

**SUBJECT:** **PRELIMINARY REPORT**  
CTC Source Protection Plan (2015): Draft Official Plan Amendment

**PREPARED BY:** Patrick Wong, Natural Heritage Planner, x 6922

**REVIEWED BY:** Lilli Duoba, Manager, Natural Heritage, x7925

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**RECOMMENDATION:**

- 1) That the report titled “PRELIMINARY REPORT: CTC Source Protection Plan (2015): Draft Official Plan Amendment” be received;
- 2) That Staff be authorized to schedule a statutory Public Meeting to consider the draft Official Plan Amendment;
- 3) And that Staff be authorized and directed to do all things necessary to give effect to this resolution.

**PURPOSE:**

The purpose of this report is to initiate an Official Plan Amendment to address conformity requirements under the Credit Valley – Toronto and Region – Central Lake Ontario Source Protection Plan (CTC SPP) and to schedule a public meeting on the draft amendment.

**BACKGROUND:**

In May 2000, the municipal water supply in Walkerton was contaminated with *E. coli* bacteria resulting in seven fatalities and thousands of people becoming sick. In response to the Walkerton tragedy, the Province passed the *Clean Water Act* and established a science-based approach to protect drinking water supply, also known as “source water.”

The *Clean Water Act* required the preparation of Source Protection Plans (SPP) across the Province to establish policies and strategies to protect the quantity and quality of municipal water supplies. The SPP that applies to Markham was approved by the Minister of the Environment and Climate Change in July 2015 and the policies have been in force and effect since December 31, 2015. Municipalities impacted by SPPs are provided with a 5-year mandatory timeframe in which to amend their Official Plans. To this end, a draft Official Plan amendment has been prepared by staff and is attached as Appendix “B” to this report.

**What is a Source Protection Plan?**

Source Protection Plans are science-based documents which outline how water quantity and water quality for municipal water supplies will be protected. Markham is entirely located within the Credit Valley-Toronto and Region-Central Lake Ontario Source Protection Plan (CTC SPP). The CTC SPP can be viewed in its entirety at [www.ctcswp.ca](http://www.ctcswp.ca). The implementation of the CTC SPP is a shared responsibility between

the Ministry of the Environment and Climate Change (MOECC), municipalities (York Region and City of Markham), and Conservation Authorities (Toronto and Region Conservation Authority).

A number of technical reports or 'Assessment Reports' were prepared to provide the scientific rationale for the policies in the CTC SPP. The purpose of the Assessment Reports was to describe the surface water and groundwater conditions in each watershed and to identify "vulnerable areas" and their level of sensitivity. Vulnerable areas are locations on the landscape where certain land uses or activities have the potential to negatively affect drinking water supplies. Five types of vulnerable areas exist within the Toronto and Region watersheds and are summarized below in Table 1.

*Table 1: Summary of Vulnerable Areas*

Type of Vulnerable Area	Located in Markham	Official Plan Policies
<b>Wellhead Protection Areas (WHPA)</b> are areas around a municipal groundwater well where contaminants are likely to eventually reach the drinking water supply. Certain activities such as application or storage of fertilizer, pesticide, road salt, fuel, and organic solvents have been identified as drinking water threats that have the potential to negatively impact water quality.	No	Not applicable
<b>Intake Protection Zones (IPZ)</b> are areas surrounding a municipal surface water intake (e.g., Lake Ontario or Lake Simcoe) where contaminants are likely to eventually reach the drinking water supply. Certain activities such as application or storage of fertilizer, pesticide, road salt, fuel, and organic solvents have been identified as drinking water threats that have the potential to negatively impact water quality.	No	Not applicable
<b>Highly Vulnerable Aquifers (HVA)</b> are areas that are susceptible to contamination due to the location of the groundwater aquifer close to the ground's surface. Development may be required to complete a salt management plan or a contaminant management plan. The Official Plan policies and mapping for HVA are attached as Appendix "A". These policies are under appeal and have not yet been approved.	Yes	Policies are included in Official Plan 2014 (partially approved on Oct. 30, 2015 and May 26, 2016) and are mapped as Appendix J.
<b>Wellhead Protection Areas – Quantity (WHPA-Q)</b> are areas that have been identified as critical to maintaining water balance and allowing municipal wells and groundwater to become replenished. Future land use activities that take water from the aquifer or reduce groundwater recharge may be a significant threat. Development is <u>required</u> to maintain groundwater recharge rates by minimizing impervious surfaces and	Yes	To be completed through this conformity exercise.

using Low Impact Development practices. Lands in Markham identified as WHPA-Q are shown on Figure 1 to this report.		
<b>Significant Groundwater Recharge Areas (SGRA)</b> are areas with porous soils which allow water to seep easily into the ground and to an aquifer. Development is <u>strongly encouraged</u> to maintain groundwater recharge rates by minimizing impervious surfaces and using Low Impact Development practices. Lands in Markham identified as SGRA are shown on Figure 2 to this report.	Yes	To be completed through this conformity exercise.

Compared to other local municipalities in York Region, Markham is less impacted by source protection requirements. As Markham's municipal water supplies are entirely drawn from Lake Ontario, both the Wellhead Protection Area (WHPA) and the Intake Protection Zone (IPZ) policies do not apply to lands in Markham. Policies regarding Highly Vulnerable Aquifers have been incorporated into the Official Plan 2014. Staff are not proposing any changes to these policies, but these policies remain under appeal and may be modified by the Ontario Municipal Board (OMB).

Private wells on rural properties are not subject to the requirements under the CTC SPP. Private wells are regulated separately by the *Water Resources Act* and the *Safe Drinking Water Act*, and their maintenance falls under the responsibility of the individual homeowner.

#### OPTIONS/ DISCUSSION:

##### Description of Proposed Official Plan Amendment

The draft Official Plan Amendment attached as Appendix "B" implements the policies for SGRA and WHPA-Q and generally affects lands in northern and eastern Markham. Lands identified as SGRA or WHPA-Q will be depicted on a new appendix map to be added to the Official Plan.

Both the SGRA and WHPA-Q have been identified as important locations to maintain the volume of water that infiltrates into the ground. This is important both to replenish groundwater supplies for municipal wells in York Region and to protect wetlands and watercourses that are dependent on groundwater. The proposed amendment to the Official Plan will strengthen groundwater policies within lands identified as SGRA and WHPA-Q. Development proposed in these areas will require a Water Balance Assessment which is a technical engineering study that looks at the impacts of development on groundwater recharge volumes. The level of effort required to maintain groundwater recharge rates depends on the type of vulnerable area identified on the property, as follows:

- Development on lands identified as WHPA-Q is required to maintain groundwater recharge rates. In the unlikely event that pre-development recharge cannot be maintained, enhancement of groundwater recharge is required elsewhere within the same subwatershed and WHPA-Q.
- Development on lands identified as SGRA is strongly encouraged to maintain groundwater recharge rates.

The new study requirements are meant for development applications that have the potential to significantly reduce groundwater recharge and would only be required where there will be over 500 m<sup>2</sup> (5,382 sq ft.) of impervious surfaces or for a major recreational use (e.g., golf course). It is not intended to apply to the construction of a single residential dwelling or accessory structures.

New requirements under the CTC SPP also prohibit development (within WHPA-Q) which would require a Permit to Take Water (i.e., taking of over 50,000 L/day) unless it can be demonstrated that the development will not have significant impacts. An existing policy in the Official Plan 2014 already deals with dewatering on a city-wide basis, and a minor change to this policy is recommended to incorporate the Permit to Take Water requirement.

### **Considerations for Future Urban Area Planning**

The impacts of the source protection requirements on the City's Future Urban Area generally located north of Major Mackenzie Drive and east of Woodbine Avenue (see Figure 3) are being assessed comprehensively through the Berczy, Bruce, Eckardt, and Robinson Creek Subwatershed Study. The subwatershed study has recommended that development within the Future Urban Area incorporate low impact development best management practices to mitigate impacts to watercourses, natural heritage features, and the water table. Targets for groundwater recharge rates are being developed through the subwatershed study and will be further refined through the Master Environmental Servicing Plans for each development block.

### **Public consultation**

As part of the Official Plan Amendment process, the draft amendment will be circulated to the Province, York Region, Toronto and Region Conservation Authority, and other appropriate agencies and stakeholders for review and comment. A statutory public meeting is recommended to obtain public input on this matter.

### **FINANCIAL CONSIDERATIONS:**

Not applicable.

### **HUMAN RESOURCES CONSIDERATIONS:**

Not applicable.

### **ALIGNMENT WITH STRATEGIC PRIORITIES:**

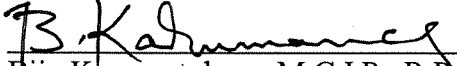
The proposed amendment will bring the City's Official Plan into conformity with the CTC SPP and is aligned with the City's strategic priority to protect and enhance the natural environment. It will also support the Region of York's responsibility to provide clean and safe drinking water to Markham residents.

### **BUSINESS UNITS CONSULTED AND AFFECTED:**

The Engineering Department has reviewed the proposed amendment. Engineering staff will also be primarily responsible for the review of the technical studies required by the proposed amendment.

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**RECOMMENDED BY:**



Biju Karumanchery, M.C.I.P., R.P.P.,  
Director of Planning and Urban Design

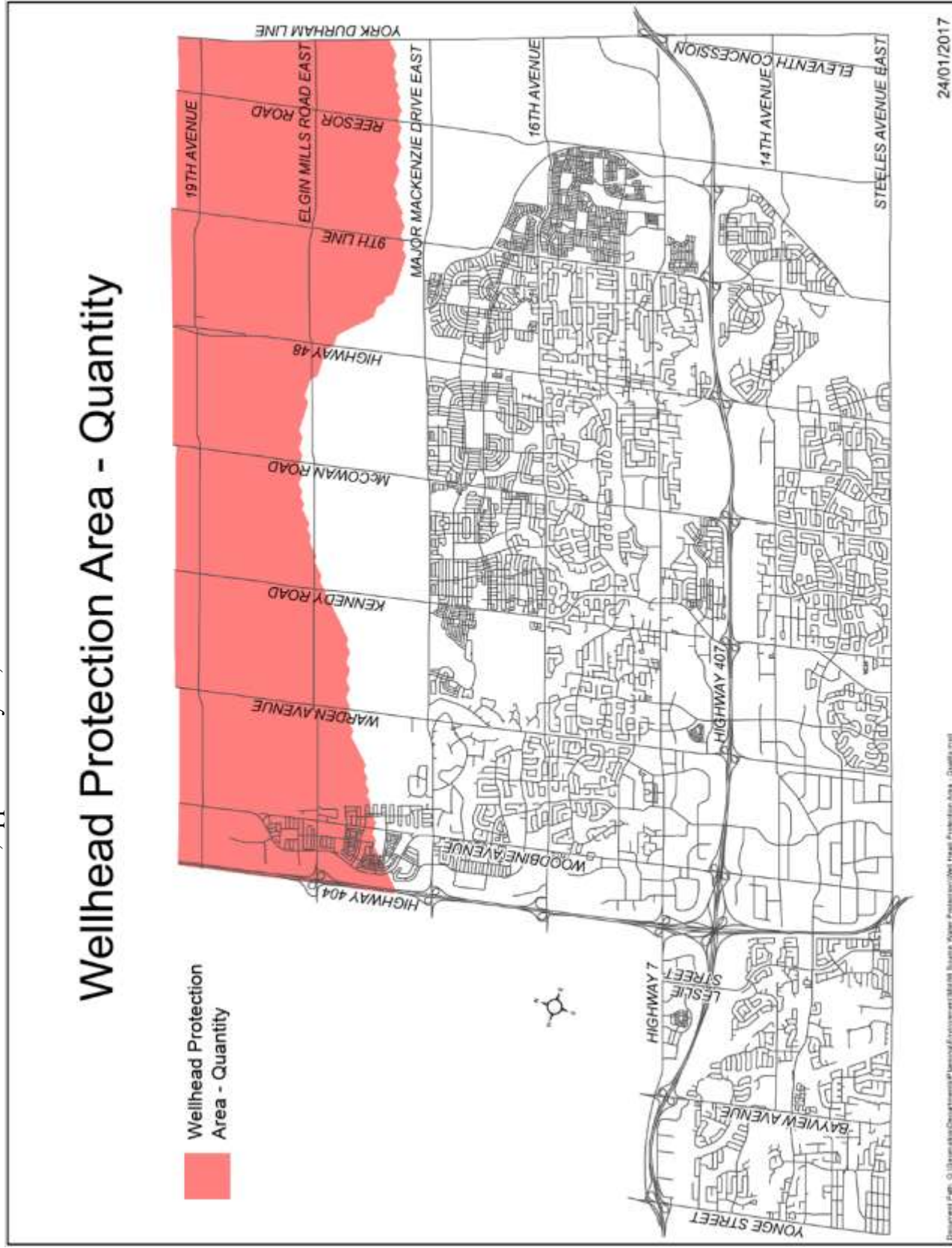


Jim Baird, M.C.I.P., R.P.P.,  
Commissioner of Development Services

**ATTACHMENTS:**

- |               |   |
|---------------|---|
| Figure 1:     | Map of Wellhead Protection Area – Quantity (WHPA-Q)                     |
| Figure 2:     | Map of Significant Groundwater Recharge Area (SGRA)                     |
| Figure 3:     | Map of Groundwater Recharge Areas in the Future Urban Area              |
| Appendix “A”: | Current Source Protection Policies and Mapping in Official Plan<br>2014 |
| Appendix “B”: | Draft Official Plan Amendment: CTC Source Protection Plan               |

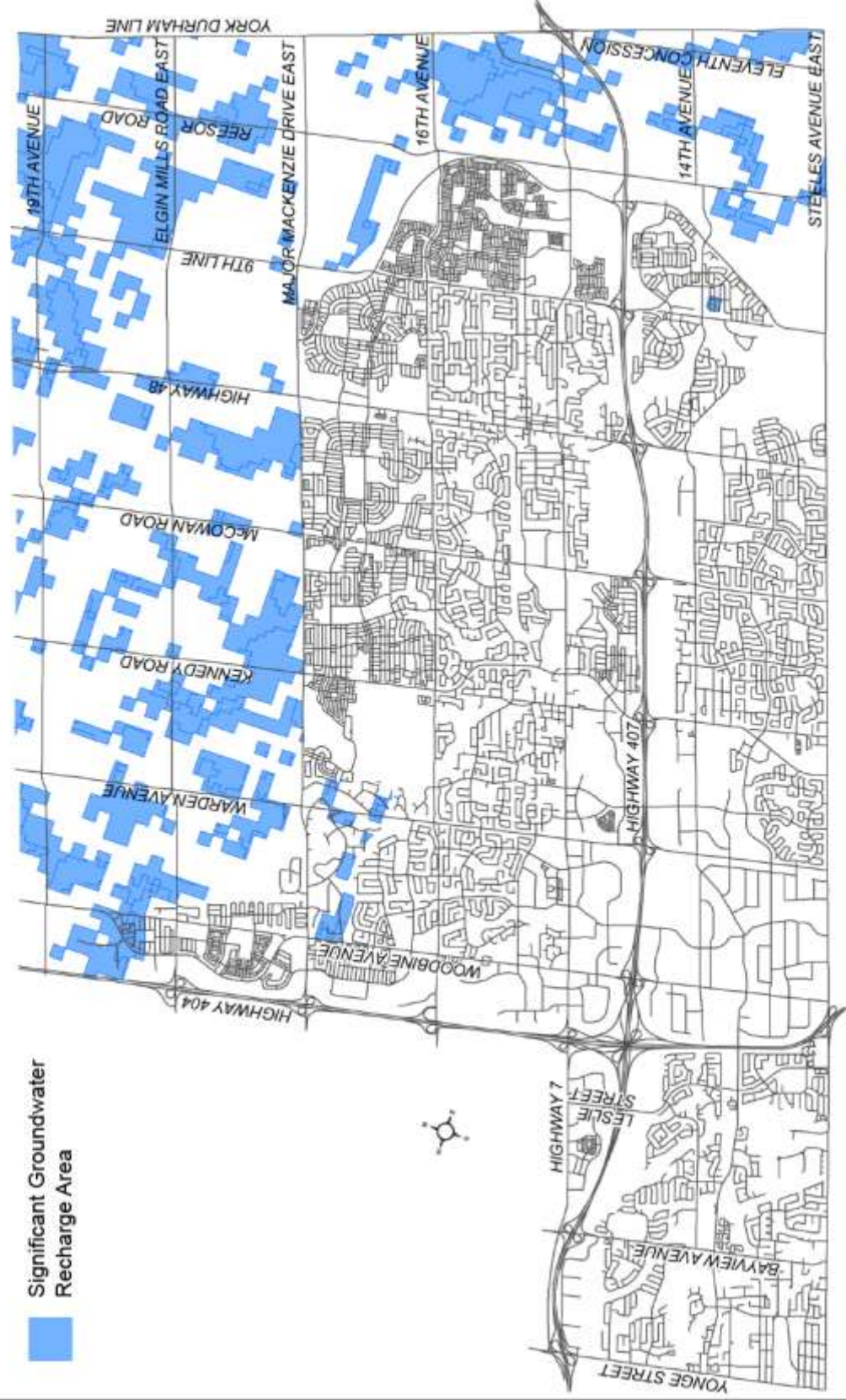
**Figure 1:** Map of Wellhead Protection Area Quantity (WHPA-Q)  
CTC Source Protection Plan, approved July 28, 2015



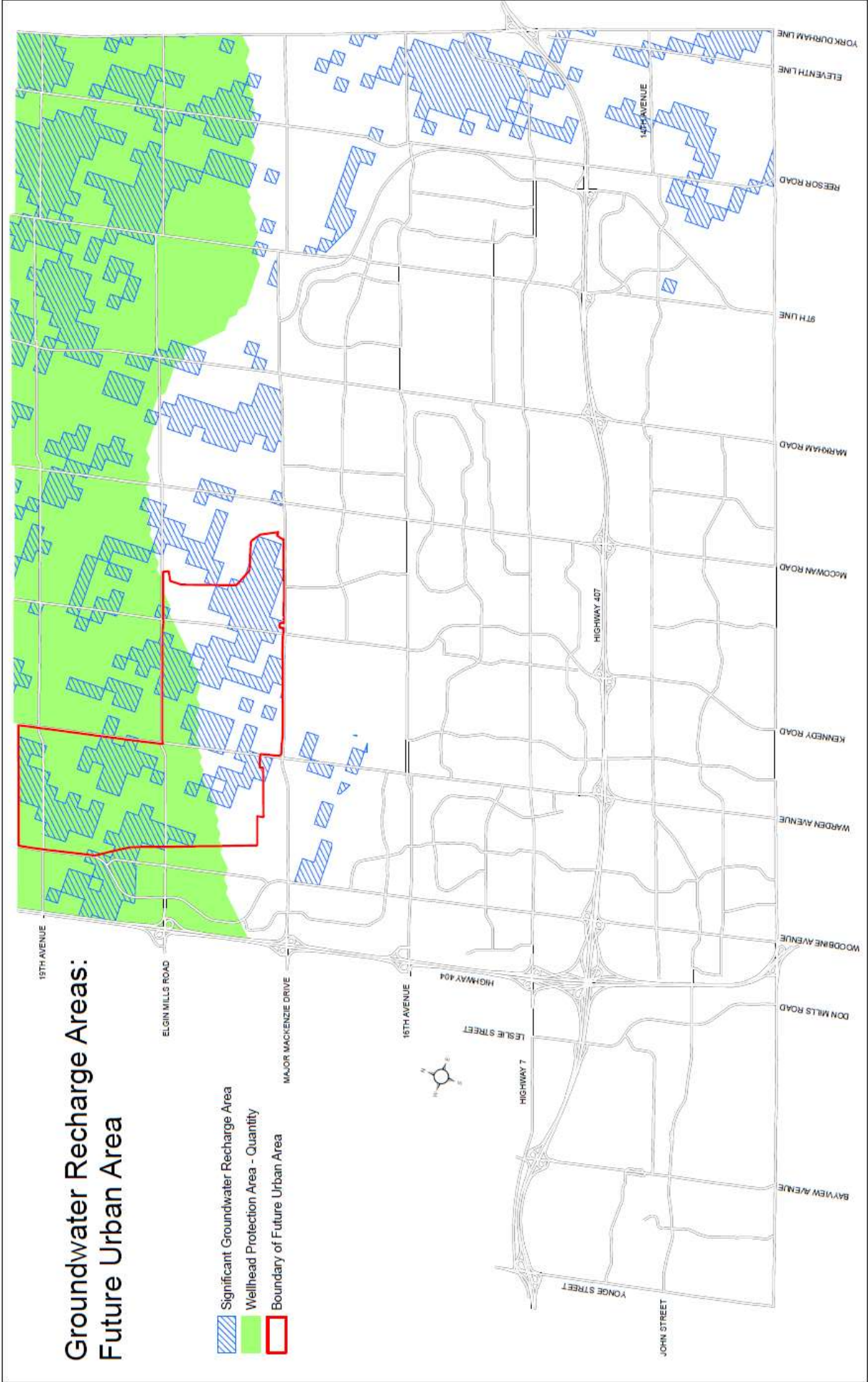


**Figure 2:** Map of Significant Groundwater Recharge Area (SGRA)  
CTC Source Protection Plan, approved July 28, 2015

## Significant Groundwater Recharge Area



**Figure 3:** Map of Groundwater Recharge Areas in the Future Urban Area





## Appendix “A”: Current Source Protection Policies and Mapping in Official Plan 2014 (Sections 3.3.2.3 and 3.3.2.4)

Environmental Systems	3-27
<p><b>It is the policy of Council:</b></p> <p>3.3.2.1 <b>To direct</b> development, <i>redevelopment</i> and <i>site alteration</i> away from <i>sensitive groundwater features</i> and <i>sensitive surface water features</i>.</p> <p>3.3.2.2 <b>To work</b> with the Toronto and Region Conservation Authority to manage the water balance as a result of development to maintain the natural quality, hydrological function and <i>ecological integrity</i> of <i>key hydrologic features</i> as much as possible using best management practices suited to terrain and hydrogeological conditions.</p> <p>3.3.2.3 <b>To work</b> with provincial agencies, York Region, adjacent municipalities and private landowners to manage activities which pose potential contamination risks on <i>highly vulnerable aquifers</i> as identified on Appendix J – <del>Toronto and Region Source Protection Area Clean Water Act</del> <u>Highly Vulnerable Aquifers</u> including salt management and the manufacturing, handling and storage of organic solvents and dense non-aqueous phase liquids (DNAPLS) in accordance with industry and provincial standards. (YR Mod. 172)</p> <p>3.3.2.4 <b>That</b> applications for development approval within <i>highly vulnerable aquifers</i> identified on Appendix J – <del>Toronto and Region Source Protection Area Clean Water Act Highly Vulnerable Aquifers</del> involving the manufacturing, handling and/or storage of bulk fuel or <del>hazardous chemicals defined under Ontario Regulation 347, (activities prescribed under the Clean Water Act)</del>, shall be accompanied by a <i>contaminant management plan</i> as deemed necessary by Markham. (YR Mods. 19 and 172)</p> <p>3.3.2.5 <b>That</b> where potentially <i>significant local groundwater recharge areas</i> are identified in an approved <i>watershed plan</i> and/or <i>subwatershed plan</i>, Markham shall require a <i>subwatershed plan</i>, a master environmental servicing plan, an environmental impact study, a natural heritage evaluation and/or hydrological evaluation, or equivalent. These studies shall include a hydrogeological study and modeling component to confirm:</p> <ul style="list-style-type: none"><li>a) recharge conditions;</li><li>b) groundwater levels and flow patterns;</li><li>c) areas of groundwater/surface water interaction; and</li><li>d) reliance of aquatic habitat for target species on groundwater discharge.</li></ul> <p>3.3.2.6 <b>To support</b> programs developed by York Region and the Toronto and Region Conservation Authority to monitor the quality and quantity of surface water and groundwater systems.</p> <p>3.3.2.7 <b>That</b> where development, <i>redevelopment</i> or <i>site alteration</i> is proposed on lands containing small drainage features as identified on Appendix B – <del>Small Streams and Headwater</del> <u>Drainage Features</u>, the features shall be evaluated and protected where required using <del>Markham's Small Streams Classification System and Management Protocol. The Protocol shall be updated periodically to address updated standards and Ontario Regulation 166-06 the Toronto and Region Conservation Authority's Evaluation, Classification and Management of Headwater Drainage Features</del></p>	
Markham Official Plan	REGION APPROVED June 2014



\*Additions and strikethroughs shown in red were approved by the Region of York as part of the approval of Markham’s Official Plan 2014.



## OFFICIAL PLAN

APPENDIX J - TORONTO-AND-

REGION-SOURCE-PROTECTION

AREA-CLEAN-WATER-ACT (YR Mod. 172)

HIGHLY-VULNERABLE-AREAS

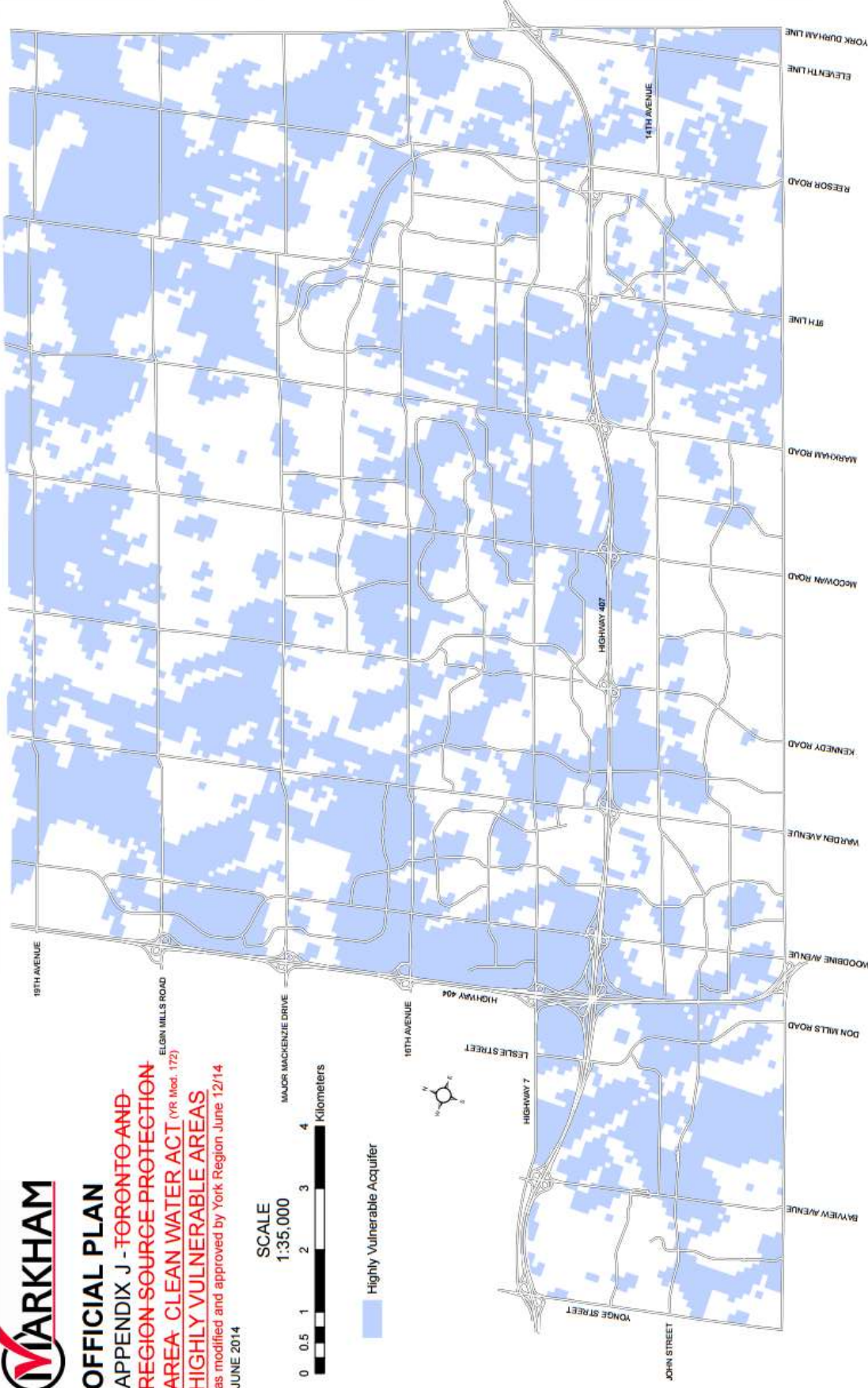
as modified and approved by York Region June 12/14

JUNE 2014

SCALE  
1:35,000



Highly Vulnerable Aquifer



Path: C:\Geomatica\Department\Planning\GIS\Map57\_Near\_DPP\DY Approved Shading June 2014\DY Red only\_Vendor\Appendix J Clean Water Act\_Highly\_Vulnerable Aquifer.mxd

\*\* Section 3 and Appendix J of the Official Plan 2014 are still under appeal to the Ontario Municipal Board.

**Appendix “B”:** Draft Official Plan Amendment: CTC Source Protection Plan

**CITY OF MARKHAM**

**OFFICIAL PLAN AMENDMENT NO. XXX**

To amend the City of Markham Official Plan 2014, as amended.

*(Source Protection Plan Conformity)*

*(Mar 2016 Draft)*

**CITY OF MARKHAM**  
**OFFICIAL PLAN AMENDMENT NO. XXX**

To amend the City of Markham Official Plan 2014, as amended.

This Official Plan Amendment was adopted by the Corporation of the City of Markham, By-law No. \_\_\_\_\_ - \_\_\_\_ in accordance with the Planning Act, R.S.O., 1990 c.P.13, as amended, on the \_\_\_\_\_ day of \_\_\_\_\_, 201 \_\_\_\_.

\_\_\_\_\_  
**Mayor**

\_\_\_\_\_  
**City Clerk**

**THE CORPORATION OF THE CITY OF MARKHAM**

**BY-LAW NO. \_\_\_\_\_**

Being a by-law to adopt Amendment No. XXX to the City of Markham Official Plan 2014, as amended.

THE COUNCIL OF THE CORPORATION OF THE TOWN OF MARKHAM, IN ACCORDANCE WITH THE PROVISIONS OF THE PLANNING ACT, R.S.O., 1990 HEREBY ENACTS AS FOLLOWS:

1. THAT Amendment No. XXX to the City of Markham Official Plan 2014, as amended, attached hereto, is hereby adopted.
2. THAT this by-law shall come into force and take effect on the date of the final passing thereof.

READ A FIRST, SECOND AND THIRD TIME AND PASSED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, (*year*)

\_\_\_\_\_  
**CITY CLERK**

\_\_\_\_\_  
**MAYOR**



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## **PART I - INTRODUCTION**

(This is not an operative part of Official Plan Amendment No. XXX)

## **PART I - INTRODUCTION**

### **1.0 GENERAL**

- 1.1** PART I - INTRODUCTION, is included for information purposes and is not an operative part of this Official Plan Amendment.
- 1.2** PART II - THE OFFICIAL PLAN AMENDMENT constitutes Official Plan Amendment No. XXX. Part II is an operative part of this Official Plan Amendment.

### **2.0 LOCATION**

The Amendment applies to all lands identified as Significant Groundwater Recharge Area or Wellhead Protection Area – Quantity on Appendix **X** – Clean Water Act Groundwater Recharge Areas.

### **3.0 PURPOSE**

The purpose of this Official Plan Amendment is to add new source protection policies addressing requirements for Significant Groundwater Recharge Areas and Wellhead Protection Areas – Quantity and adding a corresponding appendix.

### **4.0 BASIS OF THIS OFFICIAL PLAN AMENDMENT**

Source protection planning is a watershed-based approach to protect groundwater and surface water entering municipal drinking water systems. This amendment is based upon the Toronto and Region Source Protection Area Assessment Report (approved on July 24, 2015) and the Credit Valley – Toronto and Region – Central Lake Ontario Source Protection Plan which came into force and effect December 31, 2015.

#### **4.1 CREDIT VALLEY – TORONTO AND REGION – CENTRAL LAKE ONTARIO SOURCE PROTECTION PLAN (CTC SPP)**

CTC Source Protection Region staff began work on the CTC SPP in 2011. The Toronto and Region Source Protection Area Assessment Report (the “Assessment Report”) was prepared based on requirements outlined in the *Clean Water Act* and provides the scientific understanding for the policies in the CTC SPP.

Based on the technical work in the Assessment Report, policies were developed to manage, reduce, or eliminate threats to vulnerable areas. The CTC SPP identifies five types of vulnerable areas, three of which apply within the City of Markham.

Highly Vulnerable Aquifers (HVA) are areas that are particularly susceptible to contamination due to the location of the groundwater aquifer close to the ground's surface. Policies for HVAs were previously incorporated in the Official Plan 2014.

Significant Groundwater Recharge Areas (SGRA) are areas with porous soils which allow water to seep easily into the ground and to an aquifer. Within these areas, development is strongly encouraged to maintain groundwater recharge rates.

Wellhead Protection Areas – Quantity (WHPA-Q) are areas that have been identified as critical to maintaining water balance and allowing municipal wells and groundwater to become replenished. Future land use activities that take water from the aquifer or reduce groundwater recharge may be a significant threat. Within these areas, development is required to maintain groundwater recharge rates.

Wellhead Protection Areas (WHPA) and Intake Protection Zones (IPZ) have not been identified within the City of Markham.

## **PART II - THE OFFICIAL PLAN AMENDMENT**

(This is an operative part of Official Plan Amendment No. XXX)



## PART II - THE OFFICIAL PLAN AMENDMENT

### 1.0 THE OFFICIAL PLAN AMENDMENT

- 1.1 Section 3.3.2 of the Official Plan 2014, as amended, is hereby amended by replacing the last sentence of the second paragraph as follows:

“From a drinking water quantity perspective, the City will review groundwater recharge conditions within *significant groundwater recharge areas* and *wellhead protection areas – quantity* with the intent of protecting groundwater resources.”

- 1.2 Section 3.3.2 of the Official Plan 2014, as amended, is hereby further amended by renumbering sections 3.3.2.3 through to 3.3.2.9 in sequence as sections 3.3.2.5 through to 3.3.2.11, and by adding two new subsections following section 3.3.2.2 as follows:

“3.3.2.3 That development, *redevelopment*, and *site alteration* within *significant groundwater recharge areas* and *wellhead protection area – quantity* as shown on Appendix X – Clean Water Act Groundwater Recharge Areas be required to maintain pre-development recharge to the greatest extent feasible through best management practices, minimizing impervious surfaces, infiltration at the source, and where applicable, by having regard to the targets established in a *subwatershed plan* or master environmental servicing plan. A water balance assessment shall be required for development, *redevelopment*, and *site alteration* where impervious surfaces will cover more than 500 m<sup>2</sup> or for a *major recreational use*.

3.3.2.4 That where a water balance assessment is required, any predicted loss of groundwater recharge within a *wellhead protection area – quantity* shall be offset by enhancing infiltration rates elsewhere within the same subwatershed and *wellhead protection area – quantity*.”

- 1.3 Renumbered section 3.3.2.11 of the Official Plan 2014, as amended, is hereby amended by adding the words “, or temporary dewatering requiring a Permit to Take Water,” immediately following the words “To prohibit permanent dewatering”.
- 1.4 Section 10.6.2.3.b) of the Official Plan 2014, as amended, is hereby amended by adding “Water balance assessment” in a new bullet point under the bullet item “stormwater management report and/or design brief”.
- 1.5 Section 11.2 of the Official Plan 2014, as amended, is hereby amended by adding a new definition following the definition of “Watershed plan”, as follows:

“**Wellhead protection area – quantity** means an area that has been identified as critical to maintain water balance and allowing municipal wells and groundwater to become replenished and is also identified as the Wellhead Protection Area Quantity (WHPA-Q1 and Q2) under the Clean Water Act as illustrated in the CTC Source Protection Plan.”

- 1.6 Appendix X – Clean Water Act Groundwater Recharge Areas, attached hereto, is hereby added as an Appendix of the Official Plan 2014, as amended.

## **2.0 IMPLEMENTATION AND INTERPRETATION**

The provisions of the City of Markham Official Plan 2014, as amended, regarding the implementation and interpretation of the Plan, shall apply in regard to this Amendment, except as specifically provided for in this Amendment.

*(Mar 2016)*



## OFFICIAL PLAN

### APPENDIX X - CLEAN WATER ACT GROUNDWATER RECHARGE AREAS

ELGIN MILLS ROAD

SCALE

1:35,000

0 0.475 0.95 1.9 2.85 3.8

Kilometers

 Significant Groundwater Recharge Area

 Wellhead Protection Area - Quantity

