



September 1, 2017

Chair and Members
Lake Huron Primary Water Supply System
Joint Board of Management

Re: **2018 Operating & Capital Budget**

Enclosed please find a copy of the draft 2018 Budget for the Lake Huron Primary Water Supply System. You are receiving the document at this time in keeping with a request by the Board to receive the draft Budget a month in advance of the meeting at which it is to be considered. The balance of the agenda material for the upcoming meeting scheduled for Thursday, October 5, 2017, London City Hall, will be provided one week in advance of the meeting as per usual practice.

A handwritten signature in blue ink, appearing to read "J. Bunn".

J. Bunn
Committee Secretary

Enclosure

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

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

Meeting Date: October 5, 2017

Subject: 2018 Operating & Capital Budgets

RECOMMENDATION

That the following actions be taken by the Board of Management for the Lake Huron Water Supply System with regard to the 2018 Operating and Capital Budgets:

- a) The Board APPROVE the 2018 Operating Budget in the total amount of \$19,943,000 as presented;
- b) The Board APPROVE the 2018 Capital Budget in the total amount of \$2,625,000 as presented;
- c) The Board RECEIVE the 2019 to 2027 Capital Forecast for information;
- d) The Board APPROVE the 2018 rate for water of \$0.4846 per cubic meter; and,
- e) The Board RECEIVE the 2016 to 2022 Flow and Financial Analysis for information.

EXECUTIVE SUMMARY

The proposed operating and capital budgets present a balanced cost and revenue projection for 2018, and are consistent with the recently approved Financial Plan. The proposed water rate for 2018 of 48.46 cents per cubic meter of water will adequately address capital, operating and administrative requirements as currently projected. The Financial Plan continues to be a key element in the long term strategic approach that addresses both infrastructure and operating issues, and ensures fiscal responsibility to maintain a reliable and sustainable water supply to the benefiting municipalities and consumers.

Cost projections presented in the 2018 budget include the operating costs within the extended term of the agreement with the contracted operating authority, which now incorporate the current and future costs for the operation of the new Residuals Management Facility.

The 2018 Capital Budget builds on the Asset Management Plan, and utilizes the Customer Level of Service framework and Risk Mitigation strategy recently approved by the Board. This includes the utilization of the new business case process to better quantify anticipated costs, savings, and service impacts to the water supply system.

The projects and initiatives in the 2018 Capital Budget are presented in this report within two primary groupings; lifecycle projects that maintain the existing levels of service, and service improvements which address enhancements to levels of service, support growth of the system and increasing water demands, address regulatory changes, or increased efficiency. A proposed capital project may touch, in part, all of these aspects, however they are presented in the budget according to their respective primary driver.

PROPOSED 2018 OPERATING BUDGET

2018 Water Rate

It is proposed in this budget that the water rate for the wholesale of water to the benefiting municipalities be set at \$0.4846 per cubic meter (48.46¢ per cubic meter). In responding to regulatory, operational and inflationary pressures, this proposed 2018 rate represents a 3% increase from the current rate and is consistent with the projected rate increase previously reported to the Board in the 2017 Budget and the recently approved Financial Plan.

2018 Budget Volume

Allowing for the current rate of population and water demand growth within the benefiting municipalities, as well as anticipated impacts of water conservation, the projected 2018 treated water volume included in the budget of 41.11 million cubic meters represents a 1.75% decrease compared with the 2017 budgeted volume, and approximately 9.2% lower than the anticipated 2017 actual supplied volumes by year-end.

Approved 2017 budget volume	41,829,500 m ³
Anticipated 2017 year-end volume	44,905,300 m ³
Proposed 2018 volume	41,110,000 m ³

A conservative estimate of volume was utilized for the 2018 budget due to revised long-term projected consumption, largely within the City of London, but remains reflective of long-term system consumption patterns throughout the region. Although consumption so far this year has been higher than anticipated, principally due to the drier spring weather, it is the opinion of staff that the annualized projected volume will continue to trend lower on average for the next few years and the conservative volume in this budget is appropriate.

Although lower volumes do cause some short-term financial pressures, they are typically beneficial in the very long-term due to the deferral of growth-related works such as water treatment capacity expansions and transmission pipelines. Water demand projections and anticipated capital works are reviewed regularly to ensure capital projects are appropriately coordinated and timed, and will be reviewed again during future revisions to the Master Water Plan and Asset Management Plan. Further, the recently adopted business case process as part of the Asset Management Plan promotes a risk mitigation and level of service strategy which further addresses the appropriate timing of necessary projects.

Operating Expenditures

The two single largest operating costs for the water supply system is the contract costs for the operation and maintenance of the water supply system with the Board's Operating Authority, the Ontario Clean Water Agency ("OCWA"), as well as the purchase of power for the system. The 2018 projected total operating costs are budgeted at approximately \$10.402 million, reflecting an 8.9% projected increase compared to the 2017 budget. Of the \$10.4 million, energy comprises approximately 42.3% of operating expenditures.

The net increase in operating costs is largely attributed to the addition of the Residuals Management Facility (RMF) within the service agreement with OCWA. Now that the facility is in full operation, the true costs of operating, maintaining and repairing the new facility is known and better incorporated into the budget projections. Other savings within the operating budget have reduced the net impact of the addition of the RMF operation.

The Service Fee currently paid to OCWA is solely comprised of a general component (reflecting labour, material and chemical costs, etc.) paid by the Board. The electrical cost is paid directly by the Board resulting in significant savings in handling costs previously paid to the contracted operating authority. As electricity can be highly variable on a year-over-year basis, the risk of market volatility has summarily been assumed by the Board and mitigated through the Board's energy procurement strategy.

Notwithstanding the long-term benefits being realized with the deferral of growth-related capital, it is anticipated that the short-term cost drivers will continue to be the escalating operating costs and capital renewal and reinvestment requirements of the fifty year old aging infrastructure.

The Board previously received and accepted an energy, conservation and pump optimization study report which reviews possible cost saving and efficiency measures related to the procurement and usage of electrical energy and the associated pump strategy for the system. A number of efficiency recommendations were received and incorporated into the Asset Management Plan and Financial Plan, which require the development of a business case to better quantify anticipated costs, savings, and service impacts. The proposed capital plan has started to incorporate some of the energy efficiency projects, with further projects to be considered in future.

Administration and Other Expenditures

The Administration and Other Expenditures projected for the 2018 budget of approximately \$1.87 Million represents an \$85,000 net increase over the 2017 budget amount. This net increase is due to numerous changes to the water supply system, summarized as follows:

- Overhead and service costs: the administration charges paid to the City of London for such services as accounts payable/receivable, clerical support, and budget administration was increased to reflect current actual costs to the city.
- Wage adjustments: An allowance for wage adjustments has been carried in the proposed 2018 budget to accommodate potential adjustments, including overtime and adjustments to benefits.
- An allowance for additional staff, as previously approved by the Board, in support of the implementation of improvements to the business operation of the Board, the implementation of the asset management program, and changes to the associated business systems required.

Security Audit

The recently completed and approved Security Audit and Threat Risk Vulnerability Assessment recommended a number of capital and operating investments to the regional water system, including staffing resources. The proposed 2018 Operating Budget currently does not include any anticipated staffing changes specifically related to security. Board staff are in the process of completing the development of an implementation and resource plan, and a comprehensive report will be presented to the Board at a future meeting including any recommended changes to the 2018 Operating Budget.

PROPOSED 2018 CAPITAL PLAN

The Proposed 2018 Capital Budget reflects a number of projects to address capital improvements and critical reinvestment in the water supply system's assets, as well as regulatory requirements, ongoing and proposed Board initiatives. Project specific summaries are provided in Appendix A of this report for the Board's information.

Financial Plan and Asset Management Plan

The recently approved Asset Management Plan and Financial Plan provided an assessment of anticipated capital projects, based on condition assessments, operational assessments provided by our contracted operating authority, and previously undertaken studies available at that time. In the development of the 2018 Capital Budget, a business case is created for each project which outlines the scope of the issue that needs to be addressed, options, cost estimates, and project dependencies. The business case process is linked with our Customer Level of Service framework and Risk Mitigation strategy in order to better prioritize and direct funds in a more strategic fashion and in consideration of financial constraints which may be experienced.

Within this framework, a capital project may be "lifecycle" in nature and required in order to maintain a level of service, and/or "service improvement" in nature which may address:

- Enhancement to the level of service (including safety and security);
- Support of system growth or growth in water demands;
- Address regulatory changes; or,
- Increase efficiency.

The level of capital investment will vary from year-to-year, most especially for projects related to system or water demand growth. The Asset Replacement Reserve is used for lifecycle projects, while the Capital Reserve is used for system improvements. A given project, in principle, may address multiple elements within the Customer Level of Service framework, and therefor may require the utilization of both the Asset Replacement Reserve (lifecycle) and the Capital Reserve (service improvement).

It is important to note that the anticipated projects outlined in the Asset Management Plan tend to be based on risk mitigation in the first five-year planning period, and systemic or age-related in nature for the remaining 25+ year planning period. In addition, the financial information presented in the Asset Management Plan is considered an unconstrained financial projection; meaning without consideration of such things as other operational needs and financial constraints (e.g. borrowing capacity) experienced by the water supply system.

The Financial Plan is utilized to incorporate the needs identified in not only the Asset Management Plan, but also the Master Water Plan (growth study) and other studies undertaken by the system, as well as the evolving operational and administrative needs of the system to better constrain the financial requirements and implications to the system. During the development of the annual budget the projections in the Financial Plan are measured and adjusted according to actual conditions, which will consequently affect the capital plan in each fiscal year.

2018 Capital Plan

The new Financial Plan approved by the Board recommends an average year-end balance for the Asset Replacement Reserve in the order of \$7.5 million. Although the actual investment and commitment rate may vary year to year, the current capital plan maintains the average investment rate as outlined in the Asset Management Plan and Financial Plan.

In contrast, the Capital Reserve is intended to grow significantly over time to provide a sufficient base for funding large growth-related projects in future. The balance of generational investment equity (utilization of reserves established by current users, versus debt incurred and paid by future users) has yet to be fully quantified, and will be addressed in future Master Water Plan and Financial Plan studies. There are no significant growth-related expenditures within the current planning period, and staff are satisfied that the issue of generational equity can be addressed within a reasonable timeframe.

Previously approved capital budgets provided a significant investment in existing and new infrastructure. As outlined in the Asset Management Plan, the next five-year planning period is chiefly comprised of lifecycle projects needed to address the now fifty year old water system.

Lifecycle Projects (Maintain LOS)

Proposed projects in the 2018 Capital Budget which address maintaining the system's level of service are:

- | | |
|------------------------------------|---------------------------------------|
| • LH1207 Concrete Crack Injection | • LH1338 Plant Instrumentation |
| • LH1369 Filter Media Replacement | • Distressed Pipe Replacement Program |
| • Pipe Conveyance System | • Arva Victaulic Repair |
| • Control Panel/Wire Cleanup | • RMF Settling Plate Assessment |
| • Roof Replacement | • Sluice Gate Repairs |
| • Travelling Screen #1 Replacement | • PAC System Assessment |

In addition to the above-noted capital projects, the 2018 Capital Budget includes LH1316 Annual Maintenance which funds, in part, maintenance and repair projects undertaken by the contracted operating authority, the Ontario Clean Water Agency. All maintenance and repairs of the system's assets are the obligation of the contracted operating authority to undertake in accordance with the Service Agreement. For activities of maintenance and repair where the value of the material and any contracted specialty service exceed \$30,000 (adjusted annually by CPI), the Board is responsible for the value of the work in excess of the \$30,000 (as adjusted). To facilitate this work, the Capital Budget includes an Annual Maintenance project which is utilized to fund this contractual obligation of the Board.

A summary of the capital projects are provided in Appendix A of this report.

Service Improvement Projects (Enhanced LOS, Growth, Regulatory Changes, Efficiency)

Proposed projects in the 2018 Capital Budget for which the primary driver is service improvement are:

- LH1900 Record Drawings & Documents
- High Lift Pump Replacement
- HVAC Smoke Alarm
- Inactivation Control Strategy
- Security Upgrades
- Alum Flow Switch
- Raw Water Flow Meter Replacement

A summary of the capital projects are provided in Appendix A of this report.

CAPITAL FORECAST

A number of capital projects are projected beyond the 2018 Capital Budget year, which will have an impact on the financial forecast and future water rates for the water system. Some of these capital projects were anticipated in previous budget forecasts, and are now inclusive of the recently completed Asset Management Plan and Financial Plan. As previously noted, staff undertake a complete business case assessment for each project to confirm the costs, timing, and priority of the project, consistent with our new Customer Level of Service framework and Risk Mitigation strategy. Initial efforts related to the development of business cases are focused on projects anticipated within the first five projected years (2018 to 2022), and then other projects and initiatives beyond 2022 thereafter.

The recently completed Residue Management Plant, Pipeline Twinning, and the Backup Generator projects had a significant impact on the water system's Reserve Fund requiring the use of debt for financing these projects. For this reason, it is increasingly important for the system to continue the implementation of the Financial Plan recently completed and presented to the Board for its consideration.

The next update to the Board's Master Water Plan is proposed for 2019, and the Asset Management Plan and Financial Plan is anticipated to be initiated in 2020.

FLOW AND FINANCIAL ANALYSIS

Included in the budget package is a forward projection of annual volumes and financial projections beyond 2018, and provides a summary analysis of one option for rate increases and the use of debt. This projection has incorporated the recommendations from the recently updated Financial Plan and revisions to the financial model.

The projected operating expense beyond 2018 assumes that the cost of operating the system under the new contract is consistent with the amended operating agreement with the Ontario Clean Water Agency to 2022. In addition, energy expenditures projected beyond 2018 have assumed a reasonable escalation of costs, tied to the anticipated annual volumes projected.

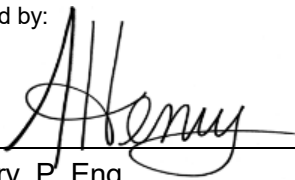
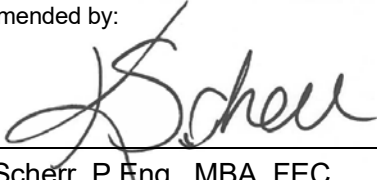
Conceptually, the Asset Replacement Reserve is required to provide a stable funding source for capital programs designed to replace, maintain and potentially extend the asset life to its full potential. Accordingly, the contribution to the Asset Replacement Reserve fund year-over-year should be relatively consistent, on average, with minor variations accounted for as the Asset Management Plan is implemented.

Conversely, the Capital Reserve Fund is intended for new growth-related capital programs and system improvement initiatives. As these programs tend to be infrequent and periodic in nature, the reserve fund balance in the Capital Reserve may significantly increase or significantly decrease in any given year depending on the programs undertaken. The Board's ultimate objective, as discussed in the Financial Plan, is to fund capital projects in the long-term without the extensive use of debt. Accordingly, this objective subsequently requires a greater use of Reserve funds than might be experienced by municipalities, and significant increases in balances to finance periodic future expenditures. Notwithstanding, the issue of generational equity remains to be fully addressed in future Financial Plans.

In accordance with the Financial Plan and Board resolution, the target balance of the Emergency Reserve Fund is established at \$2 million, wherein contributions will be discontinued when the Emergency Reserve Fund balance reaches the target value. The Emergency Reserve Fund is intended to fund unplanned emergency-related projects such as pipeline failures, tank ruptures and treatment process failures.

Acknowledgement

Preparation of these budget documents was undertaken by the Regional Water Supply Division staff with the assistance of Debbie Gibson and City of London Financial Services.

<p>Report Prepared by:</p> <div style="text-align: center;">  </div> <p>Andrew Henry, P. Eng. Division Manager, Regional Water Supply</p>	<p>Recommended by:</p> <div style="text-align: center;">  </div> <p>Kelly Scherr, P.Eng., MBA, FEC Chief Administrative Officer</p>
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Appendix A: 2018 Capital Project Summary

Attachments: 2018 Operating and Capital Budgets and Nine Year Capital Forecast, October 5, 2017

APPENDIX A: 2018 CAPITAL PROJECT SUMMARY

Lifecycle Projects (Maintain LOS)

LH1207 – Concrete Crack Injection (multi-year program): Much of the facility, including chemical and water storage tanks, is constructed of concrete which, over time, cracks and deteriorates. The initial condition survey undertaken by the contracted operating authority identified several locations throughout the facility where significant cracks had formed which would accelerate the deterioration of the facility. This program proposes sealing the significant and high-risk cracks throughout the facility on a systemic basis.

LH1316-18 – Annual Maintenance (ongoing program): This capital project is provided on an annual basis pursuant to the Operations, Maintenance and Management Agreement with the contracted Operating Authority, the Ontario Clean Water Agency (OCWA), as a source of financing for Capital Maintenance projects undertaken by the contracted operating authority with the Board's approval. Capital Maintenance is generally defined [*paraphrased*] as the maintenance or repair of equipment or assets which because of the amount of the expenditure is typically "capital" in nature rather than operational. The benchmark used to determine Capital Maintenance projects is that if the cost of the material and any contracted labour (exclusive of OCWA labour) is over \$30,000 (plus indexed inflation), then the project is considered Capital Maintenance and OCWA is responsible for expending the first \$30,000 (plus indexed inflation) and the Board would fund the remaining cost.

LH1338 – Plant Instrumentation (ongoing program): Much of the plant's online analyzers are beyond their useful life. This program funds a systematic replacement of the water system's online analyzers that are critically necessary to ensure ongoing compliance with regulations and the system's Municipal Drinking Water Licence.

LH1369 – Filter Media Replacement (multi-year project): the twelve dual-media filters used at the water treatment plant, the final stage of treatment before transmission to the benefiting municipalities, are original from the construction in the mid-1960s and have not been replaced. All filters have shown signs of deterioration due to age. This project undertakes the systemic replacement of the media within the filter boxes, as well as the filter rate valves and control valves, with an allowance for repairs to the existing filter block and drains as needed. The filter media will be replaced in two filters per year over a six year program, with 2018 being the fifth year of the program. This program does not replace the entire filtration system, which would include the filter block, underdrains, channels, and associated control systems and backwash equipment.

Distressed Pipe Replacement Program (multi-year program): As a result of the condition assessment and subsequent data from the Acoustic Fibre Optic Monitoring System within the 1200mm high pressure transmission pipeline, the water system has recently replaced two high-risk pipe segments on the pipeline. This program proposes to replace additional high-risk pipe segments on a systemic basis. The 2018 program also includes a detailed assessment of the monitoring data accumulated to date to develop a predictive model to further refine and determine targeted replacements for the next five years.

Pipe Conveyance System: Full-length replacement pipe segments, repair pieces, and associated equipment necessary for the emergency (or planned) repair of the 1200mm transmission pipeline are stored at the water treatment plant. The full-length pipe segments are approximately 5 metres in length and weigh approximately 6000kg each. To load the pipe segments and repair pieces onto a transport trailer, the pipes and repair pieces must be moved from the storage building to the building exterior in order to utilize a boom truck or crane. The existing small-gauge rail system is failing and is a safety hazard when used. The project looks to replace the existing pipe conveyance system.

Arva Victaulic Repair: The coupling from the transmission pipeline to cell #2 of the Arva terminal reservoir is leaking. This was identified during the initial condition survey undertaken by OCWA at the start of their contract. A failure at this location would result in draining both the terminal reservoir and the 1200mm pipeline to about Denfield, and a general loss of supply to the entire region. This project proposes to undertake an engineering assessment of the repair options, constructability, anticipated costs, and construction scope for a future repair or replacement project.

Control Panel/Wire Cleanup: Previous changes, upgrades and replacements at the water treatment plant over its fifty year history has resulted in a significant number of panels that have been virtually abandoned in place, in whole or in part. In order to ensure operational responsiveness, it is necessary to investigate each panel, determine if any of the control wires are still active, and remove any abandoned panels and wiring currently in place.

RMF Settling Plate Assessment: Unanticipated flow conditions during backwash are resulting in accelerated deterioration of the settling plate packs in the equalization/settling tanks within the Residuals Management Facility. A process specialist has undertaken an initial review of the condition of the process, and has recommended a full engineering assessment to identify mitigation measures or alterations to be undertaken to eliminate damage to the plate packs.

Roof Replacement: Initial condition survey completed at the beginning of OCWA's contract noted several roof sections at the water treatment plant to be in poor condition and requires replacement. The 2018 project will replace the roof over the high lift pump area, and the roof on the chlorine building.

Sluice Gate Repairs: All sluice gates throughout the water treatment plant are original to plant construction (fifty years old) and are leaking. A significant leak has developed at the low lift sluice gate which isolates the plant from the lake. This is a substantial safety risk to staff during annual maintenance in the low lift well and must be addressed.

Travelling Screen #1 Replacement: Travelling Screen #1 is original to the plant construction (fifty years old) and requires replacement. The travelling screens located at the low lift pump station prevent debris, fish and other large suspended materials from entering the pump station. Travelling screen #2 and #3 were previously replaced.

PAC System Assessment: The existing Powder Activated Carbon dosing and transfer pumps are at the end of their useful life, and the concrete bulk storage tanks have deteriorated and are leaking into the transfer pump area. In addition, the recently completed Water Quality Facility Plan identified issues with regard to the dosing point which should be addressed. A detailed engineering assessment of the PAC pumps, storage tanks, and dosing philosophy (application points) is required.

Service Improvement Projects (Enhanced LOS, Growth, Regulator Changes, Efficiency)

LH1900 – Record Drawings and Documents (ongoing program): As a requirement of the water system's Municipal Drinking Water Licence and the Drinking Water Systems Regulation (O.Reg. 170) of the Safe Drinking Water Act, this project is a systemic program to ensure that the water system's record drawings and system documentation are accurate and be kept up to date.

Security Upgrades: The recently completed Security Audit and Threat Risk Vulnerability Assessment provided policy, resource, and site-specific recommendations to mitigate security and safety risks at all facilities. The project proposed is a multi-year allowance to undertake security-related modifications to all facilities, based on the criticality assessment and recommendations of the security specialist.

High Lift Pump Replacement: The recently completed Energy Audit and Pump Optimization Study identified the high lift pumps at the water treatment plant and McGillivray intermediate pump station as a significant opportunity for energy optimization and savings. Although the ideal solution would be to replace all nine of the 3000hp pumps with a more optimal pump set-up, the projected (2019-2020) costs assume a more cost effective short- to mid-term solution of replacing two pumps. The 2018 project will provide a detailed engineering assessment and design work necessary to confirm the construction requirements, anticipated savings, and available funding from IESO and other government agencies.

Alum Flow Switch: The recently completed Water Quality Facility Plan identified that in the event of an alum dosage failure, plant operators are unable to quickly identify and respond to the treatment process changes within a reasonable timeframe. At a minimum, this would likely result in having to shut down the plant and purge the flocculation and settling tanks. At worst, it could potentially lead to an Adverse Drinking Water Quality Incident and boil water advisory across the region. The addition of treatment detection and failure alarms into the SCADA system avoids the risk of inadequate treatment and the potential of an Adverse Drinking Water Quality Incident.

HVAC Smoke Alarm: Currently there is no fire or smoke detection at the water treatment facility, and following the fire incident in the South Polymer room in 2016, it was determined that the HVAC system had no ability to shut down in the event of smoke being detected. This project proposes to initially install smoke detection at the water treatment plant, tied to the HVAC system to prevent smoke from being carried throughout the facility. As a result of the Security Audit and Threat Risk Vulnerability Assessment, further future projects may be required to address fire/smoke detection, response and recovery at this and other facilities.

Raw Water Flow Meter Replacement: The raw water flow meters, essential to the plant treatment processes and control systems, are original to the plant construction and at the end of their service life, with limited availability of replacement parts. The accuracy and reliability of the meters are suspect and the meters must be replaced.

Inactivation Control Strategy: The Water Quality Facility Plan identified a potential concern with regard to pathogen inactivation under high flow and poor raw water quality conditions. A detailed study is proposed to review the current inactivation control strategy at the water treatment facility, validate the Contact Time assessment previously undertaken, and make recommendations to further reduce risks associated with pathogens in the water treatment processes.



Lake Huron

Primary Water Supply System

**2018 Operating and Capital Budgets
and Nine Year Capital Forecast**

October 5, 2017

Lake Huron Primary Water Supply System 2018 Budget

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**Lake Huron Primary Water Supply System
2018 Operating Budget
Revenue and Expenditure Summary
(\$000's)**

	2017 Approved Budget	2018 Proposed Budget	Incr (Decr) Over 2017	% Budget Incr (Decr)	2017 Year End Projection
Revenue					
Volume Revenues ⁽¹⁾	19,680	19,923	243	1.2%	21,128
Other Revenues	20	20	0	0.0%	48
Total Revenue	\$ 19,700	\$ 19,943	\$ 243	1.2%	\$ 21,176
Expenditures					
Total Service Contract Costs ⁽²⁾	9,551	10,402	851	8.9%	10,074
Administration and Other Expenditures	1,784	1,869	86	4.8%	1,540
Debt Principal Repayments ⁽³⁾	1,140	1,197	56	4.9%	1,140
Interest on Long Term Debt ⁽³⁾	229	182	(47)	(20.5)%	229
Contribution to Reserve Funds	6,996	6,293	(703)	(10.0)%	8,193
Total Expenditures	\$ 19,700	\$ 19,943	\$ 243	1.2%	\$ 21,176

* subject to rounding

Notes:

(1) A volume decrease is anticipated in 2018 (from 41,829,500 m³ in 2017 to 41,110,000 m³ in 2018) due to conservation within municipal distribution systems. Rates per m³ are proposed to increase by 3.0%.

(2) Part of the service contract costs are direct to the Lake Huron system (i.e. electricity), while all other costs are fixed to the annual operating costs included in the bid price from the Ontario Clean Water Agency.

(3) Refer to page 9 for more information on debt.

**Lake Huron Primary Water Supply System
2018 Operating Budget
Administration & Other Expenditures
(\$000's)**

Administration & Other Expenditures	2017 Approved Budget	2018 Proposed Budget	Incr (Decr) Over 2017	% Budget Incr (Decr)	2017 Year End Projection
Management & Administrative Personnel ⁽¹⁾	519	699	180	34.7%	445
Support and Overhead Costs ⁽²⁾	203	208	5	2.5%	203
Payment in Lieu of Taxes	270	268	(2)	(0.7)%	271
Insurance (Director & Officers, General Liability)	325	330	5	1.5%	315
Financial/Office Expenses ⁽³⁾	254	250	(4)	(1.6)%	230
Information Technology Maintenance ⁽⁴⁾	100	27	(73)	(73.0)%	25
Purchased Services (Legal, Consulting, Locates etc.) ⁽⁵⁾	113	87	(26)	(23.0)%	52
Total Administration & Other Expenditures	\$ 1,784	\$ 1,869	\$ 85	4.8%	\$ 1,541

Notes:

(1) Management & Administrative Personnel costs have increased due to the restructuring report approved by the Board on March 9/17 along with anticipated wage adjustments (in accordance with collective agreements).

(2) Support and Overhead Costs reflect the costs charged by the Administering Municipality for various administrative functions (e.g. Finance, Purchasing, Human Resources, Risk Management, etc.).

(3) Financial/Office Expenses include other administrative expenses such as leased space, training/seminars/conventions, computer leasing, and sampling and research initiatives. Primary driver is reductions in expected landowner payments.

(4) For the 2018 budget year, the budget for Annual IT Maintenance has been decreased based on the last 3 years' actual expenditures.

(5) The 2018 decrease in Purchased Services is attributable to refinement in costs resulting from the new utility locate arrangements with ON1Call and G-Tel which started in 2016.

**Lake Huron Primary Water Supply System
2018 Budget
2018 Capital Plan with Forecast for 2019 to 2027
(\$000's)**

		Project Total	Prior Years Budget	2017 Approved Budget	2018 Proposed Budget	2019	2020	2021	2022	2023 to 2027
#	Description									
LH1020	Financial Plan	100					50			50
LH1204	McGillivray HVAC Replacement	1,750							1,750	
LH1207	Concrete Crack Injection	120	30		30		30		30	
LH1222	Low Life Pump #2 - Refurbishment	390	270	120						
LH1224	Division Vehicle	15		15						
LH1226	Emergency Chlorine Shut-off Actuators	190		190						
LH1316xx	Annual Maintenance ⁽¹⁾	1,500	125	125	125	125	125	125	125	625
LH1333	Asset Management Plan	300					150			150
LH1338	Plant Instrumentation	900	75	75	75	75	75	75	75	375
LH1341	Sodium Hydroxide Metering Pump	75		75						
LH1352	Arva Reservoir Structural Repairs	2,000						2,000		
LH1369	Filter Media Rebuild	1,530	300	380	425	425				
LH1383	Server Room Fire Suppression	30		30						
LH1384	Filter Rate Meters	200		200						
LH1386	Chemical Delivery Panel	75		75						
LH1387	B Line Road Monitoring Station	40		40						
LH1388	Coagulation Optimization Study	50		50						
LH1389	Flow Control Strategy and Storage Study	25		25						
LH1390	Security Assessment and Audit	25		25						
LH1428	Distressed Pipe (11-5) Replacement	250		250						
LH1900	Record Drawings & Documents	25		5	5		5		5	5
LH3015-2	Lake Huron Master Plan Update	200				100				100
LH1906	Divisional Office Expansion	130		130						
Proposed	Distressed Pipe Replacement	1,550			350		300		300	600
Proposed	Pipe Conveyance System	30			30					
Proposed	Security Upgrades	550			150	100	100	100	100	
Proposed	High Lift Pump Replacement	7,025			125	1,300	5,600			
Proposed	Alum Flow Switch Install	30			30					
Proposed	Arva Victaulic Repair	50			50					
Proposed	Control Panel/Wire Cleanup	25			25					
Proposed	HVAC Smoke Alarm	100			100					
Proposed	PAC System Assessment Study	50			50					

cont'd

**Lake Huron Primary Water Supply System
2018 Budget
2018 Capital Plan with Forecast for 2019 to 2027
(\$000's)**

		Project Total	Prior Years Budget	2017 Approved Budget	2018 Proposed Budget	2019	2020	2021	2022	2023 to 2027
#	Description									
Proposed	Raw Water Flowmeter Replacement	125			125					
Proposed	RMF Settling Plate Study	50			50					
Proposed	Roof Replacement	200			200					
Proposed	Sluice Gate Repairs	150			150					
Proposed	Travelling Screen #1 Replacement	500			500					
Proposed	Review Inactivation Control Strategy and UV Upgrade	30			30					
Proposed	Hydraulic/Transient Model Update & Transient Monitoring	500					100	300	100	
Proposed	McGillivray Electrical Upgrades	4,075				400		3,675		
Planned	Building Repairs	50				50				
Planned	Flocculator Walking Beam Rehab	200						200		
Planned	LL Building - Curtain Wall/Clearstory Window Replacement	156						156		
Planned	LL Building - Roofing	572						572		
Planned	LL, HL, BW Pump Refurbishment	390				390				
Planned	LL/Clearwell Sluice Gate Replacement	260						260		
Planned	McGillivray Pumps & Valves Refurbishment	3,842							3,842	
Planned	PAC Feed/Transfer Pump System Replacement	715						715		
Planned	Pump Station #3 Chlorinator	100				100				
Planned	Source Water Protection Assessment	50				50				
Planned	Pre-treatment System Modifications	1,000						1,000		
Planned	Crop Yield Monitoring - 2012 Rupture	90				90				
Planned	Crop Yield Monitoring - 2014 Pipeline Twinning	240						240		
		\$ 32,625	\$ 800	\$ 1,810	\$ 2,625	\$ 3,205	\$ 6,535	\$ 9,418	\$ 6,327	\$ 1,905

Notes:

(1) Capital account for Board contributions to maintenance projects undertaken by the operating authority.

Lake Huron Primary Water Supply System
2018 Budget
Source of Financing
(\$000's)

Funding Source	2017 Approved Budget	2018 Proposed Budget	2019	2020	2021	2022
Asset Replacement Reserve Fund	1,240	2,189	1,715	1,951	5,562	6,223
Capital Reserve Fund	320	436	1,490	4,584	3,856	104
Emergency Reserve Fund	250		-	-	-	-
Debenture	-		-	-	-	-
Other Funding Sources	-		-	-	-	-
Total Capital Funding	\$ 1,810	\$ 2,625	\$ 3,205	\$ 6,535	\$ 9,418	\$ 6,327

**Lake Huron Primary Water Supply System
2018 Budget
Asset Replacement Reserve Fund Analysis and Continuity Schedule
(\$000's)**

Asset Replacement Reserve Fund ⁽¹⁾	Actual	Projected					
	2016	2017	2018	2019	2020	2021	2022
Reserve Fund Opening Balance	15,220	16,032	8,427	8,907	9,780	10,448	7,496
Sources:							
Current Year Operating Contributions	3,500	2,805	2,500	2,421	2,439	2,450	4,171
Proceeds from Sale of Assets							
Transfer from Capital Reserve Fund							
Net Interest Earnings - 1.8% ⁽²⁾	258	220	169	167	180	160	116
Total Sources	\$ 18,978	\$ 19,057	\$ 11,096	\$ 11,495	\$ 12,399	\$ 13,058	\$ 11,783
Uses:							
Total Lifecycle Capital Projects	293	1,240	2,189	1,715	1,951	5,562	6,223
Less: Other Funding Sources							
Less: Debenture Requirement							
Net Current Year Fund Draws ⁽³⁾	293	1,240	2,189	1,715	1,951	5,562	6,223
Prior Years Capital Expenditures	2,653	9,390					
Total Uses	\$ 2,946	\$ 10,630	\$ 2,189	\$ 1,715	\$ 1,951	\$ 5,562	\$ 6,223
Reserve Fund Ending Balance	\$ 16,032	\$ 8,427	\$ 8,907	\$ 9,780	\$ 10,448	\$ 7,496	\$ 5,560

Notes:

(1) The Asset Replacement Reserve Fund was established in 2008 to fund projects of a lifecycle nature to maintain existing levels of service and has an average annual target ending balance of \$7.5M.

(2) Projected net interest earnings based on an average rate of anticipated sources and uses of funds.

(3) Drawdowns are based on full/committed capital needs and not intended to project the actual cash flow of funds being utilized in a particular year.

**Lake Huron Primary Water Supply System
2018 Budget
Capital Reserve Fund Analysis and Continuity Schedule
(\$000's)**

Capital Reserve Fund ⁽¹⁾	Actual	Projected					
	2016	2017	2018	2019	2020	2021	2022
Reserve Fund Opening Balance	2,137	5,876	9,015	12,564	15,006	14,308	14,269
Sources:							
Current Year Operating Contributions	3,721	3,688	3,793	3,686	3,624	3,563	1,498
Net Interest Earnings - 1.8% ⁽²⁾	39	135	192	246	261	255	269
Total Sources	\$ 5,897	\$ 9,699	\$ 13,000	\$ 16,496	\$ 18,891	\$ 18,126	\$ 16,036
Uses:							
Total System Improvement & Growth Projects		320	436	1,490	4,584	3,856	104
Less: Other Funding Sources							
Less: Debenture Requirement							
Net Current Year Fund Draws ⁽³⁾	-	320	436	1,490	4,584	3,856	104
Prior Years Capital Expenditures ⁽³⁾	21	364					
Transfer to Asset Replacement Reserve Fund							
Total Uses	\$ 21	\$ 684	\$ 436	\$ 1,490	\$ 4,584	\$ 3,856	\$ 104
Reserve Fund Ending Balance	\$ 5,876	\$ 9,015	\$ 12,564	\$ 15,006	\$ 14,308	\$ 14,269	\$ 15,933

Notes:

(1) The Capital Reserve Fund was established to fund projects of a growth nature, enhancing levels of service, or address issues which are regulatory or safety in nature.

(2) Projected net interest earnings based on an average rate of anticipated sources and uses of funds.

(3) Drawdowns are based on full capital needs and not intended to project the actual cash flow of funds in a particular year.

**Lake Huron Primary Water Supply System
2018 Budget
Emergency Reserve Fund Analysis and Continuity Schedule
(\$000's)**

Emergency Reserve Fund ⁽¹⁾	Actual	Projected					
	2016	2017	2018	2019	2020	2021	2022
Reserve Fund Opening Balance	353	676	1,936	1,971	2,006	2,042	2,079
Sources:							
Current Year Operating Contributions	400	1,700					
Net Interest Earnings - 1.8% ⁽²⁾	5	10	35	35	36	37	37
Total Sources	\$ 758	\$ 2,386	\$ 1,971	\$ 2,006	\$ 2,042	\$ 2,079	\$ 2,116
Uses:							
Current Year Capital Expenditures ⁽³⁾		250					
Prior Years Capital Expenditures ⁽³⁾	82	200					
Total Uses	\$ 82	\$ 450	\$ -	\$ -	\$ -	\$ -	\$ -
Reserve Fund Ending Balance	\$ 676	\$ 1,936	\$ 1,971	\$ 2,006	\$ 2,042	\$ 2,079	\$ 2,116

Notes:

(1) The Emergency Reserve Fund was established in 2011 to fund projects that arise on an emergency basis. This funding is to be in place outside of the Capital and Asset Replacement Reserve Funds and their defining guidelines. Contributions will be capped once the reserve fund balance reaches \$2.0 million.

(2) Projected net interest earnings based on an average rate of anticipated sources and uses of funds.

(3) Drawdowns are based on full capital needs and not intended to project the actual cash flow of funds in a particular year.

Lake Huron Primary Water Supply System Flow and Financial Analysis Summary

(\$000's)

Factors	Actual	Approved	Projected					
	2016	2017 Budget	2017	2018	2019	2020	2021	2022
Rate Increase ⁽¹⁾	4.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Total Flow m ³	45,350,636	41,829,500	44,905,300	41,110,000	40,607,521	40,111,279	39,621,225	39,137,287
Total Water Rate \$/m ³	0.4568	0.4705	0.4705	0.4846	0.4992	0.5141	0.5296	0.5454
Flow Volume Revenues	20,726	19,680	21,128	19,923	20,270	20,623	20,982	21,347
Other Revenue	49	20	48	20	20	20	20	20
Total Revenue	\$ 20,775	\$ 19,700	\$ 21,176	\$ 19,943	\$ 20,290	\$ 20,643	\$ 21,002	\$ 21,367
Operating Expenses ⁽²⁾	10,250	9,551	10,074	10,402	10,896	11,293	11,705	12,419
Administrative Expenses	1,581	1,784	1,540	1,869	1,906	1,906	1,906	1,906
Debt Servicing Costs ⁽³⁾	1,323	1,369	1,369	1,379	1,381	1,381	1,378	1,373
Total Operating & Administrative Expenses	\$ 13,154	\$ 12,704	\$ 12,983	\$ 13,650	\$ 14,183	\$ 14,580	\$ 14,989	\$ 15,698
Asset Replacement Reserve Fund Contributions	3,500	2,708	2,805	2,500	2,421	2,439	2,450	4,171
Capital Reserve Fund Contributions	3,721	3,688	3,688	3,793	3,686	3,624	3,563	1,498
Emergency Reserve Fund Contributions	400	600	1,700	-	-	-	-	-
Total Expenses	\$ 20,775	\$ 19,700	\$ 21,176	\$ 19,943	\$ 20,290	\$ 20,643	\$ 21,002	\$ 21,367

Notes:

(1) Rate increases recommended are consistent with the approved Financial Plan which provide for prudent financial planning to accommodate inflation, new capital requirements and adequate reserve fund balances.

(2) Operating expense projections reflect annual inflationary increases and anticipated adjustments, in accordance with the service agreement with the contracted operating authority.

(3) Debenture Requirements:

- Debt authorized (2007) for the PLC & SCADA Systems Upgrade (LH1330) in the amount of \$1.75M was issued in 2012 with payments beginning in 2013 (all-in interest rate of 2.8% for a 10 year term).
- Debt authorized (2006) for the Backup Generator (LH1326) in the amount of \$1.5M was issued in 2013 with payments beginning in 2014 (all-in interest rate of 3.3% for a 10 year term).
- Debt authorized for the Residue Management Plant (LH1902) in the amount of \$16M was partially issued in 2015 (\$7M) with payments beginning in 2016 (all-in interest rate of 1.9% for a 10 year term). It is not expected that any further debt will be required for this project.
- Prior year debt authorized for the Huron Transmission Main Twinning (LH1305) in the amount of \$4M was partially issued in 2015 (\$1.665M) with payments beginning in 2016 (all-in rate of 1.9% for a 10 year term). Further debt issuance in 2017 in the amount of \$0.4M and payments beginning in Sept/17 (all-in rate of 2.48% for a 10 year term). It is not expected that any further debt will be required for this project.
- Rates noted above could change depending upon market conditions at the time of debt issuance.