



**JOINT BOARD OF
MANAGEMENT**
Wednesday, October 20, 2021
9:00 AM
Virtually in Zoom

AGENDA

- A. Call to Order:**
- B. Disclosures of Pecuniary Interest:**
- C. Approval of Minutes:**
Minutes of the meeting of the Union Water Supply System Joint Board of Management Meeting held Wednesday, September 22, 2021
Pages
- D. Business Arising Out of the Minutes**
- E. Items for Consideration:**
 - 1. UW/33/21 dated October 15, 2021 re: Status Update of UWSS Operations & Maintenance Activities and Capital Works to October 15, 2021
Pages
 - 2. UW/34/21 dated October 14, 2021 re: UWSS Infrastructure Review and Needs Study - Presentation of Preliminary Results to UWSS Board
Pages 11 - 12 Report UW/34/21 dated October 14th, 2021
Page 13 Definitions for Infrastructure Needs Presentation
Pages 14 - 35 AE Presentation Powerpoint dated October 20th, 2021
Pages 36 - 39 Report UW/25/20 dated October 9th, 2020
 - 3. UW/35/21 dated October 15, 2021 re: Payments for September 2021
Pages 40 - 42
- F. Special Closed Meeting of the UWSS Joint Board of Management (Agenda provided under separate cover)**

Recommendation:

That the UWSS Joint Board of Management move into a Special Closed Meeting, pursuant to the Municipal Act Section 239 (2) for the following reason:

Matters for Consideration:

October 20, 2021

Union Water Supply System Joint Board of Management Agenda

2

Verbal update Under Municipal Act Section 239 (2)(c) update regarding acquisition land by the Union Water Supply System Joint Board of Management.

The UWSS Board consider this report in closed session pursuant to section 239(2) of the Municipal Act, 2001, subsection(s):

And Further Matters for Consideration:

Confidential Report C-UW03-21 dated October 14, 2021 Under Municipal Act Section 239 (2):

The security of the property of the municipality or local board.

A position, plan, procedure, criteria or instruction to be applied to any negotiations carried on or to be carried on by or on behalf of the municipality or local board

G. Disclosure of Pecuniary Interest and General Nature Thereof
(Closed Meeting)

H. Adjournment of Special Closed Meeting

I. Report on Closed Session

J. New Business:

K. Adjournment:

L. Date of Next Meeting: November 17, 2021, Virtually in Zoom

/kmj



MINUTES

Members Present Mayor MacDonald (Vice-chair); Deputy Mayor Verbeke, Councillors Hammond, Tiessen - Leamington
Mayor Santos (Chair), Deputy Mayor Queen, Councillor DeYong, Patterson - Kingsville
Councillor VanderDoelen - Essex
Councillor Walstedt - Lakeshore

Members Absent Councillor Dunn, Councillor Jones - Leamington

Also in Attendance: Rodney Bouchard, Union Water Supply System Manager
Christine Johnson, Recording Secretary

Municipal Staff Present:
Kevin Girard - Town of Essex
Andrew Plancke, Shaun Martinho - Town of Kingsville
Albert Dionne - Municipality of Lakeshore

OCWA Staff Present:
Dale Dillen, Susan Budden
Dave Jubenville

Call to Order: 9:03 am

Disclosure of Pecuniary Interest: none

Adoption of Board Minutes:

No. UW-51-21

Moved by: Deputy Mayor Queen

Seconded by: Councillor Tiessen

That the Minutes of the UWSS Joint Board of Management meeting of Wednesday, August 11, 2021 is received.

Carried

Business Arising out of Minutes:

There was none

Report UW/30/21 dated September 15, 2021 re: Status Update of the UWSS Operations and Maintenance Activities and Capital Words to September 15, 2021

The Manager reviews his report with the members of the Board. He notes that the Kingsville Water Tower (KWT) project has been completed with the contractor leaving the site on August 16th. The filling and disinfection was completed and the KWT was put back into service on August 22nd. There are a few small clean up items occurring with operations staff.

The Dissolved Air Flotation (DAF) Phase 1 project has started with the contractor, Maple Reinders, mobilizing their staff. Clarifier #2 was taken out of service on August 25th and the dome was removed on September 17th. This project is moving along quickly as the timelines are quite tight as the goal is to get this back in service next Spring.

The Manager discusses the stress test that took place at the WTP on August 25th, 26th, and 27th. He reminds them that this exercise took place in order to see what the clarifiers could handle regarding higher flows. The team in place feels stressing the clarifiers was a successful experiment. The next stress test will focus on the Filters, which should be conducted sometime in October, this will be an artificial stress test. The Manager will follow up with a report to the Board.

The valve maintenance program started, with two (2) days a week dedicated to this program. The Manager also reports that SAI Global completed the audit of the UWSS/OCWA Drinking Water Quality Management System (DWQMS). The audit confirmed that only one opportunity for improvement presented itself within the Documents and Records Control portion. The team is addressing this item.

The Manager further reports that the annual inspection of the UWSS Leamington Distribution System and the Essex Distribution System have been completed, with 100% ratings. The inspections of both the Lakeshore Distribution System for UWSS and the Kingsville Distribution System were started on September 13th and 14th. The Manager anticipates that he will have their results for the October UWSS Board meeting.

The flows continue to be above the four (4) year average and over the previous year. He notes that some greenhouses did not have any crops over the course of the summer and tomato season is still underway, but should finish shortly.

No. UW-52-21

Moved by: Councillor Patterson

Seconded by: Mayor MacDonald

That Report dated September 15, 2021 re: Status Update of the UWSS Operations and Maintenance Activities and Capital Words to September 15, 2021 is received.

Carried

Report UW/31/21 dated September 14, 2021 re: Proposed 2021 UWSS Revised Budget

The Manager reviews his report with Board members, sharing the screen with members to go through the Budget tables. He explains that water demand is about 6% higher than budgeted for, which results in an increased wholesale revenue. There is also an increase in revenue from investments and some reduction in several expenses.

He notes that the CO2 bulk purchases are much lower than anticipated. He explains that the supplier could potentially come back and say that UWSS needs to meet its contractual obligations of the minimum requirements, but that has not happened as of yet.

The legal and professional fees are higher than expected due to the potential property purchase.

The Kingsville Water Tower (KWT) is over budget by \$80,000, due to an error by the Manager for not including the consulting fees into the overall budget, this does not have to do with budgeting on the actual tower rehabilitation.

He notes that some other budgeted items will not be happening at this time, namely the improvements to the grounds. At this point in time it is not possible to have contractors attend and the manager feels it is best to wait until the DAF has been completed.

The utility building for the KWT will also be delayed as he continues to work on a lease agreement and obtain the type of building needed but potentially at reduced costs as other options might be available.

The Manager notes that the DAF project will have a large invoice prior to the end of the year and there is a line item for the property purchase of \$2.8 million.

No. UW-53-21

Moved by: Councillor Walstedt

Seconded by: Councillor Tiessen

That the Union Water Supply System Joint Board of Management (UWSS Board) receives report UW/31/21 re: Proposed 2021 UWSS Revised Budget dated September 14, 2021; and

That the UWSS Board approves the 2021 UWSS Revised Budget as outline in the report.

Carried (UW/31/21)

Report UW/32/21 dated September 17, 2021 re: Payments from August 19th to September 10th, 2021

No. UW-54-21

Moved by: Deputy Mayor Queen

Seconded by: Mayor MacDonald

That report UW/32/21 dated September 17, 2021 re: Payments from August 19th to September 10th, 2021 is received.

Carried (UW/32/21)

Time: 9:30 am

The Union Water Supply System Joint Board of Management then moved into an in-camera session:

No. C-UW-07-21

Moved by: Councillor VanderDoelen

Seconded by: Councillor DeYong

That the UWSS Joint Board of Management moved into a closed session for the verbal discussion under Municipal Act Section 239 (2)(c) regarding a proposed or pending acquisition or disposition of land by the Union Water Supply System Joint Board of Management.

Carried

Disclosure of Pecuniary Interest and General Nature Thereof

There was none.

No. C-UW-08-21

Moved by: Councillor DeYoung

Seconded by: Deputy Mayor Queen

That the confidential report C-UW/02/21 dated September 15, 2021 re: Offer to Purchase Lands is received.

No. C-UW-09-21

Moved by: Deputy Mayor Verbeke

Seconded by: Councillor VanderDoelen

That the UWSS Joint Board of Management move out of closed session and return to the regular meeting

Carried

Out of in camera at 9:43 am

Report on Closed Session

The Recording Secretary reported on the Closed Session held September 22, 2021.

A closed meeting was held at 9:30 AM on September 22, 2021 to discuss the following matters:

- I. Confidential Report C-UW/02/21 dated September 15, 2021 regarding Offer to Purchase Lands located at 1529 Union Ave., Ruthven, ON, considered pursuant to Section 239(2)(c) of the Municipal Act, 2001, as amended a proposed or pending acquisition or disposition of land by the municipality or local board.

As a result of this report the following recommendation is before the UWSS Board which will a mover and seconder:

1. The UWSS Board accept the offer and remove the conditions on the purchased of the 6.29 acre property located at 1529 Union Avenue in Ruthven, Ontario on the terms contained within the Offer as described in Confidential Report C-UW/02/21;
2. The UWSS General Manager be authorized to execute all documents required to complete all contemplated transactions;
3. The UWSS Board authorize the UWSS General Manager to solicit potential lessees for the subject property and enter into a lease agreement with a greenhouse operator to lease the subject property for the purposes of growing greenhouse vegetable crops;
4. The UWSS General Manager report to the UWSS Board at the October 2021 UWSS Board meeting in regards to leasing of the subject property.

No. UW-55-21

Moved by: Councillor Tiessen

Seconded by: Councillor Patterson

The UWSS Board approve the removal of conditions on UWSS' conditional purchase offer, as accepted by the seller, Union Acres Ltd, for the 6.29 acre property located at 1529 Union Ave in Ruthven, Ontario (subject property) on the terms contained within Confidential Report C-UW/02/21;

The UWSS General Manager be authorized to execute all documents required to complete all contemplated transactions

The UWSS Board authorize the UWSS General Manager to solicit potential lessees for the subject property and enter into a lease agreement with a greenhouse operator to lease the subject property for the purposes of growing greenhouse vegetable crops; and The UWSS General Manager report to the UWSS Board at the October 2021 UWSS Board meeting in regards to leasing of the subject property.

Carried (C-UW/02/21)

New Business:

Councillor Patterson wants to know if UWSS has any information regarding the groundwater wells in the area, as this could potentially be a discussion for our committee to look into. The Chair notes UWSS does not usually deal with private wells and was unsure of the process of dealing with said wells. The Manager notes that the UWSS has no mandate over drinking water wells in the area. They all need to go through the MECP or WECHU.

Adjournment:**No. UW-56-21**

Moved by: Councillor Hammond

Seconded by: Councillor Patterson

Time: 9:50 am

Date of Next Meeting: October 20, 2021, location TBD

/kmj

To: Chair and Members of the Union Water Supply
System Joint Board of Management

From: Rodney Bouchard, UWSS General Manager

Date: October 15, 2021

Re: Status Update of UWSS Operations & Maintenance Activities and Capital
Works to October 15, 2021



Aim:

To inform the UWSS Board about operational and maintenance activities and capital works projects for the Union Water Supply System since the last Board meeting on September 22, 2021.

Discussion:

The UWSS General Manager conducts regular meeting with OCWA Operations staff in regards to on-going operations and maintenance programs for the UWSS facilities. The following provides an update on UWSS operations, regular maintenance and major maintenance and Capital Works at UWSS facilities:

1. Regular Maintenance on all process equipment and analyzers continue to be completed through OCWA's Workplace Maintenance Management System.
2. DAF Phase 1 Update: The dome for Clarifier #2 was removed on Sept 17th. All interior components of Clarifier #2 have been removed and the concrete basin is being prepared for refurbishment and recoating. The excavation for the auxiliary DAF equipment building is complete and as of date of this report, concrete mud mat for building foundation was being poured. Excavation to access clarifier blow off chamber is complete and the blow off chamber is being prepared for rehabilitation. The work for next 4 weeks will focus on building foundations and rehabilitation of clarifier basin and blow off chamber.
3. The UWSS, its consultant Associated Engineering and OCWA staff are preparing to implement the filter capacity testing (aka stress test) now that the tomato harvest/ processing season is basically complete and water demand is much lower. The stress test results will help UWSS and OCWA staff identify the maximum outputs of individual filters total filtration capacity.
4. A new Fisher Scientific TRO "Total Residual Chlorine" Analyzer has been installed on a trial basis to monitor chlorine levels from the settling pond discharge. The trial is to ensure low levels of chlorine can be accurately measured as our license requires less than 0.02 total chlorine be measured on our waste discharge.
5. The Annual Inspection of the UWSS supplied Lakeshore Distribution System was completed on September 21, 2021. The inspection report issued on September 29, 2021 by the Ministry of Environment, Conservation and Parks

Re: UW/33/21 - Status Update of UWSS Operations & Maintenance Activities and Capital Works to October 15, 2021

did not identify any Non-Compliances/Non-Conformances during the inspection.

6. OCWA UWSS operations staff have started the valve maintenance program on the common asset watermains. This includes “exercising” each valve to assess operability and identify any issues. The program will continue into early November 2021.

The first chart shows comparative flows for 2017 through 2021 in Mega Litres (ML) and the second chart shows Millions of Imperial Gallons (MIG) for the period January 1st to October 14th, 2021.

	2017	2018	2019	2020	2021
Flow to Date (ML)	12,991.01	13,860.75	14,279.10	16,189.53	16,918.81
Max Day (ML)	75.57	82.48	85.40	97.33	93.83
Min Day (ML)	20.73	23.56	20.13	25.44	26.74
Average Day (ML)	45.26	48.30	49.75	56.21	58.95
No of Days	287	287	287	288	287

	2017	2018	2019	2020	2021
Flow to Date (MG)	2857.68	3049.00	3141.02	3561.27	3723.01
Max Day (MGD)	16.62	18.14	18.79	21.41	20.64
Min Day (MGD)	4.56	5.18	4.43	5.60	5.88
Average Day (MGD)	9.96	10.62	10.94	12.37	12.97
No of Days	287	287	287	288	287

Flows to date are up 729.28 ML (161.74 MIG) or 4.5% from last year. The 2021 flows to date are up 18.1% over the previous 4 year average.

Recommendation:

That this report be received by the UWSS Board for information purposes.

Respectfully submitted,



Rodney Bouchard, General Manager
 Union Water Supply System Joint Board of Management
 /kmj

Filename: t:\union wtr\reports to board\2021\uw33-21 uwss operations report for october 2021.docx

UW/34/21

Report

To: Chair and Members of the Union Water Supply System Joint Board of Management

From: Rodney Bouchard, Union Water Manager

Date: October 14, 2021

Re: UWSS Infrastructure Review and Needs Study - Presentation of Preliminary Results to UWSS Board



Recommendation:

That the Union Water Supply Joint Board of Management (UWSS Board) receives this report for information.

Background:

At the October 21, 2020 UWSS Board meeting, the UWSS General Manager recommended that the Board a budget of \$205,000 to be funded from the UWSS Reserves for the completion of the UWSS Infrastructure Needs Study and Master Servicing Plan. This recommendation was presented to the UWSS Board in Report UW/25/2020 UWSS Infrastructure Needs Study and Master Servicing Plan dated October 9th, 2020. The UWSS Board approved the recommendation under the following resolution:

No. UW-48-20

Moved by: Deputy Mayor Verbeke

Seconded by: Deputy Mayor Queen

That the Union Water Supply System Joint Board of Management (UWSS Board) receives this report for information; and

Further, that the Board approves a budget of \$205,000 to be funded from the UWSS Reserves for the completion of the UWSS Infrastructure Needs Study and Master Servicing Plan; and

Further, that the UWSS Board authorizes the UWSS General Manager to undertake a direct negotiation with Associated Engineering (as the lead

October 14, 2021 - UW/34/21

Re: UWSS Infrastructure Needs Study - Presentation of Preliminary Results

consultant or the team of Associated Engineering and C3 Water Inc.) for the UWSS Infrastructure Needs Study and Master Servicing Plan.

Carried (UW/25/20)

A copy of UWSS Board Report UW/25/2020 UWSS Infrastructure Needs Study and Master Servicing Plan is attached to this report.

Discussion:

The UWSS retained the consultant team of Associated Engineering (AE) and C3 Water to undertake the UWSS Infrastructure Review and Needs Study. The purpose of the study is as follows:

- Calibrate the UWSS service area water model with recent (e.g. 2019-2020) water demand data;
- Develop future water demand and infrastructure growth models (e.g. 5-year, 10-year, 20-year) based on growth projections by local municipalities;
- Identify UWSS infrastructure needs and associated costs based on results of growth models.

AE is the lead consultant on this work with C3 Water having the responsibility for completing the calibration of water model and modeling of identified growth scenarios.

AE has completed a draft report on the demand and design criteria of the Infrastructure Review and Needs Study. AE will present the preliminary results of the draft report at the October 20th, 2021 UWSS Board meeting. A copy of AE's presentation is attached to this report.

Respectfully submitted,



Rodney Bouchard, General Manager
Union Water Supply System Joint Board of Management

rb/kmj

Attachments.

Filename: t:\union wtr\reports to board\2021\uw34-21 - uwss infrastructure needs study draft report - presentation of results to uwss board.docx

Definitions

ADD	- Average Daily Demand
MDD	- Maximum Daily Demand
LDD	- Low Daily Demand
ICI	- Industrial/Commercial/Institutional
ML	- Mega litres (or million litres)
MG	- Mega gallons (or million gallons)
ML/day	- Mega litres per day
MG/day	- Mega gallons per day
L/s	- Litres per second
L/cap - day	- Litres per capita per day (or litres per person per day)
G/cap - day	- Gallons per capita per day



Infrastructure Needs Study

Demand and Design Criteria

Vincent Laplante, P.Eng.
Samantha McCauley, P.Eng.
August 1, 2016

Presentation Overview

- Existing System Review
- Growth Areas by Municipality
- Future Demands
- Storage Requirements
- Distribution System Design Criteria
- Summary



Existing System Storage Capacity

Storage Component	Useable Storage Volume	Pressure Zone
WTP Clearwell	18.93 ML (4.16 MG)	All
Albuna Elevated Tank	5.27 ML (1.16 MG)	UWSS SE
Leamington Elevated Tank	1.47 ML (0.32 MG)	UWSS SE
Kingsville Elevated Tank	1.14 ML (0.25 MG)	Kingsville
Cottam Reservoir	9.49 ML (2.09 MG)	Cottam and Essex
Essex Elevated Tank	1.11 ML (0.24 MG)	Essex
Total	37.41 ML (8.23 MG)	All

WTP = Water Treatment Plant
ML = Million Liters
MG = Million Imperial Gallons



Existing System

WTP Capacity

Process Unit	Total Capacity	Firm Capacity
Intakes	436 ML/d (95.9 MG/d)	218 ML/d (47.9 MG/d)
Low Lift Pumping Station	177 ML/d (38.9 MG/d)	140 ML/d (30.8 MG/d)
Existing Clarifiers	113 ML/d (24.8 MG/d)	85 ML/d (18.7 MG/d)
Upgraded Clarifiers	196.5 ML/d (43.2 MG/d)	126.5 ML/d (27.8 MG/d)
Filters	173 ML/d (38.1 MG/d)	130 ML/d (28.6 MG/d)
High Lift Pumping Station	235 ML/d (51.7 MG/d)	187 ML/d (41.1 MG/d)

ML/d = Million Liters per day

MG/d = Million Imperial Gallons per day



Existing System Demands

Year	ADD ¹	MDD ¹	LDD	Non-Revenue Water ²	MDD Peaking Factor for Residential and ICI Demands
2016	490.6 L/s (9.3 MG/d)	881.5 L/s (16.7 MG/d)	225.6 L/s (4.3 MG/d)	93.2 L/s (1.8 MG/d)	1.98
2017	482.8 L/s (8.1 MG/d)	874.6 L/s (16.6 MG/d)	239.9 L/s (4.6 MG/d)	91.7 L/s (1.7 MG/d)	2.00
2018	513.0 L/s (9.7 MG/d)	954.6 L/s (18.1 MG/d)	234.7 L/s (4.5 MG/d)	97.5 L/s (1.8 MG/d)	2.06
2019	534.0 L/s (10.1 MG/d)	988.4 L/s (18.8 MG/d)	232.9 L/s (4.4 MG/d)	101.4 L/s (1.9 MG/d)	2.05
2020	631.4 L/s (12.0 MG/d)	1126.4 L/s (21.4 MG/d)	294.5 L/s (5.6 MG/d)	120.0 L/s (2.3 MG/d)	1.97

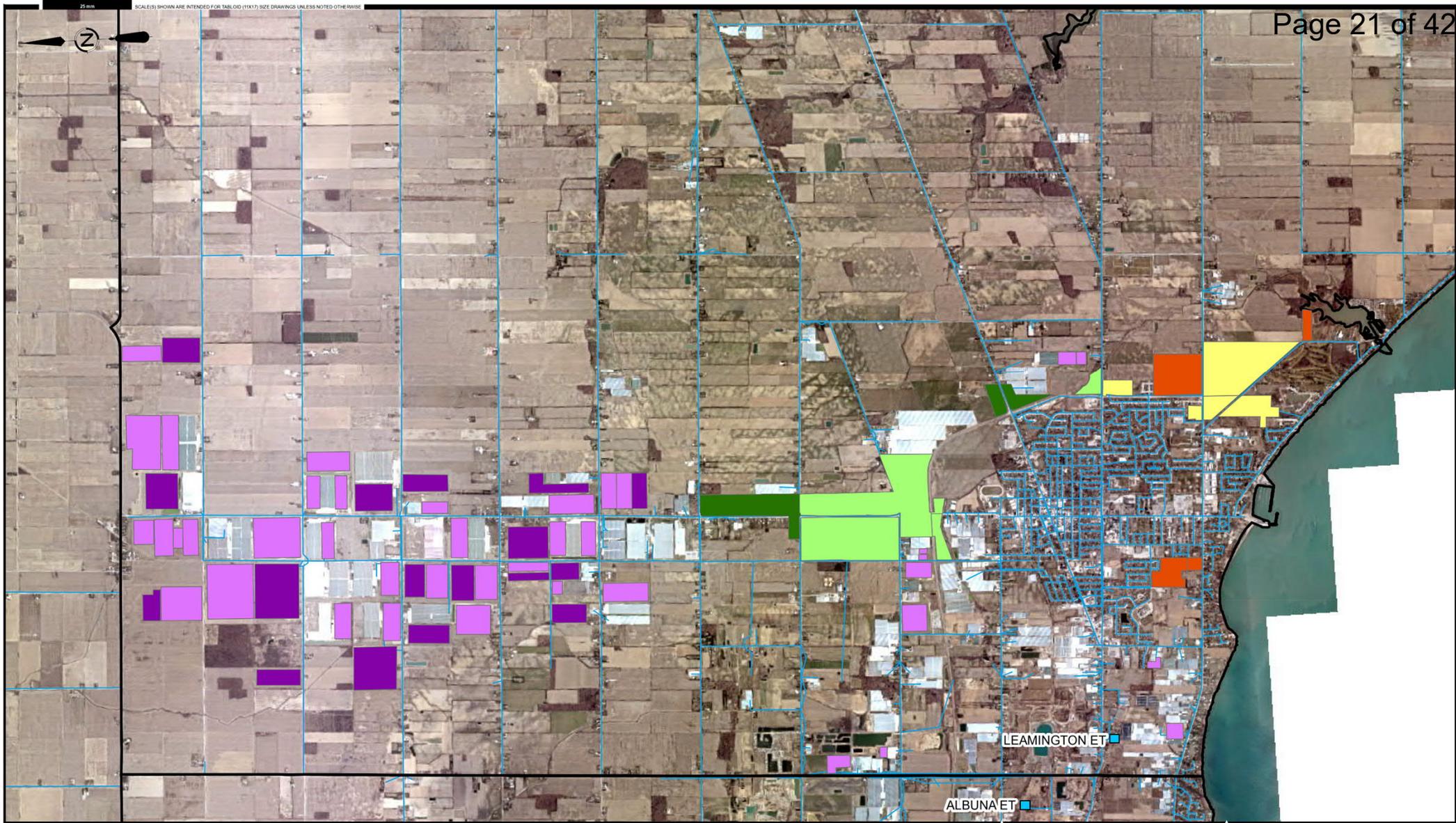
1) Both Average Day Demand and Max Day Demand include the identified Non-Revenue Water

2) 19% of Average Day Demand

ICI = Industrial, Commercial and Institutional



Growth Areas by Municipality



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LEGEND
GROWTH AREAS

- | | | |
|---|---|---|
|  Residential 2026 |  ICI 2026 |  Greenhouse 2026 |
|  Residential 2026 and 2031 |  ICI 2026 and 2031 |  Greenhouse 2031 |
|  Residential 2031 |  ICI 2031 | |

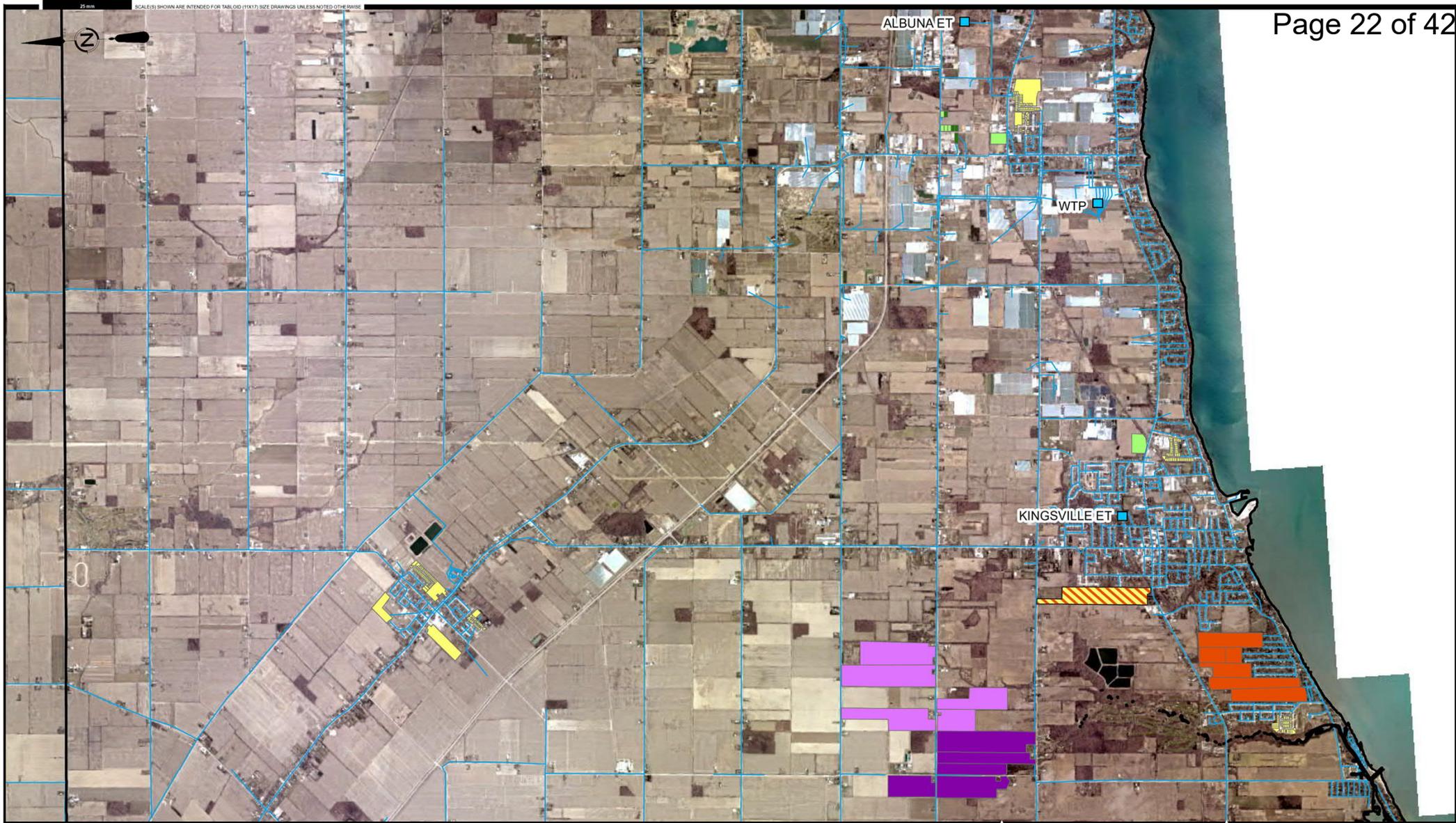
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FIGURE 4.1

UNION WATER SUPPLY SYSTEM

INFRASTRUCTURE NEEDS ASSESSMENT
 DEMAND AND DESIGN CRITERIA MEMO

LEAMINGTON GROWTH AREAS



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LEGEND

GROWTH AREAS

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|---|---------------------------|--|-------------------|---|-----------------|
|  | Residential 2026 |  | ICI 2026 |  | Greenhouse 2026 |
|  | Residential 2026 and 2031 |  | ICI 2026 and 2031 |  | Greenhouse 2031 |
|  | Residential 2031 |  | ICI 2031 | | |

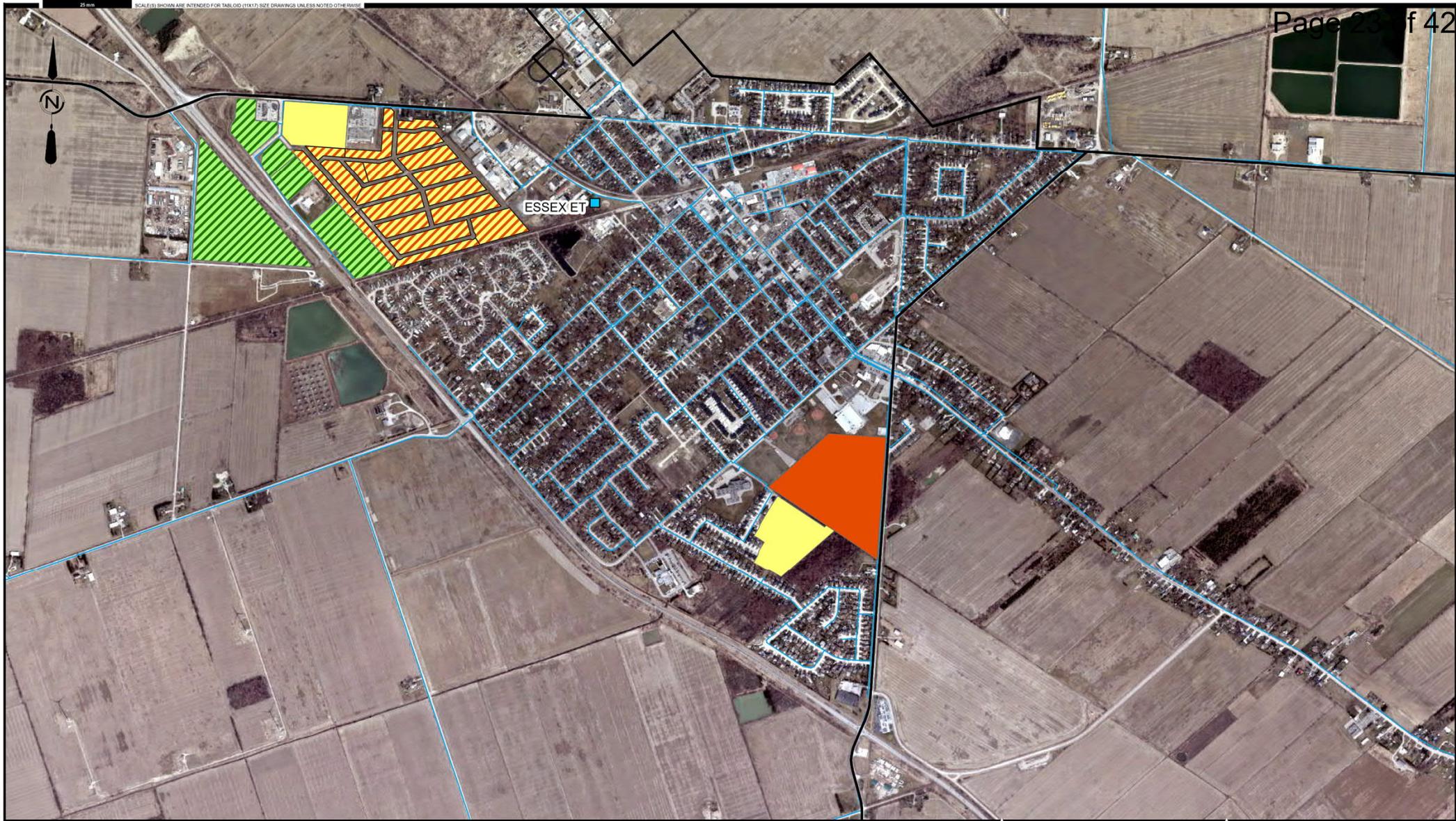
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 SCALE NTS
 DATE 2021JUL09
 REV 0

FIGURE 4.2

UNION WATER SUPPLY SYSTEM

INFRASTRUCTURE NEEDS ASSESSMENT
 DEMAND AND DESIGN CRITERIA MEMO

KINGSVILLE GROWTH AREAS



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GROWTH AREAS

- | | | |
|---|--|---|
|  Residential 2026 |  ICI 2026 |  Greenhouse 2026 |
|  Residential 2026 and 2031 |  ICI 2026 and 2031 |  Greenhouse 2031 |
|  Residential 2031 |  ICI 2031 | |

AE PROJECT No. 2020-5445-00
 SCALE NTS
 DATE 2021JUL09
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FIGURE 4.3

UNION WATER SUPPLY SYSTEM

INFRASTRUCTURE NEEDS ASSESSMENT
 DEMAND AND DESIGN CRITERIA MEMO

ESSEX GROWTH AREAS



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GROWTH AREAS

- | | | |
|---|--|---|
|  Residential 2026 |  ICI 2026 |  Greenhouse 2026 |
|  Residential 2026 and 2031 |  ICI 2026 and 2031 |  Greenhouse 2031 |
|  Residential 2031 |  ICI 2031 | |

AE PROJECT No. 2020-5445-00
 SCALE NTS
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FIGURE 4.4

UNION WATER SUPPLY SYSTEM

INFRASTRUCTURE NEEDS ASSESSMENT
 DEMAND AND DESIGN CRITERIA MEMO

LAKESHORE GROWTH AREAS

Future System

Population Projections – 5 Year (2026)

	Leamington	Kingsville	Essex	Lakeshore	Total
Residential Population Growth	2,574	1,530	576	116	4,796
ICI/Employment Population Growth (Equivalent Population)	1,287	900	279	-	2,466
Greenhouse Growth (Acres)	1,206	300	-	-	1,506
Greenhouse Growth (Equivalent Population)	31,040	7,825	-	-	38,865
Total Equivalent Population	34,901	10,255	855	116	46,127

Future System

Population Projections – 10 Year (2031)

	Leamington	Kingsville	Essex	Lakeshore	Total
Residential Population Growth	3,226	3,061	1,152	231	7,670
ICI/Employment Population Growth (Equivalent Population)	2,199	1,800	559	-	4,558
Greenhouse Growth (Acres)	1,957	600	-	-	2,557
Greenhouse Growth (Equivalent Population)	50,344	15,650	-	-	65,994
Total Equivalent Population	55,769	20,511	1,711	231	78,222

Future System

Demand Calculation Criteria

Description	5-Year (2026) and 10-Year (2031)	10-Year (2031) Higher Usage
Residential and ICI ADD Rate	265 L/cap-d (58 G/cap-d)	265 L/cap-d (58 G/cap-d)
Greenhouse ADD Rate	0.08 L/s-acre (1,520 G/d-acre)	0.08 L/s-acre (1,520 G/d-acre)
Residential and ICI MDD Rate	530 L/cap-d (116 G/cap-d)	530 L/cap-d (116 G/cap-d)
Greenhouse MDD Rate	0.192 L/s-acre (3,649 G/d-acre)	0.316 L/s-acre (6,006 G/d-acre)
Water Loss Rate	50 L/cap-day (11 G/cap-d)	50 L/cap-day (11 G/cap-d)
Agricultural MDD Rate Increase	-	75%
Essex Residential/Agricultural Rate Increase	-	15%

Future System

Demands by Pressure Zone

Pressure Zone	5- Year (2026)		10- Year (2031)		10- Year Higher Usage (2031)	
	ADD (L/s)	MDD (L/s)	ADD (L/s)	MDD (L/s)	ADD (L/s)	MDD (L/s)
UWSS SE	722.8 L/s (13.7 MG/d)	1091.6 L/s (20.7 MG/d)	791.2 L/s (15.0 MG/d)	1515.2L/s (28.8 MG/d)	791.2 L/s (15 MG/d)	1916.7 L/s (36.4 MG/d)
Kingsville	31 L/s (0.6 MG/d)	55.3 L/s (1.1 MG/d)	32.4 L/s (0.6 MG/d)	57.8 L/s (1.1 MG/d)	32.4 L/s (0.6 MG/d)	55.3 L/s (1.1 MG/d)
Cottam	42.9 L/s (0.8 MG/d)	76.5 L/s (1.5 MG/d)	44.4 L/s (0.8 MG/d)	79.3 L/s (1.5 MG/d)	44.4 L/s (0.8 MG/d)	109.9 L/s (2.1 MG/d)
Essex	36.7 L/s (0.7 MG/d)	65.5 L/s (1.2 MG/d)	39.8 L/s (0.8 MG/d)	71.3 L/s (1.4 MG/d)	40.9 L/s (0.8 MG/d)	84.5L/s (1.6 MG/d)
Total	833.4 L/s (15.8 MG/d)	1288.9 L/s (24.5 MG/d)	907.8 L/s (17.3 MG/d)	1723.6 L/s (32.8 MG/d)	908.9 L/s (17.3 MG/d)	2166.4 L/s (41.2 MG/d)

L/s = Liters per second

MG/d = Million Imperial Gallons per day

ADD = Average Day Demand

MDD = Maximum Day Demand



Storage Needs

Calculation Criteria

- Storage Needs calculated based on MECP criteria:
 - Equalization Storage (A) = 25% of Maximum Day Demand
 - Fire Storage (B) = As needed by pressure zone grouping
 - Emergency Storage (C) = 25% of (A+B)
- Pressure Zones grouped for Storage Calculation:
 - UWSS SE and Kingsville Pressure Zones
 - Cottam and Essex Pressure Zones

Storage Needs

Required Storage – UWSS SE + Kingsville Pressure Zones

Storage Component	Existing	5-Year 2026	10-Year 2031	10-Year Higher Usage 2031
Equalization Storage	21.4 ML (4.7 MG)	24.8 ML (5.5 MG)	34 ML (7.5 MG)	42.6 ML (9.4 MG)
Fire Storage	8.2 ML (1.8 MG)	8.2 ML (1.8 MG)	8.2 ML (1.8 MG)	8.2 ML (1.8 MG)
Emergency Storage	7.4 ML (1.6 MG)	8.2 ML (1.8 MG)	10.5 ML (2.3 MG)	12.7 ML (2.8 MG)
Total Required	37 ML (8.1 MG)	41.2 ML (9.1 MG)	52.7 ML (11.6 MG)	63.5 ML (14.0 MG)
Surplus/ Deficit	-10.3 ML (-2.2 MG)	-14.5 ML (-3.2 MG)	-26.0 ML (-5.7 MG)	-36.8 ML (-8.1 MG)

ML = Million Liters

MG = Million Imperial Gallons



Storage Needs

Required Storage – Cottam + Essex Pressure Zones

Storage Component	Existing	5-Year 2026	10-Year 2031	10-Year Higher Usage 2031
Equalization Storage	2.9 ML (0.6 MG)	3.1 ML (0.7 MG)	3.3 ML (0.7 MG)	4.2 ML (0.9 MG)
Fire Storage ¹	4.5 ML (1 MG)	5.1 ML (1.1 MG)	8.2 ML (1.8 MG)	8.2 ML (1.8 MG)
Emergency Storage	1.8 ML (0.4 MG)	2 ML (0.4 MG)	2.9 ML (0.6 MG)	3.1 ML (0.7 MG)
Total Required⁴	9.2 ML (2.0 MG)	10.2 ML (2.2 MG)	14.3 ML (3.1 MG)	15.5 ML (3.4 MG)
Surplus/ Deficit	1.4 ML (0.3 MG)	0.4 ML (0.1 MG)	-3.7 ML (-0.8)	-4.9 ML (-1.1 MG)

ML = Million Liters

MG = Million Imperial Gallons



Distribution System Design Criteria

- Pressures to meet MECP criteria
- Required fire flow to be used for distribution assessment:
 - 67 L/s (1.3 MG/d) for detached residential (low density)
 - 133 L/s (2.5 MG/d) for semi-detached residential and townhomes (high density), ICI, and Greenhouses
- Watermain velocity:
 - During normal operations should not exceed 2 m/s
 - During emergency operations should not exceed 5 m/s

Summary

- Significant increases in year over year demand observed
- Significant Growth Expected
 - 5 Year (2026) equivalent population growth = 46,127
 - 10 Year (2031) equivalent population growth = 78,222
- Future Maximum Day Demands
 - 5 Year (2026) = 1,289.9 L/s (24.5 MG/d)
 - 10 Year (2031) = 1,723.6 L/s (32.8 MG/d)
 - 10 Year (2031) Higher Usage = 2,166.4 L/s (41.2 MG/d)

Summary

- Storage Deficit
 - Existing deficit = 8.9 ML (1.9 MG)
 - 5 Year (2026) deficit = 14.1 ML (3.1 MG)
 - 10 Year (2031) deficit = 29.7 ML (6.5 MG)
 - 10 Year (2031) Higher Usage deficit = 41.7 ML (9.2 MG)



Questions?

UW/25/20

Report

To: Chair and Members of the Union Water Supply System Joint Board of Management

From: Rodney Bouchard, Union Water Manager

Date: October 9th, 2020

Re: UWSS Infrastructure Needs Study and Master Servicing Plan



Recommendation:

That the Union Water Supply Joint Board of Management (UWSS Board) receives this report for information;

And further, that the Board approves a budget of \$205,000 to be funded from the UWSS Reserves for the completion of the UWSS Infrastructure Needs Study and Master Servicing Plan;

And further, that the UWSS Board authorizes the UWSS General Manager to undertake a direct negotiation with Associated Engineering (as the lead consultant or the team of Associated Engineering and C3 Water Inc.) for the UWSS Infrastructure Needs Study and Master Servicing Plan

Background:

There is a requirement in the UWSS Transfer Order of 2001 for the UWSS Board to update its New Capacity Master Plan every 5 years. A New Capacity Master Plan was completed in 2001 and an Expansion Environmental Assessment in 2003.

The Board approved the undertaking of a New Capacity Master Plan Update in 2007 to help address issues associated with Common Asset Watermains between UWSS and the four owner municipalities. This Master Plan update was also undertaken to plan for UWSS expansion due to increased water demands and anticipated system growth associated with the projected residential and greenhouse sector growth.

During the undertaking of the 2007 UWSS Master Plan update, UWSS water demand decreased significantly starting in 2008. This resulted in a shift in the Master Plan from projected expansion to more of a conservation plan. The Master Plan Update report and associated water model was completed in November 2012 and shared with the 4 owner municipalities.

October 9, 2020- UW/25/20

Re: UWSS Infrastructure Needs Study and Master Servicing Plan

Discussion:

In 2016, the UWSS retained Associated Engineering to complete a Water Quality Master Plan for the UWSS. The objectives of the Water Quality Master Plan were as follows:

- Document the current and future challenges of the entire system considering regulatory, social, economic and environmental (Climate Change) impacts with an eye to improve the overall system robustness for the years to come.
- Review and propose treatment alternatives to increase the plant's robustness and meet future treatment demands
- Prepare a defensible capital phasing plan to implement the preferred treatment alternatives.

This Water Quality Master Plan was presented to the UWSS Board at a special meeting of the Board in February 2017.

The completion of the Water Quality Master Plan enabled the UWSS to work towards the undertaking of an update to the UWSS Master Plan.

As a first step, the UWSS retained C3 Water to review the UWSS water model that had been constructed as part of the Master Plan Update that was completed in late 2012. C3 Water's review of the model indicated that significant updates were needed to improve the model and make it current and relevant. UWSS retained C3 to update the model with 2018 water demand data (and then 2019 data). C3 Water issued their report in April 2020.

With the completion of the UWSS Water model update, the UWSS is now in a good position to update the UWSS Master Plan. This update to the Master Plan is needed for the following reasons:

1. The Transfer Order of 2001 stipulates that the UWSS Master Plan be updated every 5-years;
2. Residential growth in the 4 municipalities serviced by UWSS has increased steadily since 2016 and is projected to continue into the foreseeable future;
3. Greenhouse developments have increased significantly since 2017 with no sign of abating;
4. Since 2015, UWSS water demand has been steadily increasing, thus reversing the trend of water demand decline experienced between 2008 and 2014. The water demand increase since 2015 is over 30%
5. The most recent UWSS Master Plan is out of date since it was more reflective of a low demand and conservation forecast for UWSS (including associated municipal growth).

October 9, 2020- UW/25/20

Re: UWSS Infrastructure Needs Study and Master Servicing Plan

The main goal for this study is to assess the capability of the UWSS drinking water system to meet the treated water demands of its municipal customers through to 2060 (20-year planning horizon), and to identify any necessary existing or future upgrades, as required. This study will focus on: identifying future system demand requirements considering historic consumption rates and climate change impacts; assessing current system operations and identifying opportunities for optimization; and providing solutions to address identified deficiencies, considering life cycle cost, and environmental and social impact.

The undertaking of the Infrastructure Needs Study and Master Servicing Plan for UWSS requires a consultant with water system design and engineering background, planning knowledge, and hydrodynamic modelling expertise. It's the UWSS General Manager opinion that a consultant team approach with team members that have significant knowledge of the UWSS water system would be the best option for this study. The proposed team includes the following consultants:

- Associated Engineering Inc.: Associated Engineering is a Canadian multi-disciplinary engineering firm with significant expertise in the municipal water sector. Associated Engineering has completed a number of projects for the UWSS including the UWSS Water Quality Master Plan, Raw Water pH control system for coagulation enhancement, primary chlorine gas disinfection system upgrades and Dissolved Air Floatation (DAF) clarifier retrofit preliminary design. Associated Engineering will serve as the lead consultant and project manager for this proposed work
- C3 Water Inc.: C3 Water Inc. is a consulting firm that specializes in water system engineering services including expertise in hydrodynamic water modeling for municipal drinking water systems. C3 Water recently completed the update to the UWSS water model for the larger distribution system supplied by UWSS.

Financial Impact:

The UWSS General Manager requested a proposal from the consultant team of Associated Engineering and C3 Water, Inc. to complete this work. At this time, this proposal was solicited solely from this consultant team for the following reasons:

- Associated Engineering possesses extensive knowledge of the UWSS drinking water system garnered through the completion of water quality studies and drinking water system upgrades over the last few years. Further, Associated Engineering has significant expertise in municipal water system planning, design, and construction.
- C3 Water, Inc. possesses significant experience and expertise in constructing and calibrating hydrodynamic water models for municipal drinking water systems. C3

October 9, 2020- UW/25/20

Re: UWSS Infrastructure Needs Study and Master Servicing Plan

Water recently completed the review and updates for UWSS' water model for the entire UWSS serviced area.

- The use of a consultant team with extensive work experience and knowledge of the UWSS system components will significantly reduce the learning curve and cost that would be associated with retaining a consulting firm through a request for proposal.

Based on the proposal received from the consultant team led by Associated Engineering the costs for undertaking the UWSS Infrastructure Needs Study is \$184,331. This includes \$42,000 for completion of drinking water system field testing by a third party testing firm (Watermark Solutions).

The UWSS General Manager proposes a budget of \$205,000 for this work, to allow for contingency funds if needed.

Sufficient funds are available in the UWSS Reserves to fund this work.

Respectfully submitted,



Rodney Bouchard, Manager
Union Water Supply System Joint Board of Management
rb/kmj

UW/35/21

To: Chair and Members of the Union Water Supply System Joint Board of Management

From: Rodney Bouchard, Union Water Manager

Date: October 15, 2021

Re: Payments for the UWSS for September 2021



Aim:

To provide the Board with a copy of payments made by the Union Water Supply System for September 2021.

Recommendation:

For information purposes.

Respectfully submitted,



Rodney Bouchard, Manager
Union Water Supply System Joint Board of Management
/kmj

Filename: t:\union wtr\reports to board\2021\uw35-21 payments september 2021.docx



Vendor : 0011450 To STMP000006
 Batch : All
 Department : All

Cheque Print Date : 16-Sep-2021 To 23-Sep-2021
 Bank : 07 To 08
 Class : All

Vendor Invoice	Vendor Name Description				GL Account Name	Batch	Inv Date	Inv Due Date	Amount
G.L. Account	CC1	CC2	CC3						
DEPARTMENT 0700 Union Water System									
020120 Bell Mobility Cellular									
514877178-SE	MONTHLY CELL PHONE CHARGES					451	01-Sep-2021	16-Sep-2021	
70-5-0700-7110	002070	002083		Telecommunications Usage					21.97
996694 Empire Communications									
34109	TAGS/FOBS SECURITY SYSTEM					451	17-Aug-2021	16-Sep-2021	
70-7-0700-8775				Communication System					435.05
180325 Ricoh Canada Inc									
SCO93371297	COPIER CONTRACT - JUL15-AUG30					451	31-Aug-2021	16-Sep-2021	
70-5-0700-7110	002070			Telecommunications Usage					95.89
230706 Wolfcrete Concrete Finishing									
64	AMMONIA BLDG - RETROFIT - GRAVEL					451	07-Sep-2021	16-Sep-2021	
70-7-0700-8745	700020			Treatment Plant					2,469.05
Department Totals :									3,021.96



Vendor : 0011450 To STMP000006
 Batch : All
 Department : All

EFT Paid Date : 16-Sep-2021 To 23-Sep-2021
 Bank : 07 To 08
 Class : All

Vendor Code	Vendor Name				Batch	Inv Date	Inv Due Date	Amount
Invoice No.	Description							
G.L. Account	CC1	CC2	CC3	GL Account Name				
DEPARTMENT 0700				Union Water System				
070173 GREENFLAG COATINGS								
2021-171	AUG6 AMMONIA BUILDING FLOOR				471	06-Aug-2021	22-Sep-2021	
70-7-0700-8745	700020			Treatment Plant				10,905.48
080250 Hydro One Networks Inc								
200141677460-	8-583,389KWH - RUTHVEN WATER TREATMENT PLANT				452	09-Sep-2021	16-Sep-2021	
70-5-0700-7420	002073			Electricity				86,842.94
200141680692-	8-286,722KWH - LOW LIFT				452	09-Sep-2021	16-Sep-2021	
70-5-0700-7420	002073			Electricity				-14.75
70-5-0700-7420	002073			Electricity				49,220.55
200141690190	(ADJ ON PREVIOUSLY BILLED JUN3-JUL6				452	08-Sep-2021	16-Sep-2021	
70-5-0700-7420	002073			Electricity				-73.54
200141690190-	8-164KWH - METER #26				452	13-Sep-2021	16-Sep-2021	
70-5-0700-7420	002073			Electricity				74.94
70-5-0700-7420	002073			Electricity				-12.53
200141690190-	7-179KWH - METER#26				452	08-Sep-2021	16-Sep-2021	
70-5-0700-7420	002073			Electricity				-13.88
70-5-0700-7420	002073			Electricity				82.97
200152134969-	8-23KWH - METER#17				452	09-Sep-2021	16-Sep-2021	
70-5-0700-7420	002073			Electricity				-7.39
70-5-0700-7420	002073			Electricity				44.20
100048 Jacques Daoust Coatings Management Inc								
PC#7 3577	PMT#7 KWT - REHABILITATION				452	25-Aug-2021	16-Sep-2021	
70-7-0700-8710				Kingsville Water Tower				79,405.92
70-7-0700-8710				Kingsville Water Tower				9,043.96
70-7-0700-8710				Kingsville Water Tower				1,989.67
150365 Ontario Clean Water Agency								
INV0000001425	AUG/21 KWT - ENG. SERV. - ADD'L SERVICES				452	25-Aug-2021	16-Sep-2021	
70-7-0700-8710				Kingsville Water Tower				26,869.14
997659 Sawatzky Balzer & Wiens LLP in Trust								
PMT#2	FINAL DEPOSIT - 1529 COUNTY RD 45 PURCHASE				471	22-Sep-2021	22-Sep-2021	
70-7-0700-8745	700030			Treatment Plant				95,000.00
SEP-21	DEPOSIT - 1529 COUNTY RD 45 PURCHASE				461	16-Sep-2021	16-Sep-2021	
70-7-0700-8745	700030			Treatment Plant				5,000.00
190751 Summa Engineering Limited								
115734	SCADA MTCE				452	23-Jun-2021	16-Sep-2021	
70-5-0700-7240	002070			Tech Hardware Maintenance & Support				116.96
115755	SCADA MTCE				452	12-Jul-2021	16-Sep-2021	
70-5-0700-7240	002070			Tech Hardware Maintenance & Support				2,222.15
Department Totals :								366,696.79