JOINT BOARD OF MANAGEMENT

Wednesday, April 24, 2019
9:00 AM
Kingsville Community Room
Kingsville Arena
1741 Jasperson Road, Kingsville

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, February 27, 2019
Pages 2 - 7

D. **Business Arising Out of the Minutes**

E. **Items for Consideration:**

1. UW/11/19 dated April 18, 2019 re: Status Update of UWSS Operations & Maintenance Activities and Capital Works to April 18, 2019
   Pages 8 – 10

2. UW/12/19 dated April 9, 2019 re: UWSS 2018 Financial Report
   Pages 11 – 30

3. UW/13/19 dated April 18, 2019 re: MECP Drinking Water Inspection Report
   Pages 31 - 62

4. UW/14/19 dated April 18, 2019 re: Payments from February 22 to April 18, 2019
   Pages 63 - 72

F. **New Business:**

G. **Adjournment:**

H. **Date of Next Meeting:** May 15, 2019 at 9:00 am, in the Kingsville Community Room of the Kingsville Arena.

/kmj

JOINT BOARD OF MANAGEMENT

Wednesday, February 27, 2019
9:00 AM
Kingsville Community Room
Kingsville Arena
1741 Jasperson Road, Kingsville

MINUTES

Members Present:	Deputy Mayor Verbeke, Councillors Dunn, Tiessen (alternate), and Wilkinson – Leamington Mayor Nelson Santos (Vice-Chair); Deputy Mayor Queen, Councillors DeYong, Neufeld, Patterson – Kingsville Councillor VanderDoelen – Essex Councillor Walstedt – Lakeshore
Members Absent:	Mayor MacDonald, Councillors Jacobs and Hammond – Leamington
UWSS Staff:	Rodney Bouchard, Manager UWSS Khristine Johnson – Recording Secretary
Staff Present:	Chris Nepszy, Andy Graf - Essex
OCWA Staff Present:	Dale Dillen, Ken Penney, Susan Budden, Dave Jubenville

Call to Order: 9:03 am

Disclosures of Pecuniary Interest: none

Adoption of UWSS Joint Board of Management Minutes:

No. UW-09-19

Moved by: Councillor Patterson

Seconded by: Deputy Mayor Queen

That Minutes of the UWSS Joint Board of Management meeting of January 16, 2019 be received.

Carried

Business Arising Out of the Minutes:

It was noted that Deputy Mayor Queen's name was missing from the attendance.

Report UW/06/19 dated February 22, 2019 re: Status Update of the UWSS Operations & Maintenance Activities and Capital Works to February 22, 2019

The Manager explains that the MOECP initiated its annual inspection of the UWSS facilities on January 8, 2019 and that this year's inspection is detailed inspection with review of over 700 items. He doesn't foresee any issues, but will bring the inspection back to the board once completed.

He then explains that ASL Rotech has removed and refurbished Low Lift pump #1. The repairs went well and the pump was put back into service on February 4, 2019. Also regarding pumps, Nevtro has been hired to investigate a vibration in High Lift Pump #4. The pump has been removed for repairs and the pump should be reinstalled by the end of March 2019.

The Manager explains that the clamp on flow meters for Clarifiers #1 and #3 have been installed to replace older pressure differential flow meters. This will provide better data for the clarifiers in anticipation of the CO2 project. Also new turbidity meters have been purchased and installed for the same Clarifiers.

Electric actuators have been installed on Filter #2 as a test case to compare electric actuators compared to pneumatic. The Board asks why there is a change from pneumatic to air. The Manager refers to the Operations Manager. The Operations Manager indicates that the air system causes a great deal of failures that disrupts the facility. They are trying the electric to determine reliability versus pneumatic.

The Manager provides an update on the SCADA project. He confirms that Associated Engineering (AE), Summa Engineering, OCWA and the UWSS all participated in a day and a half workshop, reviewing the draft Program Control Narrative (PCNs) and PLC design.

The Manager provides an update on the CO2 pH Adjustment/ Chlorine System Improvements and notes that there was a kick off meeting on February 20th. The contractor, Maple Reinders, AE, UWSS and OCWA staff were present. There was a schedule review and the notice to proceed was to be provided soon. The project is still on track with a 40 week completion date.

The Manager indicates to the members of the Board that the Ruthven WTP is scheduled to be shut down for only a few hours on February 28, 2019 in order to allow for a temporary installation of a chlorine gas system that will be used during upgrades of the primary gas system. The Board has some concern over this temporary shut down. The Operations Manager assures the Board that this practice has occurred in the past and is only on the raw water lines and there will be no disruption to the service. The process should only take approximately one (1) hour.

The Manager briefly reviews the flows.

No. UW-10-19

Moved by: Deputy Mayor Verbeke

Seconded by: Councillor Wilkinson

That report UW/06/19 dated February 22, 2019 re: Status Update of the UWSS Operations & Maintenance Activities and Capital Works to February 22, 2019 is received.

Carried (UW/06/19)

Report UW/07/19 dated February 21, 2019 re: O. Reg. 453/07 Financial Plan Update for the Union Water Supply System

The Manager reviews the Municipal Drinking Water License (MDWL) renewal with the Board and reminds them of the notice received back in July 2018 indicating that the UWSS application was due by January 20th 2019. He confirms that Water & Associates were preparing the water rate study on behalf of the UWSS. The water rate study is required to be completed prior to the Financial Plan, and was completed in December 2018. The Manager than received the Financial Plan on January 17th, 2019 just after the last board meeting. However, the Financial Plan is required to be endorsed by the UWSS JBM in order to be forwarded to the MOECP. Therefore, the Manager requested, and was granted, an extension by the MOECP to submit the Financial Plan when it had been presented to and approved by the UWSS Board.

The Manager then reviews the water rate study and speaks of the wholesale revenue as the main source of income for the UWSS. He then speaks about the large capital program that he is forecasting over the next several years. He directs attention to the forecasted growth within the UWSS treatment zone in terms of population and greenhouse acreage that is forecasted.

He reminds members of the board that he typically provides the board with a six (6) year capital plan, that the board endorses, however he notes that this is a plan that can be amended and changed as need be. The Manager also provides information on some of the larger capital projects that are expected to start within the next several years, such as the DAF project, residuals management, dry scrubber, possibly UV, watermain replacement and others.

The Board asks if this water rate study and Financial Plan consider the possibility of restructuring. The Manager indicates that it does not, as the Financial Plan could only take into account what was happening with the UWSS JBM right now.

The Board asks the Manager if the 4% suggested water rate increase over the next five years is in addition to the standard 2% that has been used recently. The Manager indicates that the water rate study is suggesting the 4% only, not in addition too. The Manager also reminds members of the board that this plan can change as well, it is not fixed.

There is a question concerning a possible rate increase and how it will affect greenhouse operators. The Manager again explains that this report is not fixed and he normally provides a mid-year variance report that will provide an indication if the flows are above the projection and then perhaps a rate increase will not be necessary. The Manager explains that the numbers can change if need be.

The board asks the Manager if there is a limit to amount of water the UWSS can draw from the lake. The Manager confirms that the Permit to Take Water (PTTW) provides UWSS with a limit and currently the UWSS is well below that limit.

No. UW-11-19

Moved by: Councillor Patterson

Seconded by: Deputy Mayor Queen

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

And further, The Union Water Supply System Water Financial Plan prepared by Watson & Associates Economists Ltd. dated January 17, 2019 be approved;

And further, that Notice of availability of the Financial Plan be advertised;

And further, that the Financial Plan and the Board Resolution approving the Financial Plan be submitted to the Ministry of Municipal Affairs and Housing. (O.Reg. 453/07, Section 3 (1) 6);

And further, that the Financial Plan and the Board Resolution approving the Financial Plan be submitted to the Ministry of Environment, Conservation and Parks, thus satisfying the requirements under the Safe Drinking Water Act. (SDWA Section 32 (5) 2 ii)).

Carried (UW/07/19)

Deputy Mayor Verbeke leaves the meeting at 9:54 am

Report UW/08/19 dated February 21, 2019 re: Annual Report under Safe Drinking Water Act and Ontario Regulation 170/03

The Manager explains that this is a yearly report to that is completed and provided to the systems that UWSS serves. It must be prepared and provided by February 28th of the following year setting out any water quality (AWQIs) issues, capital improvements and must be made available to the public.

The Manager makes notes of the AWQI that the WTP experienced in 2018. He confirms that on May 18, 2018 the WTP experienced a loss of coagulation to Clarifier #4, due to PLC failure for approximately 51 minutes. Maintenance personal were called in to restore the PLC.

No. UW-12-19

Moved by: Deputy Mayor Queen

Seconded by: Councillor Wilkinson

That the report UW/18/19 dated February 21, 2019 re: 2018 Annual Report under the Safe Drinking Water Act and Ontario Regulation 170/03 is received.

Carried (UW/08/19)

Report UW/09/19 dated February 21, 2019 re: 2018 Summary Report for Municipalities for 2018 as required under Regulation 170/03 made under the Safe Drinking Water Act

The Manager reminds member of the Board that this is a yearly report to that is completed and provided to the systems that UWSS serves. It must be prepared and provided by March 31st of the following year. This report sets out any issues within any of the systems within the UWSS.

The Manager makes notes of the AWQIs within the UWSS System, wherein on May 19, 2018 Clarifier #4 experienced a loss of coagulation, but staff was called in to make the repair; and the Municipality of Leamington on June 22, and July 20, 2018 regarding a sample station that had an adverse residual, however, flushing the area brought the residual back up to standard levels. An auto flusher has been installed.

Finally, this report also sets out the volume of water used by each municipality and by UWSS as whole to ensure that it is within its Permit to Take Water (PTTW) limit.

No. UW-13-19

Moved by: Councillor Neufeld

Seconded by: Councillor Walstedt

That the Board receive the Summary Report for 2018 which fulfills the requirements of Schedule 22 of the Ontario Regulation 170/03; and

That the Summary Report be forwarded to the four (4) participating municipalities namely the Town of Essex, Town of Kingsville, Town of Lakeshore and the Municipality of Leamington.

Carried (UW/09/19)

Report UW/10/19 dated February 22, 2019 re: Payments from January 11 to February 22, 2019

No. UW-14-19

Moved by: Deputy Mayor Queen

Seconded by: Councillor Dunn

That report UW/10/19 dated February 22, 2019 re: Payments from January 11 to February 22, 2019 is received.

Carried (UW/10/19)

New Business

The Administrative Assistant speaks to the Board briefly about the Standard of Care training that all board members should attend. She discusses a few options and which members still require the training. Mr. Nepszy, from the Town of Essex, indicates that there is training on May 13th. The administrative assistant made note and would contact the board members in need of training.

There is a brief discussion about the date of the next UWSS Board meeting and it is determined that the March UWSS Board meeting should be cancelled.

No. UW-15-19

Moved by: Councillor Wilkinson

Seconded by: Councillor Dunn

That the March 20, 2019 UWSS Joint Board of Management meeting is cancelled.

Carried

Adjournment

No. UW-16-19

Moved by: Councillor Tiessen

Seconded by: Councillor Neufeld

That the meeting adjourn at 10:23

DATE OF NEXT REGULAR MEETRING Wednesday, April 24. 2019
9:00 am, Kingsville Arena Community Room

kmj

UW/11/19

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

From: Rodney Bouchard, Union Water Manager

Date: April 18, 2019

Re: Status Update of UWSS Operations & Maintenance Activities and Capital Works to April 18, 2019

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.

Discussion:

The UWSS 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. An MOECP annual inspection for the UWSS that was started on January 8th, 2019 has been completed. The inspection report was issued on March 27th, 2019. The UWSS received a 100 percent inspection rating. The report included a couple of recommendations such as renewal of the valve maintenance program and undertaking an inspection of the Cottam Reservoir this year.

3. Nevtro Pumps and Mechanical of London, Ontario was retained to investigate a vibration that was detected in High Lift Pump #4. The pump was removed by Nevtro on January 28, 2019 for repairs. The pump was being reinstalled on the date of this report and will be disinfected and pump back into operation on the week of April 22nd, 2019.

4. The Cottam Booster Reservoir soil cover rehabilitation project has been started. The contractor, Rudak Excavating, installed drainage tile on the reservoir cover to improve drainage. The project has been delayed somewhat due to weather related issues. It is anticipated that this work will be completed by the end of May 2019.

5. New clamp-on flow meters for Clarifier #1, #2 and #3 raw water lines have been installed to replace some older pressure differential flow meters. These flow meters are now fully functional.

6. SCADA Upgrade Project Update: A workshop was held on April 3rd, 2019 at the Ruthven Water Treatment Plant between UWSS, OCWA and the engineer (Associated Engineers) to review and update the Process Narrative for the Low Lift Pumping Plant and Water Treatment Plant. This was the first in a series of 3 workshops that are being held for this purpose. The next two workshops are scheduled for April 24th and May 15th.

7. CO2 pH Adjustment/ Chlorine System Improvements Project Update: - The Notice to Proceed for this work was issued to the contractor, Maple Reinders, on March 1st, 2019. From this date, the contractor will have 40 weeks to complete the work. The CO2 dissolution skids and control skids have been received at the Ruthven Water Treatment Plant. As of the date of this report, the contractor is in process of mobilizing to the UWSS facilities to initiate construction work.

8. A temporary gas chlorination system for use during the upgrades of the primary gas chlorination system as part of the CO2 pH Adjustment/ Chlorine System Improvements project has been installed. The temporary system was tested and was put into operation on April 15th, 2019. This temporary system will be used until the chlorine system improvement works have been completed.

9. The Upside down valve chamber located adjacent reservoir #1 at the Ruthven water treatment plant has been refurbished. UWSS retained JDCMI of Brantford, Ontario to complete this work, which included sand blasting and epoxy coating of the chamber components including piping and valves. The cost for this work was completed within the approved 2019 Budget.

10. Since June 4, 2018, the UWSS has been evaluating the use of free chlorine secondary disinfection for treated water in comparison to chloramination. The initial evaluation period was scheduled to be completed on June 4, 2019. However, the UWSS is proposing to extend the use of free chlorine secondary disinfection until December 4, 2019 to allow for additional evaluation during the summer period and to allow for review of the collected data by a third party consultant. The UWSS has notified and received approval from the MOECP of this extension. A more detailed report on this evaluation with recommendations will be provided to the UWSS Board at a later Board meeting.

11. A level transmitter will be installed on the Sodium Hypochlorite tank at the Cottam Booster station and connected to the SCADA system so that the operators are able to see the level from the Ruthven Water Treatment plant. This is part of the sodium hypochlorite dosing system at the Cottam Booster that is used for boosting the free chlorine residuals in drinking water as needed.

12. The replacement of one of the control valves for Essex Tower (VC9) is being scheduled for the month of May 2019. OCWA staff will work with the town of Kingsville and Essex staff to ensure minimal disruption to consumers.

13. OCWA Engineers were onsite last week to survey the motor control centers at the Ruthven Water Treatment Plant for the install of an energy monitoring system. This system will monitor energy usage from all the high lift pumps and other components that exert a large energy demand so that the use of pumps, etc can be optimized to reduce energy usage/ cost when possible.

Comparative Flows for 2015 through 2019 in Millions of Imperial Gallons (for the period 1 January to April 17, 2019)

	2015	2016	2017	2018	2019
Flow to Date (MG)	727.87	714.04	737.85	785.98	832.83
Max Day (MGD)	9.99	10.99	10.51	10.03	11.49
Min Day (MGD)	3.79	4.29	4.56	5.18	4.43
Average Day (MGD)	6.80	6.61	6.90	7.35	7.78
No of Days	107	108	107	107	107

Flows to date are up 46.85 MIG or 5.96% from last year. The 2019 flows to date are up 12.33% over the previous 4 year average.

Recommendation:

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

Respectfully submitted,

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

/kmj

Filename: t:\union wtr\reports to board\2019\uw11-19 operations report for april 2019.revised.docx

UW/12/19

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

From: Laura Rauch, Director of Finance and Business Services, Municipality of Leamington

Date: April 9, 2019

Re: UWSS 2018 Financial Report

Aim:

To present the draft audited 2018 Financial Report for the Union Water Supply System (UWSS) to the Joint Board of Management for review and approval.

Background:

A UWSS Financial Report is prepared annually to comply with accounting and reporting requirements for government entities. The Financial Report enables the four municipal owners to report their share of UWSS on their municipal financial statements and returns.

The financial statements in the report have been prepared in accordance with Public Sector Accounting Board standards (PSAB), including PSAB section 3150 for tangible capital assets (TCAs).

Discussion:

The Draft 2018 Financial Report has been prepared by the Municipality of Leamington on behalf of the Joint Board of Management (Board) and audited by the external audit firm of Hicks, MacPherson, Iatonna and Driedger LLP. The Draft 2018 Financial Report is attached to this report and will become final upon approval by the Board, at which point the 2018 Statement of Financial Position will be submitted as final for signature by the Board Chair and Vice-Chair.

Highlights of the 2018 Financial Report in relation to prior year results and the 2018 Budget are as follows:

Statement of Financial Position (page 4 of 15 of Financial Statements)

1. Financial Assets have increased by $0.75M (3.9%) due to increased cash and investment as well as increased accounts receivable. This is a result of timing of payments received, interest earned on the bank account and investment held, capital spending as well as increased operating revenues and decreased expenditures.

2. Financial Liabilities have decreased by $1.6M (10.7%) due to the 2018 long-term debt annual repayments and reduced accrued liabilities. Throughout the year there was no new debt issuance.
3. Non-Financial Assets have increased by $0.48M (1.2%) and represents capital additions of $1.72M less disposals and depreciation.
4. Capital asset purchases in 2018 include the following:
    - Essex water tower - $1.129M
    - SCADA system - $162k
    - CO2 Water PH Adjustment System - $142k
    - Filter media replacement #6 & #8 upgrade - $120k
    - Treatment Plant Upgrades – $64.5k
    - Leamington Water Tower - $44k
    - Water Quality/Level Instrumentation - $22k
    - Cottam Booster Station Reservoir Cover Replacement - $14.5k
    - Pumps - $14k
    - Union Water Communication System - $11k

5. The 2018 ending balance of the accumulated surplus, under PSAB has increased by $2.8M (6.3%).

Statement of Financial Activities (page 5 of 15 of Financial Statements)

1. Wholesale billings were higher than budget expectations by approximately $356k (3.8%) and 2018 flows were approximately 152M gallons more than budget and 194M gallons more than prior year. Both rates and consumption increases explain this revenue increase.
2. Investment income is favourable to budget by $103k (25.8%) due to conservative estimates and a consistently strong cash position throughout the year. This investment income includes interest earned on the $10M GIC at 2.55% due April 2022.
3. Other income is greater than budget by $22k (92.7%) due to a refund received from Hydro One relating to the Cogeneration System Study Report.
4. Wages and benefits are within budget.
6. Rents and Services were less than budget by $11k (6.6%) due to less advertising as well as less staff training and conferences compared to budget.
7. The 2018 Administration Fee and Property Taxes are within budget.
8. Electricity was less than budget due to conservative budgeting as well as HST rebates received in 2018. The installation of LED lights as well as efficient equipment (i.e. pumps) has reduced the electricity demand within the plant.
9. Repairs and maintenance expense is $167k (61.9%) favourable to budget. Prior years trending increased the budget for the 2018 watermain maintenance expense. These expenses were not incurred in 2018 although were budgeted appropriately due to the difficulty in predicting the timing of these watermain breaks and associated expenses. In addition, expenses were down significantly for the removal of sediment in the retention ponds as a result of a negotiated contract with a new vendor.

10. Operational Programs and Studies were less than budget by $47k (21.8%). This is due to the Water Demand/Loss Study Mapping Upgrade not yet completed as well as other studies not required.
11. Ontario Clean Water Agency (OCWA) operating contract costs were also under budget by $43k (1.53%).
12. Amortization and Long-term Interest Expense are within budget.

The UWSS's auditors have provided their opinion that the Draft 2018 Financial Report is a fair representation of the UWSS's financial position as at December 31, 2018 which is included on page 1 of the draft report.

Recommendation:

That the 2018 Financial Report for the Union Water Supply System Joint Board of Management be approved.

Respectfully submitted,

Laura Rauch, CPA, CMA
Director of Finance & Business Services and Treasurer
Municipality of Leamington

Encls.

Union Water Supply System

Financial Statements
December 31, 2018

Union Water Supply System

Index

INDEPENDENT AUDITOR'S REPORT

To the Owners of
Union Water Supply System

Report on the Audit of the Financial Statements

Opinion

We have audited the financial statements of Union Water Supply System, which comprise:

- the statement of financial position as at December 31, 2018
- the statement of financial activities for the year then ended
- the statement of cash flow for the year then ended
- the statement of change in net assets
- and notes to the financial statements (including summary of accounting policies).

(Hereinafter referred to as the "financial statements).

In our opinion, the accompanying financial statements present fairly, in all material respects the financial position of Union Water Supply System as at December 31, 2018, and the results of its financial activities and cash flow for the year then ended in accordance with Canadian public sector accounting standards.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of Union Water Supply System in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

In connection with our audit of the financial statements, our responsibility is to read the other information, and in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing Union Water Supply System's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate Union Water Supply System or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing Union Water Supply System's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of Union Water Supply System's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on Union Water Supply System's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause Union Water Supply System to cease to continue as a going concern.

- Evaluate the overall presentation, structure, and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within Union Water Supply System to express an opinion on the financial statements. We are responsible for the direction, supervision and performance of Union Water Supply System's audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

HICKS MacPHERSON, IATONNA
& DRIEDGER LLP

Leamington, Ontario
March 27, 2019

Chartered Professional Accountants
Licensed Public Accountants

Union Water Supply System

Statement of Financial Position
as at December 31

	2018	2017
Assets		
Financial		
Cash (note 3)	$ 8,537,613	$ 8,384,546
Long-term Investment (note 4)	10,255,000	10,000,000
Accounts Receivable (note 5)	1,269,254	927,338
	20,061,867	19,311,884
Liabilities		
Accounts Payable and Accrued Liabilities (notes 5 and 11)	445,649	1,139,030
Long-Term Debt (note 6)	12,854,536	13,756,545
	13,300,185	14,895,575
Net Assets	6,761,682	4,416,309
Non Financial Assets		
Inventories (note 7)	369,958	66,581
Tangible Capital Assets (notes 2 and 7)	40,275,465	40,097,187
	40,645,423	40,163,768
Accumulated Surplus (note 10)	$ 47,407,105	$ 44,580,077

See accompanying notes to financial statements

Approved by the Board:

Chair _____

Vice Chair _____

Union Water Supply System

Statement of Financial Activities
for the years ended December 31

	2018 Budget (note 12)	2018 Actual	2017 Actual
Revenues			
Wholesale Billings (notes 5 and 8)	$ 9,266,800	$ 9,622,832	$ 8,959,542
Investment Income (note 9)	400,000	503,173	422,241
Other Income	24,000	46,257	66,985
	9,690,800	10,172,262	9,448,768
Expenses			
Wages and Benefits (note 11)	237,000	235,246	236,096
Rents and Services	159,500	148,909	156,768
Administration Fee (note 5)	30,000	30,000	30,000
Property Taxes	145,000	146,283	143,276
Electricity and Gas	1,250,000	1,104,324	1,163,827
Repairs and Maintenance	270,000	102,791	293,422
Operational Programs and Studies	215,000	167,981	280,647
Sundry	250	-	-
Amortization (Schedule 1)	1,241,259	1,241,259	1,193,447
OCWA Operating Contract	2,799,837	2,757,009	2,712,328
Long-term Interest Expense	1,411,432	1,411,432	1,500,285
	7,759,278	7,345,234	7,710,096
Annual Surplus	1,931,522	2,827,028	1,738,672
Accumulated Surplus, Beginning of Year	44,580,077	44,580,077	42,841,405
Accumulated Surplus, End of Year	$ 46,511,599	$ 47,407,105	$ 44,580,077

See accompanying notes to financial statements

Union Water Supply System

Statement of Cash Flow
for the years ended December 31

	2018	2017
Net Inflow (Outflow) of Cash Related to the Following Activities:		
Cash flow from operating activities		
Annual surplus	$ 2,827,028	$ 1,738,672
Increase in accounts receivable	(341,916)	(149,757)
Increase (Decrease) in accounts payable	(693,381)	558,652
	1,791,731	2,147,567
Cash flow from investing activities		
Items not involving cash:		
Amortization of tangible capital assets	1,241,259	1,193,447
Cash used to acquire tangible capital assets	(1,722,914)	(434,873)
Increase in long-term investment	(255,000)	(10,000,000)
	(736,655)	(9,241,426)
Cash flow from financing activities		
Debt repayment (principal only)	(902,009)	(794,415)
Net Change in Cash for Year	153,067	(7,888,274)
Cash, Beginning of Year	8,384,546	16,272,820
Cash, End of Year	$ 8,537,613	$ 8,384,546

See accompanying notes to financial statements

Union Water Supply System

Statement of Change in Net Assets
for the years ended December 31

	2018 Budget(note 12)	2018 Actual	2017 Actual
Annual Surplus	$ 1,931,522	$ 2,827,028	$ 1,738,672
Amortization of tangible capital assets	1,241,259	1,241,259	1,193,447
Acquisition of tangible capital assets	(4,451,000)	(1,722,914)	(434,873)
Change in Net Assets	(1,278,219)	2,345,373	2,497,246
Net Assets, Beginning of Year	4,416,309	4,416,309	1,919,063
Net Assets, End of Year	$ 3,138,090	$ 6,761,682	$ 4,416,309

See accompanying notes to financial statements

Union Water Supply System

Notes to the Financial Statements
for the years ended December 31

1. Description of Reporting Entity

The Union Water Supply System (UWSS) was created, effective January 8, 2001, by Order of the Minister of the Environment pursuant to the Municipal Water and Sewage Transfer Act, 1997. The Order transferred all assets, liabilities, rights and obligations of the Ontario Clean Water Agency in the municipal drinking water treatment and distribution system located in Ruthven to the municipalities of Leamington, Kingsville, Essex and Lakeshore ("member municipalities"). The Order provided for the establishment of a Joint Board of Management to govern the operation and management of the "System". Each owner's representation on the Board is based on its share of the total flows of the system with no municipality receiving more than fifty percent of the total number of members.

The interests of the Municipalities in the System shall be as tenants-in-common, each as to the undivided interest according to their proportional consumption of the total flows of the system. The ownership interests were reset on January 1, 2017 as Leamington - 50.55% (2013 - 56.11%), Kingsville - 40.33% (2013 - 34.83%), Essex - 5.97% (2013 - 6.04%) and Lakeshore - 3.15% (2013 - 3.02%). The ownership interest is to be updated every four years.

2. Summary of Accounting Policies

The financial statements of the Union Water Supply System are the representation of the Joint Board of Management prepared in accordance with Canadian public sector accounting standards for local governments, as recommended by the Public Sector Accounting Board of CPA Canada.

Basis of Accounting

Sources of financing and expenditures are reported on the accrual basis of accounting, with the exception of interest charges on long-term liabilities, which are charged against operations in the periods in which they are paid. The accrual basis of accounting recognizes revenues as they become available and measurable; expenditures are recognized, as they are incurred and measurable as a result of the receipt of goods or services and the creation of a legal obligation to pay.

Liabilities on the statement of financial position represent the outstanding principal portion of long-term liabilities, liabilities not yet due and other future expenses not yet raised by rates on the users.

Use of Estimates

The preparation of financial statements requires management to make estimates that affect the reported amount of assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenditures during the reporting period. Significant items subject to such estimates and assumptions include the valuation of accounts receivable, carrying value of tangible capital assets, accounts payable and accrued liabilities, including the valuation of post-employment benefits. Actual results could differ from those estimates.

2. Summary of Accounting Policies (Cont'd)

Tangible Capital Assets

Tangible capital assets are recorded at cost which includes all amounts that are directly attributed to acquisition, construction, development or betterment of the asset. The costs, less residual value, of the tangible capital assets are amortized on a straight-line basis over their estimated useful life as follows:

Land	Infinite
Land Improvements	15 years to infinite
Buildings	20 to 50 years
Machinery and Equipment	3 to 25 years
Linear Assets	10 to 90 years

One-half of the annual amortization is charged in the year of acquisition and in the year of disposal. Assets under construction are not amortized until the asset is available for productive use.

Contributions of Tangible Capital Assets

Tangible capital assets received as contributions are recorded at their fair value using the half year rule as though they have been received July 1.

Leases

Leases are classified as capital or operating leases. Leases which transfer substantially all the benefits and risks incidental to ownership of property are accounted for as capital leases. All other leases are accounted for as operating leases and the related lease payments are charged to expenses as incurred.

Inventories

Inventories consist of work-in-progress measured at cost.

Long-Term Investment

Investment is recorded at fair market value.

2. Summary of Accounting Policies (Cont'd)

Future Accounting Changes

Effective for fiscal periods beginning on or after April 1, 2021, all governments will be required to adopt PSAB Section 3450 Financial Instruments, Section 2601 Foreign Currency Translation, Section 3041 Portfolio Investments, Section 1201 Financial Statement Presentation, and Section 3280 Asset Retirement Obligations. These standards provide guidance on how to account for and present financial instruments, asset retirement obligations and foreign currency translation.

Effective for fiscal periods beginning on or after April 1, 2022, all governments will be required to adopt PSAB Section 3400 Revenue. This standard provides guidance on how to account for and present new categories of revenue.

Management is currently in the process of evaluating the potential impact of adopting these standards.

3. Cash

This balance represents a consolidation from the operating fund and the reserve fund as follows:

	2018	2017
Cash		
Operating Fund	$ 7,437,411	$ 7,310,380
Reserve Fund	1,100,202	1,074,166
	$ 8,537,613	$ 8,384,546

4. Long-Term Investment

Funds are invested in a guaranteed investment certificate (GIC) with an annual interest rate of 2.55%. The GIC has a five year term (matures April 2022).

5. Related Party Transactions

The related party balances on account of trade in the Statement of Financial Position are listed below:

	2018	2017
Accounts receivable	$ 1,012,278	$ 706,215
Accounts payable and accrued liabilities	257,614	987,209

The accounts receivable amount is the receivables from the four member municipalities for 2018 water flows that have not been received by year end. The accounts payable and accrued liabilities amount is the Due to Leamington balance that arises from Union Water Supply System 2018 purchases that have not been paid by year end.

5. Related Party Transactions (Cont'd)

The related party transactions on the Statement of Financial Activities are listed below:

	2018	2017
Wholesale billings revenue (note 8)	$ 9,622,832	$ 8,959,542
Administration fee	30,000	30,000

Wholesale billings revenue balance is 2018 sales of water flows to the four member municipalities and is detailed in Note 8. Administration fee is the fee paid to the Municipality of Leamington for annual bookkeeping services. These transactions are measured at exchange amounts, which are the amounts of consideration established and agreed to by the related parties.

6. Long-Term Debt

As beneficial owners, Leamington, Kingsville, Essex and Lakeshore (collectively "the Municipalities") had become indebted to OCWA for work performed by OCWA in developing the System. The Municipal Water and Sewage Transfer Act provided that the Municipalities to whom the System was transferred were liable for such indebtedness.

In anticipation of the pending transfer order, the Municipalities jointly refinanced the indebtedness to OCWA. A financing agreement for $18,492,167, dated March 8, 1999, with Sun Life Assurance ("Sun Life"), requires a monthly repayment based on projected flows of the facility for a term ending on December 31, 2026. The effective interest rate is 10.55% per annum.

The Union Water Supply System Joint Board of Management has assumed the responsibility for all payments pertaining to the obligation detailed above.

The balance of long-term debt reported on the Statement of Financial Position is:

	2018	2017
Outstanding principal at the end of the year for:		
Net long-term debt, end of year	$ 12,854,536	$ 13,756,545

The estimated future principal payments required in the next five years and thereafter are as follows:

2019	$ 1,021,638
2020	1,154,638
2021	1,302,487
2022	1,466,829
2023	1,649,492
Thereafter	6,259,452
	$ 12,854,536

Union Water Supply System

Notes to the Financial Statements
for the years ended December 31

7. Tangible Capital Assets/Inventories

	Net Book Value	
	2018	2017
Land	$ 133,634	$ 133,634
Buildings	17,032,794	16,313,342
Machinery and equipment	6,144,679	6,314,239
Linear assets	16,859,968	17,228,582
Land improvements	104,390	107,390
Total tangible capital assets	40,275,465	40,097,187
Inventories	369,958	66,581
	$ 40,645,423	$ 40,163,768

For additional information, see the Consolidated Schedule of Tangible Capital Assets (Schedule 1).

8. Wholesale Billings Revenue

The member municipalities are invoiced on a monthly basis for their recorded flows.

	Revenues		Flows	
	2018	2017	2018	2017
	$	$	Gals (000)	Gals (000)
Municipality of Leamington	$ 5,080,831	$ 4,256,356	1,906,998	1,623,152
Town of Kingsville	3,763,883	3,922,396	1,363,284	1,446,853
Town of Essex	485,452	482,916	175,952	178,275
Town of Lakeshore	292,666	297,874	106,077	109,915
	$ 9,622,832	$ 8,959,542	3,552,311	3,358,195

9. Investment Income

Investment income includes bank and GIC interest income as follows:

	2018	2017
Bank interest	$ 243,648	$ 244,789
Interest on long-term investment - GIC	259,525	177,452
	$ 503,173	$ 422,241

10. Accumulated Surplus

	2018	2017
Opening Fund Balance		
Funds:		
Operating fund	$ 7,098,688	$ 5,645,894
Capital financing reserve fund	11,074,166	10,824,129
Total Fund Balance	18,172,854	16,470,023
Long-term debt obligations	(13,756,545)	(14,550,960)
Tangible capital assets beginning of year (inc. inventory)	40,163,768	40,922,342
Accumulated Surplus, beginning of year	44,580,077	42,841,405
Contributions to operating fund	1,157,803	1,452,794
Contributions to reserve and interest	285,561	250,037
Tangible capital assets purchased (net of disposal)	1,722,914	434,873
Amortization of tangible capital assets	(1,241,259)	(1,193,447)
Debt repayment	902,009	794,415
Accumulated Surplus, end of year	$ 47,407,105	$ 44,580,077

11. Post Employment Benefits

Post employment benefits are future obligations of UWSS to its employees and retirees for benefits earned but not yet taken. Retiring full time employees hired prior to August 1, 2011 continue to receive paid health and dental benefits and life insurance coverage. All coverage continues for the lifetime of the retiree and spouse. In accordance with public sector accounting standards, the projected unit credit actuarial cost method has been used to determine the future cost of these benefits at the end of the year. The most recent actuarial valuation is dated March 23, 2018 and is effective December 31, 2017. Assumptions used are as follows:

(a) a discount factor of 3.40% was used;
(b) an increase of 6.0% for health in 2018 (2017 - 8.1%), linearly decreased to an ultimate rate of 4% in 2038, and an annual increase of 4% for dental benefits was used;
(c) an employee will retire when they meet the criteria for an unreduced pension from OMERS, abut not later than 65; and
(d) all employees will remain employed by UWSS until retirement.

The liability, based on the above assumptions, at year-end is $127,500 (2017 - $106,000) and is included in accounts payable and accrued liabilities. An additional expense of $21,500 (2017 - $17,800) is reported in the Statement of Financial Activities and is reflected in wages and benefits.

12. Budget Figures

The 2018 Budget approved by the UWSS Board on December 20, 2017 was prepared on a modified cash basis. This budget was revised on July 18, 2018. The budget has been restated and is reported on a full accrual basis, in accordance with PSAB reporting requirements, in relation to the actual results in these financial statements.

The following summary outlines adjustments made to the approved budget (modified cash basis) to derive the restated based budget (full accrual basis) as presented in the financial statements:

		2018
Financial Plan (Budget) surplus for the year	$	(2,180,228)
Add:		
Accumulated surplus, beginning of the year		44,580,077
Principal payments on long term debt		902,009
Capital expenditures reallocated to tangible capital assets		4,451,000
Less:		
Amortization expense on tangible capital assets		(1,241,259)
Budget Surplus per Statement of Financial Operations	$	46,511,599

13. Contingency - Liability Valuation

The Sun Life long-term debt obligation requires a monthly repayment based on projected flows of the facility over the term of the agreement ending on December 31, 2026. The annual valuation of the remaining obligation has been based on the present value of the remaining payment stream according to the cancellation provisions of the financing agreement.

In order to reflect the obligation in a manner similar to a traditional serial debt instrument, an amortization schedule allocating the required monthly payment stream between principal and interest has been created utilizing an effective monthly interest rate, as adopted in fiscal 2005 for the reporting of the remaining obligation.

14. Comparative Figures

Certain comparative figures have been reclassed to conform to the current year's presentation.

Union Water Supply System

Schedule of Tangible Capital Assets - Schedule 1
as at December 31

	Infrastructure						Totals	
	Land	Land Improvements	Buildings	Machinery & Equipment	Linear Assets	Inventories	2018	2017
Cost								
Balance, beginning of year	$ 133,634	$ 120,022	$ 26,155,122	$ 10,629,843	$ 25,860,855	$ 66,581	$ 62,966,057	$ 62,551,700
Add: New acquisitions during the year	-	-	-	136,741	5,823	19,358	161,922	350,151
Add: Additions during the year	-	-	1,251,932	25,041	-	1,552,853	2,829,826	84,722
Less: Disposals during the year	-	-	-	-	-	(1,268,834)	(1,268,834)	(20,516)
Balance, end of year	133,634	120,022	27,407,054	10,791,625	25,866,678	369,958	64,688,971	62,966,057
Accumulated Amortization								
Balance, beginning of year	-	12,632	9,841,780	4,315,604	8,632,273	-	22,802,289	21,629,358
Add: Amortization	-	3,000	532,480	331,342	374,437	-	1,241,259	1,193,447
Less: Accumulated amortization on disposals	-	-	-	-	-	-	-	(20,516)
Balance, end of year	-	15,632	10,374,260	4,646,946	9,006,710	-	24,043,548	22,802,289
Net Book Value of Tangible Capital Assets Including Inventories	$ 133,634	$ 104,390	$ 17,032,794	$ 6,144,679	$ 16,859,968	$ 369,958	$ 40,645,423	$ 40,163,768

See accompanying notes to financial statements

UW/13/19

To: Chair and Members of the Union Water Supply System (UWSS) Management Board

From: Rodney Bouchard, UWSS Manager

Date: April 18, 2019

Re: MECP Drinking Water Inspection Report for the UWSS – January 8, 2019 Inspection

RECOMMENDATION

That the Union Water Supply System (UWSS) Board receives this report for information.

BACKGROUND

The UWSS is subject to annual inspections by the Ontario Ministry of Environment, Conservation and Parks (MECP) under the Safe Drinking Water Act, 2002 (SDWA) and its associated regulations.

The UWSS was inspected on January 8, 2019 and the final report for that inspection was issued by the MOECC on March 27, 2019. The previous inspection was conducted on January 16, 2018.

DISCUSSION:

The March 27, 2019 inspection report (copy attached) did not identify any items of non-compliance as noted on Page 19 of 21 of the inspection report under section titled ***Non-Compliance with Regulatory Requirements and Actions Required.***

The inspection report also includes a section titled ***Summary of Recommendations and Best Practice Issues***, found on page 20 of 21 in the attached Final Inspection Report. The following recommendations and best practice issues were noted in the report. UWSS responses to each of these recommendation/ best practice issue is provided below each item.

1. ***A program for inspecting and exercising valves did not exist.***

   Recommendation:
   It is recommended that the valve turning program be restarted as planned.

   UWSS and OCWA completed valve turning in 2015 and 2017 with the intent to undertake valve turning again in 2019. UWSS and OCWA staff are proposing to develop a Valve Exercising Program for UWSS valves in 2019 so that this work can be completed in an optimized fashion.

2. ***The following issues were also noted during the inspection:***

Recommendation:

a. *SCADA trending is used to remove spikes in flow rate due to pump initiation. It is recommended that the raw flow data from SCADA is used to remove these outliers and determine the true maximum daily flow, instead of an estimate based on SCADA trending.*

OCWA operations staff will review and refine the methodology used to remove flow spikes attributed to pump initiation. This will also be addressed in the new reporting outputs of the new SCADA system

b. *Reservoir vents were observed to be corroded. It is recommended that these screens are inspected and repaired or replaced as required.*

Reservoir vent screens will be inspected and repaired/replaced as necessary.

c. *SOP OCWA-C6-12 Cyanobacterial Toxins – Microcystin-LR includes some guidance on when to turn off the chlorination at the intake. It is recommended that the wording in the SOP be clarified so that chlorination at the intake is not turned back on prematurely.*

The recommendation will be taken into consideration.

d. *No plumbing samples are currently being sampled for lead as the UWSS is exempt from this monitoring. It is once again recommended that monthly plumbing samples be added to the corrosivity study to assess how the water conditions affect lead service lines and/or solder, especially with the upcoming installation of the pH adjustment equipment. Monitoring of lead in plumbing prior to the commissioning of the pH adjustment equipment would provide some baseline data to compare any impacts of this treatment change on corrosivity in the distribution system.*

UWSS will take the recommendation into consideration and will work to identify locations where lead could be a concern and seek volunteers for the sampling.

As required by the regulations under the SDWA, the municipal water systems which receive drinking water from the UWSS have been provided with copies of the inspection report for the January 8, 2019 inspection. Further, the inspection has been posted on the UWSS website www.unionwater.ca .

CONCLUSION

This report is being provided to the Board for information purposes.

Respectfully submitted,

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

Filename: t:\union wtr\reports to board\2019\uw13-19 mecp drinking water inspection report for the uwss for the january 8 2019 inspection.docx

Ministry of the Environment and Climate Change

Windsor Area Office

Unit 620 – 4510 Rhodes Dr
Windsor ON N8W 5K5
Tel. : 519 948-1464
1-800-387-8826
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Ministère de l'Environnement et de l'Action en matière de changement climatique

Bureau du Secteur de Windsor

No 620 – 4510 Ch Rhodes
Windsor ON N8W 5K5
Tél. : 519 948-1464
1-800-387-8826
Téléc. : 519 948-2396

March 27, 2019

File #: SI-LA-KI-540

Union Water Supply System
1615 Union Avenue
Ruthven, ON N0P 2G0

Attention: Mr. Rodney Bouchard, Manager

Re: Union Water Supply System (DWS#210000853) Inspection Report

Please find enclosed the Drinking Water System Inspection Report for the inspection that was conducted at the Union Water Supply System (DWS#210000853) on January 8, 2019.

A summary of **Recommendations and Best Practice Issues** are found on page 20.

Section 19 of the Safe Drinking Water Act (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems. Please be aware that the Ministry has encouraged such individuals, particularly municipal councillors, to take steps to be better informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings. Further information about Section 19 can be found in "Taking Care of Your Drinking Water: A guide for members of municipal council" found under "Resources" on the Drinking Water Ontario website at www.ontario.ca/drinkingwater.

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal/external risk experts. The Inspection Summary Rating Record (IRR), included as Appendix B of the inspection report, provides the Ministry, the system owner and the local Public Health Units with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance.

IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspectors' Annual Report. If you have any questions or concerns regarding the rating, please contact Marc Bechard, Drinking Water Program Supervisor, at 519-383-3778.

If you have any questions or concerns regarding this report, please call me at (519) 948-2467.

Yours truly,

Emily Awad
Water Inspector, Provincial Officer #1823
Safe Drinking Water Branch, Windsor Area Office

Encl.
cc: Ken Penney, Process & Compliance Technician and Dale Dillen, Operations Manager, Union Water Supply System;

Dr. Wajid Ahmed, Acting Medical Officer of Health; Theresa Marentette, Director of Health Protection; Phil Wong, Manager, Health Inspection Department; WECHU
Katie Stammler, Source Water Protection Manager, Essex Region Conservation Authority
Marc Bechard, Supervisor, Ministry of Environment and Climate Change

Ministry of the Environment, Conservation and Parks

UNION AREA WATER SUPPLY SYSTEM

Inspection Report

Site Number:	210000853
Inspection Number:	1-ICRTG
Date of Inspection:	Jan 08, 2019
Inspected By:	Emily Awad

Table of Contents

Ontario

OWNER INFORMATION:

Company Name:	UNION WATER SYSTEM JOINT BOARD OF MANAGEMENT (LEAMINGTON, KINGSVILLE, ESSEX, LAKESHORE)		
Street Number:	1615	**Unit Identifier:**	
Street Name:	UNION Ave		
City:	RUTHVEN		
Province:	ON	**Postal Code:**	N0P 2G0

CONTACT INFORMATION

Type:	Main Contact	**Name:**	Ken Penney
Phone:	(519) 326-4447	**Fax:**	
Email:	kpenney@ocwa.com		
Title:	Ontario Clean Water Agency - Process & Compliance Technician		

INSPECTION DETAILS:

Site Name:	UNION AREA WATER SUPPLY SYSTEM
Site Address:	1615 UNION AVE RUTHVEN ON N0P 2G0
County/District:	Kingsville
MECP District/Area Office:	Windsor Area Office
Health Unit:	WINDSOR-ESSEX COUNTY HEALTH UNIT
Conservation Authority:	Essex Region Conservation Authority
MNR Office:	Chatham Regional Office
Category:	Large Municipal Residential
Site Number:	210000853
Inspection Type:	Announced
Inspection Number:	1-ICRTG
Date of Inspection:	Jan 08, 2019
Date of Previous Inspection:	Jan 16, 2018

COMPONENTS DESCRIPTION

Site (Name):	Union AWSS		
Type:	Other	**Sub Type:**	Other

Comments:
The Union Area Water Supply System (Union WSS) is located in Ruthven, Ontario. The drinking water system is owned by, and supplies water to, the municipalities of Kingsville, Leamington, Essex and Lakeshore via the Union Water System Joint Board of Management. Each of these respective municipalities forms part of the board, but each also owns and operates a separate standalone distribution system receiving water from the Union WSS. According to the drinking water system registration profile, this results in a total serviced population of approximately 65,000 persons. The Union WSS system is considered a "large municipal residential system" under O. Regulation 170/03. The communities of Kingsville, Leamington, Essex are equipped with elevated tanks. Other than the reservoirs on-site at the Union treatment plant, there is also a reservoir/booster station in the village of Cottam which serves the Town of Essex.

Site (Name): Union AWSS Low Lift Building
Type: Source **Sub Type:** Surface Water
Comments:
The treatment facility in Ruthven, receives water from Lake Erie via a low lift pumping station. Seven low lifts pumps can draw water through two intake pipes and another emergency intake channel if needed. The low lift station is equipped with a zebra mussel control system consisting of two sodium hypochlorite chemical feed pumps to pre-chlorination lines retrofitted through both the #1 and 2 intake, extending to a diffuser within each intake crib. The low lift pumping station consists of a two cell interconnected pump-well, equipped with manually removed bar screens and automatic travelling screens. Low lift pump well #1 houses five low lift pumps and low lift pump well #2 houses the remaining two pumps. The low-lift also houses two surge tanks for pump pressure surges.
Raw water flows through 24 inch and 36 inch raw transmission mains to the treatment plant approximately one kilometre inland.

Site (Name): Union AWSS WTP
Type: Treated Water POE **Sub Type:** Treatment Facility
Comments:
The Union WSS treatment plant is currently rated at 124,588 m3/d approved capacity. It is a conventional water treatment plant consisting of contact clarification via four solids upflow clarifiers after coagulant, coagulant aid (polymer) and activated carbon addition. Clarified water flows into eight dual media-type filters (sand and anthracite). Filter aid can be dosed on a contingency basis. The filters are equipped with backwash facilities via two backwash pumps. Sedimentation sludge and backwash from the filters is directed to a residue management pump station and is transferred to two settling/storage ponds. Supernatant overflow from the ponds is discharged into a storm sewer which discharges to Lake Erie.
Primary disinfection is provided via chlorine gas solution injection into the clarified effluent water (pre) and filtered effluent water (post) locations. Chlorine contact is achieved in two on-site reservoirs, operated in series. Interconnecting piping and valves allow taking individual reservoirs out of service. Free and total chlorine is monitored after the reservoirs to properly meter and inject aqueous ammonia into the treated water stream for secondary disinfection before the high-lift pump station. The high-lift pump station consists of two wells. High-lift pump well #1 houses seven high lift pumps and high-lift pump well #2 houses two pumps. There is also an emergency diesel-drive for one of the high-lift pumps. The high-lift also houses two surge tanks for pump pressure surges.

INSPECTION SUMMARY:

Introduction

- **The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.**

  This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.

  This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

  Specifically, this review includes an assessment of compliance/conformance in relation to the following:
  • Drinking Water Systems Regulation (O. Reg. 170/03)
  • Drinking Water Operator and Water Quality Analyst Certification Regulation (O. Reg. 128/04) with respect to facility certification, operator licensing and operating standards
  • Drinking Water System Licence 041-101, Issue Number 6, issued February 16, 2018, related to Performance, Monitoring and Recording, Operations and Maintenance requirements
  • Drinking Water Works Permit 041-201, Issue Number 4, issued June 9, 2017
  • Permit to Take Water Number 0816-9T9SVT, issued March 6, 2015
  • Ontario Drinking Water Quality Standards based on water quality data generated since the previous inspection.

  The inspection was conducted on an announced basis on January 8, 2019. It included:
  1. a physical inspection of the low and high lift pumping facilities, water treatment equipment, and residual waste management facilities, as well as the Cottam Booster Station;
  2. testing free chlorine residuals CRA-7 and at the Cottam Booster Station;
  3. collection of relevant operational documents and owner's sampling results;

  A follow-up visit was conducted on February 26, 2018 to review SCADA data gaps and logs.

Source

- **Trends in source water quality were being monitored.**

  Operators review and record raw water pH and temperature values (twice per day) and turbidity values hourly on the Operational Data Logsheet. Generally the Overall Responsible Operator (ORO) makes operational changes based on the raw water turbidity values; however, the operator in charge (OIC) or an operator in training (OIT) under the direction of an OIC or ORO may also make process changes. The YSI probe is also used to monitor Blue Green Algae in the source water and operational staff use this information to adjust treatment accordingly during a potential algal bloom. Operational staff are aware of the contents of the Source Protection Plan.

Permit To Take Water

- **The owner was in compliance with all conditions of the PTTW.**

  Section 3.2 of Permit to take Water #0816-9T9SVT states that the maximum water takings shall not exceed

Permit To Take Water

163,656 m3/day and 113,650 L/min. During 2018, the daily maximum volume of water pumped into the plant was 94,256 m3, approximately 58% of the authorized water takings. The maximum taken per minute was 56,403 L/min, approximately 50% of the authorized water takings. The maximum values provided were corrected for pump spikes lasting less than 5 minutes.

Capacity Assessment

- **There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.**

  Condition 2.0 of Schedule C of Drinking Water Licence #041-101, Issue #6 requires the owner to undertake continuous flow measurement and recording for:
  2.1.1 The flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system.
  2.1.2 The flow rate and daily volume of water that flows into the treatment subsystem.

  Three differential pressure type (Clarifiers 1, 2 & 3) meters and 1 magnetic type (Clarifier 4) meter are installed on the raw inlet supply to each upflow clarifier. The metered flow piping to clarifiers 1 and 2 are inter-connected with each other. Magnetic type meters are installed on each filter effluent line. Magnetic type meters are also installed on the high-lift discharge headers to the distribution system. Additionally flow meters are installed to measure filter backwash. A flow meter is also in operation at the Cottam booster pumping station on the station effluent/bypass header. It was observed during the physical inspection that flow was being measured at all operating filter effluent line meters as well as meters 1A and 1B, the two primary flow meters at the high lift (from the treatment subsystem to the distribution system).

- **The flow measuring devices were calibrated or verified in accordance with the requirements of the Municipal Drinking Water Licence issued under Part V of the SDWA.**

  As per Condition 3.0 of Schedule C of the Licence, flow measuring devices shall be checked and calibrated in accordance with the manufacturer's instructions or within 12 months (maximum 30 days after the 12 month anniversary). All flow meters were checked and calibrated by Flowmetrix in May 2018, within twelve months of the previous calibration (May 2017).

- **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.**

  Condition 1.0 of Schedule C of the Drinking Water System Licence states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 124,588 m3/day. During the period of review, the maximum daily flow of treated water was 82,478 m3, approximately 66% of the approved rated capacity.

- **Appropriate records of flows and any capacity exceedances were made in accordance with the Municipal Drinking Water Licence issued under Part V of the SDWA.**

  Daily maximum flow data were reviewed. The SCADA data included spikes due to pump start-up which exceeded the rated capacity. In those cases, operational staff manually reviewed the SCADA trending to remove the outliers and estimate the true maximum. It is recommended that the raw flow data from SCADA is used to remove these outliers and determine the true maximum daily flow instead. There were no exceedances during the inspection period.

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**

  All equipment appeared to be installed in accordance with the Permit. In 2019, the remaining microstrainer in the microstrainer room will be removed and the laboratory will be relocated to this area. In addition, a carbon dioxide system will be installed prior to coagulant dosing to decrease raw water pH which will optimize the coagulant performance and reduce the aluminum residual. There are also plans to update the chlorine building with a gas scrubber system and add an addition to the building.

- **The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.**

  A Form 2 "Record of Minor Modifications or Replacement to the Drinking Water System" document was prepared for:
  1. New HACH turbidimeter installed on filter #4. Commissioned: March 2, 2018; Form 2 date: March 2, 2018
  2. New SWAN filter backwash turbidimeter installed. Commissioned: March 20, 2018; Form 2 date: March 20, 2018
  3. Change of treatment coagulant chemical from DelPac 2020 to Hyper+Ion 1090. Commissioned: June 14, 2018; Form 2 date: June 14, 2018
  4. New HACH turbidimeter installed for plant effluent. Commissioned: September 14, 2018; Form 2 date: September 13, 2018
  5. Change of treatment coagulant chemical from Hyper+Ion 1090 back to DelPac 2020. Commissioned: October 21, 2018; Form 2 date: October 29, 2018

  The Owner/operating authority is reminded that as per Condition 4.6.1 of Schedule B of the Permit, these Form 2's need to be completed "prior to the modified or replaced components being placed into service".

- **Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.**

  At the time of the inspection, only two clarifiers were online and filters #2 and 3 were out of service.

  Operating logs and continuous trends from January to December 2018 were reviewed. Turbidity measurements from each filter and chlorine measurements from CRA-7 and the Cottam Booster effluent were provided by the Operating Authority in 2 minute intervals. There were quite a few data gaps identified, which were likely due to SCADA communication errors. SCADA trends for all gaps were provided.

  The Disinfection Procedure requires that in order to be considered conventional filtration and meet or exceed the 2.5 log Giardia cyst removal, the 2.0 log Cryptosporidium oocyst removal and 2.0 log virus removal credits, the filtration process must use a chemical coagulant at all times when the treatment plant is in operation. On May 19, 2018 there was a loss of coagulant for more than 30 minutes due to a PLC failure. The operator shut down clarifier 4 after receiving a coagulant flow alarm, but due to the PLC failure, it did not actually shutdown clarifier 4. At this time, three clarifiers were online and two were operating as designed; water from the clarifers is blended before going into the filtering stage. Review of the data did not indicate breakthrough of the filters so improperly disinfected water was not directed to users. The Standard Operating Procedure (SOP) was updated to direct operators to first put the chemical pump in manual mode if they get a loss of coagulant flow alarm. This way, coagulant will continue to flow. The updated SOP was reviewed by staff on June 12/18.

  Turbidity levels from filters #1-8 ranged from 0 to 0.77 NTU during the inspection period. Performance must meet filtered water turbidity of less than or equal to 0.3 NTU in 95% of the turbidity measurements each month. This performance standard was met at each filter in each month. Summaries assessed for the review period show that turbidity values on all filters were less than 0.3 NTU 100% of the time in all months except for May, July, September

Treatment Processes

and October, where it ranged between 99.97 to 99.99%.

- **Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.**

  Distribution monitoring programs for combined chlorine residuals in each of the respective municipalities fed by the Union WSS are included within the scope of inspections for each of the stand-alone distribution systems for those drinking water systems. The Union WSS is responsible for operation of the remote sites including the Cottam Booster Station and the elevated tank and tower sites, and must maintain adequate chlorine residuals at those locations to ensure acceptable residuals are maintained throughout the entire system.

  On March 1, 2018, logs indicate that power to the ammonia building was off for approximately 2 hours during maintenance. Although combined chlorine in the distribution system was low during this time, free chlorine was sufficient.

  Beginning on June 4, 2018, the UWSS initiated a routine shutdown of their chloramination system for maintenance purposes. During the transition from chloramination to free chlorine secondary disinfection, as per Condition 2, Schedule D of their Licence, they were required to increase their microbiological and trihalomethane sampling in the distribution system. By June 15, 2018, the chlorine residuals in the distribution systems had stabilized and the increased sampling was no longer required. MECP has subsequently approved a request made by UWSS to extend the use of free chlorine secondary disinfection until June 4, 2019.

  A review of the combined chlorine residuals at the outlet of the Cottam Booster Station showed the majority of total chlorine residuals above 0.25mg/L, ranging from 0.49 to 2.94mg/L, with an average concentration of 1.63mg/L. There were a few exceptions where values were recorded as "(null)" or zero. In all cases, these exceptions corresponded to notations of maintenance activities or power outages in the Facility Logbooks. There were also a handfull of results that exceeded 3mg/L that did not have a corresponding notation in the logbook. In these cases, the chlorine residual only spiked for a two minute interval and is not a concern. During the inspection, the chlorine residual was measured at CRA1 and CRA2 at the Cottam Booster Station, and the concentrations were CRA1=0.97mg/L (1.11 on continuous analyzer) and CRA2=1.11 mg/L (1.22 on continuous analyzer).

- **The owner had evidence indicating that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

  As per Condition 14.1 of the Licence, all chemicals and materials used in the alteration or operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60, NSF/61 and NSF/372. Documentation was provided from NSF stating that all chemicals used meet NSF/60 and that the materials not exempt from this condition (filter media and carbon), meet NSF/61, which has more stringent lead requirements than NSF/372.

- **Up-to-date plans for the drinking-water system were kept in a place, or made available in such a manner, that they could be readily viewed by all persons responsible for all or part of the operation of the drinking water system in accordance with the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

  Updated plans are available in a binder in the DWQMS cabinet at the plant. Electronic copies are also available on the shared drive.

- **Where a potential bypass of primary or secondary treatment equipment existed, measures were taken to ensure that raw or partially treated water was not directed to the distribution system.**

Treatment Processes

There is bypass valve for the clarifiers as well as the filters at the Union plant. All potential bypasses have been addressed by either installing blank flanges on the valves, or if this was not possible due to location, placing chains/locks on the valves.

Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.**

  A ProMinent D1C continuous chlorine monitor/controller with CLE probe (designated as CRA-7) measures free chlorine on the second reservoir outlet line for measuring primary disinfection CT, consistent with the ministry's "Procedure for Disinfection of Drinking Water in Ontario". This location is prior to addition of aqueous ammonia for the creation of chloramine for secondary disinfection, which was in service between January 1 and June 3, 2018. Free chlorine residuals from this monitor generally ranged between 1.25 to 2.3mg/L, with a few outliers (high values: >2.3mg/L and low values: <1mg/L). Values below 1mg/L corresponded to notations of maintenance in the Facility Logbook. There were approximately 20 instances where the minimum free chlorine reading dropped to 0 for only a two minute period, which corresponded to notations of power outages or maintenance in the Facility Logbook. The average free chlorine residual during the inspection period was 1.68mg/L. The trend in free chlorine concentrations appears to begin to decline beginning in late June, likely due to the switch from chloramination. The operating authority confirmed that chlorine dosing decreased after the switch to free chlorine as a 4:1 ratio of chlorine to ammonia was no longer required.

- **Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.**

  Ongoing training is provided to operational staff.

- **Continuous monitoring of each filter effluent line was being performed for turbidity.**

  Filter effluent turbidity values are measured by Hach TU5300sc analysers on all filters lines. Measured results are recorded by SCADA. Alarm and filter-to-waste set-points are established in SCADA to respond to measured tests from these analysers.

  At the inspection each operating filter effluent line had a functioning continuous turbidity meter. Filters #2 and 3 were out of service for annual maintenance.

- **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**

  In accordance with the operating authority's policy, and as reflected in the project logs, review of continuous monitoring results via daily summary reports are completed once per day.

- **Samples for chlorine residual analysis were tested using an acceptable portable device.**

  All portable/benchtop HACH meters were calibrated annually. In house verifications are conducted monthly and annually.

- **All continuous monitoring equipment utilized for sampling and testing required by O. Reg.170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order, were equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6.**

  Free chlorine is measured on the reservoir's outlet (CRA-7) for monitoring primary disinfection CT and each filter effluent line is equipped for continuous measurement of turbidity.

Treatment Process Monitoring

Chlorine alarm setpoints for CRA-7 are LoLo: 1.00, Lo: 1.15, Hi: 1.75 and HiHi: 1.85 mg/L. These alarm setpoints have been in effect since the switch from chloramination (June 4th). Prior to this, alarms for both CRA-7 and secondary disinfection total chlorine levels leaving the plant (CRA-10) were set at LoLo: 1.20, Lo: 1.30, Hi: 2.00, HiHi: 2.10mg/L. Filter turbidity alarm setpoints are Hi: 0.16 NTU and HiHi: 0.20 NTU. At 0.20 NTU, the filter is automatically directed to waste; however, the operator can adjust this setpoint for operational purposes (i.e. to keep a filter online). Hi and HiHi alarms are audible throughout the plant. Operational alarms for clarifier effluent turbidity prior to filtration are set at 3 NTU (Hi) and 5 NTU (HiHi).

At the inspection, the alarm setpoints were adjusted to demonstrate the audible alarms for CRA-7 and Filter 5. For both, the audible alarm was heard throughout the plant and the visual alarm was displayed on the SCADA terminal. The alarm system is set so that if the flow to the turbidity meter drops to zero or there is a power failure, it will alarm and filter to waste. New Hach turbidimeters have been installed on all filters and include a local alarm when flow is interrupted that flashes on the screen and would be noted by operators during rounds only. The operating authority is currently exploring ways to connect this flow alarm to the SCADA system so that any flow disruptions to turbidimeters can be addressed immediately. Upgrades to the SCADA system planned for 2019 should address this issue.

Due to the complexity of the Union WSS, the engineers designed an algorithm for SCADA to calculate CT which accounts for the current raw water conditions (temperature, pH), reservoir volume and flow rate, and free chlorine residual. During the last licence renewal (2017), the CT worst case scenario was provided to the ministry's approvals engineer along with some rationale for the maximum high lift flow values that are used in winter versus summer. The CT achieved exceeded the CT required in all cases described. The ministry engineer recommended that a high flow alarm be incorporated into the system to notify operators to look more closely at the CT parameters. A combination alarm for CT based on high flow, low reservoir level and chlorine level was implemented on March 12th, 2019.

- **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.**

  O. Reg. 170/03, sub-section 6-5(1) requires the continuous monitoring equipment to record the date, time, sampling location and result of every test for the parameter with at least the minimum frequency prescribed as follows:
  1. Free chlorine residual required to achieve primary disinfection: 5 minutes
  2. Filter effluent turbidity: 15 minutes.

  A review of SCADA data confirmed that, in all cases, monitoring of free chlorine residual at CRA-7 was occurring at least every 5 minutes, and monitoring of turbidity at each filter was occurring at least every 15 minutes. There were quite a few data gaps identified during review, however SCADA trends for all gaps were provided. These data gaps were likely due to SCADA communication errors, which were noted in the logbook in most cases.

- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

  The HACH TU5300sc manufacturer's manual recommends that a calibration verification be done periodically to make sure that the system operates as intended and after repairs or comprehensive maintenance work. The manufacturer recommends cleaning the vial every 1 to 3 months, replacing the vial and the desiccant cartridge every 1 to 2 years, and cleaning the vial compartment and replacing tubing as necessary. Manufacturer's instructions for the Rosemount Clarity II turbidity sensor recommend calibration after maintenance of the turbidity sensor and lamp. All turbidity continuous analysers were calibrated/verified as per the scheduled preventative maintenance: monthly verifications, quarterly calibrations, and annual inspections.

  Manufacturer's instructions for the Prominent free chlorine analyser located at CRA-7 indicates calibration should

Treatment Process Monitoring

be repeated at regular intervals. All chlorine analyzers were calibrated as per the scheduled monthly inspections and annual calibrations. Maintenance, checks and calibrations are documented in the operating authority's equipment maintenance recording system.

Process Wastewater

- **The process wastewater and residual solids/sludges were treated, handled and disposed of in accordance with the design requirements approved under the Drinking Water Works Permit and the Municipal Drinking Water Licence.**

  Backwash waste and clarifier sludge are automatically pumped to the wastewater station and then pumped to the waste lagoons when the level reaches a setpoint. The waste lagoons also discharge to Lake Erie based on the level.

- **The process wastewater discharge monitoring program and discharge quality complied with requirements established in the Municipal Drinking Water Licence Issued under Part V of the SDWA.**

  Sampling for Environmental Discharge Parameters are required under Schedule C, Condition 4.0 of the Municipal Drinking Water Licence. A monthly composite sample was collected from the point of discharge from the waste management settling pond and analyzed for total suspended solids (TSS). Concentrations ranged from below detection to 8mg/L and the annual average is 3.6mg/L, well below the 25mg/L limit set out in Schedule C, Condition 1.5 of the Licence.

  The recent amendment to the Licence also includes monitoring conditions for the runoff of the solids residual pile. As per Schedule C, Condition 4, monthly grab samples are required at four sites within the surrounding drains (influent stream of the Municipal Drain, influent stream of the OCWA Drain, point of discharge from the south end of the residual waste pile and point of discharge from the west end of the residual waste pile) for analysis of both TSS and aluminum (filtered and unfiltered). Sampling (grab) was conducted on a weekly basis for aluminum and a portion of that sample went into the monthly composite sample container for TSS. Sampling was logged on the lagoon sludge pile runoff logsheet and times when a sample could not be collected due to dry conditions (all of July, August and September) were documented. Total aluminum concentrations were generally below 2mg/L and dissolved aluminum concentrations were generally below 1mg/L. There was a significant increase in aluminum and TSS at the end of October at SP#1 (influent stream of the Municipal Drain). The owner indicated that the contractors were conducting some cleanup at the site after the removal of sludge from the pile, which likely caused the spike in aluminum and TSS. Monitoring shall continue in 2019 and results will be re-assessed during the next inspection.

  The owner has made significant progress in removing the accumulated sludge from the residual pile. In 2018, approximately 2000 tonnes of the sludge was brought to the Essex Windsor Solid Waste Authority's (ESWA) Regional Landfill in Essex to be used as landfill cover. The owner indicated that they are anticipating the removal of 3000 tonnes in 2019. The black filter media that was observed adjacent to the residual pile last inspection has since been removed.

Distribution System

- **There is a backflow prevention program, policy and/or bylaw in place.**

  Backflow prevention is the responsibility for each of the municipal owners of the four connected municipal distribution systems. The UWSS has a program for annual checking of backflow preventers at the water treatment plant. There are two backflow preventers located at the Cottam Booster Station as well as 11 backflow preventers located within the UWSS facility.

- **The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of**

Distribution System

reservoirs and elevated storage tanks within the distribution system.

In general, AWWA standards are followed and reservoirs and storage tanks are inspected approximately every 5 years.

The Cottam reservoir was removed from service for maintenance and upgrades in 2013 and then inspected in March 2014 to investigate and address potential leakage. The 2019 inspection will investigate further any potential leakage from the reservoir. Recoating and maintenance (as per AWWA procedures) of the Leamington elevated tank was conducted in 2015 and it was inspected again in 2018. Recoating and maintenance of the Essex elevated tank was conducted in 2018. The Kingsville elevated tank is scheduled for inspection within the next few years. Reservoir #2 was inspected by Watech in February 2015. Leakage was found and temporary repairs were completed. More permanent repairs were completed in 2017. Reservoir #1 and high-lift clearwell #1 have not yet been inspected. The owner does not expect any sedimentation necessitating cleanout of the clearwell due to the high rate of flow through this chamber. In addition, this maintenance would require plant shut down. The owner is exploring the addition of another high lift pump to assist with maintenance of the high lift clearwells. A membrane has been installed around the clearwells to prevent spills from getting in.

- **Existing parts of the distribution system that are taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that come in contact with drinking water, were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit, or an equivalent procedure (i.e. the Watermain Disinfection Procedure).**

  Prior to returning elevated towers to service, super-chlorination, refilling and testing of the tower is first completed in accordance with AWWA procedures. Disinfection procedures are also applied to in-plant equipment that has been removed from service for repair or maintenance, including pumping and flow metering equipment, and filters as per SOP OCWA-C3-07 Filter Maintenance (Annual). Disinfection activities are documented in the Disinfection log.

- **A program for inspecting and exercising valves did not exist.**

  In 2013, a program was developed with a valve turning trailer, and valves on the distribution system mains were turned in 2013 and 2014/15. There are currently plans to restart the program. When the program was initiated in 2013, stationary valves were identified and these are operated annually. All other valves within the plant are operated regularly through routine operations. In addition, valves within the plant that were installed over 30 years ago have been replaced.

- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**

  All elevated tank, tower levels and control valve station pressures were continuously measured and logged through SCADA. Similarly, system pressure was continuously measured and logged at the water treatment plant and the Cottam Booster Station. Pressure monitors plus tower and elevated tank levels are all alarmed. Standard operating procedures exist for placing the Essex and Kingsville towers in hydraulic mode of operation, and operate high-lift pumps at the water plant to maintain Leamington pressures, in the event of loss of communications or failure of automatic electronic tower controls.

- **The donor had provided an Annual Report to the receiver stand alone distribution system(s) connected to this system.**

  The 2018 Annual Reports for each of the connected stand alone distribution systems, prepared under section 11 of O. Regulation 170/03, were received by member municipal representatives on February 22, 2019 and presented at the Joint Management Board meeting on February 27, 2019.

Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**

  The relevant operating manuals for the Union treatment plant are kept in the plant control room. A standard operating procedure binder, operations manual and facility emergency plan for the Cottam Booster Station is located in the HMI control room at the booster station. A set of binders, folders and reference manuals containing manufacturers' equipment manuals and information is also available at the water plant 'library' for reference.

- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

  The Union Area WSS Operations Manual contains descriptions of each of the process steps. Sections of the Operations Manual were revised in 2015, 2016, and 2017 and it has not been updated since. Standard Operating Procedure manuals for the plant and the Cottam Booster Station contain standard procedures and policies. SOP OCWA-C6-12 Cyanobacterial Toxins – Microcystin-LR was updated in March 2018 to address the recommendation in the last inspection report. The SOP now states "If a sample result is received that exceeds 0.15 ug/L then sampling of the Treated water will be conducted on the next scheduled sample day along with the raw. If chlorination is occurring at the intake for zebra mussel control, it is recommended to shut down the chlorination immediately, since chlorine attacks the algal cell wall which releases the cyanobacteria toxins into the water." During a known or suspected algal bloom where algae have infiltrated the plant, it is recommended that the sodium hypochlorite at the low lift remains off as long as possible, or until it can be determined that the algae infiltration has been cleared. It is recommended that the wording in the SOP be clarified so that chlorination at the intake is not turned back on prematurely.

  Operators also have access to a map showing transmission mains in the Union distribution system along with as-built drawings. These are available as hard copies at the water plant.

  An extension to the deadline for plant drawing updates was approved and set for July 10, 2018. Drawings were manually updated by this new deadline. New as-built drawings will be completed for the new pH adjustment system, as well as previous changes to the microstrainer room and valve room, which will capture the removal of the carbon feed system and microstrainer #1.

- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

  As required by Condition 16.2 under Schedule B of the Licence, the Union Area WSS Operations Manual contains procedures for monitoring, operating and maintaining equipment, contingency plans for emergencies, and procedures for dealing with complaints.

Logbooks

- **Logbooks were properly maintained and contained the required information.**

- **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

- **For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.**

- **The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.**

  Any process adjustments are made by the OIC or ORO; an OIT can only make adjustments under supervision of

Logbooks

the OIC. Logbooks get reviewed daily by operators and the Process and Compliance Technician reviews the logbook on weekly basis.

- **Logs or other record keeping mechanisms were available for at least five (5) years.**

  The last five years of operational logs and records are maintained in cabinets next to the control room. Additional archived records, going back decades and possibly to the start-up of the water plant, are maintained in an international shipping container adjacent to the water treatment plant.

Contingency/Emergency Planning

- **Spill containment was provided for process chemicals and/or standby power generator fuel.**

  Chemical storage areas within the water plant and Cottam Booster Station are equipped with secondary containment curbs and structures, including for:
  - Sodium hypochlorite storage and metering
  - Primary coagulant, polymer and filter-aid storage, mixing and metering. Containment is formed by the chemical room itself, although there is an open floor drain that routes to the process wastewater system
  - Ammonia storage, delivery and leak abatement systems

  The area for secondary coagulant storage and delivery is located overtop of floor grating within the raw header pipe gallery/valve room. The area underneath the grating is equipped with a sump pump which is normally designed to pump accumulated water to the floor drain system routed to the process wastewater system.

  Generators and fuel storage within the low-lift, water plant and Cottam Booster Station are equipped with secondary containment curbs. The fuel tanks serving the low-lift generator, the Cottam Booster Station generator, the high-lift diesel driven pump, and the water plant's bulk fuel and day storage tanks serving the plant's two generators, are equipped with built-in outer secondary containment systems.

- **Clean-up equipment and materials were in place for the clean up of spills.**

  A stocked spill station is located at the water plant's "pole barn". Smaller spill kits are located at the low-lift building and the Cottam Booster Station.

- **Standby power generators were tested under normal load conditions.**

  Standby generator testing under load is conducted on a monthly basis as per Standard operating procedure OCWA-C6-04.

Security

- **All storage facilities were completely covered and secure.**

  Reservoirs at the water plant are both covered below ground structures. The reservoir at the Cottam Booster Station is a covered partially below-grade structure.

- **Air vents and overflows associated with reservoirs and elevated storage structures were equipped with screens.**

  During the inspection it was noted that the screens on the reservoir vents were corroded and holes were visible. It is recommended that these screens are inspected and repaired or replaced as required.

- **The owner had provided security measures to protect components of the drinking water system.**

  The Union WSS water treatment plant is located in a fenced compound with locked/camera monitored security entrances which must be remotely opened by the operator. All doors of the plant, with the exception of the front

Security

door, are steel security doors which are normally kept locked. The low lift building is in a separate windowless brick structure. It is not in a fully fenced compound, although strategic security fencing has been installed for preventing access to the roof and the electrical transformer compound. The building is equipped with lockable steel security doors, intruder door contact alarms, keycode entry and remote camera monitoring. The Cottam Booster Station is in a fenced compound which is video monitored from the plant; the doors are also locked and equipped with alarms.

Consumer Relations

- **The owner and/or operating authority undertook efforts to promote water conservation and reduce water losses in their system.**

  Lawn watering restrictions from May 1 to September 30 have been adopted in a uniform by-law in each of the municipalities served by the Union WSS. An information brochure is available on the Union WSS web site indicating the restrictions. Restrictions entail even/odd house number watering days and time of day application.

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**

  The overall responsible operator for the treatment system and distribution system is identified in SOP OCWA-C3-01, and holds a valid class IV certification for both, matching the classification of the Union water treatment plant and the Union trunk water distribution system.

- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

  Operators in charge for each shift are required to be identified in a designated field in the project log book.

- **All operators possessed the required certification.**

- **Only certified operators made adjustments to the treatment equipment.**

  According to operating logs reviewed for the period assessed, only certified operators made adjustments to the treatment equipment.

- **An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.**

  Three adequately licenced (class 3) operators are designated to act when the ORO is unable to act.

Water Quality Monitoring

- **All microbiological water quality monitoring requirements for raw water samples were being met.**

  O. Reg. 170/03, Schedule 10-4 requires the owner and operating authority to sample raw water once per week and analyse it for E. coli and total coliforms. For the period reviewed, raw water microbiological samples were taken each week.

- **All microbiological water quality monitoring requirements for distribution samples were being met.**

  The Dinking Water System (DWS) does not include any distribution systems except transmission mains. All services are located within the individual municipalities. An assessment of distribution sampling compliance is referred to within the scope of those separate inspections.

  Due to the switch from chloramination to chlorine in June, increased microbiological sampling was required in exchange for exemption of chloramination treatment. As per Schedule D, Condition 2.2 of the Licence, on the day prior to the switch to free chlorine, 25 samples shall be taken and tested for E.coli, total coliform, and 25% of

Water Quality Monitoring

samples tested for heterotrophic plate count (HPC). On days 1, 3, and 5, 16 samples shall be taken and tested for those parameters. If there are any detections, at least 25 samples from the entire distribution system shall be collected until two consecutive sets (24-48 hours apart) of samples are clear. For week 2, 16 samples shall be taken 3 times per week and tested for the same parameters, until the transition to free chlorine is complete (i.e. the free chlorine levels stabilize in the distribution system). This transition occurred by June 15 (week 2). All sampling was completed as required.

- **All microbiological water quality monitoring requirements for treated samples were being met.**

  O. Reg. 170/03, Schedule 10-3 requires the owner and operating authority to sample treated water once per week and analyse it for E. coli, total coliforms and HPC. For the period reviewed, treated water microbiological samples were taken each week.

- **All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  Provided that previous sample results have not exceeded one-half maximum acceptable concentration (MAC) for any parameter under Schedule 23, O. Reg. 170/03, Schedule 13-2 requires that samples must be taken and analysed for Schedule 23 parameters every 12 months for a surface water supply. The required samples were taken January 9, 2018. Previous samples for analysis of these parameters were taken January 10 and July 18, 2017.

  Schedule 6-1.1 (5) states that for samples required to be taken every 12 months and tested for a parameter, the owner and the operating authority shall ensure that at least one sample that is taken during a 12-month period for the purpose of being tested for that parameter is taken not more than 30 days before or after the first anniversary of the day a sample was taken for that purpose in the previous 12-month period. The owner complied with this provision.

- **All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  Provided that previous sample results have not exceeded one-half maximum acceptable concentration (MAC) for any parameter under Schedule 24, O. Reg. 170/03, Schedule 13-4 requires that samples must be taken and analysed for Schedule 24 parameters every 12 months for a surface water supply. The required samples were taken January 9, 2018. Previous samples for analysis of these parameters were taken January 10 and July 18, 2017.

  Schedule 6-1.1 (5) states that for samples required to be taken every 12 months and tested for a parameter, the owner and the operating authority shall ensure that at least one sample that is taken during a 12-month period for the purpose of being tested for that parameter is taken not more than 30 days before or after the first anniversary of the day a sample was taken for that purpose in the previous 12-month period. The owner complied with this provision.

- **All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.**

  The drinking water system does not include any distribution systems except transmission mains. An assessment of distribution sampling compliance for haloacetic acid (HAA) is referred to within the scope of those separate stand-alone distribution system inspections. However, samples for HAA analysis were also taken at the water treatment plant quarterly and ranged from 5.3 (below detection limit) to 11.3ug/L, with a running annual average (RAA) of 6.8ug/L. The HAAs in the 4 distribution systems that are fed by the Union Area WSS were lowest at Leamington (5.3-15.1ug/L; RAA=9.7ug/L) and Kingsville (5.3-19ug/L; RAA=10.7ug/L) and highest at Essex (5.3-25.1ug/L; RAA=14ug/L) and Lakeshore (5.3-32.6ug/L; RAA=15.1ug/L). HAA concentrations in the distribution system have increased since 2017 (Essex=5.3 to 13.2ug/L, Kingsville=5.3 to 5.6ug/L, Lakeshore=5.3 to 14ug/L, and

Water Quality Monitoring

Leamington=all below detection, 5.3ug/L). In 2018, the increase in HAAs occurred after the switch to free chlorine.

- **All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.**

  The drinking water system does not include any distribution systems except transmission mains. An assessment of distribution sampling compliance for trihalomethanes (THM) is referred to within the scope of those separate stand-alone distribution system inspections. However, samples for THM analysis were also taken at the water treatment plant quarterly and the running annual average (RAA) for 2018 (18.7 ug/L) was higher than in 2017 (13.4 ug/L) but lower than the RAAs at the 4 distribution systems that are fed by the Union Area WSS (Essex=30.5ug/L, Kingsville=26.7ug/L, Lakeshore=42.75ug/L, and Leamington=29.4ug/L). THM concentrations in the distribution system have increased since 2017 (Essex=23.5ug/L, Kingsville=19.6ug/L, Lakeshore=25.2ug/L, and Leamington=21.5ug/L). In 2018, the increase in THMs occurred after the switch to free chlorine. Although THM levels were still well below 100ug/L, the owner should continue to monitor these closely.

  Due to the switch from chloramination to chlorine in June, increased THM sampling was required. As per Schedule D, Condition 2.2 of the Licence, THMs are to be sampled monthly within the distribution system. Since the switchover to chlorine only lasted two weeks, only one additional sample was taken in June.

- **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**

  As required under O. Reg. 170/03, Schedule 13-7, samples must be taken and analysed for nitrate and nitrite every 3 months. Raw and treated samples were taken approximately weekly until June, while the chloramine system was in operation. In June and July, monthly raw and treated samples were taken and following that, sampling changed to quarterly. Samples were analyzed for total ammonia-N, nitrate-N, nitrite-N, and nitrite+nitrate-N. Concentrations of nitrate (below method detection to 0.9mg/L) and nitrite (all below method detection (0.1mg/L)) in treated samples were well below the drinking water standards (nitrate=10mg/L and nitrite=1mg/L).

- **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  O. Reg. 170/03, Schedule 13-8 requires sampling and analysis of sodium every 60 months. A sample for analysis of sodium was taken on January 9, 2018 (7.74mg/L), well below the 20mg/L benchmark at which the local Medical Officer of Heatlh must be notified. The previous samples were taken January 10 and July 18, 2017.

- **All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  O. Reg. 170/03, Schedule 13-8 requires sampling and analysis of fluoride every 60 months. A sample for analysis of fluoride was taken on January 9, 2018 (0.09mg/L), well below the 1.5mg/L standard. The previous samples were taken January 10 and July 18, 2017.

- **The owner ensured that water samples were taken at the prescribed location.**

- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**

  Review of all chain of custody forms sent to the laboratory confirmed that chlorine residuals were measured with the microbiological samples each week. Total chlorine residual ranged from 1.58 to 2.17mg/L during the inspection period. From June 11th on, the free chlorine residual ranged from 1.3 to 1.9mg/L.

- **The drinking water system owner submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order, Drinking Water Works Permit or Municipal Drinking Water Licence.**

Water Quality Monitoring

- **The owner indicated that the required records are kept and will be kept for the required time period.**

Water Quality Assessment

- **Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

  All regulatory water sample results consistently met Ontario Drinking Water Quality Standards.

  The following water quality is also noted from the owner's results for samples collected from January to December 2018:
  (i) Aluminum residual samples of treated water from the plant were taken weekly. Concentrations were elevated above the operational guideline (100ug/L) from May 14 to July 3, 2018 with the highest concentration on June 11 (269ug/L). The operating authority switched coagulants (from DelPAC to Hyperion) from June 14 to October 21 to address the elevated aluminum residuals. Aluminum levels started to decline shortly after this switch and were below 100ug/L by July 9, 2018. As stated above, the installation of the pH adjusting equipment should help to optimize coagulant performance and plant efficiency. This will lower the coagulant dosing and thus reduce aluminum residual and should reduce the reliance on Hyperion, which creates more solids for the waste lagoons.
  (ii) Samples of raw and filtered water for Clostridium perfringens were taken weekly; there were no detections in the filtered water.
  (iii) Samples of raw and treated water for nitrites, nitrates, and ammonia were taken weekly between January and May 2018, monthly in June and July, and then quarterly after that.
  (iv) Samples of Geosmin and MIB from raw and treated water were taken weekly from July to September, 2018, once in May and three times in June; detections were generally only in the raw water, but there were five detections of Geosmin and MIB in the treated water (July 9, 16, 23 (MIB only), 30, August 7 (Geosmin only), and September 10)
  (v) Samples of raw and treated water were taken weekly for chloride, sulphate, TOC , DOC and alkalinity for operational purposes.
  (vi) As part of the Enhanced Corrosivity Study, water samples from each of the four distribution systems (Essex, Kingsville, Lakeshore and Leamington) were collected monthly and tested for lead, chloride, sulphate, pH, alkalinity, Langelier's Index as well as other parameters to monitor corrosivity potential in the distribution system. As in 2017, the chloride to sulphate mass ratio (CSMR) values in the treated water were above 0.6 and the Langelier's Index values were below 0 (except for a sample taken from the Cottam Booster Station in Kingsville on April 9, 2018), indicating that corrosion may occur. The lead concentrations in 2018 were all very low (0.02 to 0.71ug/L). The owner has stated that the enhanced corrosivity monitoring will continue indefinitely. No plumbing samples are currently being sampled for lead as the UWSS is exempt from this monitoring. Due to the water conditions, it is once again recommended that monthly plumbing samples be added to the corrosivity study to assess how the water conditions affect lead service lines and/or solder. This is especially important with the installation of the pH adjustment equipment. Although bench scale studies indicate that there will be sufficient off-gassing of the carbon dioxide during the treatment process, and thus the treated water pH will not be impacted (i.e. will remain around 8), the owner has stated that close monitoring will continue. Monitoring of lead in plumbing prior to the commissioning of the pH adjustment equipment would provide some baseline data to compare any impacts of this treatment change on corrosivity in the distribution system.
  (vii) As part of UWSS internal algal toxin monitoring program, samples were taken once or twice weekly from June 13 to November 21, 2018. Raw water samples were taken throughout the whole sampling period and treated samples were also taken during August and September.Total microcystins in both raw and treated (when taken) samples were all below detection (0.1ug/L), with the exception of one raw sample on August 8th (0.10ug/L) and another on October 17th (0.14ug/L).

Reporting & Corrective Actions

- **Corrective actions (as per Schedule 17) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.**

  For the adverse event that took place on May 19, 2018 (loss of coagulant for more than 30 minutes), failure of the PLC prevented the corrective actions (shutting off flow to Clarifier 4) from resolving the incident. Review of turbidity trends indicated a small spike in turbidity at filter 6; however, it was still very low, and the other filters did not show a similar trend. The data did not indicate breakthrough of the filters so improperly disinfected water was not directed to users. Regardless, the operating authority chose to update the reporting procedure to direct operators to place the coagulant pump in manual mode as soon as they receive a loss of coagulant flow alarm to ensure that coagulant is always flowing.

- **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**

- **All required written notices of adverse water quality incidents were provided as per O. Reg. 170/03 16-7.**

- **In instances where written notice of issue resolution was required by regulation, the notice was provided as per O. Reg. 170/03 16-9.**

- **Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.**

  The water plant is staffed 24 hours per day, 365 days per year, therefore an operator is always on site and the operating authority has an expectation of an immediate response to alarms. Water plant operating logs indicate that appopriate actions were taken in a timely manner for regulatory equipment alarms.

- **The Annual Report containing the required information was prepared by February 28th of the following year.**

  The 2018 Annual Report, prepared under section 11 of O. Regulation 170/03, was received by member municipal representatives on February 22, 2019 and presented at the Joint Management Board meeting on February 27, 2019.

- **Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.**

  The 2018 Summary Report, prepared under section 22 of O. Regulation 170/03, was received by member municipal representatives on February 22, 2019 and presented at the Joint Management Board meeting on February 27, 2019. All required content was included in the Summary Report.

- **All changes to the system registration information were provided within ten (10) days of the change.**

  On February 27, 2019, the population number was updated from 60,000 to 65,000.

Other Inspection Findings

- **The following issues were also noted during the inspection:**

  See SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES.

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

Not Applicable

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

1. **A program for inspecting and exercising valves did not exist.**

   Recommendation:

   It is recommended that the valve turning program be restarted as planned.

2. **The following issues were also noted during the inspection:**

   Recommendation:

   a. SCADA trending is used to remove spikes in flow rate due to pump initiation. It is recommended that the raw flow data from SCADA is used to remove these outliers and determine the true maximum daily flow, instead of an estimate based on SCADA trending.

   b. Reservoir vents were observed to be corroded. It is recommended that these screens are inspected and repaired or replaced as required.

   c. SOP OCWA-C6-12 Cyanobacterial Toxins – Microcystin-LR includes some guidance on when to turn off the chlorination at the intake. It is recommended that the wording in the SOP be clarified so that chlorination at the intake is not turned back on prematurely.

   d. No plumbing samples are currently being sampled for lead as the UWSS is exempt from this monitoring. It is once again recommended that monthly plumbing samples be added to the corrosivity study to assess how the water conditions affect lead service lines and/or solder, especially with the upcoming installation of the pH adjustment equipment. Monitoring of lead in plumbing prior to the commissioning of the pH adjustment equipment would provide some baseline data to compare any impacts of this treatment change on corrosivity in the distribution system.

SIGNATURES

Inspected By:

Emily Awad

Signature: (Provincial Officer)

Reviewed & Approved By:

Marc Bechard

Signature: (Supervisor)

Review & Approval Date:

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.

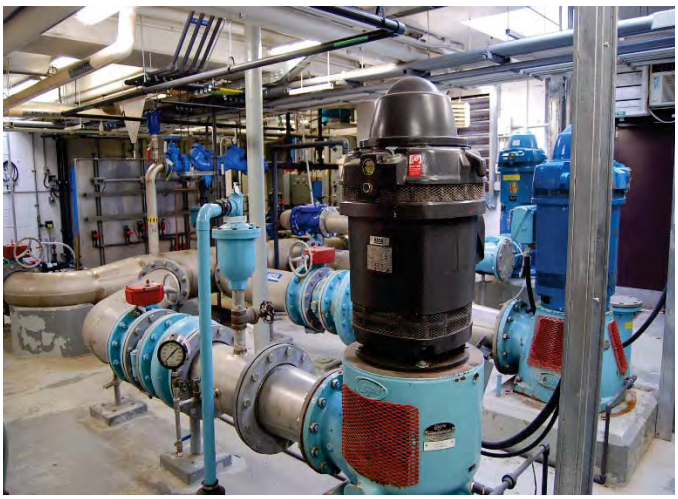
Stakeholder Appendix

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater



PUBLICATION TITLE	PUBLICATION NUMBER
FORMS: Drinking Water System Profile Information Laboratory Services Notification Adverse Test Result Notification	 012-2149E 012-2148E 012-4444E
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	Website
Procedure for Disinfection of Drinking Water in Ontario	Website
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	Website
Filtration Processes Technical Bulletin	Website
Ultraviolet Disinfection Technical Bulletin	Website
Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments	Website
Certification Guide for Operators and Water Quality Analysts	Website
Guide to Drinking Water Operator Training Requirements	9802E
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	Website
Drinking Water System Contact List	7128E01
Ontario's Drinking Water Quality Management Standard - Pocket Guide	Website
Watermain Disinfection Procedure	Website
List of Licensed Laboratories	Website

Inspection Rating Record

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2018-2019)

DWS Name:	UNION AREA WATER SUPPLY SYSTEM
DWS Number:	210000853
DWS Owner:	Union Water System Joint Board Of Management (Leamington, Kingsville, Essex, Lakeshore)
Municipal Location:	Kingsville
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	January 8, 2019
Ministry Office:	Windsor Area Office

Maximum Question Rating: 632

Inspection Module	Non-Compliance Rating
Permit To Take Water	0 / 12
Capacity Assessment	0 / 42
Treatment Processes	0 / 72
Process Wastewater	0 / 20
Distribution System	0 / 25
Operations Manuals	0 / 42
Logbooks	0 / 30
Certification and Training	0 / 49
Water Quality Monitoring	0 / 132
Reporting & Corrective Actions	0 / 88
Treatment Process Monitoring	0 / 120
TOTAL	**0 / 632**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 05-MAR-19 (Inspection ID: 1-ICRTG).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2018-2019)

DWS Name:	UNION AREA WATER SUPPLY SYSTEM
DWS Number:	210000853
DWS Owner:	Union Water System Joint Board Of Management (Leamington, Kingsville, Essex, Lakeshore)
Municipal Location:	Kingsville
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	January 8, 2019
Ministry Office:	Windsor Area Office

Maximum Question Rating: 632

Inspection Risk Rating	**0.00%**
FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 05-MAR-19 (Inspection ID: 1-ICRTG).

UW/14/19

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

From: Rodney Bouchard, Union Water Manager

Date: April 18, 2019

Re: Payments for the UWSS from February 23 to April 18, 2019

Aim:

To provide the Board with a copy of payments made by the Union Water Supply System from February 23 to April 18, 2019.

Recommendation:

For information purposes.

Respectfully submitted,

Rodney Bouchard, Manager
Union Water Supply System Joint Board of Management
rb/kmj
Filename: t:\union wtr\reports to board\2019\uw14-19 payments from feb to april 2019.docx

Vendor : 0011450 To PT00000165
Batch : All
Department : All
Cheque Print Date : 11-Mar-2019 To 22-Mar-2019
Bank : 07 To 08
Class : All

Vendor / Invoice	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
020120	**BELL MOBILITY CELLULAR**								
514877178-MA	MONTHLY CELL PHONE CHARGES					128	01-Mar-2019	12-Mar-2019	
70-5-0700-7110		002070	002083		Telecommunications Usage				21.72
030004	**C3 WATER INC**								
201902-288	WATER MODELING UPDATES					142	28-Feb-2019	21-Mar-2019	
70-5-0700-7989		002075			Operational Programs & Studies				3,749.34
040070	**DEVINE & ASSOCIATES LIMITED**								
55246	VALVE CHAMBER #9					142	30-Jan-2019	21-Mar-2019	
70-7-0700-8750		002203			Watermains				50.85
050003	**E.L.K. ENERGY INC**								
40010915-FEB	FEB/19 HYDRO - ESSEX WATER TOWER					126	01-Mar-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-8.73
70-5-0700-7420		002073			Electricity				123.38
40047150-FEB	FEB/19 HYDRO - METER #9					126	01-Mar-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-2.59
70-5-0700-7420		002073			Electricity				36.58
51976611-FEB	FEB/19 HYDRO - KINGSVILLE WATER TOWER					126	01-Mar-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-26.28
70-5-0700-7420		002073			Electricity				371.46
90006300-FEB	FEB/19 HYDRO - COTTAM BOOSTER STATION					126	01-Mar-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				2,398.79
995929	**LAKESIDE PROCESS CONTROLS LTD.**								
CD970059820	FLOW METERS - FILTERS 5/6/7					126	26-Feb-2019	12-Mar-2019	
70-7-0700-8730		700015			Filters				8,658.04
70-7-0700-8730		700016			Filters				8,658.04
70-7-0700-8730		700017			Filters				8,658.04
CD970060079	FLOW METER - FILTER #8					126	28-Feb-2019	12-Mar-2019	
70-7-0700-8730		700018			Filters				8,646.36
130360	**METCON SALES & ENGINEERING LTD**								
4005386	RECHLORINATION SYSTEM UPGRADES					126	26-Feb-2019	12-Mar-2019	
70-7-0700-8725		700090			Cottam Booster Station				4,583.28
180053	**RAPID DRAINAGE LTD**								
4048	WATERMAIN BREAK - ESSEX					142	12-Mar-2019	21-Mar-2019	
70-7-0700-8750		002203			Watermains				13,246.89
180325	**RICOH CANADA INC**								
SCO92301841	COPIER CONTRACT - JAN18-FEB28					142	28-Feb-2019	21-Mar-2019	
70-5-0700-7010		002070			Office Supplies				90.40
190635	**STANTEC CONSULTING LTD**								
1356800	HIGH LIFT PUMP SYSTEM REVIEW - FEB15					142	20-Feb-2019	21-Mar-2019	
70-5-0700-7950		002070			Professional Services				1,435.19
190751	**SUMMA ENGINEERING LIMITED**								
PC#3 114410	PMT#3 SCADA UPGRADES					126	15-Feb-2019	12-Mar-2019	
70-7-0700-8780					SCADA System				53,136.44
230440	**WILLIS BUSINESS LAW**								
10124	LEGAL FEES - RESTRUCTURING					142	28-Feb-2019	21-Mar-2019	
70-5-0700-7950		002070			Professional Services				8,045.45
								Department Totals :	**121,872.65**

Vendor : 0011450 To PT00000165 EFT Paid Date : 11-Mar-2019 To 22-Mar-2019
Batch : All Bank : 07 To 08
Department : All Class : All

Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
050195	**ESSEX POWERLINES CORPORATION**								
220651-FEB19	FEB/19 HYDRO - METER #4					127	20-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-3.40
70-5-0700-7420		002073			Electricity				48.09
080250	**HYDRO ONE NETWORKS INC**								
200141677460-I	FEB/19 HYDRO - RUTHVEN WATER TREATMENT					141	08-Mar-2019	21-Mar-2019	
70-5-0700-7420		002073			Electricity				46,074.50
200141680692-I	FEB/19 HYDRO - LOW LIFT					141	08-Mar-2019	21-Mar-2019	
70-5-0700-7420		002073			Electricity				-4.44
70-5-0700-7420		002073			Electricity				23,452.61
200141680894-I	FEB/19 HYDRO - LEAMINGTON WATER TOWER					127	28-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-36.34
70-5-0700-7420		002073			Electricity				513.28
200141681706-I	FEB/19 HYDRO - METER#2					127	26-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-3.34
70-5-0700-7420		002073			Electricity				47.17
200141682009-I	FEB/19 HYDRO - ALBUNA WATER TOWER					141	01-Mar-2019	21-Mar-2019	
70-5-0700-7420		002073			Electricity				-99.00
70-5-0700-7420		002073			Electricity				1,398.41
200141683019-I	FEB/19 HYDRO - METER#3					127	28-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				41.64
200141683120-I	FEB/19 HYDRO - METER#5					141	01-Mar-2019	21-Mar-2019	
70-5-0700-7420		002073			Electricity				-3.04
70-5-0700-7420		002073			Electricity				43.01
200141683423-I	FEB/19 HYDRO - METER#6					127	28-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-3.00
70-5-0700-7420		002073			Electricity				42.41
200141683524-I	FEB/19 HYDRO - METER#8					127	26-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-2.99
70-5-0700-7420		002073			Electricity				42.25
200141683726-I	FEB/19 HYDRO - METER #15					127	25-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-3.22
70-5-0700-7420		002073			Electricity				45.56
200141687362-I	FEB/19 HYDRO - METER #22					127	26-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-2.60
70-5-0700-7420		002073			Electricity				36.71
200141687766-I	FEB/19 HYDRO - METER#29					127	26-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-2.91
70-5-0700-7420		002073			Electricity				41.20
200141687867-I	FEB/19 HYDRO - METER#24					127	26-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-2.28
70-5-0700-7420		002073			Electricity				32.15
200141690190-I	FEB/19 HYDRO - METER#26					127	26-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-3.93
70-5-0700-7420		002073			Electricity				55.52
200152134969-I	FEB/19 HYDRO - METER#17					141	08-Mar-2019	21-Mar-2019	
70-5-0700-7420		002073			Electricity				-2.80
70-5-0700-7420		002073			Electricity				39.43
200220161473-I	FEB/19 HYDRO - METER#14					127	22-Feb-2019	12-Mar-2019	
70-5-0700-7420		002073			Electricity				-2.76
70-5-0700-7420		002073			Electricity				38.96
150365	**ONTARIO CLEAN WATER AGENCY**								

Vendor : 0011450 To PT00000165 EFT Paid Date : 11-Mar-2019 To 22-Mar-2019
Batch : All Bank : 07 To 08
Department : All Class : All

Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
INV000111174	FEB/19 OPER&MTCE					141	28-Feb-2019	21-Mar-2019	
70-5-0700-6720			002071		OCWA Operating Contract				241,376.00
190185	**SGS CANADA INC. ENVIRONMENTAL SERVICES**								
11222562	WATER QUALITY STUDIES CORROSION-UWSS					127	27-Feb-2019	12-Mar-2019	
70-5-0700-7989			002075		Operational Programs & Studies				621.50
11222583	WATER QUALITY STUDIES CORROSION-ESSEX					127	27-Feb-2019	12-Mar-2019	
70-5-0700-7989			002075		Operational Programs & Studies				196.62
11222584	WATER QUALITY STUDIES CORROSION-LEAMINGTON					127	27-Feb-2019	12-Mar-2019	
70-5-0700-7989			002075		Operational Programs & Studies				98.31
11222592	WATER QUALITY STUDIES CORROSION-KINGSVILLE					127	27-Feb-2019	12-Mar-2019	
70-5-0700-7989			002075		Operational Programs & Studies				98.31
11222761	WATER QUALITY STUDIES CORROSION-UWSS					127	27-Feb-2019	12-Mar-2019	
70-5-0700-7989			002075		Operational Programs & Studies				118.65
190755	**SUN LIFE ASSURANCE COMPANY OF CANADA**								
MAR-19	MAR/19 UNION WATER LOAN 3724:1					141	20-Mar-2019	21-Mar-2019	
70-5-0700-6000			002020	006901	Debenture Principal				50,767.32
70-5-0700-6100			002010	006901	Debenture Interest				112,493.68
210120	**UNION GAS LTD**								
1929770177678	1379.895M3 GAS - COTTAM BOOSTER STATION					141	12-Mar-2019	21-Mar-2019	
70-5-0700-7410			002073		Gas				371.23
1929770208308	21374.667M3 GAS - RUTHVEN WATER TREATMENT PLANT					127	21-Feb-2019	12-Mar-2019	
70-5-0700-7410			002073		Gas				5,484.23
1929770217397	2857.862M3 GAS - LOW LIFT					127	25-Feb-2019	12-Mar-2019	
70-5-0700-7410			002073		Gas				741.01
70-5-0700-7410			002073		Gas				-588.32
							Department Totals :		**483,595.39**

Vendor : 0011450 To PT00000167
Batch : All
Department : All

Cheque Print Date : 04-Apr-2019 To 08-Apr-2019
Bank : 07 To 08
Class : All

Vendor / Invoice	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
050003	**E.L.K. ENERGY INC**								
40010915-MAR	921KWH - ESSEX WATER TOWER					182	01-Apr-2019	04-Apr-2019	
70-5-0700-7420		002073			Electricity				-9.68
70-5-0700-7420		002073			Electricity				136.67
40047150-MAR	151KWH - METER#9					182	01-Apr-2019	04-Apr-2019	
70-5-0700-7420		002073			Electricity				-2.70
70-5-0700-7420		002073			Electricity				38.15
51976611-MAR	2523KWH - KINGSVILLE WATER TOWER					182	01-Apr-2019	04-Apr-2019	
70-5-0700-7420		002073			Electricity				-24.22
70-5-0700-7420		002073			Electricity				342.13
90006300-MAR	14160KWH - COTTAM BOOSTER STATION					182	01-Apr-2019	04-Apr-2019	
70-5-0700-7420		002073			Electricity				2,554.14
994271	**ESSEX REGION CHILDREN'S WATER FESTIVAL**								
2019	DONATION TO ERCWF					182	25-Mar-2019	04-Apr-2019	
70-5-0700-7130		002070			Advertising & Promotion				3,000.00
130838	**MUNICIPALITY OF LEAMINGTON**								
530-17700 APF	TAXES - 446 TALBOT W					182	04-Apr-2019	04-Apr-2019	
70-5-0700-6750		002072			Property Tax				843.00
997710	**RUDAK EXCAVATING INC**								
PC#1 1656201	PMT#1 COTTAM BOOSTER STN RESERVOIR GRADING					182	26-Mar-2019	04-Apr-2019	
70-7-0700-8725		700030			Cottam Booster Station				11,063.24
70-7-0700-8725		700030			Cottam Booster Station				1,257.19
70-7-0700-8725		700030			Cottam Booster Station				251.44
						Department Totals :			**19,449.36**

Vendor : 0011450 To PT00000167
Batch : All
Department : All
EFT Paid Date : 04-Apr-2019 To 08-Apr-2019
Bank : 07 To 08
Class : All

Vendor Code / Invoice No. / G.L. Account	Description / CC1 / CC2 / CC3 / GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System				
030458	**CORRPRO CANADA INC**				
519328 SEP18	CATHODIC PROTECTION-LEAMINGTON WATER TOWER	181	04-Apr-2019	04-Apr-2019	
70-7-0700-8715	Leamington Water Tower				2,385.77
050195	**ESSEX POWERLINES CORPORATION**				
220651-MAR19	39KWH - METER#4	181	20-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-3.13
70-5-0700-7420	002073 Electricity				44.17
080250	**HYDRO ONE NETWORKS INC**				
200141680894-I	HYDRO - LEAMINGTON WATER TOWER	181	28-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-35.44
70-5-0700-7420	002073 Electricity				500.51
200141681706-I	HYDRO - METER#2	181	27-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-3.55
70-5-0700-7420	002073 Electricity				50.19
200141683019-I	HYDRO - METER#3	181	28-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-3.25
70-5-0700-7420	002073 Electricity				45.87
200141683423-I	HYDRO - METER#6	181	28-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-3.10
70-5-0700-7420	002073 Electricity				43.68
200141683524-I	HYDRO - METER#8	181	27-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-7.93
70-5-0700-7420	002073 Electricity				112.05
200141683726-I	HYDRO - METER#15	181	25-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-2.68
70-5-0700-7420	002073 Electricity				37.85
200141687362-I	HYDRO - METER#22	181	27-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-2.70
70-5-0700-7420	002073 Electricity				38.20
200141687766-I	HYDRO - METER#29	181	27-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-3.04
70-5-0700-7420	002073 Electricity				42.94
200141687867-I	HYDRO - METER#24	181	27-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-2.28
70-5-0700-7420	002073 Electricity				32.15
200141690190-I	HYDRO - METER#26	181	26-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-4.50
70-5-0700-7420	002073 Electricity				63.50
200208899066-I	HYDRO - METER#16	181	15-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-11.97
70-5-0700-7420	002073 Electricity				169.01
200220161473-I	HYDRO - METER#14	181	25-Mar-2019	04-Apr-2019	
70-5-0700-7420	002073 Electricity				-2.65
70-5-0700-7420	002073 Electricity				37.38
210120	**UNION GAS LTD**				
1929770208308	21097.917M3 GAS - RUTHVEN WTP	181	21-Mar-2019	04-Apr-2019	
70-5-0700-7410	002073 Gas				5,415.49
1929770217397	2081.268M3 GAS - LOW LIFT	181	25-Mar-2019	04-Apr-2019	
70-5-0700-7410	002073 Gas				546.69
230089	**WATSON & ASSOCIATES ECONOMISTS LTD**				
0025008	WATER RATE STUDY - FIN.PLAN O.REG 453/07	181	28-Feb-2019	04-Apr-2019	

Vendor : 0011450 To PT00000167
Batch : All
Department : All

EFT Paid Date : 04-Apr-2019 To 08-Apr-2019
Bank : 07 To 08
Class : All

Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700					Union Water System				
70-5-0700-7950			002070		Professional Services				5,994.93
								Department Totals :	**15,474.16**

Vendor : 0011450 To PT00000167
Batch : All
Department : All
Cheque Print Date : 10-Apr-2019 To 18-Apr-2019
Bank : 07 To 08
Class : All

Vendor / Invoice	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
010103	**ASSOCIATED ENGINEERING (ONT) LTD**								
525483	SCADA UPGRADES - MAR8					200	15-Mar-2019	18-Apr-2019	
70-7-0700-8780					SCADA System				9,139.78
525485	CO2 WATER PH ADJUSTMENT SYSTEM					200	15-Mar-2019	18-Apr-2019	
70-7-0700-8745		700200			Treatment Plant				15,690.73
020120	**BELL MOBILITY CELLULAR**								
514877178-AP	MONTHLY CELL PHONE CHARGES					201	01-Apr-2019	18-Apr-2019	
70-5-0700-7110		002070	002083		Telecommunications Usage				44.14
100048	**JACQUES DAOUST COATINGS MANAGEMENT INC**								
3206	UPSIDE DOWN VALVE-RES#1, PIPES/VALVES-RES#2					200	29-Mar-2019	18-Apr-2019	
70-7-0700-8745		700040			Treatment Plant				70,350.55
180190	**RICCI ENNS ROLLIER&SETTERINGTON LLP**								
61698	2017 & 2018 UWSS AUDIT LETTERS					200	08-Apr-2019	18-Apr-2019	
70-5-0700-7950		002070			Professional Services				203.40
180325	**RICOH CANADA INC**								
SCO92342870	COPIER CONTRACT - FEB19-MAR30					200	29-Mar-2019	18-Apr-2019	
70-5-0700-7010		002070			Office Supplies				102.19
190635	**STANTEC CONSULTING LTD**								
1368711	CBS - SOIL GRADING					200	28-Mar-2019	18-Apr-2019	
70-7-0700-8725		700030			Cottam Booster Station				1,212.47
230440	**WILLIS BUSINESS LAW**								
10299	LEGAL FEES - RESTRUCTURING					200	31-Mar-2019	18-Apr-2019	
70-5-0700-7950		002070			Professional Services				11,816.51
							Department Totals :		**108,559.77**

Vendor : 0011450 To PT00000167 EFT Paid Date : 10-Apr-2019 To 18-Apr-2019
Batch : All Bank : 07 To 08
Department : All Class : All

Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
080250	**HYDRO ONE NETWORKS INC**								
200141677460-I	MAR/19 HYDRO - RUTHVEN WATER TREATMENT PLANT					199	08-Apr-2019	18-Apr-2019	
70-5-0700-7420			002073		Electricity				54,737.05
200141680692-I	MAR/19 HYDRO - LOW LIFT					199	08-Apr-2019	18-Apr-2019	
70-5-0700-7420			002073		Electricity				-4.65
70-5-0700-7420			002073		Electricity				25,764.67
200141682009-I	MAR/19 HYDRO - ALBUNA WATER TOWER					194	01-Apr-2019	11-Apr-2019	
70-5-0700-7420			002073		Electricity				-118.64
70-5-0700-7420			002073		Electricity				1,695.33
200141683120-I	MAR/19 HYDRO - METER#5					194	01-Apr-2019	11-Apr-2019	
70-5-0700-7420			002073		Electricity				-3.20
70-5-0700-7420			002073		Electricity				45.83
200152134969-I	MAR/19 HYDRO - METER#17					199	08-Apr-2019	18-Apr-2019	
70-5-0700-7420			002073		Electricity				-2.74
70-5-0700-7420			002073		Electricity				38.76
130620	**MONARCH OFFICE SUPPLY INC**								
133707	BINDERS					199	01-Feb-2019	18-Apr-2019	
70-5-0700-7010			002070		Office Supplies				19.19
138739	POST-IT NOTES, STAPLES					199	03-Mar-2019	18-Apr-2019	
70-5-0700-7010			002070		Office Supplies				36.13
562933	RET'D BINDERS (INV#133502)					199	07-Feb-2019	18-Apr-2019	
70-5-0700-7010			002070		Office Supplies				-33.88
150365	**ONTARIO CLEAN WATER AGENCY**								
INV000108895	MAY-DEC18 BILLING ADJUSTMENT					199	31-Dec-2018	18-Apr-2019	
70-5-0700-6720			002071		OCWA Operating Contract				73,394.00
INV000111486	MAR/19 OPER & MTCE					199	31-Mar-2019	18-Apr-2019	
70-5-0700-6720			002071		OCWA Operating Contract				241,376.00
INV000112201	CREDIT ADJUSTMENT - INV000108895					199	01-Apr-2019	18-Apr-2019	
70-5-0700-6720			002071		OCWA Operating Contract				-33,394.00
160530	**PRICEWATERHOUSE COOPERS LLP**								
TR139127640	RESTRUCTURING CONSULTANT - MAR31					199	08-Apr-2019	18-Apr-2019	
70-5-0700-7950			002070		Professional Services				13,096.00
190185	**SGS CANADA INC. ENVIRONMENTAL SERVICES**								
11229799	WATER QUALITY STUDIES CORROSION-LAKESHORE					199	28-Mar-2019	18-Apr-2019	
70-5-0700-7989			002075		Operational Programs & Studies				196.62
11230011	WATER QUALITY STUDIES CORROSION-ESSEX					199	28-Mar-2019	18-Apr-2019	
70-5-0700-7989			002075		Operational Programs & Studies				98.31
11230080	WATER QUALITY STUDIES CORROSION-KINGSVILLE					199	28-Mar-2019	18-Apr-2019	
70-5-0700-7989			002075		Operational Programs & Studies				116.39
11230084	WATER QUALITY STUDIES CORROSION-UWSS					199	28-Mar-2019	18-Apr-2019	
70-5-0700-7989			002075		Operational Programs & Studies				621.50
11230091	WATER QUALITY STUDIES CORROSION-LEAMINGTON					199	28-Mar-2019	18-Apr-2019	
70-5-0700-7989			002075		Operational Programs & Studies				98.31
190755	**SUN LIFE ASSURANCE COMPANY OF CANADA**								
APR-19	APR/19 UNION WATER LOAN 3724:1					199	12-Apr-2019	18-Apr-2019	
70-5-0700-6000			002020	006901	Debenture Principal				74,536.48
70-5-0700-6100			002010	006901	Debenture Interest				112,047.52
210120	**UNION GAS LTD**								
1929770177678	777.378M3 GAS - COTTAM BOOSTER STATION					199	10-Apr-2019	18-Apr-2019	
70-5-0700-7410			002073		Gas				220.12

Vendor : 0011450 To PT00000167
EFT Paid Date : 10-Apr-2019 To 18-Apr-2019
Batch : All
Bank : 07 To 08
Department : All
Class : All

Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description / CC1 CC2 CC3 GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System				
	Department Totals :				**564,581.10**