Agenda Including Addeds
Elgin Area Primary Water Supply System
Joint Board of Management

The 2nd Meeting of the Elgin Area Primary Water Supply System Joint Board of Management
March 3, 2022, 5:00 PM
2022 Virtual Meeting - during the COVID-19 Emergency

Elgin Area Primary Water Supply System
Report

The 1st Meeting of the Elgin Area Primary Water Supply System Joint Board of Management
December 2, 2021

Attendance: Meeting held remotely on Thursday, December 2, 2021, commencing at 5:00 PM.

PRESENT: P. Barbour (Chair), S. Hillier, R. Monteith, S. Peters, M. van Holst and S. Wookey and J. Bunn (Committee Clerk)

ALSO PRESENT: A. Henry, L. McVittie and K. Scherr

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Adoption of Minutes

2.1 Minutes of the 4th Meeting held on October 7, 2021

VAN HOLST AND MONTEITH

That the minutes of the 4th meeting of the Elgin Area Primary Water Supply System Joint Board of Management, from the meeting held on October 7, 2021, **BE NOTED AND FILED**. **CARRIED**

Motion Passed

3. Consent Items

3.1 Quarterly Compliance Report (3rd Quarter 2021: July - September)

VAN HOLST AND PETERS

That, on the recommendation of the Chief Administrative Officer, the report dated December 2, 2021, with respect to the general, regulatory and contractual obligations of the Elgin Area Primary Water Supply System, for July to September 2021, **BE RECEIVED**. **CARRIED**

Motion Passed

3.2 Environmental Management System and Quality Management System

VAN HOLST AND PETERS

That, on the recommendation of the Chief Administrative Officer, the report dated December 2, 2021, with respect to the Environmental Management System and Quality Management System for the Elgin Area Primary Water Supply System, **BE RECEIVED**. **CARRIED**

Motion Passed

3.3 Quarterly Operating Financial Status - 3rd Quarter 2021

VAN HOLST AND PETERS

That, on the recommendation of the Chief Administrative Officer, the report dated December 2, 2021, with respect to the Quarterly Operating Financial Status of the Elgin Area Water Supply System, **BE RECEIVED**. **CARRIED**

Motion Passed

3.4 2021 and 2022 Meeting Schedule - Revised

VAN HOLST AND PETERS

That, on the recommendation of the Chief Administrative Officer, the revised meeting schedule for the Elgin Area Primary Water Supply System Board of Management, as appended to the report dated December 2, 2021, **BE APPROVED**. **CARRIED**

Motion Passed

4. Items for Discussion

4.1 Contracted Security Services - Contract Award

MONTEITH AND VAN HOLST

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the report, dated December 2, 2021, related to Contracted Security Services – Contract Award:

a) the above-noted report **BE RECEIVED**; and,

b) the proposal from Paladin Security Group Limited **BE ACCEPTED** and the Board Chair and the Chief Administrative Officer **BE AUTHORIZED** to execute an agreement for contracted security services, at an annual cost of $262,713, per year, for a three-year term. **CARRIED**

Motion Passed

4.2 Security Upgrades - Tender Award

PETERS AND MONTEITH

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the report, dated December 2, 2021, related to the Elgin Area Primary Water Supply System Security Upgrades – Tender Award (EA4022):

a) the bid from Paladin Technologies Inc., at an estimated cost of $242,631.51 (excluding HST), for the installation and integration of security cameras and access control systems at the Elgin Area water treatment plant **BE ACCEPTED**;

b) the approved budget for EA4022 **BE INCREASED** by $75,000, for a total approved budget amount of $575,000; it being noted that the additional funds will be provided from the Capital Reserve; and,

c) the above-noted report **BE RECEIVED**. **CARRIED**

Motion Passed

4.3 Elgin-Middlesex Pump Station Ownership Reconciliation

WOOKEY AND HILLIER

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the report, dated December 2, 2021, related to the Elgin-Middlesex Pump Station (EMPS) Ownership Reconciliation:

a) the Board Chair and the Chief Administrative Officer **BE AUTHORIZED** to execute a Joint Occupancy and Use Agreement with the City of London, the St. Thomas Secondary Water System and the Aylmer Secondary Water System, substantially in the form appended to the above-noted report, regarding the ownership of the common pumping station building and related building services at the Elgin Terminal Reservoir site; and,

b) the establishment of a dedicated reserve fund for the EMPS building and building-related assets **BE AUTHORIZED**, whereby the Annual Rate charged to the beneficiaries of the EMPS Building, in accordance with the Joint Occupancy and Use Agreement, is directed to the dedicated reserve and used for the sole purpose of maintaining, repairing and replacing the EMPS building and building-related assets. **CARRIED**

Motion Passed

5. Deferred Matters/Additional Business

None.

6. Next Meeting Date

March 3, 2022

7. Adjournment

The meeting adjourned at 5:39 PM.

Elgin Area
Primary Water Supply System

Report No.: EA-2022-01-01
Report Page: 1 of 2
Meeting Date: March 3, 2022
File No.:

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: Quarterly Compliance Report (4th Quarter 2021: October - December)

RECOMMENDATION

That the Quarterly Compliance report with respect to the general, regulatory and contractual obligations of the Elgin Area Primary Water Supply System **BE RECEIVED** for the information of the Board of Management; it being noted that there were no Adverse Water Quality Incidents reported in the 4th quarter of 2021.

BACKGROUND

Pursuant to Board of Management resolution, this Compliance Report is prepared on a quarterly basis to report on general, regulatory and contractual compliance issues relating to the regional water system. For clarity, the content of this report is presented in two basic areas, namely regulatory and contractual, and does not intend to portray an order of importance or sensitivity nor a complete list of all applicable regulatory and contractual obligations.

DISCUSSION

Regulatory Issues

Recent Regulatory Changes: At the time of drafting this report, there are no new regulatory changes for this reporting period which may significantly impact the EAPWSS.

New Environmental Registry of Ontario (ERO) Postings: At the time of drafting this report, there were no postings on the ERO that may have a significant impact on the EAPWSS.

Quarterly Water Quality Reports: The Water Quality Quarterly Report for the period of October 1 – December 31, 2021 was completed by the operating authority, and is posted on the Water Systems' website for public information.

Note: In order to better comply with the *Accessibility for Ontarians with Disabilities Act, 2005*, the detailed tables of water quality test results which were previously appended to this Report have been removed. The full list and test results of drinking water quality parameters is posted on the water system's website and available in print at the Board's Administration Office in London upon request. In addition, the detailed water quality information is also published within the water system's Annual Report required by O.Reg. 170/03 under the *Safe Drinking Water Act*.

Adverse Water Quality Incidents (AWQI): There were no AWQI reported by the operating authority or adverse laboratory results reported by the third-party accredited laboratory during this quarter.

Compliance Inspections: The Ministry of the Environment, Conservation and Parks (MECP) conducted a physical inspection of the EAPWSS on October 19, 2021. The final inspection report was issued by the MECP on December 7, 2021 and is the subject of a separate report to the Board.

Contractual Issues

ARTICLE 3, "Operation and Maintenance of the Facilities – General":

Board staff informally meets with OCWA on a monthly basis to discuss operations and maintenance related issues, and formally on a quarterly basis to review contractual performance. The 2021 fourth quarter Contract Report was received from OCWA on January 28, 2022 and was scheduled to be discussed at the quarterly administration meeting between Board staff and OCWA on February 10, 2022. Copies of the monthly Operations and Maintenance Reports, and quarterly Contract Reports are available at the Board's Administration Office in London upon request.

Prepared by: Erin McLeod, Quality Assurance & Compliance Manager

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Elgin Area
Primary Water Supply System

Report No.: EA-2022-01-02
Report Page: 1 of 16
Meeting Date: March 3, 2022
File No.:

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: Environmental Management System and Quality Management System

RECOMMENDATION

That the following report with respect to the Environmental Management System and Quality Management System for the Elgin Area Primary Water Supply System **BE RECEIVED** for information.

BACKGROUND

Environmental Management System (EMS)

The Elgin Area Primary Water Supply System (EAPWSS) has an Environmental Management System (EMS) which has been registered to the ISO 14001 standard since 2003. The EAPWSS underwent a three-year registration audit in October 2020 and was recommended for registration to the ISO 14001:2015 standard for a three-year period (ending in 2023).

The continued utilization and registration of the EMS to the ISO 14001 standard is a requirement of the Service Agreement with Ontario Clean Water Agency (OCWA), the contracted Operating Authority for the EAPWSS.

Quality Management System (QMS)

In 2006, the Drinking Water Quality Management Standard (DWQMS) was integrated with the existing EMS and the combined EMS/QMS is maintained by the contracted Operating Authority. The *Safe Drinking Water Act* (SDWA) and the water system's Municipal Drinking Water License (MDWL) require that an accredited Operating Authority be in operational charge of the drinking water system. In order to become accredited, the Operating Authority must utilize and maintain an Operational Plan that meets the requirements of the DWQMS and must undergo an external accreditation audit.

OCWA received full scope DWQMS re-accreditation in October 2019 and is currently accredited for the three-year period ending in 2022.

DISCUSSION

Management Review

The documented EMS/QMS and its performance requires Management Review by Top Management a minimum of once every calendar year to ensure that the management team of the Board and the Operating Authority stay informed of environmental and quality related issues. Items discussed at the Management Review meetings include, but are not limited to, water quality test results, environmental and quality performance, legislative changes, identified non-conformances, corrective and preventive actions, staff suggestions, changing circumstances and business strategies, and resource requirements. Corrective and preventive actions include not only those to address non-conformance issues and opportunities for improvement identified as part of internal and external audits, but also non-compliance issues identified by the Ministry of the Environment, Conservation and Parks (MECP), suggestions from staff, and opportunities for improvement identified during the Management Review process.

In order to carry out more effective Management Review meetings, the Board's administration has opted to conduct shorter meetings at more frequent intervals. Although each required Management Review input may not be covered at every meeting, over the course of the year all required inputs are reviewed at least once. Management Review meetings are held in a combined format for both the EAPWSS and the Lake Huron Primary Water Supply System (LHPWSS).

A Management Review meeting was held on January 25, 2022. The meeting minutes are included as Appendix A for the information of the Board.

Internal Audits

Pursuant to the international ISO 14001 EMS standard and the provincial DWQMS standard, periodic "internal" audits are performed by the Board's administration to ensure continued compliance with legislated, contractual, and other requirements, as well as conformance with the ISO 14001 EMS standard and DWQMS standard. Internal audits also ensure that the ongoing operation of the EAPWSS conforms to the EMS and QMS as implemented. As required by the standards, internal audits are performed a minimum of once every calendar year.

There were no internal audits conducted during the reporting period.

External Audits

Annual surveillance audits (third-party external audits) are conducted for both the EMS and QMS, with a recertification audit taking place every third year. The external registrar for both the EMS and QMS is currently SAI Global. External audits review all aspects of the EMS or QMS, including the scope and results of internal audits, subsequent management reviews, and corrective action processes.

The QMS surveillance audit was performed by SAI Global on November 2, 2021 and a summary of the findings is included in Appendix B of this report (full report available upon request). There were no non-conformances and one (1) opportunity for improvement identified during the audit. The opportunity for improvement is administrative in nature and relates to referencing additional procedures within the Operational Plan. The audit findings were discussed at the January 25, 2022 Management Review meeting.

The EMS surveillance audit was performed by SAI Global November 4-5, 2021 and a summary of the findings included in Appendix C of this report (full report available upon request). There were no non-conformances and two (2) opportunities for improvement identified during the audit. One (1) finding relates to compliance auditing including external training of new compliance staff and one (1) finding relates to enhancing documentation to facilitate trending. The audit findings were discussed at the January 25, 2022 Management Review meeting.

During the EMS audit, the external auditor specifically provided positive comments about the status and success of the EAPWSS management systems. The auditor confirmed to staff during the closing meeting that, based on their national experience, the EAPWSS has successfully implemented some of the best management systems they have seen, not just within the drinking water industry but across all industries. Specifically noted was the cooperative relationship between the EAPWSS and its operating authority, and the proactive approach to identifying improvement projects.

Corrective and Preventive Actions

For the EMS/QMS to be effective on an on-going basis, an organization must have a systematic method for identifying actual and potential non-conformities, making corrections, and undertaking corrective and preventive actions, preferably identifying and preventing problems before they occur. The Internal Audit process and Management Review are the two main drivers for proactively identifying potential problems and opportunities for improvement for the EAPWSS and implementing corrective actions. Preventive actions may originate from identified opportunities for improvement as part of an audit, but also staff suggestions and discussions with management.

It is important to note that action items should not be construed as **compliance failures**, but rather an action to be undertaken which will improve the EAPWSS's overall performance.

Action items are the result of the "Plan-Do-Check-Act" continual improvement process. The identification of action items is a critical component of continual improvement and an essential element of management systems. The identification of action items should be seen as a positive element, as this drives continual improvement.

A key concept of Plan-Do-Check-Act is that it does not require nor expect 100% conformance but promotes an environment of continual improvement by identifying shortfalls, implementing corrective and preventive measures, and setting objectives and targets for improvement. Figure 1 outlines the general process.

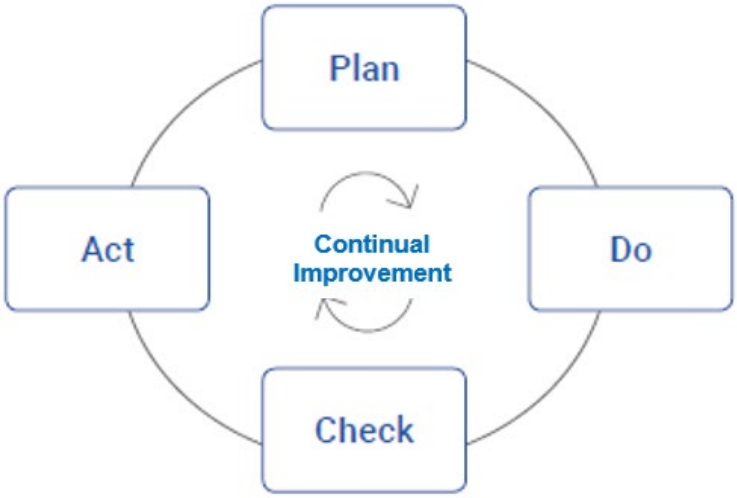


Figure 1: Plan-Do-Check-Act improvement process

Since the last report to the Board, the following summarizes new action items that have been added to the EMS/QMS action item tracking system:

- One (1) new action item was added as a result of the QMS external audit
- Four (4) new action items were added as a result of the EMS external audit
- Thirteen (13) new action items were added as a result of a QMS internal audit (presented at the previous Board meeting)
- Six (6) new action items were added as a result of the new security trailer on site
- Three (3) new action items were added as a result of the corrective action process for a loss of SCADA event.
- Three (3) new action items were added as a result of the corrective action process for a Drain Flush Total Residual Chlorine exceedance event
- Three (3) new action items were added as a result of the corrective action process for a raw water event that took place in September 2021

As of January 25, 2022, there are currently thirty-seven (37) open action items in the system. Action items are prioritized and addressed using a risk-based approach, and deadlines established given reasonable timeframes and resources that are available. Board staff are pleased with the performance of the corrective and preventive action process and have no concerns with the number of open action items.

CONCLUSION

The Internal Audits and frequent Management Review meetings continue to effectively identify system deficiencies. The EMS/QMS for the EAPWSS continues to be suitable, adequate and effective. Activities by OCWA continue to address the need for change, and the management systems are being revised and refined as required.

Prepared by: Erin McLeod, Quality Assurance & Compliance Manager, with the assistance of Allison McGuckin, Compliance Coordinator

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Attachments:

Appendix A – Management Review Meeting Minutes (January 25, 2022)
Appendix B – QMS External Audit Report (November 2, 2021)
Appendix C – EMS External Audit Report (November 4-5, 2021)

APPENDIX A: MANAGEMENT REVIEW MEETING MINUTES (JANUARY 25, 2022)

Lake Huron & Elgin Area Primary Water Supply Systems EMS/QMS Management Review

Date: January 25, 2022
Time: 10:00am
Location: Virtual – Microsoft Teams
Attendees: Andrew Henry (RWS), Erin McLeod (RWS), Allison McGuckin (RWS), Blair Tully (OCWA), Denny Rodrigues (OCWA), Simon Flanagan (OCWA)
Regrets: Greg Henderson (OCWA), Randy Lieber (OCWA)

N.B.: Management Review meetings are held in a combined format for both the Lake Huron Primary Water Supply System (LHPWSS) and the Elgin Area Primary Water Supply System (EAPWSS).

------Meeting Notes------

1. Review and Approval of Previous Minutes (LHPWSS & EAPWSS)

The minutes from the previous meeting (September 22, 2021) are posted to SharePoint. The minutes were approved. No concerns

2. Elgin Ministry of the Environment, Conservation and Parks (MECP) Inspection Report

MECP issued the Inspection report in December 2021. It contained no non-compliances or best management practices. EAPWSS received a rating of 100%. No actions required

3. Huron MECP Inspection Report

MECP issued the Inspection report in January 2022. It contained no non-compliances or best management practices. Report card still pending but confident the LHPWSS will receive a rating of 100%. No actions required

4. Elgin QMS Internal Audit (October 20-21, 2021)

Discussion occurred on all internal audit findings and the edits and updates were captured in the Elgin Corrective Action Form (CAF) Tracking Spreadsheet.

5. Huron QMS Internal Audit (October 13-14, 2021)

Discussion occurred on all internal audit findings and the edits and updates were captured in the Huron CAF Tracking Spreadsheet.

6. Elgin QMS External Audit (November 2, 2021)

There were no non-conformances and one (1) Opportunity for Improvement (OFI). Discussion occurred on this finding and the edits and updates were captured in the Elgin CAF Tracking Spreadsheet.

7. Huron QMS External Audit (November 1, 2021)

There were no non-conformances and one (1) OFI. Discussion occurred on this finding and the edits and updates were captured in the Huron CAF Tracking Spreadsheet.

8. Elgin EMS External Audit (November 4-5, 2021)

There were no non-conformances and two (2) OFI's Discussion occurred on these findings and the edits and updates were captured in the Elgin CAF Tracking Spreadsheet.

9. Huron EMS External Audit (November 25-26, 2021)

There were no non-conformances and six (6) OFI's. Discussion occurred on these findings and the edits and updates were captured in the Huron CAF Tracking Spreadsheet.

10. Corrective Action Forms (LHPWSS & EAPWSS)

a. Elgin – Loss of SCADA Event (June 16, 2021)
b. Elgin – Plant Drain Flush Total Chlorine Residual Exceedance (June 21, 2021)
c. Elgin – Raw Water Challenges (September 9, 2021)
d. Huron – MS1 Strathroy (Neil Rd) Unauthorized Entry (November 12, 2021)

Top Management was informed that each of the above events were captured on a Corrective Action Form and included in the appropriate CAF tracking spreadsheet.
Top Management acknowledged these items and had no additional comments.

11. Contingency Plan Test (LHPWSS & EAPWSS)

a. Elgin Loss of SCADA Event (June 16, 2021)
b. Huron Fire Response (July 27, 2021)
c. Huron Unauthorized Entry or Vandalism (November 12, 2021)
d. Elgin Fire Response (January 21, 2022)

Top Management was informed that each of the above events were captured on a Contingency Plan Test Form and included in the appropriate CAF tracking spreadsheet.
Top Management acknowledged these items and had no additional comments.

12. Management of Change (EAPWSS Site Security)

The following Management of Change Forms are required/completed:

1. Completed
    a. EAPWSS On-Site Security
        i. Action items identified and added to the Elgin CAF tracking spreadsheet.
2. Required
    a. EAPWSS and LHPWSS E-Logbooks
    b. LHPWSS residuals disposal
        i. Effective January 1, 2022, the residuals are going to South Huron Landfill
    c. LHPWSS High Lift Pump Project
    d. EAPWSS and LHPWSS Computerized Maintenance Management System (CMMS) change to Maximo
    e. LHPWSS North Filtered Conduit/Clearwell Repairs
    f. Elgin-Middlesex Pumping Station (EMPS) Ownership Reconciliation & Joint Occupancy Agreement

13. Results of Board Meetings (October 7, 2021 and December 2, 2021)

There have been 2 board meetings conducted since the last Management Review.

Oct. 7th Board Meetings
The EMS/QMS Report were received for information by each respective Board. There were no specific questions or comments on the EMS/QMS reports.

Dec. 2nd Board Meetings
The EMS/QMS Reports were received for information by each respective Board. There were no specific questions or comments on the Huron EMS/QMS report. The Elgin Board had general discussion on non-revenue water and process water losses, and customer service.

Items discussed at the Dec. 2nd Board meeting that may impact the EMS/QMS in future include: renewal of the operating contract with OCWA, EMPS joint occupancy agreement, system growth and expansion. These items will be further considered at a future EMS/QMS Management review meeting when updates to internal & external issues, and interested parties are discussed.

14. Compliance Obligations Update

Proposed amendments to drinking water operator and water quality analyst certification regulation to address impacts of emergencies

Source: Ministry of the Environment, Conservation and Parks (MECP)
Date Posted/Notice Received: December 3, 2021
Comments Due: N/A

Summary: With the rapid spread of the highly transmissible omicron variant, MECP recognizes that drinking water and wastewater systems may experience pandemic related critical staffing shortages that could impact the continuity of operations. Recent regulatory amendments were made to address potential shortages. O. Reg. 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) was amended to provide systems with temporary staffing options (e.g., use of knowledgeable non-certified persons) during an emergency that could adversely affect the operation of a system resulting in a drinking water health hazard or a significant risk to human health or the natural environment.
Potential Impacts:
None anticipated. However, if the organization takes any actions under the authority of these provisions, notification is required to MECP within 7 days.
The Operational Plan procedures that address continuity of operations/emergency scenarios are up to date.

Guidelines for Canadian Drinking Water Quality: Dicamba
Source: Health Canada
Date Posted/Notice Received: January 14, 2022
Comments Due: N/A
Summary:
The updated document establishes the maximum acceptable concentration (MAC) of 0.11 mg/L (110 µg/L) for dicamba in drinking water. Dicamba is an herbicide registered for use on lawn and turf, as well as on industrial and agricultural sites. It is not commonly found in source or drinking water in Canada, except at low levels during targeted monitoring where dicamba is being applied.
Potential Impacts: The current Ontario MAC is 0.12 mg/L. Test results for dicamba in treated water are non-detect for both the EAPWSS and LHPWSS.

Guidelines for Canadian Drinking Water Quality: Diquat
Source: Health Canada
Date Posted/Notice Received: January 21, 2022
Comments Due: N/A
Summary:
The updated document establishes the maximum acceptable concentration (MAC) of 0.05 mg/L (50 µg/L) for diquat in drinking water. Diquat is an herbicide that is deliberately applied to food crops and to water sources for weed control.
Potential Impacts: The current Ontario MAC is 0.07 mg/L. Test results for diquat in treated water are non-detect for both the EAPWSS and LHPWSS.

Guidance on the Temperature Aspects of Drinking Water
Source: Health Canada
Date Posted/Notice Received: December 24, 2021
Comments Due: N/A
Summary: The document highlights water temperature aspects that may be relevant to drinking water utilities. Water temperature affects all physical, chemical, microbiological, and

biochemical processes to some extent. This, in turn, affects treatment efficacy and water quality and can result in issues related to health-based contaminants and/or aesthetics. The document states that all water utilities should implement a risk management approach requiring a system assessment that: characterizes the water source; describes treatment barriers; highlights the conditions that can result in contamination; and identifies control measures.
Potential Impacts: None (reference material). The DWQMS Operational Plan includes a risk assessment as recommended.

Amendments to the Director's Technical Rules made under the Clean Water Act, 2006
Source: MECP
Date Posted/Notice Received: December 3, 2021
Comments Due: N/A
Summary:
MECP has updated the Director's Technical Rules for assessing vulnerability and risks under the Clean Water Act, 2006. These Technical Rules are used by source protection authorities and municipalities to help develop and implement collaborative, watershed-based assessment reports and source protection plans that protect local drinking water supplies. A supporting document contains details on the updates to the Director's Technical Rules, including the Tables of Drinking Water Threats.
Potential Impacts: None anticipated.

Moving to a project list approach under the Environmental Assessment Act
Source: MECP
Date Posted/Notice Received: November 26, 2021
Comments Due: January 25, 2022
Summary:
Recent amendments to the Environmental Assessment Act (EAA) enabled the move to a project list approach, which means that projects that require a comprehensive environmental assessment (EA) (previously known as an individual EA) will be listed in the regulation rather than being based mainly on who is proposing the project.
Under the proposal, most project types that currently require a comprehensive EA will continue to need one. Proposed changes will allow some projects to instead follow a streamlined process which will continue to ensure environmental oversight and robust consultation prior to the project being able to proceed.
Projects subject to a comprehensive EA include waste management, electricity, transit, highway, railway, waterfront, and mineral development projects.
Potential Impacts:
None anticipated.
Waterfront projects in the Great Lakes-St. Lawrence River System subject to comprehensive EA requirements would involve establishing "works" (e.g., berm, marina, channel, island, beach, pier, wall, or riprap) which alter at least 1 km of shoreline and require at least 4ha of lakebed or riverbed to be filled.

15. Other Business

No other business discussed.

Next Meeting: April 5, 2022

APPENDIX B: QMS SURVEILLANCE AUDIT REPORT (NOVEMBER 2, 2021)

Audit Type and Purpose

Surveillance Audit:

A systems desktop audit in accordance with the systems audit procedure as it applies to Full Scope accreditation. The audit also included consideration of the results of the most recent audit undertaken in accordance with this Accreditation Protocol and any of the following that have occurred after that audit including but limited to:

a) the results of any audits undertaken in accordance with element 19 of the DWQMS V2;
b) historical responses taken to address corrective action requests made by an Accreditation Body;
c) the results of any management reviews undertaken in accordance with element 20 of the DWQMS V2; and,
d) any changes to the documentation and implementation of the QMS.

Audit Objectives

The objective of the audit was to determine whether the drinking water Quality Management System (QMS) of the subject system conforms to the requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Drinking Water Quality Management Standard (DWQMS V2).

The audit was also intended to gather the information necessary for SAI Global to assess whether accreditation can continue or be offered or to the Operating Authority.

Audit Scope

The facilities and processes associated with the Operating Authority's QMS were objectively evaluated to obtain audit evidence and to determine a) whether the quality management activities and related results conform with DWQMS V2 requirements, and b) if they have been effectively implemented and/or maintained.

Audit Criteria:

- The Drinking Water Quality Management Standard Version 2
- Current QMS manuals, procedures and records implemented by the Operating Authority
- SAI Global Accreditation Program Handbook

Confidentiality and Documentation Requirements

The SAI Global stores their records and reports to ensure their preservation and confidentiality. Unless required by law, the SAI Global will not disclose audit records to a third party without prior written consent of the applicant. The only exception will be that the SAI Global will provide

audit and corrective action reports to the Ontario Ministry of the Environment. For more information, please refer to the SAI Global Accreditation Program Handbook.

As part of the SAI Global Terms, it is necessary for you to notify SAI Global of any changes to your Quality Management System that you believe are significant enough to risk non-conformity with DWQMS V2: For more information, please refer to the SAI Global Accreditation Program Handbook.

Review of any changes

Changes to the Operating Authority since the last audit: None

EXECUTIVE OVERVIEW

Based on the results of this surveillance system audit the management system remains effectively implemented and meets the requirements of the standard relative to the scope of certification; therefore, a recommendation for continued certification will be submitted.

Recommendation

Based on the results of this audit it has been determined that the management system is effectively implemented and maintained and meets the requirements of the standard relative to the scope of certification identified in this report; therefore, a recommendation for (continued) certification will be submitted to SAI Global review team.

Opportunities for Improvement:

The following opportunities for improvement have been identified.

- **Element 18 Emergency Management** – There is an opportunity to reference EMC-8 in OP Element 18.

It is suggested that the opportunities for improvement be considered by management to further enhance the Operating Authority's Quality Management System and performance.

Management System Documentation

The management systems operational plan(s) was reviewed and found to be in conformance with the requirements of the standard.

Management Review

Records of the most recent management review meetings were verified and found to meet the requirements of the standard. All inputs are reflected in the records and appear suitably managed as reflected by resulting actions and decisions.

Internal Audits

Internal audits are being conducted at planned intervals to ensure conformance to planned arrangements, the requirements of the standard and the established management system.

Corrective, Preventive Action & Continual Improvement Processes

The Operating Authority is implementing an effective process for the continual improvement of the management system using the quality policy, quality objectives, audit results, data analysis, the appropriate management of corrective and preventive actions and management review.

APPENDIX C: EMS SURVEILLANCE AUDIT REPORT SUMMARY (NOVEMBER 4-5, 2021)

SURVEILLANCE EXECUTIVE OVERVIEW

The objective of this audit was to determine continuing compliance of your organization's management system with the audit criteria; and its effectiveness in achieving continual improvement and system objectives

Changes to the audit plan and the reasons for the change:

No changes were required.

Significant issues impacting on the Audit Programme:

New Regional Water Supply Compliance Coordinator to be hired – refer to 6.1.3 OFI

Site(s) description: activities/processes at each site:

Refer to Scope

Interrelationship between sites (dependency):

Refer to Scope /CIS.

The objectives of the audit were achieved.

Overall Recommendation

The capability of the management system to meet expected outcomes:

The organization continues to demonstrate continual improvement (e.g., refer to projects outlined in the audit summary including proactive relationship between OCWA and RWS to identify improvements, e.g., energy team, advancing lifecycle evaluation) through meeting long-term electricity and chemical usage objectives and compliance with obligations (refer to audit summary below–refer to OFI), with the support of Regional Water Supply (RWS) and OCWA leadership. Environmental awareness at management and operational levels (e.g., impact on the environment) is evident.

Audit recommendations are always subject to ratification by SAI Global certification authority.

For the following standard(s): ISO 14001:2015

Based on the evidence verified and findings of this audit, the management system is being managed and utilized by all employees interviewed. There is appropriate input and support from top management. There have been no issues identified that need immediate attention although the contents of this report should be fully reviewed to determine any ongoing system improvement opportunities.

Non-Conformances (NCRs):

All the applicable requirements of the ISO 14001:2015 were audited and considered to be implemented except for the non-conformances identified below. None identified.

Opportunities for Improvement:

The following opportunities for improvement have been identified.

- **6.1.3 Compliance obligations** – Consider the use of an external party to support new Compliance Coordinator in relation to compliance:

    i. audit services to address internal auditing backlog, and

    ii. training for additional due diligence.

- **10.2 Nonconformity and corrective action** – Consider, as part of Corrective Action Tracking spreadsheet:

    i. prioritization of verification activities (e.g., CARs) to address backlog, and

    ii. addition of EMS / QMS elements columns to facilitate corrective action / OFI analysis / trending.

It is suggested that the opportunities for improvement be considered by management to further enhance the company's Management System and performance of the business.

Elgin Area
Primary Water Supply System

Report No.: EA-2022-01-03
Report Page: 1 of 4
Meeting Date: March 3, 2022
File No.:

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: Quarterly Operating Financial Status – 4th Quarter 2021

RECOMMENDATION

That this report regarding the Quarterly Operating Financial Status of the Elgin Area Water Supply System be **RECEIVED** by the Board of Management for information; it being noted that the financial information presented in this report is unaudited and subject to adjustments including the preparation of the financial statements and completion of the annual audit.

BACKGROUND

At the request of the Board of Management, a Financial Status Report is provided on a quarterly basis for information. The financial status provides a high-level overview of incurred expenditures and revenues on a cash-flow basis and is compared to the approved operating budget of the water supply system. All expenditures and revenues provided in this Financial Status Report are unaudited and may include accrued and/or unaccrued expenses from a previous or future fiscal year.

A high-level summary of incurred expenses and revenues for the water supply system is attached to this report as Appendix A for the fourth quarter 2021 (October 1 to December 31) as well as a comparative accumulation of expensed for the year to date.

Note: The reported expenditures and revenues may be subject to adjustments, including but not limited to corrections and entries required for the preparation of financial statements and completion of the annual audit.

DISCUSSION

For the information and reference of the Board, the following highlights of the attached summary provides a brief explanation of notable deviations from the approved budget and/or clarifications of the financial summary:

- Contracted Operating Services in the summary report reflects the total direct operating costs of the contracted operation of the water treatment and transmission system, as well as other related contracted services. The total accumulated operating costs over the year (unaudited) is higher than the same period in 2020 and is reflective of contractual increases in service agreements with the operating authority and other contracted services.

- Contracted Administrative Services in the summary report reflects the fees paid to the City of London.

- Electricity expenditures include the purchase of energy and related energy management service charges for the water system. The water system was marginally lower than the previous year largely due energy savings resulting from the installation of the new high lift pumps at the water treatment plant and other energy-saving programs implemented.

- Salaries, wages and benefits expenditures include all direct labour costs for administrative staff including benefits. Variations over the same period in 2020 are attributed to annual salary adjustments, previous staff vacancies, and additional costs as a result of the pandemic.

- Administration and Other Expenses relates to various overhead operating expenses, including subscriptions and memberships, and office supplies. While the reported expenditures have been adjusted as part of the year-end process, accounting for 2022 pre-payments and other cost adjustments, the costs to date are significantly than the same period in 2020 largely due to property tax adjustments that occurred in 2020.

- Vehicles and Equipment expenditures include costs associated with vehicles, computers and office equipment for administrative staff. Anticipated 2021 year-end expenditures are anticipated to be only marginally higher than 2020.

- Purchased Services and Professional Fees largely relate to allowances for ad hoc professional consulting and legal services, office lease, telephone charges, network and SCADA maintenance, printing services, and pipeline locate costs. The increased cost when compared to 2020 is largely attributed to increased computer and network maintenance costs for the regional water system.

- Debt Principle and Interest payments occur twice per year; in the first and third quarter.

- Contributions to the Reserve Funds occur at the end of the fiscal year (fourth quarter) as part of the year-end process and in preparation for the year-end audit, where the actual contributions are the total remaining revenue in excess of expenditures. Accordingly, the amount of the anticipated contribution is currently adjusted to reflect the additional revenue and expenses incurred and may be subject to further adjustment as a result of the completion of the year-end financial statements and audit.

Prepared by: Archana Gagnier
Budget and Finance Analyst

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water Supply

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Attachments: Operating Financial Status Summary – 4th Quarter 2021

Quarterly Financial Summary Report

Elgin Area Water Supply System

4th Quarter 2021 (October 1 to December 31)

($,000's)

	Approved 2021 Budget	Q4-2021	2021 Year to Date	% Year to Date	Year To Date Variance	2020 Year To Date
Total Revenue	**13,987**	4,990	14,515	103.8%	-528	14,260
Expenditures:						
Contracted Operating Services	4,274	1,345	4,537	106.2%	-263	4,484
Contracted Administrative Services	180	45	180	100.0%	0	170
Electricity	1,150	672	1,042	90.6%	108	1,181
Salaries, Wages, Benefits	741	254	800	108.0%	-59	692
Administration and Other Expenditures	252	-2	405	160.7%	-153	798
Vehicles and Equipment	46	11	46	100.0%	0	45
Purchased Services & Professional Fees	452	63	526	116.4%	-74	455
Debt Principle Payments	2,288	15	2,292	100.2%	-4	2,239
Interest on Long-Term Debt	243	-16	223	91.8%	20	289
Contributions to Reserve Funds	4,361	4,361	4,465	102.4%	-104	3,906
Total Expenditures	**13,987**	**6,748**	**14,515**	**103.8%**	**-528**	**14,260**

Elgin Area
Primary Water Supply System

Report No.: EA-2022-01-04
Report Page: 1 of 6
Meeting Date: March 3, 2022
File No.:

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: Capital Status Report

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the following actions be taken regarding Elgin Area Primary Water Supply System capital projects:

a) That this report regarding the status capital projects **BE RECEIVED** for information.

b) That projects EA4144 Fluoride Lines, EA4147 Generator Multiline Relay and EA4179 Window/Glazing Replacement be **CLOSED** with surplus funding in the approximate amount of **$17,028** be released to the Reserve Funds; and,

c) That projects EA4085 IT Security Upgrades and EA4160 Non-Revenue Meter Replacement be **CLOSED** with additional funding in the approximate amount of **$44,743** be drawn from the Reserve Funds.

DISCUSSION

The Capital Project Status Report, attached to this report as Appendix A for the Board's information, provides a brief overview of the status of current capital projects for the Elgin Area Primary Water Supply System. This report is provided for the general information of the Board.

The status report is divided into four categories of projects, namely:

1. **Ongoing Projects**: This section provides a summary list of all projects which are funded by the Board through the Capital Budget, and which are currently in-progress. Board funded projects are typically for the replacement or upgrade of existing assets, the construction of new assets, or engineering studies and assessments, as approved by the Board.

   Under the terms of the Service Agreement with the contracted operating authority, the Board is also required to pay for some maintenance/repair activities. The benchmark used in the operating contract is that if the value of the material and any contracted labour is over $36,408.98 (indexed annually to inflation from the start of the contract), the project is considered Capital Maintenance and the contracted operating authority would fund the first $36,408.98 (indexed), with the balance funded by the Board. Accordingly, the Board maintains an annual “fund” within the Board’s capital budget to pay for these projects as they arise.

2. **Completed Projects - Release Surplus to Reserve Funds**: This section provides a summary list of all projects which are presently completed and do not require additional funds from that budgeted. Should the Board approve the closure of the listed projects, it is the recommendation of staff to release the surplus funds, if any, to the appropriate Reserve Fund.

   Completed Projects – Reduce Authorized Debt: In the case where the project is funded through the issuance of a debenture, should the Board approve the closure of the listed project it is the recommendation of staff to reduce the previously authorized but unissued debt for the project(s).

3. **Completed Projects - Additional Funding Required**: This section provides a summary list of all projects which are presently completed but require additional funds from that originally approved by the Board. Should the Board approve the closure of the listed projects, it is the recommendation of staff to provide the required additional funding from the Board's Reserve Fund.

Prepared by: Archana Gagnier, Budget and Finance Analyst

Submitted by: Andrew Henry, P. Eng., Director, Regional Water Supply

Recommended by: Kelly Scherr, P.Eng., MBA, FEC, Chief Administrative Officer

Attachments: Appendix A - Capital Project Status Summary

APPENDIX A: CAPITAL PROJECT STATUS SUMMARY

A.1 Ongoing Capital Projects

PROJECT NO.	PROJECT	APPROVED BUDGET	EXPENDED TO DATE *	STATUS
EA1026	RW Office Expansion & Renovation	$200,000	$96,996	Project ongoing
EA2172	Terminal Reservoir Isolation Valve Replacement	$90,000	$35,766	Project ongoing
EA2177	Asset Management Plan 2021	$150,000	$61,847	Project ongoing
EA3010	IT Asset Replacement Program	$431,000	$191,188	Project ongoing
EA3011	Plant Interior Door Replacement	$60,000	$37,746	Project ongoing
EA3012	Interior LED Lighting Upgrades	$75,000	$74,957	Project ongoing
EA3013	Plant Reservoir Drain Repairs	$100,000	$40,640	Project ongoing
EA3014	LLP 2&3 Replacement Study	$50,000	$21,098	Project ongoing
EA3016	Safety Showers Replacement	$60,000	$60,078	Project ongoing
EA3017	Exterior WTP Building Seals	$60,000	$15,572	Project ongoing
EA3018	Cyber Intrusion Detection System	$10,000	$0	Project ongoing
EA3020	Roof Replacement	$325,000	$163,457	Project ongoing
EA4020	Financial Plan Update 2021	$50,000	$2,061	Project ongoing
EA4022	Security Upgrades	$600,000	$199,247	Project ongoing
EA4039	Record Drawings & Documents	$255,000	$174,045	Ongoing annual project
EA4055	Pipeline Condition Assessment	$950,000	$695,921	Project ongoing

PROJECT NO.	PROJECT	APPROVED BUDGET	EXPENDED TO DATE *	STATUS
EA4073	Plant Instrumentation	$577,000	$591,350	Ongoing annual project
EA4095	WTP Interior Renovations	$581,500	$332,541	Ongoing multi-year project
EA4107	Concrete Crack Injection	$120,000	$103,284	Project ongoing
EA4114-21	Annual Maintenance (2021)	$100,000	$18,212	Annual program
EA4129	Server Room Fire Suppression	$30,000	$0	Project on hold
EA4132	Alum Storage Tanks	$615,000	$273,882	Project ongoing
EA4135	Hydraulic/Transient Model Update & Monitoring Study	$92,000	$33,931	Project ongoing
EA4136	Service Water Piping Replacement	$75,000	$63,104	Ongoing multi-year project
EA4137	Low Lift Service Water Connection	$550,000	$35,578	Ongoing multi-year project
EA4138	Parking Lot Asphalt Resurfacing	$50,000	$0	Project ongoing
EA4152	PLC Replacements	$40,000	$0	Project ongoing
EA4153	Filter Backwash Upgrades	$2,459,000	$37,560	Project ongoing
EA4156	High Lift Pump Replacement	$4,851,000	$2,829,337	Project ongoing
EA4161	Evaluate Pre-Treatment Hydraulics	$50,000	$40,310	Project ongoing
EA4162	Crop Yield Monitoring – 2013 Pipeline Twinning	$661,000	$195,959	Ongoing multi-year project
EA4166	SCADA/PLC – Software Review and Upgrade	$500,000	$7,375	Project ongoing

PROJECT NO.	PROJECT	APPROVED BUDGET	EXPENDED TO DATE *	STATUS
EA4171	Backwash Drain Valve Actuator Replacement	$125,000	$66,542	Project ongoing
EA4172	Dedicated Raw Water Sample Line	$90,000	$0	Project ongoing
EA4175	Pilot – Unchlorinated Filtration	$25,000	$0	Project ongoing
EA4176	Plant Drain Chlorine Sample Line	$80,000	$59,683	Project ongoing
EA4177	Railings and guarding	$250,000	$196,964	Ongoing multi-year project
EA4180	Filter Capacity Evaluation	$37,000	$0	Project ongoing
EA4183	UV Replacement	$500,000	$0	Project to be initiated
EA4184	Water Quality Facility Plan	$290,000	$0	Project to be initiated
EA4185	Construction Site Trailer Pad	$25,000	$0	Project to be initiated
EA4186	Sodium Hydroxide Assessment Study	$30,000	$0	Project to be initiated
EA4187	EMPS – Utility Pole Replacement	$15,000	$0	Project to be initiated
EA4188	Lighting/Breaker Panel Replacement	$50,000	$0	Project to be initiated
EA4189	RMF Mixing Pump Replacement	$100,000	$0	Project to be initiated
EA4190	RMF Total Chlorine Residual Compliance	$50,000	$0	Project to be initiated
EA4191	Roof Drain Replacements	$25,000	$0	Project to be initiated
EA4192	Flocc Tank Influent Distribution Upgrades	$100,000	$0	Project to be initiated
	TOTAL	**$16,609,500**	**$6,756,231**	

A.2(a) Completed Projects – Release Surplus to Reserve Funds ($17,028)

PROJECT NO.	PROJECT	APPROVED BUDGET	EXPENDED TO DATE *	STATUS
EA4144	Fluoride System Renewal	$30,000	$20,891	Project completed
EA4147	Generator Multiline Relay	$75,000	$68,631	Project completed
EA4179	Window/Glazing Replacement	$120,000	$118,450	Project completed
	TOTAL	**$225,000**	**$207,972**	

A.2(b) Completed Projects – Reduce Authorized Debt

PROJECT NO.	PROJECT	APPROVED BUDGET	EXPENDED TO DATE *	STATUS
	TOTAL	**$ 0**	**$ 0**	

A.3 Completed Projects – Additional Funding Required ($44,743)

PROJECT NO.	PROJECT	APPROVED BUDGET	EXPENDED TO DATE *	STATUS
EA4085	IT Upgrades	$754,000	$798,467	Project completed
EA4160	Non-Revenue Meter Replacement Program	$275,000	$275,276	Project completed
	TOTAL	**$1,029,000**	**$1,073,743**	

Notes:

* *Expended as of December 31, 2021.*

Elgin Area
Primary Water Supply System

Report No.: EA-2022-01-05
Report Page: 1 of 3
Meeting Date: March 3, 2022
File No.:

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: Ministry of the Environment, Conservation and Parks Inspection Report

RECOMMENDATION

That this report with respect to the Ministry of the Environment, Conservation and Parks (MECP) annual inspection **BE RECEIVED** for the information of the Board of Management.

BACKGROUND

The Ministry of the Environment, Conservation and Parks (MECP) conducts an inspection of the Elgin Area Primary Water Supply System (EAPWSS) annually. The objective of the inspection is to determine the compliance of the drinking water system with requirements under the *Safe Drinking Water Act* and associated regulations, as well as licences and permits issued by the MECP. An inspection report is issued by the MECP which outlines any non-compliances as well as recommended best management practices for the water system's consideration.

Violations identified within an inspection report, if any, have been evaluated by the MECP based on the potential and degree of risk to consumers. Any identified violations are monitored for compliance with the minimum standards for drinking water in Ontario as set forth under the *Safe Drinking Water Act* and associated regulations. Where risk is deemed to be high and/or compliance is an ongoing concern, violations are forwarded to the Ministry's Investigation and Enforcement Branch by the MECP Inspector.

DISCUSSION

Inspection Findings

The MECP conducted an unannounced "focused" inspection of the EAPWSS on October 19, 2021. The final inspection report was issued by the MECP on December 7, 2021. The inspection covered the period from November 1, 2020 through September 30, 2021.

A focused inspection involves fewer activities than what would be normally undertaken in a detailed inspection, and includes the critical elements required to assess key compliance issues. Drinking water systems may be selected for a focused inspection if the past performance has met MECP criteria. Future inspections may be either detailed or focused.

The final inspection report issued by the MECP contained an inspection rating of 100.00% for the inspection period. There were no non-compliances or recommended best management practices identified by the Ministry Inspector. No action is required by either the operating authority or owner.

Due to the length of the Ministry's final inspection report, this Board report contains a summary only for the general information of the Board. Copies of the complete inspection report as issued by the MECP are available to the Board, the benefiting municipalities, and the public at large from Board staff at the Regional Water Supply office in London upon request.

It is noted for the Board's information and reference that these annual inspection reports were previously posted to the water systems' website for ease of public access. Unfortunately, the Inspection Report issued by the MECP does not comply with the *Accessibility for Ontarians with Disabilities Act.* As a result, previous inspection reports have been removed from the water systems' website. This and future annual inspection reports issued by the Ministry will only be made available upon request until such time as the Ministry makes the document compliant with the Act.

Risk Rating

The MECP applies a risk rating methodology to establish an annual inspection rating. Any non-compliance identified in the inspection report is evaluated based on the potential to compromise the delivery of safe drinking water to the public. For example, a "failure to document" may have a relatively low risk, whereas a "failure to disinfect" would have a relatively high risk. The primary goal of this type of assessment is to encourage ongoing improvement and to establish a way to measure improvement, which is weighted by the severity of the risk. A low inspection rating does not necessarily mean that drinking water is unsafe, but rather it is an indication of the degree to which there is room for improvement with respect to a drinking water system's operation and related administrative activities.

This methodology of risk assessment and rating has been used consistently by the MECP since the 2008-2009 inspection period, and therefore can serve as a comparative measure both provincially and specifically to the EAPWSS since that time. The methodology utilized for annual inspections is reviewed by the MECP every three years. If changes occur in the application of the methodology and risk ratings, ratings from one three-year period may be slightly inconsistent with another.

The following table outlines inspection ratings for the EAPWSS over the last five years:

Reporting Year	Final Inspection Rating	# of Non-compliances	Type of Inspection	Operating Authority
2017-2018	97.17%	3	Focused	OCWA
2018-2019	100.00%	0	Focused	OCWA
2019-2020	97.11%	1	Detailed	OCWA
2020-2021	100.00%	0	Focused	OCWA
2021-2022	100.00%	0	Focused	OCWA

Correspondence and Communications

Prior to issuing the final inspection report, the MECP issues a draft copy to the owner-representative and operating authority, providing the opportunity to comment or request clarification on the findings. As no non-compliances or recommended best practices were identified, neither OCWA nor Board staff submitted formal comments.

CONCLUSION

The MECP inspection report has indicated that all requirements of applicable drinking water legislation for the EAPWSS were met for this inspection period. Board staff will continue to review and discuss any inspection findings with the MECP Regional Office as required, to ensure that inspection findings are consistent, appropriate and relevant to the EAPWSS.

Prepared by: Erin McLeod, Quality Assurance & Compliance Manager

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water Supply

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Elgin Area
Primary Water Supply System

Report No.: LH-2022-01-07
Report Page: 1 of 3
Meeting Date: March 3, 2022
File No.: EA4162

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: EA4162 Crop Yield Monitoring Program – 2012 Pipeline Twinning Project

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the Board of Management for the Elgin Area Primary Water Supply System **RECEIVE** this report regarding the Crop Yield Monitoring Program associated with the 2012 Pipeline Twinning Project for information.

PREVIOUS AND RELATED REPORTS

December 7, 2017	Crop Yield Monitoring Program – 2012 Pipeline Twinning Project
October 8, 2020	2021 Operating and Capital Budgets
June 3, 2021	EA4162 Crop Yield Monitoring Program – 2012 Pipeline Twinning Project

BACKGROUND

Construction associated with the twinning of the 14.8-kilometre transmission main, adding a new 900 mm diameter pipeline adjacent to the existing 750mm pipeline, was completed in May 2012. As part of the construction project, the Elgin Area Primary Water Supply System (EAPWSS) entered into agreements with affected landowners related to construction activities, preservation of agricultural property, and post construction monitoring.

The agreement includes a condition that in each of the seventh-, eighth-, and ninth year following construction, the EAPWSS shall implement a crop yield monitoring program and that the monitoring program shall be undertaken by a specialist agronomist consultant mutually agreeable by both the EAPWSS and the Landowner. In October 2017, the Board approved a list of pre-qualified agronomists from which affected agricultural property owners may select to undertake a three-year crop yield monitoring program.

The intent of the crop yield monitoring program is to reasonably gauge the impact of the pipeline construction on the productivity of the agricultural properties. Landowner compensation paid during pipeline construction, in part, assumed crop yield losses over an extended period. The crop yield loss compensation is based a standard formula developed and is normal industry practice for all manner of pipelines within agricultural easements.

If crop yield losses (a comparison of on-easement versus off-easement productivity) are worse than what which was previously compensated for, the landowner is entitled to further compensation as well as remediation work at the EAPWSS' expense to limit future losses.

DISCUSSION

Board staff contacted agricultural property owners affected by the 2012 pipeline twinning project to confirm their agreement to participate in the crop yield monitoring program and allow the landowner to select a pre-qualified specialist agronomist. All landowner participants selected McCallum Agronomic Services as their pre-qualified crop yield monitoring specialist and monitoring commenced in the 2019 crop year. In total fifteen (15) agricultural properties were monitored in 2019 and 2020 and fourteen (14) properties were monitored in 2021 as the monitoring program was discontinued for one property as reported to the Board in June 2021.

The crop yield monitoring for seven (7) properties showed an on-easement average loss of less than 20% over the period. In accordance with the agreement the monitoring program for those properties has been concluded.

For the remaining seven (7) properties, the crop yield monitoring program has not conclusively demonstrated that the on-easement 80% average yield threshold will be met over the long-term. Property owners are compensated in each monitoring year for the crop yield loss variance during the monitoring program pursuant to the agreement. Board staff also continue to meet with property owners to undertake remedial efforts such as organic soil amendments and drainage improvements (such as regrading and field tiling) to improve on-easement yields. Several of these properties have already completed remedial works during the monitoring program; however, efforts such as organic soil amendments and tiling may take several years before yields significantly improve to meet the threshold requirements. Despite this expected lag, the agronomist remains optimistic that many of the remaining fields will meet the on-easement average yield threshold of 80% within a reasonable (3-year) timeframe.

Pursuant to the agreement, these properties will be monitored in 2022 and beyond until the average yield threshold of 80% is met or, at the request of the property owner, Board staff adjusts the original compensation payment, and the property owner signs a release in full and final satisfaction of all issues pertaining to crop loss arising from the 2012 pipeline twinning project. It is likely that a few of the remaining properties, where remediation is currently underway, will fall short of the threshold and ultimately an adjustment to the original compensation payment will be the only course of action reasonably available to all parties.

PROJECT FINANCIAL STATUS

Expenditure	Projected		Incurred	
Crop Yield Loss Variance Compensation	$	61,000	$	15,193
Remedial works	$	300,000	$	15,984
Crop yield monitoring	$	200,000	$	176,302
Total	**$**	**561,000**	**$**	**207,479**

Approved Budget	**$**	**661,000**
Projected Variance	**$**	**100,000**

CONCLUSION

The crop yield monitoring undertaken in 2019, 2020 and 2021 by the agronomist selected by agricultural property owners affected by the 2012 Pipeline Twinning project, determined that half of the properties had on-easement yields greater than the 80% threshold. At the recommendation of the agronomist and in consultation with property owners, monitoring will continue in 2022 and beyond in conjunction with remedial efforts with the aim of reaching on-easement yields greater than the 80% threshold for the remaining properties.

Prepared by: Billy Haklander, P.Eng., LL.M
Manager, Capital Programs

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water Supply

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Elgin Area
Primary Water Supply System

Report No.: EA-2022-01-08
Report Page: 1 of 4
Meeting Date: March 3, 2022
File No.: EA4132

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: Alum Tanks Replacements Project (EA4132)

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the following actions be taken concerning Alum Tanks Replacements (EA4132) project:

a) The Board of Management for the Elgin Area Primary Water Supply System **APPROVE** an increase in the project budget by $210,000 for a total approved budget of $825,000, the additional funds being drawn from the Asset Replacement Reserve Fund; and,

b) The Board of Management for the Elgin Area Primary Water Supply System **RECEIVE** this status report for information.

PREVIOUS AND RELATED REPORTS

October 3, 2019 2020 Operating and Capital Budgets

BACKGROUND

The existing Fibreglass Reinforced Plastic bulk storage tanks used to store aluminum sulphate (a.k.a. “alum”), located in the basement of the Chemical Building at the water treatment plant, are past their normal service life, showing signs of age-related deterioration, and are undersized for the plant’s current and future needs.

In 2018, R.V. Anderson undertook the preliminary design for the replacement of the tanks, made recommendations related to sizing and constructability, and provided cost estimates for replacing the existing tanks.

DISCUSSION

R.V. Anderson recommended two viable options to replace the existing bulk storage tanks. The first option was to install two wood stave tanks in the same location as the existing tanks and the second option was to install two new Fibreglass Reinforced Plastic (FRP) alum tanks in the nearby workshop area.

Upon review, Board staff opted to proceed with the installation of wood stave tanks within the existing tank location as this option minimizes the impacts and risks to plant operation as the existing pump panels, and control panels can remain in place during construction. Wood stave tanks have a better failure mode than FRP tanks, and the project would be staged to allow for one tank installationat a time while maintaining one tank in operation. In 2018, R.V. Anderson provided an initial supply and construction cost estimate of $370,000 and a detailed design, contract administration and contract supervision cost estimate of $75,000. In October 2019, the Board approved a project budget of $661,000 based on the information provided in 2018. Given that the installation is operationally intensive, Board staff further recommended that the purchase and installation of the tanks be managed and procured through the Board's contracted operating authority, the Ontario Clean Water Agency (OCWA), as allowed by the Operations and Maintenance Services Agreement.

The wood staves were pre-purchased in 2020, at a cost of $130,470 and arrived on site on December 23, 2020. Due to the onset of the COVID-19 pandemic and associated restrictive health measures, the issuance of the construction tender was deferred from the summer of 2020 to November 2021. The tender for the assembly and construction of the tanks subsequently closed on December 21, 2021, with two contractors submitting bids in the amount of $448,928 and $356,644 (not including contingency) respectively. Unfortunately, as detailed in the Project Financial Status below, the deferral of the tender has resulted in a projected budget shortfall of approximately $209,101.00 (including contingency excluding HST).

It is noted that this year-over-year increase in construction costs is consistent with the Non-Residential Construction Price Index which reflects changes in supply and demand in various markets for construction inputs, and due to the COVID-19 pandemic and associated measures. Higher costs for construction inputs are expected to continue to influence elevated changes in the index for the remainder of 2022.

On this basis, Board staff are seeking an increase in the approved budget for this project by $210,000, for a total budget of $825,000 such that the installation of the tanks can take place in the spring of 2022.

PROJECT FINANCIAL STATUS

Summary of Projected Costs
The following summary of estimated costs is provided for review and will be confirmed throughout the project:

Detailed Design and Contract Administration & Supervision	$103,546
Construction*	$645,555
Contingency	$ 75,000
Total Projected Costs	**$824,101**
Approved Budget	**$615,000**

Summary of Expenditures Incurred to Date as of February 3, 2022
The following summary of expenditures incurred to date:

Detailed Design and Contract Administration	$ 75,489
Construction*	$174,085
Contingency	$ 0
Total Expenditures	**$249,574**
Budget Surplus/Deficit	**($209,101)**

**Includes modifications to the maintenance shop access that is required to facilitate the tank removal and installation, chemical disposal, additional chemical costs due to staging and operational support (approximately $43,000)*

CONCLUSION

The existing bulk storage tanks used to store aluminum sulphate (alum) are past their service life, are showing signs of age-related deterioration, and are undersized for the plant's current needs. Due to the COVID-19 pandemic and associated health-related measures, the issuance of the construction tender was deferred resulting in an increase in construction costs.

Board staff are seeking approval to increase the approved budget for the project by $210,000 such that the installation of the tanks can take place in the spring of 2022.

This report was written with the assistance of David Scott, Capital Projects Coordinator, Regional Water Supply.

Prepared by: Billy Haklander, P.Eng., LL.M
Capital Programs Manager, Regional Water Supply

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water Supply

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Elgin Area
Primary Water Supply System

Report No.: EA-2022-01-09
Report Page: 1 of 4
Meeting Date: March 3, 2022
File No.:

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: Central Elgin Licence of Occupancy - Port Stanley Pump Station

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the Board of Management for the Elgin Area Water Supply System take the following actions:

a) The request to construct and operate a water pumping station on a portion of the water treatment plant property be **APPROVED IN PRINCIPLE** by the Board of Management for the Elgin Area Water Supply System, subject to entering into a Licence of Occupancy Agreement with the Municipality of Central Elgin; and,

b) The Board of Management for the Elgin Area Water Supply System **RECEIVE** this report for information.

PREVIOUS AND RELATED REPORTS

None

BACKGROUND

The existing connection from the Elgin Area Water Supply system to the Central Elgin's water distribution system supplying drinking water to the community of Port Stanley is currently located at the northwest corner of the water treatment plant property at the pressure surge tank, near the dead-end of the discharge header. With the ongoing growth of the community, the Municipality of Central Elgin is undertaking upgrades and modifications to their water distribution system.

Central Elgin had previously constructed an elevated storage tank in 1997; however, the existing connection to the Elgin Area water system and corresponding pressure on the transmission pipeline was not adequate to completely fill the tower. With increasing water supply demands to the community, Central Elgin will now need a pump station to full the elevated storage tank.

DISCUSSION

The Municipality of Central Elgin recently completed an engineering assessment of the water distribution system and utilization of the elevated storage tank to support the current and future needs of Port Stanley. The assessment concluded that modifications were necessary to the municipality's connection and supply from the Elgin Area water treatment plant in order to fully utilize available storage of the elevated tank in Port Stanley including, in part, the construction of a pump station at or near the water treatment plant.

Central Elgin staff discussed the proposed construction and modifications to their system with Board staff, and requested consideration by the Board for the construction of their pump station on the water treatment plant property.

Pump Station Location

The proposed the pump station would require either the severance and purchase of agricultural lands on Dexter Line (Elgin County Road 24), or the occupancy of a portion of the water treatment plant property near the northwest entrance to the facility. The preferred option expressed by the municipality was to occupy a portion of the water treatment plant property in order to avoid the acquisition of agricultural lands.

In anticipation of future growth in the Port Stanley area, the design and construction of the 900mm water transmission pipeline by the Elgin Area Water Supply System in 2011 included a new 300mm tee and flange connection at the plant's property line on Dexter Line. The Municipality of Central Elgin has proposed to utilize this new connection to supply the proposed pump station and upgraded watermain to Port Stanley.

The proposed location of the municipality's pump station would have minimal impact on the operation and security of the water treatment plant; however, if the Board considers entering into a Licence of Occupancy with the Municipality of Central Elgin, consideration should be given to incurred liabilities by the Board including but not limited to:

- Compensation to the Elgin Area Water Supply System by the Municipality of Central Elgin for any increase in assessments and property taxes as a result of the pump station's construction and operation;
- Indemnification for the municipality's occupancy of the water treatment plant property including the construction, operation, maintenance, repair and demolition of their pump station; and,
- Indemnification of environmental liabilities.

The anticipated location and area of impact for the construction of a proposed water pump station by the Municipality of Central Elgin is shown in Appendix A attached to this report for the information and reference of the Board of Management.

Anticipated Operating and Service Impacts

The proposed occupancy and the operation of the pump station by the Municipality of Central Elgin is not anticipated to affect operating and service levels of the Elgin Area Water Supply System.

CONCLUSION

Provided the occupancy of the water treatment plant property is minimized to the extent possible and located in an area which does not impact the regional water system's infrastructure or operational activities, Board staff have no objections to the Municipality of Central Elgin's request to construct and operate a water pumping station near the northwest corner of the water treatment plant property.

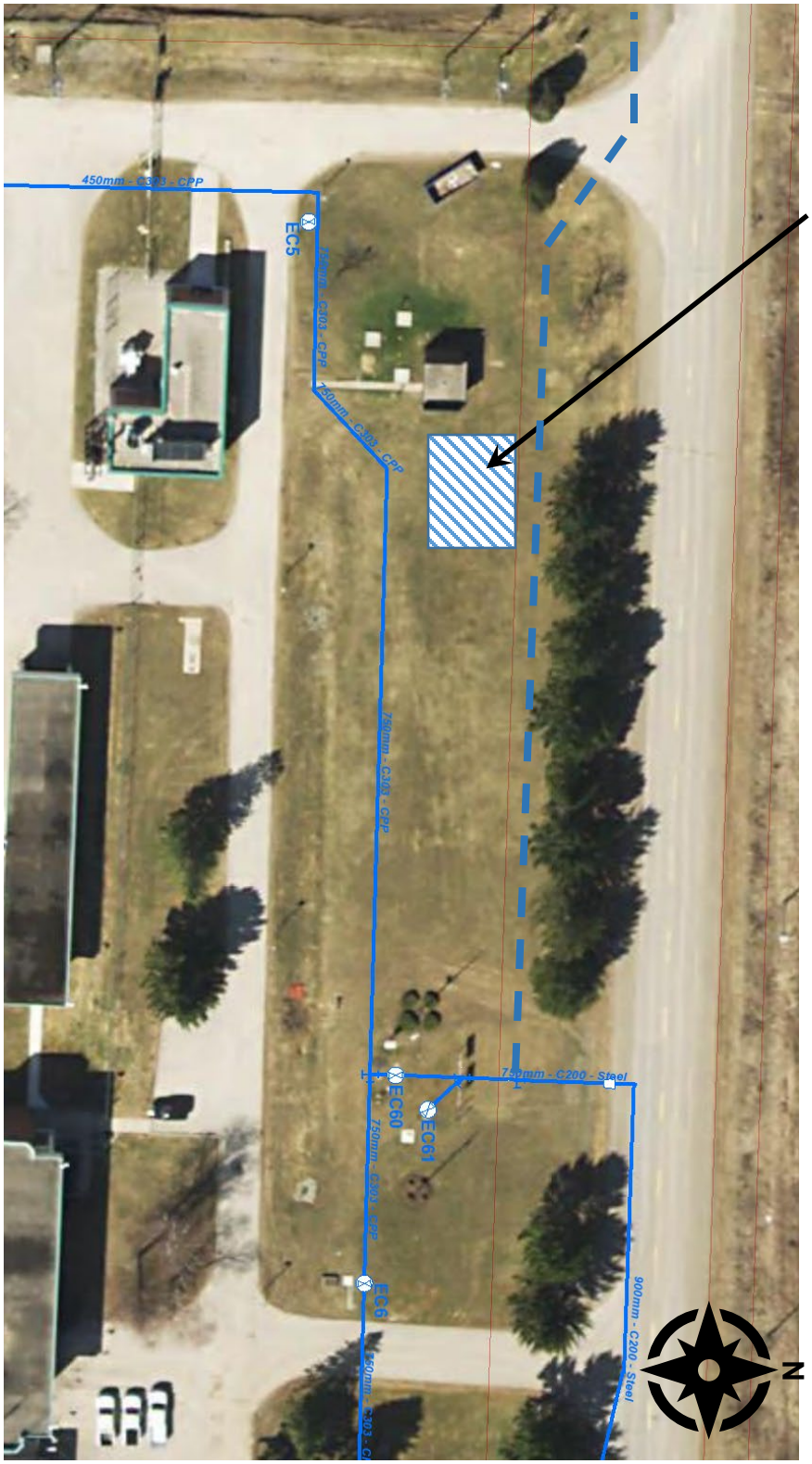
Should the Board endorse the request, Board staff recommends entering into a Licence of Occupancy with the municipality to address liabilities, including but not limited to any increase in assessments and property taxes as a result of the pump station's construction and operation.

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water Supply

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Attachments: Appendix A – Estimated Area of Occupancy

APPENDIX A: ESTIMATED AREA OF OCCUPANCY



Estimated location and area of licensed area for proposed pump station

Elgin Area
Primary Water Supply System

Report No.: EA-2022-01-10
Report Page: 1 of 11
Meeting Date: March 3, 2022
File No.: EA4153

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: EA4153 Backwash Pump Replacements Project – Pump Purchase

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the following actions be taken concerning the Backwash Pump Replacements Project (EA4153) project:

a) The Board of Management for the Elgin Area Primary Water Supply System **ACCEPT** the pump fabrication proposal from Directrik Inc.

b) The Board of Management for the Elgin Area Primary Water Supply System **ISSUE** a Purchase Order to Directrik Inc., in the amount of $996,197.40, including contingency and excluding HST, for the pump fabrication associated with the above-noted project; it being noted that upon execution of the subsequent construction contract, the pre-purchase and supply of the backwash pumps will be novated to the general contractor upon the issuance of an acceptable Purchase Order by the general contractor to Directrik Inc.; and,

c) The Board of Management for the Elgin Area Primary Water Supply System **RECEIVE** this status report for information.

PREVIOUS AND RELATED REPORTS

October 5, 2017	2018 Operating & Capital Budgets
March 1, 2018	High Lift and Backwash Pump Replacements
June 3, 2021	EA4153 Backwash Pumps Replacement Project – Consulting Award

BACKGROUND

This back wash system is original to the plant construction (fifty years old) and utilizes two pumps to undertake each filter backwash. It has been determined that a single back wash pump is insufficient to satisfy the full flow and volume range necessary to adequately clean the new filtration system under all operating conditions. There are no backup or standby pumps for the backwash system should one of the existing pumps fail or is taken out of service for maintenance.

In June 2021, Board staff reported that several back wash pump configurations were considered with the objective of identifying an option that would address the recommended high and low backwash rates, as well as the original project objective of providing full redundancy for backwash pumping. In review of all options, a like-for-like replacement of the backwash pumps in 2023 was recommended and the detailed design and the equipment selection process commenced in the summer of 2021. The new pumps will continue in a lead/lag configuration (both pumps operating as needed, without backup), rather than a duty/standby configuration.

DISCUSSION

The pump pre-selection request for proposal (RFP) for the design, fabrication, supply, delivery, supervision of installation and commissioning of two (2) vertical turbine backwash pumps was issued to six suppliers on November 1, 2021, and two proposals were received from each of Directrik Inc. (Flowserve) and KSB Pumps Inc. by the closing date. A proposal from Interpump was received two days after the proposal closing date, while Sulzer, Grundfos and NatPro (Fairbanks) declined to submit a proposal.

A review of the proposals received before the due date determined that the pumps proposed by the bidders would not provide similar or improved performance, operational flexibility or redundancy compared to the existing backwash pumps. As such, the equipment pre-selection RFP was cancelled, and the contract was not recommended for award.

Utilizing alternative specifications, the RFP was re-issued to the six suppliers noted above on January 25, 2022, with the intention of finding pumps that better meet the needs of the backwash pumping system. Bids were received from Directrik Inc. (Flowserve), Interpump and KSB by the closing date. Sulzer, Grundfos and NatPro (Fairbanks) again declined to submit a proposal.

The technical and financial information received from all proponents were evaluated and compared in detail. The evaluation determined that only the submission from Directrik Inc. (Flowserve) met the technical criteria and achieves the minimum required operating efficiencies for the project. The detailed evaluation and recommendation by AECOM for the pump pre-selection submissions are included in this report attached as Appendix A.

Directrik Inc. (Flowserve) indicated that the preparation of shop drawings would take 12 weeks after receipt of a letter of intent to supply the pumps. Following receipt of approved shop drawings, the pumps would take approximately 32 weeks to fabricate and delivery to the water treatment plant. Due to the long lead times for shop drawing preparation and pump fabrication, it is the recommendation of Board staff to pre-purchase the pumps rather than specify the selected pump within the General Contractor's tender package. Pre-purchasing the pumps will allow a construction start in February 2023 at the earliest, assuming an allowance for shop drawing reviewed and approved within 3 weeks, additional delays in the shop drawing reviews, pump fabrication and delivery processes do not exceed the times provided above.

Given that the pumps proposed by Directrik Inc. (Flowserve) meet the technical requirements and have the lowest overall anticipated lifecycle cost, Board staff recommend the proposal from Directrik Inc. be accepted and a Purchase Order be issued in the amount of $996,197.40, including contingency and excluding HST, such that pump fabrication may commence without further delay. Upon execution of the construction contract (anticipated in 2023) for the installation and commissioning of the pumps, the Purchase Order for the supply of the pumps will be novated to the general contractor upon the contractor's issuance of an acceptable Purchase Order to Directrik Inc.

PROJECT FINANCIAL STATUS

Summary of Projected Costs
The following summary of estimated costs is provided for review and will be confirmed throughout the project:

Detailed Design and Contract Administration & Supervision*	$ 225,000
Construction*	$2,200,000
Contingency	$ 30,000
Total Projected Costs	**$2,455,000**
Approved Budget	**$2,459,000**

Summary of Expenditures Incurred to Date as of February 3, 2022
The following summary of expenditures incurred to date:

Detailed Design and Contract Administration	$ 37,561
Construction	$ 0
Contingency	$ 0
Total Expenditures	**$ 37,561**
Budget Surplus/Deficit*	**$ 4,000**

**As reported to the Board in June 2021, the anticipated construction cost was $2.5M. Given the recent escalation in construction costs, an increase in project budget may be required when the construction contract is recommended for award in 2023.*

CONCLUSION

The existing backwash system is original to the plant construction, are in poor condition and requires immediate replacement. To complete the replacement of the pumps in 2023, Board staff recommend that Directrik Inc.'s proposal be accepted, and a Purchase Order be issued to commence fabrication of the new high lift pumps following shop drawing approval and in advance of the execution of the construction contract.

Prepared by: Billy Haklander, P.Eng., LL.M
Capital Programs Manager, Regional Water Supply

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water Supply

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Attachments: Appendix A: Backwash Pump Pre-Selection Evaluation

APPENDIX A: BACKWASH PUMP PRE-SELECTION EVALUATION

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Lake Huron & Elgin Area Water Supply
c/o City of London, Regional Water Supply
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London, ON N5X 4E7

CC:
Neil Awde, P.Eng.
Matt Simons, P.Eng.

Project name:
Elgin Area Water Treatment Plant Backwash Pump Replacement

Project ref:
60671387

From:
Cristina Alfano, EIT

Date:
February 10, 2022

Memorandum

Subject: Backwash Pump Pre-Selection Evaluation

1. Introduction

The Elgin Area Primary Water Supply System (EAPWSS) has retained AECOM to provide engineering and detailed design services for the replacement of the existing backwash pumps at the Elgin Area Water Treatment Plant (EAWTP). The EAWTP is a conventional water treatment plant equipped with two (2) backwash pumps to wash the four (4) dual media (anthracite and sand) granular filters.

AECOM previously reviewed numerous studies, test results and strategies to establish filter backwash rate design criteria and reviewed several strategies for replacement of the backwash pumps. The review resulted in a recommendation for like-for-like backwash pump replacements as there are significant challenges associated with providing backwash pump redundancy. It was concluded that new backwash pumps should be sized to deliver at least 1,230 L/s to achieve the high backwash rate, or up to 1,350 L/s. Both pumps will operate simultaneously to achieve the required high backwash rate and individually to achieve the low backwash rate of 575 L/s (or as low as 400 L/s). Backwash flow to the filters will be controlled by throttling the downstream butterfly valve. Recirculating a portion of the pumped flow to the pump well will allow the backwash system to achieve low flow rates. In situations where one pump is out of service for an extended period such that the facility has one backwash pump available for filter backwashing, the backwash pump remaining in service will need to pump at its highest capacity to backwash the filters at a rate as close to the high wash as possible. As such, the ideal replacement backwash pumps would have a flow range that covers the low backwash range and extend as close to the high wash as possible.

As part of AECOM's scope, an equipment pre-selection was complete for procurement of two (2) new backwash pumps. The following presents a technical review of the proposals submitted in response to the Request for Proposals (RFP) issued by AECOM on behalf of the EAPWSS for the pre-selection of vertical turbine pumps for EAWTP backwash pumping system. This memorandum is to discuss our review of the received proposals and provide a recommendation of how to proceed with pump pre-selection.

2. Equipment Pre-Selection Process and Supplier Submissions

An RFP for the design, fabrication, supply, delivery, supervision of installation and commissioning of two (2) vertical turbine backwash pumps was issued to six suppliers, listed in Table 1, on November 1, 2021. Three addenda were issued during the RFP process containing an extension to the closing date and clarifications to the technical specifications. Electronic submissions were received from two pump suppliers; KSB and Flowserve (represented by Directrik). A proposal from Interpump was submitted two days after the proposal closing date. Sulzer, Grundfos and NatPro (Fairbanks) declined to bid.

Upon review of the bids received before the due date, it was determined that the pump selections received from bidders would not provide similar or better performance, operational flexibility or redundancy compared to the existing backwash pumps. As such, the equipment pre-selection RFP was closed and the contract was ultimately not awarded.

The RFP was re-issued to the suppliers listed in Table 1 on January 25, 2022 with the intention to find pumps that better met the needs of the backwash pumping system. Addenda items from the first RFP were incorporated into the second RFP package and no addenda were issued during the re-tender process. Bids were received from Directrik (Flowserve), Interpump and KSB. The received bids are attached in Appendix A.

Table 1: List of Invited Companies with Company Contact

Company	Contact
Flowserve (represented by Directrik)	Sam Directo
Grundfos	Paul Dykstra
Interpump	Stefanie Au
KSB	Marcus Henderson
Fairbanks (Represented by NatPro)	Hooman Kia
Sulzer	Landy Lu

Upon receipt of the bid submissions, the following observations were made:

- Total contract price carried in Directrik's bid was miscalculated.
- All bidders carried a number of exceptions and deviations to the technical specifications and contract documents.
- KSB indicated their proposed pump's minimum flow is under review by their hydraulic department and pump performance curves are subject to change. Updated curves were not received by the submission date of this memo and were not considered.
- Interpump submitted three (3) alternative proposals for consideration, each with a different pump size.
- Flowserve did not submit a bid bond or letter of credit with their proposal, however a bid bond was included in their first submission in November, 2021.

The general items and omissions carried within each bid were not considered significant enough to reject any proposal. Deviations are discussed further in Section 3.1.

3. Evaluation of Submissions

Table 2 presents a summary of critical items contained within the bids received in response to the equipment pre-selection RFP. A detailed analysis and direct comparison of all technical and financial information received from bidders can be found in Appendix B to supplement the information contained within the table below and throughout this memorandum.

Table 2: Summary of Critical Bid Items

	KSB	Interpump			Flowserve
		Bid #1	Bid #2	Bid #3	
General					
Proposal Deposit / Bid Bond Submitted?	Yes	Yes			No; submitted with first bid.
Exceptions / Deviations Noted?	Yes	Yes			Yes
Critical Deviations	Tubular casing pump proposed	Exception to payment terms. Electrical and I&C work not to EAPWSS standards			Reduced number of site days and trips. Electrical and I&C not to EAPWSS standards
Place of Manufacturing	Pakistan	USA			USA
Shop Drawing Submission Time (1)	10-12 weeks	6-8 weeks			12 weeks
Delivery Time	35 working weeks	36-38 weeks			32 weeks
Financial (excl. HST)					
Total Bid Price	$819,664.27	$1,387,146.92	$1,470,530.56	$1,341,520.56	$905,634.00 (2)
Estimated 20-Yr Energy Cost (Present Value)	$253,000	$274,000	$287,000	$278,000	$247,000
Technical					
Pump Type	Tubular casing pump	Vertical turbine pump	Vertical turbine pump	Vertical turbine pump	Vertical turbine pump
Flow Range (3)	630 - 1,220 L/s (4)	491 - 920 L/s	518 - 960 L/s	578 - 1074 L/s	300 - 900 L/s
Pump Speed (RPM)	875	505	505	505	890
Motor Size (HP)	300	300	300	300	300
Overall Efficiency at 675 L/s	73.4%	79.2% (5)	78.8% (5)	77.0% (5)	74.3%
Process Conditions Acceptable?	Pump weight not received/reviewed. Pump minimum flow does not reach low wash rate of 575 L/s.	No; motor weight exceeds crane capacity.	No; motor weight exceeds crane capacity. $NPSH_R$ exceeds $NPSH_A$ above 910 L/s and low wet well water level.	No; motor weight exceeds crane capacity.	Yes; however, with single pump operation, the high flow capacity is slightly reduced from the existing conditions.
Acceptable solution?	***No***	***No***	***No***	***No***	***Yes***

(1) Following supplier receipt of Letter of Intent to supply pumps.
(2) Total contract price incorrectly calculated within Form of Tender. Sub-total of line items listed in Flowserve bid was $855,604.00 which was assumed to exclude $50,000 for shop drawings.
(3) Minimum continuous stable flow (MCSF) to pump run-out point at full speed.
(4) KSB MCSF under internal review. KSB verbally indicated MCSF may be reduced to 450 L/s, however information was not received by submission date of this memo and not considered.
(5) Motor efficiency and/or overall efficiency not specified, 94% motor efficiency assumed.

3.1 General

The bids submitted by KSB, Interpump and Flowserve carried a large number of deviations to the technical specifications and commercial terms. Of note, Interpump and Flowserve indicated that they will not perform instrumentation, controls and programming work or provide electrical hardware and wiring to meet EAPWSS's standards. In addition, Interpump rejected the payment terms identified in the RFP, requesting 100% payment following delivery of the pumps. Flowserve took exception to the number of site days and trips, quoting 2 site days and 2 trips, meanwhile the contract requires 32 person-days on site and 18 separate visits. There were several other minor exceptions to the technical specification and general terms of agreement made by all three suppliers, which are detailed within their proposals.

3.2 Financial

Energy consumption and costs were calculated for each of the alternatives over a period of 20 years utilizing the efficiencies in Table 3 and operating sequence below. The efficiencies in Table 3 were based on the stated numbers in the Form of Proposal and not the pump curves.

Table 3: Summary of Pump, Motor, and Overall Efficiencies used in the Energy Cost Analysis

	Operating Point	Pump Efficiency (%)	Motor Efficiency (%)	Overall Efficiency (%)
KSB	High Wash (675 L/s per pump)	78.2%	93.8%	73.4%
	High Wash (615 L/s per pump) (1)	70.0%	93.8%	65.7%
	Low Wash (575 L/s) (1)	66.0%	93.8%	61.9%
Interpump Bid #1	High Wash (675 L/s per pump)	84.3% (2)	94.0% (3)	79.2%
	High Wash (615 L/s per pump)	83.3% (2)	94.0% (3)	78.3%
	Low Wash (575 L/s)	80.8% (2)	94.0% (3)	76.0%
Interpump Bid #2	High Wash (675 L/s per pump)	83.8% (2)	94.0% (3)	78.8%
	High Wash (615 L/s per pump)	81.6% (2)	94.0% (3)	76.7%
	Low Wash (575 L/s)	79.4% (2)	94.0% (3)	74.6%
Interpump Bid #3	High Wash (675 L/s per pump)	81.9% (2)	94.0% (3)	77.0%
	High Wash (615 L/s per pump)	80.5% (2)	94.0% (3)	75.7%
	Low Wash (575 L/s)	77.2% (2)(4)	94.0% (3)	72.6%
Flowserve	High Wash (675 L/s per pump)	79.0%	94.1%	74.3%
	High Wash (615 L/s per pump)	77.2%	94.1%	72.6%
	Low Wash (575 L/s)	75.0%	94.1%	70.6%

(1) Flow rate is below pump MCSF.
(2) Efficiencies at pump bowl.
(3) Efficiencies were not provided in the Form of Proposal submitted by bidder; motor efficiencies were assumed for the purposes of this analysis.
(4) Flow is below pump minimum continuous stable flow. Recirculation of flow to pump well required to achieve low wash.

Pump and motor data at various duty points were used to compare the energy costs of the pumps under the following assumptions:

- Consumed energy considered the shaft power, pump efficiencies, and motor efficiencies specified in each bidder's Form of Proposal, if available;
- Motor efficiencies not specified within bids were assumed to be 94.0%;
- Each filter backwashed every 36 hours as a worst-case scenario. Backwashing could occur less frequently (every 72 hours) depending on season and operating conditions.
- Pumps operate at the following duty points and durations:
  1) Low wash at 575 L/s for 3 minutes

2) High wash at 1,350 L/s (675 L/s per pump) or as low as 1,230 L/s (615 L/s per pump) for 8 minutes. These two flow rates each account for 50% of the “high wash” operating time.
3) Low wash at 575 L/s for 5 minutes

- Unit cost of electricity is $0.15/kWh;
- The assumed rate of inflation, amortization and interest for present value were 2%, 0% and 6% respectively.

Using the assumptions detailed above, the lowest estimated 20-year present value energy cost was Flowserve’s bid at $247,000 and the highest was Interpump’s Bid #2 at $287,000. Capital costs ranged from $819,664 (KSB) to $1,470,530 (Interpump) excluding HST. Capital and estimated operating costs for each bid are further detailed in Appendix B.

3.3 Technical

In reviewing the pumps’ performance details, the pumps do not equally satisfy the operating conditions. The pump proposed by Flowserve would be able to meet the low wash rate range of 400 to 575 L/s while throttling the discharge butterfly valve, however the maximum flow that can be conveyed by this pump is 775 to 825 L/s, which is slightly less than the maximum flow rate that can be pumped by the existing backwash pumps (785 L/s to 860 L/s).

The pumps proposed by Interpump can convey higher flows than the existing backwash pumps, and the pumps proposed in Bids #1 and #2 can meet the low wash flow rate of 575 L/s. The pump within Bid #1 can convey as low as 500 L/s and as high as 880 L/s, which exceeds the flow range of the existing pumps. Interpump’s Bid #3 struggles to meet the low wash range of 575 L/s but can convey up to approximately 930 L/s of flow.

The pump proposed by KSB has a flow range of approximately 630 to 1,220 L/s from MCSF to pump run-out. With one pump operating, the highest flow conveyed by KSB’s pump would be approximately 930 L/s. The pump is unable to meet the low end of the high wash flow rate with two pumps operating (1,230 L/s total or 615 L/s per pump) and would not be able to meet the low wash rate of 575 L/s without throttling the discharge butterfly valve and recirculating a portion of the discharge flow back to the wet well. KSB indicated within their proposal that the MCSF is under review with their hydraulic department and informally indicated that a flow rate as low as 450 L/s may be achievable, however this has yet to be confirmed; KSB did not provide revised pump performance curves before the date of submission of this memorandum and a minimum flow lower than 630 L/s as indicated within their proposal was therefore not considered.

Flowserve and Interpump both met the $NPSH_R$ and operating criteria, however the pump proposed within Interpump’s Bid #2 (Model No. 34 GLC, 3 stage) had an $NPSH_R$ that slightly exceeds the available $NPSH_A$ at low wet well water level when operating with one pump on above 910 L/s. KSB’s pump met the $NPSH_R$ criteria for the flow range shown in their proposal (630 to1,220 L/s). As noted above, KSB informally indicated that a flow rate as low as 450 L/s may be achievable for the pump. Using the $NPSH_R$ curve shown in KSB’s proposal and extrapolating the $NPSH_R$ curve to 450 L/s, $NPSH_R$ may exceed $NPSH_A$ at low flows. NPSH curves can be seen in Appendix C.

The pump proposed by KSB is a different style of pump compared to what was specified and what is currently installed at the plant (tubular casing pump vs. vertical turbine pump). While operation and maintenance activities associated with the tubular casing pump are anticipated to be similar to a vertical turbine pump, further review would be recommended to confirm these details if this option was selected.

The pump proposed by Interpump included a 300 HP, 6 pole motor which weighs approximately 7,711 kg (7.7 tonnes). This weight far exceeds the capacity of the crane (5 tonnes). Interpump’s bid was not considered a viable solution due to the significant structural modifications that would need to be made to install the pump.

From this information, the pumps proposed by Flowserve are considered the most suitable replacements and recommended for this project. A breakdown of the capital costs for the Flowserve pumps is included in Table 4.

Table 4: Breakdown of Capital Costs for the Recommended Pump Option (Flowserve)

Description	Cost
Shop Drawings	$50,000.00
Lump Sum for Two (2) Vertical Turbine Backwash Pumps and One (1) Shelf Spare Rotating Assembly	$794,514.00
Non-Witness Testing	$14,354.00
Cost of Spare Parts Requested in Section 11301	$37,366.00
Cost of Special Recommended Tools	$0.00
Cost for Delivery to Site	$6,400.00
Cost for Supervision of Installation, Start-up and Commissioning	$2,000.00
Cost of Operator Training	$1,000.00
Sub-Total (Base Bid)	*$905,634.00*
HST	*$117,732.42*
Total Contract Price (Final Bid)	**$1,023,366.42**

4. Conclusions and Recommendations

Based on the above information presented herein, AECOM recommends that the EAPWSS accept the final bid from Flowserve as summarized in Table 4. As such, we request that the EAPWSS issue a purchase order in the amount of $50,000 (excluding HST) to Flowserve for the preparation of shop drawings.

It should be noted that the Flowserve pump provides a slightly reduced flow range with one pump in operation compared to the existing pumps. It is recommended that the EAPWSS carry a contingency allowance for minor changes to the pump and permit AECOM to explore potential opportunities for curve improvement through the shop drawing process with Flowserve such that the high flow condition with one pump in operation meets or exceeds the existing condition.

Following approval of the shop drawings, we recommend that EAPWSS issue an updated Purchase Order for the balance of the final bid price for the purpose of equipment pre-purchase. This Purchase Order will be novated to the General Contractor awarded the installation contract.

Flowserve indicated a shop drawing preparation time of 12 weeks after receipt of a letter of intent to supply the pumps. Following receipt of approved shop drawings, the pumps would take approximately 32 weeks for fabrication and delivery. Due to the long lead times for pump fabrication, it is recommended to pre-purchase the pumps rather than specify the selected pump within the General Contractor's contract. Pre-purchase of the pumps will allow a construction start in February 2023 at the earliest, assuming a letter of intent for supply is provided to Flowserve the week of March 7, 2022, shop drawings are reviewed and approved within 3 weeks, and assuming additional delays in the shop drawing review, pump fabrication and delivery processes do not exceed the times provided above.

Elgin Area
Primary Water Supply System

Report No.: EA-2022-01-11
Report Page: 1 of 5
Meeting Date: March 3, 2022
File No.:

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: Standby Generator TSSA Repairs

RECOMMENDATION

That the following actions be taken with regard to Elgin Area Primary Water Supply System Generator TSSA Repairs:

a) That the Board of Management **AUTHORIZE** the creation of a capital project to repair the existing Standby Generator system with an approved budget of $290,000, it being noted that the Capital Reserve fund will be utilized for the source of funding for the project; and,

b) That the Board of Management **RECEIVE** this report for information.

BACKGROUND

GM BluePlan (the consultant) was engaged by Board staff and asked to attend to the Elgin water treatment plant on January 20, 2022 to complete a visual assessment of the two existing stand-by generators. This request was made as a result of the fuel supplier noting a number of non-compliances with the generator fuel supply system. The systems consist of a 2.5 megawatt (MW) and 100 kilowatt (kW) diesel-fueled generators, each with a separate day-tank, inlet air damper assemblies, a fuel oil cooler for the 2.5MW generator and a separate exhaust system for each generator. A 65,000 litre bulk storage tank is installed beneath a landscaped area in relatively close proximity to the generator building.

The scope of the assignment is to review the existing generator installation to the current CSA B139 - Series 19 “Installation Code for Oil-Burning Equipment”, (as adopted by the TSSA – Technical Standards and Safety Authority) for compliance. Upon completion of the site visit, the consultant is to propose design recommendations for a code-compliant installation and a high-level cost estimate to complete the recommended modifications to the existing generator installation.

Ontario Regulation 213/01 Clause 7(1)(a) requires a fuel distributor to inspect the generator installation at least once every 10 years. In more recent years, the TSSA (who licenses distributors) is requiring fuel distributors to ensure that existing installations are code-compliant and in an acceptable condition in which to receive fuel. The liability for providing fuel to a non-compliant installation where a leak occurs is on the fuel distributor, and not the owner of the equipment. As such, distributors have become cautious in their distribution and supply of fuel, and are requiring the 10-year inspections to be kept current with the threat of halting fuel to noncompliant installations.

During the assessment of the two generator installations, the consultant noted several code-compliance issues with each generator installation that would prevent a TSSA licensed fuel supplier from delivering fuel in future.

DISCUSSION

Generator and Fuel System Description

The existing 2.5MW and 100kW stand-by generators were originally installed in 2009. At the time of construction, the fuel oil installation code in force was CSA B139-2006.

The 2.5MW generator is an eighteen-cylinder diesel engine that can generate approximately 3325 horsepower (2.5MW). A remote fuel cooler is also installed on the fuel return line to reduce the temperature of the fuel being circulated through the generator and returned to the day tank during generator operations. The 100kW generator is a six-cylinder diesel engine generating approximately 324 horsepower (100kW).

The main bulk fuel storage tank is a TSSA-registered underground storage tank that was installed in 2009 and is a ULC-S615 listed double walled design having a maximum capacity of 65,000 litres. Alarms generated by the onsite monitoring system are annunciated locally and at the water treatment plant's main control room.

At the full rated output of 2.5MW, the generator will consume approximately 640 liters of fuel per hour, while the 100kW generator will consume 27 liters of fuel per hour. Onsite fuel storage will provide approximately 95 hours of run time with both generators under full load.

Summary of Findings (B139 – SERIES 19 CODE REVIEW)

A review of the generator system installation to the current applicable code as adopted by the TSSA has determined the following non-compliant items presented below. As documentation or a variance from the TSSA with respect to the B139 Code is not available for the original installation, grandfathering in these non-compliance items is not permitted and therefore the entire system is required to be updated to be in compliance with the most current revision of the code.

Item #	Non-Compliant Item	Applicable Code Reference
Generator Service Room		
1	Generator service room protection levels not met.	B139.1.1-19 Clause 6.5.1.4

Item #	Non-Compliant Item	Applicable Code Reference
Fuel System		
2	Both day tanks are not vented to the atmosphere.	B139.1.0-19 Clause 10.5.1.2
3	Shut off valves are not ULC listed.	B139.1.1-19 Clause 5.4.2.1
4	Fire safety valves are not ULC listed.	B139.1.1-19 Clause 5.4.4.1 (c)
5	100kW generator verification required for day tank, drop tube for return from generator.	B139.1.1-19 Clause 5.1.3
6	2.5MW Generator - no anti-siphon device installed on day tank and main supply tank.	B139.1.1-19 Clause 6.6.3
7	Steel aboveground piping is not painted or coated (rust on piping) in sump.	B139.1.0-19 Clause 8.3.4
8	Non-ULC listed valves installed in fuel piping.	B139.1.0-19 Clause 5.2.1.15
9	Non-ULC listed flexible fuel lines.	B139.1.0-19 Clause 4.1.1
10	Non-ULC listed fuel oil cooler	B139.1.0-19 Clause 4.1.1
11	The transfer pump system installation has not been reviewed by the TSSA for approval.	B139.1.0-19 Clause 10.6.3.1
12	2.5MW generator day tank does not have an anti-siphon valve installed.	B139.1.1-19 Clause 6.6.2 – Figure 4
Inlet Air		
13	Inlet combustion air damper actuator does not provide “open” signal to monitored location.	B139.1.1-19 Clause 7.2.3
14	Combustion air dampers are not installed to “fail open”.	B139.1.1-19 Clause 7.2.3
15	Inlet combustion dampers opening protocols do not provide sufficient inlet air	B139.1.1-19 Clause 7.2.3
Exhaust System		
16	Unlisted exhausts both the100kW and 2.5MW generators require a pressure test to confirm gas-tight conditions.	B139.1.0-19 Clause 9.1
17	An engineer’s declaration is required for both unlisted exhaust systems. Ontario Building Code Pressure test of welded exhaust piping needs to be completed.	B139.1.0-19 Clause 13.7
18	Declaration signed by professional engineer required for the installed unlisted exhaust systems.	CSA B139.1.0-19 Clause 12

Engineering Recommendations

The existing main supply underground fuel tank and the sub-base day-tanks were installed circa 2009 (13 years old) and are in good condition.

GM BluePlan has recommended keeping the existing generators and day tanks and updating the fuel supply, inlet air and exhaust systems to be compliant with the current installation code as adopted by the TSSA. The following specific recommendations are also included:

Generator Service Room

- Room containment should be installed with curbing installed to a minimum height of 150mm across the room openings. Cracks present in the floor wall interface should be sealed and the entire containment area coated with a fuel resistant coating.
- Sealing of the existing trenching should also be completed
- A float switch should be installed in the interior sump to monitor for the presence of an unplanned release of fuel.

Fuel System

- A variance should be applied for with the TSSA for the existing fuel cooler installation.
- The existing duplex pumps will require new control panels with the required triple redundancy for turning the fuel pumps off when the high fuel level switches are activated. The option of keeping the existing pumps should also be explored. The control panel design is required to be reviewed by the TSSA prior to installation.
- The existing piping arrangement for both day tanks need to be reconfigured to permit venting of the individual tanks
- ULC listed shut-off and fusible link valves are required to be installed

Inlet Air

- New electric actuators should be installed into the existing inlet air dampers that provide an auxiliary switch to prove the open status of the dampers.
- A minimum of five square meters of damper area is required to suit the combustion and cooling air requirements of the 100kW diesel generator. A minimum of three-square metres of damper area is required to suit the combustion air requirement of the 2.5MW diesel generator. The lower required surface area is due to the installed remote radiator system on the building's rooftop.
- Modifications to the existing inlet air damper controls will provide the required inlet air damper surface areas and provide the needed alarm signals to a monitored location.

Exhaust System

- The existing exhaust system for the 2.5MW generator requires a pressure test and any leaks should be contained. An engineer's declaration stating compliance with Clause 12 of B139.1.0-19 is required following a successful leak test.
- The existing exhaust system of the 100kW generator requires existing threaded connections to be welded or flanged.

- The wall penetrations for both exhaust systems are required to be enlarged to meet clearance requirements. A factory-built wall thimble installed for both exhausts would meet the required clearances.
- The 100kW generator exterior stack is required to be relocated to meet distance to combustibles (roofing materials). A support structure should be placed to maintain structural integrity of the stack.

PROJECT FINANCIAL STATUS

Projected Costs

Upgrades As Per Consultant's Recommendations	$200,000
20% Contingency Allowance	$40,000
Related Administrative & Internal Costs.	$25,000
Current Costs	
Consultant's Investigation and Report	$25,000
Total Projected Costs*	**$290,000**

CONCLUSION

Completing the work outlined in this report will upgrade the backup generator system to meet current regulations and CSA B139 - Series 19 "Installation Code for Oil-Burning Equipment", and ensure the system can continue to be refuelled when needed. Without completing the work listed above, no fuel will be permitted to be supplied after March 2022. The system is currently fully fuelled and is in a position to withstand operate for one full week without utility power.

Prepared by: John Walker, CD, B.Sc., Operations Manager

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Elgin Area
Primary Water Supply System

To: Chair and Members, Board of Management
Elgin Area Primary Water Supply System

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Subject: Asset Management Plan - Levels of Service Framework

RECOMMENDATION

That the following actions be taken with regards to Asset Management Plan Levels of Service Framework for the Elgin Area Primary Water Supply System:

a) The Board of Management for the Elgin Area Primary Water Supply System **ENDORSE** the Asset Management Levels of Service Framework as presented in this report; and,

b) The Board of Management for the Elgin Area Primary Water Supply System **RECEIVE** this report regarding the Asset Management Plan Levels of Service Framework for information.

PREVIOUS AND RELATED REPORTS

October 2, 2014	Asset Management – Level of Service and Risk Management
December 3, 2020	Asset Management Maturity Assessment and Roadmap
March 4, 2021	Asset Management – Roadmap and Plan Update
October 7, 2021	Asset Management Policy and Asset Management Plan Update

BACKGROUND

The Board previously endorsed the Asset Management Policy at its meeting on October 7, 2021, and the current Level of Service and Risk Management framework on October 2, 2014.

As part of the Asset Management Plan update, Board staff reviewed the 2014 Levels of Service (LOS) Framework and identified proposed revisions to update the LOS framework to be in alignment with global best practice standards for Asset Management such as ISO (International Organization for Standardization) 55000.

The guiding principles from the Asset Management Policy that relate to the LOS Framework include:

- **Service Delivery**: Service delivery is the key purpose of infrastructure assets. Decision-making should be focused on delivering defined levels of service that reflect customer expectations and balance risk and affordability.

- **Environmentally Conscious**: The utility shall minimize the impact of infrastructure on the environment and address the vulnerabilities and risks caused by climate change through lifecycle management. This includes energy and resource optimization, meeting environmental standards such as ISO 14001 in our operation, considering end of product life disposal or reuse options, and whole lifecycle considerations at the time of repair, replacement, or new build.

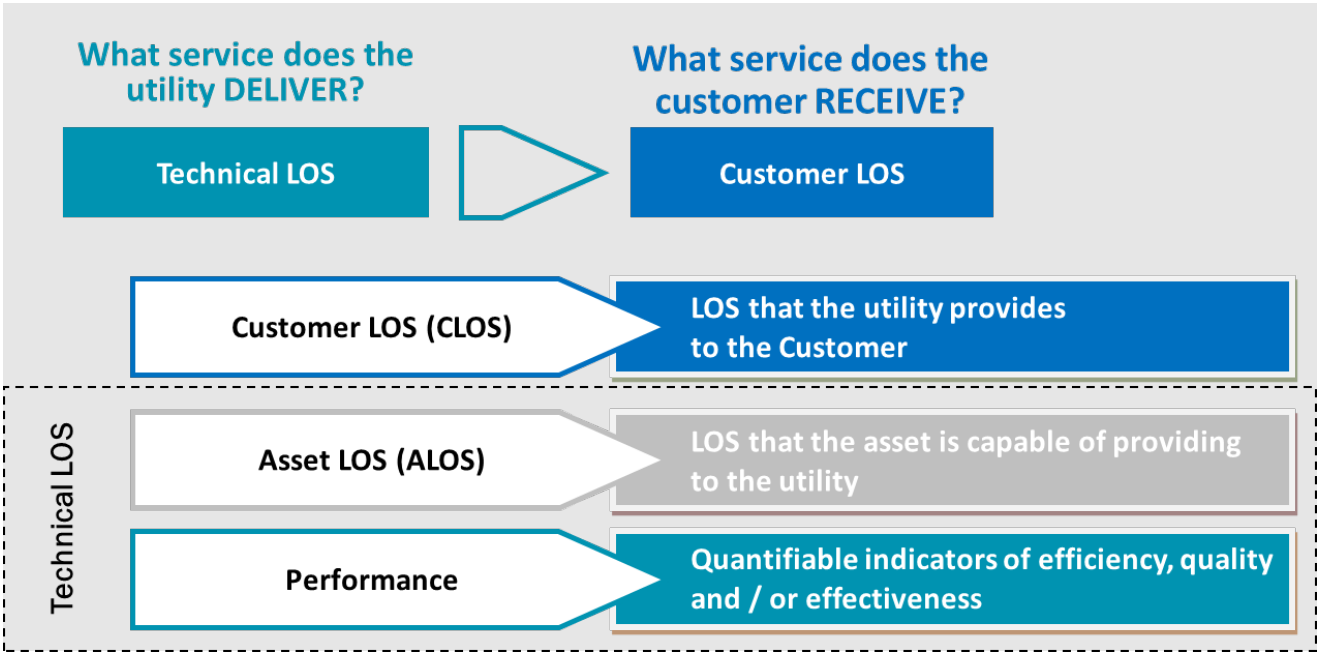
DISCUSSION

Asset management is the coordinated activity of the utility to realize value from its assets.

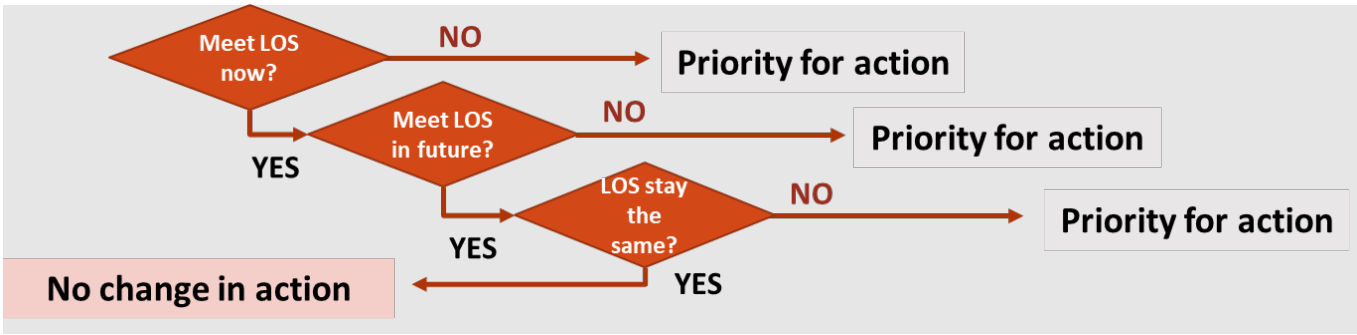
Since the 2014 LOS framework was originally endorsed, there have been much advancement and maturity in asset management practices, including a new international standard (ISO 55000). For example, the terminology related to Levels of Service (LOS) identified ten "parameters" for consideration, which was previously called "values".

Level of Service is defined in ISO 55000 as **the parameter, or a combination of parameters, that reflect the social, political, environmental, and economic outcomes that the organization delivers**. The parameters can include safety, customer satisfaction, quality, quantity, capacity, reliability, responsiveness, environmental acceptability, cost, and availability.

In the figure below, the **Customer LOS** is defined as what service the customer receives while the **Technical LOS** is defined as what service the utility delivers. The Technical LOS is further measured by a combination of what level of service the asset is capable of providing as well as the current operational performance of the assets.



The purpose of setting targets for LOS is to define the objectives of the utility. Levels of Service are the service performance targets for the utility and used in the utility's decision-making process for operational activities and asset investments. These targets will be measured on a regular basis and any gaps in meeting the established LOS become a priority for action. See the flow chart for decision making in the figure below.



In Asset Management, risk is the "effect of uncertainty on objectives". Asset risk is any issue preventing you in achieving the target Levels of Service. Establishing clearly defined objectives in the Levels of Service for the utility is a foundational practice in asset management. Not only does it help to communicate expectations to the utility's customers, but it also provides clarity in risk management for the utility to prioritize actions, including financial investments in infrastructure. Priorities are quantified by the size of the gaps between target LOS and current and future risks.

In the review of the current framework, and when considering the ISO 55000 guidance in alignment with the new Asset Management Policy, the following three Level of Service parameters and associated objectives were identified by Board staff that reflects the outcomes that the utility delivers:

- **Quality**:
  - to provide drinking water quality that meets or is superior to regulatory requirements.
- **Availability/Reliability**:
  - to deliver water to customers when demanded
  - to provide resilient water production
  - to provide safe and secure operations
- **Environmental Acceptability**:
  - to minimize water system impacts on the environment
  - to detect changes in source water quality and environmental impacts that affect the water system

In Appendix A, each LOS parameter is presented along with its associated objective(s), the Customer and Technical LOS, and proposed target(s).

Once the Asset Management Plan is finalized, it is the intent of Board staff to provide the Board with periodic updates on the effectiveness of the Asset Management strategy in the form of the ***State of Infrastructure Report***, along with a high-level summary of Levels of Service actually delivered compared with the established targets. The LOS targets, intended to be goals for the organization, are subject to further refinement in future reports to the Board.

CONCLUSION

By endorsing the updated Level of Service Framework in accordance with the new Asset Management Policy and in alignment with ISO 55000 standard, the Water Board continues to advance asset management practices at the utility. The revised Level of Service Framework will inform the ongoing updates to the Asset Management Plan that will be presented at a future Water Board meeting.

This report was written with the assistance of Ryan Armstrong, Asset Management Coordinator, Regional Water Supply and Dillon Consulting Limited.

Prepared by: Billy Haklander, P.Eng., LL.M
Capital Programs Manager, Regional Water Supply

Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water Supply

Recommended by: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Attachments: Appendix A – 1: LOS – Quality
Appendix A – 2: LOS – Availability/Reliability
Appendix A – 3: LOS – Environmental Acceptability

APPENDIX A-1: LEVEL OF SERVICE (QUALITY)

Objective	Customer Level of Service	Technical Level of Service	Target
Provide drinking water quality that meets or is superior to regulatory requirements	Meet target of no adverse water quality incidents	# of adverse water quality incidents	0
	Satisfy MECP regulatory compliance requirements	# of non-compliances identified in MECP inspection reports	0
		MECP Inspection score	100%
	Satisfy Superior Water Performance Criteria	# of superior water performance criteria met (Schedule B)	10 of 10
	Meet Plant Maintenance/ Performance Requirements	Planned maintenance completed in month scheduled	100%
		Preventative maintenance covered by Standard Operating Procedure (SOP) completed	100%
		Condition of critical assets maintained at good or very good	100%
		Chemical supply availability	100%

MECP: Ministry of the Environment, Conservation and Parks

Superior water performance criteria (Schedule B of operating agreement) include:

- Turbidity
- Total Aluminum
- pH
- Fluoride
- Primary & Secondary disinfection
- Free Chlorine Residuals
- THMs
- HAAs
- Geosmin
- Microbiological (E. coli & total coliforms)

APPENDIX A - 2: LEVEL OF SERVICE (AVAILABILITY/RELIABILITY)

Objective(s)	Customer Level of Service	Technical Level of Service	Target
Deliver water to customers when demanded	Measurable flow when customer connection is open	# of service interruptions where duration exceeds commitments of the Water Supply Agreements	0
		% of time reservoirs are above low level	100%
Water Production is Resilient	Chemical working volume greater than demand	# Inventory days > delivery period	100%
	Power supply greater than peak demand	Peak energy usage < rated capacity	100%
	Assets operate with % reserve capacity	Peak hour production < rated capacity + emergency strategic allowance by %	100%
		Intake capacity is available (observed lake level within design min)	100%
Safe and Secure Operations	Physical Security	# of physical security incidents	0
	Computational (IT, IAS) Security	# of unpatched vulnerabilities of critical or high severity (based on CVSS ratings)	0
		% of unidentified devices (not included in asset inventory)	0
		# of cyber security incidents	0

IT: Information Technology

IAS: Intelligent Autonomous Systems

APPENDIX A - 3: LEVEL OF SERVICE (ENVIRONMENTAL ACCEPTABILITY)

Objective(s)	Customer Level of Service	Technical Level of Service	Target
Minimize water system impacts on the environment	Environmental sustainability best practices	Energy intensity (ekWh/ML treated)	= < baseline
		Energy efficiency (kWh/ML treated)	= < baseline
		Total GHG emissions (Kg/ML treated)	= < baseline
		Backup generator use (total # hr runtime/# hr of planned routine maintenance)	1
		Improve chemical efficiency (kg chemicals/ML treated)	= < baseline
		% Process Water Loss (compare treated water leaving plant with raw water coming into plant)	5% or less
		% Non-Revenue Water Loss (compare water invoiced with treated water leaving plant)	5% or less
		Solids landfilled from Residuals Management Facility (m3 solids landfilled/ML treated/yr)	= < baseline
	Meet other regulatory compliance requirements	Chlorine residual in discharge water (# of non-compliances)	0
		TSS Discharge (# of non-compliances)	0
		# of reportable spills to Spills Action Centre	0
		# of non-compliance in permit to take water reports	0
Detect changes in source water quality and environmental impacts that affect the water system	Operations and services are continuous	# of incidents where source water quality is outside normal operating range (e.g., dissolved oxygen, turbidity, presence of cyanobacteria) (Note 1)	0
		Progress on implementation of Climate Change Vulnerability Assessment projects	on schedule

Note 1: This target relates to the asset LOS (i.e., system design) and early detection of any changes in source water quality is a leading indicator for asset management strategies, such as adjustments to Standard Operating Procedures (SOP) and/or upgrades to assets or processes.

RE: CEAP Risks

Dear Colleagues,

Page A-56 of London's Draft Climate Emergency Action Plan mentions the following risks associated with the regional water supply under Area of Focus 8 - Adapting and Making London More Resilient:

> *"London's drinking water is supplied from both Lake Huron and Lake Erie. This dual supply gives London built-in resiliency; however, London's distance from these supplies is also a key vulnerability. The City's drinking water travels 50km from Lake Huron and 25km from Lake Erie before entering the City's water system. The supply relies on treatment plants, large pumps, and an underground network of large water mains that are* ***susceptible to disruption during extreme weather events.*** *Although significant redundancies are built into the system, climate change driven extreme events pose a risk to the City of London's drinking water supply."*
>
> *"Climate change can also impact the quality of the raw water taken from Lake Huron and Lake Erie. Large storms can trigger a sudden decrease of the quality of the raw water making the water more difficult to treat. Increasing large storm events* ***can cause temporary interruptions to the City's water supply****."*

Should we therefore request that staff prepare a report to address these potential disruptions and interruptions? If so, I could suggest the following motion:

That staff BE DIRECTED to prepare a report to address the potential disruptions and interruptions to the water supply mentioned in the City of London's Draft Climate Emergency Action Plan.

Sincerely,

Michael van Holst