

Subject: Water Conservation Plan

Department: Infrastructure Services

Division: Environment

Report #: IS-Env-2020-012

Meeting Date: September 28, 2020

Orangeville Forward – Strategic Plan

Priority Area: Sustainable Infrastructure, Community Stewardship

Objective: Champion the Environment, Support Innovation

Sustainable Neighbourhood Action Plan

Theme: Natural Resources and the Environment

Strategy: Protect, improve or restore the quality and quantity of water resources

Recommendations

That report IS-Env-2020-012, Water Conservation Plan, be received;

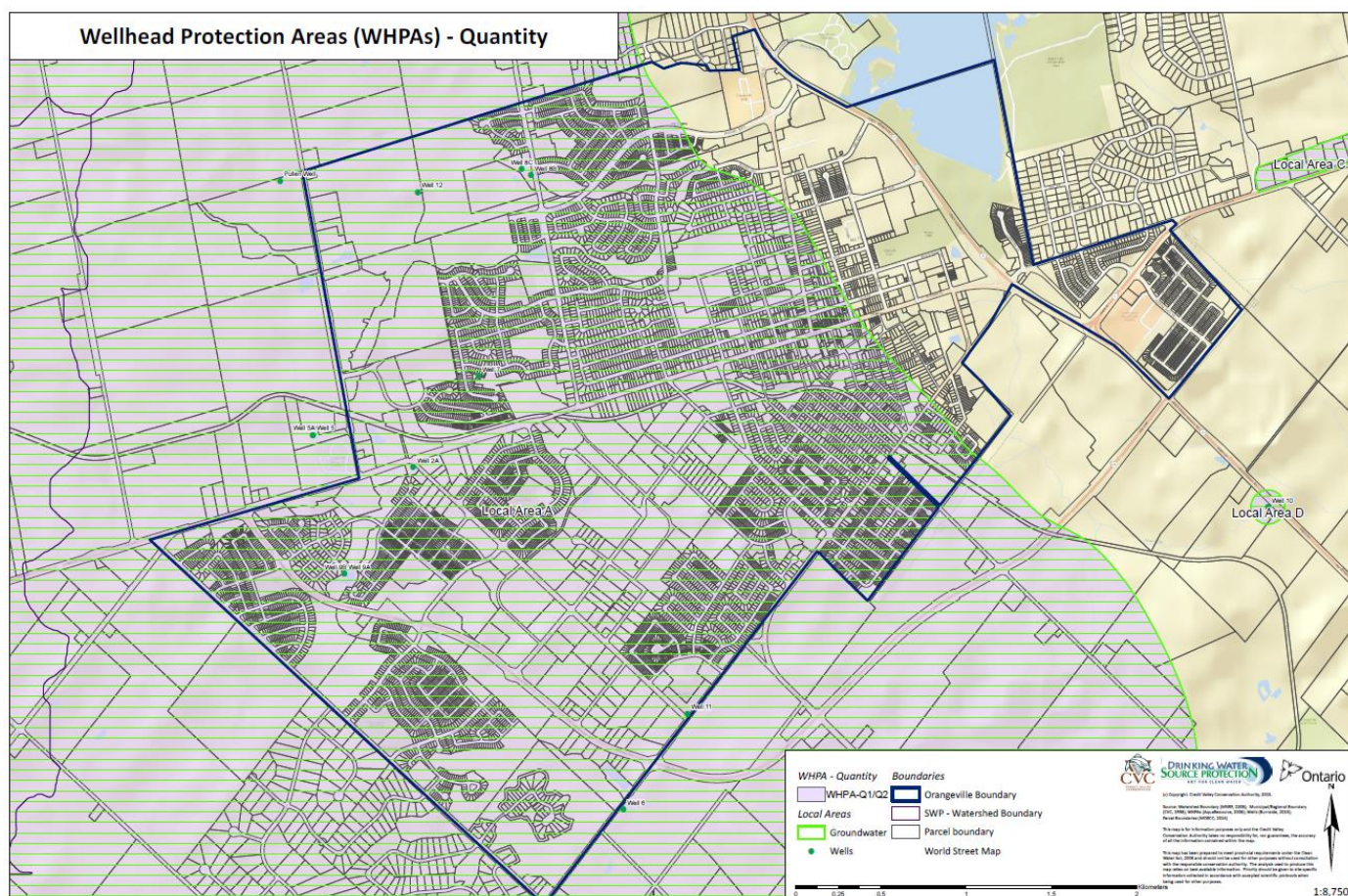
And that the Orangeville Water Conservation Plan be adopted.

Background and Analysis

The Clean Water Act (Act) was ratified in 2006 following recommendations of Justice O’Conner and the Walkerton Inquiry as part of the multi-barrier approach to protecting municipal drinking water supplies in Ontario. The Act protects the quality and quantity of existing and future drinking water sources from activities identified as drinking water threats. The legislation aims to ensure the long-term sustainability of clean, safe, and abundant drinking water through the development and implementation of policy documents called Source Protection Plans. Policies in the Source Protection Plan set out the actions that must be implemented in order to protect municipal drinking water supplies.

Under the Clean Water Act and Source Protection Plan, Orangeville's municipal water supply system underwent a water quantity analysis that evaluated the Town well system's capacity to meet existing and future water demands under a variety of climate and land use change scenarios. The assessment determined that under long-term drought conditions, and future land use build-out scenarios, the Town's current supply system would not be able to sustain the water production rates required to meet demand. As a result, a Wellhead Protection Area for Quantity (WHPA-Q1/Q2) was delineated around the Town's wells. The Wellhead Protection Area for Quantity (WHPA-Q1/Q2) is established to protect the quantity of water required by the Town to meet current and future water supply needs. The Town's WHPA-Q1/Q2 is comprised of land around municipal water wells where new or increased groundwater takings, or changes in groundwater recharge due to land use development could affect the quantity of water available at the well. Figure 1 illustrates the extent of the Wellhead Protection Area for Quantity (WHPA-Q1/Q2) within the Town of Orangeville.

Figure 1. Wellhead Protection Area for Quantity (WHPA-Q1/Q2)



To protect water quantity and safeguard the sustainability of the municipal water supply, Policy DEM-4 in the CTC Source Protection Plan mandates the development of Water Conservation Plans for all municipalities with well supply systems located within a Wellhead Protection Area for Quantity (WHPA-Q1/Q2). Water Conservation Plans are documents that analyze water use data to understand existing water demand trends. The insights gained from these demand analyses are used to set targeted water conservation goals that aim to protect the long-term sustainability of municipal drinking water resources. To achieve the identified goals, Water Conservation Plans put forth conservation initiatives to be implemented over a set timeframe. The Town of Orangeville Water Conservation Plan (the Plan), provided as Attachment No. 1 to this report, aims to satisfy the requirements of source protection policy DEM-4, while also providing added environmental benefits to the Town.

Although the Town has historically implemented several water conservation initiatives, a formal Water Conservation Plan has not been established to date. Existing initiatives to promote water conservation include; a leak detection program for older sections of the Town's distribution system, universal water metering, toilet replacement rebates, a lawn-watering by-law, and a rain barrel sale program. The Plan builds on these existing initiatives, while formalizing water conservation programming in Town.

The key objectives of the Plan include:

- Protecting the long-term viability of the Town's water supply system;
- Eliminating, postponing or deferring the need for capital infrastructure projects and expansions;
- Improving emergency preparedness and increasing the water system's ability to absorb stresses by proactively building water system redundancy, and pumping reliability;
- Building climate change resiliency and improving drought preparedness; and
- Improving operating cost efficiency for the delivery of water supply services.

A key component of the Plan is an analysis of recent and historical water use patterns. Understanding current and historical water demand is essential to identifying areas where conservation efforts will be most beneficial. The key objectives of the Plan, coupled with the findings of the water use analysis inform the conservation goals and performance targets for the Plan. To achieve the identified goals and targets, the Plan proposes several new municipal water conservation initiatives. Table 1 summarizes the goals, performance targets, and proposed conservation initiatives set out in the Plan.

Over the next five years staff will undertake in-depth investigations into the feasibility of the proposed initiatives and move forward with the implementation of initiatives determined to be practicable and effective. Staff will monitor the progress of proposed conservation initiatives on a yearly basis. To remain effective, the Plan will be reviewed every five years and revised as required to update conservation goals and targets, identify new conservation opportunities, and evaluate the success of established initiatives.

Table 1: Town of Orangeville Water Conservation Plan Goals, Targets, and Initiatives

Goal & Performance Target	Proposed Initiatives
<p>Goal: Reduce Unaccounted for Water</p> <p>Target: By 2026, a maximum of 10% of total annual treated water production volume should be attributed to water losses</p>	<ul style="list-style-type: none"> • Explore the feasibility of a district based leak-detection monitoring program; district based leak detection monitoring involves the establishment of “District Metering Areas” (DMAs) to proactively monitor the occurrence of leaks and water losses before they appear at the surface • Implement a water meter replacement program for all meters over 15 years of age with consideration for the implementation of Smart Meters • Establish a non-revenue water quantification program to help determine the true value of real water losses in the distribution system
<p>Goal: Reduce Outdoor Water Use</p> <p>Target: By 2026, a reduction in the maximum day factor (MDF) by 3% from the 2013-2019 average. This would put the target maximum day factor to 1.32</p>	<ul style="list-style-type: none"> • Establish a landscape efficiency and low impact development program to encourage the adoption of “water-wise” landscapes that combine water efficient plants with stormwater management techniques that work to capture and use rainfall run-off from hard surfaces to nourish gardens and lawns • Update Planning documents and guidelines to mandate the inclusion of landscape water efficiency, and low impact development (LID) techniques for new development and re-development applications • Review and revise the lawn watering by-law to a one or two day-per-week restriction; (as per the Ontario Water Works Association Outdoor Water Use Reduction Manual, watering deeply once a week is more beneficial to lawn health than frequent shallow watering). • Establish a phased water restriction policy to be implemented during droughts

<p>Goal: Reduce Indoor Water Use</p> <p>Target: By 2026, a 5% reduction from the 2018 baseline in average daily per capita residential demand from November 1 to April 30th. This would put the target 5 year average daily per capita residential demand from November 1 to April 30th to 158 L/day.</p> <p>By 2026, a 7% reduction in average daily per capita treated water demand from the 2013-2019 average. This would put the per capita daily treated water demand at 293 L/person/day.</p>	<ul style="list-style-type: none"> • Establish and formalize a Water Use Database • Establish a water softener rebate program to encourage the adoption of alternative water treatment technologies, or upgrades to more efficient water softening systems • Explore greywater re-use and rainwater harvesting opportunities at Town facilities for non-potable water uses • Update planning documents and application submission guidelines to mandate the inclusion of water conservation measures into new development and re-development projects; require that development and re-development proposals provide a Water Conservation Plan as part of a complete planning application submission package. Water Conservation Plans should outline how water use is minimized in site, building, and landscape design • Explore feasibility of establishing an Industrial, Commercial, and Institutional water audit program; the program would involve facility water audits for top industrial, commercial, and institutional water users with the goal of identifying water efficiencies and recommendations that owners can undertake to realize water savings
<p>Goal: Enhance rainfall infiltration and aquifer recharge</p> <p>Target : By 2026, complete two pilot projects to restore and enhance groundwater recharge processes on public lands in the Wellhead Protection Area for Quantity (WHPA-Q1/Q2). Pilot projects should utilize a combination of low impact development, naturalization, afforestation, and environmental restoration techniques to achieve an enhancement in groundwater infiltration rates.</p>	<ul style="list-style-type: none"> • Undertake a pilot project to re-naturalize public lands in the Wellhead Protection Area for Quantity (WHPA-Q1/Q2). The re-naturalization and reforestation of lands in the WHPA-Q1/Q2 will help to restore infiltration and groundwater recharge processes by creating areas to capture rainfall runoff, and in turn replenish groundwater aquifers • Undertake a pilot project to include Low Impact Development (LID) and naturalization techniques into the design of a priority Town infrastructure project.

Financial Impact

The Town of Orangeville Water Conservation Plan was developed to meet policy requirements in the CTC Source Protection Plan. The Plan puts forth a number of water conservation initiatives to achieve the goals, targets, and objectives set out in the Plan. A detailed investigation into the feasibility of proposed initiatives, and implementation of practicable initiatives will be undertaken over the next five years. Implementation of conservation initiatives will require different levels of investment. As the work to implement that Plan proceeds, the cost and timing of each initiative will be identified and incorporated into the long term budget forecast.

Respectfully submitted
Douglas G. Jones, M.E.Sc., P. Eng.
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Attachments:

1. Town of Orangeville Water Conservation Plan