The Corporation of the Town of Tecumseh
Public Works & Environmental Services

Quality Management Systems

A QMS is a system to:
• establish policy and objectives and achieve those objectives, and
• direct and control an organization with regard to quality.

Quality management for Ontario's municipal drinking water systems will occur through the development and implementation of a QMS for each system based upon the DWQMS.

Drinking Water Quality Management System
Water Services Operational Plan

Version 10

Contents

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 is included in section 6.

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 to our consumers.

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.

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 Environmental Services and the Manager, Water & Wastewater 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. ***(See Appendix 1- Commitments and Endorsement)***

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: Shawn LaPorte
Position: DWQMS Representative / Water Operator

Alternate DWQMS Representative:
Name: Brad Dupuis
Position: Manager, Water & Wastewater O.R.O.

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 QMS 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 the Water Services division and The Corporation of the Town of Tecumseh.

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 and O. Reg. 128/04)

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. The DWQMS Representative will delegate the task of creating the new documents to be approved (if necessary) by the Manager, Water and Wastewater, Top Management and/or Municipal Owner/Operating Authority if necessary.

Any employee of the Water Services division 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 the Water Services division or the Operational Plan.

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.

Approving Documents

- DWQMS-related documents may be approved by Municipal Owner; Operating Authority's Top Management: CAO, Director of Public Works & Environmental Services, Manager of Water & Wastewater / ORO; or the DWQMS Representative.
- DWQMS documentation shall be stored at the Water Services division office or electronically on The Corporation of the Town of Tecumseh network servers.
- Water Services staff has read-only access to the electronic version of the documentation. The Manager, Water & Wastewater/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 as per legislation under the *Safe Drinking Water Act 2002* and The Corporation of the Town of Tecumseh municipal by-law.

Reviewing Documents

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

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 division office.
- Original sets of equipment manuals / specifications and drinking water regulations are kept at the Water Services division office.
- Copies of As-Builts are stored at the Water Services division office and electronically on The Corporation of the Town of Tecumseh network servers.

DWQMS Records Control

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

DWQMS records include (and 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-related, results of internal and external audits, and management review meetings.

Compliance records demonstrate compliance with legislative requirements and include (and 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 division office and The Corporation of the Town of Tecumseh network servers.

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.

6. Drinking Water System

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. ***(See 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 4,546m^3 water tower, located in the North end of Tecumseh. This 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 and 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, County Road 22, 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, and 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 on, and at the Town boundary in Oldcastle Hamlet on the 8th Concession Road, County Road 46, Walker Road, North Talbot Road and Howard Avenue.

Service Areas and Water Distribution System Components:

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. ***(See Appendix 2- The north service area boundary is identified on Map 2)***

The feedermains on Dillon Drive, McNorton Street and Tecumseh Road extend from the Town boundary through the center of Tecumseh (Planning Area) to the elevated water tank 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.

South Tecumseh Water Service Area

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. ***(See 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.

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 division office. ***(See Appendix 2 – Table 1 Watermain Material Type and Length in Tecumseh Water Distribution System)***

Procedures in place to maintain disinfectant residuals within the distribution system:

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

7. Risk Assessment

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 & Wastewater/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 redone 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.

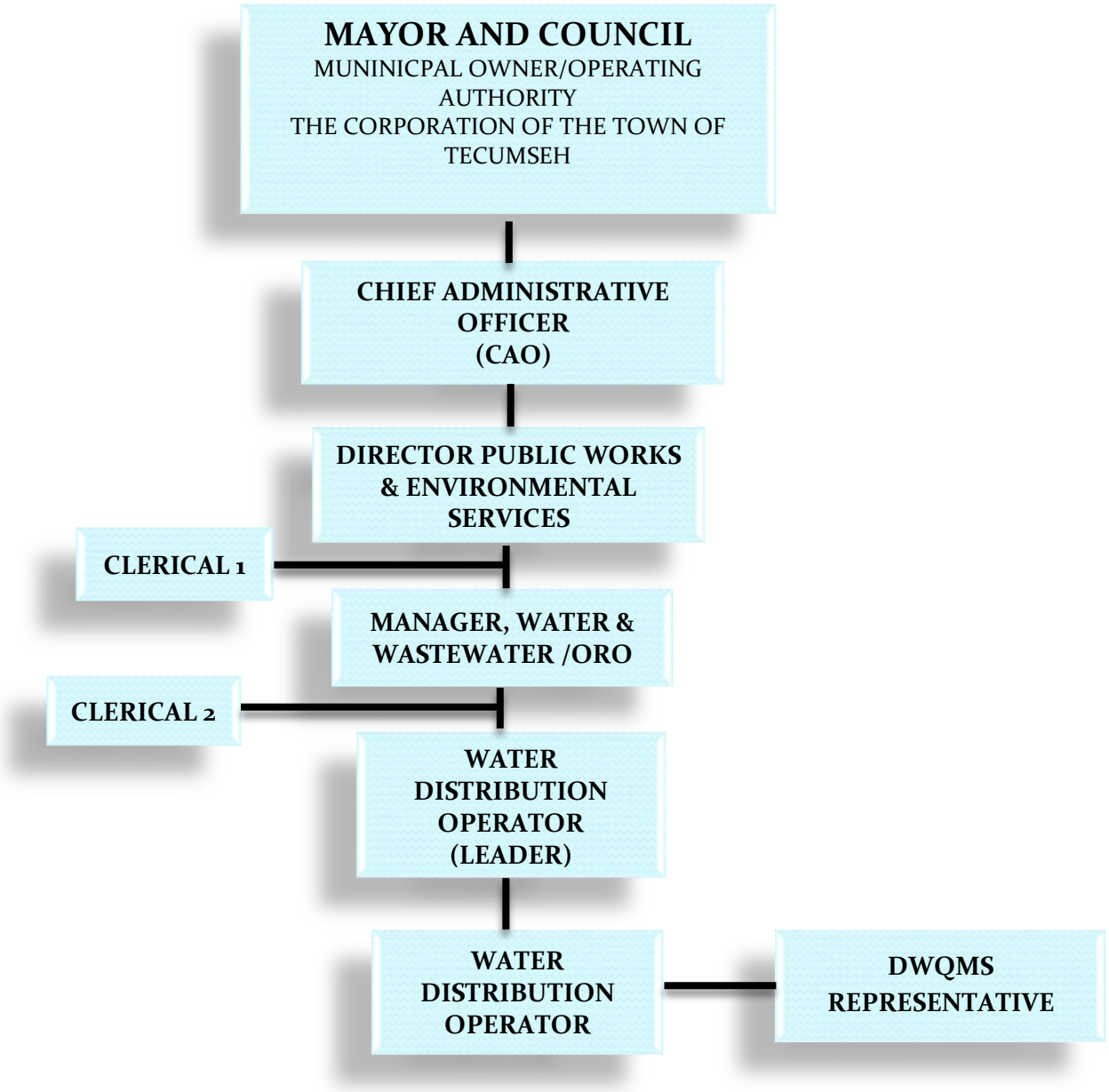
8. Risk Assessment Outcomes

The risk assessment will be facilitated by developing and completing Risk Assessment Tables. 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).

- ***(See Appendix 3 – Risk Assessment)***
- ***(See Appendix 4 - Risk Assessment Outcomes)***

9. Organizational Structure, Roles, Responsibilities and Authorities



The Corporation of the Town of Tecumseh

Water Division - Organizational Chart

Operational Roles, Responsibilities and Authorities:

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.

Top Management

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

Chief Administrative Officer (CAO)

Responsibilities

As the senior Town staff person 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 Chief Administrative Officer (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).

Director, Public Works & Environmental Services

Responsibilities

Reporting to the Chief Administrative Officer (CAO), the responsibilities of the Director of Environmental Services and Public Works 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 Environmental Services and Public Works department supervisors and administrative staff,
- Coordinating budget preparation,
- Preparation and presentation of Environmental 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 and Management Review Committee.

Authorities

The Director of Environmental Services and Public Works 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 Environmental Services Department staff in accordance with Town policies,
- Within the scope of the Environmental Services Department and Public Works, 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.

Manager, Water & Wastewater/Overall Responsible Operator (ORO)

Responsibilities

Reporting to the Director of Environmental Services and Public Works, 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 Environmental Services and Public Works 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 & Wastewater /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 Environmental 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.

DWQMS Representative

Responsibilities

Reporting to the Town Municipal Owner/Operating Authority and Top Management, 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.

Designated DWQMS Representative Alternate

- Performs all roles of Designated DWQMS Representative.

Water Distribution Certified Operator (Leader)

Responsibilities

Reporting to the Water & Wastewater/Overall Responsible Operator (ORO), the responsibilities include:

- Oversees day-to-day activities relating to maintenance of the water distribution system,
- Communicates and liaises with the Manager, Water & Wastewater, Water Operators and Clerical Staff,
- Works with the Manager, Water & Wastewater 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 & Wastewater, Clerical Staff and/or after-hours answering service.

Water Distribution Certified Operator

Responsibilities

Reporting to the Water & Wastewater/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:

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

Clerical Staff

Responsibilities

Reporting to the Director of Environmental Services and Public Works Water & Wastewater/Overall Responsible Operator (ORO), the responsibilities include:

- Communicates/liaises with the following: Director, Public Works & Environmental Services; Manager, Water & Wastewater; Water Operator (Leader); and Water Operators,
- Responds to and documents public complaints. Example- drinking water quality complaints, 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 division Organizational Chart.

10. Competencies

The Ministry of the Environment, Conservation and Parks 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.

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.

Director of Public Works & Environmental 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* 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

Manager, Water & Wastewater and Overall Responsible Operator (ORO)

Shall possess advanced theoretical and working knowledge of administrative skills. The Manager, Water and Wastewater and ORO shall also possess advanced theoretical and working knowledge of the *Safe Drinking Water Act* and applicable regulations and legislation. The Manager, Water and Wastewater and ORO should also have a good working knowledge of The Corporation of the Town of Tecumseh drinking water distribution system and it 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 Environmental Services for a designated ORO in the event he/she is not available and cannot be contacted.

New Operators (OIT's)

Must complete the OIT Water Distribution Prep Course and OIT exam as per Ministry of the Environment, Conservation and Parks (MECP) O.Reg.128/04 requirements.

Class I Water Distribution Operators

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

Class II Water Distribution Operators

Class I level, the operator can advance to a Class II Water Distribution operator by successfully completing the Class II Water Distribution Exam as per MECP O.Reg.128/04 requirements.

Class III Water Distribution Operators

Class II level, the operator can advance to a Class III Water Distribution operator by successfully completing the Class III Water Distribution Exam as per MECP O.Reg.128/04 requirements.

Water Operator Competencies

- Water Operators Shall posses an OIT or Class 1 Operating Certificate as per Ontario Regulation 128/04 requirements
- The ORO shall have a minimum Class II Water Distribution Certificate as per Ontario Regulation 128/04 requirements

Water Operator Skills and Knowledge

- The Water Operator performs a variety of skilled and semi-skilled tasks including: operates equipment used in the construction, repair and maintenance of the water distribution system and various public buildings and facilities; utilizes private contractors as authorized; oversees the contractors' work; and performs other related duties as required.
- The Water Operator will work with Town's Water Operators, other Town employees and / or contractors and provide direction to contractors as needed.

- The Water Operator will work with minimum supervision and shall comply with all safety rules and regulations and will work unsupervised if required.

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:

Identify Training Requirements

The Manager, Water & Wastewater and Water Operators must meet the training requirements as per Ministry of the Environment, Conservation and Parks (MECP) O.Reg.128/04 requirements.

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

- Class 1 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.

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 the Water Services division 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 & Wastewater, stored in document control software and filed in hard copy in the Water Services division office as proof that the required training has been successfully completed. The Manager, Water & Wastewater is responsible for ensuring that all identified training is completed.

Maintain Competencies

The Manager, Water & Wastewater 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 Ministry of the Environment, Conservation and Parks O.Reg.128/04 to maintain Water Distribution Water Distribution Operator Certificates. Training hours and courses completed by

the Water Distribution Operators are logged and tracked by the Manager, Water & Wastewater and are documented in document control software.

11. Personnel Coverage

Water Services division 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 & Wastewater 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.

Regular Hours Coverage

- All work orders are generated through the Water Services division 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 & Wastewater/ORO and the Water Operator (Leader)

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 complaints
- All reports and forms are authorized by the Manager, Water & Wastewater/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 & Wastewater/ORO and are used in digression of the Water Operator

Pandemic, Strikes and/or Lockouts

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

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 Ministry of the Environment, Conservation and Parks to request advice or assistance should an emergency of this nature arise.

Strikes and/or Lockouts

- The Manager, Water & Wastewater 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 Ministry of the Environment, Conservation and Parks to request advice or assistance should an emergency of this nature arise.

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 division office. A hard copy DWQMS Operational Plan will be kept at the Water Services division 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 & Wastewater.

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 and Wastewater/ORO will collect and analyze all data communicated to the town. The Manager, Water and Wastewater/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 division.

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

13. Essential Supplies and Services

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

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 & Environmental Services, under the advisement of the Manager, Water & Wastewater 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 & Environmental Services and Director, Financial Services/Treasurer. The capital requirements are then submitted to Top Management and Municipal Owner/Operating Authority for budgetary approval.

15. Infrastructure Maintenance, Rehabilitation and Renewal

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

Planned Maintenance

All planned maintenance is scheduled and communicated to staff by the Manager, Water & Wastewater. All records are retained at the Water Services division 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 & Wastewater with the following: Director, Public Works & Environmental Services; Director, Financial Services/Treasurer; Manager, Engineering Services; and Manager, Roads & Fleet.

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 & Wastewater ORO or the Water Operator (Leader). Completed work orders are reviewed and signed by the Manager, Water & Wastewater 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.

Unplanned Maintenance

Unplanned maintenance is conducted as required. All unplanned maintenance activities are authorized by the Manager, Water& Wastewater.

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

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 Ontario Regulation 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 Ontario Regulation 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 & Wastewater 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 division office.

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

Adverse Water Quality Sample

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

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

Inclement Weather

- Additional staff and/or equipment will be provided for as needed

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 division office.

Contractors are used for performing calibrations are identified in the "Essential Supplies and Services List". ***(See appendix 5 - Essential Supplies and Services List)***

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 division 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.

Emergencies

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

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

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

The Manager, Water & Wastewater will then report all incidents and corrective actions to the Director, Public Works and Environmental Services or designate.

The Director, Public Works and Environmental Services, in collaboration with the Manager, Water & Wastewater, 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 customers 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 then a water emergency the Corporation of the Town of Tecumseh Emergency Response Plan will be implemented. A hardcopy is stored in the Water Services division office and electronically in the document control software.

An extensive emergency contact list is provided within the Water Services Emergency Response Plan. There is a procedure in place to review and update the Water Services Emergency Response Plan on an annual basis.

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.

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 & Wastewater
- 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

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

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 & Environmental Services
- The Manager, Water and Wastewater /ORO
- The meeting is chaired by DWQMS Representative

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

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.

Review Input

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

- Incidents of regulatory non-compliance
- Incidents of adverse drinking water tests
- Deviations from Critical Control Point limits and response actions
- The effectiveness of the risk assessment process
- Results of internal and 3rd party audits
- Results of relevant emergency response testing
- Operational performance and water quality trends
- Follow-up on action items from previous Management Reviews
- Status of management action items (if any) identified between reviews
- Changes in resource requirements, infrastructure, process, personnel, the DWQMS or regulations that could affect the DWQMS
- Consumer feedback
- The resources needed to maintain the DWQMS
- The results of the infrastructure review
- Operational Plan, content, updates and staff suggestions

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.

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 (including the review of MECP's BMP document, when published) will underdo 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;
- Customer 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.

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

The Corporation of the Town of Tecumseh

Public Works & Environmental Services

To:	Mayor and Members of Council
From:	Phil Bartnik, Director Public Works & Environmental Services
Date to Council:	February 25, 2020
Report Number:	PWES-2020-14
Subject:	Drinking Water Quality Management System Operational Plan Version 10

Recommendations

It is recommended:

That the Drinking Water Quality Management System Operational Plan Version 10 **be endorsed and committed to**.

Background

Following the results of the Walkerton Inquiry in 2002, a key recommendation by Justice O'Connor was for municipalities across Ontario to develop and implement a Drinking Water Quality Management System (DWQMS). The Owners and Operating Authority are required to document a quality management system in an Operational Plan for the drinking water system they operate.

The Town's Water Services Division is legislatively required to annually review and update its Drinking Water Quality Management System Operational Plan. The [updated] Operational Plan must include a written endorsement of its contents by Top Management and the Owner [Council].

Comments

Council and Top Management's endorsement and commitment to the Town's DWQMS is a crucial element of the Operational Plan. Council and Top Management shall provide evidence of their commitment to an effective quality management system by:

Council Report-Master (Rev 2019-09-27)

- Ensuring that a Quality Management System is in place that meets the requirements of the standard as mandated through the Safe Drinking Water Act, 2002 (SDWA).
- Ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements.
- Communicating the Quality Management System according to the procedure for communications.
- Determining, obtaining or providing the resources needed to maintain and continually improve the Quality Management System.

Version 10 of the Operational Plan was submitted to the DWQMS Committee and approved. Version 10 of the Operational Plan is appended to this report as Attachment No. 1. The document changes include but are not limited to the following:

- The link to the Quality Management System Policy on the website.
- The various commitments the Owner and Top Management endorse with respect to the Town's Quality Management System.
- Staff turnover

The above-noted changes were incorporated into Version 10 of the Operational Plan due to:

- Legislative and regulatory changes;
- Management Review Committee recommendations (refer to Attachment No. 2);
- The Town's administrative and/or policy changes.

Updates to the Operational Plan are necessary to continually improve the Town's Quality Management System.

Consultations

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:

Brad Dupuis, C. Tech.
Manager Water & Wastewater Services, O.R.O.

Reviewed by:

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

Recommended by:

Margaret Misek-Evans, MCIP, RPP
Chief Administrative Officer

Attachment Number	Attachment Name
1	Drinking Water Quality Management System Operational Plan Version 10
2	Management Review Committee Meeting Minutes, February 11, 2020

Appendix 2 – Drinking Water System

Table 1:

Watermain Material Type and Length in Tecumseh Water Distribution System

Watermain Material, Size & Length in Meters
Cast Iron Watermain – 19,573 Meters • 100mm Pipe = 151 Meters • 150mm Pipe = 18,429 Meters • 200mm Pipe = 106 Meters • 250mm Pipe = 519 Meters • 400mm Pipe = 368 Meters
Concrete Watermain - 2,524.00 Meters • 250mm Pipe = 2.0 Meters • 400mm Pipe = 2522 Meters
Ductile Iron Watermain - 26,681.00 Meters • 150mm Pipe = 9,275 Meters • 200mm Pipe = 12,021 Meters • 250mm Pipe = 1160 Meters • 300mm Pipe = 1661 Meters • 400mm Pipe = 2,064 Meters • 600mm Pipe = 497 Meters
Polyvinyl Chloride (PVC)Watermain -173,592 Meters • 50mm Pipe = 300 Meters • 100mm Pipe = 1,674 Meters • 150mm Pipe = 59,818 Meters • 200mm Pipe = 65,994 Meters • 250mm Pipe = 15,277 Meters • 300mm Pipe = 18,275 Meters • 400mm Pipe = 8,524 Meters • 600mm Pipe = 3,733 Meters
Polyethylene Watermain - 250.00 Meters • 50mm Pipe = 8 Meters • 150mm Pipe = 242 Meters
Total Length of Watermain - 222,620 Meters

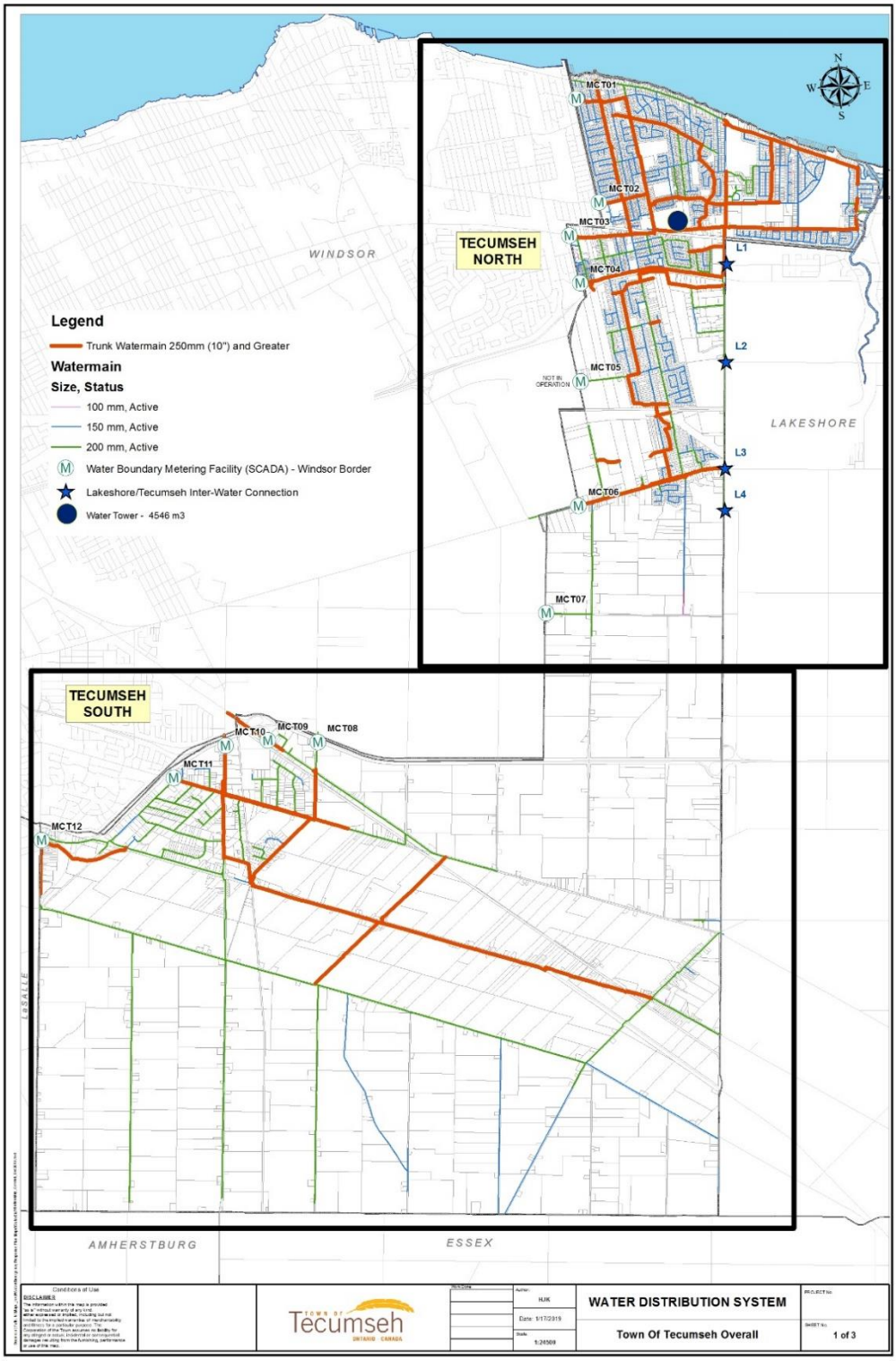
The north distribution system is currently supplied from the Windsor Water System through the following metering connection:

- 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 County Road 22
- 600 mm diameter feedermain on County Road 42
- (future) 600 mm diameter feedermain on Intersection Road

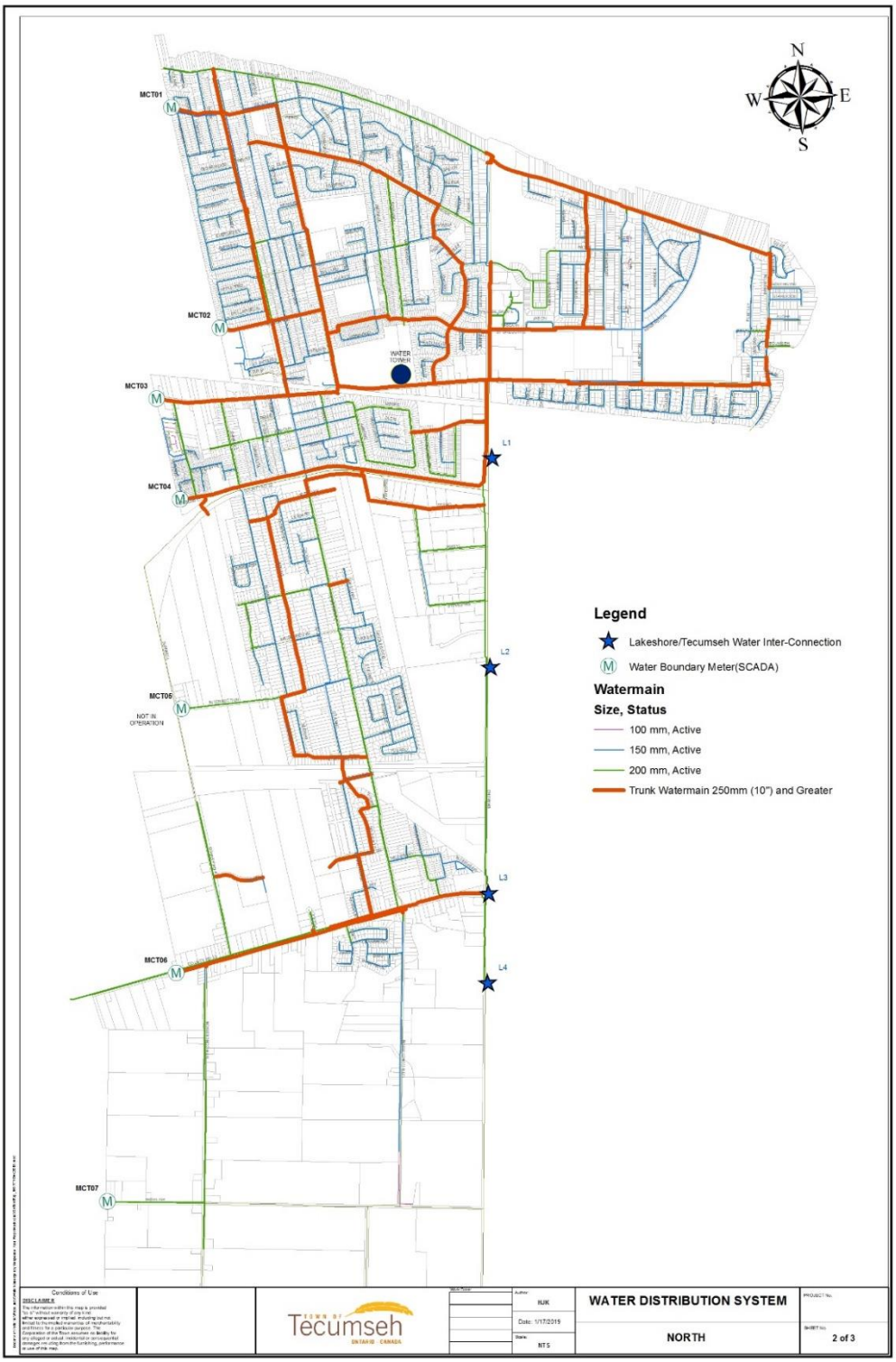
The south distribution system is currently supplied from the Windsor Water System through the following connections:

- 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
- 200 mm diameter feedermain on Talbot Road

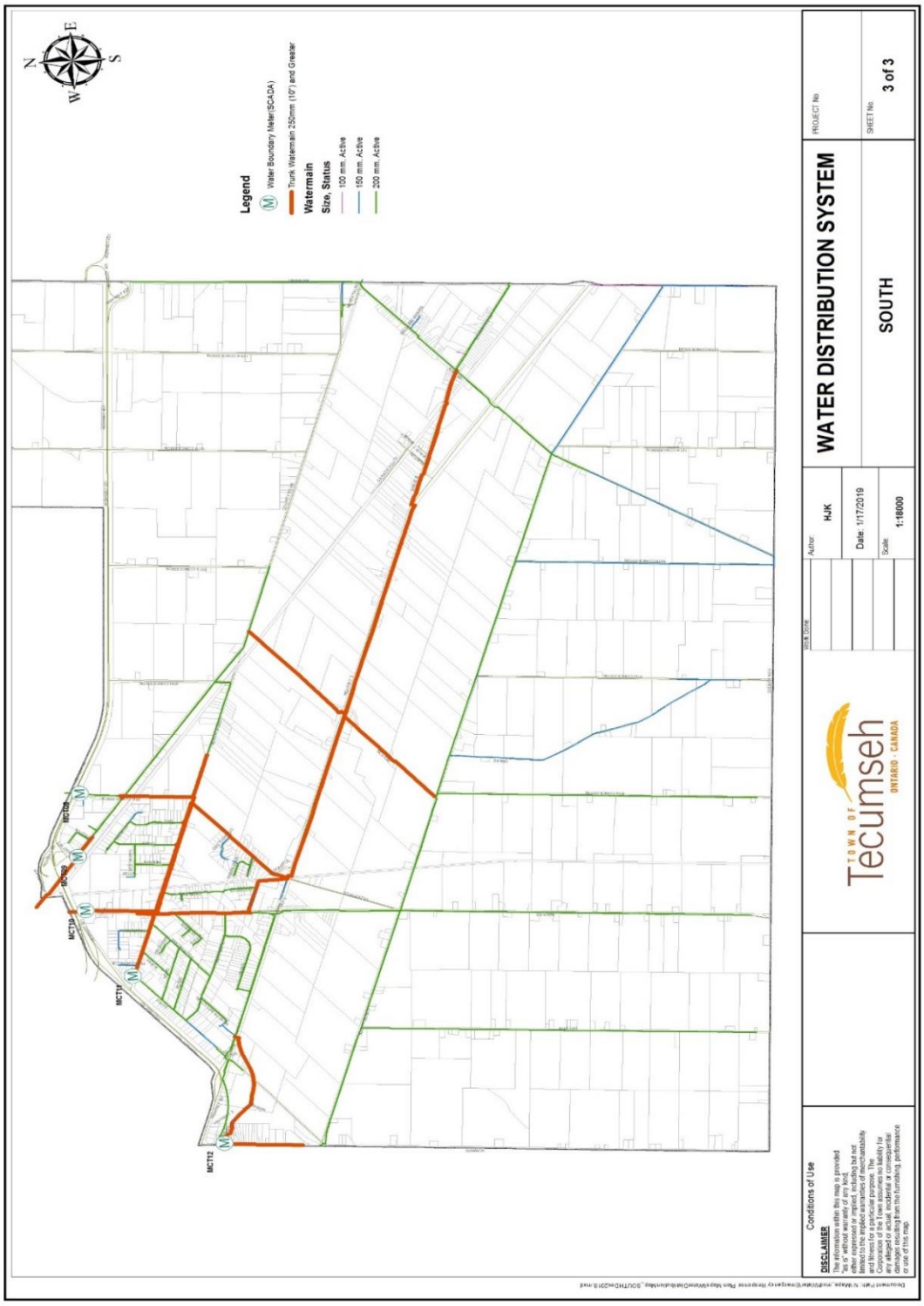
Map 1: Town of Tecumseh Water Distribution System – Overall Service Area



Map 2: Town of Tecumseh Water Distribution System – North Service Area



Map 3: Town of Tecumseh Water Distribution System – South Service Area



Appendix 3 – Risk Assessment (Comprehensive Risk Assessment done January 24, 2019)

Completing the Hazard Analysis and Critical Control Point Worksheet Procedure:

The Risk Assessment Team is to complete the tasks outlined in section 7 Risk Assessment and section 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 outline 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

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.

Table 1- Hazards

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.

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**

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 population at risk.	**4**
Catastrophic	Major impact for large part of the population, complete failure of systems.	**5**

Table 4 – Detectability

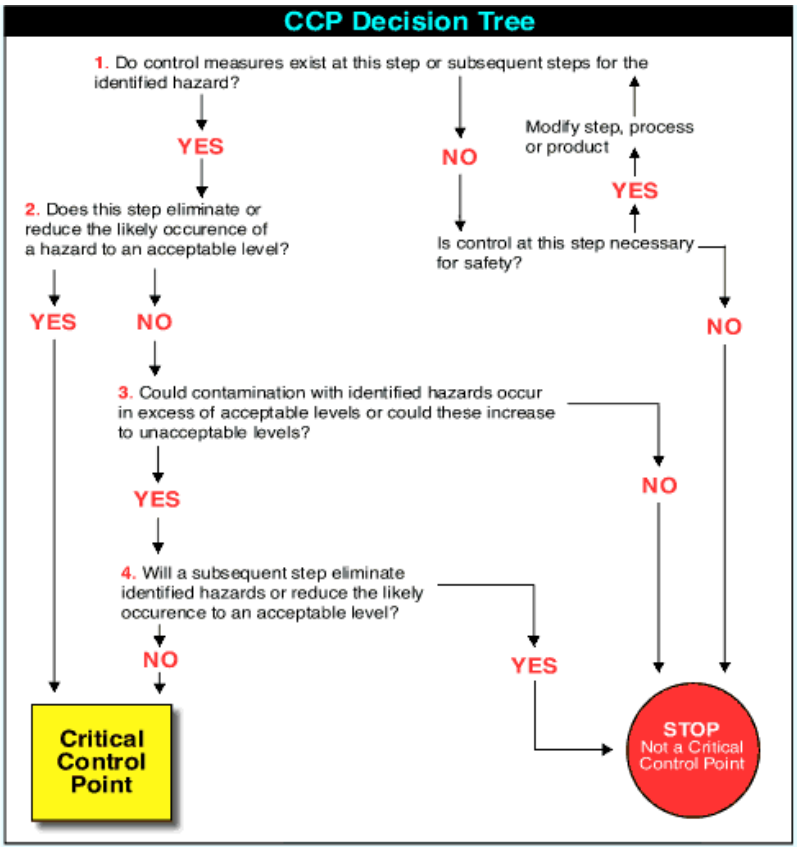
Description	Detectability of Hazardous Event	Rating
Very Detectable	Easy to detect, on-line monitoring through SCADA.	**1**
Moderately Detectable	Moderately detectable, alarm present but not in SCADA, may require operator to walk by and notice alarm; problem is indicated promptly by in-house lab test 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**

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 15	Very High

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 table included below:

Critical Control Point (CCP)	Hazard Description	Critical Control Limit (CCL)	Monitoring Process and/or Procedures	Response Procedures
Secondary Disinfection *To ensure the maintenance of a disinfectant residual throughout the distribution system.*	**Deterioration of Chlorine Residual** • Reduced water flows based on demand, pipe size, etc. • Occurrence of dead ends and Metered Areas • Increased water temperature (temporary mains) • Reaction with organic matter in watermains • Water age in the distribution system • Water age in storage facilities	<u>Free Chlorine</u> Target Residual in the Distribution System: • >0.20 mg/L (operational minimum) Reportable under the SDWA: • 0.05 mg/L <u>Turbidity</u> • <5 ntu in the distribution system <u>Customer Complaints</u> • Re: water quality characteristics (taste, odour, colour, other)	• Certified and competent operators • Sampling, testing and monitoring of control limits, as applicable • Watermain flushing programs • Installation of blow-offs in dead ends • Regular samples taken and analyzed for chlorine residual	Emergency Response procedures: • 2.1 Boil Water Advisory; • 2.2 Adverse Laboratory Water Quality Results; • 2.3 Loss of Primary 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

Critical Control Point (CCP)	Hazard Description	Critical Control Limit (CCL)	Monitoring Process and/or Procedures	Response Procedures
				contractors and suppliers
Backflow Prevention *To prevent cross-contamination that can result from the flowing back of or reversal of the normal direction of flow of water.*	**System contamination from negative or reduced pressure** • Lack of backflow prevention device • Main breaks or blow-outs • Large services • Temporary connections • Firefighting drawdown • Depressurization from residential usage • Pipe failure (deterioration)	<u>System pressure</u> Alarm setpoint ranges for pressure: • 210 to 900 kPa <u>Consumer complaints</u> • Related to system pressure or water characteristics (taste, odour, colour, other).	• Backflow Prevention program • Where possible, implementation of backflow prevention devices and small mains • Proactive Watermain replacement program • Pressure monitoring though pressure	Emergency Response procedures: • 2.2 Adverse Laboratory Water Quality Results; • 2.4 Contamination of Water Transmission System • 2.14 Water Shortage • 2.16 Establishing Potable Water Filling Stations • Response to customer calls • Service Request tracking and monitoring • Water Services Emergency Plan procedures

Critical Control Point (CCP)	Hazard Description	Critical Control Limit (CCL)	Monitoring Process and/or Procedures	Response Procedures
Contamination within Distribution System	Contamination of treated water through watermain breaks, new watermain commissioning or other means.	Drinking Water Quality Standards (O. Reg. 169/03) • Water that meets ODWQS	• Certified and competent operators • Regulatory sampling, monitoring and test programs.	Emergency Response procedures: • 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

Critical Control Point (CCP)	Hazard Description	Critical Control Limit (CCL)	Monitoring Process and/or Procedures	Response Procedures
				• Contact MOH, MECP & SAC • Communicate water advisory issued by MOH • Follow corrective actions required by O.Reg. 170/03.

Risk Assessment - Hazard Analysis & Critical Control Points

Work Sheet No. & Description

Definitions of the abbreviations found in the Hazard Analysis & Critical Control Point Work Sheet:

- **SOP-** Standard Operating Procedures
- **CCP –** Critical Control Point
- **MECP-** Ministry of Environment, Conservation and Parks
- **MOH-** Medical Officer of Health
- **SAC-** Spills Action Centre (*a division of MECP Emergency Management*)
- **WUCTP-** Windsor Utilities Commission Water Treatment Plant
- **Cl_2 –** Chlorine
- **SCADA-** Supervisory Control and Data Acquisition

Hazard Analysis & Critical Control Points

Work Sheet No. 1: Contamination of Source Water

Activity or Process Step:
- Source Water (Windsor Utilities Commission)

Description of Hazard:
- Contamination of Source Water
  (water supply shortfall)

Potential Results of Hazard:
- Physical
- Biological
- Chemical

Comments:
- No Control

Available Monitoring & Control Measures:
- Weekly sampling throughout distribution system as per mandatory under O.Reg.170/03
- On-line monitoring at (WUCTP)

Emergency Procedure or Contingency Plan:
- Follow SOP *Bad Sample or Adverse Water Quality*
- Contacting MECP, MOH & SAC
- Communication with the (WUCTP)
- Conducting all sampling and testing as necessary or directed at points in the distribution system under the direction of the MOH

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)**

Control Procedure
- There is no control for source water spills. However, there are ongoing sampling and monitoring programs; along with contingency plans, as noted above.
- Emergency Response Procedures:
  - ✓ 2.1 Boil Water Advisory
  - ✓ 2.4 Contamination of Water Transmission System;
  - ✓ 2.14 Water Shortage;
  - ✓ 2.16 Establishing Potable Water Filling Stations
  - ✓ 2.20 Pandemic

Work Sheet No. 2: Vandalism/Tampering of Water Tower/Storage

Activity or Process Step:
- Water Tower/ Storage

Description of Hazard:
- Vandalism/ Tampering

Potential Results of Hazard:
- Biological
- Chemical
- Damage to equipment

Comments:
- None

Available Monitoring & Control Measures:
- Security fence locked and gated
- Alarm system with SCADA
- Security Cameras

Emergency Procedure or Contingency Plan:
- SCADA Alarm Procedures SOP
- Contact Emergency Services, MOH, MECP & SAC
- Communicate drinking water advisory issued by MOH
- Sample water quality and take tower offline until two consecutive sample are negative within 48hrs
- Conduct sampling microbiological & Cl_2 residual
- Contact WUCTP about closure of water valve for tower

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)**

Control Procedure
- There are redundant security measures, including: secure fencing, intrusion alarms, SCADA monitoring related to Cl_2 residual, and other measures as noted above. Also, contingency plans exist, as noted above.
- Emergency Response Procedures:
  - ✓ 2.1 Boil Water Advisory
  - ✓ 2.4 Contamination of Water Transmission System
  - ✓ 2.5 Emergency Evacuation;
  - ✓ 2.6 Illegal Entry / Vandalism;
  - ✓ 2.9 Bomb Threat at any Water Facility;
  - ✓ 2.14 Water Shortage;
  - ✓ 2.16 Establishing Potable Water Filling Stations
  - ✓ 2.20 Pandemic

Work Sheet No. 3: Biofilm and Sediment Build-up in Water Tower/Storage

Activity or Process Step:
- Water Tower/ Storage

Description of Hazard:
- Biofilm and sediment buildup

Potential Results of Hazard:
- Biological
- Contamination

Comments:
- None

Available Monitoring & Control Measures:
- Inspection of tower 5 years as prescribed AWWA standards or per legislation
- Monitoring water levels
- Sampling testing of chlorine residuals weekly

Emergency Procedure or Contingency Plan:
- Cleaning tower using a qualified contractor

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)**

Control Procedure
- There is an assessment of tower reliability: 5-year inspection program; and tower cleaning in response to issues once every 5 years. Ongoing sampling and monitoring programs as noted above.

Work Sheet No. 4: Terrorism

Activity or Process Step:
- Water Tower/ Storage

Description of Hazard:
- Terrorism

Potential Results of Hazard:
- Biological
- Chemical
- Damage to equipment

Comments:
- None

Available Monitoring & Control Measures:
- Security fence locked and gated
- Alarm system with SCADA
- Security Cameras

Emergency Procedure or Contingency Plan:
- Contact Emergency Services, MOH, MECP & SAC
- Communicate drinking water advisory issued by MOH
- Sample water quality and take tower offline until two consecutive sample are negative within 48hrs)
- Conduct sampling microbiological & Cl_2 residual
- Contact WUCTP about closure of water valve for tower

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)**

Control Procedure
- There are redundant security measures, including: secure fencing, intrusion alarms, SCADA monitoring related to Cl_2 residual, and other measures as noted above.
- Emergency Response Procedures:
  - ✓ 2.5 Emergency Evacuation;
  - ✓ 2.6 Illegal Entry / Vandalism;
  - ✓ 2.9 Bomb Threat at any Water Facility;
  - ✓ 2.14 Water Shortage;
  - ✓ 2.16 Establishing Potable Water Filling Stations
  - ✓ 2.20 Pandemic

Work Sheet No. 5: Spills from Freight Trains on Railway Tracks

Activity or Process Step:
- Water Tower/ Storage

Description of Hazard:
- Spills from CN freight trains on VIA tracks.

Potential Results of Hazard:
- Physical
- Chemical
- Biological
- Contamination

Comments:
- No Control

Available Monitoring & Control Measures:
- Alarm system with SCADA
- On-line monitoring at (WUCTP)
- Security Cameras
- Passenger & Freight trains limited to max speed of 50mph zone

Emergency Procedure or Contingency Plan:
- Contact Emergency Services, MOH, MECP & SAC
- Communicate drinking water advisory issued by MOH
- Sample water quality and take tower offline until two consecutive sample are negative within 48hrs
- Conduct sampling microbiological & Cl_2 residual
- Contact WUCTP about closer of water tower

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)**

Control Procedure
- There is no control for spills from freight trains. However, there are ongoing monitoring programs and contingencies, as noted above.
- Emergency Response Procedures:
  - ✓ 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

Work Sheet No. 6: Power Failure (Affecting Control Systems)

Activity or Process Step:
- Control Systems

Description of Hazard:
- Power failure
  (power loss in general and also from extreme weather conditions (tornadoes / ice storms))

Potential Results of Hazard:
- Loss of SCADA network

Comments:
- None

Available Monitoring & Control Measures:
- UPS battery backup at monitoring stations
- UPS battery backup on server
- System alarmed
- Backup generator for server – natural gas generator, tested at least once per month
- Regular daily scheduled working days SCADA system checks

Emergency Procedure or Contingency Plan:
- Data is backed up daily onto main server

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)**

Control Procedure
- Controls, reliability and redundancy measures exist as described above.
- Emergency Response Procedures:
  - ✓ 2.7 Interruption of SCADA Components;
  - ✓ 2.15 Failure of Control Systems;
  - ✓ 2.18 Equipment Failure;

Work Sheet No. 7: Loss of Communication/Control

Activity or Process Step:

- Control of System

Description of Hazard:

- Loss of Communications/Control
  (loss in general and also from extreme weather conditions (tornadoes / ice storm))

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:

- Refer to the Failure of Control Systems section of The Corporation of the Town of Tecumseh Water Services Emergency Response Plan

Available Monitoring & Control Measures:

- The response procedure for long-term failure of control systems and communication networks is detailed in the Failure of Control Systems section of The Corporation of the Town of Tecumseh Water Services Emergency Response Plan

Emergency Procedure or Contingency Plan:

- Follow the response procedure for long-term failure of control systems and communication networks in The Corporation of the Town of Tecumseh Water Services Emergency Response Plan

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)**

Control Procedure

- There are redundant communications systems in place for SCADA controls: fiber optic is main supply with cellular back-up.
- Emergency Response Procedures:
  - ✓ 2.7 Interruption of SCADA Components;
  - ✓ 2.15 Failure of Control Systems;
  - ✓ 2.18 Equipment Failure;

Work Sheet No. 8: Watermain Breaks within the Distribution System

Activity or Process Step:
- Distribution

Description of Hazard:
- Watermain breaks within the distribution system

Potential Results of Hazard:
- Physical
- Biological
- Chemical
- Quantity
- Quality

Comments:
- No elevated distribution system; Tecumseh tower and continuously pumping from WUCTP needed

Available Monitoring & Control Measures:
- Customer complaints; low pressure or visual inspection
- General inspection of distribution system
- Controlling valves, looping and replacing watermain
- SCADA alarm system

Emergency Procedure or Contingency Plan:
- Customer complaints; low pressure or visual inspection
- General inspection of distribution system
- Controlling valves, looping and replacing watermain

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)**

Control Procedure
- System reliability evaluations are regularly carried out as noted above.
- There is a need for response procedures because the Risk Analysis Ranking value is greater than the high-risk threshold.
- Follow SOP *Watermain Repair Category 1-2*
- Emergency Response Procedures:
  - ✓ 2.1 Boil Water Advisory;
  - ✓ 2.3 Loss of Primary 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

Work Sheet No. 9: Loss of Chlorine Residual (Secondary Disinfection)

Activity or Process Step:
- Distribution

Description of Hazard:
- Loss of chlorine residual (secondary disinfection)

Potential Results of Hazard:
- Biological

Comments:
- Legislated under O.Reg. 170/03

Available Monitoring & Control Measures:
- Weekly monitoring chlorine residuals throughout the distribution system

Emergency Procedure or Contingency Plan:
- Flush affected area to increase Cl_2 residual
- Follow corrective actions required by O.Reg. 170/03.
- Resample and follow corrective action as per SOP

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)**

Control Procedure
- There is a need for control procedures because the Risk Analysis Ranking value is greater than the High-Risk Threshold, and through the CCP Decision Tree, maintenance of chlorine residual / secondary disinfection is determined to be a critical control point.
- Requirements for corrective action under O.Reg.170/03
- Follow SOP for *Low Chlorine Result Procedure*
- Emergency Response Procedures:
  - ✓ 2.1 Boil Water Advisory;
  - ✓ 2.2 Adverse Laboratory Water Quality Results;
  - ✓ 2.3 Loss of Primary Disinfectant (Chlorine);
  - ✓ 2.14 Water Shortage;
  - ✓ 2.16 Establishing Potable Water Filling Stations

Work Sheet No. 10: Commissioning New Watermains Causing Contamination

Activity or Process Step:
- Distribution

Description of Hazard:
- Commissioning new watermains causing contamination

Potential Results of Hazard:
- Biological
- Chemical

Comments:
- None

Available Monitoring & Control Measures:
- Follow SOP's as per C*ommissioning New Watermain*
- Check Cl_2 residuals
- Take microbiological testing

Emergency Procedure or Contingency Plan:
- Follow corrective action as per O.Reg.170/03
- If necessary, communicate issuance of boil water after consultation with MOH

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)**

Control Procedure
- While the high-risk threshold was not reached for this hazardous event, "Commissioning New Watermains causing contamination" is determined a critical control point (following the CCP Decision Tree) because it can directly introduce contamination to the distribution system and can be controlled with proper disinfection.
- Follow control procedures as noted above.
- Emergency Response procedures:
  - ✓ 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

Work Sheet No. 11: Loss of Pressure Resulting from a Watermain Break

Activity or Process Step:
- Distribution

Description of Hazard:
- Loss of pressure due to watermain break

Potential Results of Hazard:
- Biological
- Chemical
- Physical
- Low pressure back-siphoning

Comments:
- None

Available Monitoring & Control Measures:
- Consumer complaints
- Pressure gauges on boundary meters and tower monitored and alarmed by SCADA
- Backflow prevention by-law and program

Emergency Procedure or Contingency Plan:
- Check pressures in affected area. If necessary, discuss with MOH and MECP/SAC
- If necessary, issue water advisory in consultation with MOH as per SOP
- Restore pressure and chlorine residuals and conduct testing and sampling in effected area
- Notify (WUCTP) of low-pressure alarms

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 = Yes)**

Control Procedure
- System reliability / redundancy measures are in place, as noted in monitoring and control measures above.
- While the high-risk threshold was not reached for this hazardous event, backflow prevention is considered CCP's (following CCP Decision Tree) – as contaminants can be directly introduced to distribution system and with pressure and backflow prevention program monitoring and response, could be prevented.
- Follow SOP *Watermain Repair Category 2*
- Emergency Response procedures:
  - ✓ 2.2 Adverse Laboratory Water Quality Results;
  - ✓ 2.4 Contamination of Water Transmission System
  - ✓ 2.14 Water Shortage
  - ✓ 2.16 Establishing Potable Water Filling Stations

Work Sheet No. 12: Bacteriological Test Failure

Activity or Process Step:
- Distribution

Description of Hazard:
- Bacteriological test failure

Potential Results of Hazard:
- Biological

Comments:
- Legislated under O.Reg. 170/03

Available Monitoring & Control Measures:
- Weekly monitoring: bacteriological testing throughout the distribution system

Emergency Procedure or Contingency Plan:
- Contact MOH, MECP & SAC
- Communicate water advisory issued by MOH
- Sample water quality and take tower offline until two consecutive sample are negative within 48hrs
- Flush affected area to increase Cl_2 residual
- Follow corrective actions required by O.Reg. 170/03.
- Follow SOP *Bad Sample or Adverse Water Quality*

Risk Analysis Ranking		*RISK ANALYSIS*	*RANKING*
[A] LIKELIHOOD 1 to 5	3 to 5 = LOW	**Likelihood**	3
[B] CONSEQUENCE 1 to 5	6 to 7 = MODERATE	**Consequence**	3
[C] DETECTABILITY 1 to 5	8 to 11= HIGH	**Detectability**	2
[A] + [B] +[C] = Total	12 to 15 = VERY HIGH	***(High Risk Threshold = 8)***	***Total*= 8 (CCP = Yes)**

Control Procedure
- There is a need for control procedures because the Risk Analysis Ranking value is greater than the high-risk threshold and is determined a CCP (through CCP Decision Tree) because contamination is direct to distribution system and response and contingency actions can be taken to address the issue.
- Requirements for corrective action under O.Reg.170/03
- Emergency Response Procedures:
  - ✓ 2.1 Boil Water Advisory;
  - ✓ 2.2 Adverse Laboratory Water Quality Results;
  - ✓ 2.3 Loss of Primary Disinfection (Chlorine)
  - ✓ 2.14 Water Shortage;
  - ✓ 2.16 Establishing Potable Water Filling Stations

Work Sheet No. 13: Failure of Backflow Prevention Device

Activity or Process Step:
- Distribution

Description of Hazard:
- Failure of Backflow Prevention Device

Potential Results of Hazard:
- Biological
- Chemical

Comments:
- Backflow preventers on all connections of concern

Available Monitoring & Control Measures:
- Visual on- site inspection
- Backflow prevention by-law and program

Emergency Procedure or Contingency Plan:
- If backflow is suspected, report to MOH and MECP, SAC
- Isolate area. Flush the system and sample as needed. Re-pressurize system

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 = Yes)**

Control Procedure
Backflow prevention is considered a CCP (following CCP Decision Tree) – as contaminants can be directly introduced to distribution system and with pressure and backflow prevention program monitoring and response, could be prevented.

- Emergency Response procedures:
  - ✓ 2.1 Boil Water Advisory (if bacteriological contamination);
  - ✓ 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

Work Sheet No. 14: Adverse Drinking Water Lead Results

Activity or Process Step:
- Distribution

Description of Hazard:
- Adverse drinking water lead results

Potential Results of Hazard:
- Biological
- Chemical
- Positive lead sample from testing

Comments:
- Will follow legislations and Regulations as mandated by the MECP

Available Monitoring & Control Measures:
- Follow SOP *Community Lead Testing Program*

Emergency Procedure or Contingency Plan:
- O.Reg. 170/03 mandating every water system in Ontario to test for lead in the drinking water

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)**

Control Procedure
- There is no need for control procedures because the Risk Analysis Ranking value is less than the high-risk threshold.
- Emergency Response procedures:
  - ✓ 2.2 Adverse Laboratory Water Quality Results

Work Sheet No. 15: Extreme Cold/Heat/Long-term Impacts of Climate Change

Activity or Process Step:
- Distribution

Description of Hazard:
- Extreme cold / heat / long-term impacts of climate change (including frozen pipes, potential for wildfires)

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 customers

Comments:
- None

Available Monitoring & Control Measures:
- SCADA (re: major fire); freezing conditions (re: alarms for water tower boundary meters)

Emergency Procedure or Contingency Plan:
- Emergency Response Plan

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)**

Control Procedure
- There is no need for control procedures because the Risk Analysis Ranking value is less than the high-risk threshold.
- Emergency Response procedures:
  - ✓ 2.14 Water Shortage
  - ✓ 2.16 Establishing Potable Water Filling Stations
  - ✓ 2.19 Serve Storm (tornado, Wind, Hurricane, Winter Storm etc)

Work Sheet No. 16: Loss of Pressure Resulting from Major Fire

Activity or Process Step:
- Distribution

Description of Hazard:
- Loss of pressure due to major fire

Potential Results of Hazard:
- Physical
- Chemical
- Low pressure back-siphoning
- Biological

Comments:
- None

Available Monitoring & Control Measures:
- Notification from the fire department
- Consumer complaints
- Pressure gauges on boundary meters and tower monitored and alarmed by SCADA
- Backflow prevention

Emergency Procedure or Contingency Plan:
- Check pressures in effected area. If necessary, discuss with MOH and MECP/SAC
- If necessary, issue water advisory with consultation of MOH as per SOP *Bad Sample or Adverse Water Quality*
- Restore pressure and chlorine residuals and conduct testing and sampling in effected area
- Notify (WUCTP) of low-pressure alarms

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)**

Control Procedure
Backflow prevention is considered a CCP (following CCP Decision Tree) – as contaminants can be directly introduced to distribution system and with pressure and backflow prevention program monitoring and response, could be prevented.

- Emergency Response procedures:
  - ✓ 2.1 Boil Water Advisory (if bacteriological contamination);
  - ✓ 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

Work Sheet No. 17: Loss of System Pressure

Activity or Process Step:
- Distribution

Description of Hazard:
- Loss of system pressure

Potential Results of Hazard:
- Physical
- Chemical
- Low pressure back-siphoning
- Biological

Comments:
- None

Available Monitoring & Control Measures:
- Consumer complaints
- Pressure gauges on boundary meters and tower monitored and alarmed by SCADA
- Backflow prevention

Emergency Procedure or Contingency Plan:
- Check pressures in effected area If necessary discuss with MOH and MECP/SAC
- If necessary, issue water advisory with consultation of MOH as per SOP *Bad Sample or Adverse Water Quality*
- Restore pressure and chlorine residuals and conduct testing and sampling in effected area
- Notify (WUCTP) of low pressure alarms

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)**

Control Procedure
Backflow prevention is considered a CCP (following CCP Decision Tree) – as contaminants can be directly introduced to distribution system and with pressure and backflow prevention program monitoring and response, could be prevented.

- Emergency Response procedures:
  - ✓ 2.1 Boil Water Advisory (if bacteriological contamination);
  - ✓ 2.2 Adverse Laboratory Water Quality Results;
  - ✓ 2.4 Contamination of Water Transmission System
  - ✓ 2.14 Water Shortage
  - ✓ 2.16 Establishing Potable Water Filling Stations

Work Sheet No. 18: Staff Shortage

Activity or Process Step:
- Distribution

Description of Hazard:
- Staff shortage
  (due to lottery, retirements, Illness /Pandemic, Strike/Lock-out)

Potential Results of Hazard:
- Physical
- Chemical
- Biological

Comments:
- No Control

Available Monitoring & Control Measures:
- Collective Agreements for both outside and inside workers
- Attendance/medical records
- MOH health advisory's
- Town's Wellness Committee

Emergency Procedure or Contingency Plan:
- Having the proper amount of 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 license water operators to assist the ORO if necessary

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)**

Control Procedure
- Adequate staffing levels assured through personnel coverage, competency requirements achieved, and other monitoring, control and contingency measures identified above.

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 and Wastewater 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.

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
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

Essential Supplies and Service List		
Product/Service	**Primary Source**	**Secondary Source**
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
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

Essential Supplies and Service List		
Product/Service	**Primary Source**	**Secondary Source**
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
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

Essential Supplies and Service List		
Product/Service	**Primary Source**	**Secondary Source**
Answering Service	Environmental 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: 519-971-2866

Appendix 6- Public Works & Environmental Services Capital Works Plan:

The Corporation of the Town of Tecumseh

Public Works & Environmental Services

To: Mayor and Members of Council

From: Phil Bartnik, Director Public Works & Environmental Services

Date to Council: December 10, 2020

Report Number: PWES-2019-49

Subject: 2020-2024 Public Works & Environmental Services Five Year Capital Works Plan

Recommendations

It is recommended:

That the following Public Works and Environmental Services Projects for the 2020 year, and the Capital Project List 2020-2024, **be approved**:

	Previously Approved	Requested for 2020	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	$ 850,000	**$ -**	$ -	$ 850,000
2. CR42: CR19 to CR43 (Sidewalks and Bike Lanes)	$ -	**$ 90,000**	$ 618,500	$ 708,500
Sub-Total:	$ 850,000	$ 90,000	$ 618,500	$ 1,558,500
Grants:	$ -	**$ -**	$ -	$ -
Recoveries:	$ -	**$ -**	$ -	$ -
Infrastructure Reserve:	$ 850,000	**$ 90,000**	$ 618,500	$ 1,558,500

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		Previously Approved	Requested for 2020	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.	CR42/43 Const. including 12th&Banwell Watermains	$ -	**$ 22,450**	$ 20,450	$ 42,900
5.	Tecumseh Hamlet SPA EA FSR	$ -	**$ 30,250**	$ 61,250	$ 91,500
6.	Tecumseh Sigange Project	$ -	**$ 16,000**	$ -	$ 16,000
7.	Lesperance/VIA Rail Improvements	$ -	**$ 155,000**	$ 1,129,000	$ 1,284,000
8.	Tecumseh Road CIP - Streetscape Plan & Final Design	$ 1,422,640	**$ -**	$ 27,908,927	$ 29,331,567
9.	Manning Road/ETLD Drain Relocation - Phase 2	$ 50,000	**$ 4,500**	$ 691,400	$ 745,900
10.	Manning Road Reconstruction - Phase 3	$ 180,000	**$ 45,500**	$ 6,239,200	$ 6,464,700
11.	Sylvestre Drive Sanitary Sewer Extension	$ 94,000	**$ -**	$ 983,400	$ 1,077,400
12.	Scully & St. Mark'sStorm PS/Riverside Drive	$ 43,600	**$ -**	$ 1,454,400	$ 1,498,000
13.	Cty Rd 46/Webster/Laval Sanitary Sewer Extension	$ 120,750	**$ -**	$ 1,410,350	$ 1,531,100
14.	Del Duca Drive Sanitary Sewer	$ 92,450	**$ -**	$ 1,018,450	$ 1,110,900
15.	Lanoue Street Improvements	$ -	**$ 363,300**	$ 1,300,700	$ 1,664,000
16.	Tecumseh Road Sanitary Sewer	$ -	**$ 672,600**	$ -	$ 672,600
17.	Tecumseh Road Path - Arlington to DM Eagle	$ -	**$ 100,000**	$ -	$ 100,000
18.	Traffic Signal Controller Update	$ 150,000	**$ -**	$ -	$ 150,000
19.	Expansion/Improvements PW Yard (North)	$ 30,000	**$ -**	$ -	$ 30,000
	Sub-Total	$ 2,183,440	**$ 2,709,600**	$ 42,217,527	$ 47,110,567
	Grants:	$ -	**$ -**	$ 525,000	$ 525,000
	Recoveries:	$ -	**$ -**	$ 2,180,000	$ 2,180,000
	Road Lifecycle Reserve:	$ 2,183,440	**$ 2,709,600**	$ 39,512,527	$ 44,405,567
Bridge Projects					
1.	Bridge & Culvert Needs Study (>3m Span)	$ -	**$ 39,000**	$ -	$ 39,000
2.	Bridge #1013 - Merrick Creek at 8th Concession	$ 250,300	**$ -**	$ -	$ 250,300
	Sub-Total:	$ 250,300	**$ 39,000**	$ -	$ 289,300
	Grants:	$ -	**$ -**	$ -	$ -
	Recoveries:	$ -	**$ -**	$ -	$ -
	Bridges Lifecycle Reserve:	$ 250,300	**$ 39,000**	$ -	$ 289,300
Water Projects					
1.	Tecumseh Road CIP - Streetscape Plan & Final Design	$ 50,250	**$ -**	$ 1,292,686	$ 1,342,936
2.	Manning Road/ETLD Drain Relocation - Phase 2	$ 25,000	**$ 6,000**	$ 914,700	$ 945,700
3.	Hwy#3/County Road 11 Watermain Replacement	$ 134,600	**$ 2,182,100**	$ -	$ 2,316,700
4.	Tecumseh Hamlet SPA EA FSR	$ -	**$ 30,250**	$ 61,250	$ 91,500
5.	Cty Rd 46/Webster Laval Sanitary Sewer Exten.	$ 80,400	**$ -**	$ 1,417,200	$ 1,497,600
6.	Del Duca Drive Sanitary Sewer	$ 5,550	**$ -**	$ 25,750	$ 31,300
7.	CR42/43 Const. including 12th&Banwell Watermains	$ -	**$ 758,600**	$ 811,400	$ 1,570,000
8.	2020 Water and Wastewater Rates Study	$ -	**$ 10,000**	$ -	$ 10,000
	Sub-Total:	$ 295,800	**$ 2,986,950**	$ 4,522,986	$ 7,805,736
	Grants:	$ -	**$ -**	$ -	$ -
	Recoveries:	$ -	**$ -**	$ -	$ -
	Watermain Reserve Fund:	$ 295,800	**$ 2,986,950**	$ 4,522,986	$ 7,805,736

Services (PWES) Capital Works Plan is to maintain a consistently high level of service and strive to improve the Town's infrastructure components through these improvements.

The Town adopted an Asset Management Plan in December 2013, updated in May 2018, which serves as a guide as to what, and when, capital projects should be undertaken. The attached PWES Capital Project List 2020 – 2024 summarizes PWES projects proposed to be undertaken over the 2020 – 2024 period. Recommendations will be made requesting Council approve specific projects which begin in 2020 while adopting the five-year capital plan; this gives authorization to proceed with the 2020 projects while 2021 to 2024 projects will come back to Council in subsequent years for approval to proceed.

Comments

This section provides detailed information for all 2020 projects i.e. both those previously approved and those newly proposed for 2020. Comments are provided by **road, sidewalks and pathways, bridge, water, wastewater, storm sewer** and **municipal drain** categories. Generally, projects will contain expenditures related to all categories; for expediency purposes we have included project discussion on the main driver requiring the project be undertaken.

We have also included a section entitled **2021 to 2024 projects** that provides a higher level discussion on projects being proposed for future years. Some of the future projects are initiatives led by the County of Essex that will require further discussion regarding cost-sharing agreements with the Town. In addition, there are some potential new developments in the Town that, depending on the actual development proposals, may drive the need for improvements to existing Town infrastructure. At this time, it is premature to estimate Town costs related to these potential future projects.

The attached PWES Capital Project List 2020 – 2024 **has been prepared assuming adequate funding is available in all lifecycle categories**. Discussion on those categories that are deficient can be found in the Financial Implications Section.

Certain projects have been proposed to be phased in over a two-year period. Generally, this occurs because either the project scope is too large or costly to be completed in one construction season or would be too disruptive over too large of an area and too long a period of time to the adjacent properties. Projects being phased would be tendered as two separate tender calls.

In addition, 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).

Road Projects

Public Works staff review roads for inclusion in the annual paving program. The Town's Road Needs Study has been used for reference in conjunction with Public Works input and suggestions from Council and residents to form the basis for the recommended annual paving projects. Public Works & Environmental Services investigates and categorizes the needs based on the condition of the roads in comparison with other roads of similar traffic volumes.

The list of roads proposed for tar and chip are based on Public Works staff review of observed conditions of the roads 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 on the 9th Concession Road (CR8 to South Talbot Road) and the 10th Concession Road (CR8 to South Talbot Road). Public Works also suggest earmarking an amount for remedial tar and chip repairs on roads other than those planned for. Every spring Public Works finds areas that require some repair from winter plowing activities, and this would be used to address those concerns.

Administration recommends that as part of the annual paving program, 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. It is recommended that $100,000 be set aside for crack sealing.

RD 1. Tar & Chip, Asphalting, and Crack Sealing

Work	Budget Allocation	Location of Work	Extent
Tar & Chip	$100,000	9th Concession Rd. 10th Concession Rd.	CR8 to South Talbot Road CR8 to South Talbot Road
Asphalting	$1,100,000	Beachgrove Rd. Pentilly Rd. St. Thomas St. Papineau Crt. Shields St. Odessa Dr. Odessa Dr. Shawnee Rd. Wellwood Crt. Thalthorpe Pl.	Full Extent Beachgrove to Cul de Sac Centennial Dr. to Amberly Cres. Full Extent Lesperance to St. Alphonse Full Extent Cul-de-sac Gouin St. to County Rd. 22 Full Extent Full Extent
Crack Sealing	$100,000	Various locations	To be determined

Administration recommends that the above noted road improvements be completed in 2020. Inspection and project administration will be carried out by Public Works & Environmental Services staff upon award of the Contract by Council. Quality control of the materials will be carried out by a Consulting Geotechnical Engineer.

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

RD 2. Tecumseh Signage Project

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$16,000**	$0	$16,000

In response to various Councilor inquiries regarding Town of Tecumseh existing and new signage, Administration completed an inventory of existing signage within the Town. As a result of this inventory, it was confirmed that the existing signage varies greatly in design, branding, size, road classification, location and age. Based on these findings, Administration recommends that a study be undertaken to develop criteria for signage to create consistency in design, branding and location selection. It is further recommended that Generator Design of Canada Inc. be retained to undertake this study based on their previous development of the 2014 Town of Tecumseh Branding Standards.

Funding for this project is to be provided from the Road Lifecycle Reserve in the amount of $16,000.

RD 3. Lesperance/VIA Rail Improvements

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$186,000**	$1,348,700	$1,534,700

On November 28, 2014, Transport Canada established new regulations for on grade crossings that stated a railway company must assure the conformity of grade crossings within seven years of the new regulations coming into force. VIA inspected all grade crossings over its entire network and identified two rail crossings in the Town of Tecumseh – Lesperance Road north of Tecumseh Road (Mile: 99.31) and Tecumseh Road just west of Lacasse Blvd (Mile: 99.13).

Article 12 of the new regulation stipulated that the road authority must provide the railway company, in writing, certain information regarding each grade crossing under its authority within two years (by 2016). Based on their involvement with the Tecumseh Road Community Improvement Plan (CIP)/Streetscape project, Dillon Consulting Ltd. (Dillon) was retained by the Town to assist with providing the required documentation and design parameters as outlined in VIA's initial letter.

Subsequent to the Town's submission, VIA provided the results of their crossing inspections in a letter dated June 27, 2017. In this correspondence, VIA identified that minor improvements were required, such as faded road paint and consideration for additional safety features, as well as one major item at the crossing at Mile 99.31. VIA determined that the gradient for the road approach at Mile 99.31 exceeds the maximum gradient of 2% within 8 m of the nearest rail and 5% for 10 m beyond. The Town, as the local road authority, is therefore required to regrade the approach by late 2021. Failure to do so may lead Transport Canada to impose measures to address the required improvements.

The project cost of $1,534,700 includes $250,700 for storm sewers and $1,284,000 for road reconstruction.

In order to meet Transport Canada's required improvement timelines, Administration recommends that the detailed design for the required improvements to the Lesperance/VIA Rail crossing be completed in 2020 with construction following in 2021. Administration further recommends that Dillon Consulting Ltd. be retained to complete the design based on their initial work related to the inspection of this crossing and their current involvement in the Tecumseh CIP/Streetscape project.

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

- Road Lifecycle Reserve in the amount of $155,000
- Storm Sewer Lifecycle Reserve in the amount of $31,000

RD 4. Lanoue Street Improvements

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$363,300**	$1,300,700	$1,664,000

The Town of Lakeshore is planning to move forward with the design and construction of Lanoue Street and Commercial Drive to provide a second connection from Manning Road to Amy Croft Drive. These works will include improvements to the Manning Road and Lanoue Street intersection. It is our understanding that the Town of Lakeshore tentatively plans to design and construct this project in late 2019/2020.

The Town of Tecumseh anticipates that Lanoue Street, from Manning Road to approximately 200 metres west of Manning Road, will require improvements when the vacant property at the southwest corner of the Manning Road and Lanoue Street intersection is developed. To accommodate the added traffic from this future development to Lanoue Street, it is anticipated that Lanoue Street will need to be widened to a three-lane cross-section to allow for a center left turning lane. It is also anticipated that the Lanoue Street improvements may require improvements to the Tecumseh side of the Manning Road and Lanoue Street intersection.

As noted above, improvements to Lanoue Street in both Tecumseh and Lakeshore will require improvements to the Manning Road and Lanoue Street intersection. Accordingly, a cost sharing agreement will be required between both municipalities and the County of Essex for the intersection improvements. At this time, it is expected that these intersection improvements will be part of Lakeshore's 2020 design and construction project to which Tecumseh would be a contributing partner in accordance with a cost sharing agreement.

Administration recommends that the design for the Lanoue Street improvements be completed in 2020 with construction tentatively planned for 2021. To achieve potential economies of scale from the Lakeshore project, Administration recommends that the same consultant be used on the Tecumseh project. It is therefore recommended that Stantec Consulting Ltd. be retained to complete the design for the Lanoue Street improvements in 2020. It is further recommended that an allowance of $200,000 be included in the 2020 Capital Works Plan for costs associated with the Town's portion of the Manning Road and Lanoue Street intersection improvements.

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The project cost estimate is $1,664,000, all of which is attributable to road improvements.

Funding for this project is to be provided from the Road Lifecycle Reserve in the amount of $363,300.

RD 5. Tecumseh Road Community Improvement Plan (CIP) – Streetscape Plan & Design

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$1,604,700	**$0**	$31,149,740	$32,754,440

At the May 10, 2016 Special Meeting of Council, Council approved the recommendations (Motion SCM-01/16) of Planning & Building Services Report No.10/16 titled "Tecumseh Road Main Street CIP, Streetscape Plan and Detail Design and Utility Lines" that selected the preferred streetscape design that called for the removal of above-ground hydro poles, hydro wires and utility wires placing them underground.

At the July 12, 2016 Regular Meeting of Council, Council approved the recommendations (Motion RCM-257/16) of PWES Report No. 35/16 titled "Streetscape Plan and Design, Revised Scope & Budget Update, July 2016" that included a revised scope for 30% Schematic Design for the full project limits, 100% Tender Drawings and Specifications for Phase 1 and 90% Design Drawings and Specifications for Phase 2.

The tentative phasing and associated project costs are broken up into the five following phases:

- Phase 1: $14,611,300 - Tecumseh Road (St. Anne to VIA) & Lesperance (St. Denis to Arbour)
- Phase 2: $7,716,180 - Tecumseh Road (St. Anne to Shawnee)
- Phase 3: $4,053,262 - Tecumseh Road (Shawnee to Southfield)
- Phase 4: $4,187,530 - Tecumseh/Southfield intersection
- Phase 5: $2,186,168 - Lesperance (McNorton to St. Denis)

Expected recoveries from the County of Essex are anticipated to be $885,000 for a portion of the Tecumseh Road reconstruction (under the Connecting Link Agreement). Administration is still exploring recovery opportunities with some of the Utility companies.

At the April 23, 2019 Public Meeting of Council, Council received (Motion PCM-25/19) PWES Report No. 2019-28 titled "Tecumseh Road Main Street CIP – Streetscape Plan and Design Project Update – April 2019" which provided a project update. General items discussed during the meeting included concerns related to potential traffic impacts, the need for additional public consultation and potential cost savings if existing above ground hydro/utilities are maintained in the Streetscape improvements beyond Phases I and II. Accordingly, additional traffic analyses has been initiated and another Public Information Center is being planned for early 2020 to obtain additional feedback from the public.

A future report will be brought forward to Council with recommendations regarding a path forward for this project.

RD 6. Manning Road Improvement Project, Phase 3

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$180,000	**$48,000**	$6,554,800	$6,782,800

The Town completed a Class Environmental Assessment (EA) in April 2010 for improvements to the East Townline Drain (Manning Road) Storm Pump Station. The proposed upgrades to the pump station and drain enclosure along Manning Road provided an opportunity to improve this portion of Manning Road by constructing an urban cross-section that accommodates pedestrians, cyclists and urban design features to create an aesthetically pleasing gateway into Lakewood Park. The limits of the Class EA included Manning Road from Riverside Drive to St. Gregory's Road.

Construction of Phase 1 was completed in 2014 which included the construction of the storm pump station and associated facilities, and the reconstruction of a section of Riverside Drive (Manning Road to Christy Lane), including the roundabout at the Manning Road/Riverside Drive intersection.

At the December 13, 2016 Regular Meeting of Council, Council approved the recommendation (Motion RCM-442/16) of PWES Report No. 54/16 titled "2017-2021 Public Works & Environmental Services Capital Works Plan" that authorized Administration to retain Dillon Consulting Ltd. to proceed with the engineering design for Phase 3 of this project. Phase 3 generally relates to the road re-construction component of the project from Riverside Drive to St. Gregory's Road including improvements to an urban cross-section that accommodates pedestrians, cyclists and urban design features to create an aesthetically pleasing gateway into Lakewood Park.

In the last two years, the Town has sought funding for this project under the following government funding programs:

- Disaster Mitigation and Adaptation Fund – 1st Intake
- Investing in Canada Infrastructure Program: Rural and Northern Communities Funding Stream – 2019 Intake

Unfortunately, this project was not selected for funding under either funding program.

The design for this project has proceeded through 2017, 2018 and, most recently, updates related to pedestrian crosswalks at the proposed roundabouts commenced in 2019. The original scope of the project has been expanded to include a new parking lot at Lakewood Park, flood control berming in Lakewood Park, road improvements on Little River Boulevard and the development of existing tree protection mitigation measures. In addition, significant effort has been expended on grant funding applications.

The Phase 3 project cost of $6,782,800 includes $6,464,700 for road works and $318,100 for storm sewers.

Expected recoveries from the County of Essex are anticipated to be $525,000 for a portion of the Bike Lanes (under the CWATS program), and $1,295,000 for a portion of the Manning

Road reconstruction (under the Connecting Link Agreement). The estimated recoveries will be refined once the actual tender costs are known.

Administration recommends updating/finalizing the design drawings/tender documents and obtaining all required approvals in 2020 with construction anticipated to proceed in 2022.

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

- Road Lifecycle Reserve in the amount of $45,500
- Storm Sewer Lifecycle Reserve in the amount of $2,500

RD 7. Traffic Signal Controller Upgrade

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$150,000	**$0**	$0	$150,000

As part of the approved 2019-2023 Public Works & Environmental Services Five Year Capital Works Plan, Administration recommended that a yearly program be created to replace traffic signal controller equipment currently in use at the Town's signalized intersections. The Town utilizes electronic equipment that is compatible with the County of Essex highways infrastructure due to the many intersections on shared roads. The equipment currently in use is dated and replacement parts are no longer available. Both the Town and County road departments are transitioning towards the next generation of traffic controller equipment. This program will take multiple years to complete and coordination between both road departments will ensure seamless operation and the potential for integration in the future between the two systems. This project will continue in 2020.

Funding for this project was previously approved from the Road Lifecycle Reserve in the amount of $150,000.

RD 8. Expansion/Improvements to the Public Works Yard (North)

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$30,000	**$0**	$0	$30,000

Additional storage area is required for Public Works equipment and materials. As part of the approved 2019-2023 Public Works & Environmental Services 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 8 years ago. It was recommended that the area be stripped of topsoil and that a treed earth berm be constructed around the perimeter of the site. Site modifications were to include construction of a gravel surface suitable for vehicle traffic and the construction of storage bins with concrete blocks.

Due to Public Works staff demands related to the Town's flood preparedness work, this project was delayed and will be undertaken in 2020.

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

Sidewalks and Pathway Projects

SW 1. 2020 Sidewalk Repair Projects

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$69,000**	$0	$69,000

The 2020 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. 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. A detailed list of recommended sidewalk replacements will be circulated to Council for their information prior to issuing the RFQ. 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.

SW 2. County Road 42 Sidewalks and Bike Lanes (2020 - CR19/CR42 Roundabout)

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$90,000**	$618,500	$708,500

As part of the County of Essex 25-year capacity program, County Road 42 and County Road 43 road improvements were identified and the County of Essex engaged Dillon Consulting Ltd. to undertake the detailed design for the following:

- Widening of County Road 42 from the City of Windsor border with the Town of Tecumseh to the Pike Creek located in the Town of Lakeshore.
- Diversion of County Road 43 from Shields Avenue to approximately 250 metres south of County Road 42.

The County of Essex is proposing to complete the County Road 42 improvements in a number of phases. The County's current schedule includes the construction of the County Road 19/42 roundabout and related municipal services in 2020. The County has not finalized the scope of the phases, however, it is anticipated that the remaining watermain and sanitary works may proceed in 2021 with the County Road 42/43 roundabout proceeding in 2022 and the

remaining roadwork proceeding in 2023. Sidewalk and bike lane construction will be included in related phases of this project. These future works are subject to change based on the County's ultimate phasing plan.

Administration recommends that the sidewalks and bike lanes be included in the County of Essex contract drawings and specifications for the County's County Road 42 improvements project and that an allowance for the Town's portion of the sidewalks and bike lanes related to the County Road 19/42 roundabout be included in the Town's 2020 Capital Works Plan. It is anticipated that the ultimate cost to the Town will be based on a future cost sharing agreement. It is further anticipated that a future report will be brought forward to Council regarding cost sharing.

Administration also recommends that Dillon Consulting Ltd. be retained to undertake contract administration and construction inspection for the Town's infrastructure that is to be installed as part of the County project due to their previous involvement with this project and to obtain efficiencies by using the same consultant as the County.

The project cost of $708,500 includes $439,000 for sidewalks and $269,500 for bike lanes.

Funding for this project is to be provided from the Infrastructure Reserve in the amount of $90,000.

SW 3. Tecumseh Road Multi-Use Pathway Re-construction (Arlington to DM Eagle Public School)

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$100,000**	$0	$100,000

Public Works staff have reviewed the condition of the existing asphalt path located on the north side of Tecumseh Road between Arlington Boulevard and D.M. Eagle Public School. The existing path is approximately 600 metres long and 2.4 metres wide. Based on the path inspection, it has been determined that the existing condition of the path warrants full re-construction.

Administration recommends the full re-construction of this path in 2020. The works will 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. Administration will proceed through a tender process to obtain prices to complete the work with a future report being brought forward to Council for tender award.

Funding for this project is to be provided from the Road Lifecycle Reserve in the amount of $100,000.

SW 4. Riverside Drive Trail

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$850,000	**$0**	$0	$850,000

At the October 25, 2016 Regular Meeting of Council, Council approved the recommendations (Motion RCM-372/16) of Planning & Building Services Report No. 32/16 titled "County Wide Active Transportation Study Plan, Town of Tecumseh 2017 Project, Trail on Riverside Drive from Tecumseh/Windsor Municipal Boundary to Manning Road" that endorsed in principle the construction of a 2.4m wide trail having a length of approximately 2.4km as a 2017 CWATS Project, subject to the resolution of a suitable design and determination to which side of the road the trail should be located.

At the December 13, 2016 Regular Meeting of Council, Council approved the recommendations (Motion RCM-442/16) of PWES Report No. 54/16 titled "2017-2021 Public Works & Environmental Services Capital Works Plan" that authorized Administration to proceed with the 2017 capital works projects including the design of the Riverside Drive Trail.

On Wednesday, September 13, 2017, a Public Information Centre was held to share details and gather public input on the Town's above noted initiative to construct a multi-use recreational trail along Riverside Drive. Options under consideration included constructing the trail in the public right-of-way on the south side of the road or on the north side of the road. Comments received were reviewed by Administration and the Consulting Team. Following consideration of the comments, it was recommended that the preferred location for the trail was within the public right-of-way on the south side of the road.

On Wednesday, June 6, 2018, a second Public Information Centre was held to discuss the detailed analysis that had been completed since the first Public Information Centre and to convey the resulting best design solution for the new multi-use trail. Concept plans showing the multi-use trail on the south side of the road were presented for discussion and to gather public input.

It is currently anticipated that the pathway design and utility relocations will be completed in 2020 upon a final determination of the preferred location of the trail by Council, with construction to follow in 2021. A report will be brought forward to Council in early 2020 with recommendations regarding the path forward for this project.

Funding for this project was previously approved from the Infrastructure Reserve in the amount of $850,000.

Bridge Projects

BR 1. Bridge and Culvert Needs Study (with Spans > 3.0m)

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$39,000**	$0	$39,000

There are a total of eighteen (18) existing bridges and culverts with a span greater than 3.0 metres that were inspected as part of the Bridge and Culvert Needs Study in 2018. Inspections of the eighteen structures within the Town were completed 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'. It is now necessary to carry out a new Bridge and Culvert Needs Study in 2020 to comply with the legislation.

Administration recommends retaining Dillon Consulting Ltd. to provide engineering services on this project based on their past completion of the 2003, 2008, 2014, 2016 and 2018 Bridge and Culvert Needs Studies.

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

BR 2. Bridges (with Spans > 3.0m) – Bridges No. 1004, 1013 & 1014

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$760,900	**$0**	$0	$760,900

At the November 8, 2016 Regular Meeting of Council, Council approved the recommendations (Motion RCM-386/16) of PWES Report No. 48/16 titled "2016 Bridge and Culvert Needs Study (Structures with Spans > 3.0m)" that authorized Administration to use the recommendations contained within the report to form the basis of the annual PWES Capital Works Plan. The 2016 Bridge and Culvert Needs Study (Structures with Spans > 3.0m) identified the following Bridges for rehabilitation within a 1-5 year time frame.

- Bridge No.1004 (Pike Creek at 12th Concession Road)
- Bridge No.1013 (Merrick Creek at 8th Concession Road)
- Bridge No.1014 (Colchester Townline Drain at 6th Concession Road)

At the December 11, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-361/18) of PWES Report No. 2018-08 titled "2019-2023 Public Works & Environmental Services 5 Year Capital Works Plan" that authorized Administration to proceed with the 2019 capital works projects which included the rehabilitation of Bridges No. 1004, 1013 & 1014 in 2019 and continuing with Dillon Consulting Ltd. for contract administration and inspection during construction.

All three bridges were combined into a single tender package and five (5) tenders were received by the Town Purchasing Officer on February 7, 2019.

At the February 26, 2019 Regular Meeting of Council, Council approved the recommendations (Motion RCM-53/19) of PWES Report No. 2019-16 titled "Rehabilitation of Bridges No. 1004, 1013 and 1014 – Tender Award" which authorized the award of the contract to South Shore Contracting of Essex County Inc. and that the previously approved project budget be increased from $750,900 to $760,900.

The rehabilitation of Bridges No. 1004 and 1014 are on schedule to be completed in 2019. The rehabilitation of Bridge No. 1013 will commence in spring 2020.

Funding for this project was previously provided from the Bridges Lifecycle Reserve in the amount of $760,900.

Water & Wastewater Projects

Water and wastewater projects are intended to upgrade existing infrastructure while also providing for future development.

The methodology used to provide Council with recommendations for yearly capital projects are:

- a review of the Town of Tecumseh Water & Wastewater Master Plan.
- a review of lifecycle dollars available and possible government funding.
- a review of the Ministry of Environment regulations/guidelines.
- a review of other planned capital projects.
- a review of private land development opportunities.
- a review of possible opportunities to improve/upgrade the existing infrastructure.

Water Projects

WA 1. Highway No.3 / County Road 11 Watermain Replacement

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$134,600	**$2,182,100**	$0	$2,316,700

The Water Division had previously recommended replacement of the existing 200mm diameter ductile iron watermain at the Highway No.3 / County Road 11 intersection. In recent years, the 200mm diameter ductile iron watermain has been failing due to the age and material of the pipe.

The recommended works consist of the following:

- Replacement of approximately 410m of 200mm ductile iron watermain on Highway No.3 from County Road 11 westerly with a new 300mm diameter PVC;
- Replacement of approximately 345m of 200mm ductile iron watermain on County Road 11 from McCord Lane to just south of Highway No.3 with a new 300mm diameter PVC;
- The installation of approximately 430m of 300mm diameter PVC watermain on Highway No.3 from County Road 11 to Oldcastle Road.

At the December 12, 2017 Regular Meeting of Council, Council approved the recommendations (Motion RCM-441/17) of PWES Report No. 57/17 titled "2018-2022 Public Works & Environmental Services Capital Works Plan" that authorized Administration to proceed with the 2018 capital works projects which included retaining Stantec Consulting Ltd. to complete the engineering design for the Highway No.3 / County Road 11 Watermain Replacement project in 2018.

At the December 11, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-361/18) of PWES Report No. 2018-08 titled "2019-2023 Public Works & Environmental Services 5 Year Capital Works Plan" that included an update to this project. Due to on-going discussions with the Ontario Ministry of Transportation (MTO), the project schedule was revised to allow sufficient time to complete the engineering design and obtain approvals in 2019 followed with construction in 2020.

Administration recommends that the Highway No.3 / County Road 11 Watermain Replacement project be constructed in 2020. As Stantec Consulting Ltd. is nearing completion of the engineering design, Administration also recommends continuing with Stantec Consulting Ltd. to undertake tendering, contract administration and construction inspection in 2020.

Funding for this project is to be provided from the Watermain Reserve Fund in the amount of $2,182,100.

WA 2. County Road 42 and County Road 43 Improvements

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$825,950**	$1,083,750	$1,909,700

As part of the County of Essex 25-year capacity program, County Road 42 and County Road 43 road improvements were identified and the County of Essex engaged Dillon Consulting Ltd. to undertake the detailed design for the following:

- Widening of County Road 42 from the City of Windsor border with the Town of Tecumseh to the Pike Creek located in the Town of Lakeshore.
- Diversion of County Road 43 from Shields Avenue to approximately 250 metres south of County Road 42.

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 County Road 42 to the Pike Creek located to the south of County Road 42.

At the December 11, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-361/18) of PWES Report No. 2018-08 titled "2019-2023 Public Works & Environmental Services 5 Year Capital Works Plan" that included retaining Dillon Consulting Ltd. to complete 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 County Road 42 improvements project.

Based on the advanced engineering completed in 2019, it is recommended that the following Town municipal services be included in the County of Essex County Road 42 improvements project:

- Construction of a new 400 mm diameter trunk watermain on County Road 19 in the vicinity of the proposed County Road 19/42 roundabout.

- Construction of a new 400 mm diameter trunk watermain from the proposed County Road 19/42 roundabout to the 12th Concession Road.
- Replacement of a section of existing 150 mm diameter watermain on the 12th Concession Road with new 150 mm diameter PVC watermain.
- Replacement of a section of the existing 200 mm diameter watermain on County Road 43 with new 200 mm diameter PVC watermain.
- Replacement of existing sanitary connections on County Road 42 with new PVC service connections.
- Installation of landscaping within the proposed roundabouts at County Road 19/42 and County Road 42/43 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 County of Essex is proposing to complete the County Road 42 improvements in a number of phases. The County's current schedule includes the construction of the County Road 19/42 roundabout in 2020. This will include the 400 mm diameter trunk watermain on County Road 19, a portion of the 400 mm diameter trunk watermain on County Road 42, sanitary service connection improvements on a portion of County Road 42 and landscaping within the County Road 19/42 roundabout. The County has not finalized the scope of the phases, however, it is anticipated that the remaining watermain and sanitary works may proceed in 2021 with the County Road 42/43 roundabout proceeding in 2022 and the remaining roadwork proceeding in 2023. These future works are subject to change based on the County's ultimate phasing plan.

Administration recommends that the above noted municipal service improvements be included in the County of Essex contract drawings and specifications for the County's County Road 42 improvements project and that the Town's servicing costs associated with the construction of the County Road 19/42 roundabout be included in the Town's 2020 Capital Works Plan. Once the County's ultimate phasing plan is determined, Administration will confirm the applicable costs for municipal infrastructure in future capital works plans.

Administration also recommends that Dillon Consulting Ltd. be retained to undertake contract administration and construction inspection for the Town's infrastructure that is to be installed as part of the County project due to their previous involvement with advance engineering for this project and to obtain efficiencies by using the same consultant as the County.

The project cost of $1,909,700 includes $42,900 for road works, $1,570,000 for watermains and $296,800 for sanitary sewers.

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

- Road Lifecycle Reserve in the amount of $22,450
- Watermain Reserve Fund in the amount of $758,600
- Wastewater Sewers Reserve Fund in the amount of $44,900

WA 3. 2020 Water and Wastewater Rates Study

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$20,000**	$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.

Administration recommends that a study be undertaken in 2020 to update the Town's water and wastewater rates. The results of this study will be used as a guide to set the water and wastewater rates for budget years 2021 to 2025. Administration plans to complete the majority of this study in-house, however, it is recommended that an allowance of $20,000 be included in the 2020 Capital Works budget for potential external consulting assistance and peer review.

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

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

Wastewater Projects

WW 1. Tecumseh Road Sanitary Sewer – Lesperance to Southfield

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$150,000	**$2,917,700**	$0	$3,067,700

The Tecumseh Road Sanitary Sewer – Lesperance Road and Southfield Drive is located within the Tecumseh Road Community Improvement Plan (CIP) area. The Tecumseh Road CIP area is currently serviced by a sanitary sewer collection system that includes a sub-trunk sewer on Tecumseh Road, which directs sewage flows to the Lesperance Road trunk sewer and ultimately to the Gauthier (Cedarwood) Pump Station. Over time, the Town has implemented several strategies to address sanitary servicing requirements within the Tecumseh Road CIP area as development has progressed.

Part of the original 2013 Tecumseh Road CIP area draft functional servicing investigations included a review of the existing Tecumseh Road sanitary sewer under both existing development conditions and the future full build-out scenario based on future population and building density estimates. Based on these investigations, it was determined that the existing Tecumseh Road sanitary sewer did not have sufficient capacity to accommodate the flows resulting from the full build-out of the Tecumseh Road CIP area based on the conceptual development plan. It was further determined that, when improvements are warranted, the most appropriate solution would be to increase the diameter of the existing sanitary trunk sewer on

Tecumseh Road, from east of Southfield Drive to Lesperance Road. Accordingly, Administration has been monitoring development within this area to determine when upgrades to the existing sanitary sewer system should be initiated.

In 2018, four potential development proposals within the Tecumseh CIP area west of St. Anne Street were presented to the Town which included approximately 216 apartment/condo units and 2,635 m^2 of commercial space. An assessment of the existing sanitary sewer, with the addition of these four potential development proposals, was completed and available capacity was confirmed for same. With these four developments, however, the capacity of the existing sewer is maximized and any further new development will require sewer improvements. More recently in 2019, another property owner near Southfield Drive approached Administration with a conceptual development proposal that included approximately 160 apartment units. This property is also serviced by the existing Tecumseh Road sanitary sewer. If the other four developments proceed, the Tecumseh Road sanitary sewer will need to be upgraded in order for this development to move forward. Based on discussions with this landowner, it is Administration's understanding that, if this development proceeds, sanitary servicing will be required by 2021.

In order to ensure that development opportunities are not adversely impacted by insufficient sanitary sewer capacity, the Tecumseh Road Sanitary Sewer – Lesperance Road and Southfield Drive will need to be upgraded in 2020.

At the June 25, 2019 Regular Meeting of Council, Council approved the recommendations (Motion RCM-187/19) of PWES Report No. 2019-39 titled "Amendment to 2019-2023 PWES Five Year Capital Works Plan - Tecumseh Road Sanitary Sewer - Lesperance Road to Southfield Drive" that authorized the addition of the Tecumseh Road Sanitary Sewer - Lesperance Road and Southfield Drive to the 2019-2023 PWES Five Year Capital Works Plan. This Motion further authorized Administration to retain Dillon Consulting Ltd. to complete the detailed design, plans, specifications and tender documents and to assist with obtaining all required approvals for this project in 2019 with construction anticipated to proceed in 2020.

The project cost of $3,067,700 includes $672,600 for road works and $2,395,100 for sanitary sewers.

Administration recommends that the Tecumseh Road Sanitary Sewer - Lesperance Road to Southfield Drive be constructed in 2020. As Dillon Consulting Ltd. is nearing completion of the engineering design, Administration further recommends continuing with Dillon Consulting Ltd. to assist with tendering and to complete the contract administration and inspection for the construction of the Tecumseh Road Sanitary Sewer - Lesperance Road to Southfield Drive in 2020.

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

- Road Lifecycle Reserve in the amount of $672,600
- Wastewater Sewers Reserve Fund in the amount of $2,245,100

WW 2. Sylvestre Drive Sanitary Sewer Extension

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$285,000	**$0**	$1,574,900	$1,859,900

This project consists of the extension of a sanitary sewer on Sylvestre Drive from Sylvestre Drive to County Road 19 (approximately 410-metres), as well as adjacent to the County Road 19 right-of-way through a future easement (approximately 215-metres). It is also proposed to rehabilitate Sylvestre Drive from Jamsyl Drive to County Road 19 (approximately 760-metres). 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.

As part of this project, a Schedule B Class Environmental Assessment was required to be undertaken due to the extension of a sanitary sewer through a future easement.

At the December 12, 2017 Regular Meeting of Council, Council approved the recommendations (Motion RCM-441/17) of PWES Report No. 57/17 titled "2018-2022 Public Works & Environmental Services Capital Works Plan" that authorized Administration to proceed with the 2018 capital works projects which included retaining Dillon Consulting Ltd. to complete the engineering design work and the Class Environmental Assessment for the Sylvestre Drive Sanitary Sewer Extension project.

At the July 23, 2019 Regular Meeting of Council, Council approved the recommendations (Motion RCM-232/19) of PWES Report No. 2019-31 titled" Sylvestre Drive Sanitary Sewer Extension Municipal Class Environmental Assessment, Schedule B Filing the Notice of Study Completion" that authorized administration to file the Notice of Study Completion and initiate the mandatory 30-day public and agency review period. Accordingly, the Notice of Study Completion was issued and the 30-day public and agency review period occurred from August 2, 2019 to September 1, 2019. All comments received were satisfactorily addressed and on October 9, 2019 Dillon Consulting Ltd. issued correspondence advising that the Sylvestre Drive Sanitary Sewer Extension Class Environmental Assessment is considered approved under the Municipal Class EA process and may proceed to detailed design and implementation.

Dillon Consulting Ltd. has completed the Class Environmental Assessment and preliminary functional design for this project and will be continuing with the detailed design, obtaining required approvals, tender document preparation, assisting with easement acquisition and utility relocations in 2020. Construction is tentatively planned to proceed in 2021. A future report will be brought forward to Council with recommendations related to easement acquisition.

Estimated recoveries from landowners for the sanitary sewers would be approximately $729,300. Assessments to be calculated by Administration and invoiced back to the landowners by means of a Part XII by-law (*Municipal Act*, s.391). The project cost of $1,859,900 includes $1,077,400 for road works, $729,300 for sanitary sewers and $53,200 for storm sewers.

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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

WW 3. County Road 46, Webster and Laval Sanitary Sewer Extension

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$370,250	**$75,000**	$4,715,550	$5,160,800

The County Road 46, 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 County Road 46 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 be coordinated with the County's planned road rehabilitation for County Road 46.

At the December 11, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-361/18) of PWES Report No. 2018-08 titled "2019-2023 Public Works & Environmental Services 5 Year Capital Works Plan" that authorized Administration to retain Dillon Consulting Ltd. to complete the engineering design for the County Road 46, Webster and Laval Sanitary Sewer Extension in 2019 with construction tentatively planned for 2020.

Through detailed design it has been determined that additional storm sewer improvements are required on Webster Drive, that the existing local watermain on County Road 46 requires replacement and that certain utilities need to be relocated to facilitate this project. Based on this information, it is now proposed that the project design, advanced utility relocations, easement acquisition and obtaining all required approvals will continue in 2020 with construction anticipated to proceed in 2021. A future report will be brought forward to Council with recommendations related to easement acquisition.

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 completed. The project cost of $5,160,800 includes $1,531,100 for road reconstruction, $646,200 for storm sewers, $1,485,900 sanitary sewers and $1,497,600 for watermains.

Funding for this project is to be provided from the Storm Sewer Lifecycle Reserve in the amount of $75,000.

WW 4. Del Duca Drive Sanitary Sewer Extension

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$297,350	**$75,000**	$2,735,650	$3,108,000

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.

At the December 11, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-361/18) of PWES Report No. 2018-08 titled "2019-2023 Public Works & Environmental Services 5 Year Capital Works Plan" that authorized Administration to retain Stantec Consulting Ltd. to complete the engineering design for the Del Duca Drive Sanitary Sewer Extension in 2019. At that time, it was anticipated that utility relocations and easement acquisition would occur in 2020 with construction proceeding in 2021.

Preliminary design drawings have been prepared and Stantec Consulting Ltd. is currently investigating the condition of the existing storm sewer outlet and existing utility conflicts. It is proposed that the completion of the project design, advanced utility relocations, easement acquisition and obtaining all required approvals will occur in 2020. Based on competing priorities, it is now anticipated that construction may proceed in 2022. A future report will be brought forward to Council with recommendations related to easement acquisition.

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. The project cost of $3,108,000 includes $1,110,900 for road reconstruction, $891,200 for storm sewers, $1,074,600 for sanitary sewers and $31,300 for watermains.

Funding for this project is to be provided from the Storm Sewer Lifecycle Reserve in the amount of $75,000.

WW 5. Sanitary Sewer Model Update and Flow Monitoring

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$250,000	**$45,000**	$0	$295,000

In 2011 Council received the report (Motion RCM-227/11) titled "Town of Tecumseh, Sanitary Sewer Assessment Report, dated May 2011". The report included a recommendation that the Town update their existing sanitary sewer model every three to four years, as well as carryout a flow monitoring program.

In 2011, Dillon Consulting Ltd. was retained to update the sanitary sewer model for the sanitary sewer infrastructure located north of County Road 22 in order to assess the impacts of a proposed development. The findings of the model update and related assessment led to the preparation of the "Sanitary Sewerage Collection System Improvements Class Environmental Assessment – April 2013 (Dillon) to address the recommended improvements. Following completion of the EA, Dillon Consulting Ltd. was retained to update the sanitary sewer model for the sanitary infrastructure located south of County Road 22 which was completed in late 2013. Both models were then integrated into one model.

At the June 26, 2018 Regular Meeting of Council, Council approved the recommendation (Motion RCM-194/18) of PWES Report No. 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.

At the December 11, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-361/18) of PWES Report No. 2018-08 titled "2019-2023 Public Works & Environmental Services 5 Year Capital Works Plan" that authorized Administration to retain Dillon Consulting Ltd. to complete the Sanitary Sewer Model Update and Flow Monitoring 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 recommends expanding the scope of work in 2020 to include modelling assessments related to the Tecumseh CIP area and the reconfiguration of the future sanitary trunk servicing within the Tecumseh Hamlet area (including 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).

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

WW 6. Manhole Restoration Program

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$100,000	**$50,000**	$0	$150,000

Administration recommends a program whereby manholes that have been constructed in the travelled lanes of Town roadways will be reviewed and manholes that are found to have a significant difference in elevation between the rim and the surrounding roadway will be repaired. The method of repair is a technique that has been used by PWES for the last few years. It involves a machine to core drill around the manhole lid and the manhole is rebuilt and levelled to the surrounding pavement elevation. This method results in significantly less cracking of existing roadway pavement due to the circular excavation. It also allows the area around the manhole to be compacted prior to reinstatement of any pavement. PWES has experienced good success with this restoration method and it has been used by other municipalities to reconstruct manholes in travelled lanes.

At the December 11, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-361/18) of PWES Report No. 2018-08 titled "2019-2023 Public Works & Environmental Services 5 Year Capital Works Plan" that authorized Administration to proceed with a manhole restorations plan in 2019. Based on the success of this program, Administration recommends that the program be continued in 2020.

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

- Wastewater Sewers Reserve Fund in the amount of $25,000
- Storm Sewer Lifecycle Reserve in the amount of $25,000

Storm Sewer Projects

ST 1. Shoreline Management Plan

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$350,000**	$0	$350,000

At the June 26, 2018 Regular Meeting of Council, Council approved the recommendation (Motion RCM-194/18) of PWES Report No. 2018-17 "Flood Mitigation Strategy" that the report be received. Completion of a Shoreline Management Plan was one of the recommended flood mitigation strategies in the report. The report further identified that completion of a Shoreline Management Plan would be incorporated within the 5-year PWES Capital Works Plan.

In 1973 the City of Windsor and surrounding areas (including Tecumseh and St. Clair Beach) experienced widespread flooding from Lake St. Clair and the Detroit River due to a combination of record high lake levels and strong on-shore winds. The properties along the shoreline as well as inland (lower lying) properties sustained significant flood damage during that event.

The water levels in Lake St Clair reached new record highs in 1986 (from the previous record set in 1973) which prompted the Essex Region Conservation Authority (ERCA) in coordination with many local municipalities to undertake Shoreline Management Plans, including:

- The City of Windsor, 1986
- Town of LaSalle (Township of Sandwich West), 1988
- Town of Amherstburg (Township of Malden), 1989
- Town of Kingsville (Township of Gosfield South), 1990

In 2019 water levels in Lake St. Clair exceeded the previous record high water levels set in 1986. In response to the high lake level, ERCA attended the May 14, 2019 Regular Meeting of Council and gave a presentation on the Great Lakes Water Levels Current Conditions and Outlook. Following the ERCA presentation, Council approved Motion RCM-124/19 which included the following:

- Authorized the creation of a new Sandbag Program to make sand and sandbags available at no cost to residents living adjacent to Lake St. Clair and Pike Creek;
- Authorized the purchase of new equipment and materials to assist in filling sandbags;
- Authorized the installation of protective measures on the Town's critical infrastructure, being the storm and sanitary pump stations.

In 2019, Administration also used LiDAR (light detection and ranging) topographical information to determine low-lying areas along the shorelines of Lake St. Clair and Pike Creek that are potentially vulnerable to lake flooding. Property owners at these locations were contacted and offered filled sandbags. It was hoped that strategically placed mitigation

measures may reduce the potential for inland flooding and adverse impacts to private properties. It should be noted, however, that sandbags are considered a temporary measure to reduce the potential for lake flooding and that no work will completely remove the potential for flooding. In addition, high lake water levels combined with significant on-shore wind events exacerbate the potential for lake flooding within the Town of Tecumseh. Current lake water level forecasts from the Department of Fisheries and Oceans Canada show the potential for Lake St. Clair water levels to again exceed the historic 1986 high water levels in 2020. Should these high water level predictions materialize, the Town will remain in a heightened state of flood susceptibility in 2020 and potentially beyond.

In order to understand the Town's vulnerability to lake flooding and to develop appropriate mitigation strategies, a Shoreline Management Plan is required. The required Shoreline Management Plan should generally include 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.

Similar Shoreline Management Plans are being developed for other municipalities along Lake St. Clair and Lake Erie. Currently, Zuzek Inc. is undertaking shoreline assessments for the Town of Lakeshore, the Municipality of Leamington and the Municipality of Chatham-Kent. Zuzek Inc. has a long history of project experience in the County of Essex dating back to 1998 as well as other locations within the Great Lakes. Zuzek Inc. is also currently leading a comprehensive investigation into the impacts of climate change on coastal storms for Lake Erie and Lake Ontario with funding support from Natural Resources Canada's (NRCan) Adaptation Platform.

Based on the above, Administration recommends that a Shoreline Management Plan be undertaken for the Town of Tecumseh in 2020. It is further recommended that Zuzek Inc. be retained to complete the Shoreline Management Plan based on their related experience and the anticipated benefits of using the same consultant that is currently completing a Shoreline Management Plan for the Town of Lakeshore.

Funding for this project is to be provided from the Storm Sewer Lifecycle Reserve in the amount of $350,000.

ST 2. Stormwater Rate Study

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$45,000**	$0	$45,000

At the December 13, 2016 Regular Council Meeting, Council approved the recommendations (Motion RCM-442/16) of PWES Report No. 54/16 titled "2017-2021 Public Works & Environmental Services Capital Works Plan" that authorized Administration to proceed with the Storm Drainage Master Plan.

At the June 25, 2019 Special Meeting of Council, Council approved the recommendations (Motion SCM-17/19) of PWES Report No. 2019-35 titled "Storm Drainage Master Plan – Filing the Notice of Study Completion" that authorized Administration to advertised the Notice of Study Completion to initiate the mandatory 30-day public and agency review period. Accordingly, a Notice of Study Completion was issued and the 30-day public and agency review period ended on August 19, 2019. All comments received were satisfactorily addressed and on October 24, 2019 Dillon Consulting Ltd. issued correspondence advising that the Town of Tecumseh Storm Drainage Master Plan, including the specified Schedule B projects that form part of the preferred solutions, is considered approved under the Municipal Class EA process and may proceed to detailed design and implementation.

The purpose of the Storm Drainage Master Plan was to address the impacts of surface flooding on the mainly urbanized residential areas of the Town located along the northern and eastern limits of the municipality. This included assessments of storm pump stations, gravity outfalls and the respective service areas minor (sewer) and major (roadway) systems discharging to Lake St. Clair and Pike Creek.

Based on the findings of the Storm Water Master Plan, significant improvements are recommended to existing Town storm infrastructure to reduce surface flooding concerns resulting in 'level of service improvements'. The recommended solutions to improve the level of service for the storm infrastructure within the study area are estimated to cost $106.59M. In addition to the Storm Drainage Master Plan, the Town is also in the process of completing the Oldcastle Stormwater Master Plan. This study will also provide recommendations for stormwater infrastructure 'level of service improvements' as well as the related costs for same. As identified within the Town's 2018 Asset Management Plan (v2.0), these type of recommended improvements are to be incorporated into the annual Public Works & Environmental Services Capital Works Plan moving forward.

The current allocation to the Storm Sewer Reserves ($902,700) is intended for the replacement of the existing assets and is not meant for 'level of service improvements'. There was no significant increase in the Storm Sewer Reserves within the 2019 budget, however it was intended that the 'level of service improvements' may be funded from the New Infrastructure Reserve in the interim. This approach may find storm infrastructure projects competing for funding with other Council initiatives such as the Multi-Use Sportsplex and the Main Street CIP Streetscape project.

To address these challenges, the Town needs to have a long-term plan that defines, prioritizes and appropriately funds the storm system needs, while recognizing many competing interests.

Similar to water and wastewater rates, many municipalities are considering the implementation of a user fee system for stormwater services.

Based on the significant funding requirements needed to implement the Town's recommended stormwater infrastructure improvements, it is recommended that the Town undertake a Stormwater Rate Study to assess the feasibility of implementing a user fee system. The objective of the Stormwater Rate Study would be to provide for the long-term protection and enhancement of the Town's stormwater infrastructure through effective and efficient stormwater management infrastructure capital construction, operations and maintenance. In assessing the potential of a user fee system as a primary revenue stream for stormwater services, the evaluation of existing data and the selection of a preferred rate methodology are critical steps in choosing an equitable way to distribute stormwater fees across a community. The identified rate structure must ensure funding is sufficient to meet revenue requirements and is consistent with all relevant legislation, regulations, policies, by-laws, etc. Items to be considered include the following:

- Ability to impose stormwater fees under current provincial and federal legislation;
- Applicability to capital vs. operating costs;
- Applicability for recovery of total program costs vs. a subcomponent of the service;
- Ability for use on a Town-wide vs. area-specific basis;
- Variability and sustainability of the rates for cost recovery;
- Ease of calculating the rates and administration;
- Ease of understanding by the public and general acceptance of the approach.

In addition, an implementation plan strategy to support the rate structure will need to be developed and evaluated.

Administration recommends that Watson & Associates Economists Ltd. (Watson) be retained to undertake a Stormwater Rate Study in 2020. Watson has previously completed studies for the Town of Tecumseh and is familiar with the Town's assets. Most recently, Watson completed the Town's 2019 Development Charges Study. In addition, Watson is one of Canada's leading economic consulting firms and they have completed stormwater rate studies for other municipalities.

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

ST 3. Manning Road Secondary Plan Area – Stormwater Facility

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$40,000	**$2,740,000**	$9,955,000	$12,735,000

The Town of Tecumseh completed the Manning Road Secondary Plan Area, Stormwater Management Class Environmental Assessment (EA) Environmental Study Report (ESR) in April 2010. The preferred stormwater management solution resulting from this EA included a single regional stormwater management facility at the southerly limits of the Study Area with a stormwater pump station that would discharge the runoff volume collected in this facility to the

East Townline Drain at a controlled rate. In addition, the Baillargeon Drain would continue to discharge separately and directly to the East Townline Drain.

Between 2010-2013, the Town initiated the functional design of site servicing for the Manning Road Secondary Plan Area (MRSPA) during which time alternative servicing options for the MRSPA were investigated to assess potential cost saving opportunities. Based on these investigations, the Town of Tecumseh completed the Manning Road Secondary Plan Area, Stormwater Management Class Environmental Assessment (EA) Addendum in December 2014 (Updated March 2015). The Addendum incorporated the Baillargeon Drain as part of the MRSPA storm sewer system and stormwater management facility to better utilize the capacity of the existing and proposed storm drainage infrastructure in the area.

Following the completion of the EA Addendum, the original 2013 Functional Servicing Report (FSR) was updated to address the recommendations included in the Addendum and a revised FSR was issued in 2015.

At the November 12, 2019 Regular Meeting of Council, Council approved the recommendations (Motion RCM-369/19) of PWES Report No. 2019-55 titled "Amendment to 2019-2023 PWES Five Year Capital Works Plan Manning Road Secondary Plan Area, Stormwater Management Facility" which included the following:

- Adding the MRSPA Stormwater Management Facility to the 2019-2023 PWES Five Year Capital Works Plan
- Authorization of an initial $40,000 expenditure in 2019 to be funded out of the Storm Sewer Lifecycle Reserve for costs associated with the acquisition of lands related to legal, surveyors and land appraisals
- Recommendation that additional funding be referred to budget deliberations in the 2020-2024 PWES Five Year Capital Works Plan specific to detailed design, property acquisition and construction costs

Administration recommends that Dillon Consulting Ltd. be retained to complete the detailed design for the MRPSA stormwater facility in 2020 based on their previous work on the 2010 MRSPA EA, 2015 MRSPA EA Addendum and 2015 MRSPA FSR. Administration further recommends that the Town acquires the required property for the MRSPA stormwater management pond in 2020 with construction anticipated to proceed in 2021.

Estimated recoveries from landowners for the design and construction of the MRSPA stormwater facility would be approximately $10,156,000. Assessments to be calculated by Administration and invoiced back to the landowners by means of a Part XII by-law (*Municipal Act*, s.391). Administration will bring forward a future report to Council regarding cost recovery recommendations for this project.

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

ST 4. Tecumseh Hamlet EA and Functional Servicing Study

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$0	**$310,000**	$445,000	$755,000

In 2011, Council approved Administration to engage the services of DIALOG, an Urban Design Consultant, to assist in the development of the Tecumseh Hamlet Secondary Plan (THSP). DIALOG was to assist Administration with stakeholder engagement and capacity building, organizing and facilitating design charrettes and developing concept plans, policies and urban design guidelines to ensure orderly development of lands within the planning area.

In 2012, it was identified that a range of servicing issues needed to be addressed in the THSP area and that these servicing issues needed to be address concurrently with the land use planning issues. Accordingly, it was determined that a Functional Servicing Report (FSR) was required to address storm drainage, sanitary collection, water distribution infrastructure and road layout for the planned development of this area.

At that time, Dillon Consulting Ltd. (Dillon) was engaged to complete an FSR (water, wastewater, stormwater) to supplement the planning work. It was intended that the FSR would take into account the trunk infrastructure proposed by the Town's Water and Wastewater Master Plan and would provide more details as to how the lands would be serviced.

In conjunction with the FSR, it was also identified that a Municipal Class Environmental Assessment (Class EA) would be required to the fulfil infrastructure Class EA requirements for water distribution, wastewater, stormwater and transportation within the Hamlet area.

At the same time as the above, the Upper Little River Watershed Master Drainage and Stormwater Management Municipal Class EA Study (ULR) was being undertaken jointly by the City of Windsor and the Town of Tecumseh, with project management being delivered by the Essex Region Conservation Authority. It was originally intended that the general location and size of the required Hamlet stormwater facilities would be determined through the recommendations of the ULR study. Due to numerous justifiable issues, the ULR study was delayed which ultimately resulted in the THSP and FSR/EA being delayed since the ULR stormwater requirements are needed to finalize the servicing requirements for the Hamlet area.

It is now anticipated that the final report for the ULR study will be available in early 2020. Upon completion of the ULR study, a Notice of Completion will be issued and the project will enter the 30-day public and agency review period. Completion of the ULR study will provide the necessary information to move forward with the Hamlet stormwater management design, to finalize the road network, to prepare the FSR and to undertake the above noted Class EA for the Hamlet infrastructure. Based on the design and planning work completed to date, it is anticipated that the new development within the Tecumseh Hamlet area will include four (4) regional stormwater management facilities and approximately 155 hectares of residential development, 12 hectares of commercial development and 1 hectare of institutional development. The12 hectare Tecumseh Vista Academy site is also included in the Tecumseh Hamlet area.

The total cost for Hamlet FSR/Class EA is $755,000 which includes design components of $91,500 for roads, $91,500 for water distribution, $91,500 for sanitary sewers and $480,500 for stormwater infrastructure.

It is recommended that Dillon Consulting Ltd. continue as the engineering consultant based on their past work on this project. It is recommended that the stormwater management analysis, finalization of the road network and commencement of the Class EA be undertaken in 2020 in conjunction with the related planning processes for the THSP. It is further recommended that the FSR and the finalization of the Class EA be completed in 2021.

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

- Road Lifecycle Reserve in the amount of $30,250
- Watermain Reserve Fund in the amount of $30,250
- Wastewater Sewers Reserve Fund in the amount of $30,250
- Storm Sewer Lifecycle Reserve in the amount of $219,250

ST 5. Oldcastle Storm Drainage Master Plan

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$450,000	**$0**	$0	$450,000

At the December 12, 2017 Regular Meeting of Council, Council approved the recommendations (Motion RCM-441/17) of PWES Report No. 57/17 titled "2018-2022 Public Works & Environmental Services Capital Works Plan" that authorized Administration to proceed with the 2018 capital works projects which included retaining Stantec Consulting Ltd. to complete the Oldcastle Storm Drainage Master Plan.

The stormwater infrastructure network located within the Oldcastle Hamlet area is comprised of a combination of roadside ditches, Municipal Drains, storm sewers, swales/sub-drains, as well as County and Provincial storm infrastructure. There are three (3) distinct watershed areas within the Oldcastle Hamlet which include Little River (8 outlets), Turkey Creek (1 outlet), and River Canard (3 outlets).

The Oldcastle Storm Drainage Master Plan will focus on an analysis of the storm infrastructure within these watersheds and will set the framework for how stormwater is addressed for new and re-developments. This analysis will review how the storm infrastructure functions during minor rainfall events (what can be contained within the ditches, drains and sewers), and major rainfall events (which would follow overland flood routes). The Master Plan will follow the Municipal Class Environmental Assessment (EA) process and is equivalent to the same steps that a Schedule 'B' EA would follow.

At the September 11, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-272/18) of PWES Report No. 2018-21 titled "National Disaster Mitigation Program-Intake 5" that authorized Administration to submit an application to the federal government for funding under the National Disaster Mitigation Program (NDMP) for the Oldcastle Storm Drainage Master Plan. Subsequent to the September 11, 2018 Regular Meeting of Council, Administration submitted a funding application for this project to the

NDMP. On March 28, 2019, Administration received confirmation that our funding application in the amount of $180,000 was approved. As per the funding agreement, all works for this project must be completed by March 31, 2020.

In the Spring of 2019, the project manager for the Oldcastle Stormwater Master Plan left Stantec Consulting Ltd. to seek employment opportunities at another local engineering firm. Through discussions with Stantec Consulting Ltd., it was mutually agreed that the best path forward for this study was for the original project manager to complete the project. Accordingly, Landmark Engineers Inc. was retained to complete the study in accordance with the original project schedule and approved budget.

On October 17, 2019, a Public Information Center was held at the Ciociaro Club. Plans showing the existing drainage conditions within the Oldcastle area were available for review and discussion.

Landmark Engineers Inc. is continuing with the Master Plan and is in the process of developing/evaluating drainage improvement alternatives for the study area. This study will continue through 2019 with a final report anticipated by the end of March 2020.

Funding for this project was previously provided from the Storm Sewer Lifecycle Reserve in the amount of $450,000.

ST 6. Manning Road Improvement Project, Phase 2

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$260,000	**$43,000**	$6,499,500	$6,802,500

The Town completed a Class Environmental Assessment (EA) in April 2010 for improvements to the East Townline Drain (Manning Road) Storm Pump Station. The proposed upgrades to the pump station and drain enclosure along Manning Road provided an opportunity to improve this portion of Manning Road by constructing an urban cross-section that accommodates pedestrians, cyclists and urban design features to create an aesthetically pleasing gateway into Lakewood Park. The limits of the Class EA included Manning Road from Riverside Drive to St. Gregory's Road.

Construction of Phase 1 was completed in 2014 which included the construction of the storm pump station and associated facilities, and the reconstruction of a section of Riverside Drive (Manning Road to Christy Lane), including the roundabout at the Manning Road/Riverside Drive intersection.

At the December 13, 2016 Regular Meeting of Council, Council approved the recommendation (Motion RCM-442/16) of PWES Report No. 54/16 titled “2017-2021 Public Works & Environmental Services Capital Works Plan” that authorized Administration to retain Dillon Consulting Ltd. to proceed with the engineering design for Phase 2 of this project. Phase 2 generally relates to underground servicing including the enclosure and redirection of the East Townline Drain into the recently constructed Lakewood Park channel, filling in the existing open drain on the west side of Manning Road, watermain replacement, construction of a new local storm sewer on the west side of Manning Road and the construction of an overflow storm

sewer on St. Thomas Street. Both the enclosure/redirection of the East Townline Drain into the Lakewood Park channel and the construction of an overflow storm sewer on St. Thomas Street are recommended works from the Tecumseh Storm Drainage Master Plan (Projects ETL-3 and ESL-1) which was recently approved under the Municipal Class EA process.

In the last two years, the Town has sought funding for this project under the following government funding programs:

- Disaster Mitigation and Adaptation Fund – 1st Intake
- Investing in Canada Infrastructure Program: Rural and Northern Communities Funding Stream – 2019 Intake

Unfortunately, this project was not selected for funding under either funding program.

The design for this project has proceeded through 2017, 2018 and, most recently with the approval of the Tecumseh Storm Drainage Master Plan under the Municipal Class EA process, the project scope was expanded to include the St. Thomas Street overflow storm sewer. The previously completed hydrologic and hydraulic modelling was also recently updated to satisfy the requirements of the Windsor/Essex Region Stormwater Management Standards Manual that was adopted by Council at the June 25, 2019 Regular Meeting of Council (Motion RCM-186/19). In addition, significant effort has been expended for funding applications and for the submission of approval applications which are currently under review by the Essex Region Conservation Authority and the Ontario Ministry of Environment, Conservation and Parks.

The Phase 2 project cost of $6,802,500 includes $745,900 for road works, $945,700 for watermains, $11,500 for sanitary sewers, $1,722,900 for storm sewers and $3,376,500 for municipal drains.

Administration recommends completing the St. Thomas Street overflow storm sewer design, updating/finalizing the design drawings/tender documents and obtaining all required approvals in 2020 with construction anticipated to proceed in 2021.

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

- Road Lifecycle Reserve in the amount of $4,500
- Watermain Reserve Fund in the amount of $6,000
- Storm Sewer Lifecycle Reserve in the amount of $11,000
- Drains Lifecycle Reserve in the amount of $21,500

ST 7. Scully & St. Mark's Storm Pump Station & Riverside Drive Storm Sewers

Previously Approved	**Requested for 2020**	Future Costs	Total Project Costs
$797,250	**$0**	$15,756,050	$16,553,300

In 2016 a review of the St. Mark's Storm Pump Station, the Scully (Edgewater) Storm Pump Station and the existing storm sewer infrastructure within the contributing drainage area was conducted. The results indicated that the storm pump stations would be unable to accommodate additional flows from local streets that were slated to be reconstructed with

storm sewers having a 1:5-year level of service. These results were discussed and included in PWES Report No. 52/16 titled "Arlington Boulevard Improvements – Project Update, December 2016", which was brought to Council at the December 13, 2016 Regular Meeting of Council. In addition, the detailed analysis of the stormwater infrastructure that was conducted as part of the Storm Drainage Master Plan confirmed that improvements are required to the existing Scully & St. Mark's pump stations.

The proposed 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 Scully pump station upgrade is to increase 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. 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 $16,553,300 includes $14,680,600 for storm sewers and pumping stations, $374,700 for sanitary sewers and $1,498,000 for road reconstruction.

At the July 24, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-232/18) of PWES Report No. 2018-19 titled "Disaster Mitigation and Adaptation Fund Expression of Interest" that authorized Administration to submit the required documentation to the federal government for funding under the Disaster Mitigation and Adaptation Fund (DMAF). Accordingly, an application was submitted, however, on Friday May 31, 2019, the Town was made aware that our application for funding was not approved.

At the December 11, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-361/18) of PWES Report No. 2018-08 titled "2019-2023 Public Works & Environmental Services 5 Year Capital Works Plan" that authorized Administration to proceed with the 2019 capital works projects which included continuing with Dillon Consulting Ltd. to complete the engineering design for the Scully & St. Mark's Storm Pump Station & Riverside Drive Storm Sewers project in 2019 following completion of the Storm Drainage Master Plan and subject to the results of the Town's DMAF application. It was also noted that the future timing for construction would be contingent on the availability of funding and Council approval.

At the July 23, 2019 Regular Meeting of Council, Council approved the recommendations (Motion RCM-229/19) of PWES Report No. 2019-02 titled "Disaster Mitigation and Adaptation Fund Special Spring 2019 Flooding Intake Expression of Interest and Full Application" that authorized Administration to submit an Expression of Interest and Full Application to the federal government for funding under the 2nd intake of the Disaster Mitigation and Adaptation Fund (DMAF). Accordingly, an Expression of Interest and Full Application were submitted by August 1, 2019 for the following projects:

- Scully & St. Mark's Storm Pump Station & Riverside Drive Trunk Storm Sewers project.
- P.J. Cecile Storm Pump Station Improvements project.

Administration is currently waiting to receive the results of the DMAF application.

As noted above, commencement of the previously approved design work for the Scully & St. Mark's Storm Pump Station & Riverside Drive Trunk Storm Sewers project was to be deferred until completion of the Tecumseh Storm Drainage Master Plan. The Master Plan is now complete, however, the design work has not yet commenced since engineering design costs are eligible for funding under the DMAF program. Upon receipt of the results of our current DMAF application, Administration will move forward with the design for the Scully & St. Mark's Storm Pump Station & Riverside Drive Trunk Storm Sewers project in 2020/2021.

Funding for this project was previously approved from the following:

- Storm Sewer Lifecycle Reserve in the amount of $733,100
- Wastewater Sewers Reserve Fund in the amount of $20,550
- Road Lifecycle Reserve in the amount of $43,600

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 over 150 active drainage projects that the Town is undertaking. These works include new municipal drains (1), maintenance of existing drains (89), drain improvements requiring an engineer's report (44) and apportionment agreements (16) 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 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.

2021 to 2024 Projects

This section provides a higher level discussion on projects being proposed for 2021 to 2024.

- **2021: Traffic Signal Reconstruction (Lesperance/McNorton)** (Cost of $165,000)

  A condition assessment was conducted for all traffic signal infrastructure owned and maintained by the Town, including 11 intersections and one mid-block cross walk. Traffic signal infrastructure includes poles, luminaires, mast arms, traffic signal heads, pedestrian signal heads, pedestrian push buttons, hand holes, loop detectors, cabinets, controllers, wiring and conduit.

  The traffic signal condition assessment has been used as the basis for identifying the recommended priority, scope and cost for traffic signal infrastructure improvements,

which could be utilized by the Town to develop a long-term, comprehensive maintenance and capital replacement strategy.

At the September 22, 2015 Regular Meeting of Council, Council approved the recommendations (Motion RCM-319/15) of PWES Report 51/15 titled "Traffic Signal Infrastructure Assessment (2015)" where the report was adopted and Administration was authorized to use the recommendations contained within the report to form the basis of the annual PWES Capital Works Plan.

Based on the Traffic Signal Infrastructure Assessment (2015), it is recommended that the Lesperance/McNorton intersection traffic signals be reconstructed in 2021.

In addition to this project, it is recommended that the Traffic Signal Infrastructure Reconstruction program should include the following projects subject to the timing of the Tecumseh Road CIP project:

- Lesperance Road/Tecumseh Road East
- Lesperance Road/Arbour Street
- Tecumseh Road East/Shawnee Road

➢ **2021+: Culvert Works (Structures with Spans < 3.0m)**

The 2016 Culvert Needs Study (Structures with Spans < 3.0m) had identified two (2) structures to be replaced immediately; 10 structures to rehabilitated or replaced within a 1-5 year timeframe; and three (3) structures to be rehabilitated or replaced within a 6-10 year timeframe. The recommended culvert works are as follows:

- 2021 – Culvert No.45, South Talbot Road (cost of $326,000)
- 2021/2022 – Culvert No.54, Snake Lane Road (cost of $660,700)
- 2021/2022 – Culvert No.53, Snake Lane Road (cost of $660,700)
- 2021/2022 – Culvert No.42, Snake Lane Road (cost of $554,500)
- 2022/2023 – Culvert No.51, 8th Concession Road (cost of $150,000)
- 2022/2023 – Culvert No.70, 12th Concession Road (cost of $160,000)
- 2024/2025 – Culvert No.48, Holden Road (cost of $550,000)

➢ **2021+: Town Multi-Use Trails and Bike Lanes**

As part of the Tecumseh Transportation Master Plan (TMP), a network of key Active Transportation facilities was developed to ensure connectivity in the larger network. This network has been coordinated with plans and recommendations from the County Wide Active Transportation Study (CWATS) and the City of Windsor Bicycle Use Master Plan (BUMP). The expansion of the Active Transportation Network is a municipal focus for several reasons, including: it promotes Environmental Sustainability, it promotes personal Health, and it promotes Equity in transportation service. The following Active Transportation Facilities are proposed:

- McNorton Bike Lanes (2021, cost of $10,000)
- Lesperance Road Multi-Use Trail – County Road 22 to County Road 42 (2021-2022, cost of $1,071,000)

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- Riverside Drive Multi-Use Trail – Arlington to Kensington (2022-2023, cost of $156,000)
- County Road 34 Multi-Use Trail – Malden to County Road 19 (2023-2024, cost of $455,000)
- Lesperance Road Multi-Use Trail – Riverside to McNorton (2024-2025, cost of $455,000)

➢ **2021 – 2022: Traffic Signal Upgrades/Maintenance** (Cost of $92,500)

A condition assessment was conducted for all traffic signal infrastructure owned and maintained by the Town, including 11 intersections and one mid-block cross walk. Traffic signal infrastructure includes poles, luminaires, mast arms, traffic signal heads, pedestrian signal heads, pedestrian push buttons, hand holes, loop detectors, cabinets, controllers, wiring and conduit.

The traffic signal condition assessment has been used as the basis for identifying the recommended priority, scope and cost for traffic signal infrastructure improvements, which could be utilized by the Town to develop a long-term, comprehensive maintenance and capital replacement strategy.

At the September 22, 2015 Regular Meeting of Council, Council approved the recommendations (Motion RCM-319/15) of PWES Report 51/15 titled "Traffic Signal Infrastructure Assessment (2015) where the report was adopted, and authorized Administration to use the recommendations contained within the report to form the basis of the annual PWES Capital Works Plan.

Based on the Traffic Signal Infrastructure Assessment (2015), it is recommended that traffic signal upgrades/maintenance will be required at the following intersections.

- 2021 - Manning Road at Green Valley Plaza Intersection ($20,625)
- 2021 - Tecumseh Road East and Manning Road Intersection ($20,625)
- 2021 - Tecumseh Road East and Southfield Drive Intersection ($21,250)
- 2022 - Manning Road and St. Gregory's Road Intersection ($16,500)
- 2022 - Tecumseh Road East and Green Valley Plaza Intersection ($13,500)

➢ **2021+: County of Essex (Initiated) Projects**

The County of Essex has a number of planned projects in the upcoming years, where the Town is obligated to meet financial contributions through cost sharing arrangements. The Town is also planning on a number of infrastructure improvements as part of these projects. As the projects are more clearly defined in the years to come, Administration will continue to communicate and negotiate with the County as to the Town's exact contribution. These projects consist of the following:

- **County Road 11/South Talbot Road (2020+,Town's cost share to be negotiated)**
  The County is currently completing the design of a roundabout at the County Road 11/South Talbot Road intersection. Town's cost share to be negotiated.

- **Westlake Drive Extension** (2021, cost of $438,500)
  The extension of Westlake Drive is a component of the County's planned advance construction works at the County Road 22/Lesperance Road intersection, the design details which continue to be the subject of discussion with the County. The Town has provided the County of Essex with a traffic study prepared by Dillon Consulting Ltd. which details the anticipated urban-cross section required for this road extension. The Town will be seeking to install full municipal services (storm, sanitary, watermain), for which those costs will be full recovery from the adjacent development lands.

- **County Road 19** (2021+, Town cost of $214,500)
  The County is proposing advance construction works at the intersections of County Road 19/County Road 46 intersection and the County Road 19/County Road 34 intersection. The Town's costs are attributed to the replacement of the existing watermains.

➢ **2022 & 2024: Bridge and Culvert Needs Study (Structures with Spans > 3.0m)** (Cost of $39,000 each occurrence)

There are a total of eighteen (18) existing bridges and culverts with a span greater than 3.0 metres that were inspected as part of the Bridge and Culvert Needs Study in 2018. Inspections of the eighteen structures within the Town were completed 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". It is currently recommended that a new Bridge and Culvert Needs Study be completed in 2020 and it will be necessary to carry out the next Bridge and Culvert Needs Study in 2022 and again in 2024 to comply with the legislation.

➢ **2022 - 2023: Riverside Drive In-line Storage Trunk Sanitary** (Cost of $2,804,750)

The Town completed a Municipal Class Environmental Assessment (Class EA) in April 2013 for improvements to the Town's sanitary collection system. As part of the 2013 Class EA, various alternative solutions were identified and evaluated to address the problem of basement flooding and the lack of capacity in the sewage system to accommodate future growth. An expansion and upgrading of the existing sanitary sewage collection system was identified as the preferred solution.

The functional design for the preferred solution identified a reduction in the risk of basement flooding and would also accommodate new development. These improvements included:

- Stage 1 (completed in 2014)
  - Decommissioning of the existing Hayes Sanitary Pump Station

- Construction of the new Lakewood Sanitary Pump Station
- Increased on-line peak flow storage capacity – Lakewood Park Trunk Sewer

- Stage 2 (currently scheduled for 2022/2023)
  - Increased on-line peak flow storage capacity – Riverside Drive Trunk Sewer

- Stage 3 (presently being reviewed as part of the 2019 Sanitary Sewer Model Update)
  - Additional investigation and sanitary sewer modeling required on Dillon Drive and Green Valley Drive

Stage 2, the Riverside Drive Trunk Sewer project, consists of replacing the existing sanitary sewer along Riverside Drive between Kensington Boulevard and Pentilly Road with an on-line peak flow storage facility. Approximately 395 meters of the existing 400 mm diameter sanitary sewer will be replaced with 1500 mm diameter sanitary sewer to provide remedial flooding measures to reduce sanitary sewer surcharging and reduce the risk of basement flooding within its service area due to extraneous flows entering the sanitary system through inflow and infiltration. An approximate population of 1,400 people representing 400 properties would see a direct benefit from the project.

The project cost of $2,804,750 includes $2,056,000 for sanitary sewers and $748,750 for road reconstruction.

At the July 24, 2018 Regular Meeting of Council, Council approved the recommendations (Motion RCM-232/18) of PWES Report No. 2018-19 titled "Disaster Mitigation and Adaptation Fund Expression of Interest" that authorized Administration to submit the required documentation to the federal government for funding under the Disaster Mitigation and Adaptation Fund (DMAF). Accordingly, an application was submitted, however, on Friday May 31, 2019, the Town was made aware that our application for funding was not approved.

Engineering design for this project is proposed to be completed in 2022 with construction anticipated to proceed in 2023. Additional funding opportunities will continue to be sought for this project which could modify the project schedule.

At the December 10, 2019 Regular Meeting of Council, Administration will be bring forward PWES Report No. 2019-52 requesting authorization to submit an application to the federal government for funding under the Investing in Canada Infrastructure Program (ICIP): Green Stream – 2019 Intake for a future commitment to the Riverside Drive Trunk Sanitary Sewer to be completed in 2022-2023.

- **2022+: Zone 2 Booster Station (W-9) and Water Storage Facility (W-10)** (Cost of $9,775,000)

At the December 8, 2015 Regular Council Meeting, Council approved the recommendations (Motion RCM-419/15) of PWES Report No. 63/15 titled "2016-2020 Public Works & Environmental Services Capital Works Plan" that authorized Administration to proceed with a Water and Wastewater Master Plan Update. The purpose of the Master Plan Update was to re-examine water and wastewater

infrastructure timing and costing requirements for the existing settlement areas in the Town of Tecumseh to ensure that the most cost effective infrastructure servicing strategies required to support new growth and maintain a high level of service into the future is implemented.

Through the Master Plan Update it is recommended that a second pressure zone is required for the South Service Area. Creation of a second pressure zone requires construction of the following facilities:

- W-9 - A new booster pumping station will permit the Town to operate the water system in the southeast area of Tecumseh at a higher pressure zone in order to provide adequate pressures throughout the full range of demand scenarios for existing and new growth in the south service area. Also included are pressure reducing valves and/or check valves at all boundary connection points with the City of Windsor water system and zone isolation valves between the two Tecumseh pressure zones.

- W-10 - A new water storage facility will supplement the existing fire storage already provided within the Tecumseh Elevated Tank, will provide Tecumseh with minimum fire storage required for an integrated Tecumseh system, and will provide storage for pump control for the booster pumping station.

Total project cost estimate is $9,775,000 with $3,325,000 for W-9 and $6,450,000 for W-10. It is proposed to complete the engineering in 2022 with construction of W-9 and W-10 to follow in subsequent years as funding becomes available.

- **2022+: West Tecumseh Trunk Sewer & Watermain from County Road 22 to CP Railway (WW-1 & W-1) & Diversion Sewer South of CP Railway (WW-2)** (Cost of $10,922,00)

  At the December 8, 2015 Regular Council Meeting, Council approved the recommendations (Motion RCM-419/15) of PWES Report No. 63/15 titled "2016-2020 Public Works & Environmental Services Capital Works Plan" that authorized Administration to proceed with a Water and Wastewater Master Plan Update. The purpose of the Master Plan Update was to re-examine water and wastewater infrastructure timing and costing requirements for the existing settlement areas in the Town of Tecumseh to ensure that the most cost effective infrastructure servicing strategies required to support new growth and maintain a high level of service into the future is implemented.

  The West Tecumseh Trunk Watermain (W-1) will provide direct servicing for new development lands within the Tecumseh Hamlet West Planning Area and will improve fire flows in existing developments south of CR 22. Based on a Preliminary Design, a 400 mm trunk watermain from CR 22 to Intersection Road and 600 mm trunk watermain from Intersection Road to CP Railway are required within the Tecumseh Hamlet West Planning Area. Also included is a 300 mm connection to the trunk watermain on Shawnee Road.

The West Tecumseh Trunk Sewer (WW-1) is proposed to provide direct servicing for new development lands within the Tecumseh Hamlet West Planning Area (north of the CP Railway), and will provide an outlet for existing and new growth south of CP Railway. Based on preliminary design, a 1200mm diameter sewer is required. In order to comply with the Wastewater Agreement between the City of Windsor and the Town of Tecumseh, a flow measurement facility will be required on this trunk sewer prior to discharging to the outlet sewer on County Road 22.

In order to alleviate system surcharges in the Lesperance Road trunk sewer between CP Railway and County Road 22, a new diversion sewer (WW-2) will be constructed along Intersection Road from the West Tecumseh Trunk Sewer to the trunk sewer on St. Anne Street.

Total project cost estimate is $10,922,000 with $7,034,000 for WW-1, $2,754,000 for W-1 and $1,134,000 for WW-2. It is proposed to complete the engineering in 2022, construction of WW-1, W-1 and WW-2 to follow in subsequent years as funding becomes available.

- **2022: Bridge and Culvert Conditions Assessment (Structures with Spans < 3.0m)** (Cost of $75,000)

  At the November 8, 2016 Regular Meeting of Council, Council approved the recommendations (Motion RCM-384/16) of PWES Report No. 39/16 titled "2016 Culvert Needs Study (Structures with Spans < 3.0m)" that authorized Administration to use the recommendations contained within the report to form the basis of the annual PWES Capital Works Plan.

  The "2016 Culvert Needs Study (Structures with Spans < 3.0m)" is being used by Administration to prioritize culvert works. It is recommended that a Bridge and Culvert Conditions Assessment be completed approximately every 5 to 6 years for structures with Spans < 3.0m. The recommended 2022 update will include the following:

  - Condition assessment of the existing culvert;
  - Signage and roadside safety review;
  - Review site conditions and possible extensions of the culverts for roadside safety;
  - Coordination with the Town's Drainage Superintendent as to active drainage reports;
  - Recommend a schedule for repairs and replacements;
  - Prepare detailed costs estimates for the recommended works

- **2022: Roadside Safety Improvements – Bridge #1010** (Cost of $70,000)

  A 2015 Roadside Safety Review documented existing roadside safety hazards and provided recommendations for 16 bridge and culvert structures in the Town of Tecumseh (Town). A 2016 Culvert Needs Study documented, in part, existing roadside safety hazards and provided recommendations for 71 culvert structures having spans equal to or less than 3.0 metres in the Town. These reviews were based on the 1993 Ministry of Transportation, Ontario (MTO) Roadside Safety Manual. In December of 2017, MTO

released the 2017 MTO Roadside Design Manual to replace the 1993 MTO Roadside Safety Manual.

As part of the 2018 Bridge and Culvert Needs Study-Structures with Spans Greater than 3.0 m project, Dillon Consulting Ltd. provided a standalone Memo on Roadside Safety Improvements based on the 2017 MTO Roadside Design Manual. Based on this information, improvement to a guide rail is recommended at Bridge #1010.

- **2022: Town Property Shoreline Protection Condition Assessment** (Cost of $50,000)

  High lake levels and related wave action during wind events can cause significant adverse impacts to existing shore protection structures. The Town of Tecumseh owns a number of shoreline properties with shore protection structures of varying age, type and condition. In order to maintain this infrastructure and provide for necessary improvements in future PWES Capital Works Plans, it is recommended that a condition assessment be undertaken for all shoreline protection infrastructure owned by the Town. The condition assessment should generally include the following:

  - Inventory of existing shore protection
  - Existing condition assessment
  - Estimate of remaining design life
  - Concepts for potential improvements as determine based on the existing condition assessment
  - High level cost estimate for the preparation of detailed designs and construction of suggested improvements
  - Priority ranking based on the existing condition assessment

- **2022: Sanitary Pump Station Improvements** (Cost of $30,000)

  The Town owns and operates four (4) sanitary pump stations. The 2016 Pump & Metering Station Condition Assessment had identified 'Immediate Repairs' and '10 Year Repairs' for the sanitary pump stations. The proposed 2022 works consist of improvements at the Sylvestre Sanitary Pump Station, where the pump and structural supports will be replaced.

- **2022 – 2023: Ure Street Sanitary Sewer Extension** (Cost of $1,587,000, landowner recoveries approximately $905,500)

  The Ure Street Sanitary Sewer Extension is a continuation of the sanitary sewer servicing within the 8th Concession Road sanitary service area. This project includes the extension of a sanitary sewer along Ure Street from Del Duca Drive to North Talbot Road. It is proposed to carry out the engineering in 2022 and to proceed with construction in 2023.

  Estimated recoveries from landowners for the sanitary sewers would be approximately $905,500 and will be refined once the By-Law for the 8th Concession Road sanitary service area is completed. The project cost of $1,587,000 includes $509,000 for sanitary sewers, $667,000 for road reconstruction and $411,000 for storm sewers.

- **2023+: P.J. Cecile (Kensington) Storm Pump Station** (Cost of $9,940,000)

  In 2016 a review of the P.J. Cecile (Kensington) Storm Pump Station and existing storm sewer infrastructure within the contributing drainage area was conducted. The results indicated that the pump station cannot accommodate the future projected flows from the drainage area once some of the existing streets are reconstructed to an urban (or semi-urban) cross section.

  The recently completed Storm Drainage Master Plan confirmed the need for improvements at this pump station.

  The project cost of $9,940,000 includes $9,660,000 for storm sewers and pump stations and $280,000 for road reconstruction.

  At the July 23, 2019 Regular Meeting of Council, Council approved the recommendations (Motion RCM-229/19) of PWES Report No. 2019-02 titled "Disaster Mitigation and Adaptation Fund Special Spring 2019 Flooding Intake Expression of Interest and Full Application" that authorized Administration to submit an Expression of Interest and Full Application to the federal government for funding under the 2nd intake of the Disaster Mitigation and Adaptation Fund (DMAF). Accordingly, an Expression of Interest and Full Application were submitted by August 1, 2019 for the following projects:

  - Scully & St. Mark's Storm Pump Station & Riverside Drive Trunk Storm Sewers project.
  - P.J. Cecile Storm Pump Station Improvements project.

  Administration is currently waiting to receive the results of the DMAF application.

  Administration believes it is important to identify this project within the 5-year capital works plan as it will have an effect on the annual allocation to the storm sewer reserve fund. There is also benefit in having projects in a 'shovel ready' state in the event grant funding becomes available from upper levels of government. The timing of design and construction is contingent on the availability of funding, and Council approval.

- **2023 – 2024: O'Neil Street Sanitary Sewer Extension** (Cost of $1,794,000, landowner recoveries $740,000)

  The O'Neil Street Sanitary Sewer Extension is a continuation of the sanitary sewer servicing within the 8th Concession Road sanitary service area. This project includes the extension of a sanitary sewer along O'Neil Street from Del Duca Drive to North Talbot Road. It is proposed to carry out the engineering in 2023 and to proceed with construction in 2024.

  Estimated recoveries from landowners for the sanitary sewers would be approximately $740,000, and will be refined once the By-Law for the 8th Concession Road sanitary service area is completed. The project cost of $1,794,000 includes $566,000 for sanitary sewers, $772,000 for road reconstruction and $456,000 for storm sewers.

- **2024+: Moynahan Street, Henin Drive and Regal Drive Sanitary Sewer Extension** (Cost of $2,194,000, landowner recoveries $990,000)

  The Moynahan Street, Henin Drive and Regal Drive Sanitary Sewer Extensions are a continuation of the sanitary sewer servicing within the 8th Concession Road sanitary service area. It is proposed to carry out the engineering in 2024 and to proceed with construction in 2025.

  Estimated recoveries from landowners for the sanitary sewers would be approximately $990,000 and will be refined once the By-Law for the 8th Concession Road sanitary service area is completed. The project cost of $2,194,000 includes $692,000 for sanitary sewers, $944,000 for road reconstruction and $558,000 for storm sewers.

- **2024: Road Needs Study** (Cost of $70,000)

  The Town of Tecumseh maintains an extensive network of urban, semi-urban and rural roads of all classes, with the exception of Class 1 roads such as County Road 22. The roads network is approximately 180 centerline-kilometers of roadway (varying from two to four lanes), consisting of varying materials such as asphalt, concrete and tar and chip.

  The key to managing the Town of Tecumseh roads is to apply the correct rehabilitation strategy at the correct time. This includes applying preventative maintenance strategies to roads in the early stages of deterioration (e.g. crack sealing), then applying rehabilitation strategies at later dates and ultimately reconstructing the road when the useful life has expired.

  Road reconstruction is closely coordinated with other infrastructure replacements such as sewer and water in order to achieve a level of cost saving. Initiatives such as these help to increase the customers level of service as well as reduce the frequency of large scale construction activities. This is a key factor to achieving improvements while achieving overall benefits to the customer through the use of sound planning.

  The Town undertakes Road Needs Studies on a five year basis to help prioritize road projects and gauge the Town effectiveness in the replacement/rehabilitation strategies to date. The Town is currently undertaking the 2019 Roads Needs Study and the next study is proposed to be completed in 2024.

- **2024: Tecumseh Storm Drainage Master Plan Update (Cost of $150,000)**

  At the June 25, 2019 Special Meeting of Council, Council approved the recommendations (Motion SCM-17/19) of PWES Report No. 2019-35 titled “Storm Drainage Master Plan – Filing the Notice of Study Completion” that authorized Administration to advertised the Notice of Study Completion to initiate the mandatory 30-day public and agency review period. Accordingly, a Notice of Study Completion was issued and the 30-day public and agency review period ended on August 19, 2019. All comments received were satisfactorily addressed and on October 24, 2019 Dillon Consulting Ltd. issued correspondence advising that the Town of Tecumseh Storm Drainage Master Plan, including the specified Schedule B projects that form part of the preferred solutions, is

considered approved under the Municipal Class EA process and may proceed to detailed design and implementation.

In order to keep this information current, it is recommended that the report and related modeling be updated every five years. The recommended 2024 update should generally include the following:

- Review of developments and related stormwater controls that have been built since completion of the study.
- Model update to include developments and related stormwater controls that have been built since completion of the study.
- Model update based on 2024 Regional Stormwater Guidelines.
- Integration of works completed in the Manning Road Secondary Planning Area and expansion of the study area to incorporate the Tecumseh Hamlet Area.
- Integration of findings of the Town Shoreline Management Plan.
- EA/Master Plan report update.

Consultations

Financial Services
Planning & Building Services

Financial Implications

The capital expenditures proposed for 2020 total just over $13.4M with an additional $82.6M projected over the remaining four years of the five-year capital works plan. Details of expenditures by project and year are included in the tables.

Generally speaking, funding for most projects is covered through lifecycle, grants and rates however the following categories are projected to be in deficit positions:

Bridges Lifecycle Reserve

In 2022 three (3) culverts are planned to be replaced at a cost of $1,691,600 which will push this reserve into a deficit position of $1,412,000. The annual Lifecycle allocation was increased from $390,000 to $410,000 for 2020 as a step towards addressing the funding deficit identified in the Town's 2018 Asset Management Plan (AMP).

The Town's AMP will be updated for July 2021 at which time Administration will consider options to offset the deficit including reallocating funds from the Road LC, borrowing, grants, increasing the annual allocation and stretching out the works over a longer period.

Storm Sewer Lifecycle Reserve

The reserve is expected to be in a $2,614,000 deficit position by the end of 2020 largely as a result of the $2,740,000 required for the MRSPA pond design and construction.

A major contributor to the deficit is that the Town has significantly enhanced storm infrastructure with funding coming from Storm Sewer LC whereas a portion of the funds should come from new infrastructure funds. Examples include Brighton and Manning Roads pump stations being enhanced, over what was previously in place, along with certain road projects in the St. Clair Beach and Oldcastle areas where the storm system is being enhanced. Deficits have been manageable to date using grants and additional funding provided by the Roads LC.

The (Tecumseh) Storm Drainage Master Plan was completed during 2019 and recommended capital projects of $107 million. The Scully & St. Mark's Storm Pump Station has been identified as one of the recommended projects and is included in the five-year capital works plan at an estimated project cost in excess of $15,000,000 of which $733,100 has been allocated in 2020/2021 for engineering to have the project in a "shovel ready" state in the event grants become available. The timing of design and construction is contingent on the availability of funding, and Council approval.

The (Oldcastle Hamlet) Storm Drainage Master Plan should be completed in 2020 and will recommend capital projects of its own.

Discussions are on-going with regard to functional servicing for various developments that are being considered within the Town that may require advancement of Capital infrastructure. As proposals are brought forward, Administration will report back to Council with project details and potential financial implications.

Based on the current annual allocation of just over $1 million, implementation of the Master Plan projects will require significant funding enhancements. Administration continues to look at a range of funding sources including debt, grants, increased lifecycle allocations, consideration of stormwater rates, etc. In the near term OCIF grant allocations have been preliminarily earmarked for storm sewer purposes and will be banked until an implementation plan is developed coming out of the master planning process.

Wastewater Sewers Reserve Fund

This reserve fund continues to be in a deficit position with projected 2020 year-end estimated to be $5,158,000. Lack of sustained growth has meant the Town has had to fund infrastructure for longer than originally anticipated. In addition, the Town expended $11.9 million in funding between 2011 and 2017 for trunk sanitary sewer construction for the 8th Concession Road sanitary service area. Local sewers are scheduled to be constructed over the next several years, which should result in significant recoveries to help reduce the deficit.

Administration is investigating debt funding and other options in order to address the cash flow issues facing the wastewater infrastructure system.

For purposes of putting together this PWES Capital Plan, Administration has assumed that new sidewalk and CWATS projects would be funded by the Infrastructure Reserve. Neither the Sidewalk LC nor the Trail LC annual allocations of $74,000 and $50,000 respectively allow for any significant new infrastructure. Administration continues to work at refining estimates for

new infrastructure requirements to be funded from the Infrastructure Reserve as well as other methods of financing. Additional analysis will be brought before Council as these works continue.

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

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 Planning & Building Services

Reviewed by:

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

Recommended by:

Phil Bartnik, P.Eng.
Director Public Works & Environmental Services &
Acting Chief Administrative Officer

Attachment Number	**Attachment Name**
1	PWES 2020-2024 Capital Works Plan-Project Cost Estimates
2	PWES 2020-2024 Capital Works Plan-LCRoads2020 CC2 1500

Attachment Number	Attachment Name
3	PWES 2020-2024 Capital Works Plan-LCBridges2020 CC2 1660
4	PWES 2020-2024 Capital Works Plan-LCSidewalks2020 CC2 1550
5	PWES 2020- 2024 Capital Works Plan-LCStorm2020 CC2 1650
6	PWES 2020-2024 Capital Works Plan-RFWastewater2020 CC2 2550
7	PWES 2020-2024 Capital Works Plan-RFWastewaterFacilities2020 CC2 2560
8	PWES 2020-2024 Capital Works Plan-RFWatermains2020 CC2 2520
9	PWES 2020-2024 Capital Works Plan-RFWaterFacilities2020 CC2 2530
10	2020-2024 Infrastructure Five Year Projections-RInfrastructure2020 CC2 1085

Town of Tecumseh
Public Works and Environmental Services
2020 - 2024 Public Works and Environmental Services Capital Works Plan

Roads	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
Paving	$ 7,775,000	$ -	$ -	$ 7,775,000	$ 1,300,000	$ 1,300,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000
Traffic Signal Controller Upgrade (w/ County) CFWD	$ 150,000	$ -	$ -	$ 150,000	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ -
PW Yard (North) Expansion/Improvements CFWD	$ 30,000	$ -	$ -	$ 30,000	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -
Road Line Painter	$ 30,000	$ -	$ -	$ 30,000	$ 30,000	$ -	$ -	$ -	$ -	$ -	$ -
Traffic Calming Guideline Study	$ -	$ 20,000	$ -	$ 20,000	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -
Traffic Signal Upgrades/Maintenance	$ 83,000	$ 12,450	$ 8,300	$ 103,750	$ -	$ -	$ 62,500	$ 30,000	$ -	$ -	$ -
Traffic Signal Reconstruction (Lesperance/McNorton)	$ 140,250	$ 24,750	$ -	$ 165,000	$ -	$ -	$ 165,000	$ -	$ -	$ -	$ -
CR42/43 Const. including 12th&Banwell Watermains	$ 35,100	$ 6,000	$ 1,800	$ 42,900	$ -	$ 22,450	$ -	$ 20,450	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ -	$ 91,500	$ -	$ 91,500	$ -	$ 30,250	$ 61,250	$ -	$ -	$ -	$ -
Tecumseh Sigange Project	$ -	$ 16,000	$ -	$ 16,000	$ -	$ 16,000	$ -	$ -	$ -	$ -	$ -
Lesperance/VIA Rail Improvements	$ 991,800	$ 242,600	$ 49,600	$ 1,284,000	$ -	$ 155,000	$ 1,129,000	$ -	$ -	$ -	$ -
Tecumseh Road CIP - Phase 1 CFWD	$ 10,131,900	$ 1,665,360	$ 946,000	$ 12,743,260	$ 100,000	$ 350,000	$ -	$ -	$ -	$ -	$ -
Tecumseh Road CIP - Phase 2 CFWD	$ 5,579,980	$ 846,540	$ 538,020	$ 6,964,540	$ 28,000	$ 50,000	$ -	$ -	$ -	$ -	$ -
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 Drain Relocation - Phase 2	$ 609,400	$ 106,000	$ 30,500	$ 745,900	$ -	$ 4,500	$ 691,400	$ -	$ -	$ -	$ -
Manning Road Reconstruction - Phase 3	$ 5,415,900	$ 778,000	$ 270,800	$ 6,464,700	$ -	$ 45,500	$ -	$ 6,239,200	$ -	$ -	$ -
South Talbot Road Reconstruction	$ 2,039,500	$ 189,000	$ 102,000	$ 2,330,500	$ 2,240,500	$ -	$ -	$ -	$ -	$ -	$ -
Sylvestre Drive Sanitary Sewer Extension	$ 881,700	$ 151,600	$ 44,100	$ 1,077,400	$ 20,000	$ -	$ 983,400	$ -	$ -	$ -	$ -
Lesperance Road Bike Lanes	$ 100,000	$ 10,000	$ -	$ 110,000	$ 110,000	$ -	$ -	$ -	$ -	$ -	$ -
Tecumseh/Lacasse Intersection Improvements	$ 365,000	$ 77,000	$ 36,500	$ 479,000	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -
Brighton Road Traffic Circle Review	$ -	$ 32,000	$ -	$ 32,000	$ 32,000	$ -	$ -	$ -	$ -	$ -	$ -
Roads Needs Study	$ -	$ 133,000	$ -	$ 133,000	$ 63,000	$ -	$ -	$ -	$ -	$ 70,000	$ -
Scully & St Mark's Storm PS/Riverside Drive CFWD	$ 1,177,300	$ 203,000	$ 117,700	$ 1,498,000	$ -	$ 26,100	$ 17,500	$ -	$ 1,454,400	$ -	$ -
CR46/Webster/Laval Sanitary Sewer Exten. (LRPCP)	$ 1,284,900	$ 182,000	$ 64,200	$ 1,531,100	$ 120,750	$ -	$ 1,410,350	$ -	$ -	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 902,400	$ 163,400	$ 45,100	$ 1,110,900	$ 92,450	$ -	$ -	$ 1,018,450	$ -	$ -	$ -
Lanoue Street Improvements	$ 1,322,900	$ 275,000	$ 66,100	$ 1,664,000	$ -	$ 363,300	$ 1,300,700	$ -	$ -	$ -	$ -
Tecumseh Road Sanitary Sewer	$ 533,600	$ 85,600	$ 53,400	$ 672,600	$ -	$ 672,600	$ -	$ -	$ -	$ -	$ -
Riverside Drive In-line Storage Trunk Sanitary	$ 575,000	$ 116,250	$ 57,500	$ 748,750	$ -	$ -	$ -	$ 58,125	$ 690,625	$ -	$ -
Ure Street Sanitary Sewer (LRPCP)	$ 533,900	$ 80,100	$ 53,400	$ 667,000	$ -	$ -	$ -	$ 40,000	$ 627,000	$ -	$ -
PJ Cecile Storm PS *	$ 200,000	$ 60,000	$ 20,000	$ 280,000	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ 250,000
O'Neil Street Sanitary Sewer (LRPCP)	$ 617,500	$ 92,600	$ 61,800	$ 772,000	$ -	$ -	$ -	$ -	$ 46,300	$ 725,700	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ 755,300	$ 113,300	$ 75,500	$ 944,000	$ -	$ -	$ -	$ -	$ -	$ 56,650	$ 887,350
Total	$ 49,961,660	$ 6,949,068	$ 3,389,740	$ 60,300,568	$ 4,166,700	$ 3,215,700	$ 6,821,100	$ 8,406,225	$ 3,848,325	$ 1,852,350	$ 2,137,350

Town of Tecumseh
Public Works and Environmental Services
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Sidewalks/Pathways	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
Sidewalk Repair Program	$ 483,000	$ -	$ -	$ 483,000	$ 69,000	$ 69,000	$ 69,000	$ 69,000	$ 69,000	$ 69,000	$ 69,000
Riverside Drive Trail (Lesperance to Manning) CFWD	$ 680,000	$ 102,000	$ 68,000	$ 850,000	$ -	$ 150,000	$ 632,000	$ -	$ -	$ -	$ -
McNorton Bike Lanes	$ 10,000	$ -	$ -	$ 10,000	$ -	$ -	$ 10,000	$ -	$ -	$ -	$ -
Lesperance Road Trail (CR22 to CR42)	$ 885,000	$ 142,000	$ 44,000	$ 1,071,000	$ -	$ -	$ 71,000	$ 1,000,000	$ -	$ -	$ -
Tecumseh Road Path (Arlington to DM Eagle)	$ 92,500	$ 5,000	$ 2,500	$ 100,000	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -
Riverside Drive Pathway (Arlington to Kensington)	$ 120,000	$ 18,000	$ 18,000	$ 156,000	$ -	$ -	$ -	$ 9,000	$ 147,000	$ -	$ -
CR34: Malden to CR19 (Multi-Use Trail)	$ 350,000	$ 52,500	$ 52,500	$ 455,000	$ -	$ -	$ -	$ -	$ 75,000	$ 380,000	$ -
Lesperance Road Trail (Riverside to McNorton)	$ 350,000	$ 52,500	$ 52,500	$ 455,000	$ -	$ -	$ -	$ -	$ -	$ 26,250	$ 428,750
CR42 / CR19 Roundabout (Sidewalks)	$ 16,500	$ -	$ 2,500	$ 19,000	$ -	$ 19,000	$ -	$ -	$ -	$ -	$ -
CR42: CR43 to Lesperance (Sidewalks)	$ 352,000	$ -	$ 10,000	$ 362,000	$ -	$ -	$ -	$ -	$ 362,000	$ -	$ -
CR42: Lesperance to CR19 (Sidewalks)	$ 50,000	$ -	$ 8,000	$ 58,000	$ -	$ 29,000	$ -	$ -	$ 29,000	$ -	$ -
Total	$ 3,389,000	$ 372,000	$ 258,000	$ 4,019,000	$ 69,000	$ 367,000	$ 782,000	$ 1,078,000	$ 682,000	$ 475,250	$ 497,750

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Town of Tecumseh
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CWATS Projects	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
CR11: Hwy 401 to NTR (Multi-Use Trail)	$ 348,000	$ 52,000	$ 34,600	$ 434,600	$ 292,950	$ -	$ -	$ -	$ -	$ -	$ -
CR42 / CR19 Roundabout (Bike Lanes)	$ 11,000	$ -	$ -	$ 11,000	$ -	$ 11,000	$ -	$ -	$ -	$ -	$ -
CR42: CR43 to Lesperance (Bike Lanes)	$ 196,500	$ -	$ -	$ 196,500	$ -	$ -	$ -	$ -	$ 196,500	$ -	$ -
CR42: Lesperance to CR19 (Bike Lanes)	$ 62,000	$ -	$ -	$ 62,000	$ -	$ 31,000	$ -	$ -	$ 31,000	$ -	$ -
Total	$ 617,500	$ 52,000	$ 34,600	$ 704,100	$ 292,950	$ 42,000	$ -	$ -	$ 227,500	$ -	$ -

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Town of Tecumseh
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Bridges	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
Bridge & Culvert Condition Assessment (<3m Span)	$ -	$ 75,000	$ -	$ 75,000	$ -	$ -	$ -	$ 75,000	$ -	$ -	$ -
Bridge & Culvert Needs Study (>3m Span)	$ -	$ 117,000	$ -	$ 117,000	$ -	$ 39,000	$ -	$ 39,000	$ -	$ 39,000	$ -
Culvert #46: South Talbot Road	$ 290,500	$ 90,000	$ 30,000	$ 410,500	$ 370,500	$ -	$ -	$ -	$ -	$ -	$ -
Culvert #47: South Talbot Road	$ 131,500	$ 50,000	$ 14,000	$ 195,500	$ 175,500	$ -	$ -	$ -	$ -	$ -	$ -
Culvert #35: Rossi Drive	$ 10,000	$ -	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sullivan Creek at 12th Concession (1004)	$ 155,000	$ 87,500	$ 7,800	$ 250,300	$ 207,300	$ -	$ -	$ -	$ -	$ -	$ -
Townline Road Drain at 6th Concession Road (1014)	$ 155,000	$ 87,500	$ 7,800	$ 250,300	$ 207,300	$ -	$ -	$ -	$ -	$ -	$ -
Merrick Creek at 8th Concession Road (1013) CFWD	$ 155,000	$ 87,500	$ 7,800	$ 250,300	$ 207,300	$ 310,000	$ -	$ -	$ -	$ -	$ -
Culvert #45: South Talbot Road (CR11/STR Works)	$ 250,000	$ 38,000	$ 38,000	$ 326,000	$ -	$ -	$ 326,000	$ -	$ -	$ -	$ -
Culvert #42: Snake Lane Road	$ 470,000	$ 61,000	$ 23,500	$ 554,500	$ -	$ -	$ 54,500	$ 500,000	$ -	$ -	$ -
Culvert #53: Snake Lane Road	$ 560,000	$ 72,700	$ 28,000	$ 660,700	$ -	$ -	$ 64,900	$ 595,800	$ -	$ -	$ -
Culvert #54: Snake Lane Road	$ 560,000	$ 72,700	$ 28,000	$ 660,700	$ -	$ -	$ 64,900	$ 595,800	$ -	$ -	$ -
Culvert #51: 8th Concession Road	$ 80,000	$ 60,000	$ 10,000	$ 150,000	$ -	$ -	$ -	$ 30,000	$ 120,000	$ -	$ -
Culvert #70: 12th Concession Road	$ 85,000	$ 60,000	$ 15,000	$ 160,000	$ -	$ -	$ -	$ 30,000	$ 130,000	$ -	$ -
Roadside Safety Improvements - Bridge #1010	$ 50,000	$ 10,000	$ 10,000	$ 70,000	$ -	$ -	$ -	$ 70,000	$ -	$ -	$ -
Culvert #48: Holden Road	$ 422,000	$ 64,000	$ 64,000	$ 550,000	$ -	$ -	$ -	$ -	$ -	$ 32,000	$ 518,000
Colins Drain at Outer Drive (1016)	$ 300,000	$ 45,000	$ 45,000	$ 390,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 22,500
Total	$ 3,674,000	$ 1,077,900	$ 328,900	$ 5,080,800	$ 1,167,900	$ 349,000	$ 510,300	$ 1,935,600	$ 250,000	$ 71,000	$ 540,500

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Town of Tecumseh
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Watermains	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
Water & Wastewater Master Plan Update (2016)	$ -	$ 57,500	$ -	$ 57,500	$ 7,500	$ -	$ -	$ -	$ -	$ -	$ -
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 Drain Relocation - Phase 2	$ 773,000	$ 134,000	$ 38,700	$ 945,700	$ -	$ 6,000	$ 914,700	$ -	$ -	$ -	$ -
Hwy#3/Walker Rd Watermain Replacement	$ 1,920,700	$ 300,000	$ 96,000	$ 2,316,700	$ 74,600	$ 2,182,100	$ -	$ -	$ -	$ -	$ -
Westlake Drive - San, Stm, Water	$ 85,000	$ 12,750	$ 12,750	$ 110,500	$ -	$ -	$ 110,500	$ -	$ -	$ -	$ -
Water Tower Internal Lining Replacement	$ 470,000	$ -	$ -	$ 470,000	$ 470,000	$ -	$ -	$ -	$ -	$ -	$ -
Water Loss Audit	$ -	$ 15,000	$ -	$ 15,000	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ -	$ 91,500	$ -	$ 91,500	$ -	$ 30,250	$ 61,250	$ -	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer Exten. (LRPCP)	$ 1,256,800	$ 178,000	$ 62,800	$ 1,497,600	$ 80,400	$ -	$ 1,417,200	$ -	$ -	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 25,400	$ 4,600	$ 1,300	$ 31,300	$ 5,550	$ -	$ -	$ 25,750	$ -	$ -	$ -
CR42/43 Const. including 12th&Banwell Watermains	$ 1,294,300	$ 211,000	$ 64,700	$ 1,570,000	$ -	$ 758,600	$ 811,400	$ -	$ -	$ -	$ -
2020 Water and Wastewater Rates Study	$ -	$ 10,000	$ -	$ 10,000	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -
CR42 & CR43 Advanced Engineering	$ -	$ 25,000	$ -	$ 25,000	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -
Zone 2 Booster Station (W-9)	$ 2,660,000	$ 399,000	$ 266,000	$ 3,325,000	$ -	$ -	$ -	$ 399,500	$ -	$ -	$ 2,925,500
Zone 2 Water Storage Facility (W-10)	$ 5,160,000	$ 774,000	$ 516,000	$ 6,450,000	$ -	$ -	$ -	$ 687,000	$ -	$ -	$ 5,763,000
CR 19 @ CR46 Advanced Construction	$ 125,000	$ 18,750	$ 18,750	$ 162,500	$ -	$ -	$ 162,500	$ -	$ -	$ -	$ -
West Tecumseh Trunk Watermain (W-1)	$ 2,040,000	$ 408,000	$ 306,000	$ 2,754,000	$ -	$ -	$ -	$ 204,000	$ -	$ 2,550,000	$ -
CR 19 @ CR34 Advanced Construction	$ 40,000	$ 6,000	$ 6,000	$ 52,000	$ -	$ -	$ -	$ 52,000	$ -	$ -	$ -
Total	$ 16,898,500	$ 2,834,906	$ 1,493,830	$ 21,227,236	$ 678,050	$ 2,986,950	$ 3,477,550	$ 1,368,250	$ -	$ 2,550,000	$ 8,688,500

Town of Tecumseh
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Wastewater Projects	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
Water & Wastewater Master Plan Update (2016)	$ -	$ 57,500	$ -	$ 57,500	$ 7,500	$ -	$ -	$ -	$ -	$ -	$ -
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	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Manning Road/ETLD Drain Relocation - Phase 2	$ 9,000	$ 2,000	$ 500	$ 11,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -
County Road 11 (North) Sanitary Sewer	$ 875,000	$ 172,000	$ 105,000	$ 1,152,000	$ 952,000	$ -	$ -	$ -	$ -	$ -	$ -
Sylvestre Drive Sanitary Sewer Extension	$ 518,000	$ 185,400	$ 25,900	$ 729,300	$ 77,600	$ -	$ 542,500	$ -	$ -	$ -	$ -
Pump Station Emergency Response Plan	$ -	$ 35,000	$ -	$ 35,000	$ 35,000	$ -	$ -	$ -	$ -	$ -	$ -
SCADA Software/Server/Nodes Update	$ 26,250	$ -	$ -	$ 26,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Manhole Restoration Program	$ 75,000	$ -	$ -	$ 75,000	$ 50,000	$ 25,000	$ -	$ -	$ -	$ -	$ -
Sylvestre Drive Sanitary PS Improvements	$ 45,000	$ -	$ -	$ 45,000	$ 15,000	$ -	$ -	$ 30,000	$ -	$ -	$ -
Lakewood Sanitary PS Improvements	$ 7,500	$ -	$ -	$ 7,500	$ 7,500	$ -	$ -	$ -	$ -	$ -	$ -
Sanitary Metering Station Repairs	$ 10,000	$ -	$ -	$ 10,000	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -
Westlake Drive - San, Stm, Water	$ 132,000	$ 20,000	$ 20,000	$ 172,000	$ -	$ -	$ 172,000	$ -	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ -	$ 91,500	$ -	$ 91,500	$ -	$ 30,250	$ 61,250	$ -	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer Exten. (LRPCP)	$ 1,246,600	$ 177,000	$ 62,300	$ 1,485,900	$ 166,700	$ -	$ 1,319,200	$ -	$ -	$ -	$ -
Scully & St Mark's Storm PS/Riverside Drive CFWD	$ 294,300	$ 51,000	$ 29,400	$ 374,700	$ -	$ 12,350	$ 8,200	$ -	$ 354,150	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 872,900	$ 158,100	$ 43,600	$ 1,074,600	$ 148,500	$ -	$ -	$ 926,100	$ -	$ -	$ -
Sanitary Sewer Model Update	$ -	$ 295,000	$ -	$ 295,000	$ 250,000	$ 45,000	$ -	$ -	$ -	$ -	$ -
Riverside Drive In-line Storage Trunk Sanitary	$ 1,645,000	$ 246,750	$ 164,500	$ 2,056,000	$ -	$ -	$ -	$ 123,375	$ 1,932,625	$ -	$ -
CR42/43 Const. including 12th&Banwell Watermains	$ 244,600	$ 40,000	$ 12,200	$ 296,800	$ -	$ 44,900	$ 251,900	$ -	$ -	$ -	$ -
CR42 & CR43 Advanced Engineering	$ -	$ 16,000	$ -	$ 16,000	$ 16,000	$ -	$ -	$ -	$ -	$ -	$ -
Tecumseh Road Sanitary Sewer	$ 1,900,100	$ 305,000	$ 190,000	$ 2,395,100	$ 150,000	$ 2,245,100	$ -	$ -	$ -	$ -	$ -
Ure Street Sanitary Sewer (LRPCP)	$ 407,500	$ 61,100	$ 40,800	$ 509,000	$ -	$ -	$ -	$ 31,000	$ 478,000	$ -	$ -
West Tecumseh Trunk Sanitary (WW-1)	$ 5,210,000	$ 1,042,000	$ 781,500	$ 7,034,000	$ -	$ -	$ -	$ 521,000	$ -	$ 6,513,000	$ -
Diversion San Sewers (Intersection Rd) (WW-2)	$ 840,000	$ 168,000	$ 126,000	$ 1,134,000	$ -	$ -	$ -	$ 84,000	$ -	$ 1,050,000	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ 471,300	$ 70,700	$ 23,600	$ 566,000	$ -	$ -	$ -	$ -	$ 35,350	$ 530,650	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ 576,400	$ 86,500	$ 28,800	$ 692,000	$ -	$ -	$ -	$ -	$ -	$ 43,250	$ 648,750
2020 Water and Wastewater Rates Study	$ -	$ 10,000	$ -	$ 10,000	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -
Total	$ 16,424,750	$ 3,480,356	$ 1,755,930	$ 21,661,586	$ 1,885,800	$ 2,412,600	$ 2,355,050	$ 1,715,475	$ 2,800,125	$ 8,136,900	$ 648,750

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Storm Sewers	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
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 Drain Relocation - Phase 2	$ 1,408,500	$ 244,000	$ 70,400	$ 1,722,900	$ -	$ 11,000	$ 1,651,900	$ -	$ -	$ -	$ -
Manning Road Reconstruction - Phase 3	$ 266,800	$ 38,000	$ 13,300	$ 318,100	$ -	$ 2,500	$ -	$ 315,600	$ -	$ -	$ -
Lesperance/VIA Rail Improvements	$ 193,600	$ 47,400	$ 9,700	$ 250,700	$ -	$ 31,000	$ 219,700	$ -	$ -	$ -	$ -
Sylvestre Drive Sanitary Sewer Extension	$ 43,500	$ 7,500	$ 2,200	$ 53,200	$ -	$ -	$ 49,000	$ -	$ -	$ -	$ -
Pump Station Emergency Response Plan	$ -	$ 35,000	$ -	$ 35,000	$ 35,000	$ -	$ -	$ -	$ -	$ -	$ -
West St. Louis Storm PS - Repairs	$ 51,000	$ 7,650	$ 7,650	$ 66,300	$ 66,300	$ -	$ -	$ -	$ -	$ -	$ -
Lesperance Road Storm PS - Repairs	$ 181,000	$ 18,100	$ 18,100	$ 217,200	$ 117,200	$ -	$ -	$ -	$ -	$ -	$ -
(East) St. Louis Storm PS - Repairs	$ 65,000	$ 9,750	$ 9,750	$ 84,500	$ 84,500	$ -	$ -	$ -	$ -	$ -	$ -
Manhole Restoration Program	$ 75,000	$ -	$ -	$ 75,000	$ 50,000	$ 25,000	$ -	$ -	$ -	$ -	$ -
Westlake Drive - San, Stm, Water	$ 120,000	$ 18,000	$ 18,000	$ 156,000	$ -	$ -	$ 156,000	$ -	$ -	$ -	$ -
Oldcastle Storm Drainage Master Plan	$ -	$ 450,000	$ -	$ 450,000	$ 330,000	$ -	$ -	$ -	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ -	$ 480,500	$ -	$ 480,500	$ -	$ 219,250	$ 261,250	$ -	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer Extension	$ 542,100	$ 77,000	$ 27,100	$ 646,200	$ 2,400	$ 75,000	$ 568,800	$ -	$ -	$ -	$ -
Scully & St Mark's Storm PS/Riverside Drive CFWD	$ 11,533,300	$ 1,994,000	$ 1,153,300	$ 14,680,600	$ -	$ 440,000	$ 293,100	$ -	$ 13,947,500	$ -	$ -
MRSPA Pond Design and Construction	$ 9,775,000	$ 1,660,000	$ 1,300,000	$ 12,735,000	$ 40,000	$ 2,740,000	$ 9,955,000	$ -	$ -	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 723,900	$ 131,100	$ 36,200	$ 891,200	$ 50,850	$ 75,000	$ -	$ 765,350	$ -	$ -	$ -
Shoreline Management Plan	$ -	$ 350,000	$ -	$ 350,000	$ -	$ 350,000	$ -	$ -	$ -	$ -	$ -
Stormwater Rate Study	$ -	$ 45,000	$ -	$ 45,000	$ -	$ 45,000	$ -	$ -	$ -	$ -	$ -
P.J. Cecile Storm PS *	$ 6,900,000	$ 1,380,000	$ 1,380,000	$ 9,660,000	$ -	$ -	$ -	$ -	$ 345,000	$ 345,000	$ 8,970,000
Ure Street Sanitary Sewer (LRPCP)	$ 328,800	$ 49,300	$ 32,900	$ 411,000	$ -	$ -	$ -	$ 25,000	$ 386,000	$ -	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ 380,300	$ 57,000	$ 19,000	$ 456,000	$ -	$ -	$ -	$ -	$ 28,500	$ 427,500	$ -
CR42 & CR43 Advanced Engineering	$ -	$ 9,000	$ -	$ 9,000	$ 9,000	$ -	$ -	$ -	$ -	$ -	$ -
Breakwall Condition Assessment	$ -	$ 50,000	$ -	$ 50,000	$ -	$ -	$ -	$ 50,000	$ -	$ -	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ 465,100	$ 69,800	$ 23,300	$ 558,000	$ -	$ -	$ -	$ -	$ -	$ 34,900	$ 523,100
Tecumseh Storm Drainage Master Plan Update	$ -	$ 150,000	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ 150,000	$ -
Total	$ 33,752,900	$ 7,378,100	$ 4,190,900	$ 45,321,400	$ 785,250	$ 4,013,750	$ 13,154,750	$ 1,155,950	$ 14,707,000	$ 957,400	$ 9,493,100

Town of Tecumseh
Public Works and Environmental Services
2020 - 2024 Public Works and Environmental Services Capital Works Plan

Municipal Drains	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
Manning Road/ETLD Drain Relocation - Phase 2	$ 2,759,500	$ 479,000	$ 138,000	$ 3,376,500	$ -	$ 21,500	$ 3,250,000	$ -	$ -	$ -	$ -
Total	$ 2,759,500	$ 479,000	$ 138,000	$ 3,376,500	$ -	$ 21,500	$ 3,250,000	$ -	$ -	$ -	$ -

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Town of Tecumseh
Public Works and Environmental Services
2020 - 2024 Public Works and Environmental Services Capital Works Plan
Major Projects Summary

Oldcastle - North Talbot - Sanitary Area	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
Rossi Drive Sanitary Sewer	$ 1,831,500	$ 335,000	$ 89,300	$ 2,255,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -
County Road 11 (North) Sanitary Sewer	$ 1,223,000	$ 224,000	$ 139,600	$ 1,586,600	$ 1,244,950	$ -	$ -	$ -	$ -	$ -	$ -
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 and Environmental Services
2020 - 2024 Public Works and Environmental Services Capital Works Plan
Major Projects Summary

Oldcastle - 8th Concession - Sanitary Area	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
CR46/Webster/Laval Sanitary Sewer Extension	$ 4,330,400	$ 614,000	$ 216,400	$ 5,160,800	$ 370,250	$ 75,000	$ 4,715,550	$ -	$ -	$ -	$ -
Delduca Drive Sanitary Sewer (LRPCP)	$ 2,524,600	$ 457,200	$ 126,200	$ 3,108,000	$ 297,350	$ 75,000	$ -	$ 2,735,650	$ -	$ -	$ -
Ure Street Sanitary Sewer (LRPCP)	$ 1,270,200	$ 190,500	$ 127,100	$ 1,587,000	$ -	$ -	$ -	$ 96,000	$ 1,491,000	$ -	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ 1,469,100	$ 220,300	$ 104,400	$ 1,794,000	$ -	$ -	$ -	$ -	$ 110,150	$ 1,683,850	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ 1,796,800	$ 269,600	$ 127,600	$ 2,194,000	$ -	$ -	$ -	$ -	$ -	$ 134,800	$ 2,059,200

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Town of Tecumseh
Public Works and Environmental Services
2020 - 2024 Public Works and Environmental Services Capital Works Plan

County of Essex (Initiated) Projects	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
CR11: Hwy 401 to NTR (Multi-Use Trail)	$ 348,000	$ 52,000	$ 34,600	$ 434,600	$ 292,950	$ -	$ -	$ -	$ -	$ -	$ -
Culvert #45: South Talbot Road (CR11/STR Works)	$ 250,000	$ 38,000	$ 38,000	$ 326,000	$ -	$ -	$ 326,000	$ -	$ -	$ -	$ -
Westlake Drive - San, Storm, Water	$ 337,000	$ 50,750	$ 50,750	$ 438,500	$ -	$ -	$ 438,500	$ -	$ -	$ -	$ -
CR42/43 Const. including 12th&Banwell Watermains	$ 1,574,000	$ 257,000	$ 78,700	$ 1,909,700	$ -	$ 825,950	$ 1,063,300	$ 20,450	$ -	$ -	$ -
CR19 @ CR46 Advanced Construction	$ 125,000	$ 18,750	$ 18,750	$ 162,500	$ -	$ -	$ 162,500	$ -	$ -	$ -	$ -
CR42: CR19 to CR43 (Sidewalks and Bike Lanes)	$ 888,000	$ -	$ 20,500	$ 708,500	$ -	$ 90,000	$ -	$ -	$ 618,500	$ -	$ -
CR19 @ CR34 Advanced Construction	$ 40,000	$ 6,000	$ 6,000	$ 52,000	$ -	$ -	$ -	$ 52,000	$ -	$ -	$ -

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Town of Tecumseh
Public Works and Environmental Services
2020 - 2024 Public Works and Environmental Services Capital Works Plan

Other	Construction	Engineering	Contingency	Total	2019	2020	2021	2022	2023	2024	2025
Water & Wastewater Master Plan Update (2016)	$ -	$ 115,000	$ -	$ 115,000	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -
Manning Road/ETLD Drain Relocation - Phase 2	$ 5,559,400	$ 965,000	$ 278,100	$ 6,802,500	$ -	$ 43,000	$ 6,508,000	$ -	$ -	$ -	$ -
Manning Road - Road Reconstruction - Phase 3	$ 5,682,700	$ 816,000	$ 284,100	$ 6,782,800	$ -	$ 48,000	$ -	$ 6,554,800	$ -	$ -	$ -
Tecumseh Road CIP - Phase 1 CFWD	$ 11,661,900	$ 1,850,400	$ 1,099,000	$ 14,611,300	$ 100,000	$ 350,000	$ -	$ -	$ -	$ -	$ -
Tecumseh Road CIP - Phase 2 CFWD	$ 6,177,780	$ 940,600	$ 597,800	$ 7,716,180	$ 28,000	$ 50,000	$ -	$ -	$ -	$ -	$ -
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 CFWD	$ 680,000	$ 102,000	$ 68,000	$ 850,000	$ -	$ 150,000	$ 632,000	$ -	$ -	$ -	$ -
Lesperance Road Trail (CR22 to CR42)	$ 885,000	$ 142,000	$ 44,000	$ 1,071,000	$ -	$ -	$ 71,000	$ 1,000,000	$ -	$ -	$ -
Riverside Drive Pathway (Arlington to Kensington)	$ 120,000	$ 18,000	$ 18,000	$ 156,000	$ -	$ -	$ -	$ 9,000	$ 147,000	$ -	$ -
Lesperance Road Trail (Riverside to McNorton)	$ 350,000	$ 52,500	$ 52,500	$ 455,000	$ -	$ -	$ -	$ -	$ -	$ 26,250	$ -
South Talbot Road Reconstruction & Culverts	$ 2,461,500	$ 329,000	$ 146,000	$ 2,936,500	$ 2,786,500	$ -	$ -	$ -	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ -	$ 755,000	$ -	$ 755,000	$ -	$ 310,000	$ 445,000	$ -	$ -	$ -	$ -
Lesperance/VIA Rail Improvements	$ 1,185,400	$ 290,000	$ 59,300	$ 1,534,700	$ -	$ 186,000	$ 1,348,700	$ -	$ -	$ -	$ -
Manhole Restoration Program	$ 150,000	$ -	$ -	$ 150,000	$ 100,000	$ 50,000	$ -	$ -	$ -	$ -	$ -
Tecumseh/Lacasse Intersection Improvements	$ 365,000	$ 77,000	$ 36,500	$ 479,000	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -
Hwy#3/Walker Rd Watermain Replacement	$ 1,920,700	$ 300,000	$ 96,000	$ 2,316,700	$ 74,600	$ 2,182,100	$ -	$ -	$ -	$ -	$ -
Water Tower Internal Lining Replacement	$ 470,000	$ -	$ -	$ 470,000	$ 470,000	$ -	$ -	$ -	$ -	$ -	$ -
Water Loss Audit	$ -	$ 15,000	$ -	$ 15,000	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -
Zone 2 Booster Station (W-9)	$ 2,660,000	$ 399,000	$ 266,000	$ 3,325,000	$ -	$ -	$ -	$ 399,500	$ -	$ -	$ 2,925,500
Zone 2 Water Storage Facility (W-10)	$ 5,160,000	$ 774,000	$ 516,000	$ 6,450,000	$ -	$ -	$ -	$ 687,000	$ -	$ -	$ 5,763,000
Sylvestre Drive Sanitary Sewer Extension	$ 1,443,200	$ 344,500	$ 72,200	$ 1,859,900	$ 97,600	$ -	$ 1,574,900	$ -	$ -	$ -	$ -
Sanitary Sewer Model Update	$ -	$ 295,000	$ -	$ 295,000	$ 250,000	$ 45,000	$ -	$ -	$ -	$ -	$ -
Lanoue Street Improvements	$ 1,322,900	$ 275,000	$ 66,100	$ 1,664,000	$ -	$ 363,300	$ 1,300,700	$ -	$ -	$ -	$ -
Tecumseh Road Sanitary Sewer	$ 2,433,700	$ 390,600	$ 243,400	$ 3,067,700	$ 150,000	$ 2,917,700	$ -	$ -	$ -	$ -	$ -
Riverside Drive In-line Storage Trunk Sanitary	$ 2,220,000	$ 363,000	$ 222,000	$ 2,804,750	$ -	$ -	$ -	$ 181,500	$ 2,623,250	$ -	$ -
MRSPA Pond Design and Construction	$ 9,775,000	$ 1,660,000	$ 1,300,000	$ 12,735,000	$ 40,000	$ 2,740,000	$ 9,955,000	$ -	$ -	$ -	$ -
West St. Louis Storm PS - Repairs	$ 51,000	$ 7,650	$ 7,650	$ 66,300	$ 66,300	$ -	$ -	$ -	$ -	$ -	$ -
Lesperance Road Storm PS - Repairs	$ 181,000	$ 18,100	$ 18,100	$ 217,200	$ 117,200	$ -	$ -	$ -	$ -	$ -	$ -
(East) St. Louis Storm PS - Repairs	$ 65,000	$ 9,750	$ 9,750	$ 84,500	$ 84,500	$ -	$ -	$ -	$ -	$ -	$ -
Oldcastle Storm Drainage Master Plan	$ -	$ 450,000	$ -	$ 450,000	$ 330,000	$ -	$ -	$ -	$ -	$ -	$ -
Tecumseh Storm Drainage Master Plan Update	$ -	$ 150,000	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ 150,000	$ -
Shoreline Management Plan	$ -	$ 350,000	$ -	$ 350,000	$ -	$ 350,000	$ -	$ -	$ -	$ -	$ -
Breakwal Conditions Assessment	$ -	$ 50,000	$ -	$ 50,000	$ -	$ -	$ -	$ 50,000	$ -	$ -	$ -
Scully & St Mark's Storm PS/Riverside Drive CFWD	$ 13,004,900	$ 2,248,000	$ 1,300,400	$ 16,553,300	$ -	$ 478,450	$ 318,800	$ -	$ 15,756,050	$ -	$ -
West Tecumseh Trunk Watermain (W-1)	$ 2,040,000	$ 408,000	$ 306,000	$ 2,754,000	$ -	$ -	$ -	$ 204,000	$ -	$ 2,550,000	$ -
West Tecumseh Trunk Sanitary (WW-1)	$ 5,210,000	$ 1,042,000	$ 781,500	$ 7,034,000	$ -	$ -	$ -	$ 521,000	$ -	$ 6,513,000	$ -
Diversion San Sewers (Intersection Rd) (WW-2)	$ 840,000	$ 168,000	$ 126,000	$ 1,134,000	$ -	$ -	$ -	$ 84,000	$ -	$ 1,050,000	$ -
P.J. Cecile Storm PS *	$ 7,100,000	$ 1,440,000	$ 1,400,000	$ 9,940,000	$ -	$ -	$ -	$ -	$ 375,000	$ 345,000	$ 9,220,000
2020 Water and Wastewater Rates Study	$ -	$ 20,000	$ -	$ 20,000	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -

Attachment 2 - 2020 -2024 PWES Five (5) Year Capital Works Plan

LC Road (1500)	2020	2021	2022	2023	2024
Reserve Balance Start of Year	$ 8,922,592	$ 9,735,242	$ 3,795,442	$ 1,349,917	$ 1,641,692
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
CWATS	$ 8,000	$ -	$ 525,000	$ -	$ -
County Connecting Link Agreement	$ -	$ -	$ 1,295,000	$ -	$ -
Funds Available	**$ 13,100,592**	**$ 13,905,242**	**$ 9,785,442**	**$ 5,519,917**	**$ 5,811,692**
Committed					
IT GIS Tech % share	$ 28,150	$ 28,700	$ 29,300	$ 29,900	$ 30,500
Traffic Signal Controller Upgrade (with County)	$ 150,000	$ -	$ -	$ -	$ -
PW Yard (North) Expansion/Improvements	$ 30,000	$ -	$ -	$ -	$ -
Tecumseh Road CIP Phase 1	$ 350,000	$ -	$ -	$ -	$ -
Tecumseh Road CIP Phase 2	$ 50,000	$ -	$ -	$ -	$ -
Scully & St. Mark's Storm PS/Riverside Drive	$ 26,100	$ 17,500	$ -	$ -	$ -
Balance Committed	**$ 634,250**	**$ 46,200**	**$ 29,300**	**$ 29,900**	**$ 30,500**
Balance Uncommitted	**$ 12,466,342**	**$ 13,859,042**	**$ 9,756,142**	**$ 5,490,017**	**$ 5,781,192**
Proposed					
Road Paving - Asphalting (Note 1)	$ 1,300,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000
Traffic Signal Upgrades/Maintenance	$ -	$ 62,500	$ 30,000	$ -	$ -
Traffic Signal Reconstruct (Lesperance/McNorton)	$ -	$ 165,000	$ -	$ -	$ -
Tecumseh Road Path (Arlington to DM Eagle)	$ 100,000	$ -	$ -	$ -	$ -
McNorton Bike Lanes	$ -	$ 10,000	$ -	$ -	$ -
CR42/43 Const. including 12th&Banwell Watermains	$ 22,450	$ -	$ 20,450	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ 30,250	$ 61,250	$ -	$ -	$ -
Tecumseh Sigange Project	$ 16,000	$ -	$ -	$ -	$ -
Lesperance/VIA Rail Improvements	$ 155,000	$ 1,129,000	$ -	$ -	$ -
Manning Road - Phase 2 - Road Work	$ 4,500	$ 691,400	$ -	$ -	$ -
Manning Road - Phase 2 - Drain Relocation	$ 21,500	$ 3,250,000	$ -	$ -	$ -
Manning Road Reconstruction - Phase 3	$ 45,500	$ -	$ 6,239,200	$ -	$ -
Sylvestre Drive Sanitary Sewer Extension	$ -	$ 983,400	$ -	$ -	$ -
Roads Needs Study	$ -	$ -	$ -	$ -	$ 70,000
Scully & St. Mark's Storm PS/Riverside Drive	$ -	$ -	$ -	$ 1,454,400	$ -
CR#46/Webster/Laval Sanitary Ext. (LRPCP)	$ -	$ 1,410,350	$ -	$ -	$ -
Delduca Drive (Sanitary Sewer LRPCP)	$ -	$ -	$ 1,018,450	$ -	$ -
Lanoue Street Improvements	$ 363,300	$ 1,300,700	$ -	$ -	$ -
Tecumseh Road Sanitary Sewer	$ 672,600	$ -	$ -	$ -	$ -
Riverside Drive In-Line Storage Trunk Sanitary	$ -	$ -	$ 58,125	$ 690,625	$ -
Ure Street (Sanitary Sewer LRPCP)	$ -	$ -	$ 40,000	$ 627,000	$ -
PJ Cecile Storm PS	$ -	$ -	$ -	$ 30,000	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ 46,300	$ 725,700
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ -	$ 56,650
Balance Proposed	**$ 2,731,100**	**$ 10,063,600**	**$ 8,406,225**	**$ 3,848,325**	**$ 1,852,350**
Balance Available	**$ 9,735,242**	**$ 3,795,442**	**$ 1,349,917**	**$ 1,641,692**	**$ 3,928,842**

Notes:

1) General allowance for asphalting

Attachment 3 - 2020 - 2024 PWES Five (5) Year Capital Works Plan

LC Bridges (1660)	**2020**	**2021**	**2022**	**2023**	**2024**
Reserve Balance Start of Year	$ 152,486	$ 213,486	$ 113,186	$ (1,412,414)	$ (1,252,414)
Budget Allocation	$ 410,000	$ 410,000	$ 410,000	$ 410,000	$ 410,000
Funds Available	**$ 562,486**	**$ 623,486**	**$ 523,186**	**$ (1,002,414)**	**$ (842,414)**
Committed					
Merrick Creek at 8th Concession (1013)	$ 310,000	$ -	$ -	$ -	$ -
Balance Committed	**$ 310,000**	**$ -**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$ 252,486**	**$ 623,486**	**$ 523,186**	**$ (1,002,414)**	**$ (842,414)**
Proposed					
Culvert Condition Assessment (<3m Span)	$ -	$ -	$ 75,000	$ -	$ -
Bridge/Culvert Needs Study (>3m)	$ 39,000	$ -	$ 39,000	$ -	$ 39,000
Culvert #45: S.Talbot Road (CR11/STR Works)	$ -	$ 326,000	$ -	$ -	$ -
Culvert #42: Snake Lane Road	$ -	$ 54,500	$ 500,000	$ -	$ -
Culvert #53: Snake Lane Road	$ -	$ 64,900	$ 595,800	$ -	$ -
Culvert #54: Snake Lane Road	$ -	$ 64,900	$ 595,800	$ -	$ -
Culvert #51: 8th Concession	$ -	$ -	$ 30,000	$ 120,000	$ -
Culvert #70: 12th Concession	$ -	$ -	$ 30,000	$ 130,000	$ -
Roadside Safety Improvements - Bridge #1010	$ -	$ -	$ 70,000	$ -	$ -
Culvert #48: Holden Road	$ -	$ -	$ -	$ -	$ 32,000
Balance Proposed	**$ 39,000**	**$ 510,300**	**$ 1,935,600**	**$ 250,000**	**$ 71,000**
Balance Available	**$ 213,486**	**$ 113,186**	**$ (1,412,414)**	**$ (1,252,414)**	**$ (913,414)**

Attachment 4 - 2020 - 2024 PWES Five (5) Year Capital Works Plan

LC Sidewalk (1550)	2020	2021	2022	2023	2024
Reserve Balance Start of Year	$ 323,947	$ 328,947	$ 333,947	$ 338,947	$ 343,947
Budget Allocation	$ 74,000	$ 74,000	$ 74,000	$ 74,000	$ 74,000
Funds Available	**$ 397,947**	**$ 402,947**	**$ 407,947**	**$ 412,947**	**$ 417,947**
Committed	$ -	$ -	$ -	$ -	$ -
Balance Committed	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$ 397,947**	**$ 402,947**	**$ 407,947**	**$ 412,947**	**$ 417,947**
Proposed					
Sidewalk repair program (Note 1)	$ 69,000	$ 69,000	$ 69,000	$ 69,000	$ 69,000
Balance Proposed	**$ 69,000**	**$ 69,000**	**$ 69,000**	**$ 69,000**	**$ 69,000**
Balance Available	**$ 328,947**	**$ 333,947**	**$ 338,947**	**$ 343,947**	**$ 348,947**

Notes:

1) General allowance

Attachment 5 - 2020 - 2024 PWES Five (5) YEar Capital Works Plan

LC Storm Sewer (1650)	2020	2021	2022	2023	2024
Reserve Balance Start of Year	$ 397,453	$ (2,613,597)	$ (2,746,755)	$ (2,900,005)	$ (16,604,305)
Budget Allocation	$ 1,002,700	$ 1,002,700	$ 1,002,700	$ 1,002,700	$ 1,002,700
OCIF Grant	$ -	$ 1,862,892	$ -	$ -	$ -
Recoveries	$ -	$ 10,156,000	$ -	$ -	$ -
Funds Available	**$ 1,400,153**	**$ 10,407,995**	**$ (1,744,055)**	**$ (1,897,305)**	**$ (15,601,605)**
Committed					
Scully & St. Mark's Storm PS/Riverside Drive	$ 440,000	$ 293,100	$ -	$ -	$ -
Balance Committed	**$ 440,000**	**$ 293,100**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$ 960,153**	**$ 10,114,895**	**$ (1,744,055)**	**$ (1,897,305)**	**$ (15,601,605)**
Proposed					
Manning Road/ETLD Drain Relocation - Phase 2	$ 11,000	$ 1,651,900	$ -	$ -	$ -
Manning Road Reconstruction - Phase 3	$ 2,500	$ -	$ 315,600	$ -	$ -
Lesperance/VIA Rail Improvements	$ 31,000	$ 219,700	$ -	$ -	$ -
Sylvestre Drive Sanitary Sewer Extension	$ -	$ 49,000	$ -	$ -	$ -
Manhole Restoration Program	$ 25,000	$ -	$ -	$ -	$ -
Westlake Drive - Sanitary/Storm/Water	$ -	$ 156,000	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ 219,250	$ 261,250	$ -	$ -	$ -
CR#46/Webster/Laval Sanitary Ext. (LRPCP)	$ 75,000	$ 568,800	$ -	$ -	$ -
Scully & St. Mark's Storm PS/Riverside Drive	$ -	$ -	$ -	$ 13,947,500	$ -
MRSPA Pond Design and Construction	$ 2,740,000	$ 9,955,000	$ -	$ -	$ -
Delduca Drive (LRPCP)	$ 75,000	$ -	$ 765,350	$ -	$ -
Shoreline Management Plan	$ 350,000	$ -	$ -	$ -	$ -
Stormwater Rate Study	$ 45,000	$ -	$ -	$ -	$ -
P.J. Cecile Storm PS	$ -	$ -	$ -	$ 345,000	$ 345,000
Ure Street (Sanitary LRPCP)	$ -	$ -	$ 25,000	$ 386,000	$ -
O'Neil Street Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ 28,500	$ 427,500
Breakwall Condition Assessment	$ -	$ -	$ 50,000	$ -	$ -
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ -	$ 34,900
Tecumseh Storm Drainage Master Plan Update	$ -	$ -	$ -	$ -	$ 150,000
Balance Proposed	**$ 3,573,750**	**$ 12,861,650**	**$ 1,155,950**	**$ 14,707,000**	**$ 957,400**
Balance Available	**$ (2,613,597)**	**$ (2,746,755)**	**$ (2,900,005)**	**$ (16,604,305)**	**$ (16,559,005)**

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Attachment 6 - 2020 - 2024 PWES Five (5) Year Capital Works Plan

RF Wastewater Sewers (2550)	2020	2021	2022	2023	2024
Reserve Balance Start of Year	$ (4,305,250)	$ (5,158,177)	$ (3,052,016)	$ (1,515,969)	$ (1,228,822)
Estimated Allocation	$ 1,969,672	$ 2,056,011	$ 2,199,622	$ 2,106,072	$ 2,308,067
Estimated Interest	$ (129,200)	$ (155,000)	$ (92,000)	$ (45,000)	$ (37,000)
Development Charges	$ 163,300	$ 150,000	$ 150,000	$ 150,000	$ 150,000
Capital Sewer Charges	$ -	$ 2,496,300	$ 1,050,000	$ 905,500	$ 740,000
Funds Available	**$ (2,301,478)**	**$ (610,866)**	**$ 255,606**	**$ 1,600,603**	**$ 1,932,245**
Committed					
Debt payments - Lakewood Pump Station	$ 100,000	$ -	$ -	$ -	$ -
Debt payments - 2012 Non-DC debt	$ 57,400	$ 57,400	$ 57,400	$ -	$ -
Debt payments - DC Debt	$ 258,554	$ -	$ -	$ -	$ -
IT GIS Tech % share	$ 28,145	$ 28,700	$ 28,700	$ 29,300	$ 29,300
Scully & St. Mark's Storm PS/Riverside Drive	$ 12,350	$ 8,200	$ -	$ -	$ -
Balance Committed	**$ 456,449**	**$ 94,300**	**$ 86,100**	**$ 29,300**	**$ 29,300**
Balance Uncommitted	**$ (2,757,927)**	**$ (705,166)**	**$ 169,506**	**$ 1,571,303**	**$ 1,902,945**
Proposed					
Sylvestre Drive Sanitary Extension	$ -	$ 542,500	$ -	$ -	$ -
Manhole Restoration Program	$ 25,000	$ -	$ -	$ -	$ -
Westlake Drive - Sanitary, Storm, Water	$ -	$ 172,000	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ 30,250	$ 61,250	$ -	$ -	$ -
County Road #46/Webster/Laval Sanitary Extension (LRPCP)	$ -	$ 1,319,200	$ -	$ -	$ -
Scully & St. Mark's Storm PS/Riverside Drive	$ -	$ -	$ -	$ 354,150	$ -
Delduca Drive (Sanitary Sewer LRPCP)	$ -	$ -	$ 926,100	$ -	$ -
Sanitary Sewer Model Update	$ 45,000	$ -	$ -	$ -	$ -
Sanitary Sewer Rehabilitation (I&I Removal - Phase 3)	$ -	$ -	$ -	$ -	$ -
Riverside Drive In-Line Storage Trunk Sanitary	$ -	$ -	$ 123,375	$ 1,932,625	$ -
CR42/43 Const. including 12th&Banwell Watermains	$ 44,900	$ 251,900	$ -	$ -	$ -
Tecumseh Road Sanitary Sewer	$ 2,245,100	$ -	$ -	$ -	$ -
Ure Street (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
O'Neil Street Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ 35,350	$ 530,650
Moynahan-Henin-Regal Sanitary Sewer (LRPCP)	$ -	$ -	$ -	$ -	$ 43,250
2020 Water and Wastewater Rates Study	$ 10,000	$ -	$ -	$ -	$ -
Total Proposed	**$ 2,400,250**	**$ 2,346,850**	**$ 1,685,475**	**$ 2,800,125**	**$ 8,136,900**
Balance Available	**$ (5,158,177)**	**$ (3,052,016)**	**$ (1,515,969)**	**$ (1,228,822)**	**$ (6,233,955)**

Attachment 7 - 2020 - 2024 PWES Five (5) Year Capital Works Plan

RF Wastewater Facilities (2560)	2020	2021	2022	2023	2024
Reserve Balance Start of Year	$ 1,799,462	$ 2,253,462	$ 2,721,062	$ 3,222,662	$ 3,769,362
Estimated Allocation	$ 400,000	$ 400,000	$ 450,000	$ 450,000	$ 450,000
Estimated Interest	$ 54,000	$ 67,600	$ 81,600	$ 96,700	$ 113,100
Funds Available	**$ 2,253,462**	**$ 2,721,062**	**$ 3,252,662**	**$ 3,769,362**	**$ 4,332,462**
Committed	$ -	$ -	$ -	$ -	$ -
Balance Committed	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$ 2,253,462**	**$ 2,721,062**	**$ 3,252,662**	**$ 3,769,362**	**$ 4,332,462**
Proposed					
Sylvestre Drive Sanitary PS Improvements	$ -	$ -	$ 30,000	$ -	$ -
Total Proposed	**$ -**	**$ -**	**$ 30,000**	**$ -**	**$ -**
Balance Available	**$ 2,253,462**	**$ 2,721,062**	**$ 3,222,662**	**$ 3,769,362**	**$ 4,332,462**

Attachment 8 - 2020 -2024 PWES Five (5) Year Capital Works Plan

RF Watermain (2520)	2020	2021	2022	2023	2024
Reserve Balance Start of Year	$ 3,734,865	$ 2,557,203	$ 1,179,926	$ 3,072,913	$ 5,429,378
Estimated Allocation	$ 1,706,133	$ 2,041,773	$ 2,158,237	$ 2,284,565	$ 2,421,469
Estimated Interest	$ 112,000	$ 76,700	$ 35,400	$ 92,200	$ 162,900
Development Charges	$ 57,900	$ 50,000	$ 50,000	$ 50,000	$ 50,000
Funds Available	**$ 5,610,898**	**$ 4,725,676**	**$ 3,423,563**	**$ 5,499,678**	**$ 8,063,747**
Committed					
Tools	$ 27,600	$ 28,200	$ 28,700	$ 29,300	$ 29,900
Meters	$ 11,000	$ 11,300	$ 11,500	$ 11,700	$ 12,000
IT GIS Tech % share	$ 28,145	$ 28,700	$ 28,700	$ 29,300	$ 29,300
Balance Committed	**$ 66,745**	**$ 68,200**	**$ 68,900**	**$ 70,300**	**$ 71,200**
Balance Uncommitted	**$ 5,544,153**	**$ 4,657,476**	**$ 3,354,663**	**$ 5,429,378**	**$ 7,992,547**
Rossi Drive	$ -	$ -	$ -	$ -	$ -
Water & Wastewater Master Plan Update (2016)	$ -	$ -	$ -	$ -	$ -
Manning Road/ETLD Drain Relocation - 2	$ 6,000	$ 914,700	$ -	$ -	$ -
Hwy # 3 Watermain Replacement	$ 2,182,100	$ -	$ -	$ -	$ -
Westlake Drive - San, Storm, Water	$ -	$ 110,500	$ -	$ -	$ -
Tecumseh Hamlet SPA EA FSR	$ 30,250	$ 61,250	$ -	$ -	$ -
CR46/Webster/Laval Sanitary Sewer Ext	$ -	$ 1,417,200	$ -	$ -	$ -
Delduca Drive (Sanitary Sewer LRPCP)	$ -	$ -	$ 25,750	$ -	$ -
CR42/43 Const. incl. 12th & Banwell Watermains	$ 758,600	$ 811,400	$ -	$ -	$ -
2020 Water and Wastewater Rates Study	$ 10,000	$ -	$ -	$ -	$ -
CR19@CR46 Advanced Construction	$ -	$ 162,500	$ -	$ -	$ -
West Tecumseh Trunk Watermain (W-1A)	$ -	$ -	$ 204,000	$ -	$ 2,550,000
CR19@CR34 Advanced Construction	$ -	$ -	$ 52,000	$ -	$ -
Total Proposed	**$ 2,986,950**	**$ 3,477,550**	**$ 281,750**	**$ -**	**$ 2,550,000**
Balance Available	**$ 2,557,203**	**$ 1,179,926**	**$ 3,072,913**	**$ 5,429,378**	**$ 5,442,547**

Attachment 9 - 2020 -2024 PWES Five (5) Year Capital Works Plan

RF Water Facilities (2530)	2020	2021	2022	2023	2024
Reserve Balance Start of Year	$ 7,630,950	$ 7,988,850	$ 8,432,250	$ 7,826,450	$ 8,313,550
Estimated Allocation	$ 129,000	$ 175,000	$ 199,000	$ 223,000	$ 247,000
Estimated Interest	$ 228,900	$ 268,400	$ 281,700	$ 264,100	$ 278,700
Funds Available	**$ 7,988,850**	**$ 8,432,250**	**$ 8,912,950**	**$ 8,313,550**	**$ 8,839,250**
Committed	$ -	$ -	$ -	$ -	$ -
Balance Committed	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Balance Uncommitted	**$ 7,988,850**	**$ 8,432,250**	**$ 8,912,950**	**$ 8,313,550**	**$ 8,839,250**
Proposed					
Water Tower Internal Lining	$ -	$ -	$ -	$ -	$ -
Zone 2 Booster Station (W-9)	$ -	$ -	$ 399,500	$ -	$ -
Zone 2 Water Storage Facility (W-10)	$ -	$ -	$ 687,000	$ -	$ -
Total Proposed	**$ -**	**$ -**	**$ 1,086,500**	**$ -**	**$ -**
Balance Available	**$ 7,988,850**	**$ 8,432,250**	**$ 7,826,450**	**$ 8,313,550**	**$ 8,839,250**

Attachment 10 - 2020 - 2024 Infrastructure Five (5) Year Projections

R Infrastructure (1085)	2020	2021	2022	2023	2024
Reserve Balance Start of Year	$ 7,143,424	$ 5,656,926	$ 6,447,924	$ 7,409,424	$ 8,830,424
Budget Allocation - New Infrastructure Levy	$ 1,300,000	$ 1,300,000	$ 1,400,000	$ 1,600,000	$ 1,800,000
Budget Allocation - NIL Sportsplex	$ 250,000	$ 450,000	$ 550,000	$ 550,000	$ 550,000
DC - repayments	$ 91,100	$ 90,000	$ 90,000	$ 90,000	$ 90,000
Investment income above base budget	$ 457,000	$ 457,000	$ 457,000	$ 457,000	$ 457,000
Tecumseh Baseball re scoreboard	$ 8,500	$ 8,500	$ 8,500	$ 8,500	$ 8,500
GenSet Revenues	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
CWATS	$ 20,204	$ -	$ -	$ 91,000	
Funds Available	**$ 9,285,228**	**$ 7,977,426**	**$ 8,968,424**	**$ 10,220,924**	**$ 11,750,924**
Committed					
Official Plan	$ 22,500	$ -	$ -	$ -	$ -
Development Charge Study	$ 1,000	$ -	$ -	$ -	$ -
Community Benefit Charge Study	$ 1,000	$ -	$ -	$ -	$ -
Tecumseh Hamlet Secondary Plan	$ 37,000	$ -	$ -	$ -	$ -
Upper Little River SWM - Class EA	$ 1,000	$ -	$ -	$ -	$ -
Sportsplex - Construction	$ 1,000,000	$ -	$ -	$ -	$ -
Sportsplex - Debt Servicing	$ -	$ 550,000	$ 550,000	$ 550,000	$ 550,000
Riverside Dr. Trail	$ 150,000	$ 632,000	$ -	$ -	$ -
Town Hall Expansion	$ 2,070,000		$ -	$ -	$ -
Arena Fundraising Coordinator	$ 76,502	$ 76,502	$ -	$ -	$ -
Balance Committed	**$ 3,359,002**	**$ 1,258,502**	**$ 550,000**	**$ 550,000**	**$ 550,000**
Balance Uncommitted	**$ 5,926,226**	**$ 6,718,924**	**$ 8,418,424**	**$ 9,670,924**	**$ 11,200,924**
Proposed					
Lesperance Road Trail (CR22 to CR42)	$ -	$ 71,000	$ 1,000,000	$ -	$ -
Riverside Dr Pathway (Arlington to Kensington)	$ -	$ -	$ 9,000	$ 147,000	$ -
CR34: Malden to CR19 (Multi-Use Trail)	$ -	$ -	$ -	$ 75,000	$ 380,000
Lesperance Road Trail (Riverside to McNorton)	$ -	$ -	$ -	$ -	$ 26,250
CR42/CR19 Roundabout (Sidewalks)	$ 19,000	$ -	$ -	$ -	$ -
CR42: CR43 to Lesperance (Sidewalks)	$ -	$ -	$ -	$ 362,000	$ -
CR42: Lesperance to CR19 (Sidwalks)	$ 29,000	$ -	$ -	$ 29,000	$ -
CWATS: CR42/CR19 Roundabout (Bike Lanes)	$ 11,000	$ -	$ -	$ -	$ -
CWATS: CR42: CR43 to Lesperance (Bike Lanes)	$ -	$ -	$ -	$ 196,500	$ -
CWATS: CR42: Lesperance to CR19 (Bike Lanes)	$ 31,000	$ -	$ -	$ 31,000	$ -
CWATS: Bike repair stations (Town Hall & Optimist)	$ 6,800	$ -	$ -	$ -	$ -
Lakewood Park - Pier Boardwalk Repairs	$ 110,000				
McAuliffe Park - Splash Pad	$ 62,500	$ -	$ -	$ -	$ -
Pickleball Complex Lacasse Park	$ -	$ 200,000	$ -	$ -	$ -
Balance Proposed	**$ 269,300**	**$ 271,000**	**$ 1,009,000**	**$ 840,500**	**$ 406,250**
Balance Available	**$ 5,656,926**	**$ 6,447,924**	**$ 7,409,424**	**$ 8,830,424**	**$ 10,794,674**

Appendix 7- Continual Improvement Report

TOWN OF Tecumseh
ONTARIO · CANADA

WATER DIVISION
REQUEST FOR NEW OR CHANGED DWQMS DOCUMENT

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:	

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Version 2

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

Ontario — Ministry of the Environment and Climate Change

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

Name of Municipal Residential Drinking Water System *
Tecumseh Distribution System

Subject Systems

☐ Check here if the Municipal Residential Drinking Water System is operated by one operating authority. Enter the name of the operating authority in the below table.

	Name of Operational Subsystems(if Applicable)	Name of Operating Authority *	DWS Number(s) *
1		The Corporation of the Town of Tecumseh	260004969

Provide the information outlined in the 'Contact Information' section for **each** Operational Subsystem.

Contact Information

Last Name *	First Name *	Middle Initial
Dupuis	Brad	
Title *	Phone Number *	
Manager, Water & Wastewater	519 791-6509	
Email Address *		
bdupuis@tecumseh.ca		

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