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MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
Notice of Meeting on **Tuesday, September 20, 2016 at 9:30 am**
Goldstream Conference Room, 479 Island Highway, Victoria, BC

J. Petrie (Chair)
Director D. Howe

M. Steel
C. Rodash

K. Heslop
A. Wilson

J. Gill

AGENDA

1. Approval of Agenda
2. Adoption of Minutes of June 14, 2016
3. Wastewater Infrastructure Projects – Phase 1 Update (staff report)
4. Water and Wastewater Operations Report – July/August, 2016 (information report)
5. 2017 Operating and Capital Budgets (staff report)
6. Schooner WWTP – Request for Expression of Interest to Pilot Treatment Technologies (staff report)
7. Review of Action List – No current Task/Actions
8. Correspondence
 - Letter - Jerry Folk
9. New Business
10. Adjournment

To ensure quorum, advise Lorrie Siemens 250.360.3087 or lsiemens@crd.bc.ca if you cannot attend.



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Minutes of a Meeting of the Magic Lake Estates Water and Sewer Committee
Held Tuesday, June 14, 2016 in the Main Conference Room, 479 Island Highway, Victoria, BC

PRESENT: **Committee Members:** J. Petrie (Chair), A. Wilson, K. Heslop, J. Gill, Alternate CRD Director P. LeBlond, C. Rodash
Staff: M. Cowley, Senior Manager, Infrastructure Engineering, S. Mason, Manager, Water Engineering and Planning, C. Moch, Manager, Water Quality (for Item 7), L. Siemens (recorder)
GUEST: Robert Macquisten, Stewart, McDannold, Stuart Barristers & Solicitors (for Item 4)
ABSENT: Director D. Howe, M. Steel

The meeting was called to order at 9:30 a.m.

1. Approval of Agenda

MOVED by K. Heslop, **SECONDED** by C. Rodash,
That the agenda be approved as distributed.

CARRIED

2. Adoption of Minutes of April 19, 2016

The following changes were made to the minutes under New Business:

Director Howe did not participate in the voting for funding for the Community Resource Centre. The minutes will reflect that Director Howe "abstained"

MOVED by A. Wilson, **SECONDED** by K. Heslop,
That the minutes of April 19, 2016 be adopted as amended.

CARRIED

3. Adoption of Minutes of May 3, 2016

MOVED by C. Rodash, **SECONDED** by K. Heslop,
That the minutes of May 3, 2016 be adopted as distributed.

CARRIED

4. Motion to Close the Meeting

MOVED by P. LeBlond, **SECONDED** by C. Rodash,
That the Magic Lake Estates Water and Sewer Committee close the meeting in accordance with the Community Charter, Part 4, Division 3, 90.1(e) *the acquisition, disposition or expropriation of land or improvements, if the council considers that disclosure could reasonably be expected to harm the interests of the municipality.*

And

That the Magic Lake Estates Water and Sewer Committee close the meeting in accordance with the Community Charter, Part 4, Division 3, 90.(1)(g) *litigation or potential litigation affecting the municipality.*

CARRIED
Wilson Opposed
Gill Opposed

The Magic Lake Estates Water and Sewer Committee closed the meeting at 9:40 a.m. and resumed in open session at 11:13 a.m.

5, Wastewater Infrastructure Projects – Phase 1 Update

M. Cowley spoke to the report.

MOVED by K. Heslop, **SECONDED** by P. LeBlond,
That the Magic Lake Estates Water and Sewer Committee receive the report for information.

CARRIED

6. Water and Wastewater Operations Report – April & May 2016

M. Cowley spoke to the report.

In addition to the report, M. Cowley noted that there have been more water connections to the service area this year than average.

C. Moch joined the meeting at 11:36 a.m.

MOVED by K. Heslop, **SECONDED** by A. Wilson,
That the Magic Lake Estates Water and Sewer Committee receive the report for information.

CARRIED

7. Water Quality Report

C. Moch provided a verbal report. The following topics were addressed:

Water Quality Sampling

In March and April, samples were collected weekly and tested for chemistry, biological, and physical parameters.

Water Quality Monitoring

Testing indicates the treated water to be in compliance with Canadian Drinking Water Guidelines. Some inquiries were received of swampy odours and strong chlorine taste. Spot flushing was done to improve the water quality in those areas.

8. Review of Action List

The action list was reviewed and updated.

Items Arising from Action List

- The report on the wastewater pilot project was presented at the April 19, 2016 meeting. The closing date for the RFEI is June 20, 2016. The committee agreed to extend the closing date to July 4 to accommodate Boydel's request for an extension.
- Negotiations for R/W over dam with property owners was discussed in the closed portion of this meeting (see Rise and Report below).

Rise and Report

Access to Magic Lake Dam for Repairs and Maintenance, Pender Island

It was approved that the Magic Lake Estates Water and Sewer Committee support staff's proposed direction to secure tenure agreements onto private lands at 3804 and 3806 Pirates Road, Pender Island and legally described as *Lots 155 & 156, Section 8, Cowichan District, Plan VIP17181, PIDs 003-909-417 & 003-906-981* in order to operate, maintain and repair the northwest Magic Lake Dam.

9. New Business

Dry Fire Hydrants

J. Petrie provided a document titled "A Guide to Planning and Installing Dry Fire Hydrants" from the Wisconsin Department of Natural Resources. A discussion took place on a suggestion to install dry hydrants at Buck Lake and Magic Lake for firefighting purposes.

J. Gill left the meeting at 12:07 p.m.

The committee agreed, in principle, with the concept that the Pender Island Fire Department could use water from the lakes for firefighting purposes with the details and costs for installing dry hydrants to be determined by the Fire Commission and presented to the Magic Lake Estates Water and Sewer Committee for consideration.

Water Conservation

Stage 2 water restrictions have been implemented. Notifications will be posted on the CRD website, information will be provided with the second quarter billing and signs will be posted at Magic Lake Estates notice board.

10. Adjournment

MOVED by P. LeBlond, **SECONDED** by K. Heslop,
That the meeting be adjourned at 12:25 p.m.

CARRIED



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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, SEPTEMBER 20, 2016**

SUBJECT WASTEWATER INFRASTRUCTURE PROJECTS – PHASE 1 UPDATE

ISSUE

To provide an update to the Magic Lake Estates Water and Sewer Committee on the Phase 1 wastewater projects.

BACKGROUND

At the October 13, 2015 committee meeting, the committee directed staff to proceed with an Alternative Approval Process to borrow up to \$1.53 million undertake a number of wastewater infrastructure projects identified as Phase 1. The Phase 1 projects include: replacement of the Chart Drive septic system, replacement of sewer pipe along Buck Lake and Privateers Road, commence with an inflow and infiltration reduction program, and complete a condition assessment of the Schooner wastewater treatment tanks. Phases 2 and 3 of the wastewater renewal program are scheduled over many years in the near future and include: annual pipe replacement, pump stations renewal, and wastewater treatment plant upgrades.

Since the June 14, 2016 committee meeting, good progress has been made on the Phase 1 projects, especially the Chart Drive septic replacement, as follows:

- All of the off-site work including the forcemain pipe, manhole tie-in, paving etc. is 99% complete.
- On-site works, (on Lot 66, Chart Drive), completed to date include: waterproofing the existing concrete tank, installing the new FRP tank, replaced the discovered broken inlet pipe, and poured the concrete slab for the relocation of the electrical shed.
- Overall, the project is on track to being substantially complete by late September/early October, and it is within the approved project budget.

Next Steps

The next steps for the Phase 1 projects include commissioning the Chart Drive pump station and commencing with detailed project plans for the other three projects.

Based on initial planning and coordination with other capital projects, the tentative schedule for the other projects are estimated as follows:

Project	Start	Completion
Sewer Pipe Replacement along Buck Lake and Privateers Road	Q3 2016	Q4 2017
Inflow & Infiltration Reduction Program	Q3 2016	Q3 2018 *
Schooner Tank Assessment	Q3 2016	Q2 2017

* Note: report to be completed by 2018 after enough dry and wet weather flow data has been collected to confirm any I&I reduction results.

Crown Grant Acquisition of Lot 64 on Chart Drive:

Capital Regional District (CRD) staff have been proceeding with the Crown Grant application for Lot 64 from the Ministry of Forests, Lands and Natural Resource Operations. Acquisition of Lot 64 will enable better access to service the new Chart Drive Facility and allow for future upgrades when required. However, funding is required to complete the acquisition of Lot 64 as the following tasks need to be undertaken: a land appraisal, potential legal survey, processing time, and other fees. Staff have estimated the approximate costs to be up to \$4,000, and so far about \$2,000 has been expended to date on application fees, advertising, staking notices, etc. Staff have been informally requesting approval from the committee to undertake this work, but would now like to obtain formal direction.

ALTERNATIVES

Alternative 1

That the Magic Lake Estates Water and Sewer Committee accept this report for information, and approve funding up to \$4,000 from the Chart Drive replacement capital project to complete the crown grant acquisition of Lot 64.

Alternative 2

That the Magic Lake Estates Water and Sewer Committee request additional information.

IMPLICATIONS

Alternative 1 – Staff will continue with advancement of the Phase 1 projects and the crown grant acquisition of Lot 64. The budget for the Chart Drive replacement project includes contingency allowances as there are sufficient funds remaining in the contingency to fund this expense.

Alternative 2 – Staff will address any requests for additional information at a subsequent Committee meeting including any financial implications of discontinuing with the crown grant application.

CONCLUSION

The planning and execution of the Phase 1 Wastewater Infrastructure Projects is proceeding as planned. The AAP was successful and the construction of the Chart Drive Replacement project will be completed on time and within budget. The other Phase 1 projects will commence later this year and the process for the crown grant acquisition of Lot 64 on Chart Drive is progressing.

RECOMMENDATION

That the Magic Lake Estates Water and Sewer Committee accept this report for information, and approve funding up to \$4,000 from the Chart Drive replacement capital project to complete the crown grant acquisition of Lot 64.

Dale Puskas, P.Eng.
Project Engineer
Infrastructure Engineering
Integrated Water Services

Malcolm Cowley, P.Eng.
Manager, Wastewater Engineering & Planning
Integrated Water Services
Concurrence

Ian Jesney, P.Eng.
Sr. Manager, Infrastructure Engineering
Integrated Water Services
Concurrence

Ted Robbins, B.Sc., C.Tech.
General Manager, Integrated Water Services
Concurrence

DP/MC:ls



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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, SEPTEMBER 20, 2016**

SUBJECT **WATER AND WASTEWATER OPERATIONS REPORT – JULY/AUGUST 2016**

PURPOSE

The purpose of this report is to provide the Magic Lake Estates Water and Sewer Committee general information regarding significant operational activities carried out for the water and wastewater service.

BACKGROUND

Daily operations and maintenance for the Magic Lake Estates water and wastewater systems is performed by Capital Regional District (CRD) on-island operations staff. Additional operational support is also provided by CRD Saanich Peninsula operations staff as well as CRD Core Area electrical and mechanical maintenance staff when required.

REPORT

During the months of July and August 2016, staff attended to the regular operational and maintenance activities for the water and wastewater service. The activities listed below are intended to capture significant regular maintenance undertakings, capital project activities and unplanned emergency events.

Table 1: Wastewater Service Activities

TASK	DATE	NOTES
Assistance with the Chart Drive Pump Station capital project	July/August 2016	Operations staff provided support as required with the capital project.
Emergency response to Schooner Wastewater Treatment Plant	July/August 2016	Several emergency response calls due to ragging of pumps at the Schooner wastewater treatment plant during this period.
Chart Drive septage hauling and disposal	Ongoing	Ongoing operations to haul and dispose of Chart Drive septage. Approximately 7 hours per week of staff time being expended.

Table 2: Water Service Activities

TASK	DATE	NOTES
Water service connection installation	July 14, 2016	2601 Shoal Road property was connected to the water system. The work is fully funded by the property owner.
Chlorination failure	July 29, 2016	Emergency response to a low chlorine residual alarm at the water treatment plant. The chlorine dosing system piping was found to have failed

TASK	DATE	NOTES
Chlorination failure (cont'd)		and as a result chlorine was not being injected into the water. As a precaution additional water system flushing was conducted to ensure chlorine residuals within the water distribution system were within regulatory levels.
Power failure event	July 30, 2016	Local power failure resulted in an emergency response. Staff attended to the Buck Lake raw water pump station and the water treatment plant as a result of many alarm conditions.
Uninterrupted power supply (UPS) repair	August 3, 2016	A UPS at the water treatment plant failed and required replacement. The UPS provides power to electronic equipment in the event of hydro interruption at the facility.
Trenching and installation of underground electrical connection to storage building	August 22, 2016	As part of an approved 2016 capital project, operations staff is installing electrical service to the storage building located next to the water treatment facility.
Water service connection installation	August 24, 2016	12614 Dory Way property was connected to the water system. The work is fully funded by the property owner.
Water service connection installation	August 29, 2016	2658 Galleon Way property was connected to the water system. The work is fully funded by the Magic Lake Estates Water Service as the water service connection fee was prepaid in 1983.

RECOMMENDATION

That the Magic Lake Estates Water and Sewer Committee receive this report for information.

Dan Robson, ASCT
Manager, Saanich Peninsula and Gulf
Islands Operations

Matt McCrank, MSc., P.Eng.
Senior Manager, Infrastructure Operations
Concurrence

Ted Robbins, B.Sc., C.Tech.
General Manager, Integrated Water Services
Concurrence

DR:ln



Making a difference...together

REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE MEETING OF TUESDAY, SEPTEMBER 20, 2016

SUBJECT 2017 OPERATING AND CAPITAL BUDGETS

ISSUE

In accordance with Bylaw No. 2339, this report provides a synopsis of the 2017 draft operating and capital budget, highlighting significant proposed changes related to operational expenditures, debt charges, capital expenditures and revenue for the Magic Lake Estates Water and Sewer local service.

BACKGROUND

There are three individual service budgets that are presented in this report which are under the jurisdiction of the Magic Lake Estates Water and Sewer Committee including the following:

1. Water Local Service – pertains to the operation and capital plan for the entire water service area.
2. Water (2) Local Service – was created for the sole purpose of recovering debt costs for a specific watermain replacement project that was completed in 2003.
3. Sewer Local Service – pertains to the operation and capital plan for the sewer service area.

WATER LOCAL SERVICE

2016 Estimated Actual Revenue and Expense

The estimated actual operating expense is projected to be \$700 under budget at year end as a result of:

- Lower than budgeted expenditures for:
 - repairs and maintenance
 - electricity
 - supplies
 - other operating expenses
- Higher than budgeted expenditures for:
 - allocations
 - operating labour charges
- Unspent contingency.

The estimated actual operating revenue is projected to be \$3,110 less than budget as a result of lower than expected water sale revenue which was partially offset by sales of equipment.

The transfer to capital reserves is proposed to be decreased by \$2,410 in order to balance the year-end budget.

2017 Operating Expense

A net decrease in the 2017 operating expenses of \$6,620 (-1.2%) is proposed.

This is primarily a result of decreases in:

- labour charges: \$24,640
 - The labour charge out rate in previous budgets included overhead charges related to vehicles. Vehicle overhead costs are now removed from the labour charge out rate and is now tracked separately as a “vehicle allocation” (\$18,020).
- contingency: \$10,000
 - now that a maintenance reserve has been established for the service, the contingency can be lowered as the maintenance reserves can also help support unplanned operational expenses.

And increases in:

- repairs and maintenance expenditures: \$1,350
- Allocations: \$18,370 – two of the largest differences that result in this increase are highlighted in the following two bullets:
 - Overhead charges related to vehicles were previously accounted for in the labour charge out rate. Vehicle costs are now removed from the labour rate and are now tracked and charged under a vehicle allocation (\$18,020)
 - An allocation for Southern Gulf Islands Administration is included in the budget. (\$1,200)
- water testing: \$260
- Electricity: \$670
- Supplies: \$740
- other operating expenses: \$430

2017 Debt/Reserves

Maintenance Reserve:

Maintenance reserves are used for the purchase equipment and supplies that are typically not replaced annually such as filter media, ultraviolet lamps and sensors and significant maintenance activities, such as raw water intake inspections and unforeseen operational repairs/expenses. It is proposed that transfers to the maintenance reserves of \$15,000 remain at 2016 amount. The maintenance reserve balance at the end of 2016 is projected to be \$60,000.

Capital Reserve Fund 1024:

The Capital Reserve Fund (CRF) is established in order to prepare for and fund anticipated future capital projects. It is proposed that the transfer to the CRF be increased from \$100,000 to \$103,970. The capital reserve fund balance at the end of 2016 is projected to be \$460,400.

Municipal Finance Authority (MFA) Debt

Between 2010 and 2013, \$2,560,000 was borrowed in order to fund capital projects. The interest rates on this debt are between 3.15% and 4.50%. The total cost of interest and principal payments in 2017 to service this debt will be unchanged from 2016 at \$219,650.

2017 Revenue (User Charge and Parcel Tax)

It is proposed that:

- Volumetric water rates remain at 2016 levels (these are additional consumption charges over and above the base SFE user charge fee). The rates are as follows:
 - \$0.00/m³ for 0 m³ - 50.0 m³
 - \$0.50/m³ for >50.0 m³ to 80 m³
 - \$1.00/m³ for >80 m³
- User charge remain at \$285,920. This will result in a rate per SFE of \$280.31, slightly lower than 2016 because five additional SFE's have been added to the service.
- Parcel tax of \$568,990 be maintained at 2016 level, based on 1,205 taxable folios and including the 5.25% surveyors tax fee, equates to \$496.98.

Capital Plan

The following capital work is planned for 2017:

Referendum - Funding for Future Projects (\$10,000)

The 2016 planning and public engagement session for future projects to communicate the need, rationale and costs of water system improvements to the customers has been carried over into 2017 and will be completed prior to commencing with the Referendum. Public engagement will also include the need, rationale and costs of future wastewater projects, so that customers can be informed on the total infrastructure replacement options and financial implications.

Capstan Way PRV Upgrade (\$100,000)

This PRV upgrade is being combined with the Signal Hill and Schooner PRV upgrades, that were approved in 2015-16, in order to gain design and construction efficiencies and minimize costs. The existing PRV stations are badly corroded and operating with pressures as high as 135psi. Failure could be very serious, with significant loss of water.

ISOPAC Storage and Handling (\$5,000)

Isopac is the name of a liquid chemical coagulant that is used in the water treatment process to help settle out particles to make water clearer. It is shipped to the treatment plant in 45 gallon drums which then has to be maneuvered onto a storage platform using a dolly. The existing process and layout presents a health and safety concern to the operators and the potential to damage equipment is high as the drums are maneuvered. It is proposed to assess options to improve the storage and handling of the drums in 2017 and to complete upgrades in 2018 that will protect plant equipment and improve worker safety.

Capital Project Forecast 2018-2021

A five-year capital and operating budget forecast is provided for information. Future capital expenditures will have to be funded by electoral area ascent with a referendum proposed in 2017.

The following five-year capital expenditures are proposed:

Buck Lake East Dam Remediation – 2018 (\$1,000,000)

The 2013 geotechnical report identifies a sand layer in the dam that may liquefy during an earthquake, leading to possible dam failure. The scope of this project is to complete remediation of the dam.

Replace Distribution Infrastructure, Phases 2, 3, 4 and 5 – 2018 (\$425,000), 2019 (\$450,000), 2020 (\$400,000) and 2021 (\$400,000)

The 2011 Water Distribution Review prepared by AECOM (Strategic Asset Management Plan) recommended a prioritized list of water main replacements; Phase 1 was completed in 2014 as part of the water treatment plant project. The next proposed phases include the following:

- Phase 2 - 534 metres of water main replacement on Schooner Way - Privateers Road for \$425,000 in 2018.
- Phase 3 - 559 metres of water main replacement on Chart Drive - Galleon Way for \$450,000 in 2019.
- Phase 4 - 477 metres of water main replacement on Galleon Way for \$400,000 in 2020.
- Phase 5 - 487 metres of water main replacement on Jolly Roger Crescent - Cutty Sark Crescent for \$400,000 in 2021.

Design Buck Lake and Magic Lake Adjustable Intakes – 2021 (\$25,000)

As directed by the committee, the 2015 Magic Lake Adjustable Intake project was closed and a new project was to be included in the capital plan process to replace both Magic Lake and Buck Lake intakes at the same time (when Buck Lake intake has reached the end of its life in 2021). This item is to complete the design of both intakes and complete a detailed construction cost estimate. The construction of the new intakes will occur in a subsequent year (2022).

WATER (2) LOCAL SERVICE

This service exists for the sole purpose of recovering debt costs for a water main replacement project completed in 2003. Once the debt is paid off in 2017, this service will cease to exist.

2016 Estimated Actual Revenue and Expense

The estimated actual operating expense is projected to be \$390 over budget as a result of higher than budgeted internal interest expense.

The estimated actual operating revenue is projected to be \$500 over budget due to higher than budgeted interest income.

This results in a projected year-end surplus of \$110. It is proposed to carry forward the year-end surplus as revenue in 2017.

2017 Operating Expense

An increase in the 2017 operating expense of \$250 is proposed to budget adequately for interest expense.

2017 Debt/Reserves

Municipal Finance Authority (MFA) Debt

In 2001, \$726,000 was borrowed and has been amortized over 15 years since that time. Therefore, it will be paid off in 2016. The remaining debt of \$1,498,900, borrowed in 2002, will be paid off in 2017. Therefore, debt servicing costs in 2017 will decrease by \$92,890 to \$78,080.

2017 Revenue (Parcel Tax)

It is proposed that:

- Parcel tax of \$160,290 be decreased to \$80,149. Based on 893 taxable folios and including the 5.25% surveyor's fee, the parcel tax per parcel equates to \$94.46 (a 50% decrease).

SEWER LOCAL SERVICE

2016 Estimated Actual Revenue and Expense

The estimated actual operating expense is projected to be \$69,750 over budget as a result of:

- Higher than budgeted expenditures for:
 - sludge hauling
 - grit & waste sludge disposal
 - allocations
 - supplies
 - labour charges
- Lower than budgeted expenditures for:
 - repairs and maintenance
 - electricity
 - other operating costs
 - unspent contingency

The estimated actual operating revenue is projected to be equal to the budgeted amount.

This results in a deficit of \$69,750, however when adjusted for lower than anticipated MFA debt servicing expenses of \$34,520 and lower anticipated debt reserve fund payment of \$7,850 the projected deficit is \$27,380.

In order to balance the year-end costs so that no deficit is carried forward to 2017, it is proposed that the 2016 transfer to the Capital Reserve Fund be reduced by \$27,380.

2017 Operating Expense

An increase in the 2017 operating expense of \$22,080 (5.2%) is proposed.

This is the result of increases in:

- sludge hauling: \$12,900
- grit & waste disposal: \$12,600
- repairs and maintenance: \$1,730

- allocations: \$16,220 – two of the largest differences that result in this increase are highlighted in the following two bullets:
 - Overhead charges related to vehicles were previously accounted for in the labour charge out rate. Vehicle costs are now removed from the labour rate and are now tracked and charged under a vehicle allocation (\$13,700)
 - An allocation for Southern Gulf Islands Administration is included in the budget. (\$1,200)
- Electricity: \$830
- Supplies: \$210
- other operating expenses: \$120

And decreases in:

- labour charges: \$19,750
 - The labour charge out rate in previous budgets included overhead charges related to vehicles. Vehicle overhead costs are now removed from the labour charge out rate and is now tracked separately as a “vehicle allocation” (\$13,700).
- Contingency: \$5,000
 - Now that a maintenance reserve has been established for the service, the contingency can be lowered as the maintenance reserves can also help support unplanned operational expenses.

2017 Debt/Reserves

2017 Maintenance Reserves:

Maintenance reserves are used for the purchase equipment and supplies that are typically not replaced annually such as ultraviolet lamps and sensors and significant maintenance activities, such as outfall inspections and unforeseen operational repairs/expenses.

It is proposed that transfers to the maintenance reserves be increased from \$5,000 to \$8,000. The increase is primarily the result of eliminating the operating contingency and to have sufficient funds to complete the outfalls inspections. The maintenance reserve balance at the end of 2016 is projected to be \$10,000.

2017 Capital Reserve Fund (CRF)

In 2016, the Committee approved the expenditure of \$115,000 from the capital reserve fund to fund costs related to the Chart Drive septic field project. In addition, \$77,240 was transferred from the Equipment Replacement Fund to the CRF. Taking these transactions into account, as well as interest that will be earned and the transfer from the operating budget during 2016, the CRF balance at the end of 2016 is projected to be \$72,710. It is proposed that \$48,930 be transferred to the CRF in 2017.

Equipment Reserve Fund (ERF)

As noted above, all of the equipment reserve funds were transferred into the CRF in 2016 as approved by the committee. The transferring of these funds into the CRF will help finance upcoming capital projects in order to minimize parcel tax increases. The ERF balance will remain at zero as no funds are proposed to be budgeted for the ERF in the future.

Municipal Finance Authority (MFA) Debt

Approval was obtained in April 2016 to borrow \$1,530,000 in order to fund four projects as part of the Phase 1 Wastewater Upgrades (including Chart Drive Replacement, Sewer Pipe Replacement along Buck Lake and Privateers Road, I&I Reduction Program, and Schooner WWTP Tank Assessment). \$745,000 will be borrowed in the fall of 2016 and the remaining \$785,000 will be borrowed in 2017. The estimated debt servicing costs for 2017 are \$176,320.

2017 Revenue (User Charge and Parcel Tax)

It is proposed that:

- User charge revenue remain unchanged at \$168,910, based on 623 SFE's, equating to \$271.12 per SFE.
- Parcel tax revenue be increased by \$173,400 to \$508,320 to fund new debt for the 2017 projects as noted below. Based on 714 taxable folios, and including the 5.25% surveyor's fee, this equates to \$749.31 per folio, an increase of \$255.61 from 2016.

2017 Sewer Capital Plan

The following capital work is planned for 2017:

Schooner WWTP Blower & Electrical Room Roof Replacement: (\$15,000)

The roof for the Schooner WWTP blower and electrical room requires replacement due to age and condition. The scope of this project is to replace the roof.

Phase 2 WW Renewal Projects – Public Engagement & Funding Approval: (\$25,000)

To engage the residents of Magic Lake Estates on upcoming projects, an open house will be held to discuss upcoming wastewater and water projects and the approval process required to borrow funds. The budget for this project is for staff time, presentation materials, notifications, advertisements, open house costs, and referendum costs.

Schooner Outfall Protection: (\$30,000)

The protective concrete cap (armour) over the outfall pipe has eroded away along the beach shoreline. The armour protects the pipe from becoming damaged by logs and rocks, etc. that wash up onto the shore, and if the pipe breaks wastewater effluent would discharge onto the beach. The budget for this project is for design, permitting/approvals, notification and construction of a new concrete cap.

Forecast 2017-2021

A five-year capital and operating budget forecast is provided for information.

The following capital projects are proposed:

Schooner & Cannon Outfall Inspections – 2018 (\$17,000)

Under the Ministry of Environment's registered discharge permit, the Schooner & Cannon WWTPs outfalls are required to be inspected every 3 years. The last inspection was undertaken in the 2014. Funds from the maintenance reserve will be used to retain a consultant to conduct an inspection of the outfalls.

Annual Pipe Replacement – 2019 (\$512,000)

Much of the wastewater collection system is comprised of asbestos cement (AC) pipe ranging in age up to 50 years old. AC pipe, depending on the soil conditions, can lose structural integrity leading to inflow and infiltration. Funding is required to replace pipe that is undersized or in poor condition.

Upgrade 5 Lift Stations – 2019 (\$1,000,000)

The 2012 Stantec assessment report identified that the Masthead, Galleon, Cutlass, Capstan and Buccaneers pump stations pumps, pipes and valving were in need of replacement due to age and condition. This project is for replacement of the pumps, pipes and valving at the 5 pump stations.

Schooner Lift Station Upgrades – 2020 (\$557,000)

The Schooner Lift Station is past its serviceable life – the pumps, process piping and valves, pump lifting rails and electrical all have to be replaced. Additionally, confined space entry is required to isolate the pump station. The budget for this project is for design and the upgrades required for the Schooner Lift Station.

Replace Cannon WWTP with Pump Station and Forcemain – 2021 (\$1,826,000)

The Canon wastewater treatment plant is nearing the end of its design life and is subject to overloading during heavy rainfall events which has resulted in numerous marine discharges that have exceeded the Ministry of Environment's discharge permit. In addition, the site is fully built out and there is no more room for expanding the plant. The 2012 Stantec report recommends replacement of the treatment plant with a new pump station and forcemain that would direct the wastewater towards Schooner WWTP.

Schooner Clarifier and Aeration Tanks – 2021 (\$2,056,000)

The Schooner wastewater treatment plant is subject to overloading during heavy rainfall events, which has resulted in numerous marine discharges that have exceeded the Ministry of Environment's discharge permit. The budget for this project is for design and construction of a new clarifier and aeration tanks.

RECOMMENDATIONS

That the Magic Lake Estates Water and Sewer Committee recommend that the CRD Board:

Water

1. Approve the 2017 operating and capital budget for the Magic Lake Estates Water Service as presented;
2. Authorize the 2017 Parcel Tax of \$496.98 and User Charge of \$280.31 for the Magic Lake Estates Water Service;
3. Balance the Magic Lake Estates Water Service 2016 actual revenue and expense on the 2016 transfer to the capital reserve fund;

Water (2)

4. Approve the 2017 operating for the Magic Lake Estates Water (2) Service as presented;
5. Authorize the 2017 Parcel Tax of \$94.46 for the Magic Lake Estates Water (2) Service;
6. Balance the Magic Lake Estates Water (2) Service 2016 actual revenue and expense on the 2017 Parcel Tax;

Sewer

7. Approve the 2017 operating and capital budget for the Magic Lake Estates Sewer Service as presented;
8. Authorize the 2017 Parcel Tax of \$749.31 and User Charge of \$271.12 for the Magic Lake Estates Sewer Service; and
9. Balance the Magic Lake Estates Sewer Service 2016 actual revenue and expense on the 2016 transfer to the capital reserve fund.

Ian Jesney, P.Eng.
Sr. Manager, Infrastructure Engineering
Integrated Water Services

Matthew McCrank, P.Eng.
Sr. Manager, Infrastructure Operations
Integrated Water Services

Rianna Lachance, B.Com., CPA, CA
Manager, Financial Planning & Analysis
Financial Services

Ted Robbins, B.Sc., C Tech.
General Manager, Integrated Water Services
Concurrence

DR/SM/MC/PD:ls
Attachments: 3

CAPITAL REGIONAL DISTRICT

2017 Budget

Magic Lake Estates Water (Pender)

Committee Review

Compiled and Presented by CRD Finance

Sep 2016

Page 1

Service: 2.630 Magic Lake Estates Water (Pender) **Committee:** Electoral Area Services

DEFINITION:

LSA -1 To provide and operate water supply and distribution facilities for the Magic Lake Estates Water System. Specified Area on North Pender Island. Bylaw No. 1874 (June 11, 1991).

PARTICIPATION:

Local Service Area # 1 - D(764) LSA #9.

MAXIMUM LEVY:

Greater of \$160,000 or \$3.50 / \$1,000 of actual assessed value of land and improvements. To a maximum of \$1,151,419

MAXIMUM CAPITAL DEBT:

AUTHORIZED:	LA Bylaw No. 3633 (Nov 2009).	\$ 2,560,000
BORROWED:	SI Bylaw 3677 (Feb 2010).	\$ (723,000)
BORROWED:	SI Bylaw 3769 (Feb 2011).	\$ (250,000)
BORROWED:	SI Bylaw 3850 (Aug 2012).	\$ (559,500)
BORROWED:	SI Bylaw 3882 (Apr 2013).	\$ (1,002,500)
BORROWED:	SI Bylaw 3910 (July 2013).	\$ (25,000)
REMAINING AUTHORIZATION:		<u>\$ 0</u>

COMMITTEE:

Magic Lake Estates Water & Sewer Committee established by Bylaw No. 1870 (November 28, 1990).

FUNDING:

Any deficiencies after user charge and/or frontage tax or parcel tax to be levied on taxable school assessments.

User Charge:

Annual charge per single family equivalency unit connected to the system.

The consumption charge for water will be the total volume of water metered to the water service connections, measured in cubic meters at the following rate: (BL3987 March 2015)

- Greater than 50 cubic metres - \$0.50 / cubic metre
- Greater than 80 cubic metres - \$1.00 / cubic metre
- LSA-1 Annual charge only on properties capable of being connected to the system.

Parcel Tax:

Turn on/Turn Off Fee: \$0 during normal working hours; \$25 outside of normal working hours

Connection Charges: Actual Engineering and Construction costs, plus 15% Administration costs. The minimum charge is \$500 - Bylaw No. 3987 (Mar 2015)

RESERVE FUND:

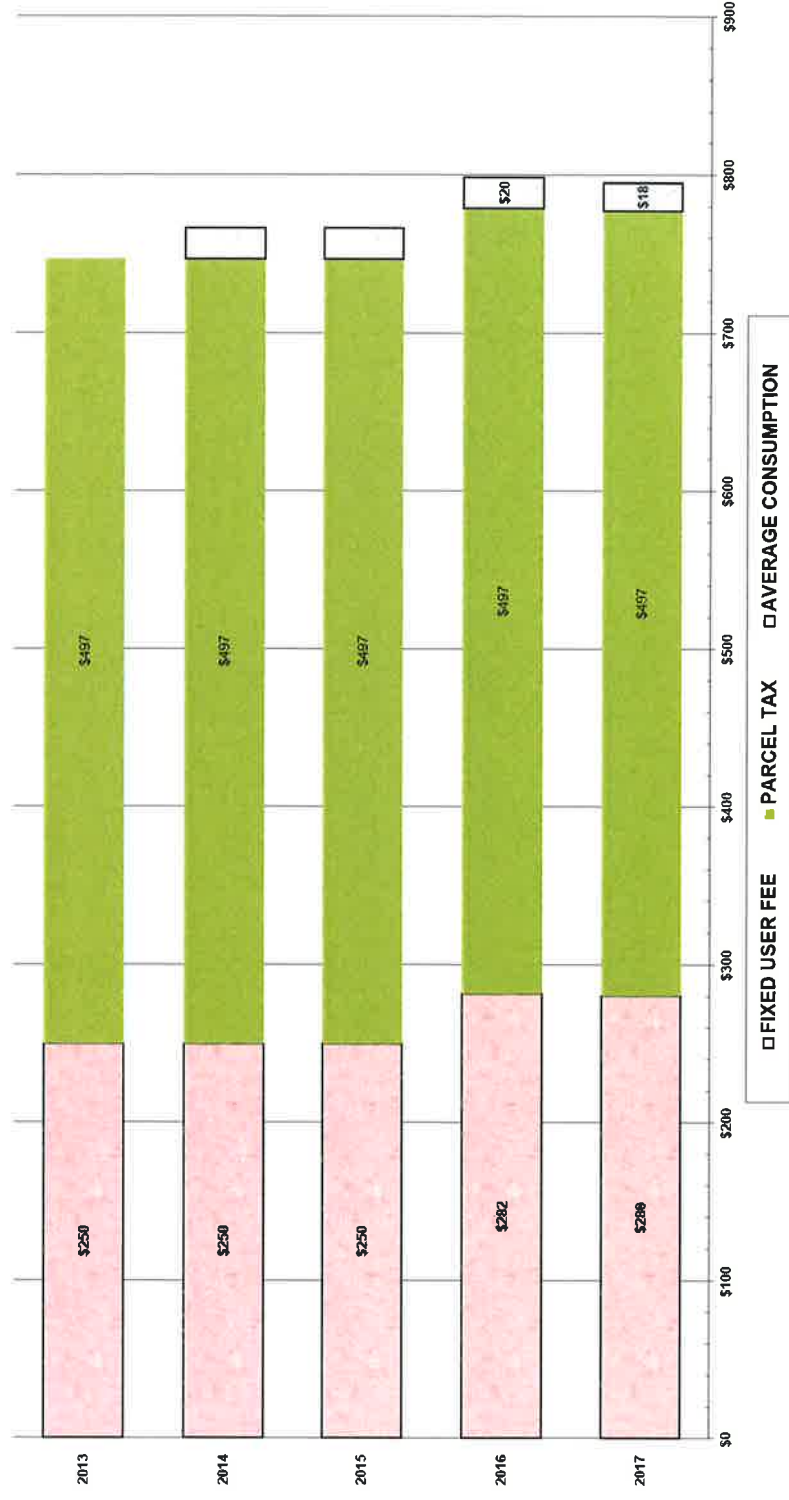
Magic Lake Estates - Water System Capital Reserve Fund. Bylaw No. 1498

Magic Lake Estates Water (Pender)	2016		BUDGET REQUEST				FUTURE PROJECTIONS			
	BOARD BUDGET	ESTIMATED ACTUAL	2017 CORE BUDGET	2017 ONGOING	2017 ONE-TIME	2017 TOTAL	2018	2019	2020	2021
OPERATING COSTS:										
Repairs & Maintenance	25,000	15,000	26,350	-	-	26,350	26,870	27,410	27,950	28,500
Allocations	34,490	35,290	54,060	-	-	54,060	55,120	56,220	57,350	58,500
Water Testing	17,500	17,500	17,760	-	-	17,760	18,120	18,480	18,850	19,230
Electricity	45,000	40,000	45,670	-	-	45,670	46,580	47,510	48,460	49,430
Supplies	49,500	49,300	50,240	-	-	50,240	51,230	52,250	53,290	54,350
Labour Charges	324,210	355,000	299,570	-	-	299,570	305,570	311,680	317,910	324,270
Contingency	15,000	-	10,000	-	-	10,000	10,200	10,400	10,610	10,820
Other Operating Expenses	38,610	36,520	39,040	-	-	39,040	39,830	40,620	41,440	42,290
TOTAL OPERATING COSTS	549,310	548,610	542,690	-	-	542,690	553,520	564,570	575,860	587,390
*Percentage Increase over prior year						-1.2%	2.0%	2.0%	2.0%	2.0%
DEBT/RESERVES										
Transfer to Maintenance Reserve	15,000	15,000	15,000	-	-	15,000	15,300	15,610	15,920	16,240
Transfer to Capital Reserve Fund	100,000	97,590	103,970	-	-	103,970	127,870	105,800	105,830	64,620
MFA Debt Reserve Fund	-	-	-	-	-	-	-	-	-	-
MFA Debt Principal	127,850	127,850	127,850	-	-	127,850	201,700	225,020	245,750	267,780
MFA Debt Interest	91,800	91,800	91,800	-	-	91,800	139,300	178,050	198,890	219,720
TOTAL DEBT / RESERVES	334,650	332,240	338,620	-	-	338,620	484,170	524,480	566,390	568,360
TOTAL COSTS	883,960	880,850	881,310	-	-	881,310	1,037,690	1,089,050	1,142,250	1,155,750
FUNDING SOURCES (REVENUE)										
Estimated balance C/F from 2016 to 2017	-	-	-	-	-	-	-	-	-	-
Balance C/F from 2015 to 2016	-	-	-	-	-	-	-	-	-	-
Sales - Water	(20,000)	(14,700)	(18,000)	-	-	(18,000)	(18,360)	(18,730)	(19,100)	(19,480)
Connection Charges	-	-	-	-	-	-	-	-	-	-
Lease Revenue	(8,100)	(8,100)	(8,100)	-	-	(8,100)	(8,260)	(8,430)	(8,600)	(8,770)
User Charges	(285,920)	(285,920)	(285,920)	-	-	(285,920)	(291,640)	(297,470)	(303,420)	(309,490)
Other Revenue	(950)	(3,140)	(300)	-	-	(300)	(310)	(320)	(330)	(340)
TOTAL REVENUE	(314,970)	(311,860)	(312,320)	-	-	(312,320)	(318,570)	(324,950)	(331,450)	(338,080)
REQUISITION - PARCEL TAX	(568,990)	(568,990)	(568,990)	-	-	(568,990)	(719,120)	(764,100)	(810,800)	(817,670)
*Percentage increase over prior year requisition						0.0%	28.4%	6.3%	6.1%	0.8%

Service: 2.630 Magic Lake Estates Water (Pender) Committee: Electoral Area Services

<u>Year</u>	<u>Taxable Folios</u>	<u>Parcel Tax</u>	<u>SFE's</u>	<u>User Charge**</u>	<u>Tax & Charges</u>	<u>Assessments \$(000's)</u>
2012	1,206	\$496.57	1,005	\$250.00	\$746.57	390,273
2013	1,206	\$496.57	1,008	\$250.00	\$746.57	356,311
2014	1,206	\$496.57	1,011	\$250.00	\$746.57	336,526
2015	1,206	\$496.57	1,012	\$250.00	\$746.57	327,129
2016	1,205	\$496.98	1,015	\$281.69	\$778.67	327,129
2017	1,205	\$496.98	1,020	\$280.31	\$777.29	328,977

CAPITAL REGIONAL DISTRICT MAGIC LAKE ESTATES WATER, #1 ONLY FUNDING ANALYSIS 2013-2017



Actual Costs 2013-2016, Projected 2017
Prepared by CRD Finance
09/14/2016

CAPITAL REGIONAL DISTRICT CAPITAL PLAN

CAPITAL BUDGET FORM

2017 & Forecast 2018 to 2021

Bold Project Description Denotes New Identified Projects

Service #:

2.630

Service Name:

Magic Lake Estates Water (Pender)

By Capital Expenditure											
	Capital Exp. Type	Capital Project Description	Asset Class	Funding Source	Carry Forward	2017	2018	2019	2020	2021	Total Project Budget
13-01	New	Magic Lake North Dam License Agreement	L	Res	10,000						10,000
14-01	Renewal	Magic Lake South Dam Safety Upgrade (siphon)	E	Res	15,000						39,000
15-01	Replacement	Signal Hill PRV	E	Res	30,000						50,000
16-01	Replacement	Buck Lake East Dam Detailed Design	E	Res	80,000						120,000
16-02	Renewal	Public Engagement for Future Projects	E	Res	10,000						10,000
16-03	Replacement	Schooner PRV Upgrade	E	Res	100,000						100,000
17-01	Renewal	Referendum - Funding for Future Projects	E	Res		10,000					10,000
17-02	Replacement	Capstan Way PRV Upgrade	E	Res		100,000					100,000
17-03	New	ISOPAC Storage and Handling	E	Res		5,000	10,000				15,000
18-01	Renewal	Buck Lake East Dam Remediation	E	Debt			1,000,000				1,000,000
18-02	Replacement	Replace Distribution Infrastructure-Phase 2	E	Debt			425,000				425,000
19-01	Replacement	Replace Distribution Infrastructure-Phase 3	E	Debt				450,000			450,000
20-01	Replacement	Replace Distribution Infrastructure-Phase 4	E	Debt					400,000		400,000
21-01	Replacement	Replace Distribution Infrastructure-Phase 5	E	Debt						400,000	400,000
21-02	Replacement	Design Buck Lake and Magic Lake Adjustable Intakes	E	Debt						25,000	25,000
											3,154,000
TOTAL ANNUAL CAPITAL EXPENDITURES						245,000	115,000	1,435,000	450,000	400,000	425,000
FIVE YEAR TOTAL (including carry-over)											3,070,000

Funding Source Codes	
Debt	= Debenture Debt (new debt only)
ERF	= Equipment Replacement Fund
Grant	= Grants (Federal, Provincial)
Cap	= Capital Funds on Hand
Other	= Donations / Third Party Funding
Res	= Reserve Fund
STLoan	= Short Term Loans

Asset Class	
L	- Land
E	- Engineering Structure
B	- Buildings
V	- Vehicles
Eq	- Equipment

Capital Expenditure Type	
New	Expenditure for new asset only
Renewal	Expenditure replaces an existing asset and extends the service ability or enhances technology in delivering that service
Replacement	Expenditure replaces an existing asset

Service: 2.630 Magic Lake Estates Water (Pender)		Committee: Electoral Area Services
13-01	<p>Magic Lake North Dam License Agreement</p> <p>This project was initially approved in 2013 and its purpose was to negotiate right-of-ways with two property owners to access a portion of the north dam that is on their properties. More recently, in 2016, the scope has been revised to acquire License Agreements with the land owners (instead of SRWs). This project will be completed in 2016.</p>	\$10,000
14-01	<p>Magic Lake South Dam Safety Upgrade (siphon)</p> <p>The 2012 dam safety review recommended installation of a siphon in order to drain the reservoir in a controlled manner in the event of an emergency. The design is complete and the next phase of the project will commence in 2016.</p>	\$35,000
15-01	<p>Signal Hill PRV</p> <p>Confined space PRV stations on the system (Signal Hill, Schooner, and Capstan Way) are badly corroded and operating with pressures as high as 135psi. Failure of could be very serious, with significant loss of water. This project is to replace the first station at Signal Hill.</p>	\$50,000
16-01	<p>Buck Lake East Dam Detailed Design</p> <p>The 2013 geotechnical report identifies a sand layer in the dam that may liquefy during an earthquake, leading to possible dam failure. This item is to complete detailed design and obtain regulatory approvals for the remediation option selected in the preliminary design stage. Also included in this item is engineering contract administration which will take place during the project.</p>	\$120,000
16-02	<p>Public Engagement for Future Projects</p> <p>Proposed planning and public engagement session for future projects to communicate the need, rationale and costs of water system improvements to the customers. It is proposed to combine this project with the engagement session for the wastewater projects too, in order to minimize engagement costs and provide the complete financial picture to customers.</p>	\$10,000
16-03	<p>Schooner PRV Upgrade</p> <p>Confined space PRV stations on the system (Signal Hill, Schooner, and Capstan Way) are badly corroded and operating with pressures as high as 135psi. Failure of could be very serious, with significant loss of water. This is to replace the second station at Schooner.</p>	\$100,000
17-01	<p>Referendum - Funding for Future Projects</p> <p>Upon completion of public engagement, a referendum is proposed to obtain elector assent to fund future capital projects. It is proposed to combine the referendum with the wastewater projects in order to minimize costs and provide the complete financial picture to customers. This budget item is for presentation materials, notifications, advertisements and other referendum costs.</p>	\$10,000
17-02	<p>Capstan PRV Upgrade</p> <p>Confined space PRV stations on the system (Signal Hill, Schooner, and Capstan Way) are badly corroded and operating with pressures as high as 135psi. Failure of could be very serious, with significant loss of water. This is to replace the third station at Capstan Way.</p>	\$100,000
17-03	<p>ISOPAC Storage and Handling</p> <p>This budget item is to improve the handling and storage of ISOPAC chemical drums to prevent damage to plant equipment and improve worker safety. An assessment will be completed in 2017 for \$5,000 and upgrades are proposed in 2018 for \$10,000.</p>	\$15,000
18-01	<p>Buck Lake East Dam Remediation</p> <p>The 2013 geotechnical report identifies a sand layer in the dam that may liquefy during an earthquake, leading to possible dam failure. This item is to complete remediation of the dam in accordance with the Dam Safety Regulations.</p>	\$1,000,000
18-02	<p>Replace Distribution Infrastructure Phase 2</p> <p>The 2011 Water Distribution Review (Strategic Asset Management Plan) recommended a prioritized list of water main replacements. Phase 1 was completed as part of the water treatment plant project. Phase 2 is for 534 metres of water main replacement on Schooner Way and Privateers Road.</p>	\$425,000
19-01	<p>Replace Distribution Infrastructure Phase 3</p> <p>Phase 3 in the recommended/prioritized list of water main replacements, includes 559 metres of main replacement on Chart Drive and Galleon Way.</p>	\$450,000
20-01	<p>Replace Distribution Infrastructure Phase 4</p> <p>Phase 4 in the recommended/prioritized list of water main replacements, includes 477 metres of main replacement on the remainder of Galleon Way.</p>	\$400,000
21-01	<p>Replace Distribution Infrastructure Phase 5</p> <p>Phase 5 in the recommended/prioritized list of water main replacements, includes 487 metres of main replacement on Jolly Roger Crescent and Cutty Sark Crescent.</p>	\$400,000
21-02	<p>Design Buck Lake and Magic Lake Adjustable Intakes</p> <p>Magic Lake currently does not have an adjustable intake and the Buck Lake adjustable intake is expected to reach the end of its design life by 2021. This budget item is just to complete a detailed design that can be used for both takes, and the construction of the new intakes is proposed for 2022.</p>	\$25,000

Reserve Schedule

Reserve Fund: 2.630 Magic Lake Estates Water (Pender) Capital Reserve Fund - Bylaw 1498

Reserve Cash Flow

	Estimate	Budget			
		2017	2018	2019	2020
Fund: 1024 Fund Center: 101368	2016				2021
Beginning Balance	613,809	460,399	449,369	567,239	673,039
Transfer to Cap Fund (Based on Capital Plan)	(251,000)	(115,000)	(10,000)	-	-
Transfer from Operating Budget	97,590	103,970	127,870	105,800	105,830
Interest Income*	-	-	-	-	-
Ending Balance \$	460,399	449,369	567,239	673,039	778,869
					843,489

Assumptions/Background:

Transfer sufficient amounts to mitigate costs of debt

* Interest should be included in determining the estimated ending balance for the current year. Interest in planning years nets against inflation which is not included.

CAPITAL REGIONAL DISTRICT

2017 Budget

Magic Lake Estates Water (2)

Committee Review

Compiled and Presented by CRD Finance

Sep 2016

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DEFINITION:

LSA-2 A second LSA was established to improve the works and services of Magic Lake Estates Water System. Bylaw No. 2798 (Sept. 27, 2000).

PARTICIPATION:

Local Service Area # 2 - Q(764) LSA #40

MAXIMUM LEVY:

Greater of \$388,140 or \$2.65 / \$1,000 of actual assessed value of land and improvements. To a maximum of \$865,390.

MAXIMUM CAPITAL DEBT:

AUTHORIZED:	LA Bylaw No. 2799 (September 2000)	2,900,000
BORROWED:	S.I. Bylaw No. 2902 (August 2001)	(726,000)
	S.I. Bylaw No. 2963 (2002)	(1,498,900)
		Refinanced @3.05% from 5.69%
		Refinanced @3.05% from 6.06%

REMAINING AUTHORIZATION	675,100
PREPAIDS (312):	0
REDUCES remaining borrowing to:	

COMMITTEE:

Magic Lake Estates Water & Sewer Committee established by Bylaw No. 1870 (November 28, 1990).

FUNDING:

Any deficiencies after user charge and/or frontage tax or parcel tax to be levied on taxable school assessments.

User Charge:

No User Charge

Parcel Tax:

LSA-2 Annual parcel tax levied only on properties capable of being connected to the system, and participation in debt servicing. Commuted Parcel Tax for prepayment 2001 - 312 properties.

Connection Charges:

N/A

Magic Lake Estates Water (2)	2016 BOARD BUDGET	2016 ESTIMATED ACTUAL	BUDGET REQUEST				FUTURE PROJECTIONS			
			2017 CORE BUDGET	2017 ONGOING	2017 ONE-TIME	2017 TOTAL	2018	2019	2020	2021
OPERATING COSTS:										
Allocations	2,420	2,420	2,280	-	-	2,280	-	-	-	-
Other Operating Expenses	10	400	400	-	-	400	-	-	-	-
TOTAL OPERATING COSTS	2,430	2,820	2,680	-	-	2,680	-	-	-	-
*Percentage Increase over prior year						10.3%				
DEBT/RESERVES										
MFA Debt Principal	103,110	103,110	69,460	-	-	69,460	-	-	-	-
MFA Debt Interest	67,860	67,860	8,619	-	-	8,619	-	-	-	-
TOTAL DEBT / RESERVES	170,970	170,970	78,079	-	-	78,079	-	-	-	-
TOTAL COSTS	173,400	173,790	80,759	-	-	80,759	-	-	-	-
FUNDING SOURCES (REVENUE)										
Estimated balance C/F from 2016 to 2017	-	110	(110)	-	-	(110)	-	-	-	-
Balance C/F from 2015 to 2016	(13,110)	(13,110)	-	-	-	-	-	-	-	-
Grants in Lieu	-	-	-	-	-	-	-	-	-	-
Other Revenue	-	(500)	(500)	-	-	(500)	-	-	-	-
TOTAL REVENUE	(13,110)	(13,610)	(500)	-	-	(500)	-	-	-	-
REQUISITION	(160,290)	(160,290)	(80,149)	-	-	(80,149)	-	-	-	-
*Percentage increase over prior year requisition						-50.0%				

Service: 2.635 Magic Lake Estates Water (2) **Committee:** Electoral Area Services

MLE - LSA # 2

Year	Taxable Folios	Parcel Tax	Actual Assessments	Converted Assessments
2011	895	\$279.39	393,681,900	39,523,039
2012	894	\$199.15	390,174,100	39,172,961
2013	894	\$199.15	355,759,000	35,728,747
2014	894	\$199.15	335,956,601	33,740,591
2015	894	\$199.15	326,562,300	32,793,591
2016	893	\$188.92	328,253,800	32,960,922
2017	893	\$94.46		

CAPITAL REGIONAL DISTRICT

2017 Budget

Magic Lake Sewer Utility (Pender)

Committee Review

Compiled and Presented by CRD Finance

Sep 2016

Service: 3.830 Magic Lake Sewer Utility (Pender)

Committee: Electoral Area Services

DEFINITION:

To provide, operate and maintain sewage collection and disposal facilities for the Magic Lake Estates Sewerage System Specified Area on North Pender Island (Local Service Establishment Bylaw No. 1873 - June 26, 1991).

PARTICIPATION:

Specified Area - B(764) SA#8

MAXIMUM LEVY:

Greater of \$200,000 or \$7.10 / \$1,000 to a maximum of \$1,421,860 on actual assessed value of land and improvements.

MAXIMUM CAPITAL DEBT:

AUTHORIZED: LA Bylaw No. 4048 (Dec 2015). Fall Borrowing \$1,530,000 for 10 years

COMMITTEE:

Magic Lake Estates Water & Sewer Committee established by Bylaw No. 1870 (November 28, 1990).

FUNDING:

Any deficiencies after user charge and/or frontage tax or parcel tax to be levied on taxable school assessments, excluding property that is taxable for school purposes only by Special Act.

User Charge: Per single family equivalency unit to connected properties only (Bylaw 4074, April 13, 2016)

Parcel Tax: Only on properties capable of being connected to system.

Connection Charge: Actual Engineering and Construction costs, plus 15% Administration costs. The minimum charge is \$500 - Bylaw No. 4074 (April 2016)

RESERVE FUND:

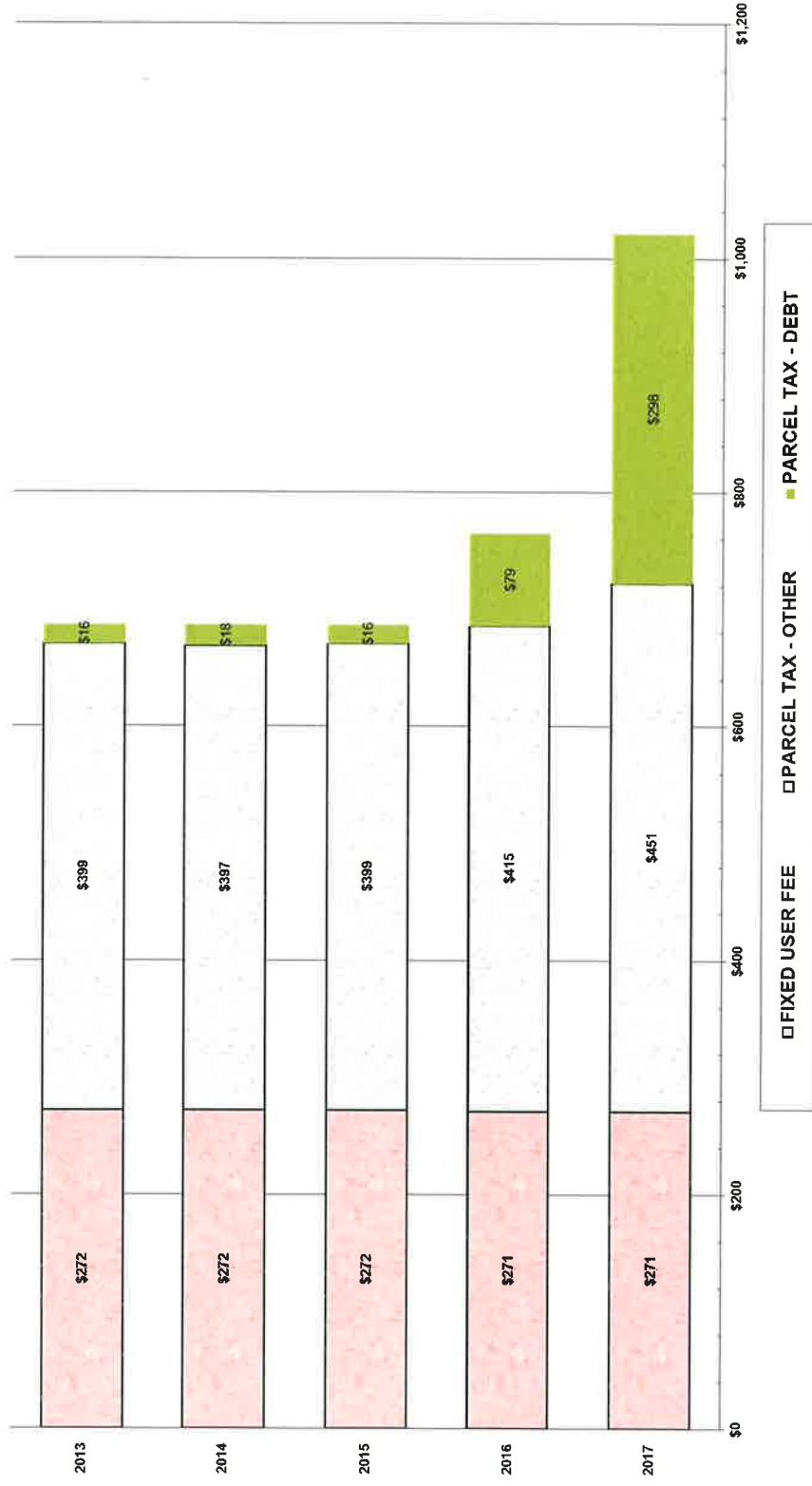
Magic Lake Estates sewage system capital reserve fund (Dec 17, 1986). Bylaw No. 1497.

Magic Lake Sewer Utility (Pender)	2016 BOARD BUDGET		BUDGET REQUEST				FUTURE PROJECTIONS			
	2016 BUDGET	2016 ESTIMATED ACTUAL	2017 CORE BUDGET	2017 ONGOING	2017 ONE-TIME	2017 TOTAL	2018	2019	2020	2021
OPERATING COSTS:										
Sludge Hauling Contracts	43,000	54,950	55,900	-	-	55,900	57,020	58,160	59,320	60,510
Grit & Waste Sludge Disposal	42,000	59,000	54,600	-	-	54,600	55,690	56,800	57,940	59,100
Repairs & Maintenance	6,380	2,530	8,110	-	-	8,110	8,270	8,440	8,610	8,780
Allocations	32,070	32,870	48,290	-	-	48,290	49,250	50,220	51,210	52,240
Electricity	20,670	19,400	21,500	-	-	21,500	21,930	22,370	22,820	23,280
Supplies	14,260	28,700	14,470	-	-	14,470	14,750	15,030	15,320	15,610
Labour Charges	234,200	273,510	214,450	-	-	214,450	218,750	223,120	227,580	232,130
Contingency	7,780	-	5,000	-	-	5,000	5,100	5,200	5,300	5,410
Other Operating Expenses	27,340	26,490	27,460	-	-	27,460	28,000	28,560	29,130	29,700
TOTAL OPERATING COSTS	427,700	497,450	449,780	-	-	449,780	458,760	467,900	477,230	486,760
*Percentage Increase over prior year						5.2%	2.0%	2.0%	2.0%	2.0%
DEBT/RESERVES										
Transfer to Capital Reserve Fund	53,930	26,550	48,930	-	-	48,930	48,930	48,930	48,930	48,930
Transfer to Maintenance Reserve Fund	5,000	5,000	8,000	-	-	8,000	8,160	8,320	8,490	8,660
Debt Reserve Fund	15,300	7,450	-	-	-	-	-	-	-	-
MFA Principal Payment	-	-	130,420	-	-	130,420	130,420	264,390	371,720	371,720
MFA Interest Payment	38,250	3,730	45,900	-	-	45,900	67,440	192,410	283,950	283,950
TOTAL DEBT / RESERVES	112,480	42,730	233,250	-	-	233,250	254,950	514,050	713,090	713,260
Sludge Disposal Recovery	(5,000)	(5,000)	(5,000)	-	-	(5,000)	(5,100)	(5,200)	(5,300)	(5,410)
TOTAL COSTS NET OF RECOVERIES	535,180	535,180	678,030	-	-	678,030	708,610	976,750	1,185,020	1,194,610
FUNDING SOURCES (REVENUE)										
Estimated balance C/F from 2016 to 2017	-	-	-	-	-	-	-	-	-	-
Balance C/F from 2015 to 2016	(30,550)	(30,550)	-	-	-	-	-	-	-	-
User Charges	(168,910)	(168,910)	(168,910)	-	-	(168,910)	(172,290)	(175,740)	(179,250)	(182,840)
Grants in Lieu	-	-	-	-	-	-	-	-	-	-
Other Revenue	(800)	(800)	(800)	-	-	(800)	(820)	(840)	(860)	(880)
TOTAL REVENUE	(200,260)	(200,260)	(169,710)	-	-	(169,710)	(173,110)	(176,580)	(180,110)	(183,720)
REQUISITION- PARCEL TAX	(334,920)	(334,920)	(508,320)	-	-	(508,320)	(535,500)	(800,170)	(1,004,910)	(1,010,890)
*Percentage increase over prior year requisition						51.8%	5.3%	49.4%	25.6%	0.6%

Service: 3.830 Magic Lake Sewer Utility (Pender) Committee: Electoral Area Services

<u>Year</u>	<u>Taxable Folios</u>	<u>Parcel Tax</u>	<u>SFE's</u>	<u>User Charge</u>	<u>Tax & Charges</u>	<u>Bylaw</u>	<u>Assessments \$(000's)</u>
2012	714	\$414.76	617	\$272.00	\$686.76	3823	238,971
2013	714	\$414.76	621	\$272.00	\$686.76	3892	217,896
2014	714	\$414.76	620	\$272.00	\$686.76	3924	205,430
2015	714	\$414.76	621	\$272.00	\$686.76	3987	199,869
2016	714	\$493.70	623	\$271.12	\$764.83	4074	200,262
2017	714	\$749.31	623	\$271.12	\$1,020.43		

CAPITAL REGIONAL DISTRICT MAGIC LAKE ESTATES SEWER FUNDING ANALYSIS 2013-2017



Actual Costs 2013-2016, Projected 2017
Prepared by CRD Finance
09/14/2016

\$0,000 in 2017 Dollars

Maigic Lake Estates Sewer

FIVE YEAR TOTAL (including carry-over)

Asset Class
L
S
B
V
E

Capital Expenditure Type
New
Expenditure for new asset only
Renewal
Expenditure replaces an existing asset and extends the service ability or enhances technology in delivering that service
Replacement
Expenditure replaces an existing asset

16-01	Replace 325m of Pipe Along Buck Lake	\$480,000
The existing Asbestos Concrete 150mm diameter sewer along the east side of Buck Lake does not have sufficient capacity, has a shallow grade or reverse grade and needs to be increased to ensure the sewer system does not backup during peak flow events.		
16-02	Replace 112m of Pipe on Privateer R	\$130,000
The existing Asbestos Concrete 150mm diameter sewer on Privateers from Dubloon Road to Brigadoon Road does not have sufficient capacity and needs to be increased to a 200mm diameter pipe to ensure the sewer system does not backup during peak flow events.		
16-03	Ultrasonic Testing of Schooner Tanks	\$15,000
The steel tanks at the Schooner WWTP are of questionable condition, a condition assessment is required to determine how much serviceable life is left. Once the serviceable life is determined, the most appropriate route for upgrading the Schooner WWTP can be chosen. Funding is required to retain a consultant to undertake a condition assessment on the steel tankage.		
16-04	Inflow/Infiltration Reduction Program	\$200,000
Both Schooner and Cannon wastewater treatment plants are subject to overloading during heavy rainfall events which has resulted in numerous marine discharges that have exceeded our Ministry of Environment discharge permit requirements. A project plan will be developed in 2016, with key areas of investigation identified for further investigation or remediation.		
17-01	Schooner WWTP Blower & Elec Rm Roof Replacement	\$15,000
The roof for the Schooner WWTP blower and electrical room has been identified by Operations as requiring replacement due to age and condition. Funds are required to replace the roof.		
17-03	Schooner Outfall Protection	\$17,000
The protective concrete cover (armour) over the outfall pipe has eroded away along the beach shoreline. The armour protects the pipe from becoming damaged by logs and rocks, etc. that wash up onto the shore, and if the pipe breaks wastewater effluent would discharge onto the beach. The budget for this item is for design, permitting/approvals, notification and construction of a new concrete cap.		

20-01	Upgrade Schooner Lift Station	\$557,000
	Public engagement is required to determine the direction that the residents will approve for an Infrastructure Replacement program. The budget for this item is for staff time, materials, notification and advertisement to hold and address an open house and town hall and referendum process to seek the residents' input on an infrastructure replacement program for the Magic Lake Estates Sewer Local Service Area.	
18-01	Schooner & Cannon Outfall Inspections	\$17,000
	Under the Ministry of Environment's registered discharge permit, the Schooner & Cannon WWTPs outfalls are required to be inspected every 3 years. The last inspection was undertaken in the 2014. Funds from an operation reserve are required to retain a consultant to conduct and inspection of the outfall.	
19-01	Annual Pipe Replacement Program	\$512,000
	Much of the wastewater collection system is comprised of asbestos cement (AC) pipe ranging in age up to 50 years old. AC pipe, depending on the soil conditions, can lose structural integrity leading to inflow and infiltration. Funding is required to replace undersized or pipe in poor condition.	
19-02	Upgrade 5 Lift Stations	\$1,000,000
	In 2011 Stantec undertook a condition assessment and identified 5 pump stations, Galleon, Masthead, Bucaneers and Capstan Pump stations, requiring mechanical and electrical upgrades to maintain the current level of service. Funding will be for design and upgrades.	
20-01	Upgrade Schooner Lift Station	\$557,000
	The Schooner Lift Station is past its serviceable life – the pumps, process piping and valving, pump lifting rails and electrical all have to be replaced. Additionally, confined space entry is required to isolate the pump station. The budget for this item is for design and the upgrades required for the Schooner Lift Station.	
21-01	Replace Cannon WWTP with Pump Station & FM	\$1,826,000
	The Cannon wastewater treatment plant is subject to overloading during heavy rainfall events which has resulted in numerous marine discharges that have exceeded our Ministry of Environment discharge permit requirements and is at end of life. Additionally, the site is fully built out; no more expansion of the Cannon wastewater treatment plant is possible. The 2012 Stantec report recommends replacement of the Cannon wastewater treatment plant with a pump station and new forcemain, pumping sewage to the Schooner wastewater treatment plant via the Schooner Lift Station.	
21-02	Schooner Clarifier & Aeration Tank	\$2,056,000
	The Schooner wastewater treatment plant is subject to overloading during heavy rainfall events, which has resulted in numerous marine discharges that have exceeded our Ministry of Environment discharge permit requirements. The budget for this item is for design and construction of the new clarifier and aeration tanks.	

Reserve Schedule

Reserve Fund: 3.830 Magic Lake Sewer Utility (Pender) Capital Reserve Fund (Bylaw No.:1497)
--

Reserve Cash Flow

Fund: 1042 Fund Center: 101386		Budget				
	Estimate	2017	2018	2019	2020	2021
	2016					
Beginning Balance	83,829	72,713	51,643	83,573	132,503	181,433
Transfer to Cap Fund (Based on Capital Plan)	(115,000)	(70,000)	(17,000)			
Transfer from Operating Budget	26,550	48,930	48,930	48,930	48,930	48,930
Transfer from Equipment Replacement Fund	77,242	-	-	-	-	-
Interest Income*	92	-	-	-	-	-
Ending Balance \$	72,713	51,643	83,573	132,503	181,433	230,363

* Interest should be included in determining the estimated ending balance for the current year. Interest in planning years nets against inflation which is not included.

Reserve Schedule

Reserve Fund: 3.830 Magic Lake Sewer Utility (Pender) Equipment Replacement Fund

Reserve Cash Flow

Fund: 1022 Fund Center: 101724
ERF Group: MGCLKSWR.ERF

Beginning Balance

Transfer to Capital Reserve Fund

Ending Balance \$

Estimate	2017	2018	2019	2020	2021
2016					
77,242	-	-	-	-	-
(77,242)	-	-	-	-	-
	-	-	-	-	-

**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, SEPTEMBER 20, 2016**

**SUBJECT SCHOONER WASTEWATER TREATMENT PLANT - REQUEST FOR
EXPRESSION OF INTEREST TO PILOT TREATMENT TECHNOLOGIES**

ISSUE

To provide an update to the Magic Lake Estates Water and Sewer Committee on the received submissions for the request for expressions of interest (RFEI) to pilot treatment technologies for the Schooner Wastewater Treatment Plant (WWTP).

BACKGROUND

At the January 12, 2016 committee meeting, the committee passed the following motion:

1. Direct staff to prepare a RFEI for pilot testing of wastewater treatment technologies at Schooner WWTP;
2. Authorize funding of up to \$2,500 from the Capital Reserve Fund to prepare and evaluate the RFEI; and
3. Direct staff to report back to the committee on the initial responses, costs, evaluations and recommendations from the RFEI submissions

A draft copy of the RFEI was sent to the committee on April 29, 2016 and on May 3, 2016 the committee directed staff to issue the RFEI. The RFEI was issued on May 11, 2016 and it closed on July 4, 2016 after extending the closing date twice at the request of one proponent (Boydel).

Four submissions were received from the following vendors as summarized in the table below:

Vendor	Technology Proposed	Willing to Conduct a Pilot	Met Intent of RFEI
ECOfluid	Upflow Sludge Blanket Filtration	No	No
	Membrane Bioreactor Retrofit	No	No
Waste 'n Watertech	Biological Combined System	No	No
	Rotating Biological Reactor	No	No
h2o Innovation	Bio-Wheel & Membrane Bioreactor	No	No
BI Purewater & Boydel	Moving Bed Bioreactor & Electrocoagulation	Yes, but requires payment of \$362,000 plus monthly fee of \$58,000 after first 2 months (not incl. many other costs)	No

As noted in the table, none of the submissions met the purpose/intent of the RFEI (see Item 2.0 Purpose in the RFEI attached to this staff report as Attachment 1).

Both ECOfluid and Waste 'n Watertech indicated that their proposed technologies are proven and, therefore, do not need to be pilot tested. They are willing to submit a competitive tender to supply their equipment. The submission from h2o Innovation contained promotional items highlighting their consulting services on a variety of technologies, but they did not offer to pilot any of the technologies that were noted in their submission.

The BI Purewater & Boydel submission did offer to pilot a combination of a moving bed bioreactor and an electrocoagulation unit with a treatment capacity of up to 25 cubic metres per day (less than 1/10th of the required capacity of the Schooner WWTP). The proposed pilot plant includes a 1mm screen, equalization tank, electrocoagulation pre-treatment, MBBR secondary treatment, filtration, and belt press. However, the submission did not include some key details that were requested such as: step-by-step description of the process, handling of peak wet weather flows, regulatory approvals, site plan layout drawing, key preliminary design drawings, sludge management, power requirements, third party testing requirements, operational requirements, evidence of financial backing and insurance.

Their submission did include assumptions that the CRD would provide (at CRD's cost) the following items: a level 20mx40m pad, connections to influent channel and UV pipe, power supply, sludge disposal, sampling and testing, third party inspections, etc.

Budget pricing offered by BI Purewater & Boydel for the "initial pilot" treatment system for a two- month test is \$362,000 and \$58,000 for each additional month. BI Purewater also provided a cost estimate for a full scale plant, if the CRD wanted to pursue this technology beyond the initial pilot test, in the order of \$7,000,000. The financial commitment requested in the BI Purewater & Boydel's submission is greater than the current balance in the Magic Lake Estates Sewer Local Service capital reserve fund. Therefore, to fund this pilot, additional funds will need to be borrowed if approved by elector assent through a referendum or AAP process.

All technologies will likely produce an effluent quality that meets or exceeds current regulatory requirements, but upgrades will require additional capital investment to supplement the existing treatment technology at Schooner WWTP.

ALTERNATIVES

Alternative 1

That the Magic Lake Estates Water and Sewer Committee accept this report for information; and direct staff to cancel RFEI No. 2016-156 - Pilot Testing of Wastewater Treatment Technologies for a Small System at Schooner WWTP.

Alternative 2

That the Magic Lake Estates Water and Sewer Committee request additional information.

IMPLICATIONS

Alternative 1 – Staff will close the RFEI and continue with advancement of the Phase 1 wastewater renewal projects and proceed with the 5-year Capital Plan that proposes to upgrade Schooner WWTP by 2021. Ultrasonic testing of the steel tanks at the Schooner WWTP is planned to start this year. Once the condition assessment of the tanks is complete, this will help to identify the most cost effective upgrades required for Schooner WWTP in the near future.

Alternative 2 – Staff will address additional information requested at a subsequent committee meeting.

CONCLUSION

Four submissions on the RFEI for pilot testing of wastewater technologies at Schooner WWTP have been received, but none of them met the criteria set out in the RFEI. One proponent did submit a proposal offering to pilot test a MBBR and Electrocoagulation plant, but it contains many assumptions and requires a considerable financial commitment from the customers of the Magic Lake Estates Sewer Service area.

RECOMMENDATION

That the Magic Lake Estates Water and Sewer Committee accept this report for information; and direct staff to cancel RFEI No. 2016-156 - Pilot Testing of Wastewater Treatment Technologies for a Small System at Schooner WWTP.

Dale Puskas, P.Eng.
Project Engineer
Infrastructure Engineering
Integrated Water Services

Malcolm Cowley, P.Eng.
Manager, Wastewater Engineering & Planning
Integrated Water Services
Concurrence

Ian Jesney, P.Eng.
Sr. Manager, Infrastructure Engineering
Integrated Water Services
Concurrence

Ted Robbins, B.Sc., C.Tech.
General Manager, Integrated Water Services
Concurrence

DP/MC:ln
Attachment: 1



INTEGRATED WATER SERVICES DEPARTMENT

Request for Expressions of Interest

RFEI No. 2016-156

Pilot Testing of Wastewater Treatment Technologies for a Small System at Schooner WWTP, Pender Island

May 2016

Request for Expression of Interest

1.0 Introduction

The Capital Regional District (CRD) invites proponents to submit expressions of interest to pilot test wastewater treatment technologies for a small system at an existing wastewater treatment plant (Schooner WWTP) on Pender Island, BC.

The existing Schooner WWTP is nearing the end of its design life and frequently exceeds its permitted discharge capacity during peak wet weather flows. The WWTP currently serves a small local service area, called Magic Lake Estates, and the community is interested in allowing proponents to pilot test their treatment technologies, at no cost to the community, in order for proponents to demonstrate that their technologies can treat wastewater to meet all regulatory requirements in a cost-effective manner. This is a great opportunity for proponents to use wastewater from this small community to demonstrate their technology. In return for providing the pilot plant to the community to test their technology, the proponent can use the information gathered to further their research and development and promote their technology to other potential clients.

It is expected that the pilot period will be at least 6 months and cover a wide range of flow and loading conditions. Information collected during the pilot testing may be used to determine the near future upgrade/replacement of the Schooner WWTP.

All submittals made in response to this Request for Expression of Interest (RFEI) are strictly voluntary and may be used by the CRD in any manner it deems appropriate. All responses received could be made available to the public under a Freedom of Information Request, except where proprietary information or trade secrets are noted. Respondents must identify those parts of their responses that they request to be confidential (see Section 9.0 of this RFEI for further terms and conditions).

The CRD will not make payment for any costs or expenses incurred by the respondents to this RFEI in the preparation and submittal of responses to this RFEI. Additional terms, conditions and limitations are noted further within this RFEI.

2.0 Purpose

The purpose of this RFEI is to:

- (a) Identify interested and qualified companies that are capable of supplying and installing a complete wastewater treatment system that operates in parallel, and completely redundant, to the existing wastewater treatment plant that exists at Schooner;
- (b) Obtain from interested companies an understanding of the technologies they are offering including, but not limited to:
 - Treatment performance: does it meet all regulatory requirements;
 - Resource recovery: are there any potential resource recovery opportunities;
 - Operational requirements: how much effort is required to operate the pilot plant, qualifications, ease of operation and maintenance, trouble-shooting, emergency back-up plans, etc. What kind of services are offered to respond to the site, trouble-shoot and resolve equipment or process performance issues.
 - Financial requirements: it is expected that there will be no cost to the CRD for the pilot testing of the plant. For a full scale permanent plant, based on the criteria noted within this

document, provide the capital costs, operational costs, maintenance costs, equipment replacement costs (all presented in a full life-cycle costs estimate over a 75 year period).

- (c) Pre-qualify up to three (3) Respondents from the RFEI submissions to participate in a collaborative request for proposal (RFP) process for pilot testing of their wastewater treatment technology process.

3.0 Background

The Magic Lake Estate (MLE) sewerage area consists of three separate sewage systems owned and operated by the CRD. These sewage systems wastewater flows are treated by the Schooner and Cannon extended aeration (EA) treatment plants, and the Chart Drive septic and disposal field (which may be replaced with a pump station to discharge to the Schooner system).

The two treatment plants were constructed around 1971. Schooner WWTP is an extended aeration plant with a capacity of 270 m³/day. Initially it operated with chlorine disinfection as a last treatment step prior to discharge out the ocean outfall, but this was discontinued in the early 1980's. It was upgraded in 1999 with the addition of a second clarifier, headworks (bar screen and grinder), UV disinfection, and sludge holding tanks. At the same time, the process was modified to operate in a step feed mode during wet weather months which theoretically increased the capacity to 640 m³/day, but even at this capacity the plant cannot handle peak hours flows as the clarifiers get "washed out". Currently, there are approximately 529 parcels connected to this treatment plant with 63 additional vacant lots that could be connected. In addition, it is likely that the Cannon WWTP will be replaced with a pump station that will pump to Schooner WWTP which will add an additional 104 parcels to Schooner. Therefore, the Schooner WWTP capacity will need to be increased in the near future to accommodate the MLE sewer system changes.

The CRD owns the property that the Schooner WWTP currently resides upon. The property is about 0.83 ha in size and it has about a 7 to 12 percent slope from the back of the usable space to the frontage of the property. There is approximately 3.5 m x 10.5 m of cleared space available for placement of the pilot wastewater treatment plant. The site plan and as-constructed drawings of the existing WWTP are in Appendix A of this RFEI.

The CRD is open to the type of wastewater treatment technology offered as long as it is proven, can work within the given constraints, and fully meets the CRD's needs and all regulatory requirements.

Proponents must provide sufficient information including a preliminary design report and drawings to convince the CRD that their technology and concept will work well based on technical information, existing reference facilities and experience. Proponents shall satisfy themselves that they have received enough information necessary to provide a well thought out and complete preliminary design. All proposed technologies and concepts will have to comply with local bylaws, the BC Municipal Wastewater Regulation (MWR) and all other relevant provincial and other legislation.

The CRD intends to evaluate the RFEI responses soon after the deadline request for receiving responses and wishes to choose a proponent by the end of the second quarter of 2016 and intends to have an operational pilot facility in operation by the first quarter of 2017. Upon completion of the pilot testing period, the CRD will review all information gathered and could choose to negotiate a partnership for ongoing operation of the facility.

4.0 Sewage Flow

Table 1 provides a summary of the annual average, maximum monthly and maximum daily flows from 2006 to 2010. The maximum day permitted flow (MWR RE:01693) is 640 m³/day. Plant influent design criteria were list as 200 mg/L biochemical oxygen demand (BOD) and total suspended solids (TSS), with effluent <45 mg/L BOD and TSS. The annual average daily flow measured at Schooner WWTP have remained stable at around 200m³/day (+/- 8%) since 2011. The maximum monthly rates have varied more with a significant drop in 2013.

The maximum day flow has been over 3 times the annual average. This indicates that inflow and infiltration is fairly extensive in the collection system catchment area tributary to Schooner WWTP. As noted above, there are currently approximately 530 residential single family equivalents (SFE's) connected to the sewage system. Assuming three persons per SFE, the total equivalent population connected to the sewage system is 1590 persons. The 2015 annual average flow per SFE is 386 L/day while the 2015 maximum month and maximum day flows per SFE are 603 L/day and 1,253 L/day respectively.

Table 1 – Summary of Existing Flows at Schooner WWTP

Year	Annual Average (m ³ /d)	Maximum Monthly (m ³ /d)	Ratio – Max Month: Annual Avg	Maximum Day (m ³ /d)	Ratio – Max Day: Annual Avg
Permit				640	
2011	198	336	1.70	546	2.76
2012	198	369	1.87	614	3.10
2013	184	288	1.57	606	3.30
2014	216	331	1.53	664	3.07
2015	204	320	1.56	547	2.67
Proposed Peaking Factors			1.75		3.50

Table 1 indicates that each year had at least one occurrence of MDD exceeding the permitted flow of 640 m³/day. List number of exceedances (or insert graph) per year. A typical ratio of maximum month to annual average is 1.3, therefore the values of 1.75 seen at Schooner is considered to be excessive. It appears that these high flows are event driven related to inflow and infiltration.

As previously noted, it is possible that flows will be diverted from Cannon WWTP and Chart Drive to Schooner WWTP which will consolidate wastewater treatment all at one location and result in operational and maintenance savings. Therefore as shown in Table 2 below, Schooner WWTP would need to be sized to an average day flow of 307 m³/day and a maximum day flow of 918 m³/day with occasional exceedances to 1,200 m³/day. This flow would include sewage flows from all 714 parcels included in the catchment areas for the Schooner, Cannon and Chart Drive facilities.

Table 2 - Future Schooner WWTP Flows

Source	Flow (m3/day)
Existing Schooner Flows	200
Future Schooner Connections	39
Diverted Chart Drive	14
Diverted Cannon Flows	50
Future Cannon Flows	3
Water Treatment DAF Backwater	1
Schooner WWTP Design Average Annual Flow Value ⁽¹⁾	307
Max. Month Flow (1.75 peaking factor)	537
Max. Day Flow (3.5 peaking factor)	1,075

(1) Note the total average dry weather flow (ADWF) is estimated at 250 m3/day.

5.0 Wastewater Characteristics

Raw wastewater sampling is carried out once a month and TSS, pH, TBOD (total BOD), ammonia and fecal coliform counts are taken. The annual influent average TSS and TBOD concentrations are summarized in Table 3. As indicated in Table 3, the strength of the wastewater was relatively stable from 2011 to 2014, however, in 2015 there is a noticeable increase in TSS and TBOD which may be attributed to the commissioning of a new water treatment plant and the disposal of the DAF float at Schooner WWTP.

Table 3 – Schooner WWTP Raw Wastewater Characteristics - Annual Average

Year	TSS (mg/L)	TBOD (mg/L)
2011	167	199
2012	205	211
2013	230	180
2014	199	214
2015	309	276
Plant Design Value	200	200
5-year Average	222	216

It should be noted that the above values are based on grab samples taken once a month. Sewage treatment facilities are typically designed on the basis of the organic loading during the maximum month. In the case of Schooner WWTP, the maximum organic loading will occur in the summer months when the serviced population is highest. Sewage strength in the summer months is also higher because of lower inflow and infiltration combined with increased seasonal population. Table 4 below summarizes the average summer month (June to September) loading values and also provides the average dry weather flow (ADWF). Again, there is a significant increase in TSS and BOD in 2015 due to the disposal of the DAF float from the water treatment plant combined with an extremely dry summer (and much lower ADWF).

Table 4 – Schooner WWTP Raw Wastewater Characteristics – Average Summer Month (June to Sept)

Year	TSS (mg/L)	TBOD (mg/L)	ADWF (m ³ /d)
2011			153
2012	192	218	137
2013	243	282	147
2014	253	270	166
2015	511	409	137
5-year Average	240	236	148
Plant Design Value	200	200	---
Proposed Revised	240	240	---

As indicated before, the Schooner WWTP was designed on the basis of average TSS and TBOD concentrations of 200 mg/L. However, this criteria may no longer be applicable and with planned inflow and infiltration reduction programs along with possible diversion of flows from Cannon WWTP and Chart Drive, it is recommended to use higher concentrations of 250 mg/L for TSS and TBOD.

6.0 Treated Effluent Quality

The Schooner WWTP is regulated under MWR registration RE-01693, issued November 15, 2000, with the requirements outlined in Table 5 below:

Table 5 – Schooner WWTP Effluent Criteria

Parameter	Effluent Criteria
Maximum Daily Flow	640 m ³ /d
Maximum cBOD	45 mg/L
Maximum TSS	45 mg/L
Maximum Fecal Coliform	200 CFU/100 mL
Toxicity Test	Pass the Rainbow trout 96 hr effluent toxicity test

In 2011 a new surface water fecal coliform monitoring program was put into place for the Schooner WWTP. A 5 in 30 monitoring program requires that 5 samples be taken within 30 days at times when treatment plant issues are most likely to occur (ie. during heavy rains in winter months). The existing plant has met the registration requirements for carbonaceous biological oxygen demand (cBOD) for the last 5 years.

The permitted TSS limit was exceeded in 2006 and 2010. In November 2006, effluent sampling occurred during a plant upset that caused a short period of bulking sludge and associated extreme levels of TSS and fecal coliform and should not be considered a representative sample. The next highest TSS value in 2006 was 21 mg/L and 21 mg/L for cBOD, and in 2010 the next highest value was 10 mg/L.

Toxicity Testing

As noted in the Gulf Islands and Port Renfrew Wastewater and Marine Environment Program 2015 Annual Report, the undiluted effluent sample from July 21, 2015 passed the toxicity test with 100% survival, indicating that the effluent was not acutely toxic to the juvenile Rainbow trout.

7.0 Expression of Interest Submission Details

Proponents responding to this RFEI should include the following information in their submission:

1. Evidence of an understanding of what the CRD needs and the ability to meet those needs.
2. Corporate profile and evidence of financial backing and insurance (professional liability, CGL, etc).
3. A list of proposed team members complete with qualifications and experience; and a description of the roles and responsibilities of each team member.
4. The experience of the proponent in implementing wastewater treatment facilities of similar size and scope as Schooner WWTP, including design, construction and long term operation and maintenance requirements of the facilities.
5. Description of the treatment process technology. The technology shall be clearly defined with a schematic flow diagram and preliminary design drawings. Include a step-by-step description of the process, from influent raw wastewater to final effluent discharge.
6. Confirm that the treatment technology can treat the raw wastewater characteristics noted within this RFEI and meet the required effluent quality. Describe the plant's capability to process and treat the peak wet weather flows. Indicate how the plant could be expanded in the future to meet the future design flow projections. Confirm the performance guarantees and warranties that would be offered by the proponent.
7. Confirm the regulatory approvals required to implement a pilot plant, (ie. Island Health Authority, Ministry of Environment, Environment Canada, etc.), and that the proponent will be responsible for obtaining all such approvals. Include the durations to obtain the approvals and key milestones within the proponents proposed schedule (see item 18 below).
8. Include a site plan layout drawing, cross sections, and details showing major treatment components and how the pilot plant can fit within the existing site; how it can be connected to the existing plant and run independently from the existing plant (and not impact its operation). Include details on any site preparation requirements, access to equipment and the rest of the plant, how equipment can be operated, maintained, removed, replaced, etc.
9. Provide preliminary civil, process mechanical, electrical and instrumentation drawings showing how the pilot plant would work. Include step-by-step narrative on the process control logic and confirm that the proponent will complete all the programming required to control the pilot plant. Indicate how much power is required to operate the pilot plant, where the power will come from and who is expected to pay for power consumption.
10. Provide details on sludge management and information on environmental controls including: odour, noise, GHG emissions, and overall aesthetics.
11. Provide any available treatment removal estimates (influent vs final effluent) for nutrients, carbonaceous biochemical oxygen demand, total suspended solids, metals and legacy and emerging organic contaminants (e.g., PCBs, PBDEs, pesticides, VOCs, pharmaceuticals and personal care products, etc). Details to include influent/effluent sampling methodologies and indicate how many samples were collected to determine the removal estimates.
12. Provide details on who the Proponent plans on using the sample, test, and confirm treatment performance. It is expected that a 3rd party experienced and qualified professional engineer will submit a report on the overall performance of the pilot plant.
13. Provide a minimum of three operating reference facilities using the same or very similar technology. Provide location, number of years in operation, capacity, availability, reliability, contact name (with

email address and phone number), and indicate if this facility can be visited. Provide also the ownership structure of the reference facilities.

14. Provide a description of the operation of the plant and confirm if the proponent will be supplying the necessary operators required to operate the pilot plant.
15. For the reference facilities noted, provide a breakdown on the capital costs, operating costs, maintenance costs, and replacement costs for a total lifecycle cost based on a 75 year life span.
16. Confirm any and all costs that the proponent is expecting the CRD to pay for during the installation of the pilot plant (including construction and commissioning of the facility) as well as the 6 month operating period of the pilot test.
17. Upon completion of the pilot testing period, propose potential or preferred financing options for the CRD to purchase the plant or technology that will meet the design requirements for Schooner.
18. Provide a draft schedule showing key tasks and milestones for when a pilot facility could be operable. Assume at least a 2-3 month duration for the RFP process, and include allowances for design reviews, site work, manufacturing, delivery, construction, tie-ins, testing/commissioning, etc.

8.0 Evaluation

The CRD will select up to three Respondents who, in its sole and absolute discretion, demonstrate the greatest combination of qualifications, experience and ability to design, construct and operate a pilot wastewater treatment facility at Schooner WWTP for the CRD (without impacting the existing WWTP). Evaluations will also include any and all potential financial implications to the CRD. In addition, evaluations will also include the proponents' success with providing similar treatment facilities (reference facilities).

9.0 General Terms and Conditions

Issuance of the Expression of Interest (EOI), and/or the decision not to proceed with a subsequent RFP process, will not cause the CRD to be liable for any costs incurred by Respondents.

The CRD may, in its sole and absolute discretion, independently verify any information in any submission. The CRD reserves the right to debrief both successful and unsuccessful Respondents after the announcement of the Respondents qualified under the EOI and prior to the issuance of an RFP.

This EOI does not create a prequalification, tender or RFP process. This EOI is not an invitation for an offer to contract and it is not an offer to contract made by the CRD. By this EOI, the CRD reserves to itself the right to consider and analyze the EOI's, select short-listed respondents, issue an RFP for detailed proposals and sign an agreement with the Preferred Proponent of that RFP. Without limiting the generality of the foregoing, the CRD reserves the right to:

- a. reject any EOI, whether or not complete and whether or not it contains all the requested information;
- b. require clarification of any EOI;
- c. request additional information on any EOI;
- d. reject any or all EOI's without any obligation, or any compensation or reimbursement to the Respondents;
- e. refuse to proceed with or issue an RFP;
- f. modify this RFEI at any time;
- g. proceed with the project in some other manner separate from this EOI; and
- h. re-advertise for new submissions for this work or for work of a similar nature.

Conflict of Interest

A Respondent must disclose in their Response any actual or potential conflicts of interest and existing business relationships it may have with the CRD, its elected or appointed officials or employees.

Limitation of Liability and No Claim

1. The CRD and its directors, officers, employees, agents, consultants and advisors are not liable or responsible for any oral, verbal or written information, or any advice, or any errors or omissions, which may be contained in this RFEI or otherwise provided to a Respondent pursuant to this RFEI. The CRD and its representatives, agents, consultants and advisors will not be liable to any Respondent for any claims, whether for costs, expenses, losses or damages, or loss of anticipated profits, or for any other matter whatsoever, incurred by a Respondent in preparing or making a submission, or participating in any discussions or negotiations or any other activity related to or arising out of this RFEI.
2. By responding to this RFEI a Respondent agrees that it will conduct its own independent investigations and interpretations and will not rely on the CRD with respect to information, advice, or documentation provided by the CRD.
3. For certainty, no contractual relations shall exist between the CRD and any Respondent to this RFEI, except that by submitting a response to this RFEI a Respondent acknowledges and accepts the provisions of this section, General Terms and Conditions.

Ownership of Submissions/Confidentiality

1. All documents submitted to the CRD, including EOI, and any drawings, plans and models (as applicable), become the property of the CRD and will not be returned to the Respondent. They will be received and held in confidence by the CRD, subject to the provisions of the *Freedom of Information and Protection of Privacy Act* of British Columbia (FOIPPA)
2. FOIPPA governs the collection, use, retention, security, and disclosure of personal information managed by public organizations, including the CRD. FOIPPA also applies to all electronic information accessed or submitted by Respondents. If EOI and any related documents contain protected, proprietary or confidential information, Respondents should identify the specific issue or information and provide supporting reasons why the CRD should not release this information if requested by a FOIPPA inquiry.

Future Process

Participation in this RFEI and the submission of a response to this RFEI is not a pre-condition to participation in a subsequent commercial process, if any. If the CRD decides, at its sole and absolute discretion, to implement a subsequent commercial process, the CRD may invite proponents who did not participate in this RFEI to participate in such subsequent process.

10.0 Submission Address and Closing Date

(by courier/mail)
Capital Regional District
479 Island Highway
Victoria, BC V9B 1H7
Attention: Malcolm Cowley

Closing Date and Time: June 06, 2016 at 2:00:00 p.m.

Late responses may be considered at the sole and absolute discretion of the CRD. However, the CRD is not obligated to consider late responses.

Responses submitted by facsimile communication equipment (FAX) or email will not be considered.

Proponents must register with the Purchaser, Kevin Evans (250-474-9674 or kevans@crd.bc.ca) to be included on the Registered Proponents List and in order to receive any further communications regarding this RFEI issued by the Owner.

1602 Chart Drive,
Pender Island,
V0N2M2
June 8, 2016

Dan Robson
Manager Saanich Peninsula
& Gulf Islands Operations
479 Island Highway
Victoria, BC,
V9B1H7



Dear Sir,

This letter is a follow up to my telephone conversation with you in seeking to divert the run off water from the auto flush valve at the end of Chart Drive, and channel it on to my property to be used exclusively to fill my re circulating water feature, also to contain it in storage containers to water vegetables in my garden.

I appreciate your observation that customers of the water system may feel that this discharge from the valves may be used as a source of potable water, and I understand your concern in that regard, and assure you that it will only be utilized as stated.

Given that this water, when discharged from the flusher valve flows down the edge of my neighbours property, and ultimately into the ocean below, I would appreciate the opportunity to recycle it rather than see it under utilized in this manner.

Thank you in advance for your consideration of my request.

Sincerely,

Jerry Folk
250-629-3246