Town of Tecumseh Distribution System

Drinking Water Quality Management System

Operational Plan

Water Services

Revision Date: April 26, 2022

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Town of Tecumseh Distribution System Drinking Water Quality Management System Operational Plan

Introduction

Quality Management Systems and Standards have been widely used in North America since the early 1950's. In 1984, the International Organization for Standardization (ISO) released the first version of the ISO 9001 Quality Management System Standard, which is used worldwide.

As recommended by Justice Dennis O'Connor, in Part 2 of the Walkerton Inquiry, the government of Ontario has implemented a licensing program for municipal drinking water systems. The program requires owners and operating authorities of drinking water systems to incorporate the concepts of quality management into water system operation and maintenance. In response to this recommendation, the Ministry of the Environment, Conservation and Parks developed the Drinking Water Quality Management Standard, which sets out the framework for the development of a Quality Management System. Owners and operating authorities of a drinking water system are mandated to implement a Quality Management System by the provincial government through the Safe Drinking Water Act, 2002.

The Town of Tecumseh's Drinking Water Quality Management System Operational Plan was first endorsed and committed to by Council in 2008. The Operational Plan provides an understanding of the drinking water system, the roles and responsibilities of the owner and operational staff, procedures to operate and maintain the drinking water system, and a commitment and endorsement by the owner to provide safe drinking water to consumers.

The Operational Plan provides a foundation for consistency, safety and efficiency, as well as meeting legislative and regulatory requirements.

Element 1 Quality Management System

This Operational Plan documents the Drinking Water Quality Management System for The Corporation of Town of Tecumseh Water Distribution System. The Corporation of the Town of Tecumseh Water Distribution System is owned and operated by The Corporation of the Town of Tecumseh. The Drinking Water Quality Management System (DWQMS) for The Corporation of the Town of Tecumseh covers the transmission and distribution of potable drinking water to consumers within the Town of Tecumseh.

Under the terms and conditions of the 2004 Water Agreement executed among the Windsor Utilities Commission (WUC), City of Windsor and The Corporation of the Town of Tecumseh, the Tecumseh water distribution system (formerly north and south Tecumseh water distribution systems) is currently supplied by the Windsor Water System.

Treated potable drinking water is purchased from the Windsor Utilities Treatment Plant, which is owned by the Windsor Utilities Commission (WUC) and is a separately held entity managed by ENWIN Utilities, which operates and manages the production and distribution of potable water.

The potable water enters The Corporation of the Town of Tecumseh Water Distribution System through 12 locations bordering the City of Windsor, Town of LaSalle and the Town of Tecumseh. Each location is metered and monitored using a Supervisory Control and Data Acquisition system (SCADA). Storage for equalization and peak hour flow of water for Tecumseh is the responsibility of the Windsor Utilities Commission (WUC).

The Corporation of the Town of Tecumseh, in turn, supplies potable drinking water to the Town of Lakeshore at 4 locations all bordering Manning Road: Scott Side Rd; County Rd. 42; Little Baseline; and Amy Croft.

The Corporation of the Town of Lakeshore owns and operates the production and distribution facilities of potable water within their boundary. The Corporation of the Town of Lakeshore is a fully owned local government and is represented by elected officials of the Town of Lakeshore.

The Corporation of the Town of Tecumseh is connected with the Town of LaSalle at one location bordering Howard Avenue. The Corporation of the Town of LaSalle owns and operates the distribution facilities of potable water within their boundary. Town of LaSalle`s treated potable drinking water is purchased from the Windsor Utilities

Treatment Plant, which is owned by the Windsor Utilities Commission (WUC) and is a separately held entity managed by ENWIN Utilities, which operates and manages the production and distribution of potable water. The Corporation of the Town of LaSalle is a fully owned local government and is represented by elected officials of the Town of LaSalle.

Additional details about the Town of Tecumseh Water Distribution System are included in Element 6 – Drinking Water System.

Element 2 Quality Management System Policy

The Corporation of the Town of Tecumseh is committed to supplying a safe, consistent, drinking water supply while maintaining strict adherence to all applicable legislative and regulatory requirements. The Corporation of the Town of Tecumseh will strive to achieve these goals through the implementation of a management system and staff competency.

The municipal owners, management and the employees of The Corporation of the Town of Tecumseh who are directly involved in the supply of drinking water, share in the responsibilities of implementing, maintaining, and contributing to the continual improvement of the Drinking Water Quality Management System (DWQMS).

The Quality Management System Policy is available on the Town's website at https://www.tecumseh.ca/en/living-here/water-quality.aspx.

Element 3 Commitments and Endorsement

This Operational Plan has been reviewed and approved by The Corporation of the Town of Tecumseh. The purpose of this document is for the planning, operation, and maintenance of The Corporation of the Town of Tecumseh Water Distribution System.

This document will be reviewed and approved by:

- **Municipal Owner/Operating Authority**: Mayor and Council
- **Top Management**: Chief Administrative Officer, Director of Public Works and Engineering Services and the Manager of Water Services/ORO (Overall Responsible Operator)

Top Management and Owner endorsement includes the following commitments:

a) ensuring that a Quality Management System is in place that meets the requirements of the Drinking Water Quality Management Standard,

b) ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements,

c) communicating the Quality Management System according to the procedure for communications, and

d) determining, obtaining or providing the resources needed to maintain and continually improve the Quality Management System.

The DWQMS Representative will keep the DWQMS document up-to-date and promote continual improvement. All recommended changes are to be approved by Municipal Owner/Operating Authority resolution (refer to Appendix 1 - Commitments and Endorsement).

Element 4 Drinking Water Quality Management System (DWQMS) Representative

The Corporation of the Town of Tecumseh has designated a DWQMS Representative and an alternate DWQMS Representative:

DWQMS Representative

Name: Nicole Bradley

Position: DWQMS Representative/Water Operator

Alternate DWQMS Representative

Name: Brad Dupuis

Position: Manager Water Services/ORO

The DWQMS Representative is responsible for the following:

- Ensures that processes and procedures needed for the DWQMS are established and maintained,
- Reports to Top Management on the performance of the DWQMS and any need for improvement, as needed, or during the Management Review meetings,
- Ensures that current versions of documents required by the DWQMS are being used at all times, and reviews DWQMS documentation and record control,
- With members of top management, ensures that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the drinking water system, and
- Promotes awareness of the DWQMS throughout Water Services and The Corporation of the Town of Tecumseh.

Element 5 Document and Records Control

This procedure is applicable to the following DWQMS documents:

- Operational Plan and associated procedures
- DWQMS Forms
- Equipment Manuals
- As Built Drawings
- Applicable drinking water regulations (e.g. O. Reg. 170/03, O. Reg. 128/04, O.Reg. 169/03)

5.1 Creating New or Updating Existing Documents

The need for document changes or for new documents may be identified through Audits, Management Reviews, DWQMS Committee or staff. Any employee of Water Services may request a change to an existing DWQMS document. The request must be made in writing, dated and submitted to the DWQMS Representative.

The request must include the following information:

- Reason for the new or changed document (one of the following needs to apply):
    - Is it required by the DWQMS?
    - Will it enhance process control?
    - Can it reduce risk?
    - Will it support regulatory requirements?
    - Will it improve operational efficiency?
- A proposed document change or new document content when applicable to Water Services or the Operational Plan.

5.2 Proposed Document Change or New Document Content

The requester shall develop the new/changed document and submit it to the DWQMS Representative for review.

The DWQMS Committee shall review the document, make any changes as required, and approve changes if applicable.

5.3 Approving Documents

- DWQMS-related documents may be approved by Municipal Owner; Operating Authority's Top Management: CAO, Director of Public Works & Engineering Services, Manager, Water Services/ORO; or the DWQMS Representative.

- DWQMS documentation shall be stored at the Water Services office or stored in document control software.

- Water Services staff has read-only access to the electronic version of the documentation. The Manager, Water Services/ORO, DWQMS Representative and Clerical Staff have access rights to manage and/or edit the electronic version of DWQMS-related documents.

- The DWQMS Representative is responsible to ensure that new or changed documents are communicated and /or distributed to the appropriate staff members.

- Documents shall be collected, archived, stored, and disposed of as per legislation under the Safe Drinking Water Act 2002 and The Corporation of the Town of Tecumseh Records Retention By-law, By-law 2018-39.

5.4 Reviewing Documents

The Operational Plan and procedures shall be reviewed by the DWQMS Committee for applicability and relevance.

5.5 Document Availability

- The current copy of the Operational Plan, procedures and associated documents are retained electronically on The Corporation of the Town of Tecumseh network servers and at the Water Services office.

- Original sets of equipment manuals / specifications and drinking water regulations are kept at the Water Services office.

- Copies of As-Builts are stored at the Water Services office and electronically on The Corporation of the Town of Tecumseh network servers.

5.6 DWQMS Records Control

This procedure is applicable to all records and documents that demonstrate conformance to the DWQMS and compliance to legislative requirements:

- **DWQMS records and documents** include (and are not limited to) Council Resolutions (for Operational Plan endorsement); risk assessment outcomes, training information, evidence of communications, procurement-related (e.g. specifications for essential supplies and services), evidence of infrastructure reviews, evidence of equipment maintenance and calibration, emergency preparedness, results of internal and external audits, and management review meetings.

- **Compliance records and documents** demonstrate compliance with legislative requirements and include (and are not limited to) the records required by the Safe Drinking Water Act and related regulations (e.g. O.Reg. 170/03, O.Reg. 128/04, O.Reg. 169/03, etc.), the Municipal Drinking Water Licence (and its parts, including: Drinking Water Works Permit, approved Financial Plan, Accreditation) and all related records (e.g. annual reports, Operator certification, sampling and testing, forms documenting changes to the distribution system, etc.).

- **Records are stored** in such a manner as to prevent their deterioration. All records are filed and/or archived (as per retention table) at the Water Services office and The Corporation of the Town of Tecumseh network servers.

5.7 Records Management

Records are stored and protected to ensure that they are kept legible, readily identifiable, and are retrievable when they are required by personnel of the Town of Tecumseh Drinking Water System.

Paper records are maintained on-site in file folders, filing cabinets, binders, or by other means deemed acceptable by individual responsible for the records. Electronic records are stored on the organization's network, and within the Town of Tecumseh's Management System Software. Regularly scheduled back-ups help protect electronic information from damage or loss.

All employees have access to the files appropriate to their roles and responsibilities. The Management System Software is also used to facilitate access to and retrieval of the required information.

Minimum record retention periods are determined according to appropriate legislative and regulatory requirements. Retention periods for records not governed by standards or legislation are established through the by-laws of the Town of Tecumseh. Records specific to the Town of Tecumseh Water Distribution System have been documented on a Record Retention Table. The records will be disposed of by either recycling, shredding, or in the case of electronic documentation archival and deletion.

Element 6 Drinking Water System

6.1 System Overview

Section 1 of this Operational Plan provides a general overview of the Town of Tecumseh's Water Distribution System and its connections to other area Municipalities' water systems with different Owners and Operating Authorities (refer to Appendix 2 - the overall service area is identified on Map 1).

The Town is responsible for its own distribution system within the boundaries of Tecumseh and is responsible for any new storage works that may be required to supply its fire flow of water. The Town of Tecumseh also has a 4,546m3 elevated water tower, located in the North end of Tecumseh. This elevated water tower is monitored by Windsor Utilities Commission (WUC) and the Town of Tecumseh through SCADA (Supervisory Control and Data Acquisition system).

The north Tecumseh water service area (north of Highway 401) includes the urban settlement areas of Tecumseh, St. Clair Beach, Tecumseh Hamlet and rural areas north of Highway 401; and is supplied from the Windsor Water System through metering facilities at the Town boundary on Dillon Drive, McNorton Street, Tecumseh Road, Mulberry Drive, County Road 42, Baseline Road and, in the future, on Intersection Road.

The south Tecumseh water service area (south of Highway 401) includes urban settlement areas of Oldcastle Hamlet, Maidstone Hamlet and rural areas south of Highway 401; and is supplied from the Windsor Water System through existing supply connections at the Town boundary in Oldcastle Hamlet on the 8th Concession Road, County Road 46, Walker Road and North Talbot Road. The south Tecumseh water service area is also supplied from the Town of LaSalle through a connection at Howard Avenue.

6.2 Service Areas and Water Distribution System Components

a) North Tecumseh Water Service Area

The distribution system in the north Tecumseh water service area is operated by The Corporation of the Town of Tecumseh and consisting of watermains ranging in size from 100 mm (4") to 600 mm (24") in diameter (refer to Appendix 2- the north service area boundary is identified on Map 2).

The feedermains on Dillon Drive, McNorton Street, Tecumseh Road and Mulberry Drive extend from the Town boundary through the centre of Tecumseh (Planning Area) to the elevated water tower on Tecumseh Road, and are interconnected through a new 300 mm feedermain on Lesperance Road and the existing 400 mm trunk watermain on Lacasse Boulevard. The 600 mm diameter feedermain on County Road 22 extends from the Town boundary to Manning Road (County Road 19) and is connected to the 400 mm diameter feedermain on Tecumseh Road. The 600 mm diameter feedermain on County Road 42 extends from the Town Boundary to Lesperance Road and is connected to the 300 mm diameter distribution mains on St. Alphonse Avenue and on Lesperance Road.

b) South Tecumseh Water Service Area

The The distribution system in the south Tecumseh water service area is operated by The Corporation of the Town of Tecumseh consisting of watermains ranging in size from 100 mm (4”) to 600 mm (24”) in diameter (refer to Appendix 2 - the south service area boundary is identified on Map 3).

The feedermains on 8th Concession Road and County Road 46 supply the north east end of Oldcastle Hamlet. The 300 mm diameter feedermain on Walker Road and North Talbot Street connect to the 300 mm diameter trunk watermain on Talbot Road (Highway 3) which supplies Oldcastle Hamlet, the rural areas south of Highway 401, and Maidstone Hamlet.

c) Consolidated Water Distribution System

The existing water distribution system will be operated as a single distribution system with connections through the Windsor Supply System. In the future, the Town intends to extend trunk watermains from County Road 42 to connect to the south service area to improve system performance. A copy of the approved Water and Wastewater Master Plan can be viewed at the Water Services office (refer to Appendix 2 – Table 1 Watermain Material Type and Length in Tecumseh Water Distribution System).

d) Sampling and Monitoring Disinfectant Residuals

Tecumseh Water Distribution System staff sample and monitor disinfectant residuals on a regular basis through regulatory sampling programs and during response activities related to consumer water quality calls.

Staff also carry-out work to improve disinfectant residuals within the distribution system through:

- regular maintenance programs (e.g. flushing);
- the practice of cycling water in the elevated water tower (reducing water age);
- optimizing distribution system flows (e.g. close-looping and eliminating system dead ends); and
- responding in a timely manner to watermain breaks (and carrying out proper disinfection in accordance with the province's Watermain Disinfection Procedure).

Element 7 Risk Assessment

7.1 Risk Assessment Team

The Risk Assessment Team shall be no less than a three-member forum and will be made up of the Manager, Water Services/ORO in conjunction with the Lead Water Operator and one other Water Operator.

The Risk Assessment Team shall meet once a calendar year to review the validity of the assumptions and the currency of the information used in the risk assessment. A comprehensive risk assessment will be done every thirty-six months unless changing conditions indicate that it should be done more frequently. In each of the risk assessment update activities, the risk assessment outcomes are presented to Top Management at Management Review for their official review and approval.

The Risk Assessment Team considers the Ministry's "Potential Hazardous Events for Municipal Drinking Water Systems" (dated February 2017) in the risk assessment process and is to identify and assess:

- Potential hazardous events and associated hazards as listed in the Ministry's document, and any additional potential hazardous events,
- The risks with the occurrence of potential hazardous events which could affect the water system,
- The ranking of hazardous events according to the associated risk,
- The control measures to address the potential hazards and hazardous events,
- The Critical Control Points and their respective Critical Control Limits,
- The associated procedures and/or processes to monitor Critical Control Limits,
- The procedures to respond to deviations from the Critical Control Limits,
- The procedures for reporting and recording deviations from the Critical Control Limits, and
- Consideration of the reliability and redundancy of equipment.

Element 8 Risk Assessment Outcomes

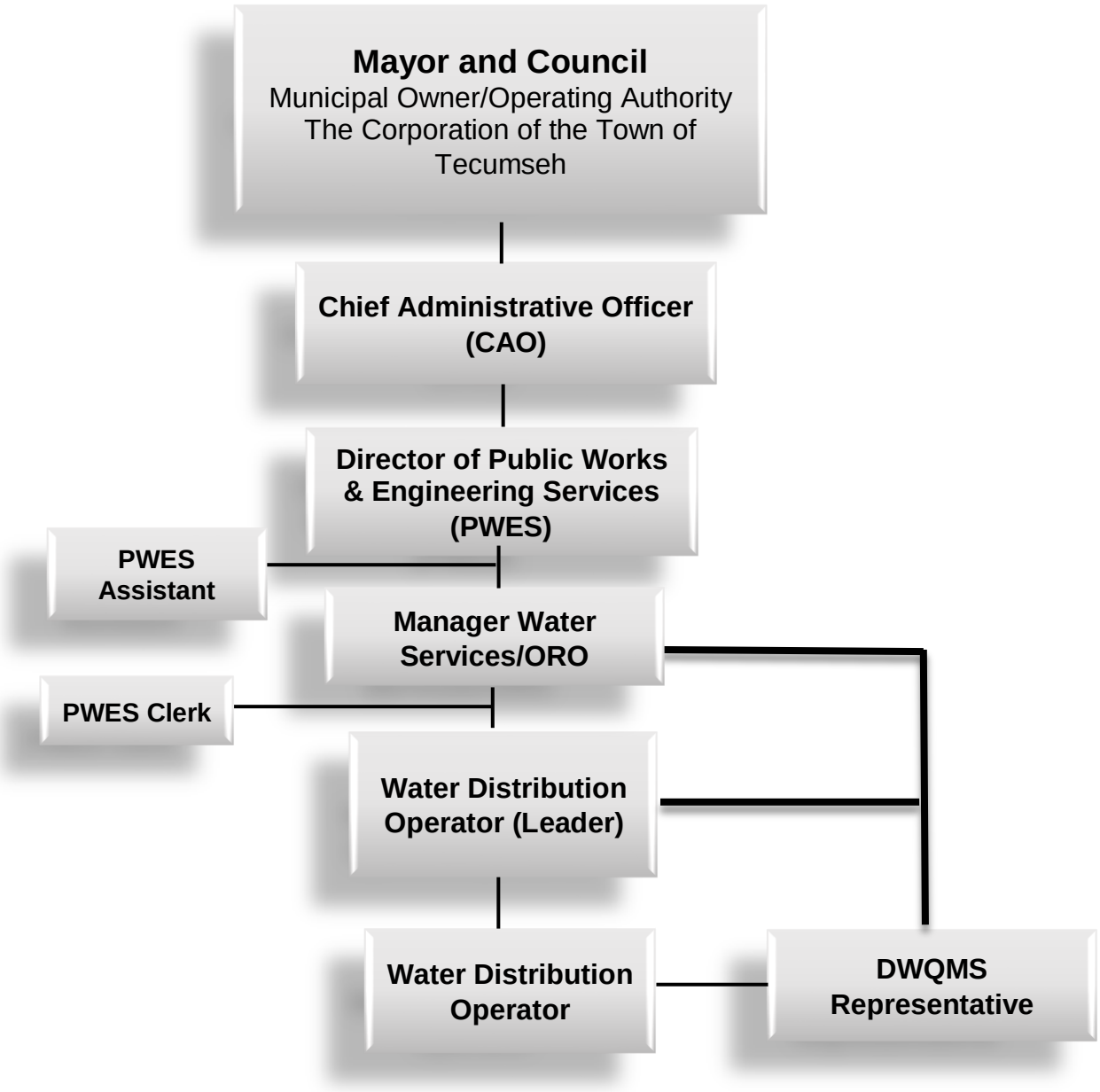
The risk assessment will be facilitated by developing and completing Risk Assessment Worksheets. As the Risk Assessment Team conducts this assessment, it will document the results of each step of the risk assessment procedure. The risk assessment process is an ongoing activity.

The DWQMS Representative shall ensure that relevant information is circulated to all members of the Risk Assessment Team; and update the outcomes of each risk assessment activity (whether it is for the calendar year or thirty-six-month update).

- Refer to Appendix 3 – Risk Assessment
- Refer to Appendix 4 – Risk Assessment Outcomes

Element 9 Organizational Structure, Roles, Responsibilities and Authorities

9.1 The Corporation of the Town of Tecumseh Water Services Organizational Chart



9.2 Operational Roles, Responsibilities and Authorities

a) Municipal Owner/Operating Authority (Mayor and Council)

- Responsibilities

In addition to ensuring the provision of safe and reliable municipal water supply to the serviced areas of The Corporation of the Town of Tecumseh Council is also responsible for:

- Complete legal oversight of The Corporation of The Town of Tecumseh Water Distribution System and the DWQMS,
- Ultimate responsibility for the provision of safe potable drinking water under the Safe Drinking Water Act 2002,
- Ensures compliance with applicable legislation and regulations,
- Participating in Council meetings and Council committee meetings and meetings of other bodies to which they are appointed by the Council,
- Obtaining and giving due consideration to information about the operation or administration of the municipality from the Chief Administrative Officer, (CAO) and from other appropriate Town staff,
- Evaluating the policies and programs of the municipality such as bylaw enforcement, taxation, property permits and inspections, planning, public works (roads, water, and sewer), parks and recreation, fire services, police services, and
- Endorsing the DWQMS and providing a representative to participate on the DWQMS Management Review Committee.

- Authorities

On behalf of the electorate of The Corporation of the Town of Tecumseh, and in accordance with the Municipal Act, Council is authorized to:

- Implement Drinking water system and DWQMS improvements or changes,

- Authorize resources to improve or change the drinking water system and DWQMS,
- Approve and review policies for the management and operation of Town assets,
- Review, revise, and approve proposed and existing bylaws, expenditures, user fees, taxation rates,
- Hire, evaluate, discipline, or terminate Town Management Staff and contracted service providers, and
- Provide financial, administrative authority related to the distribution of safe drinking water.

b) Top Management

Top Management Management is comprised of the following: Chief Administrative Officer; Director, Public Works & Engineering Services; and Manager, Water Services/Overall Responsible Operator (ORO).

i. Chief Administrative Officer (CAO)

- Responsibilities

As the senior Town staff member reporting to Council, the Chief Administrative Officer (CAO) responsibilities include:

- Oversight of the operation and management of all Town departments,
- Ensuring that the policies and direction from Council are effectively communicated to senior department managers,
- Ensuring that policies and direction from Council is carried out by the appropriate Town departments,
- Direct supervision of senior department directors and managers, and
- Endorsing the ongoing development of the DWQMS and participating on the DWQMS Management Review Committee.

- Authorities

Authorities of the CAO include:

- Communicate information from senior managers directly to Council,
- Request expenditure approval from Council and implement approved expenditures,
- To convey and mandate council policy and direction to the department senior managers,
- To hire, evaluate, discipline, or terminate utility management staff, and
- Staffing (within the guidelines of The Corporation of the Town of Tecumseh and any collective agreements).

ii. Director Public Works & Engineering Services

- Responsibilities

Reporting to the Chief Administrative Officer (CAO), the responsibilities of the Director of Public Works and Engineering Services responsibilities include:

- Ensuring the safe, reliable, and compliant management and operation of all of the Towns physical infrastructure as well as Water Distribution System,
- Direct supervision of Engineering Services and Public Works department supervisors and administrative staff,
- Coordinating budget preparation,
- Preparation and presentation of Public Works and Engineering Services Department Reports to Council,
- Administration of the Collective Bargaining Agreement for department personnel,
- Ensuring adequate and competent staffing,
- Ensuring appropriate staff training,

- Investigating and responding to public complaints and inquiries, and
- Participate and represent the Municipal Owner/Operating Authority (Mayor and Council) on the DWQMS Committee.

- Authorities

The Director of Public Works and Engineering Services is authorized to:

- Evaluate and prioritize long-term department needs,
- Prepare, review, and approve design specifications,
- Select contractors, and equipment,
- Develop and implement departmental administrative and technical policy,
- Recruit, hire, evaluate, discipline, or terminate Public Works and Engineering Services staff in accordance with Town policies,
- Within the scope of the Public Works and Engineering Services , communicate directly with regulatory agencies and the public on behalf of the Town Municipal Owner/Operating Authority,
- When necessary, will appoint a temporary Overall Responsible Operator (ORO) position, in absence of the designated ORO.

iii. Manager Water Services/Overall Responsible Operator (ORO)

- Responsibilities

Reporting to the Director of Public Works and Engineering Services, the responsibilities include:

- Ensuring the efficient, safe and compliant operation of the Towns Water Distribution System,
- Providing supervision, technical direction and training to water distribution staff,
- Maintaining provincial operator certification,

- Assisting the Director of Public Works and Engineering Services with the water distribution budget preparation and long-term planning,
- Communicating with regulatory authorities to ensure compliance with applicable legislation,
- Preparing and presenting Municipal distribution information to Council, Town staff, managers and the public, and
- Serving as an alternate DWQMS Representative and participating on the DWQMS Committee and Management Review Committee.

- Authorities

The Manager Water Services /ORO, Water System is authorized to:

- Act and is the Overall Responsible Operator (ORO) and therefore must be available to be contacted 24/7. The ORO will make arrangements with the Director of Public Works and Engineering Services for a designated ORO in the event he/she is not available and cannot be contacted,
- Develop, approve and implement operations, maintenance and safety policies and procedures related to water distribution,
- Supervise and inspect the work of contractors,
- Evaluate and prioritize the long-term rehabilitation and upgrade to the Town's infrastructure(s),
- Participate in hiring, evaluation and discipline of unionized and non-unionized staff in accordance with Town Policies,
- Communicate with Regulatory Agencies,
- Order/purchase necessary supplies and services, and
- Apply various Town By-laws.

c) DWQMS Representative

- Responsibilities

Reporting to the Manager Water Services/ORO, the responsibilities include:

- Promotes awareness of the DWQMS,
- Reports DWQMS results to staff,
- Ensures DWQMS documentation is prepared and maintained, as needed,
- Provides all staff with technical and administrative consultation related to DWQMS document preparation and implementation, as needed,
- Reviews and may approve DWQMS documentation,
- Implements and oversees document control procedure,
- Coordinates internal auditing acts as the external audit liaison,
- Communicates DWQMS information to staff and facilitates training when needed,
- May report DWQMS results to Municipal Owner/Operating Authority and Top Management, and any needs for improvement, and
- Assist Municipal Owner/Operating Authority and Top Management, that personnel who directly impact drinking water for The Corporation of the Town of Tecumseh are aware of all applicable legislative and regulatory requirements that pertain to their duties if reference to the DWQMS.

- Authorities

The DWQMS Representative is authorized to:

- The overall managing role, responsible for overseeing the development and implementation of the DWQMS.

d) Designated DWQMS Representative Alternate

- Performs all roles of Designated DWQMS Representative.

e) Water Distribution Certified Operator (Leader)

- Responsibilities

Reporting to the Manager Water Services/ORO, the responsibilities include:

- Oversees day-to-day activities relating to maintenance of the water distribution system,
- Communicates and liaises with the Manager, Water Services/ORO, Water Operators and Clerical Staff,
- Works with the Manager, Water Services/ORO in completing the Water Operators' performance assessments,
- Assists with developing procedures and processes for assuring water quality, and
- Has input into the development of procedures and processes for assuring water quality.

- Authorities

The Water Distribution Certified Operator (Leader) is authorized to:

- Directs Operators in day-to-day operations of water distribution system,
- Orders day-to-day supplies as needed,
- Respond to public complaints as relayed from Manager, Water Services/ORO, Clerical Staff and/or after-hours answering service.

f) Water Distribution Certified Operator

- Responsibilities

Reporting to the Manager, Water Services/Overall Responsible Operator/ORO and the Water Distribution Certified Operator (Leader), the responsibilities include:

- Performs weekly testing of drinking water,

- Performs regular maintenance of the water distribution system,
- Reports any incidents of non-compliance, and
- Responds to repairs.

- Authorities

The Water Distribution Certified Operator is authorized to:

- Monitor process and equipment of day-to-day operations of the water distribution system,
- Respond to public complaints as relayed from Manager, Water Services/ORO, Clerical Staff, Water Operator Leader and/or after-hours answering service.

g) Clerical Staff

The Clerical staff refer to the Public Works and Engineering Services Assistant and Public Works and Engineering Services Clerk.

- Responsibilities

Reporting to the Director of Public Works and Engineering Services and the Manager, Water Services/ORO, the responsibilities include:

- Communicates/liaises with the following: Director, Public Works & Engineering Services; Manager, Water Services/ORO; Water Operator (Leader); and Water Operators,
- Responds to and documents public inquiries. Example- drinking water quality inquiries, broken watermain, hydrant hit by car etc.,
- Inputs lab results,
- Prepares reports as required by regulations and circulates to management,
- Assists with DWQMS documentation and record control, and

- Assists with communication during emergency situations.

- Authorities

The Clerical staff is authorized to:

- Updates and implements document changes as directed by applicable administration identified in the Water Services Organizational Chart.

Element 10 Competencies

The MECP classified The Corporation of the Town of Tecumseh a “Water Distribution Subsystem Class II”. The following identifies the competencies required of staff whose performance may have a direct impact on drinking water quality.

10.1 Municipal Owners/Operating Authorities

Municipal Owners/Operating Authorities who have complete legal oversight of The Corporation of The Town of Tecumseh Water Distribution System and the DWQMS are briefed on operating conditions and are provided updates by senior management to ensure that personnel are aware of the relevance of their duties and how they affect safe drinking water, and shall maintain records of these activities. They may also attend relevant drinking water training courses, conferences, and seminars to assist in their overall knowledge pertaining to regulatory and legislative requirements.

10.2 Director Public Works & Engineering Services

The Director shall possess advanced theoretical and working knowledge of administrative skills expected of a senior level manager. In addition, the Director shall possess an intermediate theoretical and working knowledge of the Safe Drinking Water Act, 2002 and applicable regulations and legislations, and The Corporation of the Town of Tecumseh drinking water distribution system. When necessary, will appoint a temporary Over All Responsible Operator (ORO) position, in absence of the designated ORO.

10.3 Manager Water Services/ORO

Shall possess advanced theoretical and working knowledge of administrative skills. The Manager, Water Services/ORO shall also possess advanced theoretical and working knowledge of the Safe Drinking Water Act, 2002 and applicable regulations and legislation. The Manager, Water Services/ORO should also have a good working knowledge of The Corporation of the Town of Tecumseh drinking water distribution system and its components. Is the Overall Responsible Operator (ORO) and therefore must be available to be contacted 24/7. The ORO will make arrangements with the Director of Public Works & Engineering Services for a designated ORO in the event he/she is not available and cannot be contacted.

10.4 New Operators in Training (OITs)

Must complete the OIT Water Distribution Prep Course and OIT exam as per MECP O.Reg.128/04 requirements.

10.5 Class I Water Distribution Operators

The operator must successfully complete the Class I Water Distribution Exam and obtain the required training credits to become a Class I Water Distribution Operator as per MECP O.Reg.128/04 requirements.

10.6 Class II Water Distribution Operators

The Class I level operator can advance to a Class II Water Distribution operator by successfully completing the Class II Water Distribution Exam and obtaining the required training credits as per MECP O.Reg.128/04 requirements.

10.7 Class III Water Distribution Operators

The Class II level operator can advance to a Class III Water Distribution operator by successfully completing the Class III Water Distribution Exam and obtaining the required training credits as per MECP O.Reg.128/04 requirements.

a) Water Operator Competencies

- Water Operators Shall posse an OIT or Class 1 Operating Certificate as per O.Reg. 128/04 requirements
- The ORO shall have a minimum Class II Water Distribution Certificate as per O.Reg. 128/04 requirements

b) Water Operator Skills and Knowledge

- The Water operator performs a variety of skilled and semi-skilled tasks independently, or as part of the Water division team, including;
- Safe operation of heavy machinery and locate/metering equipment.
- The Water Operator utilizes GIS mapping software and applies their working knowledge in interpreting blueprints/drawings to aide in the construction,

repair and maintenance of the water distribution system as well as various public buildings and facilities.

- Collaborates with private contractors as authorized and oversees and inspects the work to ensure projects are performed and completed as planned.

- Maintaining work and preventative maintenance records, addressing public inquires and customer billing issues, completing infrastructure locates per Ontario One Call.

- On a regular basis the Water Operator liaises with municipal staff, contractors/suppliers, Ministry officials / inspectors, auditors and the general public maintaining co-operative working relationships with all groups.

- To ensure compliance and conformance to current standards legislated by the Ministry of Environment, Conservation and Parks the Water Operator is required to maintain detailed and concise records and logs.

c) Methods to Develop, Assess and Maintain Competencies

The following methods develop, assess and maintain the required competencies for personnel performing duties directly affecting drinking water quality:

i. Identify Training Requirements

The Manager, Water Services/ORO and Water Operators must meet the training requirements as per MECP O.Reg.128/04 requirements.

The required competencies include, but are not limited to the following:

- Class I Water Distribution Operator Certificate
- Understanding the Quality Management System
- Familiarity with the Town's water distribution system
- Knowledge of regulations and identifying, reporting and responding to adverse drinking water conditions as required by regulations.

ii. Assess Competencies

The Corporation of the Town of Tecumseh may administer certain tests, conduct interviews, verify references and/or request specific documentation as part of the hiring process in order to verify skills, experience and knowledge.

In order to meet the ongoing changes to technology, software, the requirements of O.Reg. 128/04 and Water Services processes, Water Operators shall receive training as required by O. Reg. 128/04, at a minimum. The training may be provided on or off site by qualified employees or contracted subject matter experts. Training effectiveness is evaluated when appropriate through testing, or a demonstration of knowledge gained.

Training records are maintained by the Manager, Water Services/ORO and/or the DWQMS Representative, stored in document control software and filed in hard copy in the Water Services office as proof that the required training has been successfully completed. The Manager, Water Services/ORO is responsible for ensuring that all identified training is completed.

iii. Maintain Competencies

The Manager, Water Services/ORO will ensure that the Standard Operating Procedures and Quality Management System are reviewed every calendar year. These duties are included in the Annual Schedule of Duties maintained and tracked by the ORO. Furthermore, the Water Operators will meet or exceed the training hours required by MECP O.Reg.128/04 to maintain Water Distribution Operator Certificates. Training hours and courses completed by the Water Operators are logged and tracked by the Manager, Water Services/ORO and/or the DWQMS Representative and are documented in document control software.

Element 11 Personnel Coverage

Water Services is staffed as per the Collective Agreement between the Corporation of the Town of Tecumseh and the Outside Bargaining workers represented by CUPE Local 702.1. The Manager, Water Services is the designated ORO. After hours calls are managed by the Water Operator (Leader) using an emergency call-out service with the staff seniority list for overtime as set out by the Collective Agreement.

11.1 Regular Hours Coverage

- All work orders are generated through the Water Services office during regular working hours.
- Created work orders will have date and time of the call, location of the problem, details of the problem, name and contact information of person initiating service call.
- Work orders are distributed through the Manager, Water Services/ORO and the Water Operator (Leader).

11.2 After Hours Coverage

- The Water Operator (Leader) receives a call from the answering service, assesses information and provides direction.
- If the Lead Water Operator cannot be contacted, the call will bump to the next Water Operator according to seniority.
- When necessary, staff is called in to do repairs, and or deal with public inquiries.
- All reports and forms are authorized by the Manager, Water Services/ORO.
- Reports, forms and or work orders, will have date and time of the call, location of the problem, details of the problem, name and contact information of person initiating service call.
- If required, sub-contractors are approved by the Manager, Water Services/ORO and are used in digression of the Water Operator.

11.3 **Pandemic, Strikes and/or Lockouts**

- The provisions for personnel coverage during situations where staff may not be available to work include the following:

a) Pandemic

- Should a pandemic occur the Town will request from surrounding municipalities with qualified licensed operators as well as private contractors for assistance.
- If needed the Town will also contact the MECP to request advice or assistance should an emergency of this nature arise.

b) Strikes and/or Lockouts

- The Manager, Water Services is designated as the Overall Responsible Operator (ORO) for the distribution system and has the appropriate Water Distribution Operators License. In the event of a union strike and/or lockout, the ORO is qualified to maintain the water distribution system.
- In the event the ORO is not available or if additional staff is required to maintain the distribution system, Town will request from surrounding municipalities with qualified licensed operators as well as private contractors for assistance.
- If needed the Town will also contact the MECP to request advice or assistance should an emergency of this nature arise.

Element 12 Communications

The DWQMS Representative shall ensure the Municipal Owner/Operating Authority and Top Management is provided with a current copy of the Operational Plan. The DWQMS Representative shall keep the Municipal Owner/Operating Authority and Top Management informed of any changes to the DWQMS as a result of Management Review and other DWQMS issues when necessary.

A current version of the Operational Plan is available to staff at the Water Services office. A hard copy of the DWQMS Operational Plan will be kept at the Water Services office and an electronic copy can be obtained using the document control software. Personnel will be informed of DWQMS changes or updates through regular staff meetings with the DWQMS Representative or the Manager, Water Services/ORO.

Any suggested revisions or recommendations to the DWQMS Operational Plan submitted by staff will be documented and provided to the DWQMS Representative.

The DWQMS Committee will meet to review and update the Operational Plan and review any staff recommendations.

Town of Tecumseh Water Services will utilize a web-based survey/questionnaire to allow the public and essential suppliers to have input and communication with all levels of the Town's Water Services and Management. The Manager, Water Services/ORO will collect and analyze all data communicated to the town. The Manager, Water Services/ORO will then make changes if necessary/ or may make recommendations to the Municipal Owners/ Operating Authority any changes or improvements identified.

Essential suppliers and service providers receive relevant DWQMS information regarding product or service requirements from the purchaser in the form of quality / quantity specifications and timeframes, as required by regulations, the Municipal Drinking Water Licence and Drinking Water Works Permit.

Notification is provided to The Corporation of the Town of Tecumseh suppliers and service providers that a copy of the current Water Distribution System Standards and Material Specifications is available on the Town's website or in hardcopy from the Water Services office.

The DWQMS Policy is available to the consumers of The Corporation of the Town of Tecumseh water distribution system at the Water Services office, Town Hall and can be viewed on the Town's website https://www.tecumseh.ca/en/living-here/water-quality.aspx.

Element 13 Essential Supplies and Services

Where applicable, supplies must meet AWWA and NSF/ANSI standards. Supplies are verified against the order requisition when received (refer to Appendix 5 - Essential Supplies and Service List).

Element 14 Review and Provision of Infrastructure

Infrastructure for The Corporation of the Town of Tecumseh consists of a water distribution system, water tower and monitoring equipment at the boundary meters. The Corporation of the Town of Tecumseh has in place a Water & Wastewater Master Plan, which has been accepted and adopted by the Municipal Owners/Operating Authority.

Rehabilitation and renewal of the water distribution system is performed on a needs schedule in association with the Water & Wastewater Master Plan. Capital and operational money is allocated each calendar year for improvements to the system.

The Director, Public Works & Engineering Services, under the advisement of the Manager, Water Services/ORO and Manager, Engineering Services, will identify areas needed for rehabilitation and renewal in accordance with risk assessment.

A report detailing the maintenance programs, any requirements for infrastructure, rehabilitation and renewal is prepared annually by the Director, Public Works & Engineering Services and Director, Financial Services/Treasurer. The capital requirements are then submitted to Top Management and Municipal Owner/Operating Authority for budgetary approval.

Element 15 Infrastructure Maintenance, Rehabilitation and Renewal

The Manager, Water Services/ORO will annually review the planned and unplanned maintenance reports and programs. A summary will be prepared and communicated to the Director, Public Works & Engineering Services under advisement of the Manager, Engineering Services and will identify areas that may need rehabilitation and renewal planning (refer to Appendix 6: Public Works & Engineering Services Capital Works Plan).

15.1 Planned Maintenance

All planned maintenance is scheduled and communicated to staff by the Manager, Water Services/ORO. All records are retained at the Water Services office.

- Annual valve exercising programs
- Annual flushing programs
- Annual hydrant inspection, maintenance and painting

Planned maintenance is scheduled on an electronic spreadsheet stored on the central office computer server. Server files are backed up daily. The long-term forecast of major infrastructure maintenance, rehabilitation and renewal activities is kept current by reviewing planned rehabilitation and renewal programs on an annual basis as capital works are planned for each calendar year by the Manager, Water Services/ORO with the following: Director, Public Works & Engineering Services; Director, Financial Services/Treasurer; Manager, Engineering Services; and Manager, Public Works & Transportation.

Scheduled tasks are typically defined by manufacturer's literature when available and revised as needed according to operator experience/observations. Planned maintenance tasks are communicated to the person responsible by issuance of work orders from the Manager, Water Services/ORO or the Water Operator (Leader). Completed work orders are reviewed and signed by the Manager, Water Services/ORO or DWQMS Representative.

If feasible, rehabilitation or replacement of water distribution piping is coordinated with the Town's scheduled wastewater and road resurfacing projects.

15.2 **Unplanned Maintenance**

Unplanned maintenance is conducted as required. All unplanned maintenance activities are authorized by the Manager, Water Services/ORO.

- Service leaks
- Meter repairs
- Emergency hydrant repairs
- Water quality inquiries
- General customers inquiries

Element 16 Sampling, Testing and Monitoring

Sampling, testing and monitoring of the treated water produced at the Windsor Utilities Commission (WUC) Water Treatment Plant is conducted by Windsor Utilities Commission Water Operators as required by O.Reg. 170/03.

A competent certified Water Operator for the Town performs all in house sampling. Results are recorded on a weekly log sheet and monitored by Water Operators. Detailed procedures for all tests performed on-site are provided in Standard Operating Procedures (SOP's).

The operators ensure that the water supplied to The Corporation of the Town of Tecumseh Water Distribution System meets the Safe Drinking Water Act, 2002. Sampling and testing for The Corporation of the Town of Tecumseh Water Distribution System is limited to the distribution system only as required by O.Reg. 170/03.

The results at all boundary meters and the water tower are displayed and recorded on the SCADA system and monitored by the Manager, Water Services/ORO and Water Operators.

Free chlorine will be done in-house. All other regulatory testing is contracted out and performed by an accredited lab chosen by The Corporation of the Town of Tecumseh. Records and logs are kept at the Water Services office.

Sampling and monitoring Standard Operating Procedures (SOP) are established for operating the water distribution system. Provisions have been made when sampling and monitoring under abnormal circumstances.

16.1 **Adverse Water Quality Sample**

- If the accredited laboratory discovers adverse water quality in a sample, they are obligated to notify Water Services within 24 hours. All adverse water results prescribed by Schedule 16 of O.Reg.170/03 must be immediately reported by Water Services to the Medical Officer of Health, Spill Action Centre and the MECP.

- During adverse water quality incidents, maps and drawings are provided to the local health authority whereby direction is given to the Town as to the locations of sampling and monitoring upstream and downstream of the location from which the adverse sample was found.

16.2 Power/Communication Loss

- Water Services staff is alerted via telephone in the event of a power/communication loss that affects the SCADA system (refer to Element 11 for call-out procedure during working hours and after working hours).

- The SCADA system is programmed to continue calling the emergency contact list until the alarm is acknowledged.

16.3 Inclement Weather

- Additional Staff and/or equipment will be provided as needed.

Element 17 Measurement and Recording Equipment Calibration and Maintenance

The portable chlorine analyzers and flow meters are calibrated by contractors according to the manufacturers' specifications or as mandated by legislation. All calibrations are recorded and filed at the Water Services office.

Contractors that are used for performing calibrations are identified in the "Essential Supplies and Services List" (refer to Appendix 5 - Essential Supplies and Services List).

Element 18 Emergency Management

The Corporation of the Town of Tecumseh's Water Operators have emergency training and are aware of the location of written procedures to deal with emergencies in the water distribution system. Specific instructions for responding to emergencies, including emergency situations that have the potential to result in acute drinking water health risks, are included in hardcopy in the Water Services office and electronically in the document control software. Once a year, a training exercise will be conducted to test selected emergency procedures. If present methods should change, or if new employees are brought into the system, semi-annual training will occur on dealing with emergencies. Senior employees or direct supervisors would provide this training. All training is documented and placed in employee training files.

Water Operators are on twenty-four hour call to ensure that a qualified staff member will attend and assess any water emergency.

18.1 **Emergencies**

- Adverse Water Quality
- Water distribution cannot supply fire protection or safe drinking water
- Situations in the water distribution system that have the potential to result in acute drinking water health risks

In the event of an identified emergency the Manager, Water Services/ORO shall be contacted immediately. The Manager, Water Services/ORO is designated to be responsible for overall management, decision-making, and communications at the entail level of emergency.

In the event the Manager, Water Services/ORO is unavailable, the Director of Public Works and Engineering Services shall be contacted and will appoint a temporary ORO.

The Manager, Water Services/ORO will then report all incidents and corrective actions to the Director, Public Works and Engineering Services or designate.

The Director, Public Works and Engineering Services, in collaboration with the Manager, Water Services/ORO, will advise the Municipal Owners/Operating Authorities of the system.

The Mayor and CAO of The Corporation of the Town of Tecumseh shall only be notified in the event that water cannot be supplied to the Town in sufficient amounts for fire protection, or that water quality poses an acute health risk to consumers and a boil water advisory or drinking water advisory must be issued.

The Water Services Emergency Response Plan is an emergency plan consisting of a set of guidelines assembled to assist water staff in emergency response procedures and is intended to facilitate a systematic and coordinated response to a variety of water emergencies or major incidents. The Water Services Emergency Response Plan has been formulated to assign emergency response roles and responsibilities, and to guide immediate and long-term response to incidents adversely affecting the water operations.

In the event of a problem occurring greater than a water emergency the Corporation of the Town of Tecumseh Emergency Response Plan will be implemented. A hardcopy is stored in the Water Services office and electronically in the document control software.

An extensive emergency contact list is provided within the Water Services Emergency Response Plan. The Water Services Emergency Response Plan is reviewed on an annual basis.

Element 19 Internal Audits

Internal audits will be performed in entirety at least once every calendar year as legislated, to ensure the DWQMS conforms to the requirements of the DWQMS Operational Plan. These requirements include ensuring that the DWQMS has been effectively implemented and properly maintained.

The Corporation of the Town of Tecumseh will conduct internal audits by trained auditors internally or by a contracted trained auditor chosen by The Corporation of the Town of Tecumseh.

19.1 Internal Audits Conducted by Town of Tecumseh Auditors

- The assignment of auditor's and schedules will be the responsibility of the DWQMS Representative.
- Internal audits will be conducted by a person who has successfully completed a recognized Internal Auditor workshop.
- Internal audits will be scheduled based on the availability and schedules of the participants.
- DWQMS will be audited as per the legislative requirements.
- The auditor shall review all related DWQMS documentation.
- The auditor shall observe activities, review records, review previous internal and external audit results, and interview personnel as necessary to ensure that the status of the audited Elements of the DWQMS has been effectively covered.
- The auditor shall submit completed reports to the DWQMS Representative and the Manager, Water Services/ORO.
- The report shall include any corrective actions requests required to address discrepancies.
- Responses to corrective action request shall be designated to the responsible individual by the DWQMS Management Review Committee.

Element 20 Management Review

Management Review (Also referred to as the DWQMS Committee) ensures and evaluates the continuing suitability, adequacy and effectiveness of the DWQMS. This process reviews the effectiveness of the DWQMS by the Management Review Committee.

20.1 **Review Participants**

Management Reviews shall be conducted during a meeting of the Management Review Committee that is comprised of the following:

- Chief Administrative Officer (CAO)
- The Director of Public Works & Engineering Services
- The Manager, Water Services/ORO
- The meeting is chaired by DWQMS Representative

The DWQMS Rep will communicate the meeting minutes to all management Review Committee members.

20.2 **Review Frequency**

Management Reviews shall be conducted after the internal audit has been completed and submitted to the DWQMS Representative by the Internal Auditor. The Management Review shall be conducted at least once a calendar year unless additional meetings are required as per the DWQMS Committee.

20.3 **Review Input**

The DWQMS Representative and/or Manager, Water Services/ORO shall provide information and data concerning the following categories for the review if requested:

- Incidents of adverse drinking water tests
- Results of Internal Audits
- Results of External Audits
- Results of MECP Inspection

- Incidents of non-compliance with applicable regulations
- Consumer feedback
- Operational performance
- Changes to services, activities, regulations etc. that could affect DWQMS
- Infrastructure review results
- Currency of operational plan
- Deviations from CCP limits
- Effectiveness of risk assessment process
- Emergency preparedness
- Trends in quality of raw water & drinking water supply
- Resources needed for DWQMS maintenance
- Town of Tecumseh website
- Retention table
- Review of best practices
- Comments / suggestions made by water services personnel

20.4 **Review Process**

The Management Review Committee shall review and discuss all information presented.

The Committee shall make recommendations and initiate an action plan, including the person(s) responsible for delivering the action items and the proposed timelines, to improve the content and implementation of the Operational Plan and related procedures, and to ensure the provision of adequate resources.

The DWQMS Representative shall be responsible for communication and implementation of the Management Review findings.

Element 21 Continual Improvement

The Corporation of the Town of Tecumseh strives to continually improve the effectiveness of its DWQMS. Issues of non-compliance, non-conformance and opportunities for improvement are presented through:

- The review of best management practices (BMP's) at least once every 36 months (including the review of MECP's BMP document, when published) will undergo the same schedule as the comprehensive risk assessment;
- MECP compliance inspections;
- Adverse water quality incidents;
- External DWQMS accreditation audits;
- Internal DWQMS audits;
- Management reviews;
- Staff suggestions;
- Consumer calls; and
- Other means (e.g. near-misses, other utilities' experiences, etc.)

Using the Request for New or changed DWQMS Document form included in Appendix 7, the DWQMS Representative tracks and measures continual improvement.

Corrective actions are taken to address issues (e.g. non-conformities, non-compliances and other drinking water system failures) where:

- Causes of the issues are investigated;
- Actions taken to correct the issues are documented;
- Actions are taken to prevent the issues from re-occurring;
- Reviews of actions taken to correct / prevent the issues are carried out to verify they are implemented and effective in correcting / preventing the re-occurrence of the issue.

Preventative actions may also be taken to eliminate potential issues – and these are documented and reviewed to ensure they are implemented an effective in preventing the potential issue from occurring.

Appendices

Appendix 1 Commitment and Endorsement

The endorsement of the Tecumseh Distribution System Operational Plan by Municipal Owner/Operating Authority (The Corporation of the Town of Tecumseh, Municipal Council) will be added to Appendix 1 when the report to Council, submitted by the Manager Water Services/ORO, is formerly approved.

The Corporation of the
Town of Tecumseh

Public Works & Engineering Services

To: Mayor and Members of Council

From: Phil Bartnik, Director Public Works & Engineering Services

Date to Council: April 26, 2022

Report Number: PWES-2022-19

Subject: Town of Tecumseh Distribution System
Drinking Water Quality Management System
Operational Plan, Revision Date: April 26, 2022

Recommendations

It is recommended:

That Tecumseh Town Council **endorse and commit to** the Town of Tecumseh Distribution System, Drinking Water Quality Management System Operational Plan, Revision Date: April 26, 2022.

Background

In accordance with the Safe Drinking Water Act, 2002 (SDWA), Owners and Operating Authorities of a drinking water system are mandated to implement a Drinking Water Quality Management System (DWQMS) that includes consideration of elements that are fundamental to ensuring the long-term sustainability of a Drinking Water System including: Management processes employed within the system; the maintenance of infrastructure used to supply drinking water; and, identification of potential risks and risk mitigation strategies for items such as system security, water treatment, and the impacts of climate change.

Town of Tecumseh Council are Owners of the Municipal Residential Drinking Water System and are responsible for ensuring that their water systems:

- Provide water that meets all prescribed drinking water quality standards;
- Operate in accordance with the Act and its regulations, and are kept in a fit state of repair;
- Are appropriately staffed and supervised by qualified persons;
- Comply with all sampling, testing and monitoring requirements; and
- Meet all reporting requirements.

Since 2008, the Town's DWQMS Operational Plan has been endorsed and committed to by Tecumseh Town Council.

As legislatively required by the province, Town of Tecumseh Water Services is required to review, update and maintain its DWQMS Operational Plan on an annual basis. Changes and updates can be triggered by staff suggestions, changes in administrative or work processes, internal audits, external audits, Ministry of the Environment, Conservation and Parks (MECP) inspections, and regulatory updates. Reviewing, updating and maintaining the DWQMS Operational Plan is an important part of the continuous improvement process.

In order for the Owner to continue to show support of its drinking water system and DWQMS, it is required that endorsement of and commitment to the updated Operational Plan are provided.

Comments

Management Review is a key element of the DWQMS. Management reviews are conducted to assess and ensure the continuing suitability, adequacy and effectiveness of the Town's DWQMS.

The Management Review Committee is comprised of the Town's Chief Administrative Officer (Marg Misek-Evans), Director Public Works & Engineering Services (Phil Bartnik), Manager Water Services (Brad Dupuis) and the DWQMS Representative/Water Operator (Nicole Bradley).

Updates to the Operational Plan were submitted to and approved by the Management Review Committee at their meetings held November 23, 2021 and March 1, 2022. An executive summary pertaining to the updated DWQMS Operational Plan is provided in Attachment 1.

Updates to the Operational Plan were due in part to the following:

1. Legislative and Regulatory Changes

   During the course of the COVID-19 pandemic, adjustments were made to ensure continuity of water service - an essential service. During this time, staff modified work environments to comply with new legislative requirements enacted by the province and to keep in line with Ministry of Health protocol.

2. Risk Assessment Review

   In accordance with Element 7 of the DWQMS, a comprehensive risk assessment is to be conducted every thirty-six months to validate identified potential hazardous events and associated hazards to the drinking water system. Following this review, the Operational Plan was amended to include updated risks associated with the occurrence of hazardous events, the control measures to address the events and the procedures to respond to these emergency situations, to name a few.

3. Management Review Committee recommendations.

   The appended Management Review Committee minutes recorded at the March 1, 2022 meeting (Attachment 2) detail the entire list of recommended changes to the Operational Plan.

   Key updates and revisions to the DWQMS Operational Plan, include but are not limited to the following:

Item	Detail	Change	Page No.
General	Throughout the entire Operational Plan document.	Updated the document to correlate with Organizational Review: reference new department name from Public Works & Environmental Services to Public Works & Engineering Services; reference new division name from Water Division to Water Services; and updated position titles to correspond with the new departmental and division names.	Throughout
Element 6	Drinking Water System	Appendix 2 is updated to include current infrastructure detail resulting from watermain installation and/or replacement, which has occurred	61-65

Item	Detail	Change	Page No.
		since the last Operational Plan update in 2021. These changes to the water infrastructure were approved in the annual PWES Capital Works Plan.	
Element 7	Risk Assessment	Appendix 3 is updated to include the current copy of the MECP reference sheet pertaining to "Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment."	72-73
Element 8 Update No. 1	Risk Assessment Outcomes	The Critical Control Point (CCP) tables in Appendix 4 were reviewed and updated. The Hazard Description column was removed, as this was considered redundant information. Only two CCP tables are necessary: (1) Loss of Chlorine Residual – Secondary Disinfection and (2) Contamination within Distribution System through New Watermain Commissioning. The Backflow Prevention CCP table was removed. After careful evaluation, it was decided that Backflow Prevention was not a CCP. Water Services staff does not monitor backflow prevention devices on private property.	76-77
Element 8 Update No. 2	Risk Assessment Outcomes	The Risk Assessment Worksheet No. 18 - Staff Shortage is updated to include the potential of staff shortages due to the occurrence of a pandemic.	96

Item	Detail	Change	Page No.
Element 8 Update No. 3	Risk Assessment Outcomes	All Risk Assessment Worksheets are updated. Two sections were removed ("Control Procedure" and "Emergency Procedure or Contingency Plan") and the relevant information from these two deleted sections was input in the "Available Monitoring & Control Measures" section. This was completed for clarity of information and to reduce redundancies.	79-96
Element 10	Competencies	The "Water Operator Skills and Knowledge" section was added. The minimum competency requirements for personnel performing duties directly affecting drinking water quality (i.e. Water Operators) and the means needed to meet those competencies are key to providing safe drinking water to consumers.	32-34
Element 20	Management Review	The list of categories for review by the Management Review Committee is updated and reorganized in the "Review Input" section, Section 20.3. This provides for a more efficient process to review the effectiveness of the DWQMS by the Management Review Committee.	48-49

Updates to the Operational Plan are necessary for continuous improvement of the Town's Quality Management System. The updated Operational Plan is appended to this report as Attachment 3.

Consultations

Chief Administrative Officer

Ministry of the Environment, Conservation and Parks

Financial Implications

There are no financial implications arising from this report.

Link to Strategic Priorities

Applicable	2019-22 Strategic Priorities
☐	Make the Town of Tecumseh an even better place to live, work and invest through a shared vision for our residents and newcomers.
☒	Ensure that Tecumseh's current and future growth is built upon the principles of sustainability and strategic decision-making.
☒	Integrate the principles of health and wellness into all of Tecumseh's plans and priorities.
☒	Steward the Town's "continuous improvement" approach to municipal service delivery to residents and businesses.
☐	Demonstrate the Town's leadership role in the community by promoting good governance and community engagement, by bringing together organizations serving the Town and the region to pursue common goals.

Communications

Not applicable ☐

Website ☒ Social Media ☐ News Release ☐ Local Newspaper ☐

This report has been reviewed by Senior Administration as indicated below and recommended for submission by the Chief Administrative Officer.

Prepared by:

Cheryl Curran, BES
Project Technician

Reviewed by:

Brad Dupuis, C. Tech.
Manager Water Services

Reviewed by:

Phil Bartnik, P.Eng.
Director Public Works & Engineering Services

Recommended by:

Margaret Misek-Evans, MCIP, RPP
Chief Administrative Officer

Attachment Number	**Attachment Name**
1	Executive Summary
2	Management Review Committee Meeting Minutes
3	Town of Tecumseh Distribution System Drinking Water Quality Management System, Revision Date: April 26, 2022

Appendix 2 Drinking Water System

2.1 Watermain Material Type and Length in Tecumseh Water Distribution System

a) Table 1: Watermain Type and Length

Watermain Material	50mm dia. (m)	100mm dia. (m)	150mm dia. (m)	200mm dia. (m)	250mm dia. (m)	300mm dia. (m)	400mm dia. (m)	600mm dia. (m)	Total Length (m)
Cast Iron	-	108.9	18,404.5	105.9	784	-	3.4	-	**19,406.7**
Concrete	-	-	-	-	-	-	2,525.5	-	**2,525.5**
Ductile Iron	-	-	10,039.3	6,505.1	1,062	1,659.7	2,428.9	500.2	**22,195.2**
PolyVinylChloride (PVC)	637.7	1,822.1	58,621.6	68,435.9	15,172.8	19,260	8,519.6	3,734	**176,203.7**
Polyethylene	7.7	-	60.2	-	-	-	-	145.6	**213.5**
Copper	6.7	-	-	-	-	-	-	-	**6.7**
Total	**652.1**	**1,931**	**87,125.6**	**75,046.9**	**17,018.8**	**20,919.7**	**13,477.4**	**4,379.8**	**220,551.3**

2.2 **Metering Connections**

a) North Distribution System

The north distribution system is currently supplied from the Windsor Water System through the following metering connection:

- 400 mm diameter feedermain on Dillon Drive
- 300 mm diameter feedermain on McNorton Street
- 400 mm diameter feedermain on Tecumseh Road
- 600 mm diameter feedermain on Mulberry Drive
- 600 mm diameter feedermain on County Road 42
- (future) 600 mm diameter feedermain on Intersection Road

b) South Distribution System

The south distribution system is currently supplied from the Windsor Water System through the following connections:

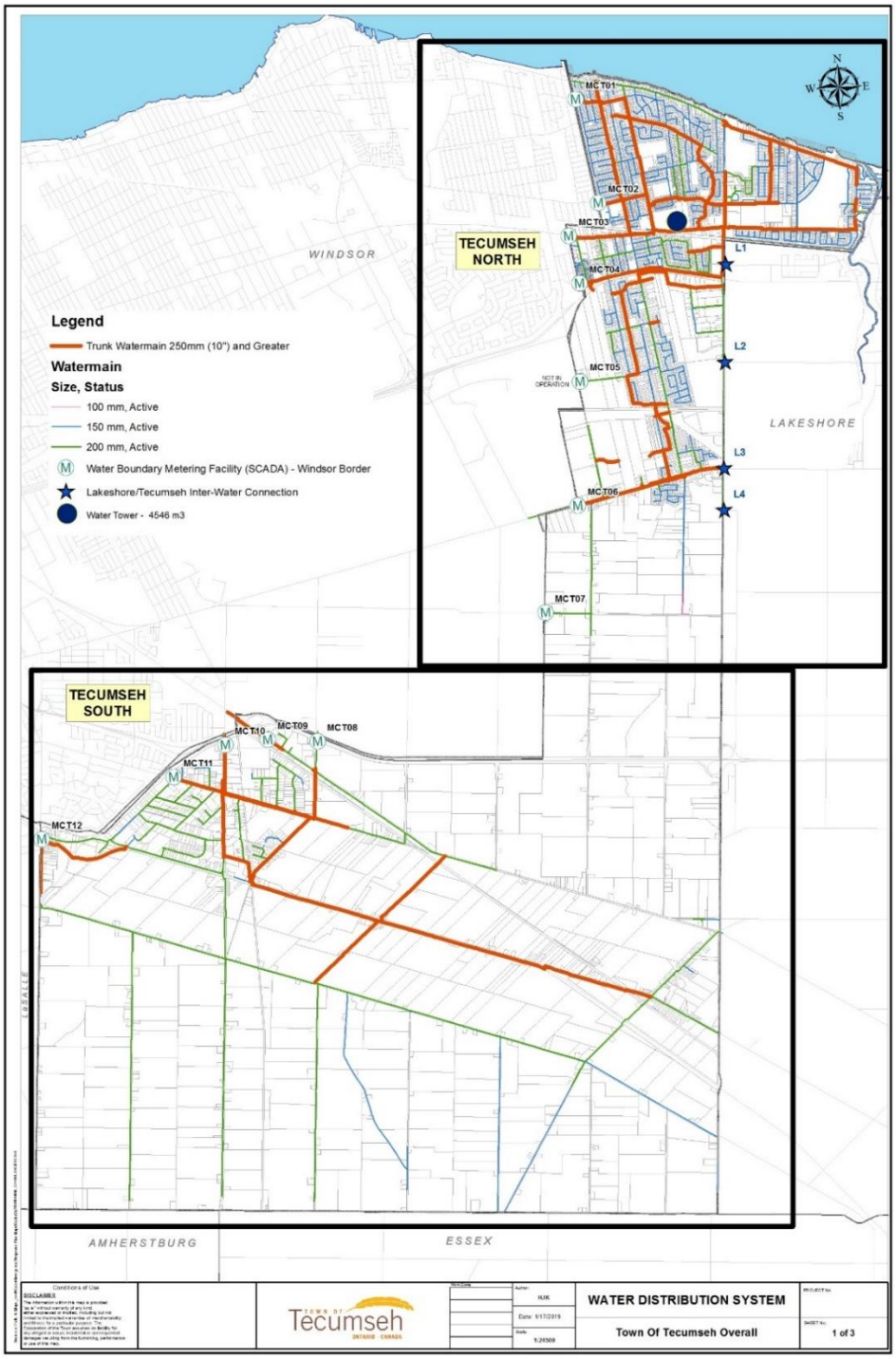
- 200 mm diameter feedermain on Baseline Road
- 200 mm diameter feedermain on 8th Concession Road
- 600 mm diameter feedermain on County Road 46
- 300 mm diameter feedermain on Walker Road
- 300 mm diameter feedermain on North Talbot Road

The south distribution system is also supplied from the Town of LaSalle Water System through the following connection:

- 200 mm diameter feedermain on Howard Avenue

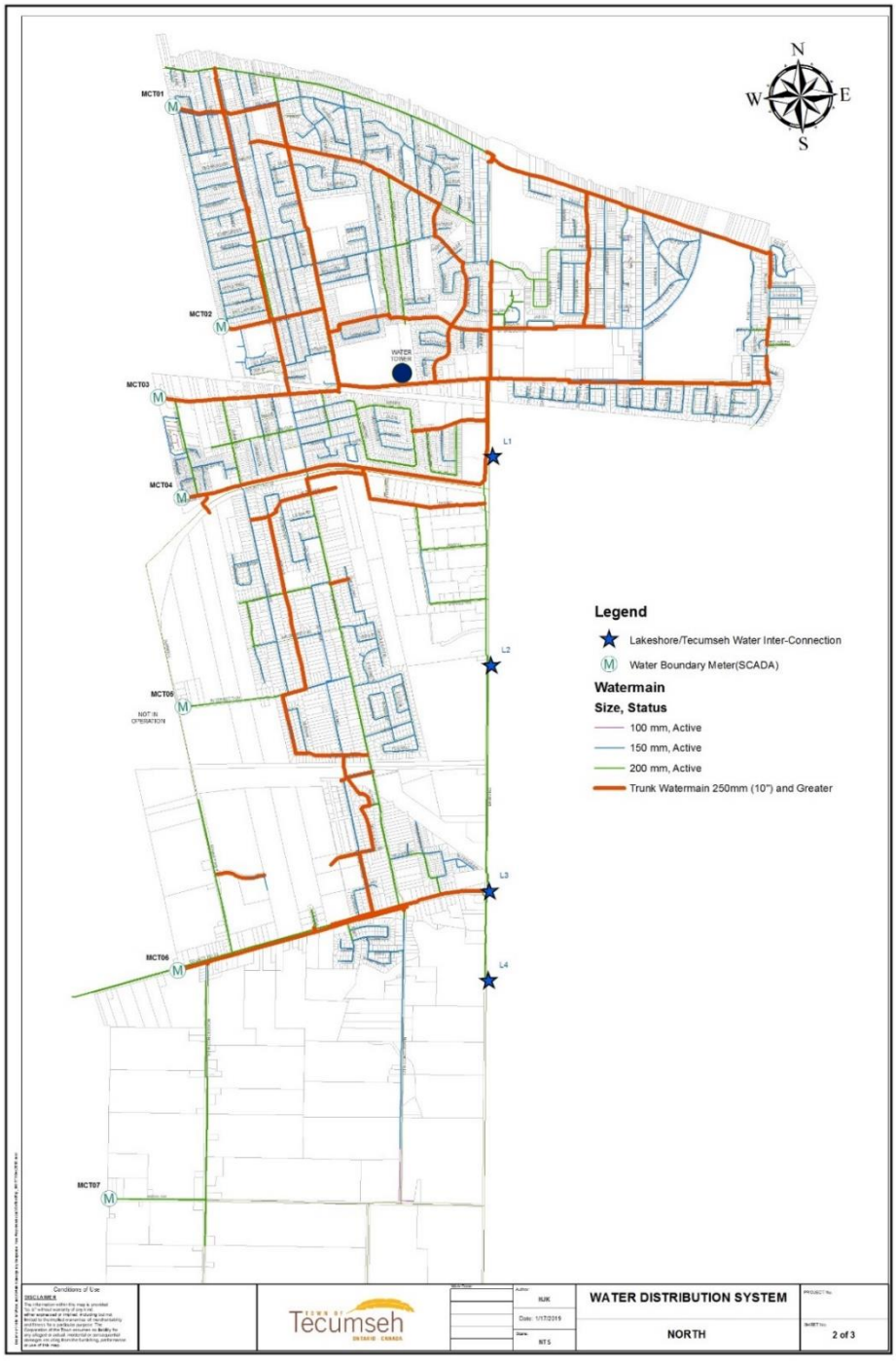
2.3 **Town of Tecumseh Water Distribution System, Overall Service Area**

a) Map 1: Overall Service Area



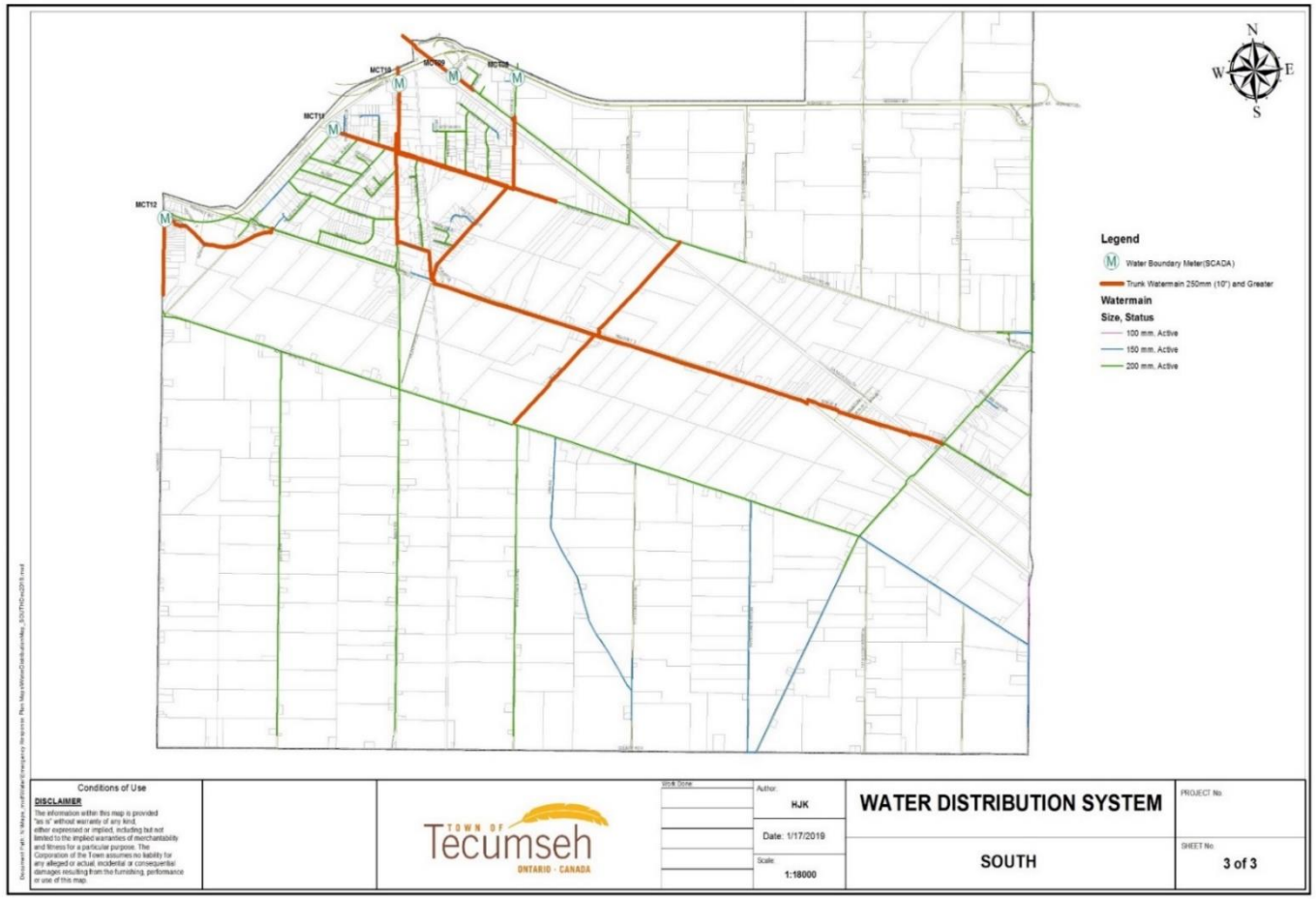
2.4 **Town of Tecumseh Water Distribution System, North Service Area**

a) Map 2: North Service Area



2.5 **Town of Tecumseh Water Distribution System, South Service Area**

a) Map 3: South Service Area



Appendix 3 Risk Assessment

The Risk Assessment Team completed a Comprehensive Risk Assessment on February 2, 2022.

3.1 Completing the Hazard Analysis and Critical Control Point Worksheet Procedure

The Risk Assessment Team is to complete the tasks outlined in Element 7 Risk Assessment and Element 8 Risk Assessment Outcomes (included as part of this Operational Plan) along with the instructions included as part of Appendix 3 – Risk Assessment (this section) and Appendix 4 – Risk Assessment Outcomes.

The Hazard Analysis & Critical Control Point (CCP) Worksheets included in Appendix 4 are reviewed and used to record the results of the risk assessment.

A. **Getting Started**: Follow the flow and process of receiving and delivering of clean drinking water to the consumer.

B. **Activity or Process Step:** This column refers to specific areas within a particular process step (pumps, tower, distribution system, etc.).

C. **Description of Hazard:** This column refers to an incident or situation that can lead to the presence of a hazard. Hazards and Hazardous events can result from natural or technological causes, or from human activities. At a minimum, the Ministry's "Potential Hazardous Events for Municipal Drinking Water Systems" (dated February 2017) is considered as part of this assessment. Any additional potential hazardous events and associated hazards also need to be included.

D. **Potential Result of Hazard:** This column refers to the source of danger or a property that may cause drinking water to be unsafe for human consumption. Biological, Chemical, Physical and Radiological. A description of each hazard is outlined in (Table 1).

E. **Comments:** This column refers to any additional information that will help in the description of the hazard or identification.

F. **Available Monitoring & Control Measures:** This column refers to any monitoring and control measures in place or need to be identified as a need to be put in place. Control measures must be addressed for all potential hazards and hazardous events, regardless of whether they are CCP's or not. This may

include monitoring, preventive measures, regular inspection, back-up equipment, written standard operating procedures etc.

G. **Emergency Procedures or Contingency Plan:** This column identifies any emergency procedure or contingency plan in place to deal with the hazards identified.

H. **Likelihood, Consequence, Detectability and Total:** These columns refer to the ranking criteria identified in (Tables 2, 3, 4, 5.).

I. **Critical Control Point (CCP):** Identifies if the total value of the columns, and determines if the value are above or below the set threshold.

J. **Control Procedure:** This column is where you apply some sort of control, to prevent or eliminate a drinking water health hazard or to reduce the health hazard to an acceptable level.

    - Hazards identified as CCP's or Recommended Minimum CCP's require control measures, which are documented in procedures or work instructions.

    Control Measures include:

    - Work Instructions
    - Monitoring, reporting and recording requirements
    - Support information
    - Response for a deviation from critical control point
    - Recovery procedures if necessary
    - Equipment reliability and redundancies

3.2 Determining the Level of Risk for each Hazard

A. Using the Ranking criteria set out at the bottom of each work sheet estimate the level of risk for each hazard.

B. Using the criteria set out at the bottom of the work sheet assign a value to each **Likelihood, Consequence and Detectability**.

C. Once the value for each is assigned, add the three values together **A+B+C=Total**.

D. The **Total** will be ranked as per the criteria in the “Total Analysis” table found at the bottom of the work sheet.

E. If the Total is in the High or Very High range as a hazard, it will require either a Critical Control Point procedure, or a response procedure.

3.3 Table 1: Hazards

Type of Hazard	Description of Hazard
Biological Hazards	Biological pathogens are usually considered the most significant drinking water health risk because the effects are acute; Waterborne biological hazards include bacterial, viral and parasitic organisms. These organisms are commonly associated with faecal wastes from humans and other animals, and some can occur naturally in the environment.
Chemical Hazards	Chemical hazards in drinking water may come from a source or occur in the treatment and distribution system. They include but are not limited to: toxic spills, naturally occurring minerals, heavy metals, dissolved gases (e.g. radon), pesticides, fertilizers, endocrine disruptors, personal care products and pharmaceutical residuals, cyanotoxins, flocculants, coagulants, lubricants, copper, iron, zinc, and lead from pipes and fittings.
Physical Hazards	Sediments are the most common physical hazard associated with drinking water and are of concern as they may carry with them microbiological hazards and interfere with disinfection system efficiency. Other physical hazards include biofilms, pipe materials etc.
Radiological Hazards	Radiological hazards may arise from man-made or natural sources, with naturally occurring chemicals (uranium, radon, etc.) most frequently found in groundwater.

3.4 Table 2: Likelihood

Description	Likelihood of Hazardous Event Occurring	Rating
Rare	May occur in exceptional circumstances, and has not occurred in past.	1
Unlikely	Could occur at some time, historically has occurred less than once every five or 10 years.	2
Possible	Has occurred or may occur once or more per year.	3
Likely	Has occurred or may occur on a monthly to quarterly basis.	4
Very Likely	One or more occurrences on a monthly or more frequent basis.	5

3.5 Table 3: Consequence

Description	Consequence of Hazardous Event Occurring	Rating
Insignificant	Insignificant impact, little public exposure, little or no health risk.	1
Minor	Limited public exposure, minor health risk.	2
Moderate	Minor public exposure, health impact on small part of the population.	3
Major	Large part of the population at risk.	4
Catastrophic	Major impact for large part of the population, complete failure of systems.	5

3.6 Table 4: Detectability

Description	Detectability of Hazardous Event Occurring	Rating
Very Detectable	Easy to detect, on-line monitoring through SCADA.	1
Moderately Detectable	Moderately detectable, alarm present but not in SCADA, may require operator to walk by and notice alarm; problem is indicated promptly by in-house lab test results.	2
Normally Detectable	Normally detectable, visually detectable on rounds or through regular maintenance.	3
Unlikely Detectable	Unlikely detectable, visually detectable but not inspected on a regular basis; not normally detected before problem becomes evident; lab tests are not done on a regular basis (e.g. quarterly).	4
Undetectable	Cannot be detected.	5

3.7 Table 5: Risk Analysis (Total)

Likelihood + Consequence + Detectability	(Total) Risk Category
3 to 5	Low
6 to 7	Moderate
8 to 11	High
12 to 16	Very High

3.8 Provincial Government Bulletin

Ministry of the Environment and Climate Change

February 2017

Potential Hazardous Events for Municipal Residential Drinking Water Systems
to Consider in the DWQMS Risk Assessment

1.0 Background

A risk assessment must be conducted for all municipal residential drinking water systems, as part of the operational plans for those systems. These operational plans form the basis upon which third party auditors assess conformance to the Drinking Water Quality Management Standard.

This approach includes identification of potential risks and risk mitigation strategies for items such as system security, water treatment, and the impacts of climate change. This document lists the potential hazardous events and associated hazards that are, at a minimum, required to be assessed as part of these risk assessments.

2.0 Definitions

All Systems - all municipal residential drinking water systems, including distribution-only systems.

Treatment Systems - all municipal residential drinking water systems that include equipment used to provide primary and/or secondary disinfection of the drinking water, including those with groundwater and/or surface water sources unless otherwise noted.

3.0 Potential Hazardous Events

System Type	Description of Hazardous Event / Hazard
All systems	Long Term Impacts of Climate Change
All systems	Water supply shortfall
All systems	Extreme weather events (e.g., tornado, ice storm)
All systems	Sustained extreme temperatures (e.g., heat wave, deep freeze)
All systems	Chemical spill impacting source water

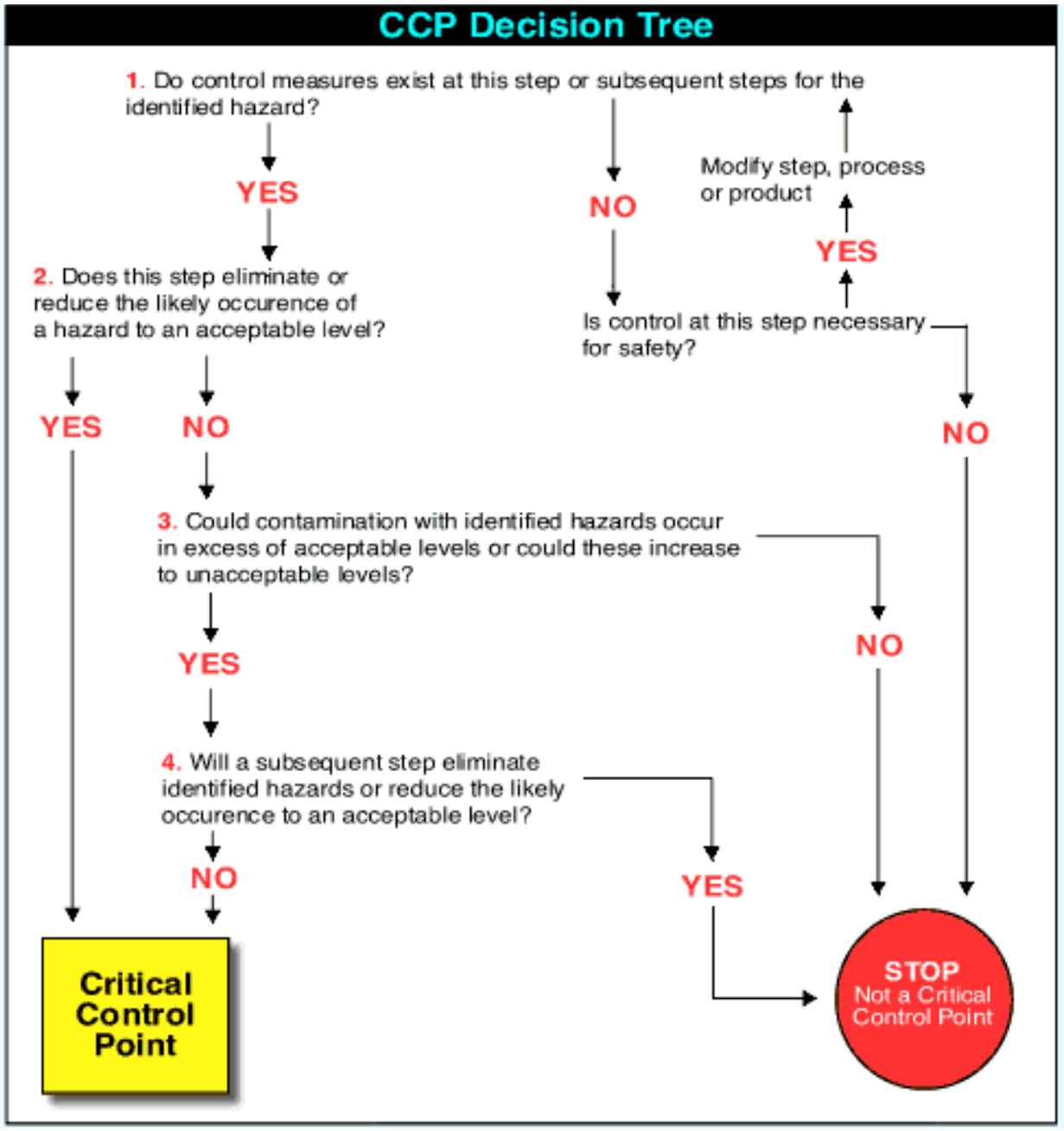
Ontario

System Type	Description of Hazardous Event / Hazard
All systems	Terrorist and vandalism actions
Distribution Systems	Sustained pressure loss
Distribution Systems	Backflow
Treatment Systems	Sudden changes to raw water characteristics (e.g., turbidity, pH)
Treatment Systems	Failure of equipment or process associated with primary disinfection (e.g., coagulant dosing system, filters, UV system, chlorination system).
Treatment Systems and Distribution Systems providing secondary disinfection	Failure of equipment or process associated with secondary disinfection (e.g., chlorination equipment, chloramination equipment)
Treatment Systems using Surface Water	Algal blooms

2

Appendix 4 Risk Assessment Outcomes

Once the values for likelihood, consequence, and detectability are assessed, the determination of whether an identified risk is also a critical control point (CCP) is made using the following decision tree:



The control points generally meet the characteristics of an ideal critical control point as they typically are:

- Able to prevent, eliminate or reduce hazards,
- Monitored, preferably in real time,
- Able to have determined control limits, and,
- Essential to ensure the safety of the drinking water

These control points also provide important barriers in the multiple barrier process to ensure that pathogens that could be present in the water are effectively inactivated and/or removed, and that secondary disinfection is maintained in the distribution system. CCP's often have corresponding Critical Control Limits, which are identified in the following tables:

Critical Control Point (CCP)	Critical Control Limit (CCL)	Monitoring Process and/or Procedures	Response Procedure
Loss of Chlorine Residual (Secondary Disinfection)	**Free Chlorine** Target Residual in the Distribution System: • > 0.20 ppm (operational minimum) Reportable under the SDWA: • 0.05 ppm	• Certified and competent operators performing regulatory sampling, testing and monitoring of system residuals as applicable • Watermain flushing programs • Installation of blow-offs and auto-flushers in dead ends • Regular samples taken and analyzed for chlorine residual • Water quality concerns tracked through consumer complaints • SOP-002: Distribution Sampling for Chlorine Residuals	Emergency Response procedures: • 2.1 Boil Water Advisory • 2.2 Adverse Laboratory Water Quality Results • 2.3 Loss of Secondary Disinfectant (Chlorine) • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations • Response to customer calls • Service Request tracking and monitoring Repair and system rehabilitation • Use of appropriately certified and competent contractors and suppliers

Critical Control Point (CCP)	Critical Control Limit (CCL)	Monitoring Process and/or Procedures	Response Procedure
Commissioning new Watermains causing Contamination Distribution	**Free Chlorine** Target Residual in the Distribution System: • 0.20 ppm (operational minimum) Reportable under the SDWA: • 0.05 ppm	• Certified and competent operators performing microbiological sampling, monitoring and testing of chlorine residuals throughout the watermain commissioning process. • Watermain flushing procedures during commissioning of watermain • Pressure testing and monitoring processes • SOP-007: *Commissioning New Watermains*	Emergency Response procedures: • 2.1 2.1 Boil Water Advisory (if bacteriological) • 2.2 Adverse Laboratory Water Quality Results • 2.4 Contamination of Water Transmission System • 2.11 Watermain Break • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations • Contact MOH, MECP & SAC • Communicate water advisory, if issued by MOH • Follow corrective actions required by O.Reg. 170/03

4.1 Hazard Analysis and Critical Control Point Worksheets

Worksheet Number and Description Page No.

Worksheet No. 1 Contamination of Source Water

Contamination of Source Water			
Activity or Process Step: • Source Water			
Description of Hazard: • Contamination of Source Water			
Potential Results of Hazard: • Biological • Chemical • Physical			
Comments: • No Control • System water received from Windsor Utilities Commission			
Identified Control Measures: • Mandatory weekly sampling throughout distribution system as per O.Reg.170/03 • On-line monitoring at (WUCTP) • Reference SOP-012: *Bad Sample or Adverse Water Quality* • Contact MECP, MOH & SAC • Communication with the (WUCTP) • Conducting all sampling and testing as necessary or as directed at points in the distribution system under the direction of the MOH. Reference SOP-001: *Distribution Sampling for Bacteriological and HPC Samples*			
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.4 Contamination of Water Transmission System • 2.14 Water Shortage • 2.16 Establishing Potable Filling Stations • 2.20 Epidemic / Pandemic			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	4
		Detectability	2
		(High Risk Threshold = 8)	***Total* = 7 (CCP = No)**

Worksheet No. 2 Vandalism/Tampering of Water Infrastructure

Vandalism/Tampering of Water Infrastructure		
Activity or Process Step: • Water Distribution System		
Description of Hazard: • Vandalism/ Tampering		
Potential Results of Hazard: • Biological	• Physical	• Chemical
Comments: • No Control • Water distribution system infrastructure such as but not limited to sample stations, hydrants, auto-flushers and meter chambers are covered within this work sheet.		
Identified Control Measures: • Security fence locked and gated • Secure entry into Water Tower through pass card and keyed • Alarm system with SCADA • Security Cameras • Visual inspections of infrastructure completed • Where applicable, infrastructure is locked • Reference SOP-013: SCADA Alarm Procedure and SOP-022: Fire Hydrant Inspection, Maintenance & Flushing • Contact Emergency Services, MOH, MECP & SAC • Communicate drinking water advisory if issued by MOH • Sample water quality until two consecutive samples are negative within 48hrs. Reference SOP-001: Distribution Sampling for Bacteriological and HPC Samples • Take Tower offline if necessary and monitor conditions. Return to service when safe to do so. Reference SOP-023: Taking Tower Offline • Conduct sampling, microbiological & Cl2 residual. Reference SOP-002: Distribution Sampling for Chlorine Residuals • Contact WUCTP about closure of water valve for tower		
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.4 Contamination of Water Transmission System • 2.5 Emergency Evacuation • 2.6 Illegal Entry / Vandalism • 2.8 Loss of Access to Facility	• 2.9 Bomb Threat at any Water Facility • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations • 2.20 Epidemic / Pandemic • 2.21 Terrorism	

Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	4
		Detectability	1
		(High Risk Threshold = 8)	***Total= 6 (CCP = No)***

Worksheet No. 3 Sediment Build-up in Water Distribution System

Sediment Build-up in Water Distribution System			
Activity or Process Step: • Water Distribution System			
Description of Hazard: • Sediment buildup			
Potential Results of Hazard: • Biological • Chemical • Physical			
Comments: • No Control • Flushing program in place to aide in system water circulation / flow			
Identified Control Measures: • Inspection of tower every 5 years as prescribed by AWWA standards or per legislation • Monitoring water levels • Sample testing of chlorine residuals weekly. Reference SOP-004: *Chlorine Residual Sampling and Calibration of Chlorine Analyzer (Water Tower)* • Cleaning tower using a qualified contractor • Take Tower offline if necessary and monitor conditions. Return to service when safe to do so. Reference SOP-023: *Taking Tower Offline*			
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.3 Loss of Secondary Disinfectant (Chlorine) • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	3
		Detectability	3
		(High Risk Threshold = 8)	***Total*= 7 (CCP = No)**

Worksheet No. 4 Terrorism

Terrorism		
Activity or Process Step: • Water Distribution System		
Description of Hazard: • Terrorism		
Potential Results of Hazard: • Biological	• Physical	• Chemical
Comments: • No Control		
Identified Control Measures: • Security fence locked and gated • Add secure entry • Alarm system with SCADA • Security Cameras • Reference SOP-013: *SCADA Alarm Procedure* • Contact Emergency Services, MOH, MECP & SAC • Communicate drinking water advisory if issued by MOH • Sample water quality until two consecutive samples are negative within 48hrs. Reference SOP-001: *Distribution Sampling for Bacteriological and HPC Samples* • Take Tower offline if necessary and monitor conditions. Return to service when safe to do so. Reference SOP-023: *Taking Tower Offline* • Conduct sampling, microbiological & Cl_2 residual. Reference SOP-002: Distribution Sampling for Chlorine Residuals • Contact WUCTP about closure of water valve for tower		
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.4 Contamination of Water Transmission System • 2.5 Emergency Evacuation • 2.6 Illegal Entry / Vandalism • 2.8 Loss of Access to Facility	• 2.9 Bomb Threat at any Water Facility • 2.14 Water Shortage • 2.16 Establishing potable water filling stations • 2.20 Epidemic / Pandemic • 2.21 Terrorism	

Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	5
		Detectability	1
		(High Risk Threshold = 8)	***Total* = 7** **(CCP = No)**

Worksheet No. 5 Spills from Freight Trains on Railway Tracks

Spills from Freight Trains on Railway Tracks		
Activity or Process Step: • Water Distribution System		
Description of Hazard: • Spills from CN freight trains on VIA tracks.		
Potential Results of Hazard: • Physical	• Biological	• Chemical
Comments: • No Control		
Identified Control Measures: • Security fence locked and gated • Add secure entry at Water Tower through pass card and keyed • Alarm system with SCADA • On-line monitoring at (WUCTP) • Security Cameras • Reference SOP-013: SCADA Alarm Procedure • Passenger & Freight trains limited to max speed of 50mph zone • Contact Emergency Services, MOH, MECP & SAC • Communicate drinking water advisory if issued by MOH • Sample water quality until two consecutive samples are negative within 48hrs. Reference SOP-001: Distribution Sampling for Bacteriological and HPC Samples • Take Tower offline if necessary and monitor conditions. Return to service when safe to do so. Reference SOP-023: Taking Tower Offline • Conduct sampling, microbiological & Cl2 residual. Reference SOP-002: Distribution Sampling for Chlorine Residuals • Contact WUCTP about closure of water valve for tower		
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.4 Contamination of Water Transmission System • 2.5 Emergency Evacuation	• 2.8 Loss of Access to Facilities • 2.12 On-Site Injury • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations	

Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	3
		Detectability	1
		(High Risk Threshold = 8)	***Total*= 5** **(CCP = No)**

Worksheet No. 6 Power Failure

Power Failure			
Activity or Process Step: • Power Supply / Communications			
Description of Hazard: • Physical			
Potential Results of Hazard: • Loss of SCADA network			
Comments: • No Control • Power loss in general and also from extreme weather conditions			
Identified Control Measures: • UPS battery backup at monitoring stations • UPS battery backup on server • Reference SOP-013: *SCADA Alarm Procedure* • System alarmed • Backup generator for server • SCADA system checks completed on scheduled work days • Data is backed up daily onto main server			
Emergency Response Procedure: • 2.7 Interruption of SCADA Components • 2.15 Failure of Control Systems • 2.18 Equipment Failure			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	2
		Detectability	1
		(High Risk Threshold = 8)	***Total*= 4** **(CCP = No)**

Worksheet No. 7 Loss of Communication

Loss of Communications			
Activity or Process Step: • Power Supply / Communications			
Description of Hazard: • Physical			
Potential Results of Hazard: • Failure of business telephone lines • Failure of local telephone provider's circuit connections, radio signals, and Ethernet connections • Failure of cellular telephones			
Comments: • None			
Identified Control Measures: • UPS battery backup at monitoring stations • UPS battery backup on server • Reference SOP-013: *SCADA Alarm Procedure* • System alarmed • Backup generator for server • SCADA system checks completed on scheduled work days • Data is backed up daily onto main server			
Emergency Response Procedure: • 2.7 Interruption of SCADA Components • 2.15 Failure of Control Systems • 2.18 Equipment Failure			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	5
		Detectability	1
		(High Risk Threshold = 8)	***Total*= 7** **(CCP = No)**

Worksheet No. 8 Watermain Breaks within the Distribution System

Watermain Breaks within the Distribution System
Activity or Process Step: • Water Distribution System
Description of Hazard: • Watermain breaks within the distribution system possibly causing adverse conditions.
Potential Results of Hazard: • Biological • Chemical • Physical
Comments: • No control
Identified Control Measures: • Consumer complaints; low pressure or visual inspection • General inspection of distribution system • Controlling valves, looping and replacing watermain • SCADA alarm system • Reference SOP-009: *Watermain Repair Procedure Category 1* • Reference SOP-010: *Watermain Repair Procedure Category 2* • Reference SOP-014: *Responding to Afterhours Call Outs* • Reference SOP-021: *Valve Exercising Maintenance Program*
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.3 Loss of Secondary Disinfection • 2.4 Contamination of Water Transmission System • 2.11 Watermain Break • 2.13 Street Flooding Due to Watermain Break • 2.17 Damage to Main Supply Transmission Line

Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	4
		Consequence	2
		Detectability	3
		(High Risk Threshold = 8)	***Total*= 9** **(CCP = No)**

Worksheet No. 9 Loss of Chlorine Residual (Secondary Disinfection)

Loss of Chlorine Residual (Secondary Disinfection)			
Activity or Process Step: • Water Distribution System			
Description of Hazard: • Loss of chlorine residual (secondary disinfection)			
Potential Results of Hazard: • Biological • Physical			
Comments: • Critical Control Limit of 0.05ppm free chlorine residual			
Identified Control Measures: • Weekly monitoring chlorine residuals throughout the distribution system • Reference SOP-002: *Distribution Sampling for Chlorine Residuals* • Reference SOP-004: *Chlorine Residual Sampling and Calibration of Chlorine Analyzer- Water Tower* • Flush affected area to increase Cl_2 residual • Follow corrective actions required by O.Reg. 170/03. • Resample and reference SOP-011: Low Chlorine Result Procedure			
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.2 Adverse Laboratory Water Quality Results • 2.3 Loss of Secondary Disinfectant (Chlorine) • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	2
		Consequence	3
		Detectability	3
		(High Risk Threshold = 8)	***Total*= 8** **(CCP = Yes)**

Worksheet No. 10 Commissioning New Watermains Causing Contamination

Commissioning New Watermains Causing Contamination			
Activity or Process Step: • Water Distribution System			
Description of Hazard: • Commissioning new watermains causing contamination			
Potential Results of Hazard: • Biological • Chemical • Physical			
Comments: • Critical Control Limit of 0.05ppm free chlorine residual			
Identified Control Measures: • Reference SOP-007: C*ommissioning New Watermains* • Check Cl_2 residuals. Reference SOP-002: *Distribution Sampling for Chlorine Residuals* • Take microbiological samples. Reference SOP-001: *Distribution Sampling for Bacteriological and HPC Samples* • Follow corrective action as per O.Reg.170/03 • Communicate Boil Water Advisory if issued by MOH • Reference SOP-019: Accepting / Inspecting Material meeting Water Standards & Material Specifications			
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.2 Adverse Laboratory Water Quality Results • 2.4 Contamination of Water Transmission System • 2.11 Watermain Break • 2.14 Water Shortage • 2.15 Failure of Control Systems • 2.16 Establishing Potable Water Filling Stations • 2.18 Equipment Failure			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	3
		Detectability	1
		(High Risk Threshold = 8)	***Total*= 5** **(CCP = Yes)**

Worksheet No. 11 Loss of Pressure Resulting from a Watermain Break

Loss of Pressure Resulting from a Watermain Break		
Activity or Process Step: • Water Distribution System		
Description of Hazard: • Loss of pressure due to watermain break		
Potential Results of Hazard: • Biological	• Chemical	• Physical
Comments: • As a best practice measure a Water Distribution System pressure of 20psi is targeted.		
Identified Control Measures: • Consumer complaints • Pressure gauges on boundary meters and tower monitored and alarmed by SCADA • Backflow prevention by-law and program • Check pressures in affected area. If necessary, discuss with MOH and MECP/SAC • Communicate water advisory if issued by MOH • Restore pressure and chlorine residuals and conduct testing and sampling in affected area • Notify (WUCTP) of low-pressure alarms • Reference SOP-002: Distribution Sampling for Chlorine Residuals • Reference SOP-004: Chlorine Residual Sampling and Calibration of Chlorine Analyzer- Water Tower • Reference SOP-006: Distribution Flow Testing Program • Reference SOP-009: Watermain Repair Procedure Category 1 • Reference SOP-010: Watermain Repair Procedure Category 2. • Reference SOP- 011: Low Chlorine Result Procedure • Reference SOP-013: SCADA Alarm Procedure • Reference SOP-014: Responding to Afterhours Call Out • Reference SOP-017: Meter-Backflow Inspection Procedure		
Emergency Response Procedure: • 2.2 Adverse Laboratory Water Quality Results • 2.4 Contamination of Water Transmission System • 2.11 Watermain Break		• 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations • 2.17 Damage to Main Supply Transmission Line

Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	2
		Consequence	4
		Detectability	1
		(High Risk Threshold = 8)	***Total*= 7** **(CCP = No)**

Worksheet No. 12 Bacteriological Test Failure

Bacteriological Test Failure
Activity or Process Step: • Water Distribution System
Description of Hazard: • Bacteriological test failure
Potential Results of Hazard: • Biological
Comments: • No control
Identified Control Measures: • Weekly monitoring: bacteriological testing throughout the distribution system • Contact MOH, MECP & SAC • Communicate water advisory if issued by MOH • Sample water quality until two consecutive samples are negative within 48hrs • Take Tower offline if necessary and monitor conditions. Return to service when safe to do so • Flush affected area to increase Cl_2 residual. Reference SOP-006: *Distribution Flow Testing Program* • Follow corrective actions required by O.Reg. 170/03. • Reference SOP-001: *Distribution Sampling for Bacteriological & HPC* • Reference SOP-002: *Distribution Sampling for Chlorine Residuals* • Reference SOP-012: *Bad Sample or Adverse Water Quality*
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.2 Adverse Laboratory Water Quality Results • 2.3 Loss of Secondary Disinfection • 2.4 Contamination of Water Transmission System • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations

Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	3
		Consequence	3
		Detectability	2
		(High Risk Threshold = 8)	***Total*= 8** **(CCP = No)**

Worksheet No. 13 Failure of Backflow Prevention Device

Failure of Backflow Prevention Device			
Activity or Process Step: • Water Distribution System			
Description of Hazard: • Failure of Backflow Prevention Device			
Potential Results of Hazard: • Biological • Chemical • Radiological			
Comments: • No control			
Identified Control Measures: • Visual on- site inspection • Backflow prevention by-law and program • If backflow is suspected, report to MOH and MECP, SAC • Isolate area. Flush the system and sample as needed. Re-pressurize system • Reference SOP-001: *Distribution Sampling for Bacteriological and HPC Samples* • Reference SOP-002: *Distribution Sampling for Chlorine Residuals* • Reference SOP-006: *Distribution Flow Testing Program* • Reference SOP-017: *Meter-Backflow Inspection Procedure*			
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.2 Adverse Laboratory Water Quality Results • 2.4 Contamination of Water Transmission System • 2.14 Water Shortage • 2.15 Failure of Control Systems • 2.16 Establishing Potable Water Filling Stations • 2.18 Equipment Failure			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	4
		Detectability	4
		(High Risk Threshold = 8)	***Total*= 9** **(CCP = No)**

Worksheet No. 14 Adverse Drinking Water Lead Results

Adverse Drinking Water Lead Results			
Activity or Process Step: • Water Distribution System			
Description of Hazard: • Adverse drinking water lead results			
Potential Results of Hazard: • Biological • Chemical • Physical			
Comments: • No control			
Identified Control Measures: • Reference SOP-005: *Lead Testing Procedure* • Reference SOP-012*: Bad Sample or Adverse Water Quality Procedure* • O.Reg. 170/03 mandating every water system in Ontario to test for lead in the drinking water			
Emergency Response Procedure: • 2.2 Adverse Laboratory Water Quality Results			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	2
		Detectability	2
		(High Risk Threshold = 8)	***Total*= 5** **(CCP = No)**

Worksheet No. 15 Extreme Cold/Heat/Long-term Impacts of Climate Change

Extreme Cold/Heat/Long-term Impacts of Climate Change			
Activity or Process Step: • Water Distribution System			
Description of Hazard: • Physical			
Potential Results of Hazard: • Maintain fire protection • No access to water from the distribution system if pipes are frozen • Maintain reliable and safe drinking water to consumers			
Comments: • No control • Extreme cold / heat / long-term impacts of climate change (including frozen pipes, potential for wildfires)			
Identified Control Measures: • SCADA alarms • Reference SOP-013: *SCADA Alarm Procedure* • Maintenance program for infrastructure: installation of insulating blankets on boundary meters, blowing out sample station, Insulating auto flushers, etc. performed annually • Installing indicators, such as, hydrant reflectors and valve locators on water distribution system infrastructure • Reference SOP-024: *Frozen Services* and SOP-025: *Frozen Meters* • Monitoring weather conditions via weather sites			
Emergency Response Procedure: • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations • 2.19 Severe Storm (Tornado, Wind, Hurricane, Winter Storm etc.)			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	1
		Detectability	1
		(High Risk Threshold = 8)	***Total*= 3** **(CCP = No)**

Worksheet No. 16 Loss of Pressure Resulting from Major Fire

Loss of Pressure Resulting from Major Fire		
Activity or Process Step: • Water Distribution System		
Description of Hazard: • Loss of pressure due to major fire		
Potential Results of Hazard: • Biological	• Chemical	• Physical
Comments: • No Control		
Identified Control Measures: • Notification from the fire department • Firefighters trained to monitor pressure gauges on trucks so as not to drop distribution system pressure below 20psi. • Consumer complaints • Pressure gauges on boundary meters and tower monitored and alarmed by SCADA • Backflow prevention • Check pressures in affected area. If necessary, discuss with MOH and MECP/SAC • If necessary, issue water advisory with consultation of MOH. Reference SOP-012: Bad Sample or Adverse Water Quality • Restore pressure and chlorine residuals and conduct testing and sampling in affected area • Reference SOP-002: Distribution Sampling for Chlorine Residuals • Reference SOP-004: Chlorine Residual Sampling and Calibration of Chlorine Analyzer-Water Tower • Notify (WUCTP) of low-pressure alarms		
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.2 Adverse Laboratory Water Quality Results • 2.4 Contamination of Water Transmission System • 2.10 Major Fire at any Facility • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations		

Risk Analysis Ranking		*Risk Analysis*	*Ranking*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	3
		Detectability	1
		(High Risk Threshold = 8)	***Total*= 5** **(CCP = No)**

Worksheet No. 17 Loss of System Pressure

Loss of System Pressure		
Activity or Process Step: • Water Distribution System		
Description of Hazard: • Loss of system pressure		
Potential Results of Hazard: • Biological	• Chemical	• Physical
Comments: • No Control		
Identified Control Measures: • Consumer complaints • Pressure gauges on boundary meters and tower monitored and alarmed by SCADA • Backflow prevention • Check pressures in affected area if necessary discuss with MOH and MECP/SAC • If necessary, issue water advisory with consultation of MOH. Reference SOP-012: *Bad Sample or Adverse Water Quality* • Restore pressure and chlorine residuals and conduct testing and sampling in affected area • Reference SOP-002: *Distribution Sampling for Chlorine Residuals* • Reference SOP-004: *Chlorine Residual Sampling and Calibration of Chlorine Analyzer-Water Tower* • Reference SOP-009: *Watermain Repair Procedure-Category 1* and SOP-010: *Watermain Repair Procedure-Category 2* • Notify (WUCTP) of low pressure alarms		
Emergency Response Procedure: • 2.1 Boil Water Advisory • 2.2 Adverse Laboratory Water Quality Results • 2.4 Contamination of Water Transmission System • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Station		

Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	3
		Detectability	1
		(High Risk Threshold = 8)	***Total*= 5** **(CCP = No)**

Worksheet No. 18 Staff Shortages

Staff Shortage			
Activity or Process Step: • Water Distribution System			
Description of Hazard: • Staff shortage			
Potential Results of Hazard: • Physical			
Comments: • No Control • Due to lottery, retirements, Illness/Pandemic, Strike/Lock-out			
Identified Control Measures: • Collective Agreements for both outside and inside workers • Attendance/medical records • MOH health advisories • Town's Wellness Committee • Having the proper amount of Licensed Water Operators • The ORO has a Class III Water Distribution Operators License • The ORO has the required competencies to maintain the water distribution system • Town of Tecumseh Water Services Emergency Response Plan • Will contract outside licensed water operators to assist the ORO if necessary • Reference SOP No. 11: Low Chlorine Result Procedure • Reference SOP No. 12: Bad Sample or Adverse Water Quality Procedure • Reference SOP No. 13: SCADA Alarm Procedure • Reference SOP No. 14: Responding to Afterhours Call-Out			
Emergency Response Procedure: • 2.20 Epidemic / Pandemic			
Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5 [B] CONSEQUENCE 1 to 5 [C] DETECTABILITY 1 to 5 *[A] + [B] +[C] = Total*	3 to 5 = LOW 6 to 7 = MODERATE 8 to 11= HIGH 12 to 15 = VERY HIGH	**Likelihood**	1
		Consequence	4
		Detectability	1
		(High Risk Threshold = 8)	***Total*= 6** **(CCP = No)**

Appendix 5 Essential Supplies and Services

A list of supplies and services has been developed and is provided below. The list includes suppliers / service providers for each essential supply and service. A secondary source is also listed for each supply and service to ensure supplies and services are available as needed. This list is reviewed by the Manager, Water Services/ORO to ensure that it is current and up-to-date.

All supplies and services shall meet AWWA and NSF/ANSI standards; these purchases must be in accordance with the Town of Tecumseh By-Law 2017-63, a by-law to govern procurement and procedures.

5.1 Essential Supplies and Service List

Product/Service	Primary Source	Secondary Source
Treated Drinking Water Supply	Windsor Utilities Commission P.O. Box 1625, Station A 4545 Rhodes Drive Windsor, ON N8W 5T1 Tel: 519-251-7300 Fax: 519-255-7423 www.enwin.com	Refer to the Water Services Emergency Response Plan, Section 2, Sub-Section 2.16 "Establishing Potable Water Filling Stations"
Accredited Laboratory Services	Caduceon Environmental Laboratories 3201 Marentette Ave. Windsor, ON N8X 4G3 Tel: 519-966-9541 Fax: 519-966-9567 contactwindsor@caduceonlabs.com	SGS Environmental Services 657 Consortium Crt. London, ON N6E 2S8 Tel: 519-672-4500 Fax: 519-672-0361 emily.crowey@sgs.com
Instrumentation Calibration	SCG Flowmetrix 2088 Jetstream Rd London, ON N5V 3P6 Tel: 519-870-3569 Fax: 519-268-3459 service@flowmetrix.ca	ACI Instrumentation Limited 14 Gormley Industrial Ave, Unit 5 Gormley, ON L0H 1G0 Tel: 905-888-0063 Fax: 905-888-6381 bhadresa@aciltd.ca

Product/Service	Primary Source	Secondary Source
Meter Supply & Service	Evans Utility and Municipal Products Supply Limited 338 Neptune Crescent London, ON N6M 1A1 Tel: 519-453-6515 Fax: 519-453-7756 www.evansupply.com	Emco Waterworks 5255 County Rd 42 Windsor, ON N8N 2M1 Tel: 519-944-3626 Fax: 519-948-4210 www.emcoltd.com
AMR/ERT Supply & Service	Emco Waterworks 5255 County Rd 42 Windsor, ON N8N 2M1 Tel: 519-944-3626 Fax: 519-948-4210 www.emcoltd.com	Itron Headquarters 2111 N Molter Rd Liberty Lake, WA 99019 Tech Support 1-877-487-6602 Chris.Jay@wolseleyinc.ca
Health & Safety Supplies	Great Lakes Safety Supply 3303 Walker Rd. Windsor, ON N8W 3R9 Tel: 519-972-6605 Fax: 519-972-6620 sales@glspi.com	HD Supply 3350 North Talbot Rd. Tecumseh, ON Tel: 519-737-7023 Fax: 519-737-9157 Meredith.stpierre@hdsupply.com
SCADA & Instrumentation	Summa Engineering Limited 3230 American Drive Mississauga, ON L4V 1B3 Tel: 905-678-3388 Fax: 905-678-0444 www.summaeng.com	Onyx Engineering Ltd. 2960 Jefferson Blvd. Windsor, ON N8T 3J2 Tel: 519-948-4324 sales@onyxengineering.com
Construction Contracting Services	Coco Paving Inc. 6725 South Service Road East Windsor, ON N8N 2M1 Tel: 519-948-7133 Fax: 519-948-7469 www.cocogroup.com	Amico Contracting and Engineering 2199 Blackacre Drive Oldcastle, ON N0R 1L0 Tel: 519-737-1577 Fax: 519-737-1929 sdraper@triamico.com

Product/Service	Primary Source	Secondary Source
Distribution Parts	Emco Waterworks 5255 County Rd 42 Windsor, ON N8N 2M1 Tel: 519-944-3626 Fax: 519-948-4210 www.emcoltd.com	Underground Specialties Wolseley 5340 Walker Road Oldcastle, ON N0R 1L0 Tel: 519737-1263 Fax: 519-737-1712 bob.bezaire@wolseleyinc.ca
Disinfectant (Sodium Hypochlorite)	Emco Waterworks 5255 County Rd 42 Windsor, ON N8N 2M1 Tel: 519-944-3626 Fax: 519-948-4210 www.emcoltd.com	Underground Specialties Wolseley 5340 Walker Road Oldcastle, ON N0R 1L0 Tel: 519737-1263 Fax: 519-737-1712 bob.bezaire@wolseleyinc.ca
Water Testing Supplies	SCG Flowmetrix 2088 Jetstream Rd London, ON N5V 3P6 Tel: 519-870-3569 Fax: 519-268-3459 service@flowmetrix.ca	Hach Canada 3020 Gore Rd London, ON N5V 4T7 Tel: 800-665-7635 Fax: 866-259-0984 www.ca.hach.com
Locators	Ontario One Call 104 Cooper Dr, Suite 1 Guelph, ON N1C 1C3 Tel: 800-400-2255 solutions@accu-link.ca	G-Tel Engineering 1150 Frances Street London, ON N5W 5N5 Tel: 866-692-0208 Fax: 866-692-0809 bgowan@gtel.ca
Communications Supplies	Information Services Corporation of the Town of Tecumseh 917 Lesperance Road Tecumseh, ON N8N 1W9 Tel: 519-735-2184 sfuerth@tecumseh.ca	Kelcom 363 Eugenie St. E. Windsor, ON N8X 2Y2 Tel: 519-250-5070 www.kelcom.com

Product/Service	Primary Source	Secondary Source
Computer Systems Supplies	Information Services Corporation of the Town of Tecumseh 917 Lesperance Road Tecumseh, ON N8N 1W9 Tel: 519-735-2184 sfuerth@tecumseh.ca	Summa Engineering Limited 3230 American Drive Mississauga, ON L4V 1B3 Tel: 905-678-3388 Fax: 905-678-0444 www.summaeng.com ONYX Engineering 2960 Jefferson Blvd. Windsor, ON N8T 3J2 Tel: 519-948-4324 Ext 210 Fax: 519-948-4840
Answering Service	Engineering Services Corporation of the Town of Tecumseh 917 Lesperance Road Tecumseh, ON N8N 1W9 Tel: 519-735-2184	After hour call Kelcom Answering Service Tel: 971-2866

Appendix 6 Public Works & Engineering Services Capital Works Plan

The Corporation of the Town of Tecumseh

Public Works & Engineering Services

To: Mayor and Members of Council

From: Phil Bartnik, Director Public Works & Engineering Services

Date to Council: January 25, 2022

Report Number: PWES-2022-03

Subject: Approval of 2022 Public Works & Engineering Services 2022 Capital Works Projects

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Recommendations

It is recommended:

That the following Public Works & Engineering Services projects for 2022, be **approved**.

		Previously Approved	Requested for 2022	Future Costs	Total Costs
Sidewalk Projects					
1.	Sidewalk Repair Program - Various Locations	$ -	**$ 69,000**	$ -	$ 69,000
	Sub-Total	$ -	**$ 69,000**	$ -	$ 69,000
	Grants:	$ -	**$ -**	$ -	$ -
	Recoveries:	$ -	**$ -**	$ -	$ -
	Sidewalk Lifecycle Reserve:	$ -	**$ 69,000**	$ -	$ 69,000
New Infrastructure					
1.	Riverside Drive Trail	$ 1,201,800	**$ 460,200**	$ -	$ 1,662,000
2.	Lesperance Road Trail (CR22 to CR42)	$ 137,500	**$ -**	$ 1,066,500	$ 1,204,000
3.	CWATS Study - Pike Creek/Tecumseh Road	$ 6,000	**$ -**	$ -	$ 6,000
	Sub-Total:	$ 1,345,300	**$ 460,200**	$ 1,066,500	$ 2,872,000
	Grants:	$ -	**$ -**	$ 1,216,707	$ 1,216,707
	Recoveries:	$ -	**$ -**	$ -	$ -
	Infrastructure Reserve:	$ 1,345,300	**$ 460,200**	-$ 150,207	$ 1,655,293

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2022 Capital Works Projects
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		Previously Approved	Requested for 2022	Future Costs	Total Costs
Road Projects					
1.	Road Paving - Tar & Chip	$ -	**$ 100,000**	$ -	$ 100,000
2.	Road Paving - Asphalting	$ -	**$ 1,100,000**	$ -	$ 1,100,000
3.	Road Paving - Crack Sealing	$ -	**$ 100,000**	$ -	$ 100,000
4.	Expansion/Improvements PW Yard (North)	$ 110,000	**$ 50,000**	$ -	$ 160,000
5.	TTMP Bicycle Sharrows	$ 15,000	**$ -**	$ -	$ 15,000
6.	CR42/43 Construction	$ 22,450	**$ -**	$ 47,550	$ 70,000
7.	Tecumseh Hamlet SPA EA FSR	$ 98,000	**$ -**	$ -	$ 98,000
8.	Tecumseh Sigange Project	$ 16,000	**$ 60,000**	$ -	$ 76,000
9.	Lesperance/VIA Rail Improvements	$ 1,849,300	**$ -**	$ -	$ 1,849,300
10.	Sylvestre Drive Sanitary Sewer Extension	$ 94,000	**$ -**	$ 1,020,000	$ 1,114,000
11.	Brighton Road Traffic Improvements	$ 30,000	**$ -**	$ -	$ 30,000
12.	Various Watermain Replacement Projects 2021	$ 23,100	**$ -**	$ -	$ 23,100
13.	Scully & St. Mark'sStorm PS/Riverside Drive	$ 127,600	**$ 1,400,400**	$ -	$ 1,528,000
14.	Cty Rd 46/Webster/Laval Sanitary Sewer Extension	$ 120,750	**$ -**	$ 1,982,050	$ 2,102,800
15.	Del Duca Drive Sanitary Sewer	$ 112,450	**$ 5,000**	$ 1,331,050	$ 1,448,500
16.	Lanoue Street Improvements	$ 488,300	**$ -**	$ 503,200	$ 991,500
17.	Tecumseh Road Path - Arlington to DM Eagle	$ 100,000	**$ -**	$ -	$ 100,000
18.	Annual Project Contingency	$ -	**$ 250,000**	$ -	$ 250,000
19.	PJ Cecile Storm Pump Station	$ 14,000	**$ 42,500**	$ 217,500	$ 274,000
20.	Tecumseh Rd - Storm and Road Improvements	$ 133,000	**$ 2,554,200**	$ -	$ 2,687,200
	Sub-Total	$ 3,353,950	**$ 5,662,100**	$ 5,101,350	$ 14,117,400
	Grants:	$ -	**$ -**	$ 525,000	$ 525,000
	Recoveries:	$ -	**$ -**	$ 2,795,000	$ 2,795,000
	Road Lifecycle Reserve:	$ 3,353,950	**$ 5,662,100**	$ 1,781,350	$ 10,797,400
Bridge Projects					
1.	Bridge and Culvert Needs Study (>3m Span)	$ -	**$ 39,000**	$ 78,000	$ 117,000
2.	Bridge #1005 - Pike Creek Drain at Baseline Road	$ 250,000	**$ -**	$ -	$ 250,000
3.	Culvert #42 - Snake Lane Road	$ 62,300	**$ -**	$ 487,500	$ 549,800
4.	Culvert #53 - Snake Lane Road	$ 65,100	**$ -**	$ 572,500	$ 637,600
5.	Culvert #54 - Snake Lane Road	$ 65,100	**$ -**	$ 572,500	$ 637,600
	Sub-Total:	$ 442,500	**$ 39,000**	$ 1,710,500	$ 2,192,000
	Grants:	$ -	**$ -**	$ -	$ -
	Recoveries:	$ -	**$ -**	$ -	$ -
	Bridges Lifecycle Reserve:	$ 442,500	**$ 39,000**	$ 1,710,500	$ 2,192,000

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	Previously Approved	Requested for 2022	Future Costs	Total Costs
Water Projects				
1. Riverside Drive Trail (Lesperance-Manning)	$ -	**$ 25,000**	$ -	$ 25,000
2. Banwell Watermain - Intersection to South of CPR	$ 130,900	**$ -**	$ 607,100	$ 738,000
3. Various Watermain Replacement Projects 2021	$ 1,085,000	**$ -**	$ -	$ 1,085,000
4. Hwy3-CR34 Water Valve Replacement	$ 456,300	**$ -**	$ -	$ 456,300
5. Watermain Anode Program - Inspection/Replacement	$ 259,690	**$ 20,000**	$ -	$ 279,690
6. Tecumseh Hamlet SPA EA FSR	$ 98,000	**$ -**	$ -	$ 98,000
7. Cty Rd 46/Webster Laval Sanitary Sewer Exten.	$ 80,400	**$ -**	$ 1,240,400	$ 1,320,800
8. Del Duca Drive Sanitary Sewer	$ 5,550	**$ 3,000**	$ 22,250	$ 30,800
9. CR42/43 Construction	$ 758,600	**$ 1,372,100**	$ 390,000	$ 2,520,700
10. Tecumseh Road - Storm and Road Improvments	$ -	**$ 67,000**	$ -	$ 67,000
11. 2020 Water and Wastewater Rates Study	$ 10,000	**$ -**	$ -	$ 10,000
12. North Tecumseh Water Distribution Model	$ -	**$ 70,000**	$ -	$ 70,000
13. Water Sampling Station Replacements	$ -	**$ 37,000**	$ -	$ 37,000
Sub-Total:	$ 2,884,440	**$ 1,594,100**	$ 2,259,750	$ 6,738,290
Grants:	$ -	**$ -**	$ -	$ -
Recoveries:	$ -	**$ -**	$ -	$ -
Watermain Reserve Fund:	$ 2,884,440	**$ 1,594,100**	$ 2,259,750	$ 6,738,290
Wastewater Projects				
1. Sylvestre Drive Sanitary Sewer Extension	$ 186,800	**$ -**	$ 761,100	$ 947,900
2. Tecumseh Hamlet SPA EA FSR	$ 113,000	**$ -**	$ -	$ 113,000
3. Cty Rd 46/Webster/Laval Sanitary Sewer Exten.	$ 166,700	**$ -**	$ 1,290,100	$ 1,456,800
4. Scully & St. Mark's Storm PS/Riverside Drive	$ 98,550	**$ 316,450**	$ -	$ 415,000
5. Del Duca Drive Sanitary Sewer	$ 188,500	**$ 20,000**	$ 1,027,200	$ 1,235,700
6. Sanitary Sewer Model Update	$ 315,000	**$ 30,000**	$ -	$ 345,000
7. CR42/43 Construction	$ 74,900	**$ 1,861,700**	$ -	$ 1,936,600
8. Tecumseh Road - Storm and Road Improvements	$ -	**$ 38,300**	$ -	$ 38,300
9. 8th Concession Sanitary Sewer By-Law	$ -	**$ 45,000**	$ -	$ 45,000
10. 2020 Water and Wastewater Rates Study	$ 10,000	**$ -**	$ -	$ 10,000
Sub-Total:	$ 1,153,450	**$ 2,311,450**	$ 3,078,400	$ 6,543,300
Grants:	$ -	**$ -**	$ -	$ -
Recoveries:	$ -	**$ -**	$ 3,764,900	$ 3,764,900
Wastewater Sewers Reserve Fund:	$ 1,153,450	**$ 2,311,450**	-$ 686,500	$ 2,778,400
Wastewater Facility Projects				
1. SCADA Software/Server/Nodes Update	$ 26,250	**$ 20,000**	$ -	$ 46,250
2. Sylvestre Drive Sanitary PS Improvements	$ 30,000	**$ 25,000**	$ 150,000	$ 205,000
3. Lakewood Sanitary PS Improvements	$ 32,500	**$ 22,000**	$ 56,000	$ 110,500
4. Gauthier Sanitary Pump Station	$ -	**$ 15,000**	$ 385,000	$ 400,000
Sub-Total:	$ 88,750	**$ 82,000**	$ 591,000	$ 761,750
Grants:	$ -	**$ -**	$ -	$ -
Recoveries:	$ -	**$ -**	$ -	$ -
Wastewater Facilities Reserve Fund:	$ 88,750	**$ 82,000**	$ 591,000	$ 761,750

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2022 Capital Works Projects

		Previously Approved	Requested for 2022	Future Costs	Total Costs
Stormwater Projects					
1.	Riverside Drive Trail (Lesperance-Manning)	$ 37,500	**$ 142,900**	$ -	$ 180,400
2.	Lesperance/VIA Rail Improvements	$ 162,500	**$ 120,400**	$ -	$ 282,900
3.	Sylvestre Drive Sanitary Sewer Extension	$ 4,200	**$ -**	$ 49,900	$ 54,100
4.	Oldcastle Storm Drainage Master Plan	$ 490,000	**$ 45,000**	$ -	$ 535,000
5.	Tecumseh Hamlet SPA EA FSR	$ 496,000	**$ -**	$ -	$ 496,000
6.	Cty Rd 46/Webster/Laval Sanitary Sewer Exten.	$ 77,400	**$ -**	$ 455,700	$ 533,100
7.	Scully & St. Marks Storm PS/Riverside Drive	$ 1,071,100	**$ 14,035,900**	$ -	$ 15,107,000
8.	MRSPA Pond Design and Construction	$ 2,780,000	**$ -**	$ 9,955,000	$ 12,735,000
9.	Del Duca Drive Sanitary Sewer	$ 165,850	**$ 24,000**	$ 940,850	$ 1,130,700
10.	Lanoue Street Improvements	$ -	**$ -**	$ 55,500	$ 55,500
11.	Shoreline Management Plan	$ 350,000	**$ -**	$ -	$ 350,000
12.	Stormwater Rate Study	$ 45,000	**$ -**	$ -	$ 45,000
13.	PJ Cecile Pump Station	$ 486,000	**$ 1,457,500**	$ 7,482,500	$ 9,426,000
14.	Tecumseh Rd - Storm and Road Improvements	$ 84,000	**$ 1,911,600**	$ -	$ 1,995,600
15.	Turkey Creek Watershed Assessment - PH 1-2	$ 60,000	**$ -**	$ -	$ 60,000
	Sub-Total:	$ 6,309,550	**$ 17,737,300**	$ 18,939,450	$ 42,986,300
	Grants:	$ 200,000	**$ -**	$ 10,700,000	$ 10,900,000
	Recoveries:	$ -	**$ -**	$ -	$ -
	Storm Sewer Lifecycle Reserve:	$ 6,109,550	**$ 17,737,300**	$ 8,239,450	$ 32,086,300

Executive Summary

The Public Works & Engineering Services (PWES) Department is recommending the Pre-Approval of the 2022 PWES Capital Works Projects to continue projects previously approved and initiate priority projects in the coming year. Subject to the outcome of on-going strategic planning sessions with Council to confirm the desired focus of infrastructure works for the Town over the next 5 years, a separate report regarding the remainder of the 2022-2026 Public Works & Engineering Services Five Year Capital Works Plan will be provided for Council consideration.

The total number of 2022 projects for PWES is 39, requiring $27.4M in budget allocation. Most of these projects are on-going and approximately 10 are new projects. The new projects generally relate to water, road, sanitary and bridge repairs/ improvements required to maintain existing infrastructure, support proposed developments and/or satisfy funding agreements. The notable projects and studies consist of the following:

- Finalization of various studies such as the Shoreline Management Plan, the Stormwater Rates Study, the Oldcastle Stormwater Master Plan and the Sanitary Sewer Model Update;
- Continuation of detailed design for the Scully, St. Marks and PJ Cecile Storm Pump Stations under the Disaster Mitigation and Adaptation Fund program;

- Construction of the Riverside Drive multi-use pathway between Manning Road and the Tecumseh/Windsor border;
- Construction of the Tecumseh Road Storm and Road Improvements Project;
- Construction of the Lesperance Road/VIA Crossing Improvements Project;
- Watermain and sanitary sewer improvements related to the County of Essex County Road 42 Improvements Project.

Details and in-progress updates for each of the 2022 projects are provided within the following sections of this report.

Background

Approval of 2022 PWES Capital Works Projects is sought to maintain a consistently high level of service and strive to improve the Town's infrastructure components in a timely manner.

In general, many of the projects listed in this report for 2022 are on-going projects that require works to continue into 2022. Additionally, a number of new projects are recommended to satisfy applicable legislation or updated municipal standards and/or grant requirements. The report is structured so that all projects with a request for funds in 2022 are detailed first, followed by ongoing projects which have prior funding allocations.

A separate report in 2022 regarding the remainder of the 2023-2026 Public Works & Engineering Services Five Year Capital Works Plan is forthcoming following the conclusion of on-going discussions with Council regarding project prioritization.

Comments

Detailed information is provided for all 2022 projects, both those previously approved and those newly proposed for 2022. Generally, the description for each project includes cost estimates for each of the related infrastructure categories (i.e. roads, water, wastewater, storm, etc.). Project descriptions also outline the main project drivers.

The tables presented in the Recommendations section of this report separate the cost of each project into the related infrastructure categories and include previously approved budget, requested budget for 2022, future budget needs and total category cost related to each specific project.

Certain projects have been proposed to be phased in over a two-year period or longer because the project scope is too large or costly to be completed in one construction season or would be too disruptive over a large area and for too long relative to the adjacent properties. Projects being phased would typically be tendered as two separate tender calls.

Finally, all new projects, and infrastructure replacement projects, will be designed to be compliant with the current requirements of the Accessibility for Ontarians with Disabilities Act (AODA).

In the following sections, unless otherwise noted, these acronyms are used: "CR" means County Road; "EA" means Environmental Assessment; "FSR" means Functional Servicing Report; "ERCA" means Essex Region Conservation Authority and "Ha" means hectares.

Section A: Projects Requiring Funding Allocations in 2022

A1. Tar & Chip, Asphalting and Crack Sealing

Work	**Requested for 2022**	Location of Work	Extent
Tar & Chip	**$100,000**	8th Concession Road 11th Concession Road 12th Concession Road (The above projects relate to edge repair and shouldering)	STR to CR8 STR to CR8 STR to CR8
Asphalting	**$1,100,000**	Riverside Drive Poisson Street Piccadilly Avenue Trafalgar Court Green Valley Drive Verdant Court Maisonneuve Street Intersection Road	Arlington to Kensington Tecumseh to Arbour Full extent Full extent Meadowland to Brunelle Full extent St. Anne to Lesperance Lesperance to Shawnee
Crack Sealing	**$100,000**	Various locations	To be determined.

Roads recommended for inclusion in the annual paving program are selected with reference to the Town's Road Needs Study, PWES staff input and suggestions from Council and residents. PWES investigates and categorizes the needs based on the condition of the roads in comparison with other similar traffic volumes.

Roads proposed for tar and chip are based on PWES staff review of observed road condition and maintenance needs in conjunction with Pavement Condition Index (PCI) ratings from the Road Needs Study. Based on this information, Administration recommends the installation of new tar and chip surfaces to repair the edge portions of the travelled road surfaces. This work will also include related road shoulder improvements. In addition, PWES suggests earmarking an amount for remedial tar and

chip repairs on roads as needed. Every spring, PWES finds areas that require repair from winter plowing activities, for example.

PWES also recommends that an amount be set aside for crack sealing of Town roads to extend the lifespan of the pavement before more substantial repairs or replacement are required. An amount of $100,000 is set aside for crack sealing in the annual paving program.

Inspection and project administration will be carried out by PWES staff upon award of the Contract by Council. Quality control of the materials will be carried out by a Consulting Geotechnical Engineer.

Funding is to be provided from Road Lifecycle Reserve in the amount of $1,300,000.

- **Reference Reports:**
  - Report PWES-2020-21, "Town of Tecumseh Road Needs Study 2019, Study Completion and Adoption", April 28, 2020; Motion RCM-139/20.

A2. Tecumseh Signage Project

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$16,000	**$60,000**	$0	$76,000

In response to Council inquiries regarding the replacement of existing Town signage, PWES completed an inventory of existing signage and confirmed that it varies greatly in design, branding, size, road classification, location and age. Based on these findings and with Council direction, PWES undertook a further study to determine the condition of the existing community signage as part of the 2020 Capital Works Plan.

Subsequently, Council approved the recommendations of the 2020 Community Sign Survey completed by Generator Design of Canada Inc. for inclusion in the annual Roads Operational Budget and further that the three sign works be incorporated into the annual PWES Capital Works Plan:

- Replacement of Sign No.11 (Brighton Road at VIA Rail)
- Replacement of Sign No.16 (Tecumseh Road at Pike Creek)
- Installation of a new Sign at County Road 9 at South Talbot Road

Additionally, the installation of a new sign on County Road 19 at County Road 8 was subsequently requested by a member of Council. PWES concurs that a sign at this location is warranted. Administration recommends that these sign improvements be undertaken in 2022.

Funding for this project is to be provided from the Road Lifecycle Reserve in the amount of $60,000.

- **Reference Reports:**
  - Report PWES-2019-49, "2020-2024 Public Works and Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.
  - Report PWES-2021-28, "Tecumseh Community Signage Inventory and Condition Assessment", June 8, 2021; Motion RCM-185/21.

A3. Lesperance/VIA Rail Improvements

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$2,011,800	**$120,400**	$0	$2,132,200

In 2020, PWES was authorized to submit an application for funding to the Rail Safety Improvement Program for the VIA/Lesperance Rail Improvements Project. While the application was in process, detailed design for this project was deferred pending the results of the funding application in order not to render design costs ineligible.

On March 19, 2021, the Town received confirmation that the Tecumseh Road VIA Crossing Improvements project had been selected for 2021-2022 Rail Safety Improvement Funding. Subsequently, Dillon Consulting Ltd. was retained to undertake the detailed design for the project due to their past involvement in the crossing investigations and on-going work with the related Tecumseh CIP/Streetscape project. Preliminary designs have been prepared and discussions are on-going with VIA regarding their requirements/approvals.

Dillon Consulting Ltd. has been retained to complete detailed design, prepare tender documents, assist with tendering and assist with obtaining required approval for this project. Dillon Consulting Ltd. is working very closely with VIA to navigate through the railway approval process obtaining valuable intellectual knowledge regarding the railway requirements that needs to carry forward through construction. Continuity in the project consulting team is critical for the timely and successful completion of this project. It is recommended that we continue with Dillon Consulting Ltd. for construction engineering services related to contract administration and construction observation.

The estimated project cost of $2,132,200 includes $282,900 for storm sewers and $1,849,300 for road reconstruction.

Additional funding for this project is to be provided from Storm Sewer Lifecycle Reserve in the amount of $120,400.

- **Reference Reports:**

  - Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan" December 10, 2019; Motion RCM-401/19
  - Report PWES-2020-24, "Rail Safety Improvement Program – Infrastructure, Technology and Research Funding (RSIP-ITR) 2021/2022 Intake VIA Crossing at Lesperance Road (Chatham Mile 99.31)", July 28, 2020; Motion RCM-236/20
  - Report PWES-2021-32, "Rail Safety Improvement Program, 2021/2022 Intake Agreement for Rail Grade Crossing Improvements VIA Rail at Lesperance Road (Chatham Mile 99.31)", July 13, 2021; Motion RCM-229/21

A4. Expansion/Improvements to the Public Works Yard (North)

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$110,000	**$50,000**	$0	$160,000

Additional storage area is required for Public Works equipment and materials. As part of the approved 2019-2023 PWES Five Year Capital Works Plan, Administration recommended that the Lacasse Public Works yard be expanded westerly in 2019 to include a portion of the previous Town dog park which was closed approximately 10 years ago. This project is progressing and to date, the following works have been completed:

- Removal of existing perimeter fence/shrubs/trees and stripping of topsoil.
- New perimeter berm has been constructed with cedar/spruce tree screening and mulch.
- Drainage has been installed.
- A new waterline has been installed to the new wash bay.
- Purchase and installation of mass concrete blocks for material storage separation walls for new construction materials (i.e. sand, clear stone, granular 'A', etc.) including identification signage.
- Asphalt pad for new material storage areas.
- Increase asphalt pad at salt shed to improve truck loading operations and reduce potential soil impacts.
- Fine grading and compaction of recycled aggregate.

The remaining works generally include the following:

- Purchase and installation of additional mass concrete blocks for material storage separation walls for debris from construction sites (i.e. broken concrete, broken asphalt, excess soil, etc.).
- Asphalt pad for construction debris storage area including stone base improvements.
- Asphalt entrance pad into service garage.
- Construction of a concrete pad for the wash bay.

Funding in the amount of $110,000 for the works completed to date has been provided through the Road Lifecycle Reserve. This project will carry over into 2022 with additional budget of $50,000 requested from the Road Lifecycle Reserve to complete the improvements.

➢ **Reference Reports:**

- Report PWES-2018-08, "2019-2023 Public Works & Environmental Services Five Year Capital Works Plan", December 11, 2018; Motion RCM-361/18.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

A5. Annual Project Contingency

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$0	**$250,000**	$0	$250,000

Administration recommends carrying an Annual Project Contingency for Public Works & Engineering Services. This allocation is for needs that arise from time to time that cannot be anticipated during the preparation of the PWES Five Year Capital Works Plan. The allocation will be used to address these needs in accordance with the Town Purchasing and Procurement Policies. Use of these funds would be communicated through quarterly budget variance reports to Council.

Funding for this Annual Project Contingency is to be provided from the Road Lifecycle Reserve in the amount of $250,000.

A6. 2022 Sidewalk Repair Projects

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$0	**$69,000**	$0	$69,000

The 2022 sidewalk program will be based on sidewalk conditions determined through the comprehensive sidewalk inspection conducted annually. Currently this inspection is completed by Public Works staff and, along with input from Council and residents, this information is used to develop the annual program for recommended sidewalk repair and replacements. Should this inspection generate large amounts of sidewalk replacement, a Request for Quotation (RFQ) will be issued.

Trip hazards identified throughout the Town will be addressed to keep the Town in compliance with minimum maintenance standards and as a risk management measure. Currently, a detailed list of sidewalks to be repaired/ replaced has not been generated. The funding requested is for an upset limit to carry out the work. Inspection and project administration will be carried out by PWES Staff upon award of the Contract.

Funding for this project is to be provided from the Sidewalk Lifecycle Reserve in the amount of $69,000.

A7. Riverside Drive Trail

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$1,239,300	**$628,100**	$0	$1,867,400

On April 8, 2021 a Special Council Meeting (SCM) was held at which time the Town's Consultants, Bezaire Partners and Dillon Consulting Ltd., presented a detailed review and analysis, inclusive of public consultation, comparative costs, key issues, and an evaluation of trail options. Based on their comprehensive evaluation, the Consultants recommended proceeding with the detailed design and construction of a 2.4m - 2.7m wide asphalt, off-road multi-use recreational trail along the south side of Riverside Drive between the Tecumseh/Windsor border and Manning Road. During the SCM, numerous delegations presented information related to the proposed trail. Following the SCM, the Consultant's presentation was uploaded to the Town's PlaceSpeak platform for a 30-day period to provide an opportunity to receive further public input on the project. Feedback received through the PlaceSpeak platform was forwarded to the Town's Consultants for their review and consideration during the preparation of their final recommendations for the trail.

At the June 22, 2021 Regular Meeting of Council, Administration brought forward Report No. PWES-2021-29 at which time the Town's Consultants presented their final trail recommendations. Following the presentation, Council approved the report recommendations to proceed to the detailed design stage for the installation of a recreational multi-use trail on the south side of Riverside Drive, from the Tecumseh/Windsor border to Manning Road, in accordance with the recommendations from the Town's Consultant.

At the July 27, 2021 Regular Meeting of Council, Council approved the recommendations of Report No. PWES-2021-35 which authorized the submission of an application to the Canada Community Revitalization Fund for the Riverside Drive Trail Project. In a news release published on August 13, 2021, the federal government announced its financial support from the Canada Community Revitalization Fund for post-pandemic recovery for the Town of Tecumseh to help fund our community infrastructure project, the Riverside Drive Trail, in order to rebound from the effects of the COVID-19 pandemic. This one-time special intake will fund up to 75%, to a maximum of $750,000, of the total eligible project costs of the Riverside Drive Trail.

The Town's Consultants are proceeding with the detailed trail design and construction is planned for 2022.

Based on the detailed design completed to date, additional works have been identified regarding the following:

- utility conflicts and required relocations
- property/easement requirements
- conflicts with private landscaping within the Town right of way
- additional drainage needs
- potential increase in asphalt thickness to accommodate larger operational (snow removal) equipment
- potential streetlight improvements

Based on the above, an updated project cost estimate has been calculated. The updated cost estimate also accounts for observed market value increases in recent local tenders. The estimated project cost is $1,867,400, which includes $1,662,000 for new infrastructure, $25,000 for watermains and $180,400 for storm sewers.

Bezaire Partners and Dillon Consulting Ltd. have been retained to complete preliminary design, detailed design (including consultation with landowners), prepare tender documents and to undertake excess soil investigations for this project. In order to complete construction in 2022, this project needs to advance in a timely manner. There have been many challenges with this project and substantial public consultation has occurred. Continuity through to the end of construction is imperative for the successful completion of this project. It is recommended that we continue with Dillon Consulting Ltd. for construction engineering services related to contract administration and construction observation with Bezaire Partners providing additional support services.

The additional funding for this project is to be provided from the following:

- Infrastructure Reserve in the amount of $460,200.
- Watermain Reserve Fund in the amount of $25,000.
- Storm Sewer Lifecycle Reserve in the amount of $142,900.

- **Reference Reports:**

  - Report PBS No. 32/16, "County Wide Active Transportation Study Plan, Town of Tecumseh 2017 Project, Trail on Riverside Drive from Tecumseh/Windsor Municipal Boundary to Manning Road", October 25, 2016; Motion RCM-372/16.
  - Report PWES No. 54/16, "2017-2021 Public Works & Environmental Services Capital Works Plan", December 13, 2016; Motion RCM-442/16.
  - Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.
  - Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.
  - Report PWES-2021-04, "Riverside Drive Trail: Tecumseh-Windsor Border to Manning Road, Summary of Public Information Centres and Recommendation", April 8, 2021; Motion SCM-05/21.
  - Report PWES-2021-29, "Riverside Drive Trail: Final Review and Recommendation", June 22, 2021; Motion RCM-196/21.
  - Report PWES-2021-35, "Canada Community Revitalization Fund", July 27, 2021; Motion RCM-259/21.
  - Report PWES-2021-40. "Canada Community Revitalization Fund – Riverside Drive Trail", September 14, 2021; Motion RCM-287/21.

A8. Bridge and Culvert Needs Study (with Spans > 3.0m)

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$0	**$39,000**	$0	$39,000

The Town has a total of eighteen (18) existing bridges and culverts with a span greater than 3.0 metres that need to be inspected in accordance with the latest version of the Ontario Structure Inspection Manual (OSIM) published by the Ministry of Transportation of Ontario (MTO).

Inspections of the bridges and culverts are to take place every two years as legislated by Section 2(3) of The Public Transportation and Highway Act: "The structural integrity, safety and condition of every bridge shall be determined through the performance of at least one inspection in every second calendar year under the direction of a professional

engineer and in accordance with the Ontario Structure Inspection Manual". With the last inspection taking place in 2020, it is now necessary to carry out a new Bridge and Culvert Needs Study in 2022 to comply with the legislation.

Continuity is an important component in assessing the on-going changes to the Town's bridge infrastructure. Administration recommends retaining Dillon Consulting Ltd. to provide engineering services on this project based on their past completion of the 2003, 2008, 2014, 2016, 2018 and 2020 Bridge and Culvert Needs Studies.

Funding for this project is to be provided from the Bridge Lifecycle Reserve in the amount of $39,000.

A9. Water Sampling Station Replacements

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$0	**$37,000**	$0	$37,000

In accordance with the Safe Drinking Water Act, 2002 and Ontario Regulation 170/03, the owner of a drinking water system and the operating authority for the system are required to take water samples from the distribution system and have those samples tested to ensure the required water quality is maintained. The Town has 34 water sampling stations within the system and a minimum of 23 water samples are taken and tested each week. Depending on location, water sampling stations have an approximate service life of 10 years. The service life of water sampling stations that are subjected to road salt is typically less than 10 years due to corrosion which also creates the risk of a sample being contaminated with rust.

Based on the condition of the existing water sampling stations, Administration recommends the replacement of 10 water sampling stations in 2022. It is planned that this work will be completed by Town Water Operators and the estimated cost is $37,000.

Funding for this project is to be provided from the Watermain Reserve Fund in the amount of $37,000.

A10. County Road 42 and County Road 43 Improvements

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$855,950	**$3,233,800**	$437,550	$4,527,300

As part of the County of Essex 25-year capacity program, CR42 and CR43 road improvements were identified and the County of Essex engaged Dillon Consulting Ltd. to undertake the detailed design for the following:

- Widening of CR42 from the City of Windsor border with the Town of Tecumseh to the Pike Creek located in the Town of Lakeshore.
- Diversion of CR43 from Shields Avenue to approximately 250 metres south of CR42.

Based on these proposed road improvements, Administration identified municipal services within the project limits that need to be designed and incorporated into the County's overall project. These municipal services included watermains, sanitary sewers and overland storm water flow routing from existing development located on the north side of CR42 to the Pike Creek located to the south of CR42.

In December 2018, Council approved the recommendations of Report PWES-2018-08 that included undertaking advanced engineering design for the above noted municipal services to allow this work to be incorporated into the County of Essex contract drawings and specifications for their CR42 improvements project. In accordance with this report, Dillon Consulting Ltd. was retained to complete the advance engineering.

Based on the advanced engineering, it was recommended that the following Town municipal services be included in the County of Essex CR42 improvements project:

- Construction of a new 400 mm diameter trunk watermain on CR19 in the vicinity of the proposed CR19/42 roundabout.
- Construction of a new 400 mm diameter trunk watermain from the proposed CR19/42 roundabout to the 12th Concession Road.
- Replacement of a section of existing 150 mm diameter watermain on the 12th Concession Road with new 300 mm diameter PVC watermain.
- Replacement of a section of the existing 200 mm diameter watermain on CR43 with new 200 mm diameter PVC watermain.
- Replacement of existing sanitary connections on CR42 with new PVC service connections.
- Installation of landscaping within the proposed roundabouts at CR19/42 and CR42/43 to enhance the aesthetic nature of the entry points into the Town of Tecumseh.
  (Note: The above noted 400 mm diameter trunk watermains are in accordance with the 2018 Water and Wastewater Master Plan Update and are components of project W-5A (Trunk watermain on Manning Road–CP Railway to CR42) and project W-5B (Trunk watermain on CR42–11th Concession Road to Manning Road).)

The original advanced engineering for the sanitary sewer focused on finding a solution to address conflicts with the proposed new storm sewer. Subsequent to the original

advanced engineering work, additional investigations were undertaken to confirm the sanitary servicing needs for the entire existing settlement area located on the south side of CR42. It was originally proposed to install a new sanitary sewer on the south side of CR42 to service only the properties that are currently connected into the existing sanitary sewer. With the assistance of the updated sanitary sewer model, it was determined that the sanitary sewer being proposed to address conflicts with the storm sewer was not large enough to accommodate the entire settlement area on the south side of CR42. The additional assessment also determined that some downstream improvements are required in the existing sanitary sewer system to address the estimated future flows from the entire settlement area. To avoid costly future sanitary sewer improvements after the CR42 improvements are completed, it is recommended that the required sanitary sewer capacity improvements be included in the County of Essex contract drawings and specifications for the their CR42 Improvements Project. Current budget requests are based on the full cost of the sanitary works, however, there may be potential for some cost sharing with the County. Future discussions with the County are required.

In addition, based on the previous CR42 phasing plans, it was anticipated that the Town's 12th Concession Road (CR42 to Dimu) watermain replacement project and the Banwell Road watermain replacement project could be constructed as part of the Town's 2021 Various Watermain Replacements Project in advance of the CR42 Improvements Project. Based on the County's current phasing plan, however, it is now recommended that these watermain replacements be included in the County of Essex contract drawings and specifications for their CR42 Improvements Project.

The estimated project cost of $4,527,300 includes $70,000 for road works, $2,520,700 for watermains and $1,936,600 for sanitary sewers.

It is recommended that the Town continue with Dillon Consulting Ltd. for construction engineering services related to contract administration and construction observation based on their current involvement with the advanced engineering and since they will be undertaking the contract administration and construction observation for the overall County project.

Additional funding for this project is to be provided from the following:

- Wastewater Sewers Reserve Fund in the amount of $1,861,700
- Watermain Reserve Fund in the amount of $1,372,100

➢ **Reference Reports:**

- Report PWES-2018-08, "2019-2023 Public Works & Environmental Services Five Year Capital Works Plan", December 11, 2018; Motion RCM-361/18.

- Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.
- Report CAO-2020-06, "Boundary Adjustment Agreement and the County Road 43 Class Environmental Assessment Study", August 11, 2020; Motion RCM-245/20.

A11. Watermain Anode Program – Inspection/Replacement

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$259,690	**$20,000**	$0	$279,690

Ductile and cast iron pipe make up approximately 20% of the total amount of watermain in the Town's watermain distribution system. Due to the continual corrosion problems and high failure rates associated with ductile and cast iron pipe, the Town of Tecumseh Water Division commenced an anode protection program in 2015.

PWES had included the Watermain Anode Program – Inspection/Replacement in its approved 2021 Capital Works Plan. In September of 2021, the tender was awarded to C.P. Systems to undertake the continuation of the program. Following award of the tender, C.P. Systems advised that there is shortage of anodes and they are unable to obtain the enough anodes to complete the work in 2021. Accordingly, it was agreed that the work would be postponed until 2022 when there is a sufficient supply of anodes to allow the contractor to complete the work in its entirety.

Additional funding is being requested for the contract administration and inspection of the project.

Additional funding for this project is to be provided from the Watermain Reserve Fund in the amount of $20,000.

➢ **Reference Reports:**

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects, December 8, 2020; Motion RCM-375/20.
- Report PWES-2021-43, "Watermain Anode Program, Inspection/Replacement - Tender Award", September 28, 2021; Motion RCM-306/21.

A12. North Tecumseh Water Distribution Model

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$0	**$70,000**	$0	$70,000

In March 2020, Council approved the recommendations of Report PWES-2020-15 which adopted the Tecumseh 2018 Water and Wastewater Master Plan Update.

The Town of Tecumseh receives its potable water supply from the ENWIN Utilities Water System. In 2019, the ENWIN Utilities Water System Master Plan was completed which incorporated information from the Tecumseh 2018 Water and Wastewater Master Plan Update.

As a result of the Master Plan recommendations, discussions have occurred between Town Administration and ENWIN to optimize the water system needs. ENWIN currently has a functional water model which accurately depicts the City of Windsor and Town of LaSalle's water distribution systems. ENWIN's model includes a high level layout of the Tecumseh water distribution system, however, to optimize the system requirements a more detailed model of the Tecumseh water system is required.

In 2021, ENWIN, through coordination with the Town, expanded their water model to include a detailed assessment of the Town's South water distribution system to more accurately represent the system and allow the model to be used to determine the best location for an elevated water storage facility within the ENWIN-Tecumseh system. The detailed water model will also allow Tecumseh to assess existing water flows and pressures within the south Tecumseh system and to develop strategies to improve water supply in identified areas of concern. This work is expected to be completed in early 2022.

Administration is recommending a similar water model update be completed on the Town's North water distribution system. This model will provide insight into the existing characteristics of the water distribution system, assist with the design of future watermain replacement projects and assess available capacity to accommodate infill and redevelopment within the Town.

Accordingly, Administration recommends that ENWIN be approached to expand the scope of service with their water modelling consultant to build an accurate model of the Town's North water distribution system. It is recommended that an allowance of $70,000 be provided for this project.

Funding for this project is to be provided from the Watermain Reserve Fund in the amount of $70,000.

➢ **Reference Reports:**

- Report PWES-2020-15, "2018 Water and Wastewater Master Plan Update, Study Completion and Final Adoption", March 10, 2020; Motion RCM-87/20.

A13. Del Duca Drive Sanitary Sewer Extension

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$472,350	**$52,000**	$3,321,350	$3,845,700

In December 2018, Council approved the recommendations of Report PWES-2018-08 that authorized Administration to complete the engineering design for the Del Duca Drive Sanitary Sewer Extension. In accordance with this report, Stantec Consulting Ltd. was retained to complete the detailed design.

The Del Duca Drive Sanitary Sewer Extension is a continuation of the sanitary sewer servicing within the 8th Concession Road sanitary service area. The project includes the extension of a sanitary sewer along Del Duca Drive.

The Oldcastle Stormwater Master Plan is being completed concurrently with the design for the Del Duca Sanitary Sewer Extension. Through the Oldcastle Stormwater Master Plan it was determined that a future major storm event flow route is required from the Del Duca Drive cul-de-sac southerly to the Hurley Relief Drain. Coordination has occurred between these two projects to ensure that the Del Duca design provides for the anticipated recommendations of the Oldcastle Stormwater Master Plan. Based on this coordination, it was determined that a previously identified sanitary easement needs to be modified to accommodate a future storm sewer. Details of the easement requirements were finalized in 2021 and discussions are on-going with the property owners where easements are required.

It is anticipated that completion of the detailed design, easement acquisition, geotechnical investigations related to new regulations from the Ontario Ministry of Environment, Conservation and Parks for excess soil generated from construction projects, utility relocations, preparation of tender documents and obtaining required approvals will occur in 2022. Construction is tentatively planned to proceed in 2023.

A future report will be brought forward to Council with recommendations related to easement acquisition.

The project cost of $3,845,700 includes $1,448,500 for road reconstruction, $1,130,700 for storm sewers, $1,235,700 for sanitary sewers and $30,800 for watermains. Estimated recoveries from landowners for the sanitary sewers would be approximately $1,050,000 and will be refined once the By-Law for the 8th Concession Road sanitary service area is completed.

Funding for this project is to be provided from the following:

- Road Lifecycle Reserve in the amount of $5,000
- Wastewater Sewers Reserve Fund in the amount of $20,000
- Storm Sewer Lifecycle Reserves in the amount of $24,000
- Watermain Reserve Fund in the amount of $3,000

➢ **Reference Reports:**

- Report PWES-2018-08, "2019-2023 Public Works & Environmental Services Five Year Capital Works Plan", December 11, 2018; Motion RCM-361/18.

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

A14. Sanitary Sewer Model Update and Flow Monitoring

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$315,000	**$30,000**	$0	$345,000

In June 2018, Council approved the recommendation of Report PWES-2018-17 "Flood Mitigation Strategy" that the report be received. Continued flow monitoring and sanitary sewer modeling were recommended flood mitigation strategies in the report. The report further identified that updating the sanitary sewer model would be incorporated within the 5-year PWES Capital Works Plan.

In December 2018, Council approved the recommendations of Report PWES-2018-08 that authorized Administration to complete a Sanitary Sewer Model Update and Flow Monitoring project. In accordance with this report, Dillon Consulting Ltd. was retained to undertake the modelling project.

Following commencement of the study, the original project scope was expanded to determine if the impacts of the Town's Inflow and Infiltration Removal project could be quantified based on the 2019 flow monitoring program to assist with sewer capacity assessments for new development proposals. In addition, to obtain design efficiencies and improve available information to assist with development inquiries, Administration recommended expanding the scope of work in 2020 to include modelling assessments related to the Tecumseh CIP area as well as the reconfiguration of the future sanitary trunk servicing within the Tecumseh Hamlet area. This would include integration of the Tecumseh Hamlet and Manning Road Secondary Planning areas and refinements to the existing County Road 42 service area for both dry and wet weather flow conditions.

A significant component of the model development is model calibration/verification. In order to calibrate/verify a model, flow monitoring data is used to confirm that the flows

generated by the model are representative of actual flows measured in the sewers during recorded events. In order to assess rain derived inflow and infiltration, a significant rainfall event is required. During the scheduled flow monitoring period, only minor rain events were received. Accordingly, the flow monitoring was extended into Fall 2020.

Prior to finalizing the report, a significant rainfall event occurred in the Town on July 16, 2021. This event provided another opportunity to verify the model generated outputs. Calibration / verification of the model is on-going and the final report for this project is expected in 2022. The updated model will provide insight into the existing flow characteristics of the sanitary sewer system and on available sanitary sewer capacity to accommodate infill development within the Town.

Funding for this project is to be provided from the Wastewater Sewers Reserve Fund in the amount of $30,000.

- **Reference Reports:**

- Report PWES-2018-17, "Flood Mitigation Strategy", June 26, 2018; Motion RCM-194/18.
- Report PWES-2018-08, "2019-2023 Public Works & Environmental Services Five Year Capital Works Plan", December 11, 2018; Motion RCM-361/18.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

A15. 8th Concession Sanitary Sewer By-Law

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$0	**$45,000**	$0	$45,000

The Oldcastle Hamlet is approximately 815 Ha of land which has largely developed for industrial purposes. The majority of existing developments within the hamlet had historically been serviced by private on-site sewage disposal (septic) systems. A number of studies, however, identified significant pollution problems and potential health risks attributed to the discharge of raw wastewater from failing septic systems into roadside open ditches. As a result of these studies, the Town commenced the phased introduction of sanitary sewers into the Oldcastle Hamlet in 2010. The Oldcastle Hamlet is serviced by two trunk sanitary sewers: North Talbot Road Trunk Sanitary Sewer and 8th Concession Road Trunk Sanitary Sewer.

In December 2011, Council approved the recommendations of PWES Report No.39/11 where it was recommended the cost of the sanitary sewer collection system (including

the municipal sanitary sewers (sewer mains) and the pipes within the municipal road allowances that connect each property to a sewer main (laterals)) for the area within the North Talbot Road Sanitary Sewer Outlet be assessed against the benefitting lands within that area based on Main and Lateral Charges in accordance with Part XII of the Municipal Act 2001; and that the "North Talbot Road Sanitary Sewer Outlet Main and Lateral Charges By-Law" be considered.

Similar to the cost recovery process for the North Talbot Road Sanitary Sewer Outlet Area, it was intended that the cost of the sanitary sewer collection system for the 8th Concession Road Sanitary Sewer Outlet Area would be assessed against the benefitting lands within that area in accordance with Part XII of the Municipal Act.

In February 2018, Council approved the recommendations of Report PWES-2018-01 which included the cost of the sanitary sewer collection system for the "8th Concession Road Sanitary Sewer Outlet" area be assessed against the benefitting lands within that area based on Main and Lateral Charges in accordance with Part XII of the Municipal Act; and that a by-law that outlines the charges be considered.

Administration recommends moving forward with the preparation of a Part XII By-Law to recover costs for the sanitary sewer collection system servicing the 8th Concession Sanitary Sewer Area from the benefitting lands. It is recommended that this be advanced in 2022 and that an allowance of $45,000 be allocated to retain a consultant to assist the Town with the creation of the By-Law.

Funding for this project is to be provided from the Wastewater Sewers Reserve Fund in the amount of $45,000.

- **Reference Reports:**

- Report PWES No. 39/11, "North Talbot Road Sanitary Sewer Outlet, Part XII By-Law", December 13, 2011; Motion RCM-427/11.
- Report PWES No. 45/17, "8th Concession Road Sanitary Sewer Outlet, Main and Lateral Charges Cost Recovery By-Law", September 26, 2017; Motion SCM-13/17.
- Report PWES-2018-01, "8th Concession Road Sanitary Sewer Outlet, Main and Lateral Charges Cost Recovery Part XII By-Law", February 13, 2018; Motion SCM-02/18.

A16. Sanitary Pump Station Improvements

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$120,250	**$82,000**	$691,000	$893,250

The Town owns and operates four (4) sanitary pump stations. The 2016 Pump & Metering Station Condition Assessment identified 'Immediate Repairs' and '10 Year Repairs' for the sanitary pump stations. In addition, The Town contracts the Ontario Clean Water Agency (OCWA) as the Overall Responsible Operator for the Town's pump stations. Accordingly, OCWA also provides recommendation to the Town for the on-going maintenance needs of our pump stations.

Administration recommends the following sanitary pump station works be undertaken in 2022, based on the recommendations contained in the 2016 Pump & Metering Station Condition Assessment and the recommendations provided by OCWA:

- Sylvestre Drive Sanitary Pump Station (Estimated Cost $25,000)
  - Rebuild existing pump.
- Lakewood Sanitary Pump Station (Estimated Cost $22,000)
  - Insulate electrical building and add a heating/air conditioning unit to control the environment in the building.
  - Replace pressure transmitter.
- Gauthier Sanitary Pump Station (Estimated Cost $15,000)
  - New hardware for flow meter.
  - New level controller.
- SCADA Software/Server/Nodes Update (Estimated Cost $20,000)
  - Implement OCWA SCADA group as 1st responder for maintenance and support.
  - Connect all stations with remote access.

Funding for this project is to be provided from the Wastewater Facilities Reserve Fund in the amount of $82,000.

➢ **Reference Reports:**

- Report PWES No. 51/16, "2016 Pump & Metering Station Condition Assessment", December 13, 2016; Motion RCM-440/16.

A17. Oldcastle Storm Drainage Master Plan

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$490,000	**$45,000**	$0	$535,000

In December 2017, Council approved the recommendations of PWES Report No. 57/17 that authorized Administration to proceed with the Oldcastle Storm Drainage Master Plan. The Oldcastle Storm Drainage Master Plan focused on analysing the storm

infrastructure and development of a framework for how stormwater is addressed for new and re-developments. This analysis determined how storm infrastructure functions during minor rainfall events (what can be contained in ditches, drains and sewers), and major rainfall events (which would follow overland flood routes). The Master Plan is following the Municipal Class Environmental Assessment (EA) process and is equivalent to the same steps that a Schedule 'B' EA would follow.

Two Public Information Centres were held (October 17, 2019 & January 29, 2020) that depicted information on existing drainage conditions, alternative mitigation measures and anticipated recommended solutions to solicit feedback from the public.

During 2020/2021, the project scope expanded to include coordination efforts with a proposed residential development in the Oldcastle area to ensure that the proposed residential stormwater storage facility will complement the future regional storage facility required for the Hurley Relief Drain watershed. Coordination also occurred with the Town's Del Duca Drive sanitary sewer project. Based on the investigation completed as part of the Master Plan, it was determined that both DelDuca Drive and Ure Street have the potential for significant surface ponding during major storm events. Under existing conditions, once surface ponding reaches a certain elevation, it spills easterly towards the 8th Concession Road between existing buildings and across private properties in an uncontrolled manner. As a result, the design for the DelDuca project, incudes storm sewer improvements to create a future planned overland follow route to the Hurley Relief Drain. Additional consultation also took place with the Town of LaSalle, City of Windsor, the Ministry of Transportation (MTO) and private landowners that would be impacted by the proposed stormwater solutions. As a result of the feedback received, significant additional analysis was undertaken to develop a revised strategy for the Wolfe Drain watershed. Work on the revised strategy continued in 2021 with a revised draft report provided to the Town in October 2021.

The final Master Plan report will be brought forward to Council in early 2022 to obtain approval to advertise the Notice of Study Completion to initiate the mandatory 30-day public and agency review period. Additional funding is being requested for 2022 for cost overruns encountered throughout the report finalization and public consultation process. The additional work reduced potential impacts to existing private industrial lands, allowed for a recently proposed private industrial site expansion to proceed so the owners could satisfy their production commitments and provided a number of potential solutions for the Wolf Drain watershed pending the completion of the on-going Turkey Creek Watershed Assessment.

Additional funding for this project is to be provided from the Storm Sewer Lifecycle Reserve in the amount of $45,000.

➢ **Reference Reports:**

- Report PWES No. 57/17, "2018-2022 Public Works & Environmental Services Capital Works Plan", December 12, 2017; Motion RCM-441/17.
- Report PWES-2018-17, "Flood Mitigation Strategy", June 26, 2018; Motion RCM-194/18.
- Report PWES-2018-21, "National Disaster Mitigation Program-Intake 5", September 11, 2018; Motion RCM-272/18.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.
- Report PWES-2021-48, "NDMP Extension for Intakes 3, 4 & 5 A19 Transfer Payment Agreement Amendment", December 14, 2021; Motion RCM-399/21.

A18. Scully & St. Mark's Storm Pump Station & Riverside Drive Storm Sewers

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$1,297,250	**$15,752,750**	$0	$17,050,000

This project consists of decommissioning the St. Mark's storm pump station and redirecting those flows into an upgraded and expanded Scully storm pump station to provide a greater level of service. The consolidated Scully St. Mark's pump station is to have increased pump capacity to accommodate the additional flows from the current St. Mark's service area, as well as other adjacent areas where interconnections and overland flows have been identified as part of the Town's Storm Drainage Master Plan (2019). This project also includes trunk storm sewer improvements along Riverside Drive to add resiliency to the system and improve the level of service to address area-wide issues of surface flooding.

The project cost of $17,050,000 includes $15,107,000 for storm sewers and pumping stations, $415,000 for sanitary sewers and $1,528,000 for road reconstruction.

In October 2020 the Town was advised that our funding application to the federal Disaster Mitigation and Adaptation Fund (DMAF) was approved for funding totalling $10.7M for the following projects:

- Scully & St. Mark's Storm Pump Station & Riverside Drive Trunk Storm Sewers project (Estimated cost 17.05M).
- P.J. Cecile Storm Pump Station Improvements project (Estimated cost $9.70M).

Under DMAF, all works must be completed by March 31, 2028. The Scully & St. Mark's Storm Pump Station & Riverside Drive Trunk Storm Sewer project is a major infrastructure improvement project that will enhance the level of service and provide approximately 6-times more capacity than the existing pump station to accommodate the growing frequency of heavy rainfall events.

In February 2021, Council approved the recommendation of Report PWES-2021-03 that authorized the Mayor and Clerk to sign the DMAF agreement and also authorized that the Town's portion of the total project costs, being $16.05M of the total $26.75M, be funded through a combination of Lifecycle Stormwater Reserves and debt with up to $15M of debt to be incurred.

Throughout 2021 the Town's Consultant, Dillon Consulting Ltd., has continued with the engineering designs for the pump station and sewer improvements, which are nearing the 60% completion stage. In addition, the Greenhouse Gas Mitigation Assessment, a condition of the DMAF Agreement, commenced in late 2021 with completion scheduled for late January 2022.

It is planned to complete all design components of this project by Q3 2022 with tendering anticipated in Q4 2022/Q1 2023. In order to tender the project in 2022, it is necessary to obtain full budget approval through the 2022 Capital Works Plan.

Funding for this project, including the above noted debit, is to be provided from the following:

- Storm Sewer Lifecycle Reserve in the amount of $14,035,900
- Wastewater Sewers Reserve Fund in the amount of $316,450
- Road Lifecycle Reserve in the amount of $1,400,400

➢ **Reference Reports:**

- Report PWES-2018-17, "Flood Mitigation Strategy", June 26, 2018; Motion RCM-194/18.
- Report PWES-2018-08, "2019-2023 Public Works & Environmental Services Five Year Capital Works Plan", December 11, 2018; Motion RCM-361/18.
- Report PWES-2019-02, "Disaster Mitigation and Adaptation Fund, Special Spring 2019 Flooding Intake, Expression of Interest and Full Application", July 23, 2019; Motion RCM-229/19.
- Report PWES-2019-50, "Storm Drainage Master Plan, Study Completion and Final Adoption", December 10, 2019; Motion RCM-402/19.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

- Report PWES-2021-03, "Disaster Mitigation and Adaptation Fund, Agreement for Climate Change and Flood Resiliency Project, Storm Infrastructure Improvements", February 9, 2021; Motion RCM-40/21.

A19. P.J. Cecile (Kensington) Storm Pump Station

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$500,000	**$1,500,000**	$7,700,000	$9,700,000

This project consists of the construction of a new pump station over the footprint of the existing structure with increased capacity and larger inlet and outlet piping. The estimated project cost of $9,700,000 includes $9,426,000 for storm sewers and pump stations and $274,000 for road reconstruction.

As indicated in A18 above, the Town received federal funding for this project through the DMAF program. As noted, under the DMAF, all works must be completed by March 31, 2028.

The P.J. Cecile (Kensington) Storm Pump Station is a major infrastructure improvement project that will enhance the level of service and provide approximately 8-times more capacity than the existing pump station to accommodate the growing frequency of heavy rainfall events.

This project is subject to the same funding requirements and approvals as outlined in A18 above, and is on a similar track for detailed engineering design and tendering. Accordingly, it is necessary to obtain full budget approval for the detailed engineering through the 2022 Capital Works Plan.

Funding for this project, including the above noted debit, is to be provided from the following:

- Storm Sewer Lifecycle Reserve in the amount of $1,457,500
- Road Lifecycle Reserve in the amount of $42,500

➢ **Reference Reports:**

- Report PWES-2018-17, "Flood Mitigation Strategy", June 26, 2018; Motion RCM-194/18.
- Report PWES-2018-08, "2019-2023 Public Works & Environmental Services Five Year Capital Works Plan", December 11, 2018; Motion RCM-361/18.

- Report PWES-2019-02, "Disaster Mitigation and Adaptation Fund, Special Spring 2019 Flooding Intake, Expression of Interest and Full Application", July 23, 2019; Motion RCM-229/19.
- Report PWES-2019-50, "Storm Drainage Master Plan, Study Completion and Final Adoption", December 10, 2019; Motion RCM-402/19.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.
- Report PWES-2021-03, "Disaster Mitigation and Adaptation Fund, Agreement for Climate Change and Flood Resiliency Project, Storm Infrastructure Improvements", February 9, 2021; Motion RCM-40/21.

A20. Tecumseh Road Storm and Road Improvements Project

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$217,0000	**$4,571,100**	$0	$4,788,100

In January 2021, the Greater Essex County School Board (School Board) submitted a Site Plan Control Application to build the new North Shore School at 13800 Tecumseh Road, which is to replace the existing D.M. Eagle School located at 14194 Tecumseh Road. Existing infrastructure is inadequate to accommodate the school's stormwater needs on the site. Accordingly, the School Board expressed an interest in the new municipal storm sewer (Project B-1 from the Storm Drainage Master Plan, 2019) proceeding in order to facilitate the timely construction of a new school.

In March 2021, Council approved the recommendations of Report PWES-2021-05 that added the Tecumseh Road Storm Sewer and Road Improvements Project to the 2021 PWES Capital Works Plan and authorized the completion of detailed design in 2021 with construction anticipated to proceed in 2022. In accordance with the recommendations, Stantec Consulting Ltd. was retained to complete detailed engineering design, prepare plans, specifications, tender documents and to assist with obtaining all required approvals.

The estimated project cost of $4,788,100 includes $2,687,200 for road reconstruction, $1,995,600 for storm sewers, $38,300 sanitary sewers and $67,000 for watermains. There are anticipated recoveries from the County of Essex of approximately $1.5M related to the road reconstruction component under the County Connecting Link Agreement. The estimated recovery will be refined once the tender costs are known. Any additional roadway improvements related to the proposed school site (i.e. traffic signal, turning lanes, sidewalks, etc.) would be borne by the School Board. These details will be determined and accounted for in the Site Plan Agreement that will be

negotiated with the School Board and brought forward for Council approval under a separate future report.

Provided that the School Board confirms the school is moving forward, and that an acceptable cost share agreement is negotiated with the School Board, it is recommended that this project be constructed in 2022.

Stantec Consulting Ltd. has been retained to complete detailed engineering design, prepare plans, specifications, tender documents and to assist with obtaining all required approvals. Provided confirmation from the School Board is received, this project will need to advance in a timely manner in 2022. It is recommended that we continue with Stantec Consulting Ltd. for construction engineering services related to contract administration and construction observation.

Additional funding for this project is to be provided from the following:

- Road Lifecycle Reserve in the amount of $2,554,200
- Wastewater Sewers Reserve Fund in the amount of $38,300
- Storm Sewer Lifecycle Reserves in the amount of $1,911,600
- Watermain Reserve Fund in the amount of $67,000

➢ **Reference Reports:**

- Report PWES-2018-17, "Flood Mitigation Strategy", June 26, 2018; Motion RCM-194/18.
- Report PWES-2019-50, "Storm Drainage Master Plan, Study Completion and Final Adoption", December 10, 2019; Motion RCM-402/19.
- Report PWES-2021-05, "Amendment to the 2021 PWES Capital Works Projects, Tecumseh Road Storm Sewer and Road Improvement Project from East of Lexham Gardens to Regent Road", March 9, 2021; Motion RCM-74/21.

Section B: Carry Over Projects from 2021 Not Requiring Additional Funding in 2022

B1. Lanoue Street Improvements

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$488,300	**$0**	$558,700	$1,047,000

In 2019, Administration was authorized to proceed with the detailed design for the Lanoue Street Improvements (Manning Road to approx. 200m westerly) in 2020 and an

allowance for Tecumseh's share of the Manning/Lanoue intersection improvements was approved. The improvements consist of a three lane road cross-section, updated lighting and a new sidewalk on the south side of Lanoue. Subsequently, Stantec Consulting Ltd. was retained to complete the detailed design for this project.

Detailed design work will continue and is anticipated to be finalized in 2022. In addition, the required relocation of utility infrastructure is also being scheduled to avoid conflicts with the future road improvements.

To date, preliminary discussions have occurred between Administration from Tecumseh, Lakeshore and the County of Essex regarding a cost sharing agreement for the Manning /Lanoue intersection improvements. An allowance of $250,000 is being carried for potential costs associated with the Town's portion of the Manning/Lanoue intersection.

The estimated project cost is $1,047,000, which includes $991,500 for road improvements and $55,500 for storm sewers.

Funding for this project was previously provided from the Road Lifecycle Reserve in the amount of $488,300.

- **Reference Reports:**
  - Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.

B2. TTMP Bicycle Sharrows

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$15,000	**$0**	$0	$15,000

In 2020, Administration was authorized to proceed with the installation of Bicycle Sharrow pavement markings on the following streets:

- Little River Boulevard – Manning to Tecumseh/Windsor boundary
- Lacasse Boulevard – Full extent
- Arlington Boulevard – Full extent

The proposed works are in accordance with the Town's Transportation Master Plan, which aims to enhance the active transportation network and encourage sustainable transportation for all users. The installation of Sharrow pavement markings will provide awareness to drivers that the lane is shared with cyclists.

To date the materials required to complete this work have been procured and it is anticipated the Sharrows will be painted in 2022.

Funding for this work was previously approved from the Road Lifecycle Reserve in the amount of $15,000.

➢ **Reference Reports:**

- Report PWES No. 43/16, "Tecumseh Transportation Master Plan", December 13, 2016; Motion RCM-439/16.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B3. Brighton Road Traffic Improvements

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$30,000	**$0**	$0	$30,000

In 2020, Administration was authorized to proceed with minor improvements within the Brighton Road corridor consisting of traffic circle enhancements, pavement markings and signage improvements. These works were in accordance with the recommendations contained within the Consultant's report 'Brighton Road Corridor Review, Review of Intersection Traffic Control Operations".

To date a portion of the improvements have been completed, with the remainder of the works anticipated to be completed in the Spring/Summer 2022.

Funding for this project was previously approved from the Road Lifecycle Reserve in the amount of $30,000.

➢ **Reference Reports:**

- Report PWES-2019-48, "Brighton Road Corridor Review – Review of Intersection Traffic Control Operations, October 2019", November 12, 2019; Motion SCM-22/19.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B4. CWATS Study for Facility Enhancements for Crossing at Pike Creek/Tecumseh Road

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$6,000	**$0**	$0	$6,000

At the September 2020 Regular Meeting of Council, Council approved the recommendations of Planning & Building Services Report No. PBS-2020-32 which included the commencement of a study for a facility enhancement for the Tecumseh Road/Pike Creek crossing. The total estimated cost of the study is $20,000, of which the Town of Tecumseh and the Municipality of Lakeshore provided a contribution of $6,000 each, for a total of $12,000 (60%), with the County of Essex's share being $8,000 (40%), in accordance with the CWATS cost-sharing agreement.

The Consultant, WSP Canada Inc., was retained and commenced this study in late 2021 with the completion of the study anticipated in 2022.

Funding for this project was previously approved from the Infrastructure Reserve in the amount of $6,000.

- **Reference Reports:**

- Report PBS-2020-32, "County Wide Active Transportation System, Town of Tecumseh 2021 Proposed Projects – Study for Facility Enhancement for Crossing at Pike Creek/Tecumseh Road", September 22, 2020; Motion RCM-281/20.

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B5. Tecumseh Road Multi-Use Pathway Re-construction (Arlington to DM Eagle Public School

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$100,000	**$0**	$0	$100,000

In December 2019, Council approved the recommendations of Report PWES-2019- that authorized Administration to proceed with the full re-construction of the Tecumseh Road pathway from Arlington to DM Eagle. The works were to include complete removal of the existing asphalt path/granular base and the construction of a new gravel base, 2.4 metre-wide asphalt path and related restoration.

To achieve efficiencies, Administration currently plans to include this pathway re-construction in the Tecumseh Road Storm and Road Improvements Project. If the Tecumseh Road Storm and Road Improvements Project does not proceed in 2022, Administration may reconsider the pathway reconstruction as a standalone project.

Funding for this project was previously provided from the Road Lifecycle Reserve in the amount of $100,000.

- **Reference Reports:**

- Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B6. Lesperance Road Multi-Use Trail – CR22 to CR42

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$137,500	**$0**	$1,066,500	$1,204,000

In May 2019, Council approved the recommendation of Report No. PBS-2019-16 that endorsed this Multi-Purpose Pathway as a candidate project for funding through the Investing in Canada Infrastructure Program (2019 Intake of the Public Transit Funding Stream). Following this meeting, an application for funding was submitted which was ultimately approved by the funding agency. The maximum amount of funding available for this project is $466,707.

Dillon Consulting Ltd. was retained and is proceeding with the detailed design which is expected to be completed in 2022, with construction following in subsequent years.

Funding for this project was previously provided from the Infrastructure Reserve in the amount of $137,500.

- **Reference Reports:**

- Report PBS-2019-16, "Investing in Canada Infrastructure Program, 2019 Intake of the Public Transit Funding Stream, Lesperance Road Multi-Purpose Pathway – Cty Rd 22 to Cty Rd 42 Final Recommendation", May 28, 2019; Motion RCM-150/19.

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B7. Snake Lane Road Culverts (with Spans <3.0m) – Culverts No. 42, 53 & 54

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$192,500	**$0**	$1,632,500	$1,825,000

The 2016 Culvert Needs Study (Structures with Spans < 3.0m) identified the following Culverts for rehabilitation or replacement within a 1 to 5-year time frame:

- Culvert No. 42 – South Talbot Road Drain at Snake Lane Road (Est. cost $549,800)
- Culvert No. 53 – 9th Line Drain at Snake Lane Road (Est. cost $637,600)
- Culvert No. 54 – Webster Drain at Snake Lane Road (Est. cost $637,600)

In December 2020, Council approved the recommendations of Report PWES-2020-33 that authorized Administration to proceed with the 2021 capital works projects, which included moving forward with the design for Culverts No. 42, 53 & 54. Dillon Consulting Ltd. was retained and detailed design for these Culverts commenced in 2021 and it is anticipated the design will be completed in 2022. Construction is tentatively planned for 2023.

Funding for this project was previously provided from the Bridges Lifecycle Reserve in the amount of $192,500.

- **Reference Reports:**

- Report PWES No. 39/16, "2016 Culvert Needs Study (Structures with Spans < 3.0m)", November 8, 2016; Motion RCM-384/16.

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B8. Bridges (with Spans > 3.0m) – Baseline Road/Pike Creek Bridge No. 1005 Bank Stabilization

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$250,000	**$0**	$0	$250,000

During road inspections, settlement was observed adjacent to Bridge No.1005 located on Baseline Road at the Pike Creek Drain. Subsequent investigations revealed that scour/erosion is occurring at the bottom of the adjacent Pike Creek Drain bank resulting in bank instability and settlement. Based on a preliminary assessment, bank

stabilization works were recommended to address the bank scour/erosion and to stop the settlement of the road shoulder.

In December 2020, Council approved the recommendations of Report PWES-2020-33 that authorized Administration to proceed with this bank stabilization project. It was also recommended in the project description, that Dillon Consulting Ltd. be retained to undertake the following: detailed design for the bank stabilization works; assist with obtaining approvals; tender document preparation; assist with tendering; and to undertake contract administration/construction observation. Dillon Consulting Ltd. was recommended based on their previous involvement with the 2013/2014 Bridge No.1005 rehabilitation project and their current appointment for repair and improvement to the Pike Creek Drain under the provisions of the Drainage Act.

This project has not progressed in 2021 and is now being planned for 2022.

Funding for this project was previously provided from the Bridges Lifecycle Reserve in the amount of $250,000.

- **Reference Reports:**

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B9. 2020 Water and Wastewater Rates Study

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$20,000	**$0**	$0	$20,000

The last update to the Town's water and wastewater rates was completed in 2015. It is important to update these rates to ensure full cost recovery for the water and wastewater services provided by the Town. Full cost recovery is the generation of sufficient revenues to cover the cost of providing water and wastewater services which includes operations, capital works and the appropriate reserve contributions necessary for asset lifecycle replacement and growth.

In December 2019, Council approved the recommendations of Report PWES-2019-49 that authorized Administration to undertake a study in 2020 to update the Town's water and wastewater rates. It was further noted that Administration planned to complete the majority of this study in-house, however, an allowance of $20,000 was approved for potential external consulting assistance and peer review.

This study was delayed due to COVID-19 and reprioritization of staffing resources to other studies, but it is anticipated that the study will be completed in 2022.

Funding for this project was previously provided from the following:

- Watermain Reserve Fund in the amount of $10,000
- Wastewater Sewers Reserve Fund in the amount of $10,000

➢ **Reference Reports:**

- Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B10. County Road 43/Banwell Watermain – Intersection Road to South of CPR

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$130,900	**$0**	$607,100	$738,000

In December 2020 Council approved the recommendations of Report PWES-2020-33 that authorized Administration to proceed with the design, approvals and construction of a new watermain to connect the existing CR43 watermain to the existing watermain at the intersection of Banwell Road and Intersection Road. Connection of these existing watermains will add resiliency to the water supply for the Tecumseh Vista School, improve water quality and reduce the required number of auto flushers. It was further identified in the report that Dillon Consulting Ltd. would be retained to complete the design in 2021/2022 with construction to follow.

Based on the County of Essex revised phasing plan for their CR 42/43 improvements, it is anticipated that the design of the CR43/Banwell watermain will be coordinated with the County's project and that construction could commence in 2023/2024. Detailed design will commence in 2022.

Funding for this project was previously provided from the Watermain Reserve Fund in the amount of $130,900.

➢ **Reference Reports:**

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B11. 2021 Various Watermain Replacement Projects

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$1,108,100	**$0**	$0	$1,108,100

In December 2020, Council approved the recommendations of Report PWES-2020-33 that authorized Administration to proceed with following watermain replacement projects in 2021:

- 12th Concession Road Watermain (Estimated Cost $575,700)
  - Replacement of two sections of 150mm diameter cast iron watermain (approximately 480 metres), with a combination of new 150mm and 300mm diameter PVC watermain. The 300mm diameter watermain is located between CR42 and Dimu Drive and the 150mm watermain is located approximately 450 metres south of CR42.
  - Detailed design commenced in 2021 and is expected to be completed in 2022. The 300mm diameter watermain is anticipated to be constructed as part of the County's CR42 Improvements project. Construction for both sections of watermain is anticipated in 2022.
- CR43 Watermain (Estimated Cost $247,900)
  - Replacement of approximately 275 metres of 200mm diameter ductile iron watermain with a new 200mm diameter PVC watermain. This section of watermain starts at CR42 and extends northerly.
  - Detailed design commenced in 2021 and is expected to be completed in 2022, with construction following in subsequent years.
- Tecumseh Road Watermain – Brighton Road to Pike Creek (Estimated Cost $284,500)
  - Replacement of approximately 160 metres of 200mm diameter ductile iron watermain with a new 200mm diameter PVC watermain.
  - This watermain has been tendered with construction planned for January/February 2022.

Dillon Consulting Ltd. was retained for engineering services for all of the above watermain replacement projects. Based on the County of Essex revised phasing schedule for their CR 42/43 Improvements Project, it was determined that efficiencies could be obtained by having the CR43 and the 300mm diameter portion of the 12th Concession Road watermain replacements included as part of the County's project.

The estimated cost of $1,108,100 for the 2021 Various Watermain Replacements Project includes $23,100 for road works and $1,085,000 for watermains.

Funding for this project was previously provided from the following:

- Road Lifecycle Reserve in the amount of $23,100
- Watermain Reserve Fund in the amount of $1,085,000

➢ **Reference Reports:**

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B12. Hwy 3/CR34 Water Valve Replacement

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$456,300	**$0**	$0	$456,300

In December 2020, Council approved the recommendations of Report PWES-2020-33 that authorized Administration to proceed with the Hwy 3/CR43 Water Valve Replacement Project. This project consists of the replacement of water valves on the existing 300mm diameter watermain located on Highway No.3 (Oldcastle Road to CR34) and on CR34 (Highway No.3 to Malden Road). Blackrock Consulting Ltd. was retained to prepare tender documents and to assist with tendering and contract administration. Draft tender documents were prepared in 2021 along with preliminary discussions with approval agencies, in anticipation of construction commencing in 2022.

Funding for this project was previously provided from the Watermain Reserve Fund in the amount of $456,300.

➢ **Reference Reports:**

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B13. Sylvestre Drive Sanitary Sewer Extension

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$285,000	**$0**	$1,831,000	$2,116,000

In December 2017, Council approved the recommendations of PWES Report No. 57/17 that authorized Administration to proceed with engineering design work and the Class

Environmental Assessment for the Sylvestre Drive Sanitary Sewer Extension project. In accordance with this report, Dillon Consulting Ltd. was retained for this project.

This project consists of the extension of a sanitary sewer on Sylvestre Drive from Sylvestre Drive to CR19 (approximately 410-metres), as well as adjacent to the CR19 right-of-way through a future easement (approximately 215-metres) or within an expanded County Road right of way as part of a future CR19 improvement project. The installation of the sanitary sewers to service the properties identified within the study area is in keeping with Town's Water & Wastewater Master Plan, the Provincial Policy Statement, the County of Essex's Official Plan, and the Town's Official Plan to provide full municipal services to those properties within designated Settlement Areas.

It was originally planned to obtaining required approvals, prepare tender documents, obtain easements and undertake utility relocations in 2020 with construction tentatively planned to proceed in 2021. The County of Essex recently advised that future improvements to CR19 may commence in the next 5 to 10 years. The CR19 improvements will require the County to obtain a right of way widening over the area where the sanitary sewer easement is required. To obtain construction efficiencies and potentially avoid the need for the Town to obtain easements, it is beneficial to plan for this sanitary sewer construction when the CR19 improvements are completed. Accordingly, the potential construction of this project has tentatively been moved to beyond 2025. This schedule will be further updated in future Five Year Capital Works Plans as the County's schedule for the CR19 improvements is refined.

The project cost of $2,116,000 includes $1,114,000 for road works, $947,900 for sanitary sewers and $54,100 for storm sewers.

Estimated recoveries from landowners for the sanitary sewers would be approximately $947,900, with assessments to be calculated by Administration and invoiced back to the landowners by means of a Part XII by-law (Municipal Act, s.391). Detailed design has been paused, however, Administration intends to bring forward a future report to Council in 2022 regarding the cost recovery by-law.

Funding for this project was previously provided from the following:

- Road Lifecycle Reserve in the amount of $94,000
- Wastewater Sewers Reserve Fund in the amount of $186,800
- Storm Sewer Lifecycle Reserves in the amount of $4,200

➢ **Reference Reports:**

- Report PWES No. 57/17, "2018-2022 Public Works & Environmental Services Capital Works Plan", December 12, 2017; Motion RCM-441/17.

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- Report PWES-2019-31, "Sylvestre Drive Sanitary Sewer Extension, Municipal Class Environmental Assessment, Schedule B – Filing the Notice of Study Completion", July 23, 2019; Motion RCM-232/19.
- Report PWES-2019-51, "Sylvestre Drive Sanitary Sewer Extension, Municipal Class Environmental Assessment, Schedule B – Study Completion and Final Adoption", December 10, 2019; Motion RCM-403/19.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B14. County Road 46, Webster and Laval Sanitary Sewer Extension

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$445,250	**$0**	$4,968,250	$5,413,500

In December 2018, Council approved the recommendations of Report PWES-2018-08 that authorized Administration to complete the engineering design for the CR46 Webster and Laval Sanitary Sewer Extension. In accordance with this report, Dillon Consulting Ltd. was retained to complete the engineering design.

The CR46 Webster and Laval Sanitary Sewer Extension is a continuation of the sanitary sewer servicing within the 8th Concession Road sanitary service area. The project includes the extension of a sanitary sewer along CR46 from the 8th Concession Road to Webster Drive, as well as on Webster Drive (entire length), and the extension of a sanitary sewer through an easement just south of Highway 401. This project will also be coordinated with the County's planned road rehabilitation for CR46.

Detailed design, consultation with utility companies and preparation of final easement documentation continued in 2021. In addition, geotechnical investigations related to new regulations from the Ontario Ministry of Environment, Conservation and Parks for excess soil generated from construction projects commenced in late 2021. Detailed design will be completed in 2022 and discussions with Bell are on-going regarding the required relocation of Bell infrastructure. Preparation of tender documents, completion of the excess soil investigations and obtaining approvals will continue in 2022. Construction is tentatively planned to proceed in 2023.

The project cost of $5,413,500 includes $2,102,800 for road reconstruction, $533,100 for storm sewers, $1,456,800 sanitary sewers and $1,320,800 for watermains.

Estimated recoveries from landowners for the sanitary sewers would be approximately $1,767,000 and will be refined once the By-Law for the 8th Concession Road sanitary service area is in place.

Funding for this project was previously provided from the following:

- Road Lifecycle Reserve in the amount of $120,750
- Wastewater Sewers Reserve Fund in the amount of $166,700
- Storm Sewer Lifecycle Reserves in the amount of $77,400
- Watermain Reserve Fund in the amount of $80,400

➢ **Reference Reports:**

- Report PWES-2018-08, "2019-2023 Public Works & Environmental Services Five Year Capital Works Plan", December 11, 2018; Motion RCM-361/18.

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B15. Shoreline Management Plan

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$350,000	**$0**	$0	$350,000

In June 2018, Report PWES-2018-17 outlined the need for a Shoreline Management Plan as one of the recommended flood mitigation strategies. This Plan was subsequently incorporated within the 2020 5-year PWES Capital Works Plan. Thereafter, Zuzek Inc. was retained to complete the study.

The Shoreline Management Plan commenced in 2020 with public information centres held on October 29, 2020, April 20, 2021 and August 18, 2021. The Shoreline Management Plan generally includes the following components:

- Re-assessment of the 1:100-year Lake St. Clair flood elevations.
- A detailed shoreline property inventory including topographic information for each shoreline property within the Town of Tecumseh.
- Determination of vulnerable flood locations along the shoreline.
- Determination of extent of inland flooding based on lake water conveyance through vulnerable areas.
- Assessment of potential impacts of climate change.
- Assessment of lake flooding plus rain generated runoff (Integration with Dillon 2D Storm Drainage Master Plan model).
- Damage value estimates for public and private properties.
- High level conceptual mitigation measures that could be considered in the next phases of the study.

The study is expected to be finalized and reported to Council in 2022. It is intended that the final report to Council will include a presentation by the study consultant.

Funding for this project was previously provided from the Storm Sewer Lifecycle Reserve in the amount of $350,000.

- **Reference Reports:**

- Report PWES-2018-17, "Flood Mitigation Strategy", June 26, 2018; Motion RCM-194/18.
- Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B16. Stormwater Rate Study

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$45,000	**$0**	$0	$45,000

In December 2019, Council authorized Administration to undertake a Stormwater Rate Study (Report PWES-2019-49). The study was to assess the feasibility of implementing a user fee system to meet the significant funding requirements needed to implement stormwater infrastructure improvements. Watson & Associates Economists Ltd. (Watson) were retained to undertake the Study, which is nearing completion.

Funding for this project was previously provided from the Storm Sewer Lifecycle Reserve in the amount of $45,000.

- **Reference Reports:**

- Report PWES-2019-50, "Storm Drainage Master Plan, Study Completion and Final Adoption", December 10, 2019; Motion RCM-402/19.
- Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B17. Manning Road Secondary Plan Area – Stormwater Facility

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$2,780,000	**$0**	$9,955,000	$12,735,000

In December 2019 through Report PWES-2019-49, Council authorized Administration to complete the detailed design for the Manning Road Secondary Plan Area (MRPSA) stormwater facility and to move forward acquiring property for the MRSPA stormwater management pond in 2020. In accordance with this report, Dillon Consulting Ltd. was retained based on their previous work on the MRSPA EA, MRSPA EA Addendum and related Functional Servicing Report (FSR).

During 2020, the Town acquired property for the MRSPA stormwater management facility. In addition, prior to completing the detailed design for the MRSPA stormwater facility, the previous 2015 Environmental Study Report and FSR must be updated to reflect the current storm design criteria as provided in the Windsor/Essex Region Stormwater Management Standards Manual (December 2018). A draft version of the updated FSR has been prepared and is currently being reviewed by Administration. Additional assessment of the sanitary servicing requirements for the MRSPA area in relation to the overall Town's sanitary system network has also been undertaken.

Options for cost recovery are currently being considered by Administration, and a future report will be brought forward to Council regarding cost recovery recommendations for this project.

Funding for this project was previously provided from the Storm Sewer Lifecycle Reserve in the amount of $2,740,000.

- **Reference Reports:**

- Report PWES-2019-55, "Amendment to 2019-2023 PWES Five Year Capital Works Plan, Manning Road Secondary Plan Area, Stormwater Management Facility", November 12, 2019; Motion RCM-369/19.
- Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.
- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B18. Tecumseh Hamlet Environmental Assessment & Functional Servicing Report

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$805,000	**$0**	$0	$805,000

In December 2019, Council authorized Administration to undertake various initiatives to move forward with the Tecumseh Hamlet Secondary Plan area (Report PWES-2019-49). These initiatives included a stormwater management analysis, finalizing the road network and commencing the Class EA, which would run concurrently with the related planning process for the Tecumseh Hamlet Secondary Plan. It was further recommended that the FSR and the finalization of the Class EA be completed in 2021. Dillon Consulting was retained to undertake the identified design and Class EA.

Dillon Consulting Ltd. proceeded with the stormwater management analysis and developed preliminary pond sizes for the Tecumseh Hamlet. During this same time, Dillon Consulting Ltd. also proceeded with the City of Windsor Sandwich South Master Servicing Report and Little River Watershed Floodplain Mapping Project (SSMSR). Ultimately, drainage from the Tecumseh Hamlet Area outlets to Little River. The preliminary pond sizing for the Tecumseh Hamlet was based on the allowable release rates identified in the draft Upper Little River Watershed Drainage and Stormwater Management Master Plan Class Environmental Assessment (ULR study). The allowable release rates in the draft ULR study are very restrictive resulting in the need for large ponds. Based on the preliminary results from the City's SSMSR study, it appeared that larger release rates may be allowable from the Tecumseh Hamlet area without adversely impacting the existing flow regime of the Little River. Since the SSMSR is generating new floodline mapping, an in depth review and approval by ERCA was required prior considering larger release rates from the Tecumseh Hamlet area. Accordingly, completion of the Tecumseh Hamlet stormwater management analysis was delayed pending ERCA's review of the SSMSR.

In March 2021, an outlet capacity assessment and recommended allowable release rate summary memo for the Tecumseh Hamlet area was submitted to ERCA and in August, ERCA confirmed that they had no objections to the proposed release rates. With the allowable release rates confirmed, Dillon Consulting Ltd. is now moving forward with finalizing the stormwater management analysis and road network layout. Following completion of this work, the EA is proposed to be finalized in 2022.

The total estimated cost for Hamlet FSR/Class EA is $805,000 which includes design components of $98,000 for roads, $98,000 for water distribution, $113,000 for sanitary sewers and $496,000 for stormwater infrastructure.

It is recommended that Dillon Consulting Ltd. continue with the stormwater management analysis, the road network design, the FSR and the Class EA in 2022, which were previously paused pending completion of other studies.

Funding for this project was previously provided from the following:

- Road Lifecycle Reserve in the amount of $98,000
- Watermain Reserve Fund in the amount of $98,000
- Wastewater Sewers Reserve Fund in the amount of $113,000
- Storm Sewer Lifecycle Reserve in the amount of $496,000

➢ **Reference Reports:**

- Report PWES-2019-49, "2020-2024 Public Works & Environmental Services Five Year Capital Works Plan", December 10, 2019; Motion RCM-401/19.

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

B19. Turkey Creek Watershed Assessment – Phase 1 and 2

Previously Approved	**Requested for 2022**	Future Costs	Total Project Costs
$60,000	**$0**	$0	$60,000

Currently, various drainage/stormwater management studies are being undertaken in the Towns of Tecumseh, LaSalle and the City of Windsor. Many of these studies involve sub-watersheds of Turkey Creek or have the potential to be impacted by spill from the Turkey Creek watershed. These studies include Tecumseh's Oldcastle Stormwater Master Plan, Windsor's Sewer Master Plan and LaSalle's Howard-Bouffard Master Drainage Study. With the outlet of Turkey Creek extending through LaSalle to the Detroit River, LaSalle has raised questions with regard to potential flood impacts from both existing and proposed development within the Turkey Creek watershed.

The Oldcastle Stormwater Master Plan will include recommendations for drainage improvements for the Tecumseh portion of the Wolfe Drain. The Wolfe Drain drainage area is approximately 340 Ha with approximately 240 Ha being located in Tecumseh. The Wolfe Drain outlets into the Cahill Drain, which crosses under the Herb Gray Parkway and ultimately outlets into the Turkey Creek between Malden Road and Matchette Road. The total drainage area for the Turkey Creek is approximately 5,700 Ha. While the Tecumseh portion of the Turkey Creek drainage area is relatively small, runoff from Tecumseh flows downstream through a developed portion of LaSalle.

The existing floodplain mapping for Turkey Creek and related tributaries dates back to the early 1980s and 1990s. Since the completion of this mapping, significant development has occurred in each municipality. In addition, the Herb Gray Parkway was constructed which included works on significant tributaries of Turkey Creek.

At the request of LaSalle, a meeting was convened in 2020 with engineering staff from all three municipalities and ERCA. Based on the extensive changes that have occurred in this watershed, it was agreed that the watershed would benefit from a more coordinated approach to updating hydrology and hydraulics for Turkey Creek and other primary tributaries (i.e. Cahill Drain) to confirm the inputs, assumptions and recommendations of the various on-going studies within the Turkey Creek watershed.

At the request of LaSalle, with input from both Tecumseh and Windsor, ERCA prepared a Request for Proposal (RFP) titled “Turkey Creek Watershed Hydrologic and Hydraulic Modeling”. Dillon Consulting Ltd. and Landmark Engineers Inc. submitted a joint submission and have been retained for the study.

In general, the objectives for this undertaking is not to replace the other on-going studies, but rather to inform and provide the necessary information to allow for more consistent and coordinated solutions across the Turkey Creek Watershed. The primary objectives for this undertaking include the following:

- Updated hydrology for the entire Turkey Creek Watershed and its tributaries.
- Updated and combined hydraulic modeling of Turkey Creek and any necessary primary tributaries (e.g. Cahill Drain).
- Confirmation of potential drainage impacts on downstream receivers.
- Identification of the necessary assumptions relevant to each of the respective master drainage studies to allow for coordinated solutions within each of the more local undertakings (primarily Tecumseh’s Oldcastle Stormwater Master Plan, Windsor’s Sewer Master Plan and LaSalle’s Howard-Bouffard Master Drainage Study).

In December 2020, Council authorized Administration to participate in the Turkey Creek Watershed Assessment study (Report PWES-2020-33).

The Consultants have completed the Phase 1 portion of the study, which focused on building out the necessary components of the hydrologic and hydraulic model, field investigations, as well as rainfall data collection and a complete review of available reports (i.e. historic floodline reports, drainage reports, drainage studies, etc.).

The Phase 2 portion of the project will include further buildout of the Phase 1 models, validating flows and hydraulic grade lines under existing conditions, assessing the system under future development conditions, identifying areas of concern and making recommendations to address the identified concerns.

As part of the draft Oldcastle Stormwater Master Plan, a number of potential improvement options are recommended for the Wolfe Drain watershed based on various allowable release rates into the downstream drainage systems. The findings of the Turkey Creek Watershed Assessment are required to ultimately determine the preferred drainage improvements for the Wolfe Drain watershed. Accordingly, Administration recommends that Tecumseh continue to be a participating partner in the Phase 2 portion of this study. Participation in the study includes both technical and financial support. The financial component of the project would include ERCA's project management costs as well as Tecumseh's portion of the above noted Turkey Creek Watershed Hydrologic and Hydraulic Modeling study. The cost estimate for Phases 1 and 2 is approximately $380,000 (excluding HST) with cost sharing based on the percentage of contributing watershed area in each municipality (Windsor 85%, LaSalle 11%, Tecumseh 4%).

During the early stages of this project, ERCA (on behalf of the municipal partners) submitted an application for funding to Intake 6 of the federal National Disaster Mitigation Program. Subsequently, ERCA was informed that the funding application was successful and that, through the Bilateral Contribution Agreement between Public Safety Canada (Government of Canada) and the Ministry of Municipal Affairs and Housing (Province of Ontario), this project is able to receive 50% funding up to $182,000.

It is important to note that, if the findings of this study identify problems in the downstream watercourses, additional studies/designs may be required to develop solutions for those problems. Furthermore, once solutions are developed, they will need to be implemented. If issues are identified downstream of the Wolfe Drain, it is anticipated that Tecumseh would be requested to be a contributing partner in future studies and remedial works. At this time, it is premature to estimate potential future cost implications to the Town of Tecumseh.

Funding for this project was previously provided from the Storm Sewer Lifecycle Reserve in the amount of $60,000.

- **Reference Reports:**

- Report PWES-2020-33, "Pre-Approval of 2021 Public Works & Environmental Services Capital Works Projects", December 8, 2020; Motion RCM-375/20.

Section C: Municipal Drain Projects

Town of Tecumseh is obligated to manage, repair, maintain and improve the Town's 120 Municipal Drains (totaling 221km) in accordance with the Drainage Act, including assessing costs to the benefitting upstream landowners according to the most current by-law. Municipal Drains are not municipal infrastructure and only the actual Town assessments are funded from the general tax rate.

There are currently approximately 132 active drainage projects that the Town is undertaking. These works include new municipal drains (4), maintenance of existing drains (62), drain improvements requiring an engineer's report (48) and apportionment agreements (18) all of which are at various stages of completion. The Drainage Superintendent receives requests for maintenance or repair and improvements for Municipal Drains, and determines which section of the Drainage Act is most suitable to proceed with the request. These drainage requests, and subsequent works, are addressed as they occur and are brought before Council for their approval on a project by project basis.

Funding for the Town's assessment for Municipal Drains will generally come from the Drains Lifecycle Reserve.

Consultations

Financial Services
Development Services

Financial Implications

The capital expenditures proposed for 2022 total just over $28.0M in addition to unfinished works carried forward from 2021, with a preliminary estimate of an additional $71.5M projected for future years.

Generally speaking, funding for most projects is covered through reserves, reserve funds and grants where reserves and reserve funds accumulate funds through annual budget allocations. There is, however, long-term debt planned with respect to the Scully/St. Marks and PJ Cecile Storm Pumping Station projects, with borrowing estimated at $15M over the course of a few years commencing in 2022.

For reference, 2021 allocations to capital reserve/reserve funds total $14.7M, with $10.3M going towards general tax rate supported reserves (public works, parks, fire, etc.) and $4.4M going towards rate supported reserve funds (water and wastewater).

Although two of the Town's capital funding reserve/reserve fund categories are either in, or soon-to-be in a deficit position, the Town's overall capital funding reserve/reserve funds are relatively healthy and Administration is comfortable recommending the advancement of the projects identified in this report in advance of the 2022-2026 five-year capital plan.

Projected Lifecycle Reserve and Reserve Fund balances for 2022 are provided in the attached schedules.

Following a capital works strategic planning session with Council in early 2022, the PWES 2022-2026 five-year capital plan will be brought to Council for consideration, approval and adoption accompanied by updated Projected Lifecycle Reserve and Reserve Fund schedules for the five-year planning period.

Link to Strategic Priorities

Applicable	2019-22 Strategic Priorities
☒	Make the Town of Tecumseh an even better place to live, work and invest through a shared vision for our residents and newcomers.
☒	Ensure that Tecumseh's current and future growth is built upon the principles of sustainability and strategic decision-making.
☐	Integrate the principles of health and wellness into all of Tecumseh's plans and priorities.
☒	Steward the Town's "continuous improvement" approach to municipal service delivery to residents and businesses.
☐	Demonstrate the Town's leadership role in the community by promoting good governance and community engagement, by bringing together organizations serving the Town and the region to pursue common goals.

Communications

Not applicable ☒

Website ☐ Social Media ☐ News Release ☐ Local Newspaper ☐

This report has been reviewed by Senior Administration as indicated below and recommended for submission by the Chief Administrative Officer.

Prepared by:

John Henderson, P.Eng.
Manager Engineering Services

Reviewed by:

Tom Kitsos, CPA, CMA, BComm
Director Financial Services & Chief Financial Officer

Reviewed by:

Brian Hillman, MA, MCIP, RPP
Director Development Services

Reviewed by:

Phil Bartnik, P.Eng.
Director Public Works & Engineering Services

Recommended by:

Margaret Misek-Evans, MCIP, RPP
Chief Administrative Officer

Attachment Number	Attachment Name
1	Road Projects 2022
2	Sidewalk & Pathway Projects 2022
3	CWATS Projects 2022

Attachment Number	Attachment Name
4	Bridge Projects 2022
5	Water Projects 2022
6	Wastewater Projects 2022
7	Storm Sewer Projects 2022
8	Municipal Drain Projects 2022
9	Major Project Summary – Oldcastle-North Talbot Sanitary Area
10	Major Project Summary – Oldcastle-8th Concession Sanitary Area
11	Major Project Summary – County of Essex Initiated Projects
12	Major Project Summary – Other Projects
13	Summary of PWES 2022 Capital Works Projects and Maps
14	2022 Roads Lifecycle Reserve Projection
15	2022 Bridge Lifecycle Reserve Projection
16	2022 Sidewalks Lifecycle Reserve Projection
17	2022 Storm Lifecycle Reserve Projection
18	2022 Wastewater Sewers Reserve Fund Projection
19	2022 Wastewater Facilities Reserve Fund Projection
20	2022 Watermain Reserve Fund Projection
21	2022 Water Facilities Reserve Fund Projection

Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan

Roads	Construction	Engineering	Contingency	Total	2021	2022
Paving	$ 7,800,000	$ -	$ -	$ 7,800,000	$ 1,300,000	$ 1,300,000
Traffic Signal Controller Upgrade (w/ County) CFWD	$ 150,000	$ -	$ -	$ 150,000	$ -	$ -
PW Yard (North) Expansion/Improvements	$ 160,000	$ -	$ -	$ 160,000	$ 30,000	$ 50,000
TTMP Bicycle Sharrows	$ 15,000	$ -	$ -	$ 15,000	$ 15,000	$ -
Traffic Signal Upgrades/Maintenance	$ 92,500	$ -	$ -	$ 92,500	$ -	$ -
Traffic Signal Reconstruction (Lesperance/McNorton)	$ 140,250	$ 24,750	$ -	$ 165,000	$ -	$ -
CR42/43 Construction CFWD	$ 50,000	$ 10,000	$ 10,000	$ 70,000	$ -	$ -
Tecumseh Hamlet SPA EA FSR CFWD	$ -	$ 98,000	$ -	$ 98,000	$ 67,750	$ -
Tecumseh Sigange Project	$ 60,000	$ 16,000	$ -	$ 76,000	$ -	$ 60,000
Lesperance/VIA Rail Improvements CFWD	$ 1,456,800	$ 318,700	$ 73,800	$ 1,849,300	$ 1,694,300	$ -
Tecumseh Road CIP - Phase 1 CFWD	$ 10,131,900	$ 1,665,360	$ 946,000	$ 12,743,260	$ -	$ -
Tecumseh Road CIP - Phase 2 CFWD	$ 5,579,980	$ 846,540	$ 538,020	$ 6,964,540	$ -	$ -
Tecumseh Road CIP - Phase 3	$ 2,930,130	$ 445,078	$ 282,870	$ 3,658,078	$ -	$ -
Tecumseh Road CIP - Phase 4	$ 3,027,950	$ 459,522	$ 292,050	$ 3,779,522	$ -	$ -
Tecumseh Road CIP - Phase 5	$ 1,742,250	$ 271,418	$ 172,500	$ 2,186,168	$ -	$ -
Manning Road/ETLD Relocation - Phase 2 CFWD	$ 686,100	$ 122,000	$ 34,300	$ 842,400	$ 787,900	$ -
Manning Road Reconstruction - Phase 3 CFWD	$ 5,719,900	$ 898,000	$ 286,000	$ 6,903,900	$ 100,000	$ -
Sylvestre Drive Sanitary Sewer Extension CFWD	$ 895,700	$ 173,500	$ 44,800	$ 1,114,000	$ -	$ -
Brighton Road Traffic Improvements CFWD	$ 30,000	$ -	$ -	$ 30,000	$ 30,000	$ -
Roads Needs Study	$ -	$ 133,000	$ -	$ 133,000	$ -	$ -
Various Watermain Replacement Projects 2021 CFWD	$ 17,600	$ 3,700	$ 1,800	$ 23,100	$ 23,100	$ -
Scully & St Mark's Storm PS/Riverside Drive CFWD+	$ 1,183,000	$ 227,000	$ 118,000	$ 1,528,000	$ 84,000	$ 1,400,400
CR46/Webster/Laval Sanitary Sewer(LRPCP) CFWD	$ 1,769,300	$ 245,000	$ 88,500	$ 2,102,800	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP) CFWD+	$ 1,194,600	$ 194,200	$ 59,700	$ 1,448,500	$ 20,000	$ 5,000
Lanoue Street Improvements CFWD	$ 636,000	$ 291,900	$ 63,600	$ 991,500	$ 125,000	$ -
Tecumseh Road Sanitary Sewer	$ 310,000	$ 67,000	$ 27,500	$ 404,500	$ -	$ -
Riverside Drive In-line Storage Trunk Sanitary	$ 575,000	$ 116,250	$ 57,500	$ 748,750	$ -	$ -
Ure Street Sanitary Sewer (LRPCP)	$ 533,900	$ 80,100	$ 53,400	$ 667,000	$ -	$ -
PJ Cecile Storm PS CFWD+	$ 195,000	$ 59,000	$ 20,000	$ 274,000	$ 14,000	$ 42,500
O'Neil Street Sanitary Sewer (LRPCP)	$ 617,500	$ 92,600	$ 61,800	$ 772,000	$ -	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ 755,300	$ 113,300	$ 75,500	$ 944,000	$ -	$ -
CP/Lesperance Crossing Improvements	$ -	$ 30,000	$ -	$ 30,000	$ 30,000	$ -
Traffic Calming Guideline Study	$ -	$ 20,000	$ -	$ 20,000	$ -	$ -
Tecumseh Rd - Storm and Road Improvements CFWD+	$ 1,966,000	$ 328,000	$ 393,200	$ 2,687,200	$ 133,000	$ 2,554,200
Annual Project Contingency	$ -	$ -	$ 1,500,000	$ 1,500,000	$ 250,000	$ 250,000
Totals	$ 50,421,660	$ 7,349,918	$ 5,200,840	$ 62,972,018	$ 4,704,050	$ 5,662,100

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan

Sidewalks/Pathways	Construction	Engineering	Contingency	Total	2021	2022
Sidewalk Repair Program	$ 414,000	$ -	$ -	$ 414,000	$ 69,000	$ 69,000
AODA Sidewalk Ramp Repair	$ 500,000	$ -	$ -	$ 500,000	$ -	$ -
Riverside Drive Trail (Lesperance-Manning) CFWD	$ 1,275,900	$ 322,300	$ 63,800	$ 1,662,000	$ 351,800	$ 460,200
Lesperance Road Trail (CR22 to CR42) CFWD	$ 885,000	$ 142,000	$ 177,000	$ 1,204,000	$ 137,500	$ -
Tecumseh Road Path (Arlington to DM Eagle) CFWD	$ 92,500	$ 5,000	$ 2,500	$ 100,000	$ -	$ -
Riverside Drive Pathway (Arlington to Kensington)	$ 120,000	$ 18,000	$ 18,000	$ 156,000	$ -	$ -
CR34: Malden to CR19 (Multi-Use Trail)	$ 350,000	$ 52,500	$ 52,500	$ 455,000	$ -	$ -
Malden Road Pathway Extension	$ 25,000	$ -	$ -	$ 25,000	$ 25,000	$ -
Lesperance Road Trail (Riverside to McNorton)	$ 350,000	$ 52,500	$ 52,500	$ 455,000	$ -	$ -
CR42 / CR43 Roundabout (Sidewalks)	$ 16,500	$ -	$ 2,500	$ 19,000	$ -	$ -
CR42 / CR19 Roundabout (Sidewalks) CFWD	$ 16,500	$ -	$ 2,500	$ 19,000	$ -	$ -
CR42: CR43 to Lesperance (Sidewalks)	$ 352,000	$ -	$ 10,000	$ 362,000	$ -	$ -
CR42: Lesperance to CR19 (Sidewalks) CFWD	$ 50,000	$ -	$ 8,000	$ 58,000	$ -	$ -
Totals	$ 4,447,400	$ 592,300	$ 389,300	$ 5,429,000	$ 583,300	$ 529,200

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan

CWATS Projects	Construction	Engineering	Contingency	Total	2021	2022
CWATS Study - Pike Creek/Tecumseh Road		$ 6,000	$ -	$ 6,000	$ -	$ -
CR42 / CR43 Roundabout (Bike Lanes)	$ 11,000	$ -	$ -	$ 11,000	$ -	$ -
CR42 / CR19 Roundabout (Bike Lanes) CFWD	$ 11,000	$ -	$ -	$ 11,000	$ -	$ -
CR42: CR43 to Lesperance (Bike Lanes)	$ 196,500	$ -	$ -	$ 196,500	$ -	$ -
CR42: Lesperance to CR19 (Bike Lanes) CFWD	$ 62,000	$ -	$ -	$ 62,000	$ -	$ -
Totals	$ 280,500	$ 6,000	$ -	$ 286,500	$ -	$ -

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan

Bridges	Construction	Engineering	Contingency	Total	2021	2022
Bridge & Culvert Condition Assessment (<3m Span)	$ -	$ 75,000	$ -	$ 75,000	$ -	$ -
Bridge & Culvert Needs Study (>3m Span)	$ -	$ 117,000	$ -	$ 117,000	$ -	$ 39,000
Pike Creek at Baseline (1005)	$ 659,300	$ 131,900	$ 98,900	$ 890,100	$ -	$ -
Culvert #37: Wolfe Drain at Outer - Improvements	$ 100,000	$ 25,000	$ 30,000	$ 155,000	$ -	$ -
Culvert #34: Wolfe Drain at Pulleyblank - Improve.	$ 70,000	$ 17,500	$ 21,000	$ 108,500	$ -	$ -
Townline Road Drain at 6th Concession Road (1014)	$ 155,000	$ 87,500	$ 7,800	$ 250,300	$ -	$ -
Merrick Creek at 8th Concession Road (1013)	$ 155,000	$ 87,500	$ 7,800	$ 250,300	$ -	$ -
Culvert #45: South Talbot Road (CR11/STR Works)	$ 270,000	$ 41,000	$ 41,000	$ 352,000	$ -	$ -
Culvert #42: Snake Lane Road CFWD	$ 416,200	$ 71,200	$ 62,400	$ 549,800	$ 62,300	$ -
Culvert #53: Snake Lane Road CFWD	$ 492,500	$ 71,200	$ 73,900	$ 637,600	$ 65,100	$ -
Culvert #54: Snake Lane Road CFWD	$ 492,500	$ 71,200	$ 73,900	$ 637,600	$ 65,100	$ -
Culvert #51: 8th Concession Road	$ 80,000	$ 60,000	$ 10,000	$ 150,000	$ -	$ -
Culvert #70: 12th Concession Road	$ 85,000	$ 60,000	$ 15,000	$ 160,000	$ -	$ -
Roadside Safety Improvements - Bridge #1010	$ 50,000	$ 10,000	$ 10,000	$ 70,000	$ -	$ -
Culvert #48: Holden Road	$ 422,000	$ 64,000	$ 64,000	$ 550,000	$ -	$ -
Colins Drain at Outer Drive (1016)	$ 300,000	$ 45,000	$ 45,000	$ 390,000	$ -	$ -
Totals	$ 3,278,200	$ 943,100	$ 481,800	$ 4,703,100	$ 442,500	$ 39,000

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan

Watermains	Construction	Engineering	Contingency	Total	2021	2022
Water & Wastewater Master Plan Update (2016)	$ -	$ 57,500	$ -	$ 57,500	$ -	$ -
Tecumseh Road CIP - Phase 1	$ 430,000	$ 92,520	$ 43,000	$ 565,520	$ -	$ -
Tecumseh Road CIP - Phase 2	$ 298,900	$ 47,030	$ 29,890	$ 375,820	$ -	$ -
Tecumseh Road CIP - Phase 3	$ 157,150	$ 24,727	$ 15,715	$ 197,592	$ -	$ -
Tecumseh Road CIP - Phase 4	$ 162,250	$ 25,529	$ 16,225	$ 204,004	$ -	$ -
Tecumseh Road CIP - Phase 5	$ -	$ -	$ -	$ -	$ -	$ -
Manning Road/ETLD Relocation - Phase 2 CFWD	$ 870,800	$ 155,000	$ 43,500	$ 1,069,300	$ 1,038,300	$ -
Riverside Drive Trail (Lesperance-Manning)	$ 19,200	$ 4,800	$ 1,000	$ 25,000	$ -	$ 25,000
Fire Hydrant Reflectors	$ 15,000	$ -	$ -	$ 15,000	$ 15,000	$ -
Banwell Watermain-Intersection to South of CPR CFWD	$ 443,200	$ 161,800	$ 133,000	$ 738,000	$ 130,900	$ -
Various Watermain Replacement Projects 2021 CFWD	$ 734,600	$ 219,200	$ 131,200	$ 1,085,000	$ 1,085,000	$ -
Hwy3-CR34 Water Valve Replacement CFWD	$ 370,700	$ 30,000	$ 55,600	$ 456,300	$ 456,300	$ -
Hwy#3/Walker Rd Watermain Replacement CFWD	$ 1,422,300	$ 304,000	$ 100,000	$ 1,826,300	$ -	$ -
Westlake Drive - San, Stm, Water	$ 85,000	$ 12,750	$ 12,750	$ 110,500	$ -	$ -
Watermain Anode Program - Inspection/Replace CFWD+	$ 234,250	$ 45,440	$ -	$ 279,690	$ 259,690	$ 20,000
Water Loss Audit	$ -	$ 15,000	$ -	$ 15,000	$ -	$ -
Tecumseh Hamlet SPA EA FSR CFWD	$ -	$ 98,000	$ -	$ 98,000	$ 67,750	$ -
CR46/Webster/Laval Sanitary Sewer(LRPCP) CFWD	$ 1,111,200	$ 154,000	$ 55,600	$ 1,320,800	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP) CFWD+	$ 25,400	$ 4,100	$ 1,300	$ 30,800	$ -	$ 3,000
CR42/43 Construction CFWD+	$ 2,085,000	$ 227,200	$ 208,500	$ 2,520,700	$ -	$ 1,372,100
Tecumseh Rd - Storm and Road Improvements	$ 49,000	$ 8,200	$ 9,800	$ 67,000	$ -	$ 67,000
Manning Trunk Water-CR22 to CPR (W-2B)	$ 1,701,000	$ 255,000	$ 340,000	$ 2,296,000	$ -	$ -
E Tecumseh Hamlet Watermain Connection (W-2A)	$ 416,000	$ 62,000	$ 83,000	$ 561,000	$ -	$ -
2020 Water and Wastewater Rates Study CFWD	$ -	$ 10,000	$ -	$ 10,000	$ -	$ -
CR42 & CR43 Advanced Engineering	$ -	$ 25,000	$ -	$ 25,000	$ -	$ -
Zone 2 Water Booster/Storage Site Select (W-9,10)	$ -	$ 280,000	$ 70,000	$ 350,000	$ -	$ -
Zone 2 Booster Station (W-9)	$ 2,660,000	$ 399,000	$ 266,000	$ 3,325,000	$ -	$ -
Zone 2 Water Storage Facility (W-10)	$ 5,160,000	$ 774,000	$ 516,000	$ 6,450,000	$ -	$ -
CR19 @ CR46 Advanced Construction	$ 125,000	$ 18,750	$ 18,750	$ 162,500	$ -	$ -
West Tecumseh Trunk Watermain (W-1)	$ 2,040,000	$ 408,000	$ 306,000	$ 2,754,000	$ -	$ -
CR19 - CR22 to Jamsyl CFWD	$ 582,000	$ 88,000	$ 88,000	$ 758,000	$ 758,000	$ -
North Tecumseh Water Distribution Model	$ -	$ 70,000	$ -	$ 70,000	$ -	$ 70,000
Water Sampling Station Replacements	$ 32,000	$ -	$ 5,000	$ 37,000	$ -	$ 37,000
CR19 @ CR34 Advanced Construction	$ 40,000	$ 6,000	$ 6,000	$ 52,000	$ -	$ -
Totals	$ 21,269,950	$ 4,082,546	$ 2,555,830	$ 27,908,326	$ 3,810,940	$ 1,594,100

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan

Wastewater Projects	Construction	Engineering	Contingency	Total	2021	2022
Water & Wastewater Master Plan Update (2016)	$ -	$ 57,500	$ -	$ 57,500	$ -	$ -
Tecumseh Road CIP - Phase 1	$ 400,000	$ 92,520	$ 40,000	$ 532,520	$ -	$ -
Tecumseh Road CIP - Phase 2	$ 298,900	$ 47,030	$ 29,890	$ 375,820	$ -	$ -
Tecumseh Road CIP - Phase 3	$ 157,150	$ 24,727	$ 15,715	$ 197,592	$ -	$ -
Tecumseh Road CIP - Phase 4	$ 162,250	$ 25,529	$ 16,225	$ 204,004	$ -	$ -
Tecumseh Road CIP - Phase 5	$ -	$ -	$ -	$ -	$ -	$ -
Pulleyblank-Crowder-Moro Sanitary Sewer	$ 780,000	$ 111,000	$ 39,000	$ 930,000	$ -	$ -
Manning Road/ETLD Relocation - Phase 2 CFWD	$ 9,000	$ 2,000	$ 500	$ 11,500	$ -	$ -
Sylvestre Drive Sanitary Sewer Extension CFWD	$ 645,000	$ 238,400	$ 64,500	$ 947,900	$ -	$ -
Pump Station Emergency Response Plan	$ -	$ 35,000	$ -	$ 35,000	$ -	$ -
SCADA Software/Server/Nodes Update	$ 46,250	$ -	$ -	$ 46,250	$ -	$ 20,000
Manhole Restoration Program	$ 125,000	$ -	$ -	$ 125,000	$ 50,000	$ -
Sylvestre Drive Sanitary PS Improvements	$ 205,000	$ -	$ -	$ 205,000	$ 15,000	$ 25,000
Lakewood Sanitary PS Improvements	$ 110,500	$ -	$ -	$ 110,500	$ 25,000	$ 22,000
St. Alphonse Sanitary PS Improvements	$ 31,500	$ -	$ -	$ 31,500	$ 31,500	$ -
Gauthier Sanitary Pump Station	$ 400,000	$ -	$ -	$ 400,000	$ -	$ 15,000
Portable Generator for PS	$ 100,000	$ -	$ -	$ 100,000	$ -	$ -
Sanitary Metering Station Repairs	$ 10,000	$ -	$ -	$ 10,000	$ -	$ -
Westlake Drive - San, Stm, Water	$ 132,000	$ 20,000	$ 20,000	$ 172,000	$ -	$ -
Tecumseh Hamlet SPA EA FSR CFWD	$ -	$ 113,000	$ -	$ 113,000	$ 82,750	$ -
CR46/Webster/Laval Sanitary Sewer(LRPCP) CFWD	$ 1,225,500	$ 170,000	$ 61,300	$ 1,456,800	$ -	$ -
Scully & St Mark's Storm PS/Riverside Drive CFWD+	$ 321,000	$ 62,000	$ 32,000	$ 415,000	$ 78,000	$ 316,450
Delduca Drive Sanitary Sewer (LRPCP) CFWD+	$ 1,019,000	$ 165,700	$ 51,000	$ 1,235,700	$ 40,000	$ 20,000
Sanitary Sewer Model Update CFWD+	$ -	$ 345,000	$ -	$ 345,000	$ 20,000	$ 30,000
Riverside Drive In-line Storage Trunk Sanitary	$ 1,645,000	$ 246,750	$ 164,500	$ 2,056,000	$ -	$ -
CR42/43 Construction CFWD+	$ 1,600,000	$ 176,600	$ 160,000	$ 1,936,600	$ 30,000	$ 1,861,700
CR42 & CR43 Advanced Engineering	$ -	$ 16,000	$ -	$ 16,000	$ -	$ -
Tecumseh Rd - Storm and Road improvements	$ 28,000	$ 4,700	$ 5,600	$ 38,300	$ -	$ 38,300
Tecumseh Road Sanitary Sewer CFWD	$ 1,400,000	$ 259,000	$ 180,000	$ 1,839,000	$ -	$ -
Ure Street Sanitary Sewer (LRPCP)	$ 407,500	$ 61,100	$ 40,800	$ 509,000	$ -	$ -
West Tecumseh Trunk Sanitary (WW-1)	$ 5,210,000	$ 1,042,000	$ 781,500	$ 7,034,000	$ -	$ -
Diversion San Sewers (Intersection Rd) (WW-2)	$ 840,000	$ 168,000	$ 126,000	$ 1,134,000	$ -	$ -
Sylvestre Pumping Station Upgrade (WW-4)	$ 591,000	$ 103,000	$ 89,000	$ 783,000	$ -	$ -
MRSPA Sanitary Sewer (WW-12)	$ 1,020,000	$ 179,000	$ 153,000	$ 1,352,000	$ -	$ -
MRSPA Sanitary Lift Station (WW-13)	$ 855,000	$ 150,000	$ 128,000	$ 1,133,000	$ -	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ 471,300	$ 70,700	$ 23,600	$ 566,000	$ -	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ 576,400	$ 86,500	$ 28,800	$ 692,000	$ -	$ -
8th Concession Sanitary Sewer By-Law	$ -	$ 45,000	$ -	$ 45,000	$ -	$ 45,000
2020 Water and Wastewater Rates Study CFWD	$ -	$ 10,000	$ -	$ 10,000	$ -	$ -
Totals	$ 20,042,250	$ 4,016,756	$ 2,211,930	$ 26,271,486	$ 372,250	$ 2,393,450

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan

Storm Sewers	Construction	Engineering	Contingency	Total	2021	2022
Tecumseh Road CIP - Phase 1	$ 700,000	$ -	$ 70,000	$ 770,000	$ -	$ -
Tecumseh Road CIP - Phase 2	$ -	$ -	$ -	$ -	$ -	$ -
Tecumseh Road CIP - Phase 3	$ -	$ -	$ -	$ -	$ -	$ -
Tecumseh Road CIP - Phase 4	$ -	$ -	$ -	$ -	$ -	$ -
Tecumseh Road CIP - Phase 5	$ -	$ -	$ -	$ -	$ -	$ -
Manning Road/ETLD Relocation - Phase 2 CFWD	$ 1,498,700	$ 267,000	$ 74,900	$ 1,840,600	$ 1,769,600	$ -
Manning Road Reconstruction - Phase 3 CFWD	$ 266,800	$ 42,000	$ 13,300	$ 322,100	$ -	$ -
Riverside Drive Trail (Lesperance-Manning) CFWD	$ 138,500	$ 35,000	$ 6,900	$ 180,400	$ 37,500	$ 142,900
Lesperance/VIA Rail Improvements CFWD+	$ 224,400	$ 47,300	$ 11,200	$ 282,900	$ 131,500	$ 120,400
Sylvestre Drive Sanitary Sewer Extension CFWD	$ 43,500	$ 8,400	$ 2,200	$ 54,100	$ -	$ -
Brighton Road Storm PS - Repairs	$ 75,000	$ -	$ -	$ 75,000	$ 75,000	$ -
West St. Louis Storm PS - Repairs	$ 51,000	$ 7,650	$ 7,650	$ 66,300	$ -	$ -
Lesperance Road Storm PS - Repairs	$ 181,000	$ 18,100	$ 18,100	$ 217,200	$ -	$ -
(East) St. Louis Storm PS - Repairs	$ 65,000	$ 9,750	$ 9,750	$ 84,500	$ -	$ -
Manhole Restoration Program	$ 125,000	$ -	$ -	$ 125,000	$ 50,000	$ -
Westlake Drive - San, Stm, Water	$ 120,000	$ 18,000	$ 18,000	$ 156,000	$ -	$ -
Oldcastle Storm Drainage Master Plan CFWD+	$ -	$ 535,000	$ -	$ 535,000	$ 40,000	$ 45,000
Tecumseh Hamlet SPA EA FSR CFWD	$ -	$ 496,000	$ -	$ 496,000	$ 276,750	$ -
CR46/Webster/Laval Sanitary Sewer(LRPCP) CFWD	$ 448,700	$ 62,000	$ 22,400	$ 533,100	$ -	$ -
Scully & St Mark's Storm PS/Riverside Drive CFWD+	$ 11,694,000	$ 2,245,000	$ 1,168,000	$ 15,107,000	$ 338,000	$ 14,035,900
MRSPA Pond Design and Construction CFWD	$ 9,775,000	$ 1,660,000	$ 1,300,000	$ 12,735,000	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP) CFWD+	$ 932,500	$ 151,600	$ 46,600	$ 1,130,700	$ 40,000	$ 24,000
Lanoue Street Improvements	$ 35,600	$ 16,300	$ 3,600	$ 55,500	$ -	$ -
Shoreline Management Plan CFWD	$ -	$ 350,000	$ -	$ 350,000	$ -	$ -
Stormwater Rate Study	$ -	$ 45,000	$ -	$ 45,000	$ -	$ -
P.J. Cecile Storm PS * CFWD+	$ 6,733,000	$ 1,346,500	$ 1,346,500	$ 9,426,000	$ 486,000	$ 1,457,500
Ure Street Sanitary Sewer (LRPCP)	$ 328,800	$ 49,300	$ 32,900	$ 411,000	$ -	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ 380,300	$ 57,000	$ 19,000	$ 456,000	$ -	$ -
CR42 & CR43 Advanced Engineering	$ -	$ 9,000	$ -	$ 9,000	$ -	$ -
Tecumseh Rd - Storm and Road Improvements CFWD+	$ 1,460,000	$ 243,600	$ 292,000	$ 1,995,600	$ 84,000	$ 1,911,600
Breakwall Condition Assessment	$ -	$ 50,000	$ -	$ 50,000	$ -	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ 465,100	$ 69,800	$ 23,300	$ 558,000	$ -	$ -
TSDMP Implementation - CWB Inlet Improvements	$ 100,000	$ -	$ -	$ 100,000	$ -	$ -
Turkey Creek Watershed Assessment - Ph 1-2 CFWD	$ -	$ 60,000	$ -	$ 60,000	$ 60,000	$ -
Tecumseh Storm Drainage Master Plan Update	$ -	$ 150,000	$ -	$ 150,000	$ -	$ -
Totals	$ 35,841,900	$ 8,049,300	$ 4,486,300	$ 48,377,000	$ 3,388,350	$ 17,737,300

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan

Municipal Drains	Construction	Engineering	Contingency	Total	2021	2022
Manning Road/ETLD Relocation - Phase 2 CFWD	$ 2,925,100	$ 521,000	$ 146,300	$ 3,592,400	$3,465,900	$ -
Totals	$ 2,925,100	$ 521,000	$ 146,300	$ 3,592,400	$3,465,900	$ -

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan
Major Projects Summary

Oldcastle - North Talbot - Sanitary Area	Construction	Engineering	Contingency	Total	2021	2022
Olympia-Astor-Solar Sanitary Sewer	$ 649,500	$ 97,400	$ 65,000	$ 812,000	$ -	$ -
County Road 11 (South) Sanitary Sewer	$ 300,000	$ 45,000	$ 30,000	$ 375,000	$ -	$ -

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan
Major Projects Summary

Oldcastle - 8th Concession - Sanitary Area	Construction	Engineering	Contingency	Total	2021	2022
CR46/Webster/Laval Sanitary Sewer(LRPCP) CFWD	$ 4,554,700	$ 631,000	$ 227,800	$ 5,413,500	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP) CFWD+	$ 3,171,500	$ 515,600	$ 158,600	$ 3,845,700	$ 100,000	$ 52,000
Ure Street Sanitary Sewer (LRPCP)	$ 1,270,200	$ 190,500	$ 127,100	$ 1,587,000	$ -	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ 1,469,100	$ 220,300	$ 104,400	$ 1,794,000	$ -	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ 1,796,800	$ 269,600	$ 127,600	$ 2,194,000	$ -	$ -

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan
Major Projects Summary

County of Essex (Initiated) Projects	Construction	Engineering	Contingency	Total	2021	2022
Culvert #45: South Talbot Road (CR11/STR Works)	$ 270,000	$ 41,000	$ 41,000	$ 352,000	$ -	$ -
Westlake Drive - San, Storm, Water	$ 337,000	$ 50,750	$ 50,750	$ 438,500	$ -	$ -
CR42/43 Construction CFWD+	$ 3,735,000	$ 413,800	$ 378,500	$ 4,527,300	$ 30,000	$ 3,233,800
CR19 @ CR46 Advanced Construction	$ 125,000	$ 18,750	$ 18,750	$ 162,500	$ -	$ -
CR42: CR19 to CR43 (Sidewalks Bike Lanes) CFWD	$ 715,500	$ -	$ 23,000	$ 738,500	$ -	$ -
CR19 @ CR34 Advanced Construction	$ 40,000	$ 6,000	$ 6,000	$ 52,000	$ -	$ -

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Town of Tecumseh
Public Works Engineering Services
2022 Capital Works Plan
Major Projects Summary

Other Projects	Construction	Engineering	Contingency	Total	2021	2022
Water & Wastewater Master Plan Update (2016)	$ -	$ 115,000	$ -	$ 115,000	$ -	$ -
Manning Road/ETLDRelocation - Phase 2 CFWD	$ 5,989,700	$ 1,067,000	$ 299,500	$ 7,356,200	$ 7,061,700	$ -
Manning Road Reconstruction - Phase 3 CFWD	$ 5,986,700	$ 940,000	$ 299,300	$ 7,226,000	$ 100,000	$ -
Tecumseh Road CIP - Phase 1 CFWD	$ 11,661,900	$ 1,850,400	$ 1,099,000	$ 14,611,300	$ -	$ -
Tecumseh Road CIP - Phase 2 CFWD	$ 6,177,780	$ 940,600	$ 597,800	$ 7,716,180	$ -	$ -
Tecumseh Road CIP - Phase 3	$ 3,244,430	$ 494,532	$ 314,300	$ 4,053,262	$ -	$ -
Tecumseh Road CIP - Phase 4	$ 3,352,450	$ 510,580	$ 324,500	$ 4,187,530	$ -	$ -
Tecumseh Road CIP - Phase 5	$ 1,742,250	$ 271,418	$ 172,500	$ 2,186,168	$ -	$ -
Riverside Drive Trail (Lesperance-Manning) CFWD	$ 1,433,600	$ 362,100	$ 71,700	$ 1,867,400	$ 389,300	$ 628,100
Lesperance Road Trail (CR22 to CR42) CFWD	$ 885,000	$ 142,000	$ 177,000	$ 1,204,000	$ 137,500	$ -
Riverside Drive Pathway (Arlington to Kensington)	$ 120,000	$ 18,000	$ 18,000	$ 156,000	$ -	$ -
Lesperance Road Trail (Riverside to McNorton)	$ 350,000	$ 52,500	$ 52,500	$ 455,000	$ -	$ -
Tecumseh Hamlet SPA EA FSR CFWD	$ -	$ 805,000	$ -	$ 805,000	$ 495,000	$ -
Lesperance/VIA Rail Improvements CFWD+	$ 1,681,200	$ 366,000	$ 85,000	$ 2,132,200	$ 1,825,800	$ 120,400
Manhole Restoration Program	$ 250,000	$ -	$ -	$ 250,000	$ 100,000	$ -
Hwy#3/Walker Rd Watermain Replacement CFWD	$ 1,422,300	$ 304,000	$ 100,000	$ 1,826,300	$ -	$ -
Various Watermain Replacement Projects 2021 CFWD	$ 752,200	$ 222,900	$ 133,000	$ 1,108,100	$ 1,108,100	$ -
Watermain Anode Program - Inspection/Replace CFWD+	$ 234,250	$ 45,440	$ -	$ 279,690	$ 259,690	$ 20,000
Water Loss Audit	$ -	$ 15,000	$ -	$ 15,000	$ -	$ -
Zone 2 Water Booster/Storage Site Select (W-9,10)	$ -	$ 280,000	$ 70,000	$ 350,000	$ -	$ -
Zone 2 Booster Station (W-9)	$ 2,660,000	$ 399,000	$ 266,000	$ 3,325,000	$ -	$ -
Zone 2 Water Storage Facility (W-10)	$ 5,160,000	$ 774,000	$ 516,000	$ 6,450,000	$ -	$ -
Sylvestre Drive Sanitary Sewer Extension CFWD	$ 1,584,200	$ 420,300	$ 111,500	$ 2,116,000	$ -	$ -
Sanitary Sewer Model Update CFWD+	$ -	$ 345,000	$ -	$ 345,000	$ 20,000	$ 30,000
Lanoue Street Improvements CFWD	$ 671,600	$ 308,200	$ 67,200	$ 1,047,000	$ 125,000	$ -
Tecumseh Road Sanitary Sewer CFWD	$ 1,710,000	$ 326,000	$ 207,500	$ 2,243,500	$ -	$ -
Riverside Drive In-line Storage Trunk Sanitary	$ 2,220,000	$ 363,000	$ 222,000	$ 2,804,750	$ -	$ -
MRSPA Pond Design and Construction CFWD	$ 9,775,000	$ 1,660,000	$ 1,300,000	$ 12,735,000	$ -	$ -
Brighton Road Storm PS - Repairs	$ 75,000	$ -	$ -	$ 75,000	$ 75,000	$ -
West St. Louis Storm PS - Repairs	$ 51,000	$ 7,650	$ 7,650	$ 66,300	$ -	$ -
Lesperance Road Storm PS - Repairs	$ 181,000	$ 18,100	$ 18,100	$ 217,200	$ -	$ -
(East) St. Louis Storm PS - Repairs	$ 65,000	$ 9,750	$ 9,750	$ 84,500	$ -	$ -
Oldcastle Storm Drainage Master Plan CFWD+	$ -	$ 535,000	$ -	$ 535,000	$ 40,000	$ 45,000
TSDMP Implementation - CWB Inlet Improvements	$ 100,000	$ -	$ -	$ 100,000	$ -	$ -
Tecumseh Storm Drainage Master Plan Update	$ -	$ 150,000	$ -	$ 150,000	$ -	$ -
Shoreline Management Plan CFWD	$ -	$ 350,000	$ -	$ 350,000	$ -	$ -
Breakwall Conditions Assessment	$ -	$ 50,000	$ -	$ 50,000	$ -	$ -
Scully & St Mark's Storm PS/Riverside Drive CFWD+	$ 13,198,000	$ 2,534,000	$ 1,318,000	$ 17,050,000	$ 500,000	$15,752,750
West Tecumseh Trunk Watermain (W-1)	$ 2,040,000	$ 408,000	$ 306,000	$ 2,754,000	$ -	$ -
West Tecumseh Trunk Sanitary (WW-1)	$ 5,210,000	$ 1,042,000	$ 781,500	$ 7,034,000	$ -	$ -
Diversion San Sewers (Intersection Rd) (WW-2)	$ 840,000	$ 168,000	$ 126,000	$ 1,134,000	$ -	$ -
P.J. Cecile Storm PS * CFWD+	$ 6,928,000	$ 1,405,500	$ 1,366,500	$ 9,700,000	$ 500,000	$ 1,500,000
Tecumseh Rd - Storm and Road Improvements CFWD+	$ 3,503,000	$ 584,500	$ 700,600	$ 4,788,100	$ 217,000	$ 4,571,100
2020 Water and Wastewater Rates Study CFWD	$ -	$ 20,000	$ -	$ 20,000	$ -	$ -

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LEGEND

- Projects Mapped
- Projects Not Mapped

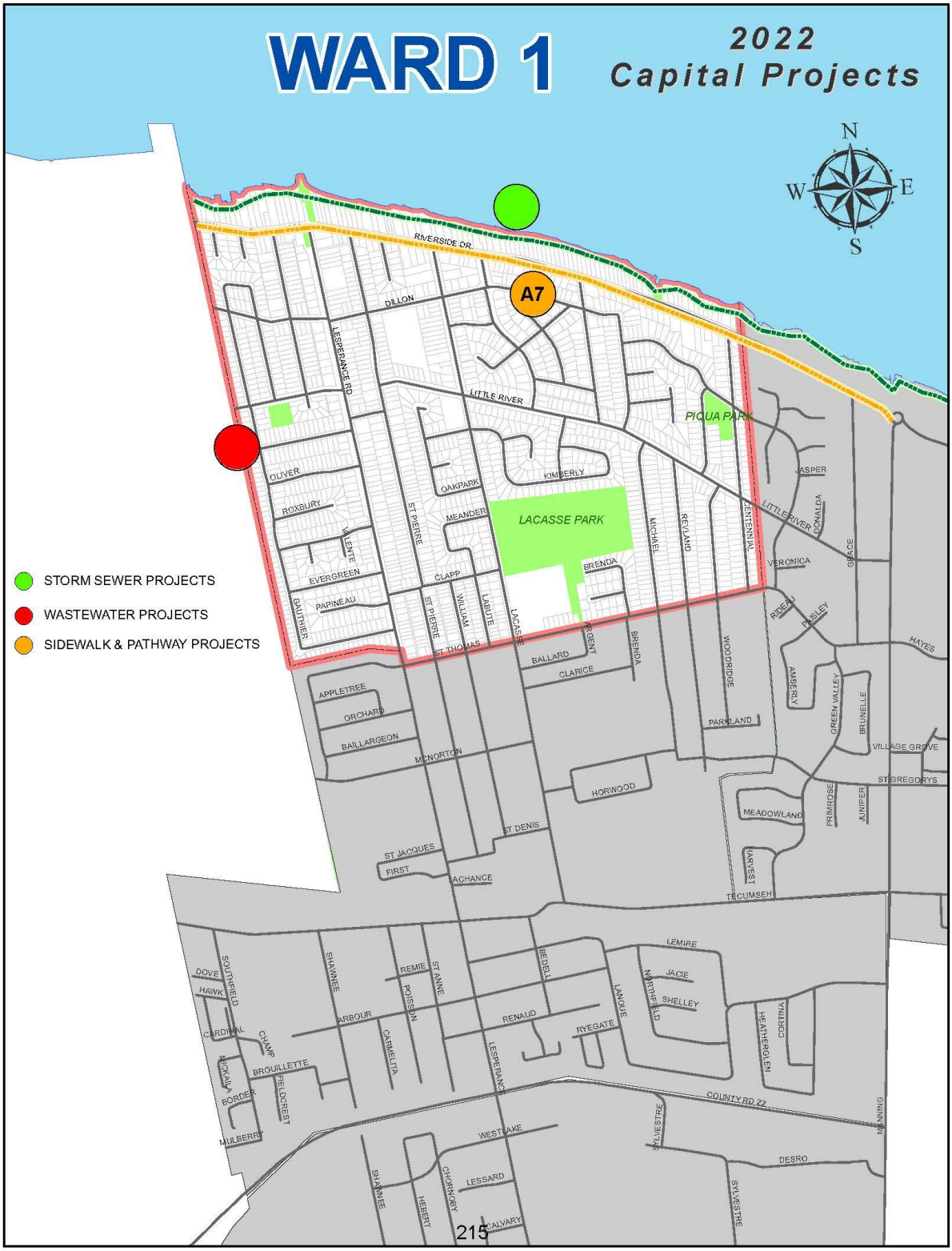
PWES 2022 Capital Works Projects

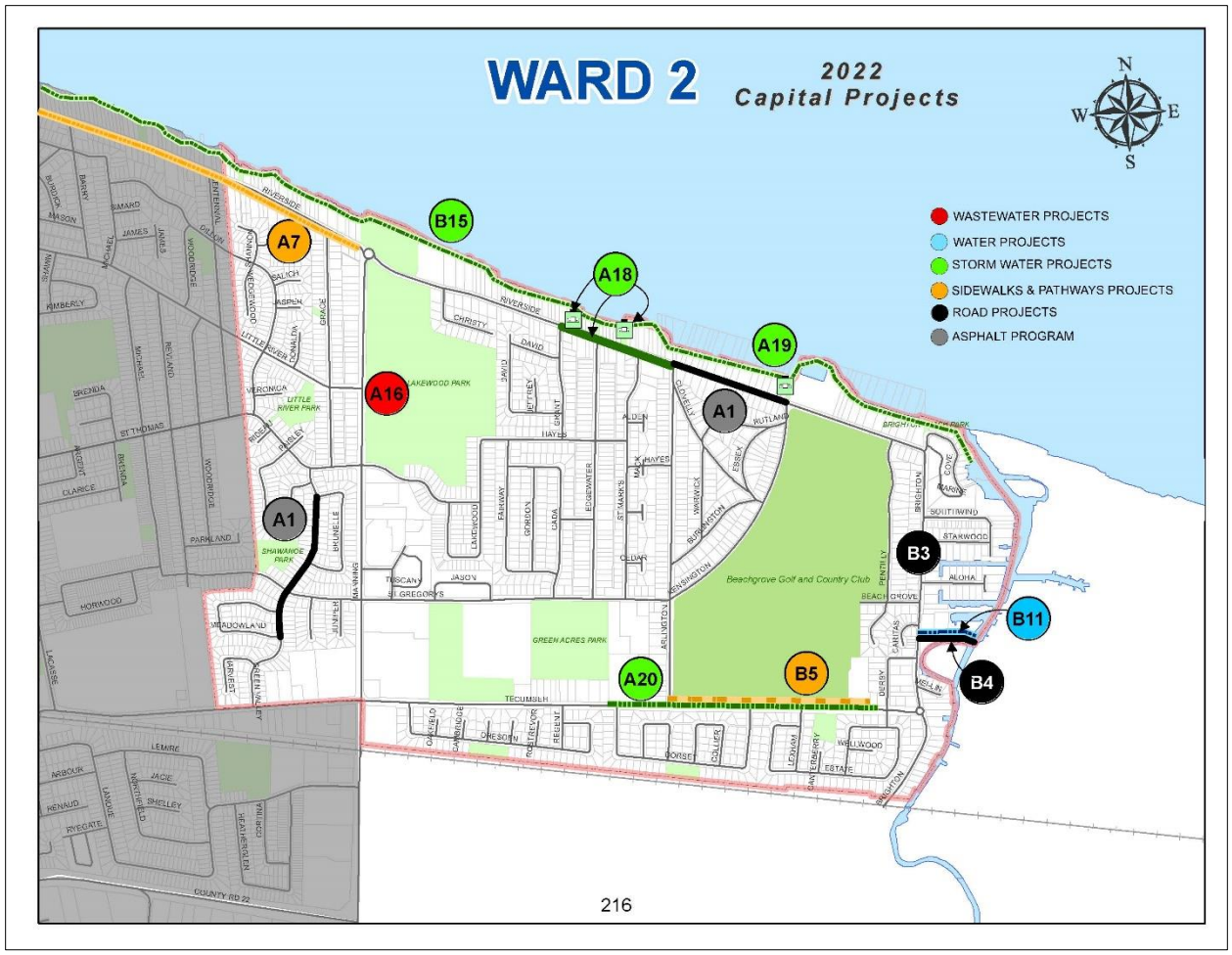
SECTION A: Projects Requiring Funding Allocations in 2022

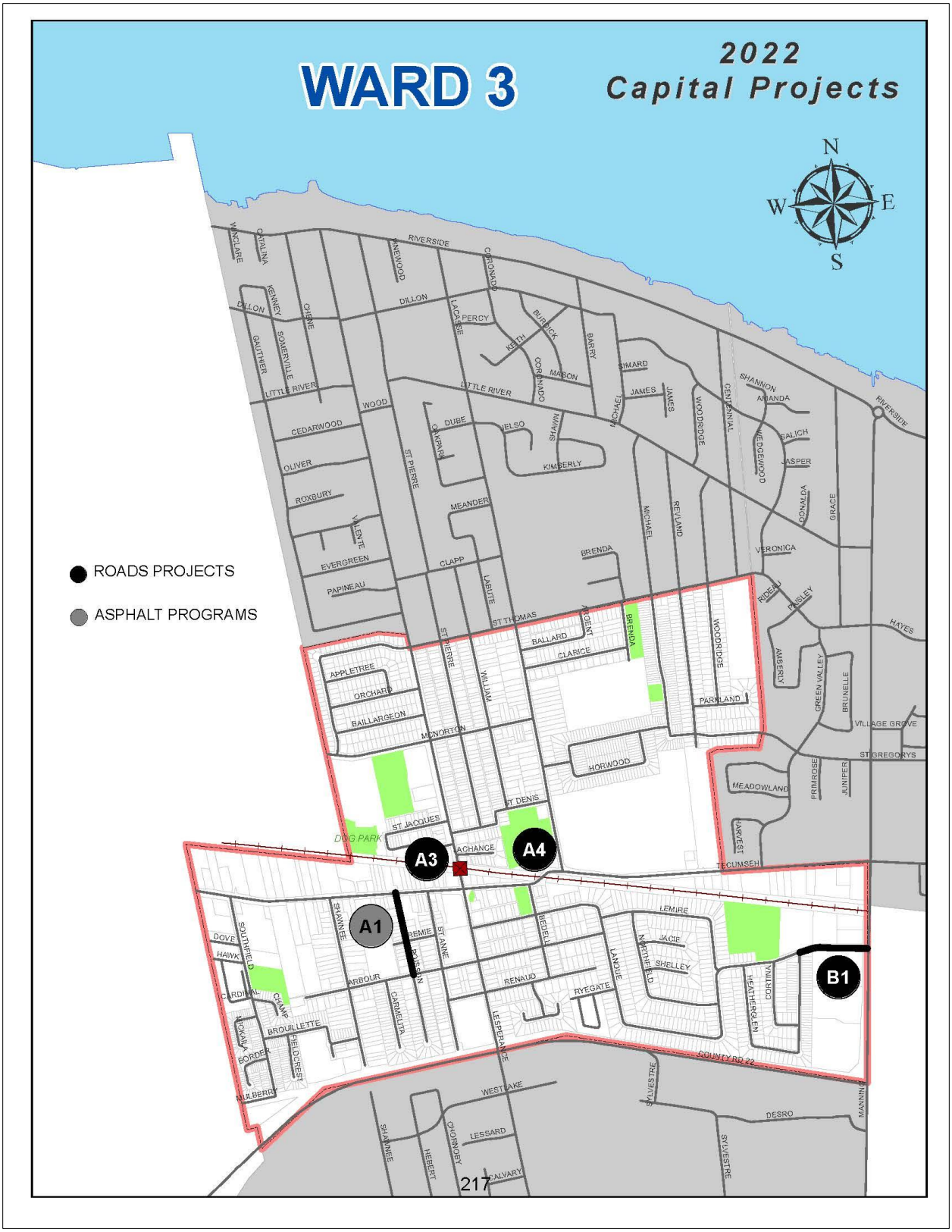
ID	PROJECT	Ward
A1	Tar & Chip, Asphalting and Crack Sealing	All
A2	Tecumseh Signage Project	All
A3	Lesperance/VIA Rail Improvements	3
A4	Expansion/Improvements to the Public Works Yard (North)	3
A5	Annual Project Contingency	All
A6	2022 Sidewalk Repair Projects	All
A7	Riverside Drive Trail	1 & 2
A8	Bridge and Culvert Needs Study (with Spans > 3.0m)	2 & 5
A9	Water Sampling Station Replacements	All
A10	County Road 42 and County Road 43 Improvements	5
A11	Watermain Anode Program – Inspection/Replacement	All
A12	North Tecumseh Water Distribution Model	All
A13	Del Duca Drive Sanitary Sewer Extension	5
A14	Sanitary Sewer Model Update and Flow Monitoring	All
A15	8th Concession Sanitary Sewer By-Law	5
A16	Sanitary Pump Station Improvements	1, 2, 3 & 4
A17	Oldcastle Storm Drainage Master Plan	5
A18	Scully & St. Mark's Storm Pump Station & Riverside Drive Storm Sewers	2
A19	P.J. Cecile (Kensington) Storm Pump Station	2
A20	Tecumseh Road Storm and Road Improvements Project	2

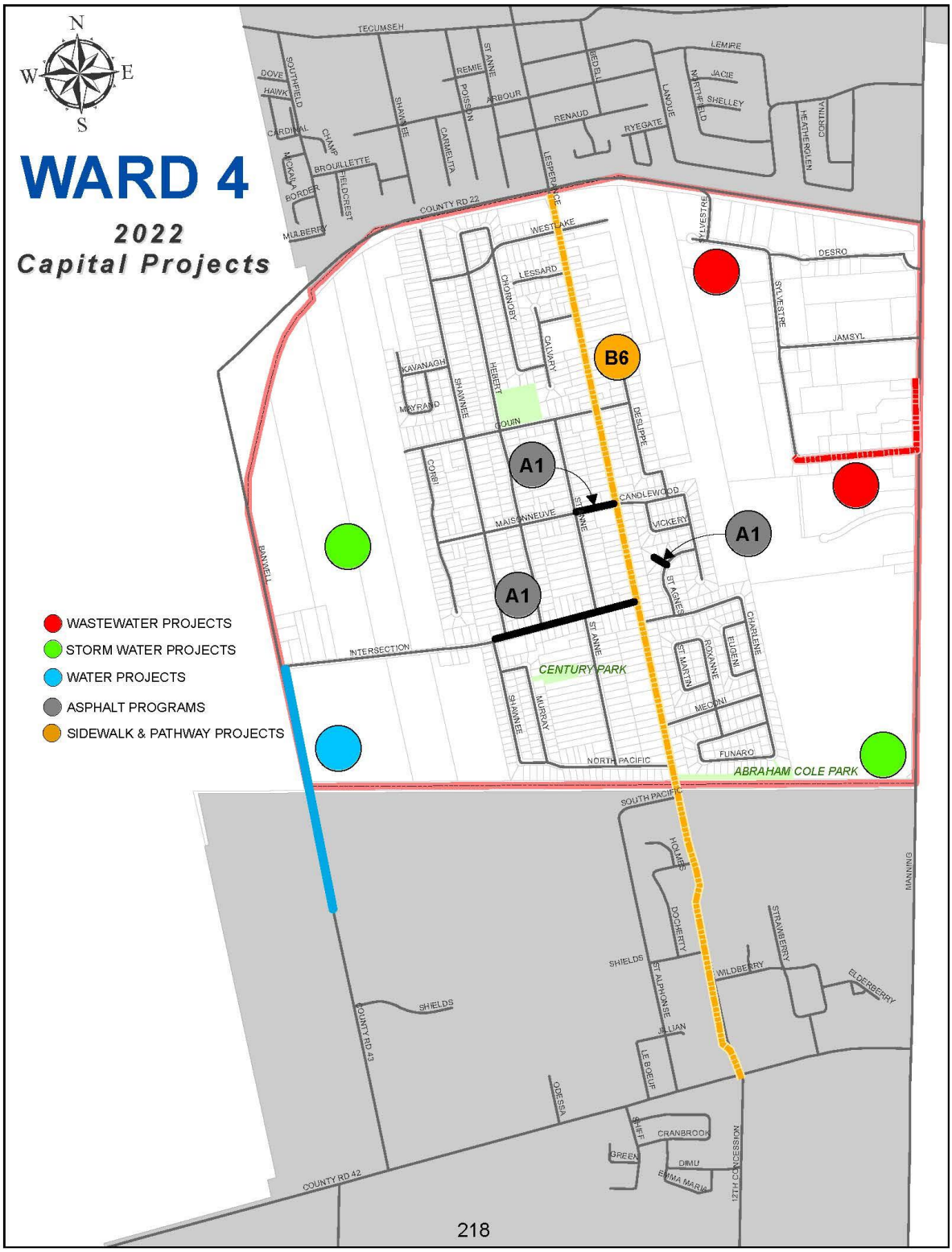
SECTION B: Carry Over Projects from 2021 Not Requiring Any Additional Funding in 2022

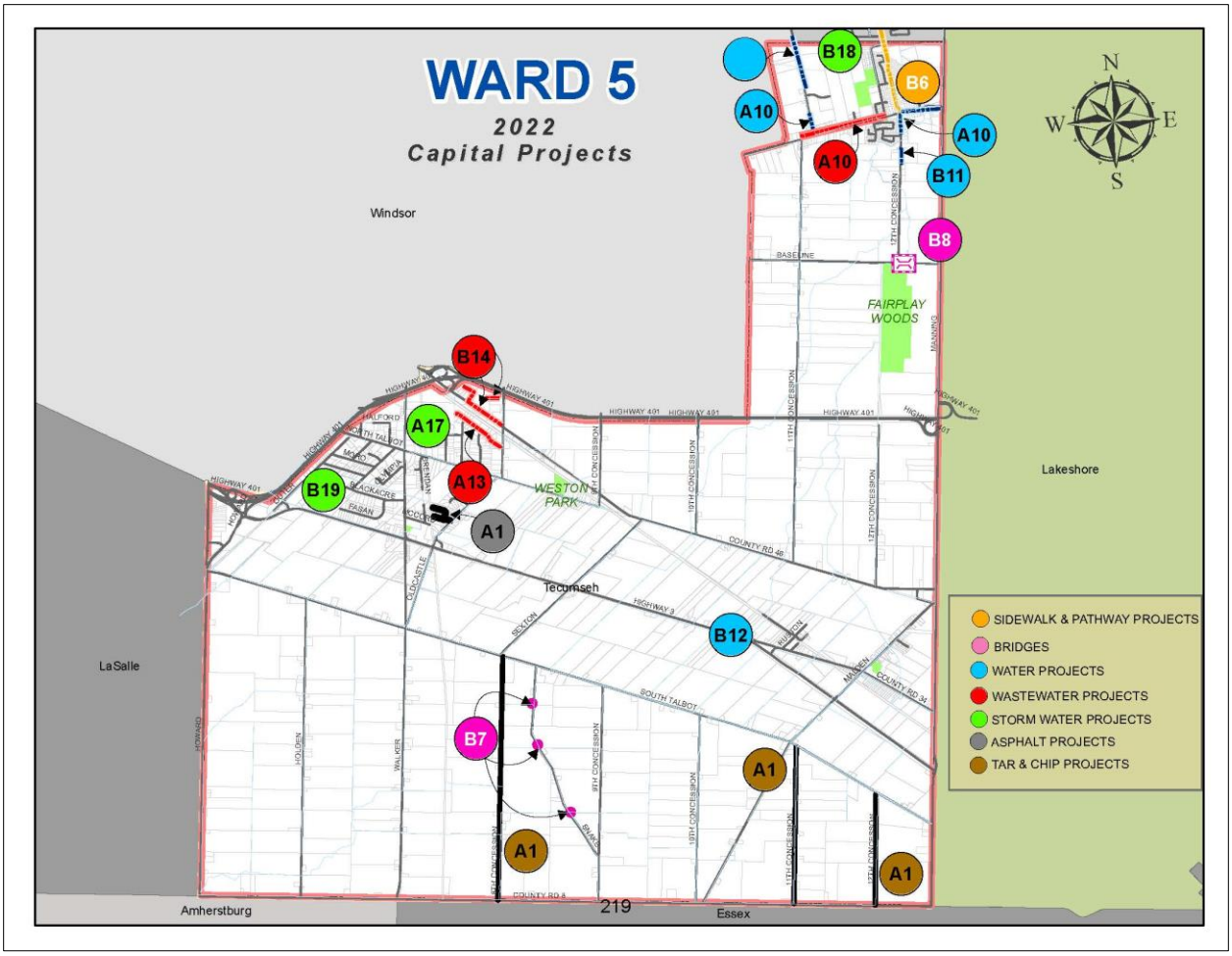
ID	PROJECT	Ward
B1	Lanoue Street Improvements	3
B2	TTMP Bicylce Sharrows	All
B3	Brighton Road Traffic Improvements	2
B4	CWATS Study for Facility Enhancements for Crossing at Pike Creek/Tecumseh Road	2
B5	Tecumseh Road Multi-Use Pathway Re-construction (Arlington to DM Eagle Public School)	2
B6	Lesperance Road Multi-Use Trail - CR22 to CR42	4 & 5
B7	Snake Lane Road Culverts (with Spans < 3.0m) – Culverts No. 42, 53 & 54	5
B8	Bridges (with Spans > 3.0m) – Baseline Road/Pike Creek Bridge No.1005 Bank Stabilization	5
B9	2020 Water and Wastewater Rates Study	All
B10	County Road 43/Banwell Watermain – Intersection Road to South of CPR	4 & 5
B11	2021 Various Watermain Replacement Project	2 & 5
B12	Hwy 3/CR34 Water Valve Replacement	5
B13	Sylvestre Drive Sanitary Sewer Extension	4
B14	County Road 46, Webster and Laval Sanitary Sewer Extension	5
B15	Shoreline Management Plan	1 & 2
B16	Stormwater Rate Study	All
B17	Manning Road Secondary Plan Area – Stormwater Facility	4
B18	Tecumseh Hamlet EA and Functional Servicing Study	4 & 5
B19	Turkey Creek Watershed Assessment – Phase 1 & 2	5











LC Road (1500)	2022	2023	2024	2025	2026
Reserve Balance Start of Year	$ 10,418,100	$ 10,219,850	$3,427,715	$4,970,505	$ 6,620,330
Budget Allocation	$ 4,160,000	$ 4,160,000	$4,160,000	$4,160,000	$ 4,160,000
Sale of Electricity to Grid	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000
County Contribution	$ 1,700,000	$ -	$ -	$ -	$ -
RSIP Grant	$ 1,027,000	$ -	$ -	$ -	$ -
DMAF Grant	$ 255,800	$ 319,400	$ 14,800	$ 35,000	$ 52,600
CWATS	$ -	$ 525,000	$ -	$ -	$ -
County Connecting Link Agreement	$ -	$ 1,295,000	$ -	$ -	$ -
Funds Available	**$ 17,570,900**	**$ 16,529,250**	**$7,612,515**	**$9,175,505**	**$ 10,842,930**
Committed					
IT GIS Tech % share	$ 28,150	$ 28,700	$ 29,300	$ 29,900	$ 30,500
Traffic Signal Controller Upgrade (with County)	$ 94,500	$ -	$ -	$ -	$ -
TTMP Bicycle Sharrows	$ 3,600	$ -	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ 81,300	$ -	$ -	$ -	$ -
Lesperance/VIA Rail Improvements	$ 1,687,300	$ -	$ -	$ -	$ -
Tecumseh Road Sanitary Sewer	$ 53,830	$ -	$ -	$ -	$ -
Manning Road Reconstruction - Phase 3	$ 35,500	$ -	$ -	$ -	$ -
Sylvestre Drive Sanitary Sewer Extension	$ 49,000	$ -	$ -	$ -	$ -
Brighton Road Traffic Improvements	$ 20,000	$ -	$ -	$ -	$ -
PJ Cecile Storm PS	$ 11,000	$ -	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer (LRPCP)	$ 45,020	$ -	$ -	$ -	$ -
Various Watermain Replacement Projects 2021	$ 23,100	$ -	$ -	$ -	$ -
Tecumseh Rd - Storm and Road Improvements	$ 2,000	$ -	$ -	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 28,510	$ -	$ -	$ -	$ -
Tecumseh Road Path (Arlington to DM Eagle)	$ 100,000	$ -	$ -	$ -	$ -
Lanoue Street Improvements	$ 142,670	$ -	$ -	$ -	$ -
Scully & St. Mark's Storm PS/Riverside Drive	$ 86,800	$ -	$ -	$ -	$ -
Balance Committed	**$ 2,492,280**	**$ 28,700**	**$ 29,300**	**$ 29,900**	**$ 30,500**
Balance Uncommitted	**$ 15,078,620**	**$ 16,500,550**	**$7,583,215**	**$9,145,605**	**$ 10,812,430**
Proposed					
Road Paving - Asphalting (Note 1)	$ 1,300,000	$ 1,300,000	$1,300,000	$1,300,000	$ 1,300,000
PW Yard (North) Expansion/Improvements	$ 50,000	$ -	$ -	$ -	$ -
Traffic Signal Upgrades/Maintenance	$ -	$ 62,500	$ 30,000	$ -	$ -
Traffic Signal Reconstruction (Lesperance/McNorton)	$ -	$ 165,000	$ -	$ -	$ -
CR42/43 Const. including 12th&Banwell Watermains	$ -	$ 35,000	$ 35,000	$ -	$ -
Tecumseh Signage Project	$ 60,000	$ -	$ -	$ -	$ -
Lesperance Road Trail (Riverside to McNorton)	$ -	$ -	$ 13,125	$ 214,375	$ -
Sylvestre Drive Sanitary Sewer Extension	$ -	$ -	$ -	$ -	$ 1,020,000
Manning Road Reconstruction - Phase 3	$ -	$ 6,578,400	$ -	$ -	$ -
Roads Needs Study	$ -	$ -	$ 70,000	$ -	$ -
CR46/Webster/Laval Sanitary Sewer (LRPCP)	$ -	$ 1,982,050	$ -	$ -	$ -
Scully & St. Mark's Storm PS/Riverside Drive	$ 609,570	$ 781,470	$ 27,000	$ -	$ -
Delduca Drive (Sanitary Sewer LRPCP)	$ 5,000	$ 1,331,050	$ -	$ -	$ -
Lanoue Street Improvements	$ -	$ 503,200	$ -	$ -	$ -
Annual Project Allocation	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
Riverside Drive In-Line Storage Trunk Sanitary	$ -	$ 58,125	$ 690,625	$ -	$ -
Ure Street (Sanitary Sewer LRPCP)	$ -	$ -	$ 40,000	$ 627,000	$ -
Tecumseh Rd - Storm and Road Improvements	$ 2,554,200	$ -	$ -	$ -	$ -
PJ Cecile Storm PS	$ 30,000	$ 17,040	$ 9,960	$ 87,600	$ 131,400
O'Neil Street Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ 46,300	$ 725,700
Riverside Drive Pathway (Arlington to Kensington)	$ -	$ 9,000	$ 147,000	$ -	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ -	$ 56,650
Balance Proposed	**$ 4,858,770**	**$ 13,072,835**	**$2,612,710**	**$2,525,275**	**$ 3,483,750**
Balance Available	**$ 10,219,850**	**$ 3,427,715**	**$4,970,505**	**$6,620,330**	**$ 7,328,680**

Notes:

1) General allowance for asphalting

Attachment 15 - 2022 Bridges Lifecycle Reserve Projection

LC Bridges (1660)	2022	2023	2024	2025	2026
Reserve Balance Start of Year	$ 827,000	$ 860,500	$ (830,500)	$ (741,500)	$ (872,000)
Budget Allocation	$ 410,000	$ 410,000	$ 410,000	$ 410,000	$ 410,000
Funds Available	**$ 1,237,000**	**$ 1,270,500**	**$ (420,500)**	**$ (331,500)**	**$ (462,000)**
Committed					
Pike Creek Drain at Baseline Road (1005)	$ 250,000	$ -	$ -	$ -	$ -
Culvert #42: Snake Lane Road	$ 27,300	$ -	$ -	$ -	$ -
Culvert #53: Snake Lane Road	$ 30,100	$ -	$ -	$ -	$ -
Culvert #54: Snake Lane Road	$ 30,100	$ -	$ -	$ -	$ -
Balance Committed	**$ 337,500**	**$ -**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$ 899,500**	**$ 1,270,500**	**$ (420,500)**	**$ (331,500)**	**$ (462,000)**
Proposed					
Bridge & Culvert Condition Assessment (<3m Span)	$ -	$ 75,000	$ -	$ -	$ -
Bridge/Culvert Needs Study (>3m)	$ 39,000	$ -	$ 39,000	$ -	$ 39,000
Culvert #42: Snake Lane Road	$ -	$ 487,500	$ -	$ -	$ -
Culvert #53: Snake Lane Road	$ -	$ 572,500	$ -	$ -	$ -
Culvert #54: Snake Lane Road	$ -	$ 572,500	$ -	$ -	$ -
Culvert #51: 8th Concession	$ -	$ 30,000	$ 120,000	$ -	$ -
Culvert #70: 12th Concession	$ -	$ 30,000	$ 130,000	$ -	$ -
Roadside Safety Improvements - Bridge #1010	$ -	$ 70,000	$ -	$ -	$ -
Culvert #37: Wolfe Drain at Outer - Improvements	$ -	$ 155,000	$ -	$ -	$ -
Culvert #34: Wolfe Drain at Pulleyblank - Improvements	$ -	$ 108,500	$ -	$ -	$ -
Culvert #48: Holden Road	$ -	$ -	$ 32,000	$ 518,000	$ -
Collins Drain at Outer Drive (1016)	$ -	$ -	$ -	$ 22,500	$ 367,500
Balance Proposed	**$ 39,000**	**$ 2,101,000**	**$ 321,000**	**$ 540,500**	**$ 406,500**
Balance Available	**$ 860,500**	**$ (830,500)**	**$ (741,500)**	**$ (872,000)**	**$ (868,500)**

Attachment 16 - 2022 Sidewalks Lifecycle Reserve Projection

LC Sidewalk (1550)	2022	2023	2024	2025	2026
Reserve Balance Start of Year	$ 454,600	$ 459,600	$ 364,600	$ 269,600	$ 174,600
Budget Allocation	$ 74,000	$ 74,000	$ 74,000	$ 74,000	$ 74,000
Funds Available	**$ 528,600**	**$ 533,600**	**$ 438,600**	**$ 343,600**	**$ 248,600**
Committed	$ -	$ -	$ -	$ -	$ -
Balance Committed	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$ 528,600**	**$ 533,600**	**$ 438,600**	**$ 343,600**	**$ 248,600**
Proposed					
Sidewalk Repair Program (Note 1)	$ 69,000	$ 69,000	$ 69,000	$ 69,000	$ 69,000
AODA Sidewalk Ramp Repair	$ -	$ 100,000	$ 100,000	$ 100,000	$ 100,000
Balance Proposed	**$ 69,000**	**$ 169,000**	**$ 169,000**	**$ 169,000**	**$ 169,000**
Balance Available	**$ 459,600**	**$ 364,600**	**$ 269,600**	**$ 174,600**	**$ 79,600**

Notes:

1) General allowance

Attachment 17 - 2022 Storm Lifecycle Reserve Projection

LC Storm Sewer (1650)	2022	2023	2024	2025	2026
Reserve Balance Start of Year	$ (639,500)	$ (3,559,466)	$ (3,528,416)	$ (2,950,716)	$ (2,612,516)
Budget Allocation	$ 1,252,700	$ 1,252,700	$ 1,252,700	$ 1,252,700	$ 1,252,700
DMAF Grant	$ 2,799,200	$ 3,311,500	$ 235,600	$ 1,133,000	$ 1,699,400
Long-term Debt	$ 4,198,770	$ 4,967,330	$ 353,440	$ 1,699,400	$ 2,549,200
Transfers from Infrastructure Reserve	$ 1,000,000	$ 1,000,000	$ -	$ -	$ -
Funds Available	**$ 8,611,170**	**$ 6,972,064**	**$ (1,686,676)**	**$ 1,134,384**	**$ 2,888,784**
Committed					
Manning Road Reconstruction - Phase 3	$ 2,500	$ -	$ -	$ -	$ -
Riverside Drive Trail (Lesperance-Manning)	$ 37,500	$ -	$ -	$ -	$ -
Lesperance/VIA Rail Improvements	$ 144,500	$ -	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ 335,700	$ -	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer(LRPCP)	$ 52,400	$ -	$ -	$ -	$ -
Scully & St Mark's Storm PS/Riverside Drive	$ 361,100	$ -	$ -	$ -	$ -
MRSPA Pond Design and Construction	$ 1,469,316	$ -	$ -	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 91,750	$ -	$ -	$ -	$ -
P.J. Cecile Storm PS	$ 389,000	$ -	$ -	$ -	$ -
Turkey Creek Watershed Assessment - Ph 1-2	$ 45,000	$ -	$ -	$ -	$ -
Balance Committed	**$ 2,928,766**	**$ -**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$ 5,682,404**	**$ 6,972,064**	**$ (1,686,676)**	**$ 1,134,384**	**$ 2,888,784**
Proposed					
Manning Road Reconstruction - Phase 3	$ -	$ 319,600	$ -	$ -	$ -
Riverside Drive Trail (Lesperance-Manning)	$ 142,900	$ -	$ -	$ -	$ -
Lesperance/VIA Rail Improvements	$ 120,400	$ -	$ -	$ -	$ -
Sylvestre Drive Sanitary Sewer Extension	$ -	$ -	$ -	$ -	$ 49,900
Manhole Restoration Program	$ -	$ 50,000	$ -	$ -	$ -
Oldcastle Storm Drainage Master Plan	$ 45,000	$ -	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer(LRPCP)	$ -	$ 455,700	$ -	$ -	$ -
Scully & St Mark's Storm PS/Riverside Drive	$ 6,027,970	$ 7,727,870	$ 267,000	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 24,000	$ 940,850	$ -	$ -	$ -
Lanoue Street Improvements	$ -	$ 55,500	$ -	$ -	$ -
P.J. Cecile Storm PS	$ 970,000	$ 550,960	$ 322,040	$ 2,832,400	$ 4,248,600
Ure Street Sanitary Sewer (LRPCP)	$ -	$ -	$ 25,000	$ 386,000	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ 28,500	$ 427,500
Tecumseh Rd - Storm and Road Improvements	$ 1,911,600	$ -	$ -	$ -	$ -
Breakwall Condition Assessment	$ -	$ 50,000	$ -	$ -	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ -	$ 34,900
TSDMP Implementation - CWB Inlet Improvements	$ -	$ 100,000	$ -	$ -	$ -
Tecumseh Storm Drainage Master Plan Update	$ -	$ -	$ 150,000	$ -	$ -
Principal and Interest Repayment Estimation	$ -	$ 250,000	$ 500,000	$ 500,000	$ 500,000
Balance Proposed	**$ 9,241,870**	**$ 10,500,480**	**$ 1,264,040**	**$ 3,746,900**	**$ 5,260,900**
Balance Available	**$ (3,559,466)**	**$ (3,528,416)**	**$ (2,950,716)**	**$ (2,612,516)**	**$ (2,372,116)**

Attachment 18 - 2022 Wastewater Sewers Reserve Fund Projection

RF Wastewater Sewers (2550)	2022	2023	2024	2025	2026
Reserve Balance Start of Year	$ 172,600	$ (565,157)	$ 1,191,618	$ (939,807)	$ (991,707)
Estimated Allocation	$ 2,053,300	$ 2,172,900	$ 2,326,500	$ 2,396,300	$ 2,468,200
Estimated Interest	$ 5,000	$ (17,000)	$ 36,000	$ (28,000)	$ (30,000)
Development Charges	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000
Capital Sewer Connection Charges	$ -	$ 3,192,850	$ -	$ 5,536,050	$ 1,513,900
Funds Available	**$ 2,380,900**	**$ 4,933,593**	**$ 3,704,118**	**$ 7,114,543**	**$ 3,110,393**
Committed					
Debt payments - 2012 Non-DC debt	$ 57,400	$ -	$ -	$ -	$ -
IT GIS Tech % Share	$ 28,700	$ 29,300	$ 29,300	$ 29,900	$ 29,900
Sylvestre Drive Sanitary Sewer Extension	$ 67,918	$ -	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ 99,859	$ -	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer(LRPCP)	$ 32,650	$ -	$ -	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 22,250	$ -	$ -	$ -	$ -
CR42/43 Construction	$ 58,300	$ -	$ -	$ -	$ -
Tecumseh Road Sanitary Sewer	$ 563,980	$ -	$ -	$ -	$ -
Balance Committed	**$ 931,057**	**$ 29,300**	**$ 29,300**	**$ 29,900**	**$ 29,900**
Balance Uncommitted	**$ 1,449,843**	**$ 4,904,293**	**$ 3,674,818**	**$ 7,084,643**	**$ 3,080,493**
Proposed					
Sylvestre Drive Sanitary Sewer Extension	$ -	$ -	$ -	$ -	$ 761,100
SCADA Software/Server/Nodes Update	$ 20,000	$ -	$ -	$ -	$ -
Manhole Restoration Program	$ -	$ 50,000	$ -	$ -	$ -
Portable Generator for PS	$ -	$ -	$ -	$ -	$ 100,000
CR46/Webster/Laval Sanitary Sewer(LRPCP)	$ -	$ 1,290,100	$ -	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 20,000	$ 1,027,200	$ -	$ -	$ -
Sanitary Sewer Model Update	$ 30,000	$ -	$ -	$ -	$ -
Riverside Drive In-line Storage Trunk Sanitary	$ -	$ 123,375	$ 1,932,625	$ -	$ -
CR42/43 Construction	$ 1,861,700	$ -	$ -	$ -	$ -
Tecumseh Rd - Storm and Road improvements	$ 38,300	$ -	$ -	$ -	$ -
Ure Street Sanitary Sewer (LRPCP)	$ -	$ -	$ 31,000	$ 478,000	$ -
West Tecumseh Trunk Sanitary (WW-1)	$ -	$ 521,000	$ -	$ 6,513,000	$ -
Diversion San Sewers (Intersection Rd) (WW-2)	$ -	$ 84,000	$ -	$ 1,050,000	$ -
Sylvestre Pumping Station Upgrade (WW-4)	$ -	$ 147,500	$ 635,500	$ -	$ -
MRSPA Sanitary Sewer (WW-12)	$ -	$ 255,500	$ 1,096,500	$ -	$ -
MRSPA Sanitary Lift Station (WW-13)	$ -	$ 214,000	$ 919,000	$ -	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ 35,350	$ 530,650
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ -	$ 43,250
8th Concession Sanitary Sewer By-Law	$ 45,000	$ -	$ -	$ -	$ -
Total Proposed	**$ 2,015,000**	**$ 3,712,675**	**$ 4,614,625**	**$ 8,076,350**	**$ 1,435,000**
Balance Available	**$ (565,157)**	**$ 1,191,618**	**$ (939,807)**	**$ (991,707)**	**$ 1,645,493**

Attachment 19 - 2022 Wastewater Facilities Reserve Fund Projection

RF Wastewater Facilities (2560)	2022	2023	2024	2025	2026
Reserve Balance Start of Year	$ 2,589,000	$ 2,894,090	$ 3,236,730	$ 3,724,230	$ 3,900,930
Estimated Allocation	$ 450,000	$ 450,000	$ 450,000	$ 450,000	$ 450,000
Estimated Interest	$ 77,700	$ 86,800	$ 97,100	$ 111,700	$ 117,000
DMAF Grant	$ 54,200	$ 69,500	$ 2,400	$ -	$ -
Funds Available	**$ 3,170,900**	**$ 3,500,390**	**$ 3,786,230**	**$ 4,285,930**	**$ 4,467,930**
Committed					
Scully & St. Mark's Storm PS/Riverside Drive	$ 79,350	$ -	$ -	$ -	$ -
Balance Committed	**$ 79,350**	**$ -**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$ 3,091,550**	**$ 3,500,390**	**$ 3,786,230**	**$ 4,285,930**	**$ 4,467,930**
Proposed					
Sylvestre Drive Sanitary PS Improvements	$ 25,000	$ 90,000	$ -	$ -	$ 30,000
Lakewood Sanitary PS Improvements	$ 22,000	$ -	$ 56,000	$ -	$ -
St. Alphonse Sanitary PS Improvements	$ -	$ -	$ -	$ -	$ -
Gauthier Sanitary Pump Station	$ 15,000	$ -	$ -	$ 385,000	$ -
Scully & St. Mark's Storm PS/Riverside Drive	$ 135,460	$ 173,660	$ 6,000	$ -	$ -
Total Proposed	**$ 197,460**	**$ 263,660**	**$ 62,000**	**$ 385,000**	**$ 30,000**
Balance Available	**$ 2,894,090**	**$ 3,236,730**	**$ 3,724,230**	**$ 3,900,930**	**$ 4,437,930**

Attachment 20 - 2022 Watermain Reserve Fund Projection

RF Watermain (2520)	2022	2023	2024	2025	2026
Reserve Balance Start of Year	$ 5,449,100	$ 2,096,410	$ 819,760	$ 241,860	$ (523,040)
Estimated Allocation	$ 1,607,200	$ 1,672,400	$ 1,746,000	$ 1,798,400	$ 1,852,400
Estimated Interest	$ 163,500	$ 62,900	$ 24,600	$ 7,300	$ (15,700)
Development Charges	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000
Funds Available	**$ 7,269,800**	**$ 3,881,710**	**$ 2,640,360**	**$ 2,097,560**	**$ 1,363,660**
Committed					
Tools	$ 28,700	$ 28,700	$ 28,700	$ 28,700	$ 28,700
Meters	$ 11,500	$ 11,700	$ 12,000	$ 12,000	$ 12,000
IT GIS Tech % Share	$ 28,700	$ 29,300	$ 29,300	$ 29,900	$ 29,900
Banwell Watermain-Intersection to South of CPR	$ 105,900	$ -	$ -	$ -	$ -
Various Watermain Replacement Projects 2021	$ 750,500	$ -	$ -	$ -	$ -
Hwy3-CR34 Water Valve Replacement	$ 431,300	$ -	$ -	$ -	$ -
Hwy#3/Walker Rd Watermain Replacement	$ 395,375	$ -	$ -	$ -	$ -
Watermain Anode Program - Inspection/Replace	$ 239,690	$ -	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ 98,000	$ -	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer(LRPCP)	$ 11,725	$ -	$ -	$ -	$ -
CR42/43 Construction	$ 739,900	$ -	$ -	$ -	$ -
CR19 - CR22 to Jamsyl	$ 738,000	$ -	$ -	$ -	$ -
Balance Committed	**$ 3,579,290**	**$ 69,700**	**$ 70,000**	**$ 70,600**	**$ 70,600**
Balance Uncommitted	**$ 3,690,510**	**$ 3,812,010**	**$ 2,570,360**	**$ 2,026,960**	**$ 1,293,060**
Riverside Drive Trail (Lesperance-Manning)	$ 25,000	$ -	$ -	$ -	$ -
Banwell Watermain-Intersection to South of CPR	$ -	$ 607,100	$ -	$ -	$ -
Watermain Anode Program - Inspection/Replace	$ 20,000	$ -	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer(LRPCP)	$ -	$ 1,240,400	$ -	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 3,000	$ 22,250	$ -	$ -	$ -
CR42/43 Construction	$ 1,372,100	$ 390,000	$ -	$ -	$ -
Tecumseh Rd - Storm and Road Improvements	$ 67,000	$ -	$ -	$ -	$ -
Manning Trunk Water-CR22 to CPR (W-2B)	$ -	$ 425,000	$ 1,871,000	$ -	$ -
E Tecumseh Hamlet Watermain Connection (W-2A)	$ -	$ 103,500	$ 457,500	$ -	$ -
West Tecumseh Trunk Watermain (W-1)	$ -	$ 204,000	$ -	$ 2,550,000	$ -
North Tecumseh Water Distribution Model	$ 70,000	$ -	$ -	$ -	$ -
Water Sampling Station Replacements	$ 37,000	$ -	$ -	$ -	$ -
Total Proposed	**$ 1,594,100**	**$ 2,992,250**	**$ 2,328,500**	**$ 2,550,000**	**$ -**
Balance Available	**$ 2,096,410**	**$ 819,760**	**$ 241,860**	**$ (523,040)**	**$ 1,293,060**

RF Water Facilities (2530)	2022	2023	2024	2025	2026
Reserve Balance Start of Year	$7,574,700	$8,000,900	$8,113,900	$ 7,517,800	$ 7,997,700
Estimated Allocation	$ 199,000	$ 223,000	$ 247,000	$ 254,400	$ 262,000
Estimated Interest	$ 227,200	$ 240,000	$ 243,400	$ 225,500	$ 239,900
Funds Available	**$8,000,900**	**$8,463,900**	**$8,604,300**	**$ 7,997,700**	**$ 8,499,600**
Committed	$ -	$ -	$ -	$ -	$ -
Balance Committed	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$8,000,900**	**$8,463,900**	**$8,604,300**	**$ 7,997,700**	**$ 8,499,600**
Proposed					
Zone 2 Water Booster/Storage Site Select (W-9,10)	$ -	$ 350,000	$ -	$ -	$ -
Zone 2 Booster Station (W-9)	$ -	$ -	$ 399,500	$ -	$ 2,925,500
Zone 2 Water Storage Facility (W-10)	$ -	$ -	$ 687,000	$ -	$ 5,763,000
Total Proposed	**$ -**	**$ 350,000**	**$1,086,500**	**$ -**	**$ 8,688,500**
Balance Available	**$8,000,900**	**$8,113,900**	**$7,517,800**	**$ 7,997,700**	**$ (188,900)**

Oasis concrete pad

Appendix 7 Continual Improvement Report

TOWN OF Tecumseh ONTARIO · CANADA

WATER SERVICES
REQUEST FOR NEW OR CHANGED DWQMS DOCUMENT
Revision Date: January 17, 2022

PLEASE PRINT ALL INFORMATON

Document Verified by (Initials Only)	

When completed, submit this form to the DWQMS Representative or alternate. Please attach a printed hardcopy with all revisions when requesting changes to an existing DWQMS document.

DWQMS Document Title: [ ]

DWQMS ID: [ ]

Operator Name (print): [ ]

Date of Submission: [ ]

Reason for Request:

- ☐ Enhances process control
- ☐ Supports regulatory requirements
- ☐ Required by the DWQMS
- ☐ Reduce risk
- ☐ Improve operational efficiency

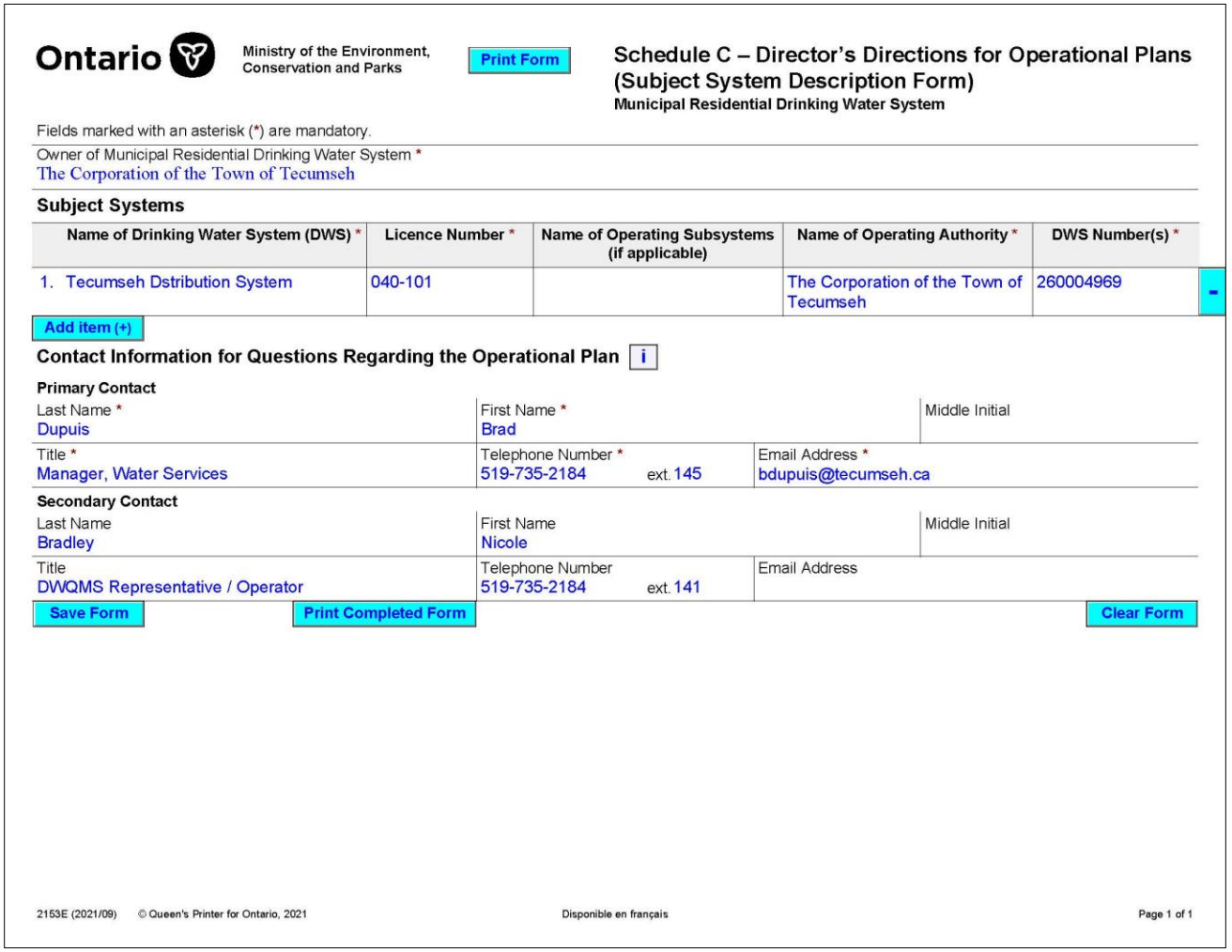
Summary of Reason for Change / Addition:

[ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]

Operator's Name (print)	[ ]		
Operator's Signature		Date:	[ ]

Page **1** of **1**

Appendix 8 Schedule C – Director's Direction for Operational Plans



Ontario — Ministry of the Environment, Conservation and Parks

Print Form

Schedule C – Director's Directions for Operational Plans (Subject System Description Form)
Municipal Residential Drinking Water System

Fields marked with an asterisk (*) are mandatory.

Owner of Municipal Residential Drinking Water System *
The Corporation of the Town of Tecumseh

Subject Systems

Name of Drinking Water System (DWS) *	Licence Number *	Name of Operating Subsystems (if applicable)	Name of Operating Authority *	DWS Number(s) *
1. Tecumseh Dstribution System	040-101		The Corporation of the Town of Tecumseh	260004969

Add item (+)

Contact Information for Questions Regarding the Operational Plan i

Primary Contact

Last Name *	First Name *	Middle Initial
Dupuis	Brad	

Title *	Telephone Number *	Email Address *
Manager, Water Services	519-735-2184 ext. 145	bdupuis@tecumseh.ca

Secondary Contact

Last Name	First Name	Middle Initial
Bradley	Nicole	

Title	Telephone Number	Email Address
DWQMS Representative / Operator	519-735-2184 ext. 141	

Save Form | Print Completed Form | Clear Form

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