Agenda
Lake Huron Primary Water Supply System
Joint Board of Management

1st Meeting of the Lake Huron Primary Water Supply System Joint Board of Management

January 19, 2023, 2:00 PM

Committee Room #5

The City of London is situated on the traditional lands of the Anishinaabek (AUh-nish-in-ah-bek), Haudenosaunee (Ho-den-no-show-nee), Lūnaapéewak (Len-ah-pay-wuk) and Attawandaron (Add-a-won-da-run).

We honour and respect the history, languages and culture of the diverse Indigenous people who call this territory home. The City of London is currently home to many First Nations, Metis and Inuit people today.

As representatives of the people of the City of London, we are grateful to have the opportunity to work and live in this territory.

Pages

1. Call to Order

1.1 Disclosures of Pecuniary Interest

1.2 Election of Chair and Vice Chair for the term ending November 30, 2024

2. Adoption of Minutes

3. Consent Items

4. Items for Discussion

5. Deferred Matters/Additional Business

6. Upcoming Meeting Dates

To Be Determined.

7. Adjournment

Lake Huron Primary Water Supply System
Report

The 4th Meeting of the Lake Huron Primary Water Supply System Joint Board of Management
October 6, 2022

Attendance: Meeting held remotely on Thursday, October 6, 2022, commencing at 2:05 PM.

PRESENT: M. van Holst (Chair), C. Burghardt-Jesson, D. Faubert, J. Fergusson, S. Lehman, J. Vanderheyden, P. Van Meerbergen, P. Walden, J. Wilcox and B. Willard and J. Bunn (Committee Clerk)

ALSO PRESENT: D. Campbell, B. Haklander, A. Henry, M. McKillop 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 3rd Meeting held on June 2, 2022

FERGUSSON AND VAN MEERBERGEN

That the minutes of the 3rd meeting of the Lake Huron Primary Water Supply System Board of Management, held on June 2, 2022, **BE NOTED AND FILED**. **CARRIED**

Motion Passed

3. Consent Items

3.1 Quarterly Compliance Report (2nd Quarter 2022: April - June)

LEHMAN AND WILLARD

That, on the recommendation of the Chief Administrative Officer, the report dated October 6, 2022, with respect to the general, regulatory and contractual obligations of the Lake Huron Primary Water Supply System, for April to June 2022, **BE RECEIVED**. **CARRIED**

Motion Passed

3.2 Environmental Management System and Quality Management System

LEHMAN AND WILLARD

That, on the recommendation of the Chief Administrative Officer, the report dated October 6, 2022, with respect to the Environmental Management System and Quality Management System for the Lake Huron Primary Water Supply System, **BE RECEIVED**. **CARRIED**

Motion Passed

3.3 Quarterly Operating Financial Status - 2nd Quarter 2022

LEHMAN AND WILLARD

That, on the recommendation of the Chief Administrative Officer, the report dated October 6, 2022, with respect to the Quarterly Operating Financial Status of the Lake Huron Water Supply System, **BE RECEIVED**. **CARRIED**

Motion Passed

3.4 Capital Status Report

WILLARD AND BURGHARDT-JESSON

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the report, October 6, 2022, related to the Lake Huron Primary Water Supply System Capital Projects:

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

b) projects LH1276 Backwash Check Valve, LH1278 Safety Showers Upgrade, LH1347 Pipeline Chamber Upgrades, LH1425 Huron Erosion Control and LH2037 Hydrant Replacement **BE CLOSED**, with surplus funding in the approximate amount of $122,961 being released to the Reserve Funds;

c) project LH1327 Strathroy Transmission Main **BE CLOSED** and reduce the previously authorized but unissued debt/other sources for the project in the approximate amount of $7,161,342; and,

d) projects LH1026 Office Space Expansion, LH1270 Interior LED Lighting Upgrades and LH1303 Easement Maintenance **BE CLOSED**, with additional funding in the approximate amount of $14,058, being drawn from the Reserve Funds. **CARRIED**

Motion Passed

3.5 Disconnecting from Work Policy

LEHMAN AND WILLARD

That, on the recommendation of the Chief Administrative Officer, the report dated October 6, 2022, with respect to the Disconnecting from Work Policy, **BE RECEIVED**. **CARRIED**

Motion Passed

3.6 Surplus Asset Disposal - Pump Shafts and Impellers

VANDERHEYDEN AND VAN MEERBERGEN

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the report, dated October 6, 2022, related to Surplus Asset Disposal for Pump Shafts and Impellers:

a) the obsolete rotating high lift pump assemblies at the Lake Huron Water Treatment Plant **BE DECLARED** to be surplus; and,

b) staff **BE AUTHORIZED** to dispose of the asset in a manner fitting its value. **CARRIED**

Motion Passed

3.7 Climate Change Vulnerability Assessment

LEHMAN AND WILLARD

That, on the recommendation of the Chief Administrative Officer, the report dated October 6, 2022, with respect to the Climate Change Vulnerability Assessment, **BE RECEIVED**. **CARRIED**

Motion Passed

3.8 Pipeline Operations and Maintenance Agreement Compensation Values Update

LEHMAN AND WILLARD

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the report, dated October 6, 2022, related to an update to the Pipeline Operations and Maintenance Agreement Compensation Values:

a) the Board Chair and the Chief Administrative Officer **BE AUTHORIZED** to execute a Pipeline Operations and Maintenance Agreement Compensation Values Update template agreement with the Lake Huron Pipeline Landowners Association;

b) the Chief Administrative Officer **BE AUTHORIZED** to execute Pipeline Operations and Maintenance Agreement Compensation Values Update agreements, substantially in the form as appended to the above-noted report, with applicable property owners along the Lake Huron transmission pipeline easement; and,

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

Motion Passed

4. Items for Discussion

4.1 2023 Operating and Capital Budgets

VAN MEERBERGEN AND FERGUSSON

That, on the recommendation of the Chief Administrative Officer, the following actions be taken by the Board of Management for the Lake Huron Water Supply System with respect to the report dated October 6, 2022, related to the 2023 Operating and Capital Budgets:

a) the 2023 Operating Budget, in the total amount of $24,499,000, **BE APPROVED**;

b) the 2023 Capital Budget, in the total amount of $27,943,000, **BE APPROVED**;

c) the 2024 to 2032 Capital Forecast, as appended to the above-noted report, **BE RECEIVED**;

d) the 2023 rate for water of $0.5194 per cubic meter **BE APPROVED**; and,

e) the 2021 to 2027 Flow and Financial Analysis, as appended to the above-noted report, **BE RECEIVED**. **CARRIED**

Motion Passed

4.2 Electronic Monitoring Policy

VANDERHEYDEN AND WILCOX

That, on the recommendation of the Chief Administrative Officer, the Electronic Monitoring Policy, as appended to the report dated October 6, 2022, **BE APPROVED**. **CARRIED**

Motion Passed

4.3 2022 Asset Management Plan Update Project Completion

LEHMAN AND VAN HOLST

That, on the recommendation of the Chief Administrative Officer, the 2022 Asset Management Plan Update, as appended to the report dated October 6, 2022, **BE ENDORSED**; it being noted that the attached Asset Management Plan 2022 Update, dated October 6, 2022, from D. Campbell, Dillon Consulting, with respect to this matter, was received. **CARRIED**

Motion Passed

4.4 LH1243 McGillivray Facility Upgrades - Tender Award and Consulting Assignment Extension

WILLARD AND LEHMAN

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the report, dated October 6, 2022, related to the LH1243 McGillivray Facility Upgrades (Mechanical and Electrical) for the Lake Huron Primary Water Supply System:

a) the approved budget **BE INCREASED** by $4,124,739; it being noted that the funds will be provided from the New Capital and Asset Replacement Reserve Funds, for a total approved budget of $11,886,739;

b) the Chair and the Chief Administrative Officer **BE AUTHORIZED** to execute an agreement with Sutherland Schultz in the amount of $10,731,729.94, including contingency (excluding HST);

c) the existing engineering assignment with Stantec Consulting Ltd. **BE EXTENDED** for contract administration and construction supervision

services, as well as SCADA integration services, at an estimated cost of $527,454; and,

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

Motion Passed

4.5 LH1408 Oneida Nation of the Thames Transmission Pipeline Municipal Class Environmental Assessment and Preliminary Design - Project Update

VAN MEERBERGEN AND BURGHARDT-JESSON

That, on the recommendation of the Chief Administrative Officer, the report dated October 6, 2022, with respect to a project update for LH1408 Oneida Nation of the Thames Transmission Pipeline Municipal Class Environmental Assessment and Preliminary Design, **BE RECEIVED**. **CARRIED**

Motion Passed

4.6 LH1426 Lake Huron Water Treatment Plant Disinfection and Storage Upgrades Class Environmental Assessment - Notice of Completion

WILLARD AND FERGUSSON

That, on the recommendation of Chief Administrative Officer the following actions be taken with respect to the report, dated October 6, 2022, related to the Lake Huron Water Treatment Plant Disinfection and Storage Upgrades Class Environmental Assessment Notice of Completion (LH1426):

a) the Lake Huron Water Treatment Plant Disinfection and Storage Upgrades Class Environmental Assessment Project File report **BE PLACED** on the water system's website and made available for public review for a 30-day review period; and,

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

Motion Passed

5. Deferred Matters/Additional Business

None.

6. Next Meeting Date

January 19, 2023

7. Adjournment

The meeting adjourned at 3:25 PM.

Lake Huron
Primary Water Supply System

Asset Management Plan 2022 Update

Presentation to Board of Management

October 6, 2022

Presented by:
Darla Campbell, P.Eng., CSR-P, FEC

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Presentation Agenda

- Value of Investing in Asset Management
- The Asset Management Journey
- Asset Cards System Wide
- Next Steps and Recommendations

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Lake Huron
Primary Water Supply System

Value of Investing in Asset Management

Asset Management Plan 2022 Update

October 6, 2022

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Why Invest in Asset Management?

Asset management is a journey of continuous improvement.

Asset Management (ISO55000)

Coordinated activity of an organization to realize value from assets.

Realization of value will normally involve a balancing of costs, risks, opportunities and performance benefits.

- Demonstrate due diligence in the management of assets (liability)
- Maintain Levels of Service (including reliability)
- Minimize likelihood of asset failure (risk management)
- Avoid premature replacement (i.e. replacement based on condition and performance data)
- Prioritization of asset replacement/rehabilitation to meet Levels of Service
- Have a strong financial footing to support the utility's assets for years to come

High Lift Pump

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Enhancements Included in 2022 Asset Management Plan

Achieved major milestones on the asset management roadmap including: the asset management policy, plan and level of service framework

- Alignment of asset registry hierarchy by **process area**
- Assessment of risk ratings for asset components in the asset registry to develop **risk profile** for each process area and overall risk profile
- Addition of **Digital Technology, security and fleet assets**.
- Focus on **lifecycle strategy** for ageing transmission systems including identification of activities aligned with lifecycle management strategic outcomes as an example for other asset categories
- **Alignment of key drivers** for funding capital projects with LOS parameters and AM Policy (e.g., guiding principles and key outcomes)

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Lake Huron
Primary Water Supply System

The Asset Management Journey

Asset Management Plan 2022 Update

October 6, 2022

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Asset Management Policy (approved October 2021)

Asset Management and its integration with prudent financial planning continues to be a priority for the utility. This commitment is affirmed in the new Asset Management Policy.

Policy - Guiding Principles

1. Service Delivery
2. Long-Term Sustainability and Resilience
3. Fiscal Responsibility and Decision-Making
4. Whole-Life Perspective
5. Environmentally Conscious
6. Transparency

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Asset Management Policy (approved October 2021)

Asset Management and its integration with prudent financial planning continues to be a priority for the utility. This commitment is affirmed in the new Asset Management Policy.

Policy - Key Outcomes

1. The utility must integrate findings from the asset management plan into its **annual budgeting process using a business case approach**.
2. Develop a corporate asset information strategy to ensure accessibility to a fully integrated **asset data registry to support good governance and leverage operational efficiencies**.
3. Develop and maintain an asset risk register capturing **climate change impacts on infrastructure assets** to inform prioritization of capital projects.
4. Asset management facilitates **evidence-based dialogue with the utility and its customers** about investment recommendations.
5. **Sustainable levels of service** and asset lifecycle activities are used by the utility as **drivers for investment** and are foundational to its decision making.
6. The utility strives for **continuous improvement in asset management planning and asset management systems** by applying best management practices.

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Levels of Service Framework (endorsed March 2022)

The revised LOS framework with target LOS was updated to align with ISO 55000 and the Asset Management Policy, specifically the following Guiding Principles:

- **Quality**
- **Availability / Reliability**
- **Environmental Acceptability**

- **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.

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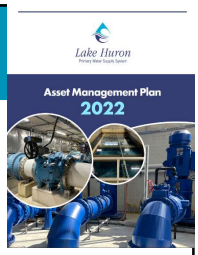
State of the Infrastructure



The State of the Infrastructure (SOTI) report highlighted condition and performance of the utility for each process area in Treatment and Transmission (June 2022).

- **Treatment**
- **Transmission**
- **Digital Technology**

SOTI Report (June 2022)

- Asset Condition
- Asset Performance
- Asset Remaining Useful Life
- Asset Replacement Value

SOTI Section in Asset Management Plan (September 2022)

+ Risk Profile
+ Digital Technology system
  - Information Technology (IT) assets
  - Operational Technology(OT) assets
  - Data & Analytics

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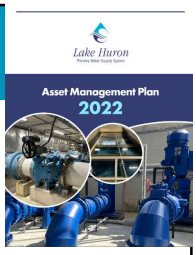
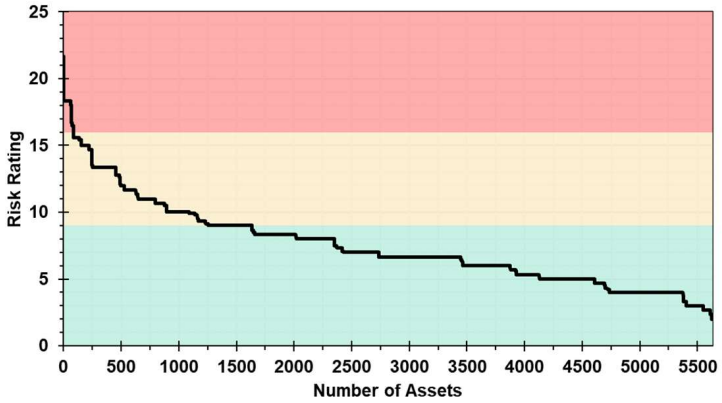
Risk Profile



The Asset Management Plan is updated to add the analysis of risk ratings at the component level and presented at the process area level, the system level and overall.



Overall Risk Profile:

This is a good position to be in as it allows the management of risk and replacement of assets to move forward at a steady rate.

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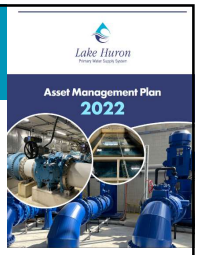
Key Drivers for Investment – align with Levels of Service



Level of Service Parameters	Address Legislative Changes	Maintain LOS	Support Growth and Demand	Increase Efficiency	Enhance LOS
Quality	yes	yes		yes	yes
Availability & Reliability		yes	yes	yes	yes
Environmental Acceptability	yes	yes			yes

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Key Drivers for Investment – align with Policy

AM Policy (Guiding Principles)	Address Legislative Changes	Maintain LOS	Support Growth and Demand	Increase Efficiency	Enhance LOS
Service Delivery		yes			yes
Long-Term Sustainability and Resilience			yes		yes
Fiscal and Asset Management Decision-Making	yes			yes	
Whole-Life Perspective		yes			yes
Environmentally Conscious	yes	yes	yes		
Transparency	yes			yes	
AM Policy (Key Outcomes)					
Annual Budgeting Process, Business Case Approach		yes	yes	yes	yes
Asset Data Registry, Good Governance & operational efficiencies					yes
Climate Change, Risk Management Approach	yes	yes			
Evidence Based Dialogue					yes
Sustainable LOS, Investment Drivers		yes			yes
Continuous Improvement				yes	yes

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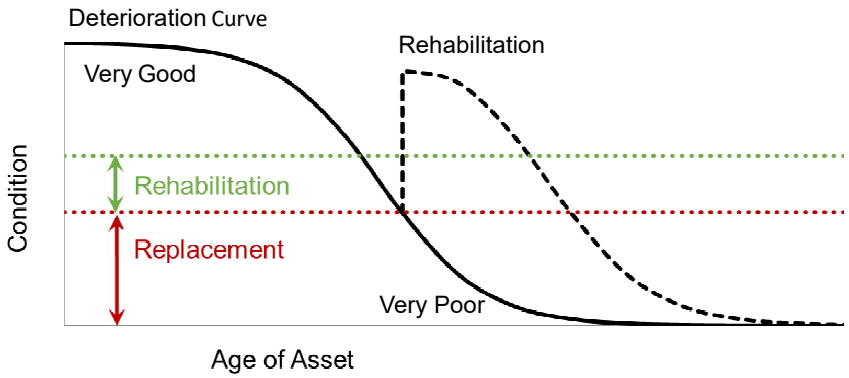
Lifecycle Strategy

Lifecycle Strategy for transmission pipeline (aligned with the Key Drivers), strategy to maintain levels of service, risk strategy, climate change strategy and lifecycle strategies for treatment and digital technology.



Key Drivers

- **Address Legislative Changes**
- **Maintain Level of Service**
- **Support Growth and Demand**
- **Increase Efficiency**
- **Enhance Level of Service**

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Lake Huron
Primary Water Supply System

Asset Cards System Wide

Asset Management Plan 2022 Update

October 6, 2022

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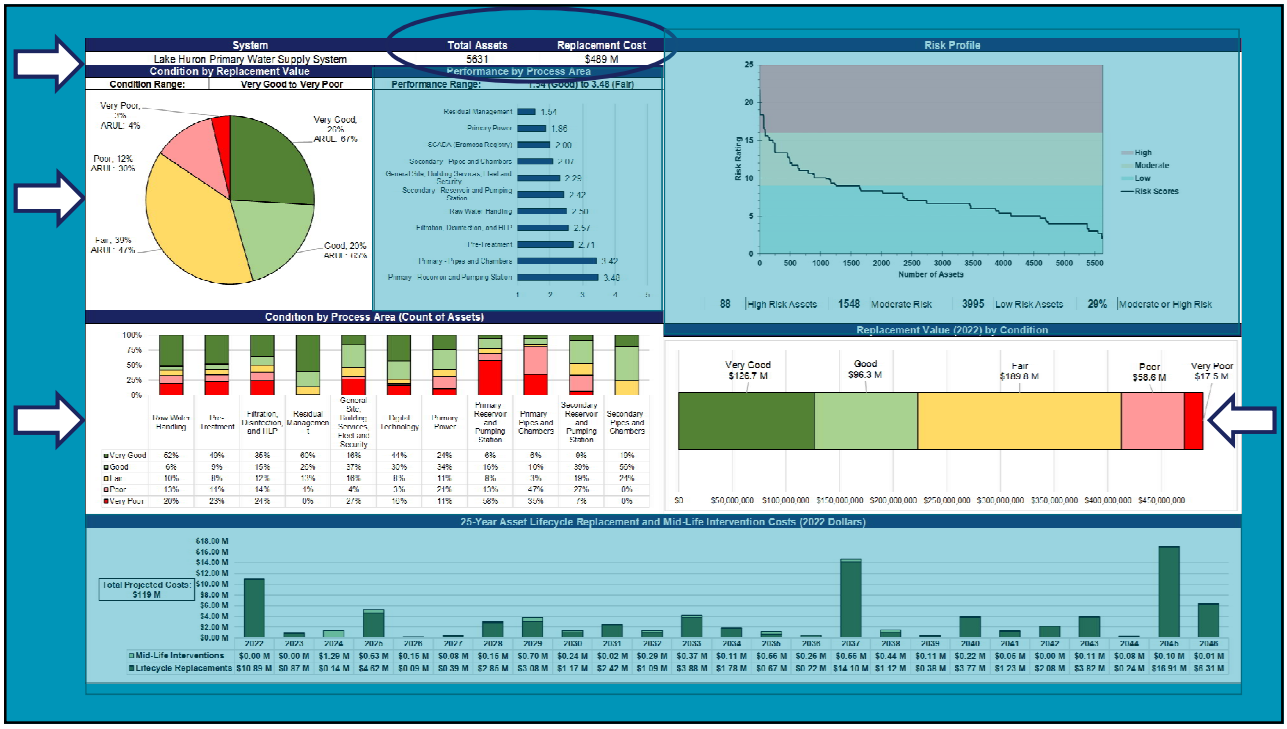

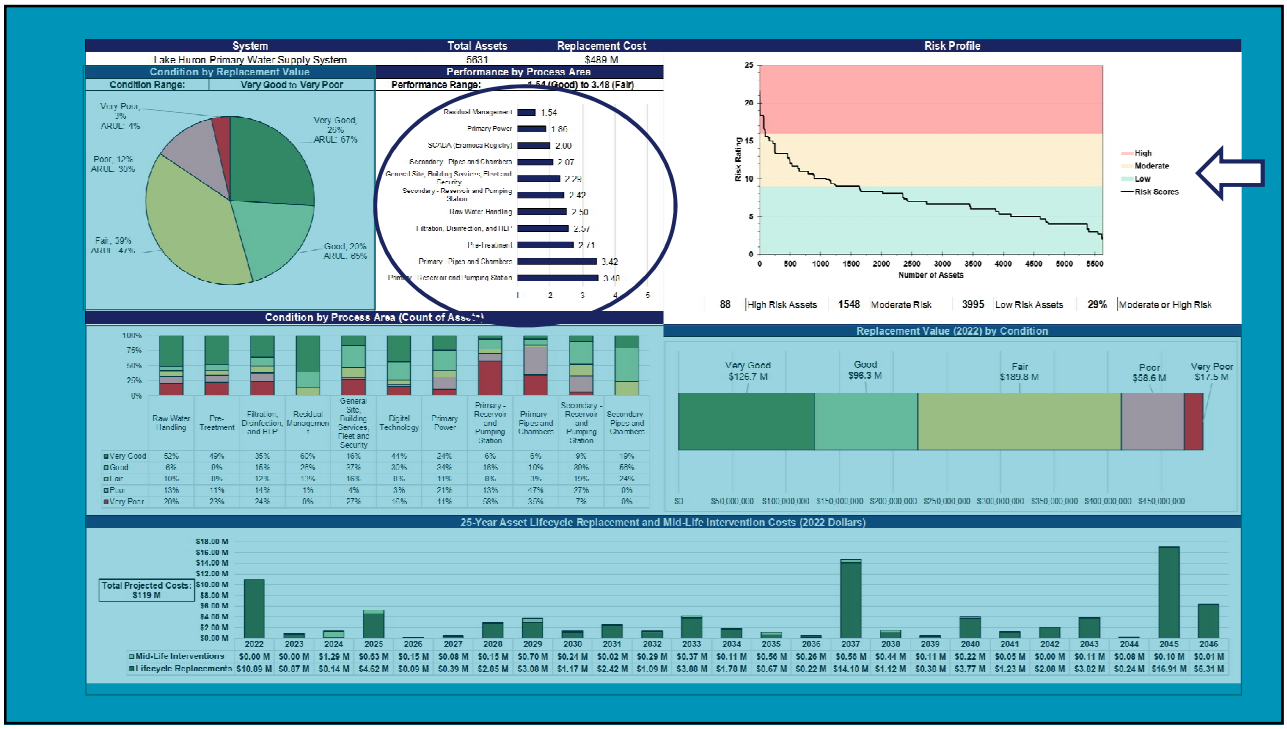
System
Total Assets
Replacement Cost
Lake Huron Primary Water Supply System
5831
$489 M
Condition by Replacement Value
Condition Range:
Very Good to Very Poor
Very Poor, 3%, ARUL: 4%
Very Good, 20%, ARUL: 67%
Poor, 12%, ARUL: 30%
Fair, 39%, ARUL: 44%
Good, 20%, ARUL: 65%
Performance by Process Area
Performance Range:
1.54 (Good) to 3.48 (Fair)
Residual Management 1.54
Primary Power 1.86
SCADA (Bromide Registry) 2.00
Secondary - Piped and Chambers 2.07
General Site, Building Services, Fleet and Security 2.23
Secondary - Reservoir and Pumping Station 2.49
Raw Water Handling 2.50
Filtration, Disinfection, and HLP 2.57
Pre-Treatment 2.71
Primary - Piped and Chambers 3.42
Primary - Reservoir and Pumping Station 3.48
Risk Profile
Risk Rating
Number of Assets
High
Moderate
Low
Risk Scores
88 High Risk Assets
1548 Moderate Risk
3995 Low Risk Assets
29% Moderate or High Risk
Condition by Process Area (Count of Assets)
Raw Water Handling
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Very Good 52% 49% 35% 60% 16% 44% 24% 6% 8% 9% 10%
Good 6% 9% 16% 25% 37% 30% 34% 16% 10% 30% 55%
Fair 10% 8% 12% 11% 16% 8% 11% 8% 3% 19% 24%
Poor 13% 11% 14% 1% 4% 3% 21% 13% 47% 27% 6%
Very Poor 20% 23% 24% 3% 27% 15% 11% 58% 33% 15% 6%
Replacement Value (2022) by Condition
Very Good $126.7 M
Good $96.3 M
Fair $189.8 M
Poor $58.6 M
Very Poor $17.5 M
25-Year Asset Lifecycle Replacement and Mid-Life Intervention Costs (2022 Dollars)
Total Projected Costs: $119 M
2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046
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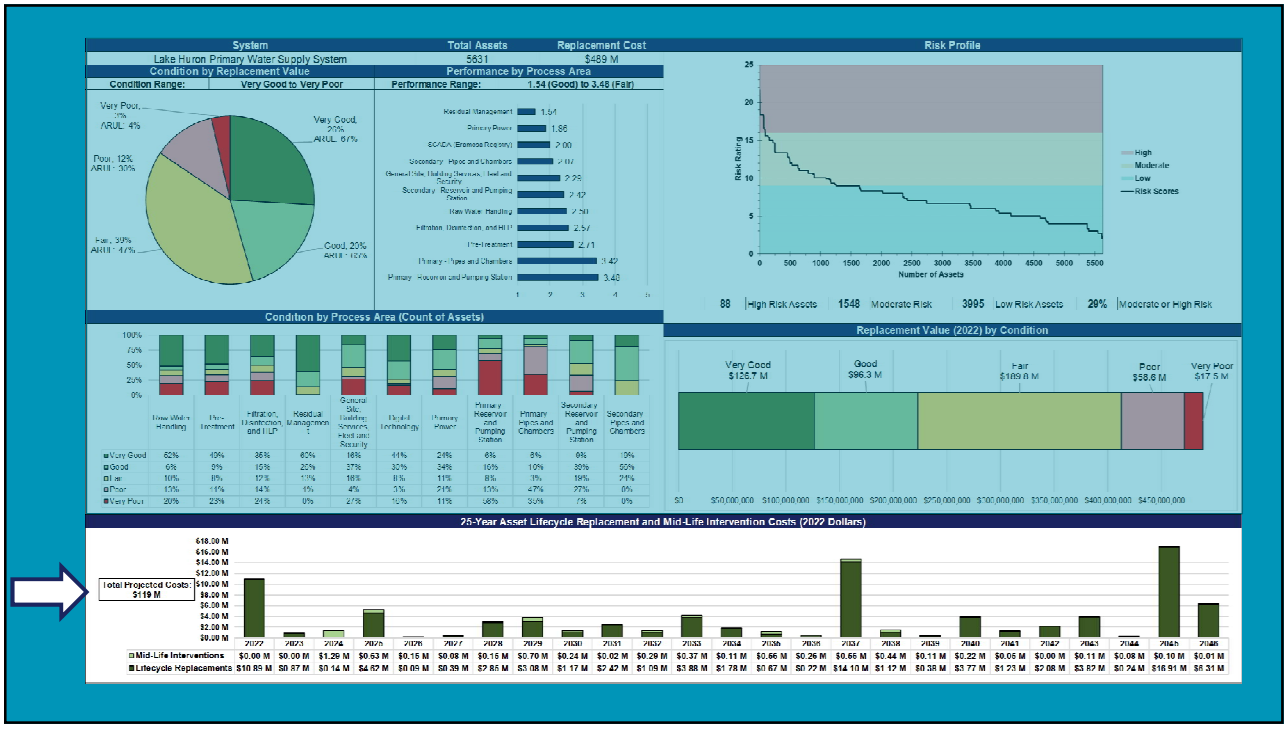
Lifecycle Replacements $10.85 M $0.57 M $0.14 M $4.62 M $0.05 M $0.39 M $2.85 M $3.08 M $1.17 M $2.42 M $1.09 M $3.88 M $1.78 M $0.67 M $0.22 M $14.10 M $1.12 M $0.38 M $3.77 M $1.23 M $2.08 M $3.82 M $0.24 M $16.91 M $5.31 M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Lake Huron
Primary Water Supply System

Next Steps and Recommendations

Asset Management Plan 2022 Update

October 6, 2022

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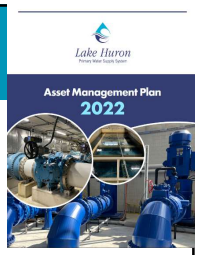
Next Steps and Recommendations



The key recommendations focus on:

- Increasing **performance data collection** in support of monitoring level of service metrics, risks, and asset condition/performance;
- Updating **condition assessment information** on a more regular basis tied to decision making windows for accurate line-of-sight; and
- Advancing recommendations on **strategy development and implementation**.

15 Recommendations covering 6 topics:

- **Data Collection and Monitoring**
- **Level of Service Tracking**
- **Risk Mitigation**
- **Strategy Implementation**
- **Financial Considerations**
- **Next Asset Management Plan Update**

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Next Steps and Recommendations

Data Collection and Monitoring

- Increase performance data collection, condition information, Level of Service data collection and enhance tracking of Digital Technology assets

Level of Service Tracking

- Operationalize the LOS Framework

Risk Mitigation

- Reduce uncertainty in data confidence (asset condition), reduce uncertainty in climate change impacts and operationalize the risk strategy

Strategy Implementation

- Develop asset management strategies (Transmission Strategy, Treatment Strategy, Digital Technology Strategy)

Financial Considerations

- Establish process for budgeting renewal and mid-life capital investments and update Business Case to align with Policy and LOS Framework

Next Asset Management Plan Update

- Prepare for 2027 update with recommended improvements and recommended schedule

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Acknowledgements

Project Team
Andrew Henry, Director, Regional Water
Billy Haklander, Capital Programs Manager
Ryan Armstrong, Asset Management Coordinator
Marcy McKillop, Environmental Services Engineer
Archana Gagnier, Finance & Budget Analyst
Brittany Bryans, Environmental Service Engineer
David Scott, Capital Projects Coordinator
Erin McLeod, Quality Assurance and Compliance Manager
John Walker, Operations Manager
Lisa McVittie, Security Manager
Rich Aycock, Information Technology Security Supervisor
Walter Martin, Control Systems Coordinator
Allison McGuckin, Compliance Coordinator
Blair Tully, Regional Manager Huron and Elgin, OCWA
Ahmed Morsy, Asset Maintenance Specialist, OCWA

Consulting Team
Darla Campbell, Project Manager
Jason Johnson, Deputy Project Manager
Matthew Murdock, Lifecycle and Risk
Kristina Lee, Project Coordinator
Catherine Liscumb, Analyst
Austen Underhill, Analyst
Jamee DeSimone, Climate Change Advisor
Vanessa Chau, Asset Management Policy
Pete Samson, Controls and Automation, Eramosa

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-01
Report Page: 1 of 2
Meeting Date: January 19, 2023
File No.:

To: Chair and Members, Board of Management
Lake Huron Primary Water Supply System

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

Subject: Quarterly Compliance Report (3rd Quarter 2022: July - September)

RECOMMENDATION

That the Quarterly Compliance report with respect to the general, regulatory and contractual obligations of the Lake Huron 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 3rd quarter of 2022.

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 is it a complete list of all applicable regulatory and contractual obligations.

DISCUSSION

Regulatory Issues

Recent Regulatory Changes: At the time of drafting this report, there were no new regulatory changes for this reporting period which may significantly impact the Lake Huron Primary Water Supply System (LHPWSS).

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

Quarterly Water Quality Reports: The Water Quality Quarterly Report for the period of July 1 – September 30, 2022, 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 of 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, 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 (AWQIs): There were no AWQI reported by the operating authority or the third-party accredited laboratory during this quarter.

Compliance Inspections: The annual inspection by the Ministry of the Environment, Conservation and Parks (MECP) began on September 26, 2022. The final inspection report will be the subject of a future 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 2022 second quarter Contract Report was received from OCWA on October 27, 2022 and was discussed at the quarterly administration meeting between Board staff and OCWA on November 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

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-02
Report Page: 1 of 21
Meeting Date: January 19, 2023
File No.:

To: Chair and Members, Board of Management
Lake Huron 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 Lake Huron Primary Water Supply System **BE RECEIVED** for information.

BACKGROUND

Environmental Management System (EMS)

The Lake Huron Primary Water Supply System (LHPWSS) has an Environmental Management System (EMS) which has been registered to the ISO 14001 standard since 2003. The LHPWSS 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 LHPWSS.

Quality Management System (QMS)

The existing EMS has been integrated with a Quality Management System (QMS) that meets the requirements of the province's Drinking Water Quality Management Standard (DWQMS). 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. To become accredited the Operating Authority must implement and maintain a QMS, including an Operational Plan, that meets the requirements of the DWQMS and must undergo external accreditation audits.

OCWA received full scope DWQMS re-accreditation in October 2022 and is currently accredited for the three-year period ending in 2025.

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 LHPWSS and the Elgin Area Primary Water Supply System (EAPWSS).

Management Review meetings were held on September 7, 2022 and November 23, 2022. The meeting minutes are included as Appendix A and Appendix D for the information of the Board.

Internal Audits

Pursuant to the international ISO 14001 standard and the provincial DWQMS, 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 standard and DWQMS. Internal audits also ensure that the ongoing operation of the LHPWSS 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 this 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.

There were two external audits conducted during the reporting period. A DWQMS re-accreditation audit and an EMS annual surveillance audit took place concurrently from October

19-21, 2022. There were no non-conformities identified during either audit, and the operating authority successfully achieved DWQMS re-accreditation. Proactive opportunities for improvement (OFIs) identified in the audit reports were discussed at the Nov. 23, 2022 Management Review meeting and action items were assigned.

Due to the length of the audit reports, Appendix B and Appendix C contain only the executive overviews from the DWQMS re-accreditation audit and EMS surveillance audit respectively. Copies of the complete external audit reports are available from the Board's administration office in London upon request.

During the audits, the external auditor provided positive comments about the status and success of the LHPWSS management systems. Specifically noted was the effectiveness of the maintenance program. The recent implementation of a new computerized maintenance management system, the currency of the information within, and the dedication of personnel have created an effective maintenance program. In addition to the routine maintenance activities, continual improvement was evident through the use of dashboards, trending and root cause analysis to further elevate the maintenance program.

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 LHPWSS 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 LHPWSS'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.

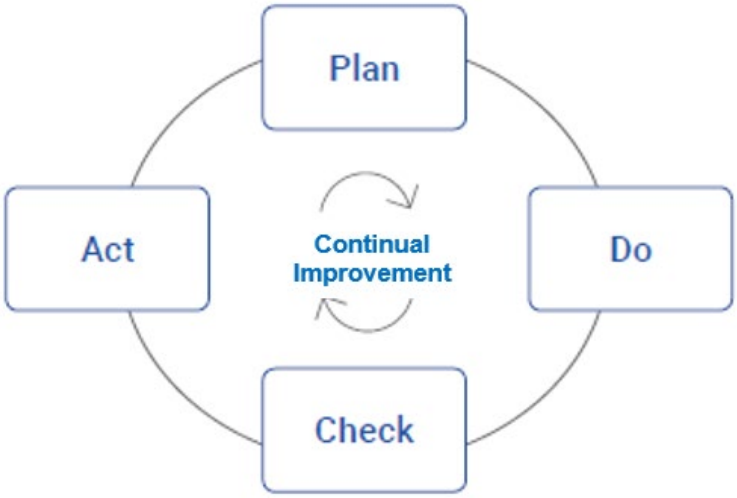

Figure 1: Plan-Do-Check-Act improvement process

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:

- Two (2) action items were added a result of an environmental compliance internal audit conducted July 28, 2022
- One (1) action item was added as a result of the management review meeting on Sep. 7, 2022
- Thirteen (13) action items were added as a result of the corrective action process for alum failure incidents
- Three (3) action items were added as a result of the correction action process for an RMF sampling incident
- Seventeen (17) action items were added as a result of the DWQMS external audit conducted on Oct. 19-21, 2022
- Eleven (11) action items were added as a result of the EMS external audit on Oct. 19-21, 2022, noting that most of these action items are duplicates with the DWQMS external audit

As of December 12, 2022, there are currently forty-two (42) 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 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 LHPWSS 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

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 (September 7, 2022)
Appendix B – DWQMS External Audit Report Summary (October 19-21, 2022)
Appendix C – EMS External Audit Report Summary (October 19-21, 2022)
Appendix D – Management Review Meeting Minutes (November 23, 2022)

APPENDIX A: MANAGEMENT REVIEW MEETING MINUTES (SEPTEMBER 7, 2022)

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

Date: September 7, 2022
Time: 1:00pm
Location: Virtual – Microsoft Teams
Attendees: Andrew Henry (RWS), Erin McLeod (RWS), Allison McGuckin (RWS),Matt Bender (OCWA)**,** Blair Tully (OCWA), Allison McCann (OCWA), Denny Rodrigues (OCWA), Randy Lieber (OCWA), Greg Henderson (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 (June 22, 2022) are posted toSharePoint. The minutes were approved. No concerns.

2. Appointment of Top Management (Policy, Operational Plan)

As of August 31, 2022, Matt Bender of OCWA is officially taking over as the Regional Manager. It was decided that the EMS/QMS Policy and Operational Plan will be re-signed by top management to show their commitment to the EMS/QMS.

As noted during the meeting, Matt Bender has worked in compliance for 3 years and has been directly involved with DWQMS internal audits, reaccreditation audits, corrective actions and the associated follow up. OCWA created a transition plan for Matt that included 6 weeks of cross training with the previous Regional Manager and the current Safety, Process and Compliance Manager.

ACTION ITEM: Top Management to resign the EMS/QMS Policy and Operational Plan. Assigned to Allison McCann and Erin McLeod. Deadline: September 30, 2022.

3. Changes In:

a. Needs and expectations of interested parties, including compliance obligations

A revised table was circulated identifying updated information for review. Discussion ensued and Top Management approved suggested changes and additions to be incorporated.

- The contract negotiations with OCWA including ongoing change management was noted.
- Member Municipalities needs and expectations were updated to reflect the new Customer Level of Service (CLOS) parameters in the updated Asset Management Plan.
- Suppliers are wanting more lead time and advance notices than in the past which creates more onus on OCWA for commitment of chemical ordering volumes.
- Research partners were split into two line items – NSERC Chairs and the Universities.
- First Nations were split into two line items – First Nations as a customer (or potential future customer) and Indigenous Peoples as related to status as rights holders in accordance with Treaties with the Crown
- EAPWSS: Site Security contractor (Paladin) was added as a separate interested party.

b. External and internal issues that are relevant to the EMS

A revised table was circulated identifying updated information for review. Discussion ensued and Top Management approved suggested changes and additions to be incorporated.

- OCWA's 5-year term extension (2023-2027) has been added with a new service agreement taking effect January 1, 2023.
- Updates on the 2021 employee retention incentive payments were provided.
- Updates on the 2021 year end volumes were provided, with predictions that the 2022 volumes will be within the projected range but will be borderline for the EAPWSS; There are proposed industrial developments in Elgin County and Central Elgin but the volume impacts to EAPWSS are unknown at this time; The region has an overall increasing demand trend, primarily attributed to the Huron system.
- An updated Asset Management Plan is scheduled to be approved at the October 6, 2022 Board meeting.
- The 2022 Provincial election took place in June 2022. The governing Progressive Conservative party was re-elected.
- There is an upcoming municipal election in October 2022There is a significant potential for changes to the appointments of the Board Members.
- OCWA mandate letter did not significantly change from the previous year.
- OCWA continues to see increases in chemical costs. A chemical cost adjustment has been introduced in the new service agreement (takes effect Jan 1, 2023).
- There is no longer an extension from the MECP for operator licenses.
- EAPWSS: The Elgin Board has decided not to pursue updating the Board's status under the Municipal Act. The Board is not seeking any changes at this time.
- LHPWSS: The Huron Board is looking into updating the Board's status under the Municipal Act.
- Updated Financial Plans are scheduled to be approved in 2023.
- EAPWSS: Elgin UV project is underway.
- LHPWSS: Huron undergoing two Class Environmental Assessments: one for disinfection and storage upgrades and the second is for the Oneida pipeline.

- LHPWSS: Completion of a Climate Change Vulnerability Assessment (in partnership with the Ausable Bayfield Maitland Valley Source Protection Region). Findings to be presented at the Oct. 6, 2022 Board Meeting.

c. Significant environmental impacts

EMS Aspects Assessment – Changes over the past year:

LHPWSS

- High water levels and storm events were added as a new environmental aspect.
- The new high lift pumps provide an opportunity to reduce energy consumption (positive impact).
- Clarifications/edits were made as a result of the EMS internal audit.
- A new control procedure for equipment containing refrigerants was created (LH-PROC-2600).

EAPWSS

- High water levels and storm events were added as a new environmental aspect.
- The Elgin-Middlesex Pump Station (EMPS) building envelope and property were added as a new area to the assessment. Reviewed and clarified all aspects related to the EMPS (Valve House, Reservoir, Building/Property).
- Clarifications/edits were made as a result of the EMS internal audit.
- A new control procedure for equipment containing refrigerants was created (EA-PROC-3200).
- 2021 had a significant iron and manganese event and a new training program for staff was implemented.

General:

- Electricity consumption and chemical consumption continue to be tracked as part of the EMS objectives and targets.
- Process water used and non-revenue water continue to be two (2) key performance indicators (KPIs) that are tracked.
- The future Central Elgin license of occupancy for a Pump Station is excluded from our EMS/QMS. If there is a backup generator there are potential impacts from the fuel.
- There are some anomalies in the non-revenue water trends that were addressed in the past year.
    - LHPWSS: City of London meter adjustment at Arva Pump Station – east meter was adjusted downward;
    - EAPWSS: Repair of leaking valve (P045) at EMPS in April 2022

d. Risks and opportunities

- Opportunity (EAPWSS & LHPWSS) – A NSERC research grant has been approved

for a project entitled "Detecting and treating per- and polyfluoroalkyl substances (PFAS) in Canadian water systems". OCWA, EAPWSS & LHPWSS are partners in this project.

- Opportunity (EAPWSS & LHPWSS) – Site security (Paladin) now on-site at Elgin WTP as of Jan. 2022. Security Upgrades: Security enhancements are in progress at Elgin (camera project). Camera project recently completed at Huron. Additional camera coverage increases security, also provides operational and emergency response benefits such as better detection of equipment failure (e.g., smoke), fire, etc.
- Opportunity (EAPWSS & LHPWSS) – OCWA has now fully transitioned to electronic logbooks (2022).
- Opportunity (EAPWSS & LHPWSS) – The Water Quality Facility Plan (5-year update) is currently in progress. The project will look at source water quality and the ability to treat the water. Process optimization improvements will be recommended which provides chemical optimization opportunities in future.
- Risk (LHPWSS) – Coagulation upgrade at Huron WTP has experienced delays which poses a water quality risk.
- Opportunities (EAPWSS & LHPWSS) – Major capital projects recently completed or currently underway include:
    - High Lift Pump upgrade (LHPWSS) – all new pumps commissioned as of August 2022; Energy savings will be reviewed
    - Class EA for disinfection and storage upgrades (LHPWSS) – included a review of environmental impacts
    - Coagulation upgrade (LHPWSS) –process optimization including better control of chemical dosing
    - UV Replacement (EAPWSS) – opportunity to replace aging UV reactors with newer more energy efficient technology
    - McGillivray Pumping Station HVAC and electrical upgrade (LHPWSS) – opportunity to replace aging equipment with more energy efficient technology
    - Oneida Pipeline (LHPWSS) – additional customer, improved water quality benefits for the region
    - Electric vehicle charging stations (EAPWSS & LHPWSS)
    - Backwash Pump Upgrade (EAPWSS)
    - Window replacement in the low lift building (LHPWSS) – building energy efficiency
    - Many other civil, mechanical, electrical upgrades underway
- Opportunity (LHPWSS) – OCWA created a career “Pathways Partner” promotional video in partnership with Avon Maitland District School Board to give students the opportunity to explore careers in the drinking water industry and raise awareness of environmental career choices. There is currently a high school co-op placement at Huron.
- Opportunity (LHPWSS) – A Climate Change Assessment Tool (climate change vulnerability assessment) was recently completed for the LHPWSS
- Opportunity (EAPWSS & LHPWSS) - Health and Safety by Design concepts may

have consequential impacts to EMS and QMS
- Opportunity (EAPWSS & LHPWSS) - Maximo mobile system implementation is in progress in 2022.
- Opportunity (EAPWSS & LHPWSS) – OCWA management team transitions through training and overlap helped to retain knowledge by keeping movement in house.
- Risk (EAPWSS) - 2021 Storm event created abrupt changes in the raw water quality causing increased iron and manganese levels.
- Opportunity (EAPWSS & LHPWSS) – The network and server infrastructure will be moving from the ITS datacenter at Museum London to the Rogers datacenter. This will allow for easier access to better maintain the systems, more reliable communications, and enhanced security.
- Opportunity (EAPWSS & LHPWSS): Resource recovery - there is potential for a future project which could result in reduction of waste (e.g., metals recovery from residuals).

4. Incidents of Adverse Drinking Water Tests

EAPWSS: No incidents of adverse drinking water quality have been reported since this item was last discussed (June 23, 2021).

LHPWSS: No incidents of adverse drinking water quality have been reported since this item was last discussed (September 22, 2021).

5. LHPWSS – Environmental Compliance Audit (July 23-28, 2022)

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

6. EAPWSS – Environmental Compliance Internal Audit (August 22-25, 2022)

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

7. Consumer Feedback

LHPWSS
Complaints & Concerns noted in Monthly Operations Reports (October 2021 – July 2022): None

EAPWSS
Complaints & Concerns noted in Monthly Operations Reports (October 2021 – July 2022):

January 2022: On Jan. 27, 2022, the Elgin WTP received a call from a St. Thomas

resident who inquiring about water quality, specifically a concern about chemical taste and smell (other than chlorine). The resident was provided with information regarding the jurisdictions for water complaints and concerns and advised that they should contact the City of St. Thomas (as standard procedure is to refer residents to their billing municipality for follow up). The resident was also advised that there had been no changes to the quality of the water produced at the WTP and that there had been no changes or additions to chemicals used in the processes.

April 2022: Concern reported by a Southwold resident on April 19, 2022, expressing their disappointment at the selection of April 24, 2022 as the date for the P045 valve replacement and the associated service interruption, since this is the date of Orthodox Easter. The date was selected to coincide with the low water demand period (Sunday night) to minimize impact. The advance notice was issued so that people could potentially store water for toilet flushing, cooking, etc. during the interruption. In future the operating authority will endeavor to research religious ceremonies and dates to hopefully avoid such conflicts

8. Compliance Obligations Update

Implementation Pause of Excess Soil Requirements in Effect January 1, 2022
Source: Ministry of the Environment, Conservation and Parks (MECP)
Date Posted/Notice Received: April 21, 2022
Comments Due: N/A
Summary:
Ontario is implementing a temporary suspension of certain provisions in the Excess Soil Regulation that came into effect January 1, 2022, until January 1, 2023. The pause will provide more time to understand the provisions and refine their implementation.
Potential Impacts: None anticipated.

O.Reg. 342/22 (General – Waste Management) amending O.Reg. 347
Source: MECP
Date Posted/Notice Received: April 23, 2022
Comments Due: N/A
Summary:
MECP has finalized regulatory amendments that will require generators, carriers, and receivers of industrial hazardous or liquid waste to report information through a new digital reporting system currently being built by the Resource Recovery and Productivity Authority (RPRA). Starting Jan. 1, 2023, reporting must be done through RPRA's Hazardous Waste Program Registry, instead of reporting through the current Hazardous Waste Information Network (HWIN). Additional changes to O. Reg. 347 include allowing generators of hazardous waste to delegate reporting requirements, changes to annual registration, as well as other clarifying amendments.
The Regulation comes into force on July 1, 2022. The RPRA's registry will be launched on Jan. 1, 2023. All documents that are required to be submitted through the Registry by this Regulation shall be submitted electronically.

A Frequently Asked Questions page has been developed by RPRA.
Potential Impacts:
On. Nov. 15, 2022 the new registry will open for users to set up their accounts. On Jan. 1, 2023 the new registry takes effect and there will be no more paper waste manifests.

Regulatory and policy proposals (Phase 2) under the Conservation Authorities Act
Source: MECP
Date Posted/Notice Received: April 22, 2022
Comments Due: N/A
Summary:
Requirements to increase transparency of Conservation Authority (CA) operations and those related to fees that CAs may charge will be in place by January 1, 2023, while those related to budget and municipal levy apportionment processes will be in place by July 1, 2023, to align timing with CA 2024 budgets. These regulations and policy will ensure a transition by January 1, 2024 of CAs to the new funding framework and three categories of programs and services that were established by recent amendments to the Conservation Authorities Act and first phase of regulations.
Potential Impacts: The regulation addresses an authority entering into an agreement with its participating municipalities with respect to the apportionment of costs. Unclear whether agreements can also be entered into with other entities (eg. Water Boards) to cover costs.

Migratory Birds Regulations, 2022: SOR/2022-105
Source: Canada Gazette
Date Posted/Notice Received: June 8, 2022
Comments Due: N/A
Summary:
A comprehensive review of the Migratory Birds Regulations (MBR) was conducted, resulting in many of the components of the Regulations being redrafted and reorganized into distinct parts, with some definitions or provisions being removed, while other ones were added. An exception to allow the destruction, damage, disturbance or removal of unoccupied nests in the MBR 2022 will provide enhanced flexibility and regulatory certainty for businesses. The new regulations take effect on July 30, 2022.
Potential Impacts: None anticipated

Amendments to the Transportation of Dangerous Goods Regulations (Registration Database)
Source: Canada Gazette
Date Posted/Notice Received: June 25, 2022
Comments Due: September 3, 2022
Summary:
This regulatory proposal would require that individuals or organizations who import, offer for transport, handle or transport dangerous goods be registered in a new registration database. All registered persons must provide administrative information and information concerning the dangerous goods and operations being conducted at their respective Transportation of Dangerous Goods (TDG) site. The new database will be implemented in spring 2023.

Potential Impacts:
If OCWA is subject to TDG regulations with respect to handling of chemicals (e.g., during chemical unloading/deliveries) then the sites will need to be registered in the new database with renewal and updates annually. The database will be implemented in spring 2023.

State of the Great Lakes 2022 Report
Source: Environment and Climate Change Canada (ECCC) and the United States Environmental Protection Agency (USEPA)
Date Posted/Notice Received: July 29, 2022
Comments Due: N/A
Summary:
Canada and the U.S. have jointly published two reports required under the the 2012 Great Lakes Water Quality Agreement (GLWQA): State of the Great Lakes 2022 Report and the 2022 Progress Report of the Parties.
The State of the Great Lakes 2022 Report provides a summary of the health of the Great Lakes using indicators of ecosystem health, such as drinking water, fish consumption, and beach closures. The report discusses progress with respect to the reduction of toxic chemicals, and a reduction in the establishment of new non-indigenous aquatic species. Challenges include the impacts of nutrients, especially in Lake Erie and localized areas, and the impacts of invasive species. Climate change is already exacerbating some threats. **Overall, the Great Lakes are assessed by the State of the Great Lakes indicators as fair, and the trend is unchanging.**
The Progress Report of the Parties describes recent achievements in restoring and protecting Great Lakes water quality and ecosystem health.
Potential Impacts: None anticipated

Notice of Pre-Consultation on Proposed Amendments to Ausable Bayfield and Maitland Valley Source Protection Plans
Source: Ausable Bayfield Maitland Valley (ABMV) Source Protection Committee (SPC)
Date Posted/Notice Received: August 29, 2022
Comments Due: October 14, 2022
Summary:
Over the past three years, the ABMV SPC has been working on a review and amendments of the Source Protection Plans for the Ausable Bayfield and Maitland Valley Source Protection Areas.
Pre-consultation on the proposed amendments begins with implementing bodies, including municipalities, ministries and other agencies.
Comments received as part of the pre-consultation process will be reviewed by the SPC and possible changes made to policies prior to public consultation. Public consultation will begin in early 2023.
Potential Impacts: None anticipated. The key changes in the proposed amendments mainly relate to municipal wells, wellhead protection areas, and road salt management.

9. Best Management Practices (including MECP website overview)

The continual improvement requirement of the DWQMS is that there be a review and consideration of the applicable best management practices, including any published by the MECP on www.ontario.ca/drinkingwater. There are currently no best management practices published on the MECP website. The LHPWSS & EAPWSS continue to identify best management practices through the other means documented in the Corrective & Preventive Action Procedures.

10. Corrective Action Forms (LHPWSS & EAPWSS)

a. Huron RMF – Effluent Conduit Sampling (July 12, 2022)
b. Huron Incident Report – Loss of Alum (Feb 7, 2022)

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. Other Business

No other business discussed.

Next Meeting: November 23, 2022

APPENDIX B: DWQMS EXTERNAL AUDIT REPORT SUMMARY (OCTOBER 19-21, 2022)

EXECUTIVE OVERVIEW
Based on the results of this onsite verification audit (Stage 2) and the results of the System audit (Stage 1) it has been determined that the management system is effectively implemented and meets the requirements of the standard relative to the scope of certification identified in this report; therefore, a recommendation for certification will be submitted to SAI Global review team.

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 5 Document and Records Control** – There is an opportunity to:

i) include date Policy was signed in addition to the revision date.

ii) address SharePoint 'Obsolete' document management within LH-ADMIN-200.

• **Element 7 Risk Assessment** – Consider reviewing Environmental Aspects' and Impacts' activities for potential risk assessment outcomes.

• **Element 10 Competencies** – There is an opportunity to:

i) include the OCWA management of MECP cybersecurity hazard within the Corporate cybersecurity course.

ii) update the EMS / QMS Orientation (e.g., 4-Oct-2022 signed Policy, updated personnel).

iii) review the OCWA Environmental Compliance 3-year Corporate and 5-year Primary Water Supply System frequency requirement.

iv) include emergency testing as part of the training record.

• **Element 13 Essential Supplies and Services** – There is an opportunity to:

i) add McLean (chlorine tonner calibration) and Sommers (generator maintenance) to the Essential Supplies and Services List.

ii) ensure evidence of quality requirements is available (e.g., Hach calibration Technician qualifications, Bureau Veritas backup laboratory accreditation).

iii) document the OCWA (e.g., piping and Watermain Repair Disinfection Form LF-PROC-2400) and RWS (e.g., tender, and associated Form 9) processes for confirmation of quality requirements.

• **Element 14 Review and Provision of Infrastructure** – There is an opportunity to align the OCWA (by including environmental impact, including life cycle as criteria within the Major Capital Recommendations) and RWS (by including QMS risk assessment outcomes within business case evaluation) capital processes.

• **Element 15 Infrastructure Maintenance** – There is an opportunity to ensure accurate maintenance records, e.g.:

i) McGillivray colorimeter had two asset numbers.

ii) no annual work order for Arva 300184 chlorine analyzer in Maximo.

iii) Exeter 400054 sodium hypochlorite level calibration sticker shows Sep-2022 expiry although it has been completed in Maximo.

• **Element 18 Emergency Management** – There is an opportunity to:

i) ensure Acute 23-Jun-2022 HMC-4 Spills Reporting testing resulting actions are reflected in the CAF Spreadsheet.

ii) review HMC-7 2022 testing (completed 2021) as per Management Review minutes.

• **Element 21 Continual Improvement** – There is an opportunity to review the identification of Best Management Practices (e.g., MECP cybersecurity hazard).

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 were 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 through the use of the quality policy, quality objectives, audit results, data analysis, the appropriate management of corrective and preventive actions and management review.

APPENDIX C: EMS EXTERNAL AUDIT REPORT SUMMARY (OCTOBER 19-21, 2022)

Surveillance Executive Overview

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

Changes to the audit plan and the reasons for the change:
No changes.

Significant issues impacting on the Audit Programme:
Loss of recently hired RWS Compliance Coordinator.
External party hired to conduct a compliance audit scheduled in 2023.

Site(s) description: activities/processes at each site:
Refer to Scope above.

Interrelationship between sites (dependency):
Refer to Scope above.

The objectives of the audit were achieved.

Overall Recommendation
The capability of the management system to meet expected outcomes:

The organisation continues to demonstrate continual improvement (e.g., refer to projects outlined in the Audit Summary) through meeting long-term electricity and chemical usage objectives and compliance with obligations. Environmental awareness (e.g., impact on the environment) at OCWA and RWS management and operational levels 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 utilised 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.

Audit Findings

Non-Conformances (NCRs):
None identified.

Opportunities for Improvement:
The following opportunities for improvement have been identified.

• **6.1.2 Environmental aspects** – There is an opportunity to:

i) ensure environmental aspect assessment is completed as part of the Management of Change process (e.g., LH1260 Huron Coagulation System Upgrade).

ii) consider reviewing QMS Risk Assessment activities for potential environmental impacts.

• **7.3 Awareness** – There is an opportunity to:

i) update the EMS / QMS Orientation (e.g., 4-Oct-2022 signed Policy, updated personnel).

ii) review the OCWA Environmental Compliance 3-year Corporate and 5-year Primary Water Supply System frequency requirement.

iii) include emergency testing as part of the training record.

• **7.5.2 Control of documented information** – There is an opportunity to:
i) include date Policy was signed in addition to the revision date.
ii) address SharePoint 'Obsolete' document management within LH-ADMIN-200.

• **8.1 Operational planning and control** – There is an opportunity to:
i) align the OCWA (by including environmental impact, including life cycle as criteria within the Major Capital Recommendations) and RWS (by including QMS risk assessment outcomes within business case evaluation) capital processes.
ii) ensure accurate maintenance records, e.g., Exeter 400054 sodium hypochlorite level calibration sticker shows Sep-2022 expiry although it has been completed in Maximo.

• **8.2 Emergency preparedness and response** – There is an opportunity to:

i) ensure Acute 23-Jun-2022 HMC-4 Spills Reporting testing resulting actions are reflected in the CAF Spreadsheet.

ii) review HMC-7 2022 testing (completed 2021) as per Management Review minutes.

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.

APPENDIX D: MANAGEMENT REVIEW MEETING MINUTES (NOVEMBER 23, 2022)

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

Date: November 23, 2022
Time: 1:00pm
Location: Virtual – Microsoft Teams
Attendees: Andrew Henry (RWS), Erin McLeod (RWS), Matt Bender (OCWA), Allison McCann (OCWA), Denny Rodrigues (OCWA), Randy Lieber (OCWA), Greg Henderson (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 PrimaryWater Supply System (EAPWSS).

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

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

The minutes from the previous meeting (September 7, 2022) are posted to SharePoint. The minutes were approved.

2. Environmental & Quality Policies (LHPWSS & EAPWSS)

Proposed changes to the Policies were reviewed. Changes included:

- Addition of a new commitment to align and coordinate the EMS and QMS with the Asset Management System.
- Re-ordering of the commitments, so that the mandatory commitments required by the Drinking Water Quality Management Standard (DWQMS) and ISO14001 Standard are listed first.
- Addition of a signature date to the title block.
- Adding a reference to process water optimization to the LHPWSS Policy, to align with a new EMS objective identified for the upcoming 5-year period.

The proposed changes were approved. The revised Policies will be provided to the Boards at the January 19, 2023 Board meetings for endorsement.

3. Huron QMS Re-accreditation External Audit (Oct. 19-21, 2022)

No non-conformances were identified. A total of seventeen (17) Opportunities for Improvement (OFIs) were identified under eight (8) elements of the standard. The OFIs were discussed, and action items were finalized to address them. OCWA successfully achieved re-accreditation and the new certificate will be issued before the end of the year.

4. Huron EMS External Audit (Oct. 19-21, 2022)

No non-conformances were identified. A total of eleven (11) OFIs were identified under five (5) elements of the standard. The majority of the OFIs were duplicates with the QMS audit. The OFIs were discussed, and action items were finalized to address them.

5. Elgin QMS Re-accreditation External Audit (Oct. 25-27, 2022)

No non-conformances were identified. A total of twenty-two (22) OFIs were identified under nine (9) elements of the standard. The OFIs were discussed, and action items were finalized to address them. OCWA successfully achieved re-accreditation and the new certificate will be issued before the end of the year.

6. Elgin EMS External Audit (Oct. 25-27, 2022)

No non-conformances were identified. A total of twelve (12) OFIs were identified under seven (7) elements of the standard. The majority of the OFIs were duplicates with the QMS audit. The OFIs were discussed, and action items were finalized to address them.

7. New Action Items (EAPWSS)

Three (3) new action items have been identified as a result of completing the following reviews:

- Corrective Action Form – Elgin Filter #4 effluent valve issue
- Management of Change Form – Elgin Alum Tank Replacement Project

The action items identified on these forms have been added to the action item tracking spreadsheet.

8. Objectives, Targets and Programs (LHPWSS & EAPWSS)

EAPWSS
The results of the current objectives and targets for 2017-2022 were reviewed and discussed.

- The electricity target is being met on an annual average basis, but not during winter months.
- The chemical target is stable/consistent but not meeting the current target on an annual average basis. Due to seasonal fluctuations the target is being met in

spring/summer but not fall/winter.
- The residuals target was always met for the total suspended solids (TSS) criteria, but there were several exceedances of total chlorine residual (TCR) criteria.

The proposed new objectives, targets and programs for 2023-2027 were reviewed and discussed. The drafts were approved by Top Management, pending final edits as per discussion.
- The residuals objective and target will not carry forward as the Residuals Management Facility (RMF) has been operating for 5 years and baseline information has now been established.
- The electricity objective will continue, with the target being lowered. The new target will be based on an annual average, with quarterly monitoring.
- The chemical objective will continue, with the target remaining the same. The target will be based on an annual average, with quarterly monitoring.
- All capital projects that may contribute to the electricity and chemical optimization are to be included in the programs. Even if impacts are minimal, document them all.

LHPWSS
The results of the current objectives and targets for 2017-2022 were reviewed and discussed.
- The electricity target is being met on an annual average basis, with the exception of recent winter months (in 2021 & 2022).
- The chemical target is being met on an annual average basis, with better performance being seen in summer months.

The proposed new objectives, targets and programs for 2023-2027 were reviewed and discussed. The drafts were approved by Top Management, pending final edits as per discussion.
- The electricity objective will continue, with the target being lowered. The new target will be based on an annual average, with quarterly monitoring.
- The chemical objective will continue, with the target being lowered. The new target will be based on an annual average, with quarterly monitoring.
- A new process water optimization objective will be added. The main driver for the program is backwash optimization, but it will consider all in-plant process water consumption. No specific target will be set.
- All capital projects that may contribute to the electricity and chemical optimization are to be included in the program. Even if impacts are minimal, document them all.

The comments brought forward at the meeting will be incorporated into the objectives, targets, and programs for 2023-2027. The final draft documents will be circulated to RWS and OCWA staff for further review and comment. The final 2023-2027 objectives, targets and programs will be provided to the Boards at the January 19, 2023 Board meetings for endorsement.

Next Meeting: TBD

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-03
Report Page: 1 of 4
Meeting Date: January 19, 2023
File No.:

To: Chair and Members, Board of Management
Lake Huron Primary Water Supply System

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

Subject: Quarterly Operating Financial Status – 3rd Quarter 2022

RECOMMENDATION

That this report regarding the Quarterly Operating Financial Status of the Lake Huron 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 third quarter 2022 (July 1 to September 30) 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 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 2021 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 is currently tracking approximately $375,000 higher than the previous year, due to increased volumes and commodity costs.

- Salaries, wages and benefits expenditures include all direct labour costs for administrative staff including benefits. Variations over the same period in 2021 are attributed to annual salary adjustments, staff vacancies, and marginally lower total staffing costs as a result of the pandemic. In addition, the 2022 YTD amount shown now includes accrued vacation costs posted early in the year.

- Administration and Other Expenses relates to various overhead operating expenses, including subscriptions and memberships, office supplies and property taxes. The costs to date are marginally the same as the same period in 2021.

- Vehicles and Equipment expenditures include costs associated with vehicles, computers and office equipment for administrative staff.

- Purchased Services and Professional Fees largely relates to allowances for ad hoc professional consulting and legal services, security services, office lease, telephone charges, network and SCADA maintenance, printing services, and pipeline locate costs. The increased cost when compared to the same period in 2021 is largely attributed to increased insurance costs.

- Debt Principal 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 as part of the year-end audit preparation process, 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 – 3rd Quarter 2022

Quaterly Financial Summary Report

Lake Huron Water Supply system

3rd Quarter 2022 (July 1 to September 30)

($,000's)

	Approved 2022 Budget	Q3 - 2022	2022 Year to Date	Year To Date Variance	2021 Year To Date
Total Revenue	**24,254**	6,848	15,782	8,472	16,150
Expenditures:					
Contracted Operating Services	7,158	1,744	5,247	1,911	5,045
Contracted Administrative Services	322	81	242	80	238
Electricity	3,500	996	2,346	1,154	1,974
Salaries, Wages, Benefits	961	215	621	340	545
Administration and Other Expenditures	484	166	351	133	346
Vehicles and Equipment	84	19	49	35	39
Purchased Services & Professional Fees	1,427	564	1,147	280	985
Debt Principle Payments	1,292	359	1,283	9	1,261
Interest on Long-Term Debt	106	41	90	16	126
Contributions to Reserve Funds	8,921	0	0	8,921	0
Total Expenditures	**24,254**	**4,185**	**11,376**	**12,879**	**10,559**

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-04
Report Page: 1 of 2
Meeting Date: January 19, 2023
File No.:

To: Chair and Members, Board of Management
Lake Huron Primary Water Supply System

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

Subject: 2023 to 2026 Meeting Schedule

RECOMMENDATION

That the Board of Management for the Lake Huron Primary Water Supply System **APPROVE** the proposed meeting schedule for the Board of Management for 2023 to 2026.

PREVIOUS AND RELATED REPORTS

December 2, 2021	2021 and 2022 Meeting Schedule - Revised
June 4, 2020	2021 and 2022 Meeting Schedule
October 4, 2018	2019 and 2020 Meeting Schedule
December 1, 2016	2017 and 2018 Meeting Schedule - Revised
October 16, 2016	2017 and 2018 Meeting Schedule

BACKGROUND

The Board of Management for the Lake Huron Primary Water Supply System regularly meets on the first Thursday of March, June, October and December. Rather than meeting in September (consistent with a meeting every three months) the budget report is issued in September, thirty days in advance of the October meeting, to allow for a comprehensive review period by the Board Members.

In the year of a municipal election, the meeting which would normally be held in December is deferred to at least mid-January in the following year to allow for each newly elected Municipal Council to recommend their Members and Alternates to the Board.

The Board normally meets at 2:00pm unless circumstances warrant an alternate time.

DISCUSSION

Consistent with past practices of meeting on the first Thursday of March, June, October and December, the following meeting dates are recommended for consideration and approval of the Board:

March 2, 2023	June 1, 2023	October 5, 2023	December 7, 2023
March 7, 2024	June 6, 2024	October 3, 2024	December 5, 2024
March 6, 2025	June 5, 2025	October 2, 2025	December 4, 2025
March 5, 2026	June 4, 2026	October 1, 2026	January 21, 2027[1]

CONCLUSION

Except for January 21, 2027, the meeting dates recommended in this report are consistent with the Board's practice of meeting on the first Thursday of each of March, June, October, and December. Meetings may also be held at the request of the Board Chair, and approved meeting dates may be altered by the Board at any time.

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

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

[1] The municipal election being held in October 2026 will require the meeting that would normally be held in December 2026 to be scheduled in mid- to late-January 2027.

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-05
Report Page: 1 of 26
Meeting Date: January 19, 2023
File No.:

To: Chair and Members, Board of Management
Lake Huron Primary Water Supply System

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

Subject: Environmental and Quality Policy and Quality Management System Operational Plan

RECOMMENDATION

That the following actions be taken with respect to the Environmental Management System and Quality Management System for the Lake Huron Primary Water Supply System (LHPWSS):

a) The Board of Management for the Lake Huron Primary Water Supply System **RECEIVE** the report for information; and,

b) The Board of Management for the Lake Huron Primary Water Supply System **ENDORSE** the Environmental and Quality Policy, and Quality Management System Operational Plan attached to this report.

PREVIOUS AND RELEVANT REPORTS

October 4, 2018	Environmental and Quality Policy
June 8, 2017	Environmental Management System and Quality Management System
January 22, 2015	Management System Policies and Operational Plan

BACKGROUND

Environmental Management System (EMS)

The Lake Huron Primary Water Supply System (LHPWSS) has an Environmental Management System (EMS) which has been registered to the ISO 14001 Standard since 2003. The continued utilization and registration of the EMS is a requirement of the Service Agreement with the Ontario Clean Water Agency (OCWA), the contracted operating authority for the LHPWSS.

Quality Management System (QMS)

The LHPWSS has a Quality Management System (QMS) which has been in place since 2006. The QMS is a provincial regulatory requirement under the *Safe Drinking Water Act* and the Municipal Drinking Water Licence Program. The licence framework requires drinking water system owners to obtain a Municipal Drinking Water Licence (MDWL) to operate their drinking water system. In order to obtain a MDWL, a drinking water system must have an accredited operating authority. To obtain accreditation the operating authority must establish and maintain a QMS that meets the minimum requirements of the province's Drinking Water Quality

Management Standard (DWQMS).

Operating authorities are accredited by a third-party accreditation body against the requirements of the DWQMS. Re-accreditation audits take place every three (3) years. OCWA recently received DWQMS re-accreditation for the LHPWSS in October 2022 and is accredited for another three-year term (ending in 2025).

DISCUSSION

Environmental and Quality Policy

The standards for the Environmental Management System (EMS) and Quality Management System (QMS) each respectively require the development and implementation of a policy.

The LHPWSS currently has a combined Environmental and Quality Policy. The Policy incorporates the guiding principles of the management systems and provides the foundation for the EMS and QMS. The Policy provides the necessary high-level “drivers” and direction for implementing and improving the organization’s EMS and QMS. The Policy focuses on the commitments of the LHPWSS and includes details that distinguish the system from other organizations.

The current Policy is posted on the water system’s website for public information and included in Appendix A for the information of the Board.

The Policy is reviewed a minimum of once annually by the Board’s staff and management of the contracted operating authority, and recommended changes (if any) are brought forward to the Board for consideration and approval. The Environmental and Quality Policy was last approved by the Board on October 4, 2018.

Staff are recommending three revisions to the Policy.

- Addition of a new commitment to align and coordinate the EMS and QMS with the Asset Management System. The Board approved a separate Asset Management Policy on October 7, 2021.
- Further to the current environmental commitments to energy management and chemical usage optimization, a commitment to process water optimization has been added. This is to align with proposed environmental objectives that are being set for the LHPWSS for 2023-2027. The environmental objectives will be the subject of a future report to the Board.
- Re-ordering the commitments so that the mandatory commitments as required by the DWQMS and ISO14001 Standards appear first. The system specific commitments follow.

The revised Environmental and Quality Policy is included as Appendix B of this report for the Board’s reference and consideration. If approved by the Board, the revised Policy will become effective January 19, 2023.

QMS Operational Plan

The DWQMS requires the operating authority to document a Quality Management System (QMS) for each drinking water system that the authority operates within an Operational Plan. The QMS Operational Plan must be accepted by the Ministry of the Environment, Conservation and Parks (MECP) and is subject to audits by a third-party accreditation body.

The current QMS Operational Plan that accompanies this report was recently reviewed and revised by Board staff and the Ontario Clean Water Agency (OCWA) in partnership. The Operational Plan is a high-level document (i.e., a "road map" to the QMS) which generally describes how each element of the standard is met. The Plan references a number of associated procedures which currently exist in a separate document library as part of the system's QMS and does not substantially change.

As per regulatory requirements and the Drinking Water Quality Management Standard (DWQMS), the QMS Operational Plan must be endorsed by the system owner. By internal policy, re-endorsement of the QMS Operational Plan is required a minimum every 4 years, or if there is a change in Top Management. Due to some recent changes in Board member appointments and Top Management, Board staff are seeking re-endorsement of the QMS Operational Plan. The Plan is attached as Appendix C to this report.

CONCLUSION

Both the Environmental Management System (EMS) and the Quality Management System (QMS) that have been developed for the LHPWSS play an important role in the Board's continuing commitments to provide safe drinking water to its customers, while managing the system in an environmentally responsible manner. The Environmental and Quality Policy plays an important role in the Board's continuing commitments to the management systems and the continual improvement of the water system. The QMS Operational Plan that accompanies this report forms the basis for the documentation of the QMS that has been developed for the LHPWSS.

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

Attachments:

Appendix A – Current Environmental and Quality Policy (Oct. 4, 2018)
Appendix B – Revised Environmental and Quality Policy (Jan. 19, 2023)
Appendix C – QMS Operational Plan

APPENDIX A: CURRENT ENVIRONMENTAL AND QUALITY POLICY (OCT. 4, 2018)

ENVIRONMENTAL AND QUALITY POLICY

The Lake Huron Primary Water Supply System (LHPWSS) and Ontario Clean Water Agency (OCWA) as the Operating Authority are committed to:

- Maintaining and continually improving the Environmental Management System (EMS) and Quality Management System (QMS) to enhance environmental and quality performance.
- Managing and operating the drinking water system in a responsible manner.
- Providing the customer with safe drinking water.
- Being environmental and quality leaders in the municipal drinking water industry.
- Promoting owner and consumer confidence in the safety of the drinking water supply.
- Developing and implementing policies and environmental objectives in partnership.
- Protecting the environment, including prevention of pollution, energy management, and chemical usage optimization.
- Promoting resource stewardship, including conservation.
- Meeting all relevant compliance obligations and encouraging suppliers and subcontractors to similarly meet these requirements.
- Accomplishing these commitments through the dedication, support and participation of all personnel.

The LHPWSS and OCWA will periodically undertake reviews, evaluations and performance measurements of the operations to promote conformance with the Environmental and Quality Policy.

OCWA also maintains a separate Quality Management System Policy which governs the activities of the Operating Authority as a Corporation.

Andrew Henry
Director, Regional Water Supply
Lake Huron Primary Water Supply System

Matt Bender
Regional Manager
Ontario Clean Water Agency

Effective Date: October 4, 2018

APPENDIX B: REVISED ENVIRONMENTAL AND QUALITY POLICY (JAN. 19, 2023)

ENVIRONMENTAL AND QUALITY POLICY

The Lake Huron Primary Water Supply System (LHPWSS) and Ontario Clean Water Agency (OCWA) as the Operating Authority are committed to:

- Maintaining and continually improving the Environmental Management System (EMS) and Quality Management System (QMS) to enhance environmental and quality performance.
- Providing the customer with safe drinking water.
- Meeting all relevant compliance obligations and encouraging suppliers and subcontractors to similarly meet these requirements.
- Developing and implementing policies and environmental objectives in partnership.
- Protecting the environment, including prevention of pollution, energy management, chemical usage and process water optimization.
- Managing and operating the drinking water system in a responsible manner.
- Being environmental and quality leaders in the municipal drinking water industry.
- Promoting owner and consumer confidence in the safety of the drinking water supply.
- Promoting resource stewardship, including conservation.
- Aligning and coordinating the EMS and QMS with the Asset Management System.
- Accomplishing these commitments through the dedication, support and participation of all personnel.

The LHPWSS and OCWA will periodically undertake reviews, evaluations and performance measurements of the operations to promote conformance with the Environmental and Quality Policy.

OCWA also maintains a separate Quality Management System Policy which governs the activities of the Operating Authority as a Corporation.

Andrew Henry
Director, Regional Water Supply
Lake Huron Primary Water Supply System

Date Signed:

Matt Bender
Regional Manager
Ontario Clean Water Agency

Date Signed:

Effective Date: January 19, 2023

APPENDIX C: QMS OPERATIONAL PLAN

[see attached document]

QMS OPERATIONAL PLAN

For the Lake Huron Primary Water Supply System

Municipal Drinking Water Licence #001-101

Lake Huron
Primary Water Supply System

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

DISCLAIMER STATEMENT

This Operational Plan is designed for the exclusive use of Lake Huron Primary Water Supply System (LHPWSS).

This Operational Plan has been developed in partnership between the Owner and Operating Authority, with the Operating Authority's standard operating practices in mind.

Any use which a third party makes of this Operational Plan, or any part thereof, or any reliance on or decisions made based on information within it, is the responsibility of such third parties. The LHPWSS Joint Board of Management and Operating Authority, Ontario Clean Water Agency (OCWA), accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this Operational Plan or any part thereof.

QMS OPERATIONAL PLAN

Lake Huron Primary Water Supply System (LHPWSS)

- Owned by the Lake Huron Primary Water Supply System Joint Board of Management (LHPWSS), which is administered by the City of London Regional Water Supply (RWS).

- Operated by the Ontario Clean Water Agency (OCWA)

This Operational Plan defines and documents the Quality Management System (QMS) for the Lake Huron Primary Water Supply System (LHPWSS). It sets out the policies and procedures with respect to quality management in accordance with the requirements of the Province of Ontario's Drinking Water Quality Management Standard (DWQMS).

OPERATIONAL PLAN REVISION HISTORY

Date	Revision	Description of Revision
2012-07-01	0	Operational Plan issued
2013-07-31	1	Annual Review and updates internal and external audits
2014-12-09	2	Annual Review and Internal and External Audits
2016-06-06	3	Updated LHPWSS QMS Policy and OCWA's QEMS Policy. Annual Review and Internal and External Audits
2017-07-19	Version 1.0	Initial upload into SharePoint. Version history is now tracked in SharePoint.

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Process Flow Diagrams	6

1. LHPWSS Quality Management System (QMS)

This QMS Operational Plan describes the contents of the QMS for the Lake Huron Primary Water Supply System (LHPWSS).

The LHPWSS's Quality Management System (QMS) is structured and documented with the purpose of:

1. Establishing policy and objectives with respect to the effective management and operation of water treatment and distribution systems;
2. Understanding and controlling the risks associated with the facility's activities and processes;
3. Achieving continual improvement of the QMS and the facility's performance.

2. Quality Management System (QMS) Policy

LHPWSS Environmental and Quality Policy

The LHPWSS has an integrated Environmental Management System (EMS) and Quality Management System (QMS), with a combined Environmental and Quality Policy.

The locations of posted copies of the Environmental and Quality Policy are listed in Procedure LH-ADMIN-200 (Document and Records Control).

OCWA Quality & Environmental Management System (QEMS) Policy

OCWA also maintains a separate QMS Policy which governs the activities of the Operating Authority as a Corporation.

OCWA, its Board of Directors, Officers and entire staff are committed to the principles and objectives set out in the Quality & Environmental Management System (QEMS) Policy.

The Board of Directors, Officers and entire staff will act to ensure the implementation of this Policy and will monitor progress of the Quality & Environmental Management System (QEMS).

OCWA's QEMS Policy is readily communicated to all OCWA personnel, the Owner and the public through OCWA's intranet and public websites. A complete review/revision history of the QEMS Policy is maintained on OCWA's intranet.

Refer to the LHPWSS Environmental and Quality Policy
Refer to the OCWA Quality & Environmental Management System (QEMS) Policy
Refer to Compliance Obligations Procedure (LH-ADMIN-600)
Refer to Government & Contract Reporting Procedure (LH-ADMIN-800)
Refer to Compliance Requirements for System Alterations and Modifications Procedure (LH-ADMIN-2500)

3. Commitment & Endorsement of the QMS Operational Plan

This Operational Plan supports the overall goal of OCWA and the Lake Huron Primary Water Supply System Joint Board of Management (LHJBOM) to provide safe, cost-effective drinking water through sustained cooperation. OCWA and the Regional Water Supply (RWS) will be responsible for developing, implementing, maintaining and continually improving the QMS with respect to the operation and maintenance of the Lake Huron Primary Water Supply System and will do so in a manner that ensures compliance with applicable legislation and regulations. .

Top management of both the LHJBOM and OCWA has approved the QMS for the drinking water system as documented in this Operational Plan. The signatories below further commit to ensuring that the QMS is regularly assessed to confirm its ongoing applicability and relevance.

Operating Authority Endorsement & Approval

Matt Bender — 4 Oct. 2022
Matt Bender — Date
Regional Manager
Ontario Clean Water Agency

Owner Endorsement & Approval

Andrew Henry — 4 Oct. 2022
Andrew Henry — Date
Director, Regional Water Supply
Owner Representative, LHJBOM

Re-endorsement of the Operational Plan shall be obtained:

- By the Owner a minimum of every 4 years,
- If Top Management changes, or
- Change of Operating Authority

Top Management ensures the Operating Authority is aware of all applicable legislative and regulatory requirements. This process is described in the Compliance Obligations Procedure (LH-ADMIN-600).

Top management ensures the QMS is communicated according to the Communications Procedure (LH-ADMIN-500).

Top management determines, obtains and provides the resources needed to maintain and improve the QMS, as demonstrated through records created under the QMS and through the management review process.

Refer to Communications Procedure (LH-ADMIN-500)
Refer to Compliance Obligations Procedure (LH-ADMIN-600)
Refer to Government & Contract Reporting Procedure (LH-ADMIN-800)
Refer to Management Review Procedure (LH-ADMIN-900)
Refer to Compliance Requirements for System Alterations and Modifications Procedure (LH-ADMIN-2500)

4. Quality Management System Representative

All personnel have a role and associated responsibilities within the QMS.

The role of QMS Representative for the LHPWSS is appointed to the Compliance Manager. The QMS Representative is supported by the Operations and Compliance Team Lead. The QMS Representative is approved by Top Management.

The Compliance Manager is ultimately responsible for establishing and maintaining processes and procedures required for the overall administration of the LHPWSS QMS.

To assist in fulfilling the specific duties set out for the Compliance Manager, the Operations & Compliance Team Lead is responsible for:

- Reporting on QMS performance and identifying opportunities for improvement,
- Ensuring that current versions of documents related to the QMS are in use, and
- Ensuring personnel are aware of all applicable legislative and regulatory requirements that pertain to their operational duties.

The Senior Operations Manager, Compliance Manager and Operations & Compliance Team Lead are responsible for promoting awareness of the QMS to all LHPWSS personnel.

Refer to Structure & Responsibilities Procedure (LH-ADMIN-100)

5. Document and Records Control

Refer to Document and Records Control Procedure (LH-ADMIN-200)

6. Drinking Water System

Description of the Drinking Water System

The LHPWSS is owned by the LHJBOM whose benefiting municipalities include the City of London, Municipality of Bluewater, Municipality of North Middlesex, Municipality of Lambton Shores, Municipality of South Huron, Township of Lucan-Biddulph, Municipality of Middlesex Centre and Municipality of Strathroy-Caradoc. Regional Water Supply (RWS) provides oversight management and administration of the LHPWSS on behalf of and under the direction of the LHJBOM.

The LHJBOM currently utilizes the services of an independent contracted OA, who operates and maintains the LHPWSS on behalf of the LHJBOM.

The Lake Huron Water Treatment Plant is situated on Lake Huron approximately two (2) kilometers north of the village of Grand Bend in the Municipality of South Huron. It is a conventional filtration plant with a total design capacity of 340 million litres per day.

The LHPWSS consists of an intake system, a low lift pumping system, a treatment system and distribution pumping system that supplies water to the following drinking water systems:

Drinking Water System	***Owner***	***Operating Authority***
City of London	City of London	City of London
Bluewater	Municipality of Bluewater	OCWA
Lambton Shores (East Lambton Shores WDS)	Municipality of Lambton Shores	JACOBS (Operations Management International Canada)
Lucan-Biddulph	Township of Lucan-Biddulph	JACOBS (Operations Management International Canada)
Middlesex Centre Distribution System	Municipality of Middlesex Centre	Municipality of Middlesex Centre
North Middlesex	Municipality of North Middlesex	OCWA
Strathroy-Caradoc Distribution System	Municipality of Strathroy-Caradoc	Municipality of Strathroy-Caradoc
South Huron Water Distribution System	Municipality of South Huron	Municipality of South Huron

The intake crib for the water treatment facility is located approximately 2.5 km offshore in Lake Huron in about 10 meters of water. The intake pipe houses a chlorine solution line with diffusers in the intake crib for mussel control.

The Low Lift Pumping Station is located on the shore of Lake Huron at the treatment plant site. The intake conduit discharges through three mechanically cleaned screens into the pump well. Pre-chlorination can be dosed to the surge well as well as the intake crib for mussel control. The Low Lift contains six pumps and discharges water to the treatment plant headworks. A grit pump returns accumulated grit back to Lake Huron through the plant drain, which extends approximately 500 m from shore.

The raw water which is pumped to the treatment plant is metered and split into two parallel streams - north and south. Each stream includes a flash mix chamber where the coagulant (alum), polymer and Powered Activated Carbon (PAC) are applied. The water then flows by gravity from the flash mix chambers to the flocculation tanks which are divided into two zones (primary & secondary). Water flows directly from the flocculators into the two clarifiers and then onto high rate gravity filters. Water from the north and south stream can be fed to any of the twelve filters.

The filtered water is discharged to the filtered water conduits and flows by gravity to the three clearwells. Post chlorination to maintain disinfection is applied to the filtered water conduits. Water from the clearwells is fed into a common underground channel where six high lift pumps deliver the finished water through the transmission main. The pH of the treated water is adjusted with caustic soda for corrosion control. Two hydro pneumatic surge tanks are located within the main treatment plant to provide surge protection in the case of a sudden loss of pressure.

A Residuals Management Facility (RMF) providing equalization, clarification, sludge thickening and dechlorination is also housed in the main complex where thickened sludge is dewatered by centrifuges and sludge cake is sent to the landfill for final disposal. Clarified and dechlorinated liquid streams are sent back to Lake Huron through the plant drain via the Diversion Chamber.

The LHPWSS distribution system includes the following facilities:

- B-Line Monitoring Station – contains regulatory instrumentation
- Exeter-Hensall Booster Pumping Station and Reservoir- includes a rechlorination facility and supplies water to the Municipalities of South Huron and Bluewater
- McGillivray Booster Pumping Station and Reservoir – During higher demand periods, typically in the summer months, this intermediate reservoir and booster pumping station is used to boost water to the Arva Terminal Reservoir
- Komoka-Mt. Brydges Booster Pumping Station (Pumping Station #4) – includes a rechlorination facility and supplies water to the Municipality of Middlesex Centre (Komoka & Kilworth) and Municipality of Strathroy- Caradoc (Mt. Brydges)
- Arva Terminal Reservoir

The LHPWSS distribution system includes the following watermains:

Description	Diameter (mm)	Approx. Length (m)	Year	Pipe Material
Primary Pipeline	1200	47,000	1964	C301(E) CPP
Primary Pipeline – Twinned section #1	1200	7,000	1996	C200 Steel
Primary Pipeline – Twinned section #1 extension	1200	3,470	2013	C200-05 Steel
Primary Pipeline – Twinned section #2 & #3	1200	15,500	1996	C301(E) CPP
Primary Pipeline – Twinned section #2 extension	1200	4,395	2013	C200-05 Steel
Strathroy-Caradoc Pipeline	600	21,000	2005	C301(L) CPP
Exeter-Hensall Pipeline	600	19,650	2008	C301(L) CPP
Exeter-Hensall Pipeline	400	9,350	2008	C303 CPP
Komoka-Mt. Brydges Pipeline - Contract 1	450	55	2010	PVC
Komoka-Mt. Brydges Pipeline - Contract 2	450	13,883	2010	PVC
Komoka-Mt. Brydges Pipeline - Contract 3	400	10,269	2010	PVC

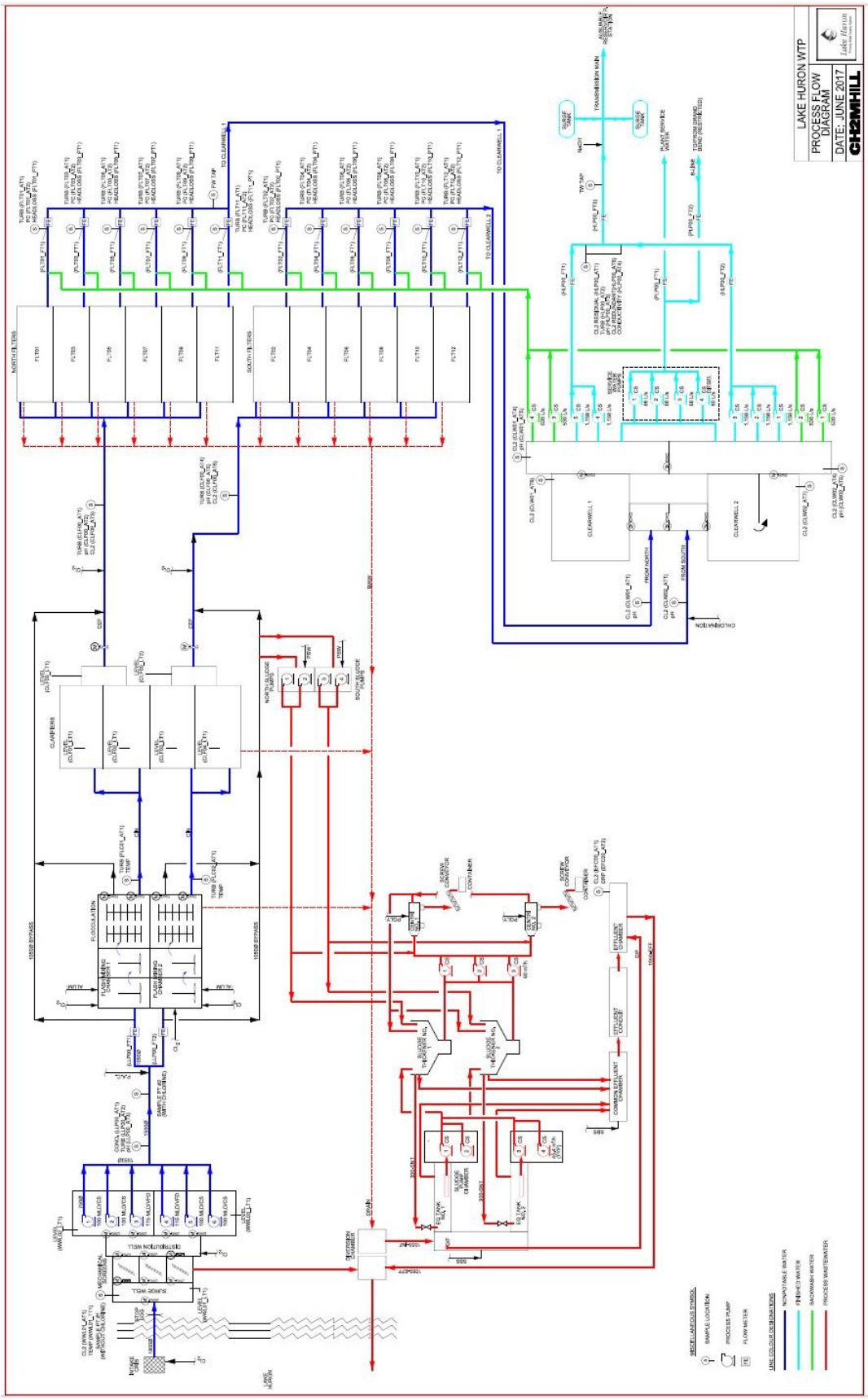
The water treatment process and distribution components are controlled by a dedicated Supervisory Control and Data Acquisition (SCADA) system and monitored by certified operators twenty four (24) hours a day.

As the water treatment plant utilizes raw water from Lake Huron, there are no critical upstream processes relied upon to ensure the provision of safe drinking water.

The LHPWSS can supply water to the Elgin Area Primary Water Supply System (EAPWSS), through the City of London in an emergency.

Emergency generators exist to provide backup power in the event of a power outage.

Process Flow Chart



Refer to the Process Flow Diagrams.

Source Water

Lake Huron raw water is consistently positive for microbiological content; however the water can be treated effectively using conventional processes to produce water meeting the Ontario Drinking Water Standards. Great Lakes water is also considered to pose lower risk for the formation of disinfection by-products (DBPs).

General Characteristics

The raw water source for the treatment plant is Lake Huron. The water from Lake Huron is typically low in turbidity and low in conductivity. Temperature fluctuates significantly through the seasons ranging from approximately 0°C in the winter to as high as 25°C during the summer. The results of chemical analysis meets the Ontario Drinking Water Quality Standards.

Raw Water Characteristics

Characteristic		*2017*	*2018*	*2019*	*2020*	*2021*
Temperature (°C)	Min.	0.6	1.1	2.3	2.3	2.3
	Max.	23.6	24.5	24.0	26.6	25.2
	Avg.	12.5	10.1	10.3	11.4	12.0
Colour (TCU)	Min.	0	1	1	0	0
	Max.	223	>500	>500	56	53
	Avg.	16	14.7	12.0	7	5
Conductivity (uS/cm)	Min.	177.0	136.9	157.0	170.0	170.2
	Max.	269.3	273.0	289.0	252.0	258.0
	Avg.	218.1	205.4	210.1	210.3	214.3
pH	Min.	7.18	7.23	7.17	7.14	7.18
	Max.	8.59	8.45	8.83	8.44	8.63
	Avg.	8.12	7.96	7.99	7.94	7.88
Turbidity (NTU)	Min.	0.04	0.03	0.44	0.3	0.24
	Max.	224	92.0	95.0	146.0	40.80
	Avg.	5.2	5.7	5.5	9.0	4.09

Common Fluctuations

Raw water turbidity increases during the spring and fall runoff and also during significant rainfall events. Lake turnovers which typically occur in March/April and October/November can also affect the raw water turbidity, so polymer is added to assist in filtration.

Mussels become an issue in the raw water when the water temperature reaches approximately 4°C. Pre-chlorination is added at the intake crib all year round to control the mussels.

Summer algal growth typically occurs mid-July and lasts until the end of September. This algal growth may create taste and odour problems. Powdered activated carbon (PAC) is added during this time to improve the taste and odour conditions.

Threats

Potential sources of raw water contamination include agricultural runoff and spills from cargo vessels traveling between the upper and lower Great Lakes.

The intake pipe is 2.5 km offshore at a depth of ten (10) m of water. Due to the position of the crib, the intake is susceptible to potential accidental damage from marine craft and ice.

Operational Challenges

- During the summer and winter months, low turbidity in the raw water creates treatment challenges. Chemical dosages are increased and the excess chemicals may interfere with the water's pH.
- SCADA communication failures are a potential operational challenge.
- Extreme weather conditions causing frazil ice have been identified as an operational challenge.
- Algal toxins are an emerging issue and a potential operational challenge.

Standard Operating Procedures (SOPs) have been developed to assist in dealing with operational challenges.

7. Risk Assessment

Refer to Changes in the Lake Huron System Procedure (LH-ADMIN-700)
Refer to New Projects Procedure (LH-ADMIN-2300)
Refer to Hazard Analysis (Risk Assessment) & Critical Control Points Procedure (LH-ADMIN-2400)

8. Risk Assessment Outcomes

Refer to the QMS Risk Assessment & Outcomes
Refer to the Chlorination Control Procedure (LH-CCP-2000)
Refer to the Turbidity Control Procedure (LH-CCP-3000)

9. Organizational Structure, Roles, Responsibilities and Authorities

Refer to Structure & Responsibilities Procedure (LH-ADMIN-100).

10. Competencies

Refer to Training Procedure (LH-ADMIN-1400).

11. Personnel Coverage

Refer to Personnel Coverage Procedure (LH-ADMIN-2600).

12. Communications

Refer to Communications Procedure (LH-ADMIN-500).
Refer to Complaints Procedure (LH-ADMIN-1000).
Refer to Visitor Sign-In Procedure (LH-ADMIN-1800).

13. Essential Supplies and Services

Refer to Subcontractor & Supplier Requirements Procedure (LH-ADMIN-1700).

14. Review and Provision of Infrastructure

Refer to Maintenance of Operations (Infrastructure) Procedure (LH-ADMIN-1900).

15. Infrastructure Maintenance, Rehabilitation and Renewal

Refer to (Maintenance of Operations (Infrastructure) Procedure (LH-ADMIN-1900).

16. Sampling, Testing and Monitoring

Refer to Monitoring Maintenance, Operations & Quality Procedure (LH-ADMIN-2000).
Refer to Sampling & Lab Analysis Procedure (LH-ADMIN-2050).
Refer to Sampling & Lab Analysis – Research Studies Procedure (LH-ADMIN-2060)

17. Measurement and Recording Equipment Calibration and Maintenance

Refer to Calibration of EMS-QMS Equipment Procedure (LH-ADMIN-2200).

18. Emergency Management

Refer to the Emergency Contingency Plan Procedures (HCP-1 to HCP-3)
Refer to the Emergency Mandatory Contingency Procedures (HMC-1 to HMC-8)
Refer to the Emergency Standard Operating Procedures (HSOPs)

19. Internal Audits

Refer to Internal Audit Procedure (LH-ADMIN-1200).

20. Management Review

Refer to Management Review Procedure (LH-ADMIN-900).

21. Continual Improvement

Refer to Corrective and Preventive Action Procedure (LH-ADMIN-400).

APPENDIX A: Schedule C – Director's Directions for Operational Plans

Ontario

Ministry of the Environment, Conservation and Parks

Print Form

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

Municipal Residential Drinking Water System

Fields marked with an asterisk (*) are mandatory.

Owner of Municipal Residential Drinking Water System *

Lake Huron Primary Water Supply System Joint Board of Management

Subject Systems

Name of Drinking Water System (DWS) *	Licence Number *	Name of Operating Subsystems (if applicable)	Name of Operating Authority *	DWS Number(s) *	
1. Lake Huron Primary Water Supply System	001-101	NA	Ontario Clean Water Agency	210000791	-

Add item (+)

Contact Information for Questions Regarding the Operational Plan i

Primary Contact

Last Name *	First Name *	Middle Initial
McCann	Allison	

Title *	Telephone Number *	ext.	Email Address *
Safety, Process and Compliance Manager	519-317-3081		amccann@ocwa.com

Secondary Contact

Last Name	First Name	Middle Initial
Bender	Matt	

Title	Telephone Number	ext.	Email Address
Regional Manager	519-868-9554		mbender@ocwa.com

Save Form | Print Completed Form | Clear Form

2153E (2021/09) © Queen's Printer for Ontario, 2021 Disponible en français Page 1 of 1

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-06
Report Page: 1 of 5
Meeting Date: January 19, 2023
File No.: LH1408

To: Chair and Members, Board of Management
Lake Huron Primary Water Supply System

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

Subject: LH1408 Oneida Nation of the Thames Water Transmission Pipeline – Connection to LHPWSS – Project Update

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the Board of Management for the Lake Huron Primary Water Supply System **RECEIVE** this report for information regarding the Oneida Transmission Pipeline (LH1408) project Environmental Assessment and preliminary design.

PREVIOUS AND RELATED REPORTS

March 3, 2022	Oneida Nation of the Thames Water Supply
June 2, 2022	Oneida Nation of the Thames Water Supply Agreement
June 2, 2022	Oneida Nation of the Thames Transmission Pipeline Class Environmental Assessment and Preliminary Design – Consultant Award
October 6, 2022	Oneida Nation of the Thames Transmission Pipeline Municipal Class Environmental Assessment and Preliminary Design – Project Update

BACKGROUND

At the March 3, 2022 meeting, the Board endorsed the request from Oneida Nation of the Thames (Oneida Nation) to supply drinking water to the Oneida Nation settlement from the Lake Huron Water Supply System and authorized Board staff to negotiate a Water Supply Agreement with Oneida Nation.

Given the location of the Oneida Nation settlement, it is proposed that the existing transmission pipeline, which currently terminates near the community of Mount Brydges, be extended to a connection point located near Muncey Road and Jubilee Drive. The preferred route for the water transmission main was presented at the October 6, 2022 meeting.

Oneida Nation anticipates that it will be undertaking the planning and design of necessary modifications and upgrades to the Oneida Nation water distribution system starting in 2023, upon the completion of a funding agreement between Oneida Nation and Indigenous Services Canada.

DISCUSSION

Preliminary Design

In June 2022, Stantec Consulting Ltd. initiated the Municipal Class Environmental Assessment and preliminary design of the Oneida Nation transmission connection project. The various routing alternatives for the water transmission main were presented along with the evaluation in the October 6, 2022 board meeting. The preferred route is illustrated in the attached figure (Appendix A).

The preliminary design was recently completed by Stantec Consulting Ltd. for the transmission main. A few highlights of the design are summarized below:

- modifications to existing monitoring station # 2 (located northeast of Mount Brydges) to accommodate the new transmission main
- transmission main (300 mm and/or 400 mm diameter anticipated) 21 km in length with various crossings, several valves and appurtenances along the route, including interconnection, air release, and drain valves, potential swab launch and catch stations, tee-connections, isolation etc.
- transmission main terminating at a new connection point, monitoring station #3 (on the west side of the County Road 11/Muncey Road Thames River bridge)
- no major upgrades to the existing Komoka-Mount Brydges Pumping Station are anticipated, except for some adjustments to operational setpoints to suit demand allocations for each customer

The preliminary design confirms that the project is a Schedule A+ activity, in accordance with the Municipal Class of projects under Ontario's *Environmental Assessment Act (1990),* and as outlined in the Municipal Engineers Association's *Municipal Class Environmental Assessment* document (2000, as amended in 2007, 2011 and 2015). Schedule A+ projects are pre-approved, and do not require completion of the Municipal Class Environmental Assessment process; however, the public is to be notified prior to project implementation.

Project Delivery

It is recognized that given the potentially variable timing needed for this project, subsequent phases of this project, including detailed design and construction, could generally follow two different types of project procurement and delivery methodologies, namely:

- "Traditional" procurement and delivery (design, bid/tender, and build); or,
- "Design-Build" delivery (one recognized form of alternate project delivery which procures a combined engineering and construction team).

Both models for procurement and delivery offer various advantages and disadvantages. At this time, conventional delivery has been selected as the preferred project delivery methodology based on the scope, schedule, and construction value of the project.

Subsequent Project Phases

The subsequent project phases are outlined below, in order:

- detailed/final design including approvals;
- tendering;
- construction; and,
- warranty period.

Board staff initiated a competitive two-stage procurement process in late 2022 to pre-qualify engineering consultants to provide proposals for the detailed design, tendering and construction administration services. The award of engineering consulting services is subject to the final execution of the Water Supply Agreement between the Lake Huron Water Supply System and Oneida Nation of the Thames.

WATER SUPPLY AGREEMENT

The proposed Water Supply Agreement with Oneida Nation of the Thames has been prepared and the Board authorized its execution substantially in the form as presented at the March 3, 2022 meeting of the Board. Notwithstanding, the corresponding funding agreement between Oneida Nation of the Thames and Indigenous Services Canada has yet to be finalized.

Accordingly, the final execution of the Water Supply Agreement has been delayed. In addition, Board staff will delay initiating the procurement for the detailed design and construction of the pipeline until such time that the Water Supply Agreement is fully executed.

FINANCIAL

The following is a summary of projected and incurred expenditures to date for the LH1408 Oneida Transmission Pipeline:

Expenditure	**Projected***	**Incurred**
Preliminary Design	$ 116,041	$ 21,272
Detailed Design, Construction Supervision & Contract Administration	$ 2,600,000	$ 0
Construction	$ 22,400,000	$ 4,727
Contingency	$ 10,454	$ 0
Total	**$ 25,126,495**	**$ 25,999**

Approved Budget	**$ 25,200,000**
Projected Variance	**$ 73,505**

**Projected costs are net of HST*

CONCLUSION

Board staff will proceed with the subsequent project phases of the Oneida Nation of the Thames Water Transmission Pipeline project once the Water Supply Agreement is fully executed. Board staff will continue to update the Board regarding the status of this project and means of public notification of the project as the project progresses.

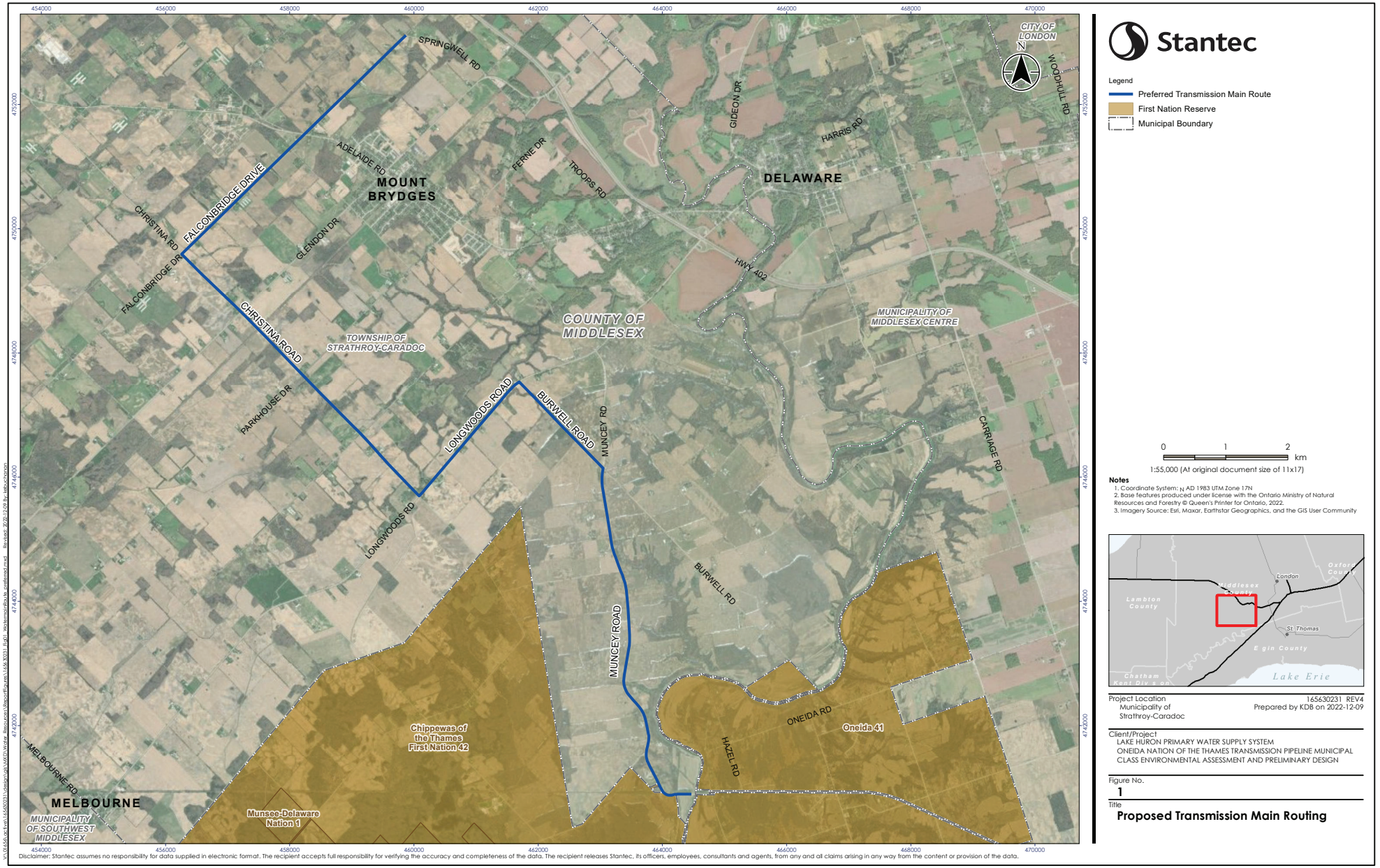
Prepared by: Marcy McKillop, P.Eng.,
Environmental Services Engineer

Billy Haklander, P.Eng., LL.M
Capital Programs Manager

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

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

Attachments: Appendix A - Transmission Main



Stantec

Legend

- Preferred Transmission Main Route
- First Nation Reserve
- Municipal Boundary

0 1 2 km

1:55,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2022.
3. Imagery Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Project Location
Municipality of Strathroy-Caradoc

165630231 REV4
Prepared by KDB on 2022-12-09

Client/Project
LAKE HURON PRIMARY WATER SUPPLY SYSTEM
ONEIDA NATION OF THE THAMES TRANSMISSION PIPELINE MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

Figure No.
1

Title
Proposed Transmission Main Routing

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-07
Report Page: 1 of 3
Meeting Date: January 19, 2023
File No.: LH1260

To: Chair and Members, Board of Management
Lake Huron Primary Water Supply System

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

Subject: LH1260 Huron WTP Coagulation Upgrade – Project Update and Additional Engineering Services

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the Lake Huron Primary Water Supply System Coagulation Upgrades (LH1260) project:

a) The Board of Management for the Lake Huron Primary Water Supply system **EXTEND** the existing engineering assignment with Jacobs Consultancy Canada Inc. for additional contract administration and construction supervision services at an estimated cost of $52,028 (excluding HST); and,

b) The Board of Management for the Lake Huron Primary Water Supply System **RECEIVE** this report for information.

PREVIOUS AND RELATED REPORTS

March 5, 2015	Water Quality Facility Plan
October 4, 2018	2019 Current Operating & Capital Budgets
March 7, 2019	LH1260 Flash Mixer Upgrade
January 8, 2020	LH1260 Coagulation Upgrade – Tender Award

BACKGROUND

At the January 8, 2020 Board meeting the tender for the Lake Huron WTP Coagulation System upgrade was awarded to BGL Contractors Corp. and the engineering assignment with Jacobs Consultancy Canada Inc. (Jacobs) was extended to include contract administration and construction supervision services. The coagulation system upgrades, including the replacement of the existing coagulant dosing system, was initiated to improve the overall operation of this treatment process, and overall plant performance. Construction was originally anticipated for completion in the summer of 2021.

DISCUSSION

There has been a series of challenges with the Huron WTP Coagulation System upgrade since the contract was initially awarded in early 2020 and over the course of the COVID-19 pandemic. A summary of the main challenges include:

- Timing and delays to accommodate various plant emergency repairs and planned maintenance activities;
- Timing and delays to accommodate various capital projects, namely the High Lift Pump replacement; and,
- Additional effort associated with unexpected service water supply and equipment issues, requiring further modifications.

Jacobs has exhausted the available contingency funds to address these challenges to date. Additional engineering fees are required to ensure continuity of contract administration and construction supervision services through the final stages of construction and commissioning of the systems. Additional services include engineering services for:

- overall management and coordination of construction phase;
- site acceptance testing;
- commissioning and trial operation;
- training;
- documentation (operation and maintenance manuals and as-built drawings); and,
- addressing deficiencies during the warranty period.

Jacobs has requested additional engineering fees totalling $52,028, to an overall upset limit of $399,657 for all design and construction engineering services to date provided by Jacobs. Board staff have reviewed these additional engineering fees and recommend that the existing engineering assignment with Jacobs be extended accordingly.

Substantial performance of the project is anticipated in May 2023.

PROJECT FINANCIAL STATUS

The following is a summary of projected and incurred expenditures to date for the LH1260 Huron WTP Coagulation Upgrades:

Expenditure	Projected*	Incurred
Preliminary and Detailed Design	$ 163,757	$ 163,757
Construction Supervision & Contract Administration	$ 241,730	$ 173,221
Construction	$ 888,703	$ 726,941
Contingency	$ 0	$ 0
Total	**$ 1,294,190**	**$ 1,063,919**

Approved Budget	**$**	**1,437,000**
Projected Variance	**$**	**142,810**

**Projected costs are net of HST*

CONCLUSION

Based on the challenges encountered to date including various delays, Board staff recommend that the Board extend the existing engineering assignment with Jacobs to provide the additional contract administration and construction supervision services to complete the final stages of this project to ensure commissioning is effectively managed and completed.

Prepared by: Marcy McKillop, P.Eng.,
Environmental Services Engineer

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

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

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-08
Report Page: 1 of 4
Meeting Date: January 19, 2023
File No.: LH2046

To: Chair and Members, Board of Management
Lake Huron Primary Water Supply System

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

Subject: LH2046 Lake Huron Water Treatment Plant Asset Condition Assessment

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the Lake Huron Water Treatment Plant Asset Condition Assessment project (LH2046):

a) The Board of Management for the Lake Huron Primary Water Supply System **ACCEPT** the proposal from WSP Canada Inc. for the completion of the asset condition assessment project for the Lake Huron Water Treatment Plant in the amount of $93,150.26, including contingency and excluding HST, having submitted a proposal which meets the Request for Proposal requirements and evaluated as having the best value; it being noted that the acceptance is conditional on the acceptance of the corresponding proposal by the Elgin Area Water Supply System Board of Management;

b) The Board of Management for the Lake Huron Primary Water Supply System **AUTHORIZE** the Chair and Chief Administrative Officer to execute a consulting services agreement with WSP Canada Inc. for the completion of the asset condition assessment project; and

c) The Board of Management for the Lake Huron Primary Water Supply System **RECEIVE** this report for information.

PREVIOUS AND RELATED REPORTS

October 7, 2021	Asset Management Policy and Asset Management Plan Update
June 2, 2022	Lake Huron Treatment and Transmission Assets – State of the Infrastructure Report
October 6, 2022	2022 Asset Management Plan Update Project Completion
October 6, 2022	2023 Operating and Capital Budgets

BACKGROUND

At the October 6, 2022 Board meeting the Lake Huron Primary Water Supply System (LHPWSS) 2022 Asset Management Plan (AMP) was endorsed by the Board of Management (Board). This updated AMP was the result of an 18-month process which established the asset management direction, vision, guiding principles, and recommended improvements and monitoring of the utility for the next five years and beyond.

Through development of the AMP several recommendations to improve asset condition information were identified as the current AMP asset condition ratings were determined based on a desktop exercise, not involving any field investigations or confirmations. While the contracted operating authority monitors and reports on assets in accordance with their contractual obligations, the most recent formal comprehensive independent visual condition assessment for the LHPWSS assets was conducted in 2013.

DISCUSSION

The condition of an asset is useful information related to whether the asset is delivering the required service (i.e., "fit for purpose") and the life expectancy of the asset (i.e. how long will it continue to operate and provide reliable service). This Water Treatment Plant Asset Condition Assessment project is intended to provide an update to the 2013 condition assessment and establish a new baseline for asset conditions based on field-verified visual and measured condition assessments by a qualified independent engineering consultant.

This condition assessment project will focus on treatment assets at the water treatment plant where there are over 2,200 assets to be documented across the major process areas and disciplines. In addition to visually assessing asset conditions through field investigations the project will also establish/verify though field and desktop assessment the asset age & expected useful life, estimated replacement cost, noted deficiencies or defects, and recommendations and/or improvements. This project is being completed in conjunction with a similar water treatment plant asset condition assessment for the Elgin Area Primary Water Supply System, by the same consultant, to provide the respective Boards with a coordinated and consistent approach to asset condition assessments for both systems.

Through this asset condition assessment project, certain recommended improvements included in the 2022 AMP will be advanced, including in the near-term:

- R2: Update Condition Assessment Information
- R4: Improvement Asset Data Collection in CMMS
- R7: Reduce Uncertainty in Data Confidence (Asset Condition)

In addition to these near-term AMP improvements, Board staff will be positioning the LHPWSS to further align with the guiding principles of our Asset Management Policy. This will facilitate the utility's short and long-term planning by supporting delivery of our defined levels of service, realizing the maximum value of our assets, and ensuring that infrastructure decisions are data-driven and evidence-based.

Proposal Submission Results

The Lake Huron Water Treatment Plant Asset Condition Assessment request for proposal (RFP # RFP2022-289) was posted publicly to the bids&tenders website on November 10, 2022. Six consultants made formal proposal submissions. The procurement process utilized met the requirements of the Board's Procurement Bylaw, as well as the City of London's procurement policy *(used as a guide).*

Board staff, with the assistance of the City of London's Purchasing Division, evaluated the proposal submissions through a two-phase process. The first evaluation phase was the review and scoring of consultant technical proposals. The technical proposal submissions from all consultants were successful and deemed qualified to have their respective cost proposals subsequently considered. Based on the evaluation team scoring, the proposal from WSP Canada Inc. was deemed to offer the best value to the utility and is therefore recommended for award by Board staff.

The workplan and associated cost estimate in the proposal from WSP Canada Inc. for their consulting fees associated with this assignment is $93,150.26, including contingency and excluding HST. The proposal is consistent with Board staff expectations for this assignment and is within the approved budget for project LH2046.

PROJECT FINANCIAL STATUS

Expenditure	Projected	Incurred
Field work condition assessments, desktop analysis, and reporting	$94,791	$ -
Total	**$94,791**	**$ -**

Approved Budget	$110,000
Projected Variance	$15,209

Per standard practice a project contingency of 10% has been included in this consultant assignment cost estimate to address unforeseen expenditures and/or project scope changes that might arise. Project Financial Status includes net HST at 1.76%.

CONCLUSION

The most recent formal comprehensive independent visual condition assessment available for the LHPWSS assets was conducted in 2013. Updating this condition assessment information is a recommended improvement identified in the 2022 Asset Management Plan.

As set out in the Request for Proposal issued in November 2022, the proposal submitted by WSP Canada Inc. was deemed through the evaluation process to provide the best value to the LHPWSS. Board staff recommend that the Board accept the proposal of and execute a consulting services agreement with WSP Canada Inc. for the comprehensive field verified visual condition assessment of the Lake Huron Water Treatment Plant assets. This project will enhance the utility's asset management system by establishing a new asset condition baseline, improve data accuracy & completeness, and increase our level of confidence in our asset data.

Prepared by: Ryan Armstrong, C.E.T., Asset Management Coordinator
Marcy McKillop, P.Eng., Environmental Services Engineer

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

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

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-09
Report Page: 1 of 2
Meeting Date: January 19, 2023
File No.: LH1251

To: Chair and Members, Board of Management
Lake Huron Primary Water Supply System

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

Subject: LH1251 PAC Feed/Transfer Pump System Replacement– Consulting Services Agreement

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the Lake Huron Water Supply System Powdered Activated Carbon (PAC) System Upgrades Preliminary Design (LH1251) project:

a) The Board of Management for the Lake Huron Primary Water Supply System **AUTHORIZE** the Chair and Chief Administrative Officer to execute a consulting services agreement with R.V. Anderson Associates Ltd. for the completion of a PAC System Upgrades Preliminary Design for the Lake Huron Water Supply System; and,

b) The Board of Management for the Lake Huron Primary Water Supply System **RECEIVE** this report regarding the status of the PAC System Upgrades Preliminary Design for information.

PREVIOUS AND RELATED REPORTS

October 6, 2022 2023 Operating and Capital Budgets

BACKGROUND

The powdered activated carbon (PAC) system at the Lake Huron WTP was built in 1993 as a pre-treatment process to control periodic taste and odor issues experienced in the warmer months due to algal activity in the raw water. The current PAC system housed within the PAC building consists of:

- Two (2) tanks (each equipped with mixers)
- Three (3) PAC dosing pumps, and
- One (1) transfer pump.

In 2018, Board staff commissioned an assessment study of the PAC system at the Lake Huron Water Treatment Plant (WTP). The objective of this study was to assess the PAC system's physical condition and functionality. The condition assessment would then inform the development of potential upgrades for the PAC system to address identified issues with dosing and concerns about the condition and age of the PAC system equipment.

From the assessment report it was found that several components of the PAC system's process equipment and some ancillary equipment are in poor condition and/or have reached the end of their service life and require replacement.

DISCUSSION

In response to the above operational challenges and observed conditions, Board staff administratively awarded the preliminary engineering assignment to R.V. Anderson Associates Ltd. (RVA) in accordance with the Board's Purchasing by-law and the City of London's Procurement of Goods and Services Policy (*used as a guide*).

RVA's fee estimate associated with this assignment is $53,210 excluding HST, based on their current work plan which is within the approved $100,000 budget. In accordance with engineering practice, RVA has requested that we enter into a consulting services agreement. On this basis, board staff are recommending that the Board authorize the Chair and Chief Administrative Officer to execute a consulting services agreement with RVA for the preliminary design of a PAC System Upgrades project.

CONCLUSION

The components of the PAC system's process equipment and ancillary equipment are in poor condition, have reached the end of their service life and require replacement. In response to the condition assessment, board staff engaged R.V. Anderson Associates Ltd. (RVA) to undertake preliminary design of the PAC/transfer pump system. In accordance with engineering practice, RVA has requested that a consulting agreement for the assignment be in place. Therefore, board staff are recommending that the Board authorize the Chair and Chief Administrative Officer to execute a consulting services agreement with RVA for the preliminary design of a PAC System Upgrades project.

Prepared by: Josh Self, EIT,
Engineer in Training, Regional Water Supply

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

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

Lake Huron
Primary Water Supply System

Report No.: LH-2023-01-10
Report Page: 1 of 9
Meeting Date: January 19, 2023
File No.: LH1353 & LH2047

To: Chair and Members, Board of Management
Lake Huron Primary Water Supply System

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

Subject: LH1353 WTP Modification/Renovation & LH2047 Electric Vehicle Charging Stations

RECOMMENDATION

That, on the recommendation of the Chief Administrative Officer, the following actions be taken with respect to the WTP Modification/Renovation (LH1353) & Electric Vehicle Charging Stations (LH2047) projects:

a) The Board of Management for the Lake Huron Primary Water Supply System **INCREASE** the budget of the WTP Modification/Renovation (LH1353) project in the amount of $500,000 for a total budget of $850,000, with the additional funds being provided from the New Capital Reserve Fund; and,

b) The Board of Management for the Lake Huron Primary Water Supply System **RECEIVE** this report regarding the status of the WTP Modification/Renovation (LH1353) and Electric Vehicle Charging Stations (LH2047) projects for information.

PREVIOUS AND RELATED REPORTS

October 6, 2022	2023 Operating and Capital Budgets
October 7, 2021	Electric Vehicle Charging Stations
October 8, 2020	Port Blake Park

BACKGROUND

In early 2022, Board staff initiated a needs assessment for administrative and operational space at the water treatment plant as well as an overall long-term site plan with the water system's acquisition of the property municipally known as 71111 Bluewater Highway, proposed improvements to Port Blake Park by the Municipality of South Huron and a future water storage reservoir and ultraviolet disinfection facility within the current park area.

The administration and operational areas for plant staff within the water treatment plant (WTP) were designed and constructed in the 1960s and as such requires significant renovation/expansion to address ongoing issues that include but are not limited to the following:

- Gender equity issues;
- Barrier-free administration areas;

- Noise and vibration levels within existing administration work areas and boardroom spaces adjacent to high lift pumps;
- Sizing and condition of existing washrooms, staff showers, and change rooms;
- Sizing and location of existing staff lunchroom; and,
- Controlled site security access points for deliveries and general access.

In June 2022, Board staff engaged the services of Architects Tillman Ruth Robinson Inc. (ATRR) to facilitate a needs assessment and prepare a conceptual design and phasing strategy, and to identify timing, cost, and project scope.

DISCUSSION

In the fall of 2022, ATRR submitted their conceptual design and phasing strategy to Board staff. A conceptual site plan and layout of the new administration building, and plant renovations may be found in Appendix A attached to this report. The following highlights are an overview of the proposed phases:

Phase 1 – Site Preparation

Estimated Budget: $220,000.00
Estimated Timeframe: 1-2 months

Within Phase 1 the following work would be completed:

- Relocation of existing second Waterworks Road entrance to align with internal low lift pump station roadway near the dead-end of Waterworks Road.
- Provision of new controlled gate at vehicle entrance.
- Creation of 32 new staff parking spaces at the north end of the site between the 2 gated entrances from Waterworks Road.
- Modifying to the existing south Highway 21 entrance with a new automated gate remotely controlled from security. This access point off highway 21 would be for emergency and construction purposes only.
- Addition of a new chain link fencing with barbed wire top along Highway 21 east property line and tie into existing fencing at Port Blake Day Park south end and north property line fencing. With the completion of the fencing this would fully secure the facility on all sides. Regular access into the facility would be controlled by security at controlled access points. All delivery and drop off vehicles would go through a controlled access point off Waterworks Road via the security office.

Phase 2 – Construction of New Administration and Garage Building

Estimated Budget: $3.8 million
Estimated Timeframe: 18 months

In Phase 2 the following work would be completed:

- Temporarily close the northeast vehicle access gate from Waterworks Road. All plant vehicles would be required to enter/ exit through the northwest gate (Waterworks Road) or south gate (highway 21).
- The northeast vehicle gate would be used as construction access only. Demolish existing garage building.
- Construct new administration and garage buildings.
- Complete civil work with the removal of existing staff parking island and relocate catch basins to suit new grading. The removal of the existing island allows for better truck mobility in this area allowing ease of access to all overhead doors. Add new sidewalk connection from administration building to overflow staff parking along Highway 21 within the plant property.

Phase 3 – Interior Infill of Existing High Lift Pumping Station Administration Spaces

Estimated Budget: $565,000.00
Estimated Timeframe: 6-9 months

In Phase 3 the following work would be completed:

- Repurpose boardroom, offices, and lobby spaces near the high lift pumps into new auxiliary spaces such as: change room(s), washrooms, staff lunchroom, education centre, etc.

Phase 4 – Interior Infill of Existing Auxiliary Spaces within the High Lift Pumping Station and Workshop Areas

Estimated Budget: $550,000.00
Estimated Timeframe: 6 months

In Phase 4 the following work would be completed:

Workshop area:

- Revise existing men’s change room and washroom into additional parts storage.
- Provide a wash station utilizing existing plumbing of change room.
- Provide a washroom in the workshop area.
- Rework workshop office, files, and storage on the east side to optimize existing space.

High Lift Pumping Station:

- Revise existing women’s change room into additional storage for high lift pump area, laundry, and janitor’s room.

- Repurpose existing lunchroom on mezzanine level into storage, washroom for control room staff, observation workstation area for filter building.

ATRR noted that the four phases noted above could be competed within a single project scope or stretched over a longer timeframe depending on the timing of other projects and budget. Notwithstanding, if a single project scope is preferred it is recommended that the project follow the phasing plan above to limit the disruption to staff and ongoing operations.

The capital plan as presented in the 2023 budget (approved by the Board in October), allocated $500,000, $1.5M and $3.0M in 2024, 2025 and 2026 respectively for a total estimated project cost of $5.0M. ATRR estimates that the total project cost for all phases to be $5.135M and take over 3 years to complete all phases. Budget estimates will be refined through the capital budget approval process as the design moves forward in more detail.

Based on the above, Board staff are recommending that budget of the WTP Modification/Renovation (LH1353) project be increased in the amount of $500,000, for a total approved budget of $850,000, with the additional funds being provided from the New Capital Reserve Fund, in order to undertake the detailed design and construction of necessary site works and undertake the detailed design of the administration building and associated renovations.

EV Charging Stations

In March 2021, Board staff prepared an information report related to the implementation and use of electric vehicle charging stations. In July 2022, staff engaged the services of VCT Group to develop a solution for installing stations at the water treatment plant. The recommended solution by VCT Group is to install six Level-2 chargers.

At the conceptual stage it is anticipated that the chargers will be located within the fenced compound and only available to charge authorized fleet and staff vehicles through secure software. The estimated costs associated with this is approximately $60,000 which aligns with the total project cost identified in the 2023 budget. There is opportunity to apply for grant funding through the Zero Emissions Vehicle Infrastructure Program offered by National Resources Canada and there may be an opportunity to coordinate with the City of London on funding applications. Board staff are recommending that the installation of the electric vehicle charging stations be undertaken as part of the WTP Modification/Renovation project given that the stations will be located within the same construction footprint. The scope of the consultant engaged for the design of the proposed renovations will include assisting Board staff in applying for these grant opportunities.

CONCLUSION

To address long-standing issues associated with the administration and operational areas for plant staff within the water treatment plant and site security and access, Board staff recommend that the project budget be increased by $500,000 such that the detailed design and construction of the site works may proceed and the detailed design of the administration building, and renovations may commence.

In addition, the proposed electric vehicle charging stations will be installed as part of the WTP Modification/Renovation project given that the stations will be located within the same construction footprint.

This report was prepared with the assistance of Josh Self, Engineer in Training, Regional Water Supply.

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

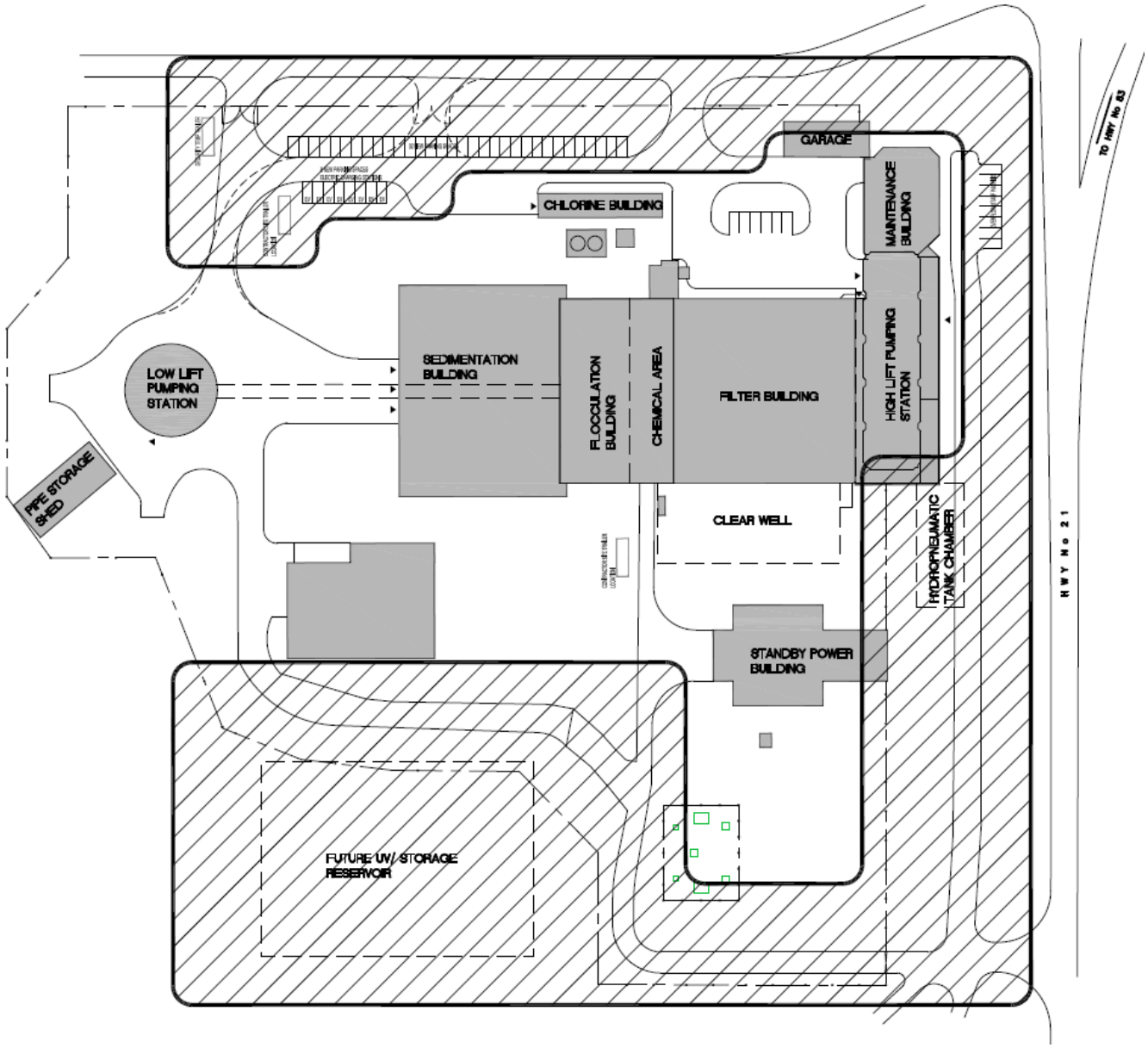
Submitted by: Andrew Henry, P. Eng.,
Director, Regional Water Supply

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

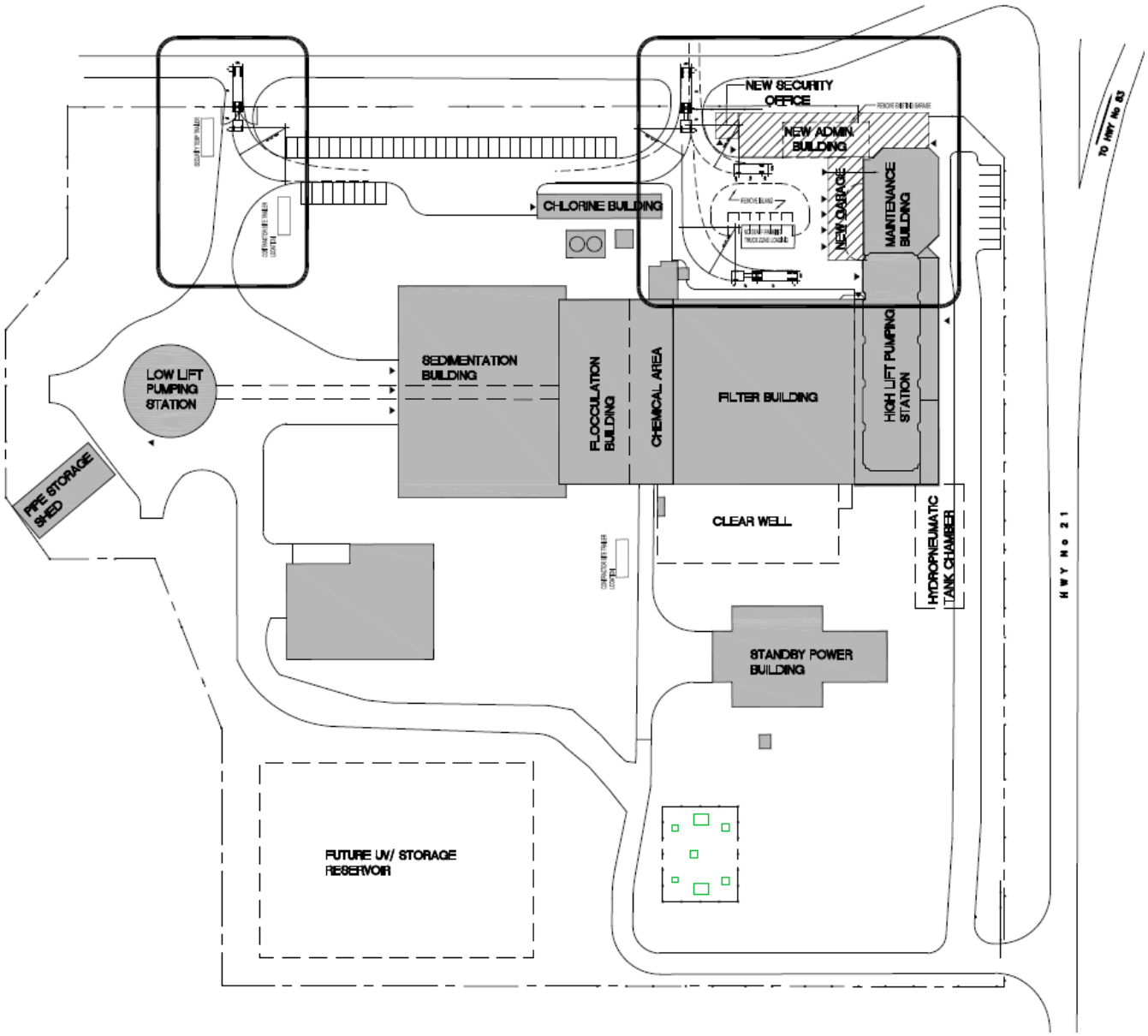
Attachments: Appendix A – Conceptual Site Plan and Layout

APPENDIX A: CONCEPTUAL SITE PLAN AND LAYOUT

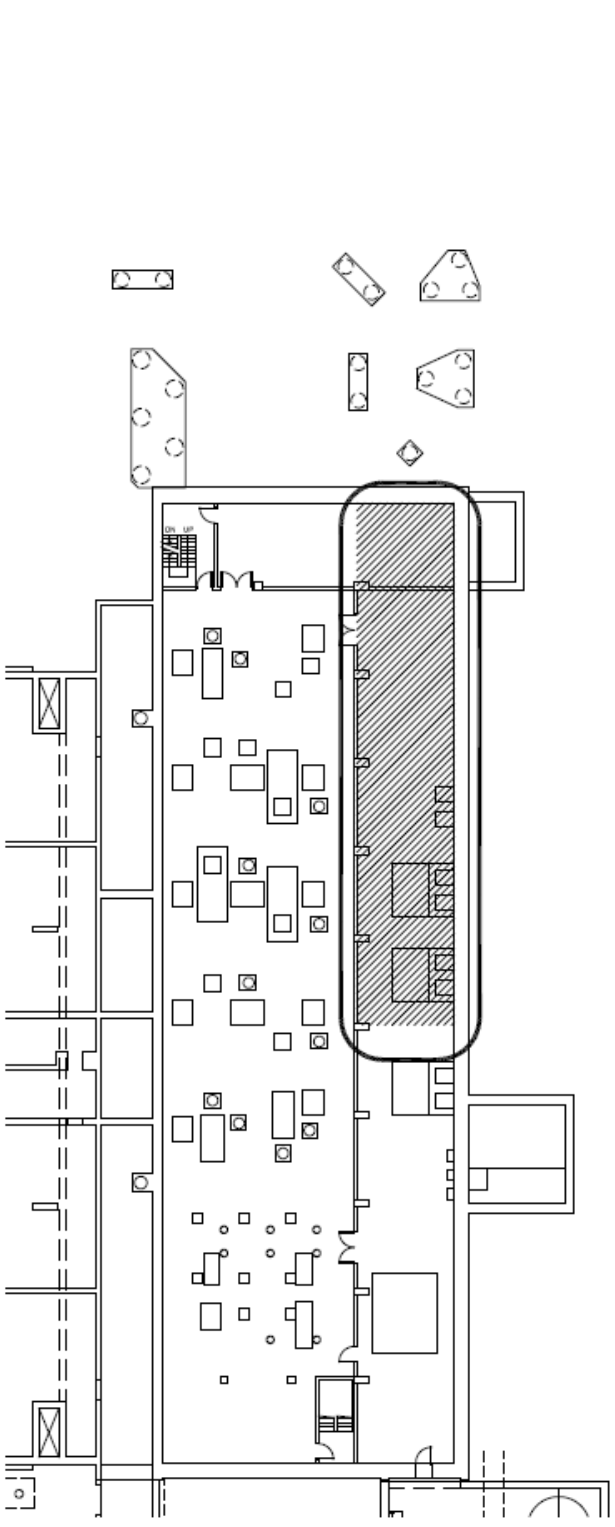
Phase 1 – Site Preparation and Site Security



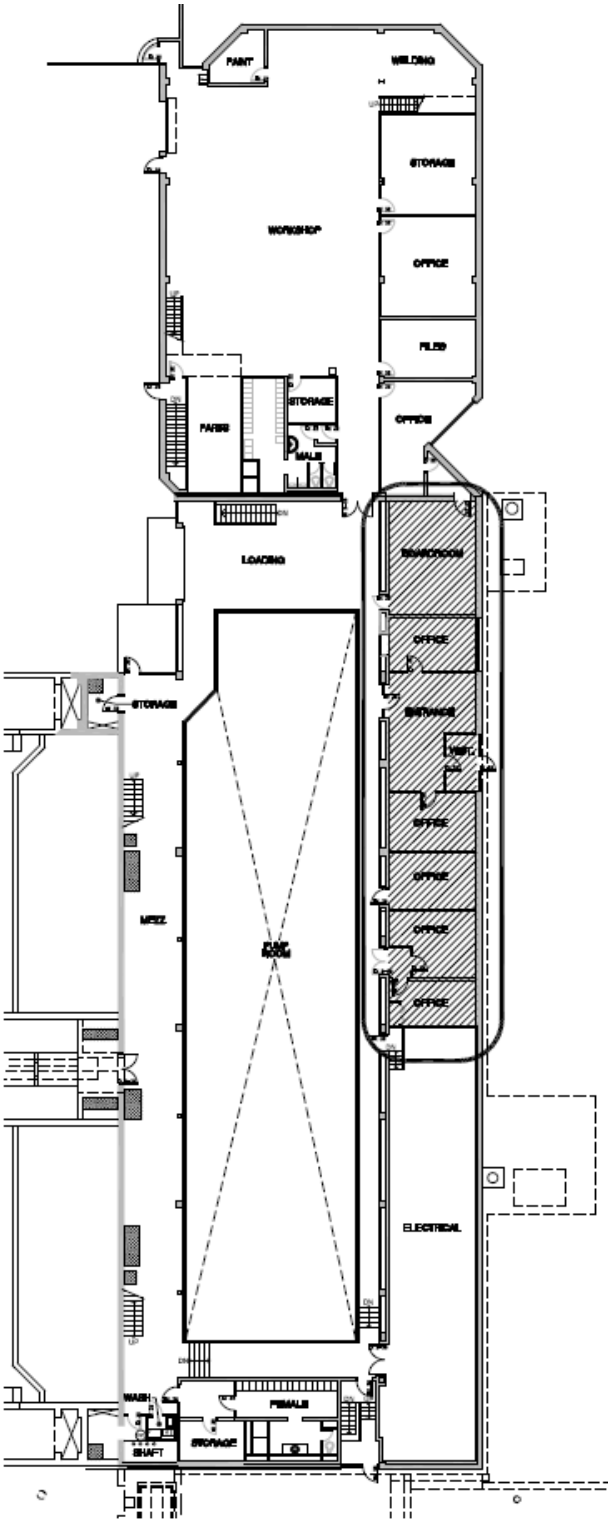
Phase 2 – Construction of New Administration Building and Vehicle Garage



Phase 3 - Interior Infill of Existing High Lift Pumping Station Administration Spaces

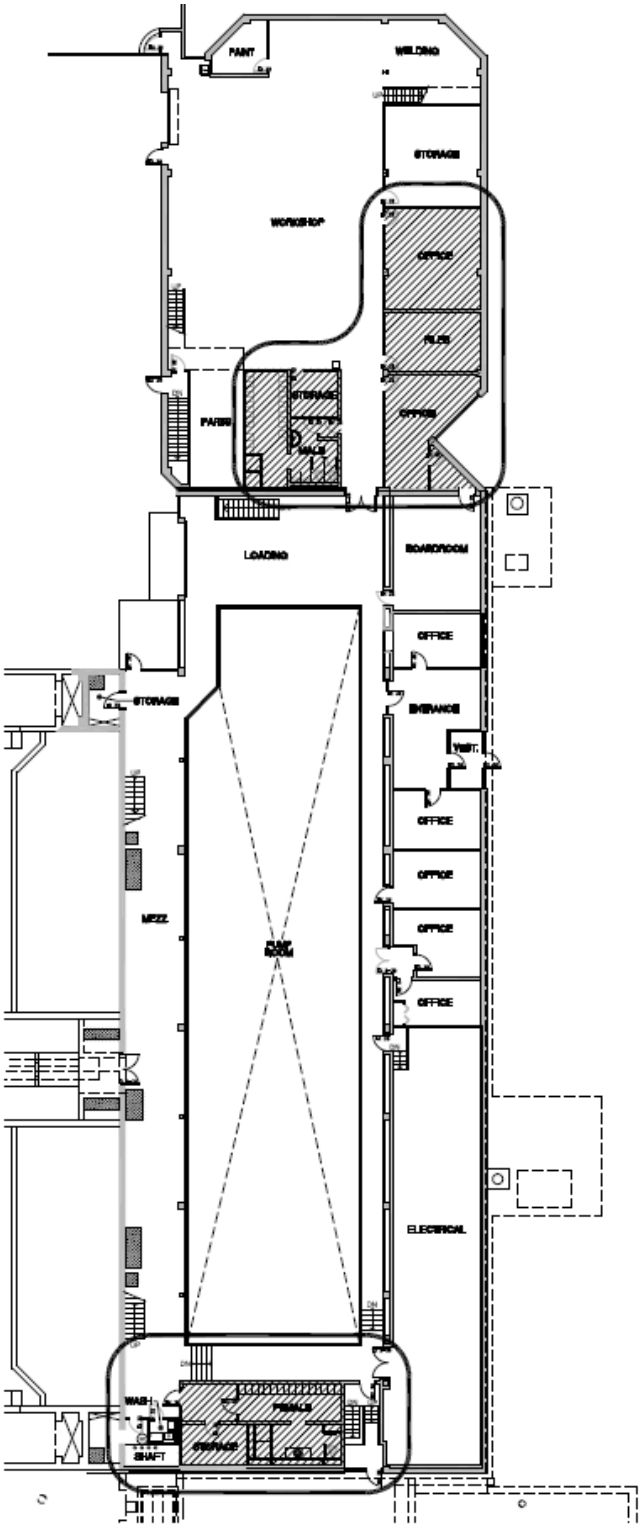


PARTIAL LOWER FLOOR PLAN - PHASE THREE

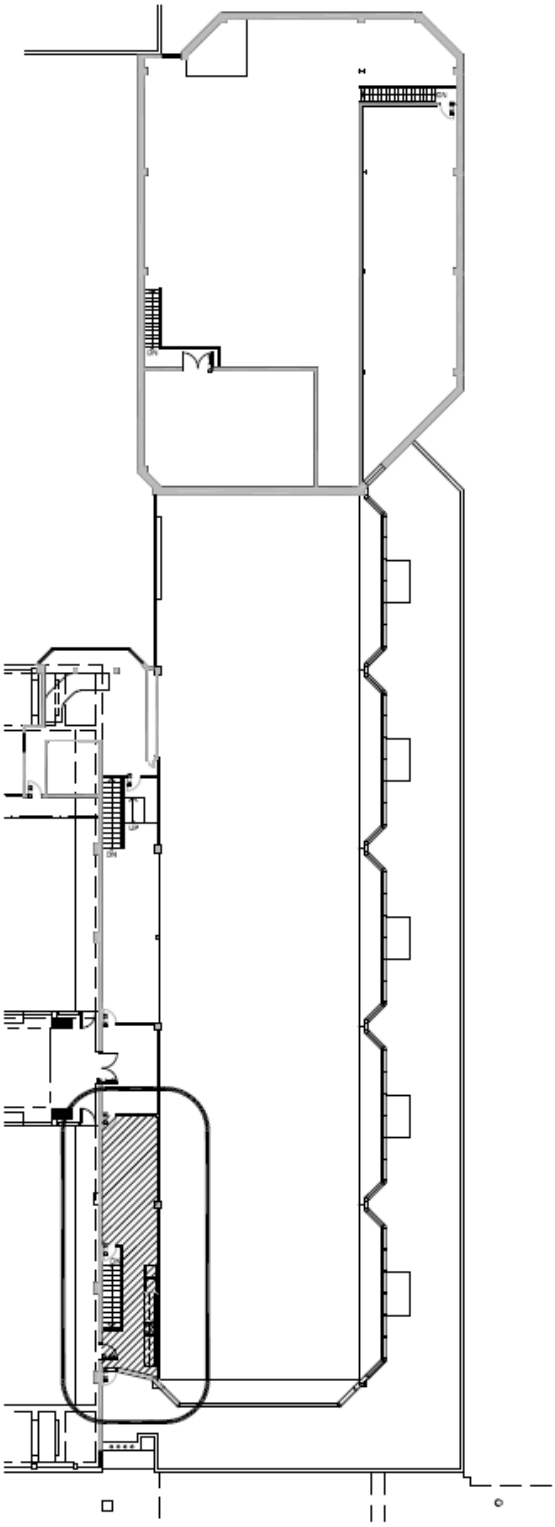


PARTIAL GROUND FLOOR PLAN - PHASE THREE

Phase 4 - Interior Infill of Existing Auxiliary Spaces within the High Lift Pumping Station and Workshop Areas



PARTIAL GROUND FLOOR PLAN - PHASE FOUR



PARTIAL UPPER FLOOR PLAN - PHASE FOUR