

REPORT TO COUNTY COUNCIL

2024 Drinking Water System Performance

To: Warden and Members of County Council

From: Director of Public Works

RECOMMENDATION

1. That County Council receive Report PW 2025-10 entitled “2024 Drinking Water System Performance”, including the 2024 Annual Drinking Water System Summary Reports.

REPORT HIGHLIGHTS

- The Ministry of the Environment, Conservation and Parks (MECP) requires that an annual status summary report on the performance of the County’s 17 municipal drinking water systems be prepared and provided to Council in accordance with the regulatory requirements of Schedule 22 and Section 11 of Ontario Regulation (O. Reg.) 170/03 under the *Safe Drinking Water Act, 2002*.
- At the time that this report was prepared, nine of the 2024 municipal drinking water system inspections have been completed by the MECP. Eight systems received a 100% inspection rating and one system received a 92% rating. The remaining systems inspection report ratings were either not available at the time of this report or the inspection had not yet been conducted.
- A summary of annual water system capital investments and an overview of key maintenance activities that were completed on the water infrastructure assets is also noted in this report.
- This report also summarizes the Source Water Protection program implementation efforts undertaken over the last year across various watersheds within the County’s jurisdiction.

IMPLEMENTATION POINTS

As required by legislation, the 2024 Annual Drinking Water Systems Summary Reports will be posted on the County’s website by February 28, 2025. An update will be provided to Council after all remaining MECP inspections are complete.

In March 2025, a separate report to Council will include the results of the Management Review of the Drinking Water Quality Management System (DWQMS). In addition, staff will continue to implement Source Water Protection Plan policies to remain in compliance with the *Clean Water Act*, 2006 requirements.

Source Water Protection Plan Updates will be presented to Council in separate reports for the Long Point Region (2025), Thames-Sydenham and Region (2025-2026) and Grand River Source Protection Areas (2025-2026).

Financial Impact

There are no financial impacts as a result of this report. Any required actions that will result in expenditures have been accounted for in the 2025 Operating or Capital Budgets of the respective drinking water systems.

Communications




As indicated, the drinking water system performance reports will be posted to the County website as legislatively required by February 28, 2025 at www.oxfordcounty.ca/water-wastewater. The results of each system's performance report will also be shared directly with Area Municipal Chief Administrative Officers and Public Works senior management, respectively.

The County communicates the performance of key Public Works systems (Water, Wastewater, Transportation and Waste Management) annually to the public through an annual social media campaign after the last performance report has been submitted to Council (March 31, 2025). The Drinking Water System Performance reports are also featured as a highlighted item in Council this week, which is released to media, posted to the website, and shared with employees.

2023-2026 STRATEGIC PLAN

Oxford County Council approved the [2023-2026 Strategic Plan](#) on September 13, 2023. The Plan outlines 39 goals across three strategic pillars that advance Council's vision of "Working together for a healthy, vibrant, and sustainable future." These pillars are: (1) *Promoting community vitality*, (2) *Enhancing environmental sustainability*, and (3) *Fostering progressive government*.

The recommendation in this report supports the following Strategic Plan Pillars and Goals:

PILLAR 1	PILLAR 2	PILLAR 3
		
Promoting community vitality	Enhancing environmental sustainability	Fostering progressive government
<p>Goal 1.2 – Sustainable infrastructure and development</p> <p>Goal 1.3 – Community health, safety and well-being</p>	<p>Goal 2.2 – Preserve and enhance our natural environment</p>	<p>Goal 3.1 – Continuous improvement and results-driven solutions</p> <p>Goal 3.2 – Collaborate with our partners and communities</p> <p>Goal 3.4 – Financial sustainability</p>

See: [Oxford County 2023-2026 Strategic Plan](#)

DISCUSSION

Background

The Statutory Standard of Care provisions of the *Safe Drinking Water Act, 2002* holds individuals with oversight responsibilities for municipal drinking water systems legally responsible for decisions made regarding the system. This Standard of Care intends to ensure that owner representatives (Oxford County Council and Chief Administrative Officer) and various levels of decision-makers of the municipal drinking water systems are acting diligently and making informed decisions when required. These decisions can impact the quality and safety of the municipal drinking water provided to all customers.

Decision-making authority over the County’s drinking water systems includes, but is not limited to, members of municipal Council. All persons who oversee the operating authority or exercise decision-making authority must:

- Exercise the level of care, diligence and skill that a reasonably prudent person would be expected to exercise in a similar situation; and
- Act honestly, competently and with integrity, with a view of ensuring the protection and safety of the users of the municipal drinking water system.

Severe penalties are possible for municipal officials who fail to act in good faith and do not exercise honesty, competence, and integrity to ensure the protection and safety of the users of municipal drinking water systems.

Some of the ways members of Council can provide diligent oversight under the Standard of Care requirements is to have awareness of drinking water legislation and regulations, the County’s Water System Operational Plans, local watershed Source Water Protection Plan policies and the drinking water annual reporting. The County’s Operational Plans will be reviewed in the upcoming DWQMS report to Council in March.

Of note, the Annual Drinking Water System Performance Report and annual water system budget process are the primary methods by which Senior Management and Council demonstrate due diligence in overseeing of the County's municipal drinking water systems and meeting their Standard of Care legal requirement.

Municipal Drinking Water System Reporting

In accordance with the *Safe Drinking Water Act of 2002*, the 2024 Annual Drinking Water Systems Summary Reports ([Annual Reports - Oxford County](#)) have been prepared for each of the County's 17 municipal drinking water systems. Under Schedule 22 and Section 11 of O. Reg. 170/03, drinking water system owners must prepare reports that provide the following information:

- brief description of the system;
- any incidents of adverse water quality, inadequate disinfection, or where any mandatory requirement was not met;
- all test results; and
- a summary of the amount of water supplied with a comparison to the system's rated capacity.

Further, the *Clean Water Act, 2006* specifies that municipalities and the Risk Management Official must report yearly on activities undertaken to meet the requirements of the Source Protection Plans (SPPs) by February 1 of the following year. A summary of the submitted reports is provided in the sections below.

Comments

2024 Annual Water Systems Summary Reports

The individual annual water system reports will be available for review by the public on the County's website at www.oxfordcounty.ca/drinkingwater by February 28, 2025. Highlights include:

- 21 communities were served through 17 separate municipal drinking water systems.
- In 2024, there were 62 active supply wells providing treated water, with treatment methods ranging from chlorination for disinfection to more advanced processes, including filtration to remove contaminants such as iron, arsenic, manganese, and hydrogen sulfide, followed by disinfection using chlorination and/or ultraviolet (UV) light.
- Approximately 10.9 million cubic metres of treated drinking water was supplied to customers.
- Over 4,500 regulated bacteriological samples were collected, with 17 samples being adverse (0.38 %). All adverse results were investigated, resampled and cleared.
- Over 3,300 bacteriological samples were collected from supply wells in 2024.
- Results for over 60 different health-related chemical parameters are summarized in the annual systems report published to the web page every year for all water treatment facilities.

- Source Water Quality:

- Brownsville Supply Wells - Naturally occurring arsenic levels in untreated raw water remain notably present in Well 6 and are monitored quarterly. Raw water from Well 6 is currently blended with Well 5 in a reservoir to effectively manage overall drinking water arsenic levels within acceptable treated Ontario Drinking Water Standards (ODWS) limits before customer distribution. In 2023, a pilot project using adsorptive media was conducted which demonstrated promising results for arsenic removal during water treatment. As per the 2024 Budget, a new adsorptive media filter system was procured to effectively manage drinking water arsenic levels from Well 6. In 2025, the Brownsville water treatment facility will undergo construction for this filter project.
- Dereham Centre Supply Wells - Naturally occurring arsenic remains present in untreated raw water. Since 2021, filtration at the Water Treatment Facility (WTF) has successfully reduced arsenic levels below the ODWS before distribution. Arsenic levels in both raw and treated water continue to be monitored quarterly, as required by the Municipal Drinking Water Licence.
- Springford Supply Wells - Naturally occurring arsenic levels in untreated raw water remain notably present in Well 4 and are monitored quarterly while the wells are in service. Water from Well 4 is blended with Well 5 to effectively manage overall drinking water arsenic levels within acceptable ODWS standards prior to customer distribution.
- Norwich Supply Wells - Naturally occurring arsenic levels in untreated raw water remain elevated in Wells 2 and 5. Since 2008, filtration at the Pitcher Street Water Treatment Facility (WTF) has successfully reduced arsenic levels below the ODWS before distribution. Quarterly monitoring of both raw and treated water samples continues.
- Otterville Supply Wells - Nitrate levels have historically been present in Wells 3 and 4. These wells were previously blended to effectively manage nitrate concentrations within acceptable ODWS limits before distribution to customers. However, in May 2024, the wells were taken out of service when nitrate levels exceeded what could be managed through existing blending practices.

Since then, the wells have been intermittently returned to service after continued monitoring showed a reduction in nitrate levels; however, nitrate levels quickly became elevated after a short period of time. A similar incident occurred in 2017 where a temporary increase in nitrate placed the wells out of service for approximately 3 weeks. Additional mitigation strategies are currently being developed and are planned for implementation in 2025.

- Tillsonburg Supply Wells (Broadway Street) - Naturally occurring arsenic levels in untreated raw water remain notably present in Well 7A and are monitored quarterly. Water from Well 7A is blended with Wells 4 and 5 (North Street) at the Fairview WTF to effectively manage overall drinking water arsenic levels within acceptable treated ODWS limits prior to customer distribution. Well 4 and 5 (North Street) noted in the next bullet under Tillsonburg Supply Wells (Brownsville Road) have high nitrate

levels. Due to the importance of this water supply, evaluation of the potential for dedicated filtration at the Well 7A site to facilitate arsenic removal from the raw water supply was a high-priority project completed in 2023. In 2025, the design for this filtration facility will be finalized with construction to follow.

- Tillsonburg Supply Wells (Brownsville Road) - Nitrate levels in raw water remain notably present in Wells 4 and 5 (North Street). Raw water from Wells 4 and 5 (North Street) is blended with Well 7A (Broadway Street) at the Fairview WTF to effectively manage and continuously monitor overall drinking water nitrate levels within acceptable treated ODWS limits prior to customer distribution. Water samples from the Fairview WTF are also taken as part of an enhanced nitrate monitoring system. In 2024, work began to re-introduce Well 3 (currently not in service) which will improve blending and the ability to better manage overall nitrate concentrations.
- Woodstock Supply Wells (Sweaburg Road) - Nitrate levels in raw water remain notably present in Wells 1, 3, 5, 8 and 11. Raw water from these wells is blended with other well supplies to effectively manage overall drinking water nitrate levels within acceptable treated ODWS limits prior to customer distribution. Continuous nitrate monitoring using an online analyzer has been in place since 2021. Water samples on the raw, treated, and processed water continue as part of an enhanced nitrate monitoring system.

The Thornton Wellfield supplies >30% of the drinking water to the Woodstock drinking water system. A Woodchip Bioreactor was constructed in 2024 to preserve water quality in Thornton Wellfield by balancing local drainage improvements and ensuring a proactive approach to nutrient management. The facility stands to be one of the largest applications of a bioreactor system in Ontario and the only one in place to provide pre-treatment for a municipal wellfield.

In 2024, work continued to reduce the potential impact of land activities (nitrate loading) on the raw water aquifer – refer to *2024 Source Water Protection* section of this report.

- Five systems (Brownsville, Ingersoll, Lakeside, Mount Elgin and Oxford South - Springford) have naturally occurring fluoride levels greater than 1.5 mg/L. At levels up to 2.4 mg/L, the water is considered safe for consumption; however, parents with children under the age of six are advised to limit exposure to other sources of fluoride when levels exceed 1.5 mg/L. For more information visit:
<https://www.swpublichealth.ca/news/posts/swph-issues-annual-reminder-about-fluoride-and-sodium-in-oxford-drinking-water/>
- Eleven systems (Bright, Brownsville, Embro, Ingersoll, Mount Elgin, Oxford South, Plattsville, Tavistock, Thamesford, and some of Woodstock and Tillsonburg water treatment facilities) have elevated levels of naturally occurring sodium greater than 20 mg/L. At levels up to 200 mg/L, the water is considered safe for consumption; however, levels above 20 mg/L may be of concern for individuals on a sodium-restricted diet due to various medical conditions. For more information visit
<https://www.swpublichealth.ca/news/posts/swph-issues-annual-reminder-about-fluoride-and-sodium-in-oxford-drinking-water/>

2024 Water System Infrastructure Investments

As per the revised 2024 Capital Forecasts noted in Report [CS 2024-36](#), the County invested over \$16.6 million in rate supported water infrastructure which includes, but is not limited to, several notable capital projects as follows (project costs are rounded):

- Water SCADA Master Plan (\$750,000)
- Water Facility Improvements (\$540,000)
- Watermain Replacements and New Installations (\$4,200,000)
- Ingersoll Cast Iron replacement (\$1,530,000)
- Ingersoll Well 7 and Well 11 Upgrades (\$410,000)
- Brownsville Water Quality Upgrades (\$220,000)
- Tavistock New Well Supply Class EA Study (\$370,000)
- Thamesford UV Upgrades (\$250,000)
- Tillsonburg Well 3 Upgrades (\$730,000)
- Tillsonburg Well 7A Upgrades (\$200,000)
- Tillsonburg UV Upgrades (\$300,000)
- Tillsonburg Boosted Pressure (\$200,000)
- Woodstock UV Upgrades (\$600,000)
- Woodstock Thornton Feedermain Replacement (\$520,000)
- Woodstock Thornton Well Field Studies (\$131,000)
- Woodstock Bowerhill Booster Pumping Station (\$900,000)

2024 Water Service Agreement Updates

Service agreements for the Town of Tillsonburg and City of Woodstock to perform operation and maintenance (O&M) for portions of the County's water distribution (and wastewater collection) systems as well as for specific engineering and construction services under contract have been effectively in place since January 1, 2024 (PW (CS) 2023-39), with no updates required in 2024.

In 2024, County staff completed all necessary administrative updates to the municipal Drinking Water Quality Management System, finalizing a consolidated Operational Plan for governing the oversight of Oxford's 17 municipal drinking water systems. This plan was reviewed and approved during the County's third-party reaccreditation audit and has been formally accepted as part of the update to the municipal drinking water licenses.

The agreements are functioning effectively, and the consolidated Operational Plan provides a streamlined, singular framework for ensuring compliance, efficiency, and oversight of the County's water systems.

2024 Water and Wastewater Master Plan

The 2024 Water and Wastewater Master Plan details long-term water servicing strategies to support existing needs and accommodate future growth in population and employment through to the year 2046. The final report can be found on the County website (www.oxfordcounty.ca/wwwmp).

The Plan continues to guide the County's annual capital and operational budgets but was an important input to the 2024 Water and Wastewater Development Charges Technical Study and 2024 Development Charges Background Study.

Backflow Prevention Program

Oxford County is committed to ensuring that residents have access to clean, safe, and reliable drinking water and strives to implement industry best management practices that support this objective. In 2024, Oxford County joined over 60 municipalities in Ontario that have successfully implemented a Backflow Prevention and Cross Connection Control program and supporting By-law (refer to [Report PW 2023-29](#)).

Key highlights for the first year of the program include:

- Gradual rollout of the program starting with Notices delivered to impacted properties in the City of Woodstock in December 2023, Town of Tillsonburg in February 2024, Town of Ingersoll in April 2024 and the remaining serviced municipalities in June 2024;
- Requested certified contractors to register with BSI for the program, reaching out directly to local companies to make them aware;
- All certified contractors that registered with BSI were given an explanation of the Oxford County program when they registered;
- Surveys were completed for 1,658 properties across the County, representing approximately 68% of properties requiring survey;
- Backflow test reports were submitted for 2,076 devices, representing 88% of required tests on known devices across the County;
- Over 70 qualified testers have registered with the County to perform device testing, inspections, and surveys; and
- A permanent program landing page is available on the County website at www.oxfordcounty.ca/backflow.

In 2025, key areas of focus for the program will be:

- Ensure all annual device inspections are completed in accordance with regulatory requirements and focus on continued engagement with stakeholders as annual device inspection notices are delivered;
- Building on feedback, staff will refresh our communication with the certified contractors regarding the Oxford County program so that Oxford County water customers receive consistent messaging;
- Increase the completion rate of cross-connection control surveys beginning with potentially high-hazard properties reaching out to property owners; and
- Monitor properties identified in cross-connection control surveys requiring backflow prevention devices, ensuring installation is completed by the end of three years from the date notices were delivered.

County staff are available to provide support and answer questions from affected property owners and qualified testers.

2024 Maintenance of Water System Infrastructure

In addition to the drinking water system capital investments noted above, several planned preventative maintenance activities are carried out annually to help optimize the useful service life and efficiency of water infrastructure assets. A number of key maintenance activities are noted below for water distribution and water supply/treatment infrastructure respectively.

Table 1: Water Distribution Assets

Preventative Maintenance Activity	Quantity
Critical Valve Turning	1,403
Non-Critical Valve Turning	2,264
Watermain Cleaning (Swabbing) - County only	37,000 m
Hydrant Flushing	3,299
Hydrant Maintenance	440
Hydrant Flow Testing	432

In terms of corrective maintenance, Oxford County Public Works and its contracted service providers (City of Woodstock and Town of Tillsonburg) also repaired 40 distribution watermain breaks and responded to approximately 274 customer water complaints within the various water distribution systems across the County in 2024.

Table 2: Water Supply/Treatment Assets

Preventative Maintenance Activity	Quantity
Water Supply Watermain Cleaning (Swabbing)	2 km
Specialized Rehabilitation of Supply Wells	7
Reservoir Cleaning	7
Water Plant Filter Media Maintenance/Inspection	1
Chlorine, Turbidimeter and Nitrate Analyzer Calibrations	564
Ultra-Violet Disinfection System Maintenance	10 (with 6 upgrades)
Standby Power Generator Maintenance	28
Water Plant Flowmeter Calibrations	157

As well, Oxford County Public Works performed over 170 inspections on critical water supply wells, instruments, and storage facilities.

2024 MECP Water System Inspection Reports

Every year, the MECP inspects each drinking water system to assess compliance with the requirements of the *Safe Drinking Water Act, 2002* and the *Ontario Water Resource Act, 1990*. As the MECP's inspections take place during their fiscal year (April to March), inspection reports are not always finalized in time to be included in the County's annual reports. Overall, 2024 demonstrated the continuous exceptional performance at the County's water treatment and

distribution facilities as reflected in the MECP inspection reports and ratings. The table below outlines the status of each system’s MECP inspection reports and ratings.

Table 3: Municipal Water System Inspection Ratings

System	MECP Inspection Rating
Beachville	100%
Bright	<i>MECP Inspection – In progress*</i>
Brownsville	100%
Dereham Centre	<i>MECP Inspection – Pending*</i>
Drumbo-Princeton	<i>MECP Inspection – In progress*</i>
Embro	100%
Hickson	100%
Ingersoll	<i>MECP Inspection – In progress*</i>
Innerkip	92%
Lakeside	100%
Mount Elgin	100%
Oxford South (Norwich, Otterville & Springford)	<i>MECP Inspection – In progress*</i>
Plattsville	<i>MECP Inspection – In progress*</i>
Tavistock	100%
Thamesford	100%
Tillsonburg	<i>MECP Inspection – In progress*</i>
Woodstock	<i>MECP Inspection – Pending*</i>

* An update to Council will be provided after all remaining MECP inspections are complete and the findings will be provided by memorandum.

Two minor non-compliances for the Innerkip drinking water system were noted due to irretrievable continuous monitoring data resulting from a UPS failure which spanned approximately 40 minutes. Raw wells were locked out for the duration of the UPS failure and the UPS has since been replaced. It is important to note that during this timeframe, the plant was still equipped with automatic alarms and shut offs to ensure the water supplied to distribution continued to meet ODWS limits and that County Water Operators attended the site and confirmed that the chlorine residuals and plant operations were normal. The MECP did not require any further corrective actions from this non-compliance.

2024 Boil Water and Adverse Water Quality Incidents

There was a total of 35 Adverse Water Quality Incidents in 2024. All incidents were reported to MECP and the local Medical Officer of Health (MOH) with no further action being required, and a summary is included in the specific water system reports.

There were five Boil Water Advisories issued by Southwestern Public Health in 2024:

- Hickson (3 day) – A bacteriological sample result taken from the Hickson Water Treatment Facility on January 2, 2024, was found to have 4 CFU/100mL of *E. coli* and 4 CFU/100 mL of total coliforms. The results were promptly reported to the MECP and MOH. A precautionary Boil Water Advisory (BWA) was issued for all residents and the school. Distribution free chlorine residuals were tested and found to be within acceptable levels. Additionally, two rounds of bacteriological samples were collected at the water treatment facility, from 2 downstream locations, all results were satisfactory.
- Dereham Centre (3 day) - During a power failure on February 24, 2024, a generator failed to start, resulting in low water pressure in the distribution system. The incident was promptly reported to the MECP and the MOH. A precautionary BWA was issued for all residents. Distribution free chlorine residuals were tested and found to be within acceptable levels. Additionally, two rounds of bacteriological water samples were collected to confirm there was no contamination in the drinking water system, and all results were satisfactory. Power to the system was restored and the generator was repaired and tested.
- Oxford South – Springford (3 days) – A category 2 watermain break occurred on April 10, 2024. A Category 2 watermain break refers to a significant break in the water distribution system where there is potential for contamination due to factors like low pressure or exposure of the watermain to soil and debris. While the risk of contamination is not confirmed, it requires precautionary measures to protect public health. The incident was reported to the MECP and MOH. A precautionary BWA was enacted for ~50 properties while the main was repaired. Additionally, two rounds of bacteriological samples were collected at site, upstream and downstream, and all results were satisfactory.
- Dereham Centre (3 day) – A bacteriological sample result taken from the South-West Oxford Municipal Office on August 6, 2024, was found to have 1 CFU/100mL of *E. coli* and 1 CFU/100 mL of total coliforms. The results were promptly reported to the MECP and MOH. A precautionary BWA was issued for all residents. Distribution free chlorine residuals were tested and found to be within acceptable levels. Additionally, two rounds of bacteriological samples were collected at the municipal office, the water treatment facility, and a downstream location, and all results were satisfactory.
- Tillsonburg (3 days) – A bacteriological sample result taken from the Community Centre (45 Hardy Ave) on October 7, 2024, was found to have 1 CFU/100ml of *E. coli* and 1 CFU/100 mL of total coliforms. The results were promptly reported to the MECP and MOH. A precautionary BWA was issued impacting approximately ~1,170 properties. A coordinated effort was launched between the County and the Town of Tillsonburg to ensure that impacted residents and businesses were notified by social media, radio, and posted notices. Distribution free chlorine residuals were tested and found to be within acceptable levels. Additionally, two rounds of bacteriological samples were collected at the community center, an upstream, and downstream location, and all results were satisfactory.

In 2024, a total of seventeen (17) Adverse Test Results and Issue Resolution (AWQIs) were reported due to the detection of total coliforms in treated water samples. When total coliforms

are detected in any treated water sample, the results are immediately reported to the MECP and MOH. Confirmatory resamples are then required from the location of the adverse sample and two other acceptable locations (typically one upstream and one downstream of the site). In all incidents, resample results were found to be free of total coliforms. The impacted sites include:

- Woodstock - January 26, 2024
- Oxford South - February 28, 2024
- Lakeside - May 23, 2024
- Woodstock - May 28, 2024
- Bright - June 19, 2024
- Tillsonburg - June 24, 2024
- Thamesford - July 1, 2024
- Tillsonburg - July 24, 2024
- Embro - July 31, 2024
- Woodstock - September 5, 2024
- Tavistock - September 11, 2024
- Tillsonburg - September 11, 2024
- Oxford South - September 28, 2024
- Embro - September 25, 2024
- Plattsville - October 3, 2024
- Mount Elgin - October 23, 2024
- Innerkip - October 24, 2024

In 2024, eight AWQI were issued for Sodium for: Bright, Brownsville, Embro, Ingersoll, Mount Elgin, Oxford South, Thamesford, and Tillsonburg. Where results are above 20 mg/L, the MECP and MOH are notified and a confirmatory resample is collected. The aesthetic objective for sodium is 200 mg/L, meaning at levels less than this, sodium will not impair the taste of the water. However, levels of Sodium above 20mg/L may be of concern for individuals on Sodium restricted diets. Oxford County works with Southwestern Public Health to issue an annual advisory which can be found here: <https://www.swpublichealth.ca/news/posts/public-health-issues-annual-reminder-about-fluoride-and-sodium/>

In 2024, three AWQI were issued for Fluoride in Brownville, Ingersoll, and Lakeside where concentrations are above 1.5 mg/L. In all cases, MECP and MOH are notified, and a confirmatory sample is collected. Fluoride levels under 2.4 mg/L are considered safe for consumption; however, levels between 1.5 and 2.4 mg/L may cause dental fluorosis in children. Oxford County works with Southwestern Public Health to issue an annual advisory which can be found here: <https://www.swpublichealth.ca/news/posts/public-health-issues-annual-reminder-about-fluoride-and-sodium/>

Two additional AWQI were issued in 2024:

- Brownsville – Brownsville Well 6 has slightly elevated arsenic levels and is blended with Well 5 to maintain levels below the maximum acceptable concentration of 10 µg/L. An AWQI was reported to the MECP and MOH in response to possible improperly blended water on March 8, 2024, while the reservoir was undergoing maintenance. Southwestern Public Health issued a Health Advisory instructing customers to flush their taps. Oxford County hand delivered the advisory notices and flushed the drinking water system. Treated water results were collected and found to be below the MAC of 10ug/L. A filter

installation is planned for 2025 which would effectively reduce arsenic concentrations from Well 6 without the need for proper mixing with Well 5.

- Woodstock – During scheduled watermain swabbing on May 27, 2024, improperly disinfected water entered the system due to a well flow meter error, which failed to detect flow, preventing chlorine disinfection.

There is no system pressure during swabbing to distribute water to residents; therefore, the water was able to be flushed from the system before service resumed.

The event was reported to the MECP and MOH, and two confirmatory bacteriological samples were collected after the maintenance was complete. One sample was found to contain total coliforms of 1CFU/100mL, which is included in the above bacteriological AWQI summary. Resamples were collected from the location and two upstream locations. The samples were found to be free of total coliforms and both AWQIs were able to be closed with no further action required.

Oxford County staff investigated all AWQIs through the DWQMS. An improvement and corrective action plan were established following the higher number total coliforms in 2024. This included a detailed review of selected sampling locations, enhanced identification of sampling taps, updated disinfection methods for sampling taps, and a comparison of laboratory quality control measures.

2024 Water Conservation Efforts

Oxford County relies entirely on groundwater for its drinking water supply. Compared to other communities near rivers or lakes, groundwater supplies may take longer to recharge and can be at times more vulnerable to overuse. Oxford County takes water conservation seriously and currently operates three rebate programs (toilet replacement rebate, washing machine rebate, and Industrial/Commercial/Institutional (ICI) water buy-back program) and a Summer Water Conservation By-law ([By-law 4193-2002](#)) to ensure that our groundwater supply is protected for future generations.

Summer Water Conservation By-law

Water use can increase by up to 50 per cent during the summer months due to an increase in outdoor water use for watering lawns/gardens and filling pools. This peak in water demand can quickly increase household water bills and put additional strain on the municipal water supply and distribution system. The Summer Water Conservation By-law is in effect from May 1 until September 30 annually. The By-law outlines designated times for outdoor water use to better manage our community water demand in peak months and help ensure a sustainable supply of water for everyone. Exemption permits are available for residents and businesses who may need to use water outside their dedicated watering times.

In 2024, Oxford County continued to raise awareness on the Summer Water Conservation By-law through new promotional video. The video ad was viewed nearly 6,000 times targeting residents of Oxford County. The retention rate for this ad was incredible at over 50%, meaning the entire video was watched nearly 3,000 times! The program was also featured in the May 2024 issue of the Woodstock Ingersoll Echo and an episode of What's on Woodstock. Approximately 200 watering exemption permit applications were processed in 2024.

Water Rebate Programs

Oxford County continues to offer rebates for residents looking to update old inefficient toilets and washing machines to modernized water efficient (low flow) models. In 2024, twenty-eight (28) applications from residents were approved as part of this initiative.

In 2024, the County received approval to update the existing Water Capacity Buy Back Program (PW 2024-13), which has been in place for a decade and has achieved an average annual savings of 476 m³/day of water capacity. To maximize the program's impact, updates were made to enhance funding and eligibility criteria, encouraging greater participation. These improvements aim to increase municipal water system capacity and help defer costly expansion projects needed to support future growth. A new program fact sheet has been developed and distributed to all eight area municipal offices, and a dedicated program webpage has been created: <https://www.oxfordcounty.ca/en/services-for-you/water-capacity-buy-back-program.aspx>.

In 2025, staff will actively engage with high water users across the County to raise awareness and promote participation in the program.

2024 Source Water Protection Program

The County's Source Water Protection Coordinator and Risk Management Inspector (RMI), along with Area Municipalities, implement Source Protection Plan policies in the Catfish Creek, Grand River, Long Point, and Upper Thames River Source Protection Areas. Across the four Source Protection Plans, it is estimated that the overall implementation to address, eliminate, and manage potential drinking water threat activities is approximately 74.4% complete.

It should be noted that future amendments made to the Source Protection Plans will reflect up-to-date science and may result in an increase to the overall inventory of potential drinking water threats on the County landscape.

2024 Source Protection Undertakings

On February 1, 2025, the County submitted summary reports to each Source Protection Region summarizing the County's 2024 source water protection implementation actions. The highlights of these summaries are detailed below.

- Source Protection staff continue to screen all development applications and building permits near drinking water supplies (vulnerable areas) that have the potential to introduce a new threat to municipal drinking water.
 - 12 Notices to Proceed were issued in 2024 (under Section 59 of the *Clean Water Act*, 2006). These 12 notices allow development activities near municipal drinking water supplies to proceed to the planning and approval stage as no risk to the drinking water sources were identified during permit application screening.
 - 82 application reviews did not require any source water protection measures such as a Notice to Proceed, Risk Management Plan, or Prohibition Notice.

- 80 property and tenant drinking water threat inspections at industrial, commercial, residential, and agricultural properties were conducted in 2024.
 - These inspections are part of the ongoing monitoring performed at sites where a potential risk to municipal drinking water has been identified.
- 5 Risk Management Plans were finalized in 2024 to incorporate best management practices to safeguard our municipal drinking water.
 - Risk Management Plans are established with property owners to manage agricultural threat land use activities (i.e. manure application, manure storage, livestock grazing or pasturing of land, pesticide application, fertilizer application, and fertilizer storage and handling) and prevent potential contamination of the drinking water supply.
- Area Municipalities are responsible for sewage maintenance inspections under the Source Protection Plans and Part 8 of the *Building Code Act*, 1992. Septic systems are identified as potential significant drinking water threats and must be inspected every 5 years.
 - Four septic tank inspections were expected to be completed by the Township of Blandford-Blenheim in the community of Bright in 2023 but were postponed to 2024. The inspections were not completed in 2024 and remain to be inspected in 2025.
 - Hickson Public School is upgrading their septic system in 2025 and will be moving the new system outside the WHPA, removing it as a threat under the *Clean Water Act*, 2006.
 - No other area municipalities had scheduled inspections required for 2024.

Agricultural Land Lease Agreement Monitoring

In 2022, new lease agreements were signed for the Oxford County owned agricultural land around the Thornton Drinking Water Well Supply System. These lease agreements are designed to support continued agricultural practices while restricting nitrogen application from commercial fertilizers, thereby reducing the risk of nitrate contamination in the groundwater and protecting the drinking water supply. Some fields are anticipated to have zero nitrogen inputs to protect the Thornton Drinking Water Well Supply System. The success of these lease agreements on managing nitrate concentrations to the municipal wells has been extensively studied for over 20 years by researchers at University of Waterloo.

Beginning in late 2025, approximately 80 acres of land around the new Strik Drain woodchip bioreactor, located near the Thornton Wellfield Water Treatment Facility (east of Sweaburg), will be removed from the agricultural leases to be re-naturalized to further mitigate nitrate concerns. The naturalization will take place over approximately four years and will consist of combination plantings of prairie grasses and tree plots, some of which will be used as a future source and supply of woodchips for the bioreactor itself. Expanding on sustainable initiatives at this site, the County will be installing a solar photovoltaic (PV) system on these lands that is anticipated to be operational in 2026 which will aid in offsetting the majority of the energy that the Thornton Water Treatment Facility requires annually.

The remaining 312 acres of leased agricultural land will continue to be farmed and managed through future lease agreements to ensure the safety of the Thornton Drinking Water Well

Supply System. The current lease agreements are in effect until the end of 2027 and will be up for renewal for a new five-year term beginning in 2028.

Source Protection Plan Updates

In 2021, Director Technical Rules (DTR) were updated to reflect the most up-to-date science which directs Source Protection Authorities to update Source Protection Plans and Assessment Reports to address potential drinking water threat specific circumstances. The Catfish Creek Source Protection Plan was updated to incorporate these changes in 2023 (Report PW 2023-01). The Catfish Creek Source Protection Plan updates were accepted by the MECP (Environmental Registry of Ontario No. 019-9001) in 2024 and the 2021 DTR rules are now being implemented in the Catfish Creek Source Protection Area.

Updated modelling of the vulnerable areas around the County's municipal wells using the most up-to-date science and incorporating the latest technical field and operational data serves to ensure that Source Protection Plan policies are applied and implemented in the appropriate geographical locations. The County is currently investigating enhanced groundwater modelling in Ingersoll through the installation of monitoring wells to improve the data that informs the wellhead protection area model updates. Between 2021 and 2024, four multi-level monitoring wells have been installed in and around the Ingersoll area and are actively being monitored to collect groundwater elevation data. This data will help the County determine if updates to the model are warranted for continued protection of the groundwater supply. In South-West Oxford, the County also performed additional modelling efforts to establish an area of influence for nitrates around the Thornton Wellfield for the Woodstock Water Supply.

Issue Contributing Areas

When municipal raw water (before treatment) demonstrates an exceedance of an ODWS or increasing trend of a contaminant of concern, the *Clean Water Act, 2006* allows municipalities and/or local Source Protection Authorities (SPAs) to identify, designate and implement Issues Contributing Areas (ICA) on the landscape. An ICA delineates an area where current/past land uses are likely inferred to contribute to the elevated contaminant concentration in raw water supplies.

In Oxford County, the County and local SPAs have identified and delineated three nitrate ICAs within the following water systems:

- *Woodstock:*
 - Tabor Wellfield - Wells 2 and 4 already have a nitrate ICA in place which is intended to manage and regulate surrounding area land uses (agriculture) which have been inferred to be contributing to the raw water supply nitrate issue due to historical nutrient loading (fertilizer and manure application activities).
 - Thornton Wellfield - Land use activities may also impact nitrate levels in other Woodstock supply wells (Wells 1, 3, 5, 8 and 11). The University of Waterloo continues to study the relationship of agricultural practices and their impacts on groundwater in this area. To mitigate these impacts, the County retained a third-party consultant in 2023 to delineate a Nitrate ICA around the Thornton Wellfield Wells (Wells 1, 3, 5, 8, 11 and 12). The results were preliminarily shared with the MECP prior to incorporating it into the Thames-Sydenham and Region Source Protection Plan. County staff continue to address the comments and

recommendations received from the MECP during this initial review. The delineation of the ICA for above mentioned wells will be brought forward to Council in a report at a later date.

- The Strik Drain expansion/upgrade is a municipal drain project (Township of South-West Oxford) to improve the functioning of the existing drain in order to manage surface water and shallow soil drainage occurring over an approximate 210 hectare agricultural area. In 2023, the County hired a consultant who confirmed concerns that this change may increase loading of nitrates and pathogens transferred from the agricultural lands through the Strik Drain into the recharge zones to the Thornton Wellfield (Wells 1, 3, 5, 8 and 11). In 2024, County staff finalized the design and construction for a treatment facility (woodchip bioreactor) that will aid in nitrate reduction and pathogen removal for water received by the Strik Drain prior to discharge in the well recharge zone. When the Township of South-West Oxford completes the upgrades to the Strik Drain upgradient of the treatment facility in spring 2025, the system will be fully operational and will begin treating effluent from the 210 hectare watershed.
- *Tillsonburg:*
 - The County and the local SPA instituted a Nitrate ICA around Tillsonburg Wells 4 and 5 in 2013, along with supportive advanced source protection plan policy requirements to manage surrounding area land uses (agriculture) which have been inferred as contributing to the nitrate issue due to nutrient loading (fertilizer and manure application).

This ICA has remained a continued focus of the Oxford County Risk Management Official and Inspector since 2023, with ongoing efforts to eliminate and manage potential drinking water threats associated with the above noted land use activities. Specifically, Risk Management Plans (RMPs) have been and continue to be negotiated with and implemented by several landowners within the Nitrate ICA to manage such threats. Below is a figure demonstrating implementation efforts and properties that have potential significant drinking water threats managed through either an RMP or Nutrient Management Plan (highlighted in blue) and outstanding properties yet to establish a RMP (highlighted in yellow).

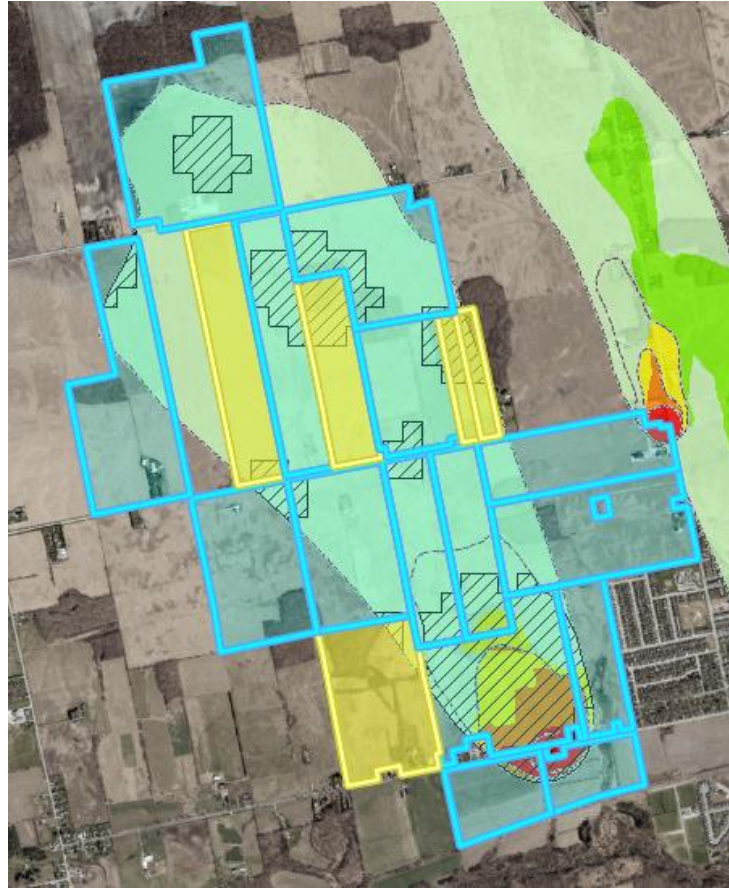


Figure 1: Tillsong ICA Implementation Efforts

- *Otterville*
 - Local SPAs designated a nitrate ICA around Wells 3 and 4 in 2020 and instituted advanced source protection plan policy requirements to manage surrounding area land uses (agriculture) which have been inferred as contributing to the nitrate issue due to nutrient loading (fertilizer and manure application). Work has begun to start to negotiate and develop RMPs with property owners engaging in drinking water threats to the Otterville Nitrate ICA.

CONCLUSIONS

The 2024 Annual Water Systems Summary Reports demonstrate Public Works' continued oversight of the County's Municipal Drinking Water Systems in order to provide a safe, reliable and sustainable supply of municipal drinking water for its residential and business users.

The County continues to institute industry best management standards to annually monitor the levels of service and financial performance of its water systems and to ensure water assets are maintained in optimal condition through effective preventative maintenance, and optimized asset decision-making.

SIGNATURES

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