

A copy of the Drinking Water Works Permit (No. 004-202) and the Amended Permit to Take Water (No. 6281-7WFQB3) are provided in Appendix A.

The municipal address of the water purification plant is 30 Park Street, Halton Hills, Ontario.

UTM Coordinates of Water Purification Plant:

NAD 83, Zone 17
Easting 576941.353 m
Northing 4831064.453 m

The Prospect Park WPP is equipped with pre-oxidation using chlorine and greensand manganese pressure filters for removal of manganese and iron, an ultraviolet (UV) system for primary disinfection, fluoridation utilizing hydrofluosilicic acid and chlorination for secondary disinfection. The process includes a provision for the addition of potassium permanganate prior to filtration for the removal of iron and manganese and filter media regeneration, however is currently not in use. The treated water is discharged to an in-ground reservoir for chlorine contact before it is pumped into the distribution system. The filtration system consists of blowers for air scouring of filter media and a backwash wastewater management system.

Free chlorine residual, fluoride residual, ultraviolet transmittance (UVT), and turbidity are continuously monitored by the SCADA system. The continuous monitoring equipment and UV units are also alarmed through the SCADA system. The well pumps automatically stop in the event that the chlorine residual, filter effluent turbidity, or UVT dosage fail to meet the pre-set water quality conditions.

Stand-by power is provided to the Prospect Park WPP by a diesel generator.

The treated water from the Prospect Park WPP is pumped directly into the Acton distribution system, which services approximately 9,889 residents. The distribution system is composed of ductile, cast iron and PVC watermains.

Figure 7 shows the location of the Well No.1 and No.2 and associated pumphouses and the WPP. Figure 8 presents the Prospect Park system process flow diagram.

Design parameters for each unit process for the Prospect Park WPP are listed in Table 2.

Figure 7 Site Location

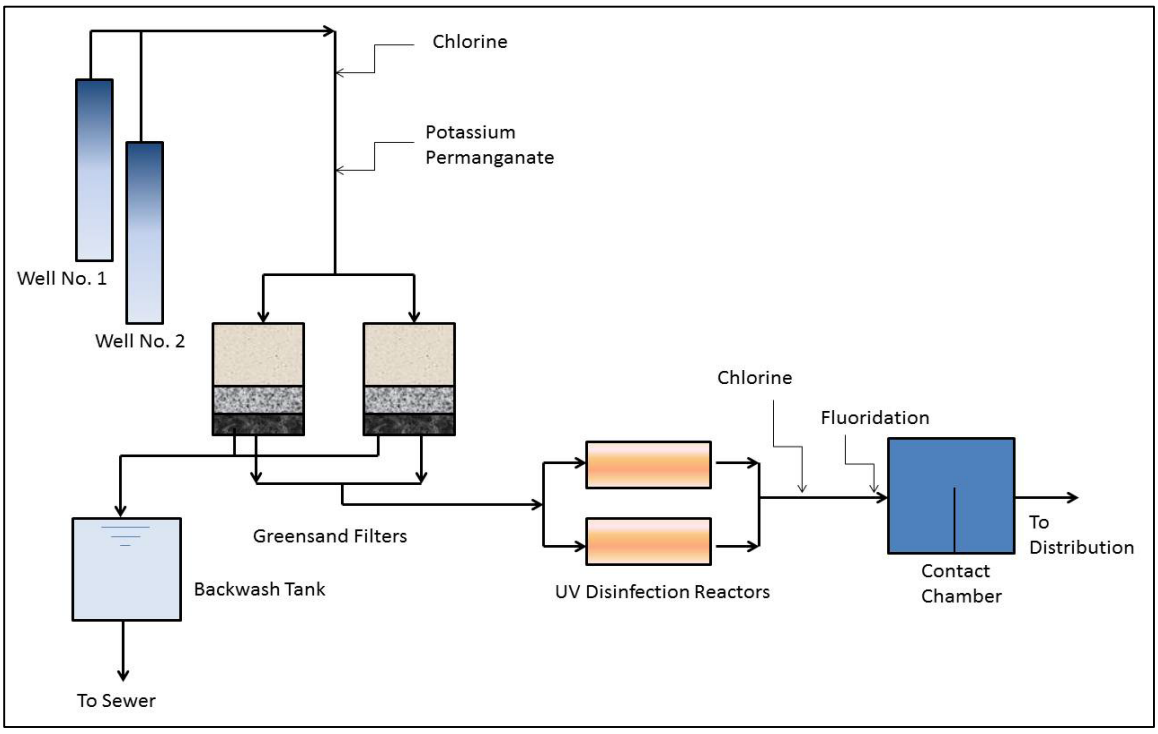


Figure 8 Prospect Park Process Flow Diagram

Table 2 Summary of Existing Process Design

Parameter	Process Design
Pre-Chlorination	
Type	Chlorine Gas
Capacity (each)	9.07 kg/d
Chlorine Booster Pumps	2
Filtration	
Capacity	Filter 1: 1,136 m^3/d, Filter 2: 1,136 m^3/d
Filtration Rate	5.3 m/h
Surface Area	7.3 m^2
Media	0.3 m deep sand, 0.6 greensand, 0.3 anthracite
Backwash rate	65 L/s
Chemical	Potassium Permanganate
Meter Pump Capacity	Pump 1: 10 L/hr
Wastewater Management System	
Tank Capacity	150 m^3
Transfer Pumps Capacity	Pump 1: 3.5 L/s, Pump 2: 3.5 L/s
Air Scour System	
Blowers Capacity	Blower 1: 170 scfm, Blower 2: 170 scfm
Air Scour Supply Rate	0.6 m^3/m^2/min
Motor	6.25 kW
UV Disinfection	
Reactors	Trojan Swift
Capacity	Reactor 1: 53 L/s, Reactor 2: 53 L/s
Minimum Dosage	40 mJ/cm^2
Secondary Disinfection	
Type	Chlorine Gas
Booster Pumps Capacity	Pump 1: 6 kg/d, Pump 2: 6 kg/d
Fluoridation	
Chemical	Hydrofluosilicic acid
Number of Metering Pumps	1
Chlorine Contact Tank	
Capacity	48.3 m^3 useable
Baffle Factor	0.5
Standby Power	
Type	Diesel Engine Generator Set
Capacity	100 kW with 1,135 L diesel fuel tank

4. IMPACT ASSESSMENT

The existing permit to take water (PTTW) approved for the Prospect Park Well Field allows for a maximum water taking of 1,137 m^3/d during the period from October 1 to April 30 and a maximum water taking of 2,273 m^3/d for the remainder of the year (May 1 to September 30). Based on the results from a series of comprehensive studies undertaken between 2005 to 2012, the Region has proposed to increase the maximum water taking limit at the well field to 3,500 m^3/d, and to allow the well field to operate at 3,500 m^3/d throughout the year. This change is proposed:

- to reduce the operational problems associated with operating the wells under a two-tiered PTTW;
- to provide redundancy in the system that will make it easier to plan and implement maintenance activities and water system upgrades; and,
- to accommodate anticipated service growth.

An Impact Assessment Report, included in Appendix D, was prepared to support an amendment to the PTTW allowing for the proposed change. The documents reviewed in preparation of the Impact Assessment Report were:

- Prospect Park Well Field Impact Assessment (Dillon, 2007);
- Prospect Park Well Field Impact Assessment (Dillon, 2010);
- North Halton Well Rehabilitation Study/Capital Needs Assessment (K.W. Thompson Inc., 2011);
- Black Creek Assimilative Capacity Study, Draft Report (Dillon, 2011);
- Prospect Park Well Field Groundwater Supply Study (Golder, 2012); and
- Halton Hills Tier 3 Water Budget and Water Quantity Risk Level Assignment Study: Conceptual Model Report (AECOM, AquaResource Inc., 2012).

The major findings of each report are provided in the following subsections.

4.1 Prospect Park Well Field Impact Assessment (Dillon, 2007)

As part of a Master Plan undertaking, an impact assessment of a proposed increase in water taking from the Prospect Park wells was completed in 2007 by Dillon Consulting Limited (Dillon). The assessment considered an increase to an annual average water taking of 3,000 m^3/d and a maximum daily water taking of 4,546 m^3/d. At the time of the assessment, it was reported that the PTTW allowed the wells to operate at the higher rate (4,546 m^3/d) only in emergency situations.

A long-term pumping test was undertaken as part of the impact assessment and it was reported that no measurable effects on Fairy Lake were observed during the 15-day (4,182 m^3/d) and 30-day (2,924 m^3/d) stages of the pumping test. Dillon also concluded that water taking during the pumping tests did not have any impact on baseflow to Black Creek or on the wetlands adjacent to Fairy Lake.

Dillon reported that equilibrium pumping conditions were reached by the end of the 30-day pumping test (at 2,924 m^3/d) and that 97 percent equilibrium was reached at the end of the 15-day pumping test (at 4,182 m^3/d). Essentially, there would be little or no additional drawdown beyond what was observed if the pumping tests continued.

Dillon concluded that water taking from the Prospect Park wells at rates marginally greater than the rates used for the pumping tests would result in drawdown conditions similar to those observed during the pumping tests. The extra flow to the well would be achieved through a deepening of the drawdown near the pumping well, without any significant expansion of the zero drawdown limits.

Dillon also concluded that the results of their analyses indicated that pumping from Prospect Park Well No.2 (PP2) at an average-day demand of 3,000 m^3/d and a maximum day demand of 4,544 m^3/d would be sustainable in the long term and would not cause measurable impact on the surface water or groundwater systems, or on the aquatic habitats of Black Creek, Fairy Lake and the adjacent wetlands.

Correspondence between CVC and the Region during the preparation of this report highlighted extensive comments from the CVC with regards to the analysis and study findings. These considerations were addressed in part in the subsequent study conducted by Dillon in 2010, which is discussed in the following section.

4.2 Prospect Park Wellfield Impact Assessment (Dillon, 2010)

In order to address some outstanding concerns following the 2007 assessment, the Region initiated additional testing and study during the period of 2008 to 2010. The objective was to complete an impact assessment for a proposed increase in water taking at the well field to an average of 3,000 m^3/d on a continuous basis. The additional work included an extended pumping test period from December 2009 to March 2010 (77 days in duration). The purpose of the long-term pumping test was to assess changes in the capture zone that would result from the proposed increase in water taking and to further assess the effects on water levels in Fairy Lake, Black Creek and various wetlands.

Based on an analysis and interpretation of the results from the 77-day test, Dillon reported the following:

- No significant aquifer boundary conditions were evident during the 77-day pumping test.
- The aquifer response to pumping was similar to that of an ideal aquifer receiving little or no leakage.
- Horizontal flow in the aquifer sediments accounted for essentially all of the discharge from the wells. The drawdowns observed in the shallow monitoring wells indicated that vertical hydraulic gradients to the aquifer were present, but these did not show a measureable effect on the time-drawdown data in the production wells and the observation wells completed in the aquifer.
- Water temperature monitoring data provided no evidence to suggest that the production wells were discharging water originating from Fairy Lake.

- The results of environmental isotope analyses (18O/16O, D/H) provided no evidence of a contribution of water from Fairy Lake to the discharge from well Prospect Park Well No.1 (PP1). The isotope results were inconclusive for PP2.
- The main source of groundwater produced at the Prospect Park Well Field (PP1 and PP2) is horizontal flow in the aquifer sediments in the buried bedrock valley that occurs in the vicinity of, and to the east of, the well field.
- Pumping from PP1 and PP2 at a combined rate 3,033 m^3/d caused no measurable drop in the water level in Fairy Lake.
- The pumping test had no measurable effect on the flow in Black Creek.
- Dillon (2010) concluded that pumping the wells at a combined rate of 3,000 m^3/d is sustainable in the long-term and will not cause measureable impacts to groundwater and surface water systems or the aquatic habitats in Fairy Lake, Black Creek and the adjacent wetlands.

4.3 North Halton Well Rehabilitation Study / Capital Needs Assessment (K.W. Thompson Inc., March 2011)

An aquifer pumping test was carried out at the Prospect Park Well Field during the spring and summer of 2010 to evaluate the potential for increasing the supply from the Prospect Park aquifer to a sustainable average day yield of 4,645 m^3/day.

The results showed that pumping at the proposed rate of 4,646 m^3/day resulted in a significant degradation of water quality; higher levels of iron and manganese result in operational problems at the existing Prospect Park WPP related to both efficiency of removals and a marked decrease in run times for the greensand filters.

The pumping tests did show that a sustainable average day demand of approximately 3,500 m^3/day can be supplied by the Prospect Park Well Field. It was suggested that raw water iron and manganese concentrations can be treated at this pumping rate using the existing Prospect Park WPP green sand filters; however, no data or information was provided to support this assertion, nor was any stress testing or optimization work completed.

4.4 Black Creek Assimilative Capacity Study, Draft Report (Dillon, 2011)

An assimilative capacity assessment of Black Creek, located downstream of Fairy Lake, was conducted as part of the Acton Wastewater Treatment Plant (WWTP) Class EA study. Flow data from 2007 to 2009 and water quality data collected as part of a field sampling and monitoring program conducted from June to August of 2007 at various locations along Black Creek were assessed. Low flow analyses and assimilative capacity modelling results were used in conjunction with water quality data to determine the impact of increased WWTP effluent discharge to the receiving stream.

The study identified the 7Q20 flow for Black Creek to be 1,400 m^3/d (16.2 L/s). Based on the study findings, the average flow rate along Black Creek increases consistently as it moves downstream, with the Fairy Lake outlet contributing the least amount of flow and the downstream locations providing significantly more flow to the Creek. The noted increasing trend in the system flow rate indicates that the Black Creek study area is subject

to groundwater inputs. In addition to the low flows, the study notes beaver dams in the vicinity one of the monitoring locations, resulting in backwater effects.

Two options were examined to increase the flow in Black Creek for dilution and mixing of the Acton WWTP effluent discharge: (1) Fairy Lake augmentation and (2) Dufferin Aggregates augmentation. Fairy Lake augmentation involves a strategy for operating the dam and controlling lake water levels and outflows. It is noted that if the water levels were permitted to rise and/or drop by 0.3 m, then 0.3 to 0.6 m of water could be stored and released slowly into Black Creek in addition to the current flow rate over the outlet weir.

The Dufferin Aggregates quarry has a daily maximum allowable release to Black Creek of 0.14 m^3/s, based on the Permit to Take Water that was presumably re-issued following its expiration in October 2007. The Dufferin Aggregates augmentation option considers pumping part of the quarry outflow upstream to Black Creek at the WWTP outfall, increasing the receiving stream flow at the effluent discharge.

4.5 Prospect Park Well Field Groundwater Supply Study (Golder, May 2012)

The Region initiated further study of the well field to determine whether the water taking could be increased and modified so that the well field could operate on a continuous basis. The Prospect Park Groundwater Supply Study report (PPGSS) acknowledged at the start that previous testing had indicated that the well field capacity was over 4,500 m^3/d.

The conclusions of the study indicated that the well field can easily sustain a continuous pumping rate of 3,400 m^3/d year round. At the proposed continuous pumping rate:

- Seepage losses from the surface catchments within the zone of influence will account for 27 percent (920 m^3/d) of the water taking; and horizontal groundwater flow in the Prospect Park/Gasport Formation aquifers beneath a 0.6 km^2 capture area will account for the remaining 73 percent (2,480 m^3/day) of the water taking.
- No interference with the operation of private wells will occur.
- Existing surface water features in the area have limited catchment areas and are already sensitive to the seasonal weather trends; relative to the existing seasonal variability in the water surplus available to support the surface water features in the area, seepage losses due to the proposed increase in pumping should have no measurable effect on the variation in streamflow rate or temperature currently observed within the surface water features.
- Declines in shallow groundwater levels beneath terrestrial areas (including wetlands) located within the pumping zone of influence will be small and unlikely to create a measurable effect; monitoring can be used to track changes in specific areas such as Provincially Significant Wetlands.
- The proposed increase in pumping rate should lower the average water level in Fairy Lake by a small amount (estimated at approximately 5 cm) during the summer months. The predicted effect represents a low risk to the fish and aquatic habitat in Fairy Lake.
- There will be no impacts to wildlife habitat.

4.6 Halton Hills Tier 3 Water Budget and Water Quantity Risk Level Assignment Study: Conceptual Model Report (AECOM, AquaResource Inc., October 2012)

The Conceptual Model Report was prepared as part of the ongoing Halton Hills Tier 3 Water Budget and Water Quantity Risk Level Assignment Study (Tier 3 Study-Conceptual Model). The overall objective of the report was to present a revised geological/ hydrostratigraphic conceptual model for the Acton and Georgetown study area. The revised conceptual model is to be used as the critical element in the development/refinement of the numerical model required under the Tier 3 Study.

The report notes that the existing PTTW restricts the water taking due to environmental concerns that the well may draw in surface water from Fairy Lake under higher pumping rates. The report notes that the reduced rate of water taking in the PTTW (1,137 m^3/d from October 1 to April 30) coincides with the fish spawning season.

The conceptual model report provides a regional scale interpretation of the hydrogeology in the Halton Hills area, with a focus on conditions relevant to the municipal wells in Georgetown and Acton. The report notes that the Prospect Park wells are screened in a buried bedrock valley aquifer cut into the Niagara Escarpment. The report notes that the buried bedrock valley between Acton and Georgetown was a focus of the Tier 3-Conceptual Model study as the overburden aquifers in the valley are thought to contribute most of the groundwater produced from the Georgetown municipal wells. The report notes that monitoring well MW15-09, located southwest of the Prospect Park wells and south of Fairy Lake, is upgradient of the Prospect Parks wells. The aquifer is reported to be thinner at the MW15-09 location (3 to 4 m of sand and gravel) compared to the aquifer at the well field (10 to 25 m of coarse-grained sediments). An elevated area or 'notch' in the Acton/Georgetown bedrock valley floor was identified near Limehouse, approximately 5 km east of Prospect Park.

4.7 Impact Assessment Analysis

Bathymetry mapping indicates that Fairy Lake is relatively shallow, with 50 percent of its volume occurring in the top 1 m of depth. A strict interpretation of the mapping would suggest that the lake itself is distinct from the surrounding wetlands. Based on lake level contours, it is estimated that the total “dried out” area caused by a 0.05 m (5 cm), as estimated in the PPGSS, reduction in surface water levels would be 6,800 m^2 (0.7 ha). Based on the estimated perimeter of the lake, the average width of the dried out area would be 1.5 m. This represents 2.6 percent of the existing lake surface area.

PPGSS pumping tests conducted at 4,400 m^3/d, which is greater than the proposed water taking of 3,500 m^3/d, suggested that the estimated change in surface water levels in Fairy Lake would be in the order of 0.05 m (see Section 4.5). A change of this magnitude is within the existing seasonal fluctuations (between 0.40 and 0.60 m) as seen historically. The Fairy Lake water level data suggests that lake levels are heavily influenced by surface water inflow, and the amount of inflow is dependent on the amount of precipitation. Available data support the assertions that the impacts of increased groundwater takings are not expected to have a significant impact on surface water levels.

The shallower areas of the lake are mainly located in the South Basin. Drawdown mapping show very minor impacts on the South Basin, and the drawdown contours do not include the Fairy Lake Marsh.

Further, it is not anticipated that there will be implications on the assimilative capacity of Black Creek needed for the Acton WWTP. Fairy Lake contributes little to the flow in Black Creek compared to other downstream sources, namely groundwater inflow. However, options for the control of the Fairy Lake outflow and other opportunities to increase flow Black Creek are describe in the Black Creek Assimilative Capacity Study Draft Report (Dillon, 2011). These options are Fairy Lake augmentation and Dufferin Aggregates augmentation and were described in Section 4.4.

The hydrological pathways for potential impacts to the natural environment have been assessed in detail as part of the work completed to date. The assessment shows that there will be minimal impacts to the natural environment via the hydrological pathways, and therefore the biological impacts by way of this pathway are expected to be minimal.

There are potential impacts to the open/vegetated space on the west side of the Main Basin, however, given the depth of the lake in this area, a 5 cm decrease in water levels at this location may not generate as wide of a "dried out" area as in the shallower areas described. Based on the information presented in vegetation mapping in the Tier 3 Water Budget Conceptual Model Report (AECOM, 2012), this area is mainly classified as Dry-Moist Old Field Meadow and Cultural Deciduous Woodland. On the east side, there are some areas designated as Thicket Swamp. The Marsh classified areas appear to be limited to the South Basin and are generally outside the projected zone of influence.

4.8 Impact Assessment Conclusions

The existing studies at the Prospect Park well field and surrounding area provide an acceptable technical basis for the hydrogeological impact assessment associated with proposed changes to the municipal pumping rate. The work indicates that the well field can sustain a pumping rate of 3,500 m^3/d on a continuous basis without causing adverse effects to other groundwater users or environmental features in the area that are dependent on groundwater.

Measurable effects of the increase in pumping rate should be limited to:

- A potential groundwater level decline in the range of 0 to 1 m in the Prospect Park aquifer beneath the uppermost part of the Black Creek catchment immediately downstream of Fairy Lake; and
- A potential groundwater level decline in the range of 0 to 0.5 m at the edge of the Blue Springs Creek catchment southwest of Fairy Lake. Neither of these potential groundwater declines in the aquifer will result in a measurable effect on surface water levels in these areas.

The results of the impact assessment conclude that the increase in pumping rate will have no measurable or adverse effect on groundwater levels or surface water levels at the three provincially significant wetlands that have been identified in the area.

5. PREFERRED ALTERNATIVE SOLUTION

The Sustainable Halton Water and Wastewater Master Plan (AECOM, 2011) examined various alternatives for the provision of additional drinking water treatment capacity to meet the demands associated with projected future growth in Acton to 2031. It was determined that the independent groundwater servicing in the community of Acton should be maintained. An expansion and upgrade of the existing Prospect Park WPP and increase in water taking from the wellfield was the preferred alternative solution identified in the Master Plan.

The Master Plan study also outlined a requirement for increased water taking at the Prospect Park and Fourth Line Well Fields, an expansion of the Third Line Reservoir, and a new Well Supply in north Acton.

Completion of the Master Plan study fulfilled Phases 1 and 2 of the Municipal Class EA process.

6. DEVELOPMENT AND EVALUATION OF ALTERNATIVE DESIGN CONCEPTS

This section summarizes the development of alternative design concepts to satisfy the expansion of the Prospect Part WPP and rerating of the wellfield components of the preferred alternative solution defined in the Master Plan (AECOM, 2011) and the evaluation of those alternatives to select a preferred alternative design concept. Technical Memorandum No.2 - Alternative Design Concepts for Prospect Park WPP Expansion (XCG, 2013) provides the detailed development and evaluation of alternative design concepts and can be found in Appendix C of this report.

6.1 Alternative Design Concepts

Four design concepts that meet the study objectives and would fulfil the capacity needs at the existing WPP were developed. XCG previously conducted a desktop capacity assessment of the Prospect Park WPP (Technical Memorandum No.1 - Assessment of Existing Conditions and Future Needs for Prospect Park WPP), provided in Appendix B, which identified that the major unit process limiting capacity at the WPP is filtration. As such, all four alternative design concepts include expansion of the filtration system at the Prospect Park WPP, although the configuration of the filters differs among the four options.

Additional upgrades and other modifications to the Prospect Park WPP that are common to all four alternatives include:

- A building expansion either to the North (Building Layout A) or East (Building Layout B) side of the existing facility to accommodate the upgraded filtration system and new process areas;
- A new scrubber room;
- new chemical rooms for chlorine, and potassium permanganate storage and feed equipment;
- A new electrical room; and
- Additional standby power.

The layout of upgrades and modifications to the WPP differs for each alternative.

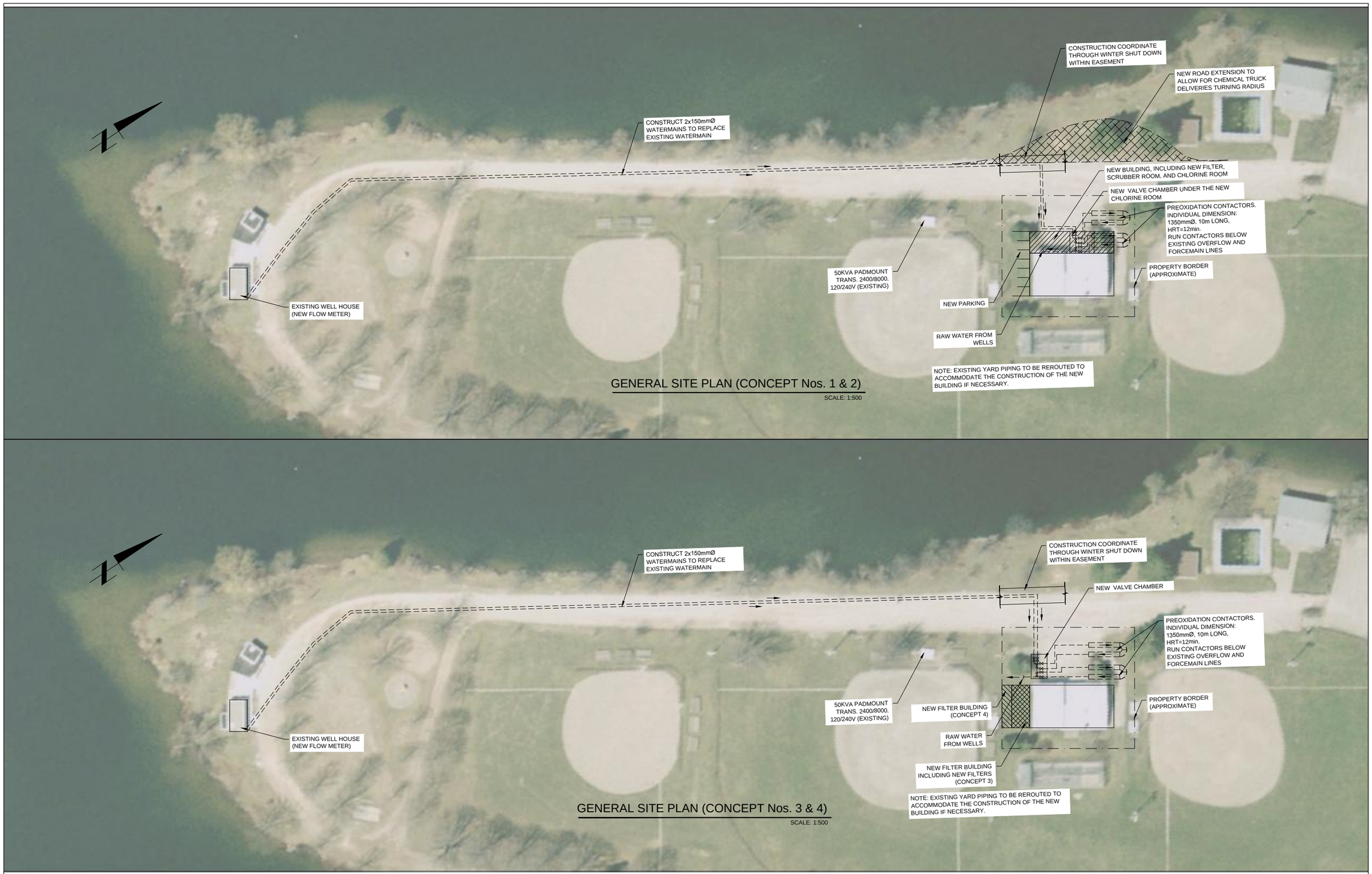
Certain upgrades to the site are common to all the alternatives presented, including installation of a new flow meter at the existing well house, construction of two new 150 mm raw water mains from the well house to the WPP, construction of two new pre-oxidation contactors, and piping upgrades. The layout of Design Concept No.1 and No.2 allow for additional parking on the west side of the building.

The recommended upgrades to the general site are presented in Figure 9.

The following subsections provide a review of the alternative design concepts that are proposed for the expansion of the Prospect Park WPP.

For the purposes of developing the alternative design concepts, the following assumptions were made:

- All expansions will be located on the existing site; and
- Existing infrastructure will be reused to the extent possible.



GENERAL SITE PLAN (CONCEPT Nos. 1 & 2)

SCALE: 1:500

GENERAL SITE PLAN (CONCEPT Nos. 3 & 4)

SCALE: 1:500

NOTES:

1. BASED ON THE EXISTING GENERAL SITE PLAN DWG A-561.

NO	Date	By	REVISIONS	MANU	CAD

Design	VL	Ch'kd	EE	Date 02/06/2013
Drawn	KY	Ch'kd		
Scale AS NOTED				References

Field Notes

REGION BOOK
BOOK_NO

Stamp

Regional

ACCEPTED FOR CONSTRUCTION OF REGIONAL INFRASTRUCTURE

Reviewed For Compliance With Regional Standards Only.

SEE SHEET 1 FOR ORIGINAL SIGNATURE
Director

SEE SHEET 1 FOR ORIGINAL SIGNATURE
Manager

Associated Engineering

XCG Environmental Engineers & Scientists

Halton REGION

TITLE

THE REGIONAL MUNICIPALITY OF HALTON
PROSPECT WATER TREATMENT PLANT
CIVIL
GENERAL SITE PLAN
DESIGN CONCEPT 1, 2, 3, & 4

Consultant File NO	Regional Drawing NO
20125530	G001
CONTRACT NO XXXX	Drawing NO SHEET — OF —

6.1.1 Design Concept 1 - One New Shorter Filter (Building Layout A)

For this alternative, the existing two filters remain in operation and a new filter with a larger diameter is constructed to provide additional filtration capacity on the north side of the building.

The upgrades required to the existing Prospect Park WPP for this option are outlined below.

Expansion of the north side of the building would include:

- One new 4 m diameter filter;
- Scrubber room;
- Chlorine room;
- Potassium permanganate room;
- Fluoride room; and
- Vestibule with the emergency shower and eye wash station.

Modifications to the existing building would include:

- New laboratory and electrical room; and
- Modified lunch and control room.

6.1.2 Design Concept 2 -Three New Shorter Filters (Building Layout A)

For this alternative, two new filters replace the two existing filters within the same building to provide additional filtration capacity. A third additional new filter is constructed within the expansion area. All three new filters have a diameter of 4 m, which is larger than the existing filers and as a result are shorter than the existing filters to improve access to ancillary equipment above and below the filters within the existing building. Staged replacement of the two existing filters (i.e. install new filter, replace and commission existing filters one at a time) can be considered to ensure that the WPP remains in operation during construction.

The upgrades required to the existing Prospect Park WPP for this option are outlined below.

Expansion of the north side of the building would include:

- One new 4 m diameter filter;
- Scrubber room;
- Chlorine room;
- Potassium permanganate room;
- Fluoride room; and
- Vestibule with the emergency shower and eye wash station.

Modifications to the existing building would include:

- Replacement of the existing old filters with two new 4 m diameter filters;
- New laboratory and electrical rooms; and
- Modified lunch and control room.

6.1.3 Design Concept 3 - Three New Taller Filters (Building Layout B)

In this alternative three new filters are constructed and the two existing filters are decommissioned. All three new filters have a diameter of 2.5 m and as a result are taller than the existing filters. The existing filter room can then be retrofitted to accommodate new areas and equipment.

The upgrades required to the existing Prospect Park WPP for this option are outlined below.

Expansion of the west side of the building would include:

- Three new 2.5 m diameter filters;

Modifications to the existing building would include:

- Decommission the existing filters;
- Retrofit existing filter room to accommodate:
  - New scrubber room
  - New electrical room
  - New chlorine room;
- Retrofitted potassium permanganate room;
- Retrofitted fluoride room;
- New laboratory; and
- Retrofitted lunch and control room.

6.1.4 Design Concept 4 - One New Filter (Building Layout B)

In this alternative the building is expanded to the west side of the existing facility to accommodate one new 2.5 m diameter filter and the existing two filters. The existing filter room is retrofitted to accommodate new areas and equipment.

The upgrades required to the existing Prospect Park WPP for this option are outlined below.

Expansion of the west side of the building would include:

- One new 2.5 m diameter filter; and
- The existing two filters.

Modifications to the existing building would include: replace

- Removal of the existing filters for placement in the building expansion;
- Retrofit existing filter room to accommodate:
  - New scrubber room
  - New electrical room
  - New chlorine room;
- Retrofitted potassium permanganate room;
- Retrofitted fluoride room;
- New laboratory; and
- Retrofitted lunch and control room.

7. PRELIMINARY EVALUATION OF DESIGN CONCEPTS

7.1 Evaluation Methodology

Table 3 presents the evaluation that was used to evaluate the design concepts described in Section 6. The potential for phasing of construction to maintain plant operation was evaluated for each alternative, with additional consideration given to impacts on the natural environment, technical factors, social/cultural/community environments, and cost.

For the purposes of the evaluation, all evaluation groups were assumed to be equally weighted.

Table 3 Evaluation Criteria

Group	Criteria	Definition
Natural Environment	Effects on surface water and groundwater	This criterion refers to the effects of the construction and operation of the alternative design concept on Fairy Lake water quality, quantity and aquatic ecosystems, and the aquifer quality and quantity.
	Displacement of vegetation	This criterion refers to the displacement of vegetation during construction.
Technical Environment	Constructability	This criterion addresses the ability to maintain the performance and capacity of the treatment facility during construction.
	Ease of operation	This criterion refers to the operational complexity of the concept in terms of operator attention and staffing requirements.
	Performance reliability	This criterion refers to the performance reliability of the concept.
	Compatibility with existing infrastructure	This criterion refers to the compatibility of the concept with existing infrastructure in terms of the application/use of existing equipment and ability for retrofit.
	Ability to consistently meet Region's treated water quality criteria	This criterion refers to the ability for the concept to consistently be able to meet the Region's treated water quality criteria and regulatory requirements.
Social/Cultural/ Community Environments	Disruption of adjacent residential, community and recreational features (noise, dust, traffic)	This criterion addresses the potential short-term nuisance impacts on adjacent land owners, residents during construction.
	Disruption to park visitors	This criterion addresses the potential short-term nuisance impacts and permanent long-term impacts on park visitors.
Economic Environment	Capital costs	This criterion provides an estimate of capital cost of construction and land acquisition costs.
	Annual operating costs	This criterion provides an estimate of annual operating costs.

A matrix was prepared to present information on each alternative design concept. Each alternative design concept was assigned a score based on the impact on the natural, technical, social and economic environments.

A score was assigned to each alternative for each evaluation criteria, as follows:

○ - Meets criterion objectives / least negative impact / lowest cost;

◔ - Meets most aspects of the criterion / moderate impact;

◑ - Meets some aspects of the criterion / potential for negative impact; and

● - Does not meet criterion objectives / negative impact / highest cost.

For each alternative, a score was assigned to each individual criterion. Each group (Environmental, Technical, Social and Economical) was considered to have equal weight. Based on the results of the evaluation, design concepts were ranked from most preferred to least preferred. The alternative design concept with the most preferred ranking was selected as the preferred alternative design concept.

7.2 Preliminary Evaluation Results

Table 4 presents the information matrix for the evaluation of alternative design concepts.

Table 4 Comparison of Alternative Design Concepts

	Natural Environment		Technical Environment		Social/Cultural/ Community Environments		Economic Environment		Overall Rank
	Criteria / Evaluation	**Score**	**Criteria / Evaluation**	**Score**	**Criteria / Evaluation**	**Score**	**Criteria / Evaluation**	**Score**	
Concept 1 - One New Shorter Filter (Building Layout A)	**Effect on surface water and groundwater** • Minor to moderate impacts to Fairy Lake and aquifer from increased water taking. • All construction impacts can be mitigated through good construction techniques.	○	**Constructability** • Building expansion to the North side of the existing facility. • One new filter will be installed in expanded building. • Existing two old filters will remain in operation. • Minor disruption to treatment process during construction.	○	**Disruption of adjacent residential, community and recreational features (noise, dust, traffic)** • Minor noise and dust on adjacent land owners and residents during construction activities. • Moderate traffic during construction activities.	○	**Capital costs** • Low capital costs of construction relative to all other concepts. • Land acquisition costs similar to all other concepts.	◔	3
	Displacement of vegetation • Largest construction footprint, same as Concept 2. • Four trees to the North of the facility will be displaced. • Potential to replant trees displaced during construction.	◔	**Ease of operation** • Difficult flow splitting between different sized filters. • Most difficult to operate.	●	**Disruption to park visitors** • Moderate temporary disruption anticipated to Prospect Park during construction. • Major temporary disruption anticipated to baseball diamond during construction. • Minor permanent disruption anticipated to adjacent baseball field from building expansion to the West side of the existing facility.	◔	**Annual operating costs** • Similar annual operations costs compared to other concepts.	○	
			Performance reliability • Low to medium reliability. • The two existing filters will need to be replaced once they reach the end of their useful life. • Two existing filters may require additional maintenance in the interim.	●					
			Compatibility with existing infrastructure • Poor compatibility with existing infrastructure. • Some retrofits required to split flow to different sized filters	●					
			• **Ability to consistently meet Region's treated water quality criteria** • New filter able to consistently meet treated water quality criteria. • Two old filters may consistently meet treated quality water criteria.	●					
	Group Average Score	◔	**Group Average Score**	◕	**Group Average Score**	◔	**Group Average Score**	◔	

Table 4 Comparison of Alternative Design Concepts

	Natural Environment		Technical Environment		Social/Cultural/ Community Environments		Economic Environment		Overall Rank
	Criteria / Evaluation	**Score**	**Criteria / Evaluation**	**Score**	**Criteria / Evaluation**	**Score**	**Criteria / Evaluation**	**Score**	
Concept 2 - Three New Shorter Filters (Building Layout A)	**Effect on surface water and groundwater** • Minor to moderate impacts to Fairy Lake and aquifer from increased water taking. • All construction impacts can be mitigated through good construction techniques.	○	**Constructability** • Building expansion to the North side of the existing facility. • Three new filters will be installed in expanded building. • Existing old filters will be decommissioned and replaced individually to ensure the WPP remains in operation at all times. • Medium disruption to treatment process during construction.	◑	**Disruption of adjacent residential, community and recreational features (noise, dust, traffic)** • Minor noise and dust on adjacent land owners and residents during construction activities. • Moderate traffic during construction activities.	○	**Capital costs** • High capital costs of construction relative to all other concepts. • Land acquisition costs similar to all other concepts.	●	2
	Displacement of vegetation • Largest construction footprint, same as Concept 1. • Four trees to the North of the facility will be displaced. • Potential to replant trees displaced during construction.	◔	• **Ease of operation** • Difficult flow splitting between different sized filters. Once two old filters are replaced, flow through process with relatively simple operation control requirements.	◑	**Disruption to park visitors** • Moderate temporary disruption anticipated to Prospect Park during construction. • Major temporary disruption anticipated to baseball diamond during construction. • Minor permanent disruption anticipated to adjacent baseball field from building expansion to the West side of the existing facility.	◔	**Annual operating costs** • Similar annual operations costs compared to other concepts.	○	
			Performance reliability • Low to medium reliability while the two old filters are in operation. • High performance reliability for three new filters, once the two old filters are replaced.	◔					
			Compatibility with existing infrastructure • Some temporary retrofits required to split flow to different sized filters. • Good compatibility with existing infrastructure once two old filters are replaced.	◔					
			• **Ability to consistently meet Region's treated water quality criteria** • Able to consistently meet treated quality water criteria once all filters are replaced.	○					
	Group Average Score	◔	**Group Average Score**	◔	**Group Average Score**	◔	**Group Average Score**	◑	

Table 4 Comparison of Alternative Design Concepts

	Natural Environment		Technical Environment		Social/Cultural/ Community Environments		Economic Environment		Overall Rank
	Criteria / Evaluation	**Score**	**Criteria / Evaluation**	**Score**	**Criteria / Evaluation**	**Score**	**Criteria / Evaluation**	**Score**	
Concept 3 - Three New Taller Filters (Building Layout B)	**Effect on surface water and groundwater** • Minor to moderate impacts to Fairy Lake and aquifer from increased water taking. • All construction impacts can be mitigated through good construction techniques.	○	**Constructability** • Building expansion to the West side of the existing facility. • Three new filters will be installed in expanded building. • Existing old filters will be decommissioned once new filters are in operation. • Allows for retrofits to existing building after new filters are installed. • Some disruption to treatment process during construction.	◔	**Disruption of adjacent residential, community and recreational features (noise, dust, traffic)** • Minor noise and dust on adjacent land owners and residents during construction activities. • Moderate traffic during construction activities.	○	**Capital costs** • High capital costs of construction relative to all other concepts. • Land acquisition costs similar to all other concepts.	●	1
	Displacement of vegetation • Smallest construction footprint, same as Concept 4. • Four trees to the North of the facility and three trees to the South of the facility will be displaced. • Potential to replant trees displaced during construction.	○	• **Ease of operation** • Flow through process with relatively simple operation control requirements	○	**Disruption to park visitors** • Moderate temporary disruption anticipated to Prospect Park during construction. • Moderate temporary disruption anticipated to baseball diamond during construction. • Moderate permanent disruption anticipated to adjacent baseball field from building expansion to the North side of the existing facility.	◑	**Annual operating costs** • Similar annual operations costs compared to other concepts.	○	
			Performance reliability • High performance reliability for three new filters.	○					
			Compatibility with existing infrastructure • Good compatibility with existing infrastructure.	○					
			• **Ability to consistently meet Region's treated water quality criteria** • Able to consistently meet treated water quality criteria.	○					
	Group Average Score	○	**Group Average Score**	◔	**Group Average Score**	◔	**Group Average Score**	◑	

Table 4 Comparison of Alternative Design Concepts

	Natural Environment		Technical Environment		Social/Cultural/ Community Environments		Economic Environment		Overall Rank
	Criteria / Evaluation	Score	Criteria / Evaluation	Score	Criteria / Evaluation	Score	Criteria / Evaluation	Score	
Concept 4 - One New Filter (Building Layout B)	**Effect on surface water and groundwater** • Minor to moderate impacts to Fairy Lake and aquifer from increased water taking. • All construction impacts can be mitigated through good construction techniques.	○	**Constructability** • Building expansion to the West side of the existing facility. • One new filter will be installed in expanded building. Existing two old filters will be moved to the expanded building. • Minor disruption to treatment process during construction.	◑	**Disruption of adjacent residential, community and recreational features (noise, dust, traffic)** • Minor noise and dust on adjacent land owners and residents during construction activities. • Moderate traffic during construction activities.	○	**Capital costs** • Low capital costs of construction relative to all other concepts. • Land acquisition costs similar to all other concepts.	◔	4
	Displacement of vegetation • Medium construction footprint. • Four trees to the North of the facility and three trees to the South of the facility will be displaced. • Potential to replant trees displaced during construction.	○	• **Ease of operation** • Difficult flow splitting between different sized filters. • Most difficult to operate.	●	**Disruption to park visitors** • Moderate temporary disruption anticipated to Prospect Park during construction. • Moderate temporary disruption anticipated to baseball diamond during construction. • Moderate permanent disruption anticipated to adjacent baseball field from building expansion to the North side of the existing facility.	◑	**Annual operating costs** • Similar annual operations costs compared to other concepts.	○	
			Performance reliability • Low to medium reliability. • The two existing filters will need to be replaced once they reach the end of their useful life. • Two existing filters may require additional maintenance in the interim.	●					
			Compatibility with existing infrastructure • Poor compatibility with existing infrastructure. • Some retrofits required to split flow to different sized filters.	●					
			Ability to consistently meet Region's treated water quality criteria • New filter able to consistently meet treated water quality criteria. • Two old filters may consistently meet treated water quality criteria.	●					
	Group Average Score	○	**Group Average Score**	◕	**Group Average Score**	◔	**Group Average Score**	◔	

Notes:

○ ◔ ◔ ◑ ◕ ◕ ●

Least Impact / Lowest Cost ⟶ Highest Impact / Highest Cost

8. PREFERRED DESIGN CONCEPT

8.1 Description of Preferred Design Concept

The preferred alternative design concept to meet the study objectives is Design Concept 3 – Three New Taller Filters (Building Layout B). The preferred design concept for upgrading and expanding the Prospect Park WPP involves:

- Construction of three new filters and decommissioning of the existing filters to provide water servicing for growth in the Town of Acton;
- Expansion of the west side of the building using the existing blow-out wall to accommodate the new filters; and
- Modifications to the existing building would include a new scrubber room, a new chlorine room, a new electrical room, a retrofitted potassium permanganate room, a new laboratory, and retrofitted fluoride room.

Although this design concept has the highest capital cost, it offers the following advantages relative to the other alternatives:

- Improved and more consistent water quality;
- Ease of operation;
- Performance reliability;
- Compatibility with existing infrastructure; and
- Ability to consistently meet Region's treated water quality criteria.

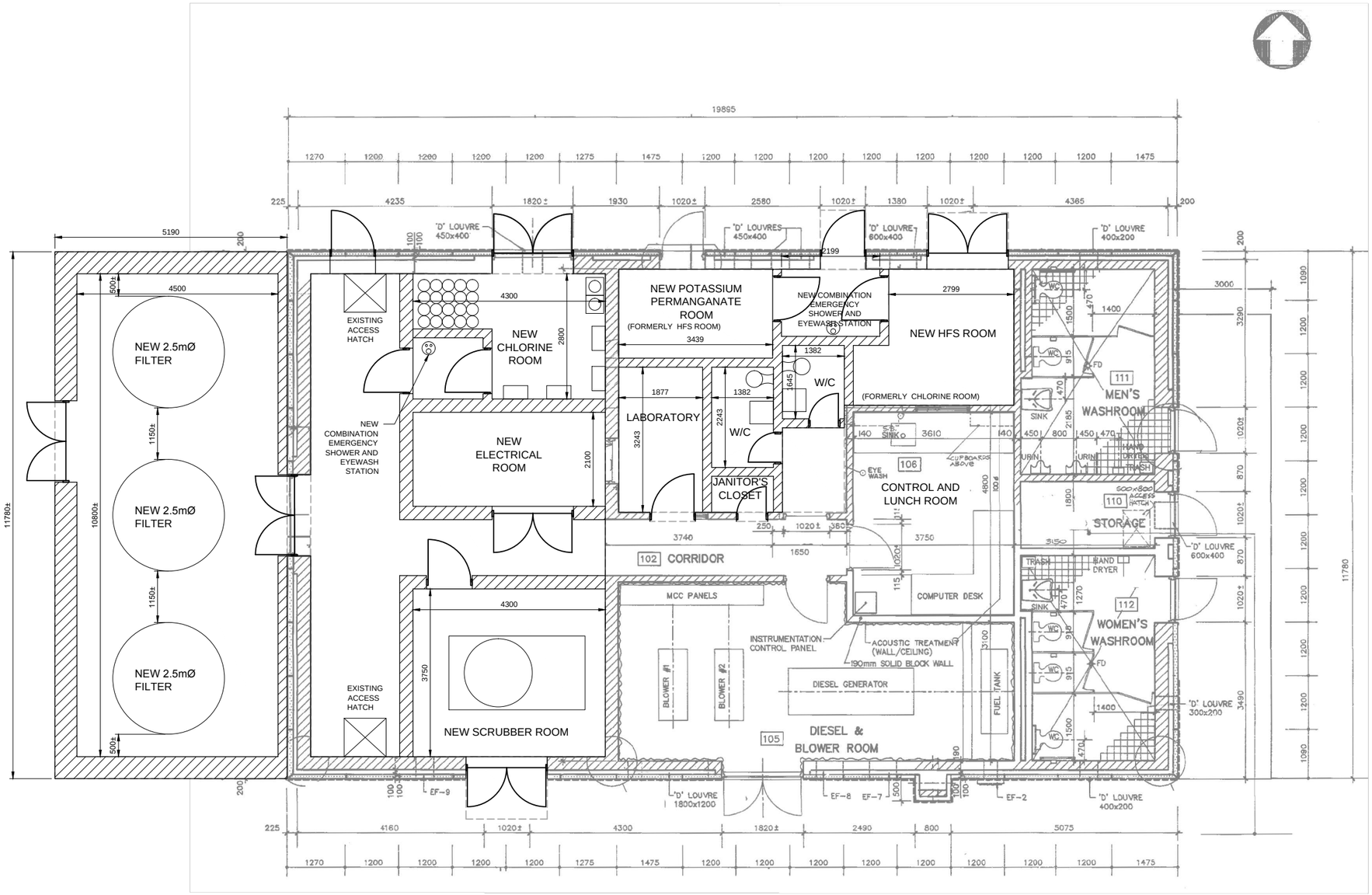
Design Concept 3 - Three New Taller Filters (Building Layout B) has the smallest footprint; however, this alternative reduces the set-back from the existing baseball field. Consultations with the Town are recommended to ensure that the land is available and that there are no objections to reducing the distance between the WPP and the baseball field.

Figure 10 presents the preferred alternative design conceptual layout. The site layout and construction phasing will be finalized during the preliminary and detailed design stage.

8.2 Implementation and Staging

The detailed design will begin after the Class EA process is completed. Construction staging of the preferred design concept will allow for continued operation of the existing facility during construction of the building expansion and installation of the new filters. Construction staging should be as follows:

1. Building expansion to the West side of the existing facility using the existing blow-out wall to accommodate the new filters.
2. Installation of three new filters in the expanded building.
3. Commission new filters into operation.
4. Decommission existing filters once new filters are operational.
5. Modify existing building to include:
   - A new scrubber room;
   - A new chlorine room;
   - Retrofitted potassium permanganate room;
   - Retrofitted fluoride room;
   - New laboratory and electrical rooms; and
   - Retrofitted lunch and control room.



GROUND FLOOR PLAN - DESIGN CONCEPT 3 - THREE NEW TALLER FILTERS (BUILDING LAYOUT B)

SCALE: 1:50

NOTES:

1. BASED ON THE EXISTING GROUND FLOOR PLAN DWG: A-542.
2. NEW AND EXISTING CHEMICAL ROOMS WILL HAVE NEW HVAC, CONTAINMENT FLOOR AND CURB ALONG WITH NEW SAFETY SHOWER / EYE WASH STATIONS.
3. BLOWERS, DIESEL GENERATOR, AND FUEL TANK WILL BE REPLACED WITH NEW.
4. NEW PUBLIC WASHROOMS ON EAST SIDE OF BUILDING.

NO	Date	By	REVISIONS	MANU	CAD

Design	VL	Ch'kd	EE	Date 02/06/2013
Drawn	KY	Ch'kd		
Scale AS NOTED				References

Field Notes
REGION BOOK
BOOK_NO

Stamp

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Associated Engineering
XCG Environmental Engineers & Scientists
Halton REGION

TITLE
THE REGIONAL MUNICIPALITY OF HALTON
PROSPECT WATER TREATMENT PLANT
PROCESS
DESIGN CONCEPT 3
THREE NEW TALLER FILTERS (BUILDING LAYOUT B)

Consultant File NO	Regional Drawing NO
20125530	P003
CONTRACT NO	Drawing NO
XXXX	SHEET — OF —

Drawing: \\S-TOR-FS-01\PROJECTS\20125530\00_PROSPECT_PARK\ENGINEERING\03.00_CONCEPTUAL_FEASIBILITY_DESIGN\GRAPHICS\GROUND FLOOR CONCEPTUAL P
Layout Tab: 11X17
Date: 03/14/2013 Time: 04:12:35 PM

8.3 Standby Power

Additional standby power will be required for the expanded Prospect Park WPP. The location of the standby power supply will be on the current WPP property, and the final location will be determined during the detailed design stage.

8.4 Utilities

The location of all utilities will be reviewed during the detailed design stage, including but not limited to watermain, sewers, hydro, and telephone.

8.5 Confirmation of Class EA Schedule

Projects are classified as either Schedule A, A+, B, or C undertakings. Based on guidance provided in the MCEA document, projects requiring the construction of a new water treatment plant or the expansion of an existing water treatment plant beyond its existing rated capacity are defined as Schedule C projects.

The proposed project will increase the water taking at the Prospect Park Well Field from 2,273 m^3/d to 3,500 m^3/d (year round) and expand the Prospect Park WPP capacity from 2,300 m^3/d to 3,500 m^3/d; hence, it is a Schedule C undertaking under the Municipal Class EA (2000, as amended in 2007 & 2011).

8.6 Additional Approval Requirements

Prior to construction of the preferred design, the following additional approvals may be required:

- Permit-to-Take Water;
- Site plan approval and building permit;
- Drinking water works permit; and
- ECA for Air, Noise and Vibration.

A request for project review has been sent to Fisheries and Oceans Canada as a result of recommended construction at or near water (see Appendix F). A response has not yet been received, however any comments received from DFO will be considered during the detailed design phase of the WPP expansion to mitigate potential impacts on the water environment.

9. SUMMARY OF ENVIRONMENTAL EFFECTS AND MITIGATING MEASURES

All construction will occur on the existing site, which has been the site of the Prospect Park and the WPP for more than 23 years. Therefore, construction on the site is not expected to result in any archaeological, natural environment or cultural heritage disturbances.

Construction will have some potential short-term environmental impacts including noise, vibration, dust, and traffic. During construction, mitigating measures will be employed wherever possible to minimize impacts. Excavation during construction will be performed in an orderly and efficient manner to minimize disturbances from noise, vibration, and dust. A preconstruction public meeting could be held to inform the public of the scale of the proposed construction, the schedule, and to receive comments.

9.1 Land Use

The lands where Prospect Park and the WPP are situated are owned by the Town of Halton Hills with easements in favour of the Regional Municipality of Halton. Land title issues will need to be resolved during the detailed design phase. The proposed undertaking would require additional property on the north and west side of the existing facility.

9.2 Social Environment

Construction on the site is not expected to result in any long-term disturbances to users of Prospect Park. Construction will have some potential short-term social impacts including access to certain parts of Prospect Park. During construction, mitigating measures will be employed wherever possible to minimize impacts, including limiting construction activities to normal working hours, Monday to Friday, and employing noise and dust control measures.

9.2.1 Prospect Park Access

Prospect Park is a Community Park for the Town of Acton. The park is the site of the annual Acton Fall Fair and the Acton Winter Festival. Amenities at the park include a playground, ball diamonds, tennis and multi-purpose courts, leash-free zone, seasonal outdoor splash-pad, picnic area, bandstand, track, soccer field and seasonal concession stand. The scenic park is surrounded by Fairy Lake and it offers several activities for local families.

Access to Prospect Park will be maintained during construction.

9.2.2 Traffic and Noise

Prior to the start of construction, a traffic management plan will be developed for approval. The objective of the plan will be to minimize local traffic disruptions during the construction period. The traffic plan will be developed in accordance with the proposed construction staging. At a minimum, the plan will include details on construction signage, supply of traffic control persons to direct traffic during construction, and access along the line of construction for local residents and businesses.

Muffling devices on construction vehicles and heavy equipment are recommended to ensure that local residents and park users are not negatively impacted during construction.

9.3 Cultural Environment

The construction on the site is not expected to result in any cultural heritage disturbances. As discussed in Section 3.2, during the development of the Master Plan a *Master Plan of Archaeological Resources of the Regional Municipality of Halton 2008 Update* was completed to identify historical features and cemeteries.

The annual Acton Agricultural Society Fall Fair is held in September and the annual Acton Winter Festival is held in the winter on the grounds of Prospect Park. During the detailed design phase, the construction schedule will be developed. In the event that construction is ongoing during these fairs, mitigating measures will be taken to minimize the impact of construction activities on these events.

9.4 Natural Environment

A sediment and erosion control plan will be developed in order to prevent sediment from leaving the construction site. At a minimum, the plan will include the erection and maintenance of silt fencing, and installation of sediment traps at catch basins and manholes. Sediment control measures will be removed once construction has been completed and the construction site ground cover has been re-established.

Credit Valley Conservation Authority concerns, as well as detrimental impacts to fish and fish habitat, will be addressed through appropriate mitigation measures during detailed design.

Trees to be removed on the Region of Halton or Town of Halton Hills property require prior approval in accordance with applicable by-laws and procedures. Any construction activities required within the dripline of a tree or within the crown of the tree will be performed in accordance with applicable by-laws and procedures.

9.5 Accidents and Malfunctions

Potential malfunctions and accidental events related to project construction and operations activities were considered during the course of the assessment. The events considered include hazardous material spills, breaks in the distribution system, failures of the effluent treatment, transportation accidents, fires, and explosions. It has been determined that such events are unlikely to occur due to project pre-planning, system redundancy, emergency response planning and the on-going implementation of monitoring and maintenance procedures. Contingency measures are in place at the facilities to address accidents or malfunctions. Nonetheless, should accidents or malfunctions occur, the effects would generally be temporary while corrective action is taken.

10. PUBLIC, AGENCY, STAKEHOLDER, AND ABORIGINAL CONSULTATION

An important component of the Class EA process involved consultation with regulatory and review agencies, stakeholders, the public, and Aboriginals. A Technical Steering Committee (TSC) which included members of various agencies, Halton Region, the Town of Halton Hills, and consultants was established to discuss the project direction and findings at various stages along the process. TSC Correspondence as well as meeting notes are provided in Appendix E. The following subsections outline the public, agency, stakeholder, and Aboriginal consultation that were undertaken during the Class EA Study.

10.1 Notifications

Members of the public and those on the project mailing list (see Section 10.3), which included agencies, stakeholders, and Aboriginals, were provided with project notifications through direct mail outs at key points in the Class EA Study. These notifications were also published in the local (Acton) newspaper. Residents/Property Owners located within the study area also received project notifications.

The following subsections provide details on the Notice of Public Information Centre (PIC) and the Notice of Completion.

10.1.1 Notice of Public Information Centre

A PIC was held to provide an opportunity for members of the public to obtain information on the purpose of the study, the Class EA process, alternative design concepts for the expansion of the WPP and the evaluation of these alternatives, the recommended preferred alternative, and the Impact Assessment Report. It was also an opportunity for members of the public to obtain responses to questions and provide comment and input to the study. Comments from the PIC were considered in selecting the preferred design concept.

The PIC was held on March 20, 2013. Information on the PIC was published in the Acton Tanner on March 7 and 14, 2013. A copy of this notification is included in Appendix F.

The Notice of PIC was also posted on the Halton Region web site.

In addition, a letter of notification of the PIC was sent to those on the project mailing list on March 20, 2013 and e-mailed to residents/property owners within the study area illustrated in Figure 1 on February 28, 2013 (letter was also hand delivered to residences within study area). Examples of these letters are provided in Appendix F.

10.1.2 Notice of Completion

The Notice of Completion was published in the Acton Tanner on February 26, 2015. The Notice of Completion advised members of the public of the opportunity to review and provide comments on the ESR. A period of 30 calendar days was provided for the public review of the ESR. Contact information for the Region and consulting team project managers was noted. Copies of the ESR were available for review and comment at the following locations: Halton Clerk's Office; Town of Halton Hills Clerk's Office; Halton Public Library - Acton Branch; and on the Halton Region web site. The Notice of Completion newspaper advertisement is provided in Appendix F. This notice was also posted on the Halton Region web site.

In addition, a letter and attached Notice of Completion were mailed to those on the project contact list on or before February 26, 2015, as well as to residents/property owners within the study area illustrated in Figure 1. Examples of these letters are provided in Appendix F.

10.2 Public Information Centre

A PIC was held from 6:30 pm to 8:30 pm on March 20, 2013 at the Royal Canadian Legion in Acton, Ontario. The PIC was a drop-in format with display boards available for viewing and an opportunity for one-on-one discussions with project team members. Members of the project team, including Halton Region and consultant representatives, were available to provide and discuss information on the study, and to receive comments and input.
A Comment Sheet and Handout were available for attendees. The display boards provided information on:

- Why are We Here;
- Purpose of the Study;
- Class EA Study Process;
- Prospect Park Well Field and WPP;
- Alternatives for WPP Expansion (Matrix Evaluation);
- Impact Assessment Report; and
- What Will Happen Next.

The PIC materials were also posted on the Halton Region web site.

A total of ten people provided their name and contact information on the Attendance Record for the PIC, consisting of seven residents, one Town of Halton Hills Councillor, and two Town of Halton Hills staff. Four completed Comment Sheets were submitted to the Region (see Appendix F). One resident provided e-mail comments, in addition to the completed Comment Sheet. In addition, the Halton Region project manager had telephone conversations with two residents. One conversation was with an industrial land owner in Acton. The Project Manager directed the individual to the Comment Sheet and PIC materials available on the Region's web site. Another conversation was with a resident who expressed concerns about potential impacts to Fairy Lake at the PIC. Table 5 summarizes the comments received.

Table 5 Summary of PIC Comments and Responses

	Comments	Response to Comments
Please provide your comments on the alternative design concepts for providing additional capacity at the Prospect Park Water Purification Plant.	• I believe that either one of the two west side additions would be best for loss of space to the fall fair.	• Comment Noted • No Response Required
	• My interest is with the Acton Agricultural Society. I believe that the addition on the west end of the building would have the least impact, concerning the Agricultural Society.	• Comment Noted • No Response Required
	• I agree with the preliminary recommendation for Concept # 3 which is based on the design consideration. Furthermore, I suspect that Concept # 3 is more advantageous than the study indicates in terms of annual operating costs.	• Comment Noted • No Response Required
	• Option 4 seems to make the most sense.	• Comment Noted • No Response Required
Please provide your comments on the evaluation of the alternative design concepts for providing additional capacity at the Prospect Park Water Purification Plant.	• The fall fair will be September 13 to 15, 3013 with activities on the track to the north side of present purification building all three days. Set up and take down will be September 7 to 18, 2013.	• Comment Noted • No Response Required
	• With so many advantages in terms of the ease of operation, there will be significant annual operating cost savings.	• Comment Noted • No Response Required
	• Evaluation of design seems thorough. Would like to see more details regarding cost / timelines.	• Comment Noted • No Response Required
Please provide any additional comments.	• My suggestion is that construction be stopped / curtailed for a 7 to 10 day period during the annual Acton Fall Fair – likely September 8 to 16, 2014.	• Comment Noted • Construction Activities will be Coordinated to avoid Annual Acton Fall Fair
	• My concerns regarding the lowering of the lake level as a result of pumping more water were well addressed by the hydro engineer. • I assume the aesthetics of the pumphouse will be given due consideration in view of its prominent location in a park. • I saw nothing in the way of comparative reliability and maintainability in the study. I assume that will be given in the contract bids. • I was very pleased with the attention given by staff members and consultants at the PIC.	• Comments Noted • No Response Required
	• Thanks for the opportunity to provide feedback.	• Comment Noted • No Response Required

Copies of the comment sheet, attendance sheet, display boards, and handout are provided in Appendix F.

10.3 Project Contact List and Web-site Postings

A project contact list was maintained throughout the Class EA Study. The contact list was developed early in the study process and contacts were added in response to requests from agencies, stakeholders, and members of the public. A copy of the project contact list is provided in Appendix F. This list was used for the mailing of all study notifications.

In addition, key project information such as notifications and PIC materials (i.e., display boards, comment sheet, handout) were posted on the Halton Region web site.

10.4 Agency and Stakeholder Consultation

In addition to the agencies represented on the Steering Committee, other federal, provincial, and municipal agencies, as well as utilities and stakeholders, were consulted during the course of the Class EA Study. The following are agencies, utilities, and stakeholders that were included on the project contact list, provided with project notifications, and asked to provide concerns or comments regarding the study:

- Federal
  - Aboriginal Affairs and Northern Development Canada (AANDC).
- Provincial
  - Ministry of Aboriginal Affairs (MAA).
  - Ministry of the Environment, Central Region.
  - Ministry of Agriculture, Food and Rural Affairs.
  - Ministry of Tourism, Culture and Sport.
  - Ministry of Municipal Affairs and Housing.
  - Ministry of Natural Resources, Aurora District Office.
  - Ministry of Transportation.
  - Infrastructure Ontario.
  - Niagara Escarpment Commission.
  - Credit Valley Conservation Authority.
  - Grand River Conservation Authority.
  - Conservation Halton.
- Regional and Municipal
  - Region of Halton: CAO; Regional Chair; Public Works; Water Services.
  - Town of Halton Hills: Chief Administrative Officer (CAO); Public Works Department; Ward 1 Councillors; Recreation and Parks Department; Infrastructure Services; Development and Sustainability.
  - Town of Oakville: Office of Mayor and Council.
  - Halton Hills Chamber of Commerce.
  - City of Guelph: Water Supply Program Manager.

- Utilities
  - Hydro One Networks.
  - Halton Hills Hydro Inc.
  - Rogers Cable.
  - Bell Canada.
  - Canadian Pacific Railways.
  - CN Rail.
  - GO Transit.
  - Union Gas.
  - Enbridge Gas Distribution Inc.
- Stakeholders
  - Acton BIA.
  - Town of Halton Hills Sustainability Advisory Committee.
  - Town of Halton Hills Environmental Advisory Committee.
  - Trout Unlimited.
  - Halton Region Federation of Agriculture.
  - Protect Our Water and Environmental Resources (P.O.W.E.R.).
  - Acton Agricultural Society.

The project contact list is provided in Appendix F. Table 6 provides a summary of comments received from agencies and Aboriginal groups, along with the response to these comments. Appendix F contains copies of the correspondence received from: Aboriginal Affairs and Northern Development Canada; Ministry of Aboriginal Affairs; Niagara Escarpment Commission; Ministry of Natural Resources (Aurora District); Town of Halton Hills (Recreation and Parks); Alderville First Nation; Curve Lake First Nation; Chippewas of RAMA First Nation, and Credit Valley Conservation.

Table 6 Summary of Agency and Stakeholder Comments and Responses

Date	Contact	Comment	Response to Comment
Federal			
March 26, 2013	Allison Berman Regional Expert for Ontario Consultation and Accommodation Unit Aboriginal Affairs and Northern Development Canada	• Responding to request for information concerning consultation with Aboriginal and First Nation communities in the vicinity of the project. • Provided the information regarding potentially affected Aboriginal communities: Aboriginal Community Information (contact information); Treaties, Claims and Negotiations; and Litigation. • Provided information for First Nation communities within a 100 km radius of the project and information on Métis.	• Comments noted. • Information on Mississaugas of the New Credit and Six Nations of the Grand River was provided by the Consultation and Accommodation Unit – these First Nations have been contacted by Halton Region and are on the project mailing list. • Metis Nation of Ontario has also been contacted by Halton Region and is on the project mailing list. • No response required.
Provincial			
April 11, 2013	Heather Levecque Manager, Consultation Unit Aboriginal Relations and Ministry Partnerships Division Ministry of Aboriginal Affairs	• You should be aware that many First Nations and/or Métis communities either have or assert rights to hunt and fish in their traditional territories; for First Nations, these territories typically include lands and waters outside of their reserves. • In some instances project work may impact Aboriginal archaeological resources; if any such resources could be impacted by your project, you should contact your regulating or approving Ministry to inquire about whether any additional Aboriginal communities should be contacted. • We can advise that the project appears to be located in an area where First Nations may have existing or asserted rights or claims in Ontario's land claims process or litigation that could be impacted by your project. • Provided contact information for the Six Nations of the Grand River Territory, Haudenosaunee Confederacy Chiefs Council and the Mississaugas of the New Credit First Nation. • Additional details about your project or changes to it that suggest impacts beyond what you have provided to date may necessitate further consideration of which Aboriginal communities may be affected by or interested in your undertaking.	• Comments noted. • All suggested First Nations have been contacted by Halton Region and are on the project mailing list.
March 21, 2013	David Johnston Planner Niagara Escarpment Commission (NEC)	• Understands the proposal relates to a project that was identified in the Region's Water and Wastewater Master Plan as part of a long-term Region-wide water servicing strategy designed to support future growth in the Acton community. • The project lies outside the area of the Niagara Escarpment Plan and Niagara Escarpment Development Control Area. • While the NEC has no comment at this time on the proposed undertaking, it does request that you keep NEC staff informed on the progress.	• No response required.
March 19, 2013	Kyle Munro A/Planner Aurora District Ministry of Natural Resources	• MNR staff have reviewed the Prospect Park Well Field study area noted in the letter received March 13, 2013. • Please note that our records indicate that the study area does not appear to contain Species at Risk (SAR) or ANSIs but does include portions of the Eramosa River – Blue Springs Creek Provincially Significant Wetland (PSW) and portions of the Black Creek. • The undertaking should avoid interference with the PSW and any species at risk. • As you work through the EA process, please report any SAR encountered within the study area to this office – contact information provided.	• Comments noted and considered in the evaluation.
Municipal			
March 22, 2013	Kevin Okimi Senior Landscape Architect Recreation and Parks Town of Halton Hills	• Comments are primarily focused on impacts of the concepts shown to the park areas. • No concerns with building layout of Concepts 1 and 2; there is concern with potential removal of trees and expansion of track/driveway to accommodate turning radius for chemical trucks, and additional parking shown on west side of building; those two proposed features would have significant permanent effect on the park features and would not be desired by the Town; closer study may be able to confirm actual turning radius and parking requirements. • Concept 3 footprint would have minimal impact on ball diamond; height would need to be reviewed in further detail. • Concept 4 begins to encroach on ball diamond infrastructure. • Electrical infrastructure in the park would need to be confirmed. • The Town's two ball diamonds and water playground are serviced out of the storage room on the east side of the building; actual location of the underground connections is not known. • Construction will need to be coordinated with the Town with regard to: existing winter carnival in the park; fall fair; parking lot use for the indoor soccer facility; general disruption to park users; and construction staging requirements. • Any consideration to minor renovation/renewal of the existing washrooms as part of this project would be appreciated.	• Comments noted and considered in evaluation of alternatives.

Table 6 Summary of Agency and Stakeholder Comments and Responses

Date	Contact	Comment	Response to Comment
Conservation Authority			
December 3, 2013	Liam Marray Manager Planning Ecology Credit Valley Conservation Kerry Mulchansingh Source Water Protection Project Manager / Hydrogeologist Credit Valley Conservation	• CVC recommends inclusion of a summary of previous concerns identified by CVC and Ministry of the Environment related to the proposal to increase the water taking, including issues such as: groundwater contributions to water courses; wetland discharge and/or water table fluctuations; and other potential ecological/biological impacts. • CVC is concerned that there is generally no assessment of potential biological impacts made in the documents other than the assumption that if hydrological impacts are minimal therefore impacts to the aquatic and wetland ecosystems also would be minimal. The conclusions related to fish and aquatic health are not based on direct field/empirical data. • The report indicates that Fairy Lake lacks high quality fish habitats. CVC considers Fairy Lake as one of the few large body wetlands in the watershed and is known as a significant recreational fishery in terms of productivity and diversity. There are habitats in the lake that are sensitive to water level impacts including: shallow nursery areas, near-shore aquatic vegetation, access routes and other life cycle requirements of species such as killifish (watershed rare species). The past issue of connectivity for spawning pike through the road culvert and the potential isolation of that wetland basin when juvenile pike return to the lake also requires consideration. Fairy Lake should be recognized as part of the PSW. There is also a fen within the PSW which could be sensitive to minor changes to groundwater levels, and therefore the predicted change in Fairy Lake spring/summer water levels may be a significant impact. • Clarification is needed with respect to the management of the Fairy Lake dam and the relationship to low flows in Black Creek downstream of Fairy Lake. • CVC is concerned about the number of areas monitored during the pumping test. We believe more wetland monitoring was needed, including within the fen. • How was it concluded that the Zone of Influence has no effect on the three PSWs? • The mapping in the report shows that the zones of influence tend to be oval, and skewed along the bedrock valley, consistent with the findings of the Tier 3 study. However, it is not clear whether the mapping reflects data from the shallow wells, deep wells, or a combination thereof. • There is little or no discussion / analysis of drawdown in the shallow groundwater zones in the report, but it would have been helpful if there were in order to gain a better appreciation of the potential behaviour of groundwater zones in the vicinity of sensitive ecosystems that may depend on the shallow groundwater component. • There were no monitors in proximity to the Black Creek at Acton Wetland Complex or the Eramosa River - Blue Springs Creek Wetland Complex, however the study recognizes that site-specific changes in water level can occur, and recommends wetland monitoring as a component of future assessment. This recommendation is strongly supported by CVC, as empirical data is always more desirable and additional monitoring will be valuable in continually assessing environmental responses related to the increased pumping regime. The Blue Springs catchment, where the potential for minor flow reductions has been noted, should be included in the wetland monitoring program moving forward. It would have been very helpful to have the wetland monitoring data from the pumping test. • Please confirm the data and year(s) used to characterize the intermittency of the outflow channel from Fairy Lake. Are there any potential implications for the assimilative capacity needed for the Acton WWTP? • Please confirm the presence of Blandings Turtle in Fairy Lake and address any requirements under the Endangered Species Act with MNR.	• Comments noted and addressed. • Letter response sent to CVC on May 27, 2014 (see Appendix F).
Aboriginals			
July 15, 2013	Gay Marsden Land and Resources Alderville First Nation	• As per the Alderville First Nation Consultation Protocol, your proposed project is deemed a level 3, having minimal potential to impact our First Nations rights, therefore, please keep Alderville apprised of any archaeological findings, burial sites or any environmental impacts, should any occur.	• Comments noted. • No response required.
April 19, 2013	Chief Phyllis Williams Curve Lake First Nation	• Strongly suggest that you provide Karry Sandy-Mackenzie, Williams Treaty First Nation Claims Coordinator with a copy of your proposal. • Curve Lake First Nation is not currently aware of any issues that would cause concern with respect to our Traditional, Aboriginal and Treaty rights. • Should excavation unearth bones, remains or other such evidence of a native burial site or any archaeological findings, we must be notified without delay – details provided regarding contacts to be made. • If any new, undisclosed or unforeseen issues should arise that have the potential for unanticipated negative environmental impacts or anticipated impacts on our Treaty and Aboriginal rights, we require that we be notified regarding these as well.	• Comments noted. • No response required.
March 21, 2013	Chief Sharon Stinson Henry Chippewas of RAMA First Nation	• Acknowledges receipt of March 12, 2013 letter. • A copy of the Region's letter has been forwarded to Karry Sandy-Mckenzie, Barrister & Solicitor, Coordinator for Williams Treaties First Nations for further review and response directly to you. • Please direct all future correspondence and inquiries, with a copy to Rama First Nation, to Ms. Sandy-Mckenzie (address provided).	• No response required. • Notice of Completion sent as per request in letter.

10.5 Aboriginal Consultation

10.5.1 Agency Contacts

Aboriginal Affairs and Northern Development Canada (AANDC) and the Ontario Ministry of Aboriginal Affairs (MAA) were contacted and included on the project mailing list. Correspondence from these agencies is documented in Table 6 and included in Appendix F.

These agencies were contacted to determine whether there were any potential Aboriginal and treaty rights in the vicinity of the proposed project or land claims that have been submitted to the Government of Canada or the Government of Ontario that may be affected by projects resulting from the Class EA Study.

Notice of Public Information Centre

Notice of PIC letters were sent to AANDC and MAA on March 12, 2013. Responses to the Notice of PIC were received from both agencies. Copies of these responses are included in Appendix F. The AANDC response provided information regarding Aboriginal communities within a 100 km radius of the project, as well as the Métis Nation of Ontario. Information on the Mississaugas of the New Credit and the Six Nations of the Grand River was provided. Both of these First Nations were included on the project mailing list, as was the Métis Nation of Ontario. The suggested contacts included in the letter from MAA were also included on the project mailing list.

Notice of Completion

Notice of Completion letters (see Appendix F) were sent to the above noted Agency contacts on or before February 26, 2015.

10.5.2 Aboriginal Contacts

Notice of Public Information Centre

Halton Region decided to include all those Aboriginal groups that had been on the mailing list for the Sustainable Halton Water and Wastewater Master Plan on the project contact list for the Class EA, as follows:

- Mississaugas of the New Credit First Nation;
- Six Nations of the Grand River;
- Alderville First Nation;
- Beausoleil First Nation;
- Chippewas of Georgina Island;
- Chippewas of Nawash First Nation;
- Chippewas of RAMA First Nation;
- Curve Lake First Nation;
- Hiawatha First Nation;
- Huron-Wendat Nation;
- Iroquois Confederacy;

- Métis Nation of Ontario;
- Mississaugas of Scugog Island First Nation;
- Oneida Nation of the Thames;
- Mohawks of Akwesasne First Nation;
- The Mohawks of the Bay of Quinte (Tyendinaga) First Nation; and
- Haudenosaunee Confederacy.

Notice of PIC letters (see Appendix F) were sent to these Aboriginal contacts on March 12, 2013. Responses were received from: Alderville First Nation; Curve Lake First Nation; and Chippewas of RAMA First Nation (see Table 6). The Alderville First Nation response indicated that the project would have "minimal potential impact on our First Nation rights". The Curve Lake First Nation response noted that they were not "currently aware of any issues that would cause concern with respect to our Traditional, Aboriginal and Treaty rights", although noted requirements should "excavation unearth bones, remains or other such evidence of a native burial site or any archaeological findings". The Chippewas of RAMA response suggested forwarding a letter to the Coordinator for Williams Treaties First Nations.

Notice of Completion

Notice of Completion letters (see Appendix F) were sent to the above noted Aboriginal contacts on or before February 26, 2015.

11. COMPLETION OF CLASS EA STUDY

11.1 Summary of Preferred Design Concept

The identified preferred design concept meets the study objectives and would fulfil the capacity needs at the existing WPP. Implementation of three new taller filters was identified as the preferred design concept. Components and major construction works required as part of this design concept include:

- Construction of three new filters and decommissioning of the existing filters to provide water servicing for growth in the Town of Acton.
- Expansion of the west side of the building using the existing blow-out wall to accommodate the new filters.
- Modifications to the existing building would include a new scrubber room, a new chlorine room, a new electrical room, a retrofitted potassium permanganate room, a new laboratory, retrofitted fluoride room, and additional standby power.

11.2 Completion of Environmental Study Report

The publication of this ESR represents the conclusion of Phase 4 of the Municipal Class EA process, including public and agency consultation. The ESR will be placed on public record by issuing a Notice of Study Completion and interested parties will have 30 days to provide comments. If comments arise that cannot be resolved or mitigated in discussions with the Regional Municipality of Halton within the 30 day period, a person/party may request that the Minister of the Environment issue a Part II Order. The request must be directed to the Minister of the Environment at the following address:

Minister of the Environment and Climate Change
77 Wellesley Street West
11th Floor, Ferguson Block
Toronto, Ontario M7A 2T5

A copy of all requests is to be forwarded to the Regional Municipality of Halton at the following address:

Mr. Norman Cato
Project Manger
Regional Municipality of Halton
1075 North Service Road W., Unit 27
Oakville, Ontario L6M 3L1
Phone: 905-825-6000 ext. 7433
Toll Free: 1-866-442-5866
TTY: 905-825-9833
Fax: 905-825-0267
Email: norman.cato@halton.ca

12. REFERENCES

AECOM, Sustainable Halton Water and Wastewater Master Plan, September 2011.

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