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MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
Notice of Meeting on **Tuesday, January 12, 2016 at 9:30 am**
Main 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 November 10, 2015
3. Capital Projects Status Update at Year-End 2015 (information report)
4. Magic Lake - Adjustable Water Intake Concept Review (staff report)
5. Wastewater Infrastructure Projects - Phase 1 Update (staff report)
6. Proposed Water Conservation Bylaw (staff report)
7. Water System Capital Improvement Project Update (staff report)
8. Motion to Close the Meeting
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.*
9. Water and Wastewater Operations Report – November and December 2015 (information report)
10. Request for Expression of Interest – Pilot Testing of Wastewater Treatment Technologies (staff report)
11. Review of Action List
12. Correspondence
13. New Business
14. 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, November 10, 2015 in the Main Conference Room, 479 Island Highway,
Victoria, BC**

PRESENT: **Committee Members Representing Sewer:** J. Petrie (C), A. Wilson (via Skype), J. Gill
Committee Members Representing Water: K. Heslop, C. Rodash. M. Steel
Representing Water and Sewer: Director D. Howe
Staff: M. Cowley, Senior Manager, Infrastructure Engineering, S. Mason, Manager, Water Engineering and Planning, D. Puskas, Project Engineer, (for items 1 to 4), D. Robson, Manager, Saanich Peninsula and Gulf Islands Operations, C. Moch (for item 8), Manager, Water Quality Operations, J. Marr, Project Engineer (for items 5 & 6), L. Siemens (recorder), Debbie Glew (recorder in training)
One member of the public

The meeting was called to order at 9:30 am

1. Approval of Agenda

MOVED by M. Steel, **SECONDED** by C. Rodash,
That the agenda be approved previously as distributed.

CARRIED

2. Election of Chair and Vice Chair

Nominations were called for Chair of the Magic Lake Estates Water and Sewer Committee for a one-year term. Kathy Heslop and Jim Petrie were nominated and agreed to stand. Nominations were called for two more times and there were no further nominations. An election was held by secret ballot. A. Wilson voted by phone call to L. Siemens. Jim Petrie received the most votes and was elected as chair.

MOVED by J. Gill, **SECONDED** by C. Rodash,
That the ballots be destroyed.

CARRIED

Nominations were called for vice-chair of the Magic Lake Estates Water and Sewer Committee for a one-year term. Courtenay Rodash, Kathy Heslop and Alex Wilson were nominated. Courtenay Rodash and Kathy Heslop agreed to stand. Alex Wilson declined the nomination. An election was held by secret ballot. A. Wilson voted by phone call to L. Siemens. Kathy Heslop received the most votes and was elected as vice-chair.

MOVED by M. Steel, **SECONDED** by J. Gill,
That the ballots be destroyed.

CARRIED

3. Adoption of Minutes of October 13, 2015

MOVED by M. Steel, **SECONDED** by K. Heslop,
That the minutes of October 13, 2015 be adopted as presented.

CARRIED

4. Wastewater Infrastructure Projects, Phase 1 – Update

M. Cowley presented a written report.
The committee noted that the local publication for Pender Island is the Island Tides and that ads should be placed in that publication to reach residents on Pender Island.

A. Wilson left the meeting at 9:56 am.

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

CARRIED

5. Water System Capital Improvement Project Update

S. Mason provided a verbal report. The following items were noted:

- The CRD and contractor are still working on finalizing payment regarding the claims and liens.
- The CRD is expecting the contractor to submit a request for Final Acceptance as AECOM has confirmed that all the deficiencies are complete (versus warranty items).
- The CRD and contractor are working on resolving the stainless steel pipe weld defects (warranty issue).

6. Motion to Close the Meeting

MOVED by J. Gill, **SECONDED** by M. Steel,
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

The Magic Lake Estates Water and Sewer Committee closed the meeting at 10:35 am and resumed in open session at 10:52 am.

7. Water and Wastewater Operations Report – October

D. Robson presented a written report.

The committee requested that the water level sign at the entrance to Magic Lake Estates be updated weekly on a regular basis. D. Robson will request operations staff to update the sign on a weekly basis.

MOVED by J. Gill, **SECONDED** by Director Howe,
That the Magic Lake Estates Water and Sewer Committee direct staff to expedite the Buck Lake Intake Line Assessment project identified in the 2016 Capital Budget for \$5,000 and that funding for the assessment can be acquired from the Capital Reserve Fund.

CARRIED

Director Howe left the meeting at 11:11 am.

MOVED by M. Steel, **SECONDED** by C. Rodash,
That the Magic Lake Estates Water and Sewer Committee receive the report for information.

CARRIED

8. Water Quality Update

Christoph Moch provided a verbal report. The following items were noted:

- Switched raw water supply from 100% Buck Lake to 80% Buck Lake and 20% Magic Lake.
- Potassium permanganate injection remains effective on both source lakes and regular jar testing continues to confirm the effectiveness.
- Some property owners have reported bryozoan growth in Magic Lake. It is a normal and healthy part of the ecosystem and does not affect water quality.
- Water testing has changed from bi-weekly to monthly.
- One positive test for total coliforms at Crowsnest sampling location on October 20. A re-sample two days later was negative. Possible sampling error. All other samples were negative for bacteria.
- Taste and odour testing is ongoing.
- Blue green algae bloom in September in Buck Lake has subsided. Additional testing was performed to confirm that it was not toxic.
- Magic Lake water quality has been stable.
- Turbidity is monitored and tested on a regular basis.
- Metal testing was not conducted in October, the next scheduled test is in November.

9. Review of Action List

The action list was reviewed and updated.

Items Arising from Action List

- Correspondence has been received from Boydel regarding a pilot wastewater treatment project for Schooner wastewater treatment plant. A staff report will be prepared outlining the steps involved in pursuing a potential pilot.

10. Correspondence

There was no correspondence.

11. New Business

The 2016 meeting schedule was set as follows. All meetings will be held in at 479 Island Highway with the exception of the Annual General Meeting. Meetings will be held on Pender Island when required, such as public open houses for future wastewater and water projects.

January 12, 2016	July 12, 2016
February 9, 2016	August 13, 2016 (AGM on Pender)
March 8, 2016	September 13, 2016
April 12, 2016	October 11, 2016
May 10, 2016	November 8, 2016
June 14, 2016	December 13, 2016

MOVED by M. Steel, **SECONDED** by J. Gill that the December 8, 2015 meeting only be held if necessary.

CARRIED

12. Adjournment

MOVED by J. Gill, **SECONDED** by M. Steel,
That the meeting be adjourned at 12:02 pm.

CARRIED



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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, JANUARY 12, 2016**

SUBJECT CAPITAL PROJECTS STATUS UPDATE AT YEAR-END 2015

ISSUE

To provide a year-end status update on the Magic Lake Estates water and sewer service capital projects.

BACKGROUND

A number of water and sewer capital projects were initiated in 2015 as per the approved Capital Plan in the 2015 budget. Good progress has been made on the projects and they are all currently within their approved budgets.

It should be noted that while capital projects are identified in a specific year as part of the annual budget approval process, often projects span multiple budget years due to a number of reasons including the size and complexity of the project, weather conditions, specific work windows, etc. Most projects are not initiated until after the Capital Regional District (CRD) Board approves the final budget at its March Board meeting each year. The typical phases of a project includes planning, design, construction, commissioning, and close-out.

The following Water and Sewer project tables summarize the status of each project as of December 31, 2015.

Table 1: Magic Lake Estates Water Projects

Project Name	Approved Project Budget	Estimated Budget Expended	Project Status
New Syphon @ Magic Lake	\$35,000	\$3,100	Conceptual Design: Initial design review and associated report is complete and associated specification has been developed. Works will be completed by CRD Operations Staff in the spring of 2016 when weather improves.
Buck Lake East Dam Preliminary Design.	\$40,000	\$31,000	COMPLETE: The preliminary design report for remedial work was completed by KCB Engineering. Detailed design is scheduled in 2016 and construction is planned for 2017.
Signal Hill PRV Upgrade	\$50,000	\$7,000	Conceptual Design is Complete: Conceptual review for Signal Hill, Capstan Way and Schooner Cove has been completed and a staff report will be prepared to summarize the concept review findings and recommend that all PRV upgrades be combined to save construction and administration costs.
Magic Lake - Adjustable Water Intake	\$20,000	\$2,500	Conceptual Design: Conceptual review has been completed and a staff report has been prepared to present the findings.
Magic Lake Dam Safety Upgrades - Replace Spillway Boom	\$3,000	\$2,800	COMPLETE: The log boom was installed the week of December 07 th , 2015 by CRD forces.
Magic Lake - Install Staff Gauge	\$2,000	\$400	Under Construction: Materials and equipment have been purchased and final installation is scheduled for early 2016 during safer weather conditions (low wind).

Project Name	Approved Project Budget	Estimated Budget Expended	Project Status
Buck Lake Building Alterations	\$40,000	\$4,500	Under Construction: Approvals have been received and initial works have been initiated. It is anticipated that construction will be complete by the end of March 2016.
Air Valve Upgrades	\$8,000	\$6,700	Under Construction: Four air valves were installed in 2015, and one more will be completed in 2016. Stations installed in 2015 were at 3784 Privateers, 1615 Schooner Way, 3615 Jolly Roger Place and beside the access Rd to Captain's Reservoir.

Table 2: Magic Lake Estates Sewer Projects

Project Name	Approved Project Budget	Estimated Budget Expended	Project Status
Chart Drive Replacement Design	\$100,000	\$18,000	Detailed Design: Project concepts have been developed. Urban Systems Ltd. have been retained to design two alternatives that will be tendered in March 2016 subject to a successful Alternative Approval Process. If approved, construction would commence in the summer of 2016 and be complete in early 2017.

It is anticipated that the majority of the projects listed in the above tables will be completed by the second quarter of 2016. After the 2016 budget is approved by the CRD Board in March 2016, the new 2016 capital projects will be initiated and added to the capital project tables.

ALTERNATIVES

Alternative 1

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

Alternative 2

That the Magic Lake Estates Water and Sewer Committee receive this report and requests CRD staff to provide further information.

IMPLICATIONS

Alternative 1 – Staff will continue with advancement of the approved capital projects as directed.

Alternative 2 - Staff will continue with advancement of the approved capital projects and provide additional information as requested.

CONCLUSION

A total of nine capital projects are underway and all are currently within their approved budget. Some of works are undertaken using CRD engineering and operations forces. Good progress has been made and it is expected that a majority of the projects will be completed by the second quarter of 2016 or sooner.

RECOMMENDATION

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

Ian Sander, P.Eng.
Manager, Capital Projects
Infrastructure Engineering

Malcolm Cowley, P.Eng.
Acting Senior Manager
Infrastructure Engineering

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

IS:ls



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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, JANUARY 12, 2016**

SUBJECT MAGIC LAKE - ADJUSTABLE WATER INTAKE CONCEPT REVIEW

ISSUE

To provide an update on the concept and costs for an adjustable water intake on Magic Lake.

BACKGROUND

The Magic Lake Estates Water and Sewer Committee requested that an adjustable intake at Magic Lake be considered, and approved this project in 2015 with a budget of \$20,000.00. The project had a general description as noted in Schedule G of the 2015 Budget document as follows:

“Install Adjustable Intake on Magic Lake (2015) – Although the Buck Lake intake is moveable, the Magic Lake intake is fixed to the bottom of the lake. The only way to do yearly inspections is by using divers, at a significant cost. A movable intake can be inspected by operations staff by hoisting the intake to the surface to check screens.”

Conceptually, the preferred solution is to create a fixed floating service platform over a flexible water intake pipe to allow the screens and check valve to be brought to the surface for repair or maintenance by operations staff, without the need for a dive team. In addition, it was thought that an adjustable intake could be adjusted to a level that could enhance raw water quality.

Prior to initiating the detailed design, a concept review was completed to more fully evaluate the project benefits, probable capital costs, and potential operational costs savings. A copy of the Conceptual Review has been attached as **Appendix 1** and a summary of the key findings are noted below:

- The estimated cost for new Magic Lake Intake is considerably more than the available budget. The approved budget is \$20,000 and the estimated cost, including contingency is in the order of \$40,000 to 60,000. This is due to the complexity of constructing a maintenance platform such that staff can safely access the check valve and screen for cleaning and maintenance.
- Due to the shallow depth of Magic Lake, a new adjustable intake would provide little benefit in improving raw water quality due to limited water depth.
- It was noted that Buck Lake intake still requires a diver to safely access the check valve and screen and, therefore, a new adjustable intake on Magic Lake would only provide marginal operational savings of approximately \$800/year (a 40+ year payback period) as diving services are combined for both Magic Lake and Buck Lake intakes.
- Buck Lake is the primary raw water source for the Magic Lake Estates community and the adjustable water intake raft on that lake has a remaining life expectancy of approximately five years.

Therefore, based on the benefits and business case outlined in Appendix A, it appears that it would be more beneficial to replace the Buck Lake adjustable intake in five years rather than installing a new Magic Lake adjustable intake now for the following reasons:

- Buck Lake is the main water source for the Magic Lake Estates service area;
- Providing a new platform on Buck Lake provides greater operational savings of approximately \$4,000/year (assuming one emergency call out); and
- The emergency response time to address issues on Buck Lake intake would be better as work could be completed by on-island operators rather than calling in a dive team.

The proposed replacement of the Buck Lake Intake will be included in the Strategic Asset Management Plan for the year 2022 (when it has reached the end of its design life).

ALTERNATIVES

Alternative 1

That the Magic Lake Estates Water and Sewer Committee direct staff to close the 2015 Magic Lake Adjustable Intake Project and include a new project, in the 2017 Capital Planning process, to upgrade the Buck Lake and Magic Lake intakes in five years (2022).

Alternative 2

That the Magic Lake Estates Water and Sewer Committee direct staff to continue with the Magic Lake Intake Project and authorize an increase the project budget up to \$60,000.

IMPLICATIONS

Alternative 1 - The proposed intake at Magic Lake will not benefit the community through improved water quality or provide a meaningful reduction in operating cost. There will be no new capital expenses charged to this project. The investigative work completed to date can be used again in 5 years when the Buck Lake adjustable intake has reached the end of its life.

Meanwhile, operation staff will continue to utilize divers on an annual basis and during emergencies to clean and maintain the screen and check valve on intakes at Magic Lake and Buck Lake.

Alternative 2 - Staff will continue with the detailed design and construction of the Magic Lake adjustable intake at a total estimated cost of about \$60,000. However, since divers are still required to clean and maintain the Buck Lake intake the new Magic Lake adjustable intake this would only result in an operational savings of about \$800/year (with an estimated 40+ year payback).

CONCLUSION

The Magic Lake Estates Water and Sewer Committee authorized a budget of \$20,000 in 2015 for a new adjustable intake at Magic Lake. During the concept review, it has been determined that this budget will not be sufficient for a new adjustable water intake with maintenance platform. A new Magic Lake intake would offer little benefit with respect to water quality (due to the shallow lake depth) and it will not reduce the operations budget significantly because divers are still required for Buck Lake intake. If operational savings are desired, the best use of capital funds would be either on a new Buck Lake intake, or new Buck Lake and Magic Lake intake.

RECOMMENDATION

That the Magic Lake Estates Water and Sewer Committee direct staff to close the 2015 Magic Lake Adjustable Intake Project and include a new project, in the 2017 Capital Planning process, to upgrade the Buck Lake and Magic Lake intakes in five years (2022).

Ian, Sander, P.Eng.
Manager, Capital Projects
Infrastructure Engineering

Malcolm, Cowley, P.Eng.
A / Senior Manager, Infrastructure Engineering
Concurrence

Dan Robson, A.Sc.T
Manager, Saanich Peninsula and Gulf
Islands Operations
Concurrence

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

IS:ls

Attachments: 1



TO: Scott Mason, Manager, Water Engineering and Planning
Malcolm Cowley, Senior Manager, Infrastructure Engineering

FROM: Ian Sander, P. Eng.
Manager, Capital Projects

DATE: November 9, 2015 **FILE:** 5220-20

SUBJECT: MAGIC LAKE ESTATES (MLE): ADJUSTABLE WATER INTAKE FOR MAGIC LAKE – CONCEPT REVIEW AND CLASS C ESTIMATE

ISSUE

Prior to initiating a detailed design for the Magic Lake Adjustable Water Intake, options for the design and construction as well as the associated operations & maintenance costs have been evaluated. This memo summarizes those options and recommends an approach for the use of the MLE approved 2015 budget.

BACKGROUND

The MLE Commission approved this project in 2015, with a budget of \$20,000.00, and was defined in Schedule G of the budget as follows:

“Install Adjustable Intake on Magic Lake (2015) – Although the Buck Lake intake is moveable, the Magic Lake intake is fixed to the bottom of the lake. The only way to do yearly inspections is by using divers, at a significant cost. A movable intake can be inspected by operations staff by hoisting the intake to the surface to check screens.”

A Statement of Work was not prepared for this project; however, from discussions with operations the following information was noted about the Magic Lake Estates Water System:

- The Magic Lake Estates Water Treatment Plant receives source water from both Magic Lake and Buck Lake using separate pumping systems. Magic Lake provides approximately 20% of the source water and Buck Lake provides approximately 80%.
- The existing Magic Lake intake is fixed to the lake bed; and as such, yearly maintenance (cleaning of the screen and inspection of the check valve), or emergency repairs must be completed with the assistance of divers.
- The existing Buck Lake intake is adjustable and can be raised, or lowered within the water column, from a floating platform, to correspond with water quality parameters. As the lake stratifies during the summer and winter seasons, various layers form in the water column which can exhibit different water quality characteristics. It is beneficial to have the ability

to adjust the elevation of the intake to align will improved raw water quality. The Buck Lake platform and winch system cannot fully raise the intake and check valve out of the water; and as such; divers are still required for maintenance of the Buck Lake System (similar to Magic Lake maintenance procedure).

- The Magic Lake Intakes is approximately 10 feet deep and Buck Lake is approximately 40 feet deep. The Magic Lake intake sits in a cradle, off the lake bottom, and adjustment for water quality would not be required due to the limited depth.
- Currently maintenance work on the Magic Lake fixed intake and Buck Lake adjustable intake is done once per year by operations staff with the assistance of a dive team at a cost of approximately \$4,000.00 per year for both intakes. The Buck Lake and Magic Lake intakes are serviced at the same time to reduce diver cost.
- Recent data indicates that the Buck Lake intake requires emergency service yearly. The cost is approximately \$3,200 per event (a single intake). There has been no emergency response need in recent history for the Magic Lake Intake.
- The remaining service life of the Buck Lake intake is estimated to be 5 years.

An adjustable system for the Magic Lake intake would provide little improvement to raw water quality as it is relatively shallow. The benefit of an adjustable intake would include reduced yearly maintenance and emergency costs, and improved emergency response time.

The preferred solution is to create a fixed floating service platform over a flexible water intake pipe to allow the screens and check valve to be brought to the surface for repair or maintenance by island operations staff, without a dive team. Response time for a dive team can be in the order of two days. If there is an issue with the check valve or intake screen, the floating service platform can be used by CRD Operations to rectify the issue promptly, and cost effectively, with available island staff.

OPTIONS

As divers are currently required for scheduled maintenance for both Magic Lake and Buck Lake intakes, new service platforms and adjustable intakes for each lake would need to be constructed to fully reduce associated diving costs.

The following table has been developed to summarize options for the Magic Lake Estates intake system and associated costs. Appendix 1 includes cost estimate details.

New Platform to Service the Intake	Description	Estimated Capital Cost ¹	Current Diving Costs ² for both lakes	Estimated Diving Costs After New Platforms	Estimated Yearly Maintenance Savings	Estimated Payback (Years)	20 Year Total Cost ³
Magic Lake Only	New fixed floating platform or pole and winch system accessed by movable floating platform	\$40,000 - \$60,000	\$7,200	\$0 for Magic Lake \$6,400 for Buck Lake	\$800	38 - 75	\$168,000 to \$188,000
Buck Lake Only	New fixed floating platform or retrofit of existing platform to allow raising of intake above surface	\$40,000 - \$60,000	\$7,200	\$0 for Buck Lake \$3,200 for Magic Lake	\$4,000	10 to 15	\$104,000 to \$124,000
Magic Lake and Buck Lake	As per above	\$70,000 - \$120,000	\$7,200	\$0 ⁴	\$7,200	10 to 17	\$70,000 - \$120,000
Do nothing	No upgrades	0	\$7,200	\$7,200	\$0	0	\$144,000

1. Assumes a 25% contingency
2. Assumes one annual inspection of \$4,000 for both lakes and one yearly emergency call out. A regular service or emergency call out for one lake costs about \$3,200.
3. 2015 \$'s, assumes 20 year life expectancy.
4. No diving costs assumed. All scheduled maintenance and emergency work managed by operations.

CONCLUSIONS

The Magic Lake Estates Commission has granted a budget of \$20,000 in 2015 for a new adjustable intake at Magic Lake and this budget will not cover the costs of a new adjustable water intake with maintenance platform. This new intake would offer little benefit with respect to water quality (shallow depth) or reduction in system operations costs (the project would not negate the need for divers for the system).

If operational savings are desired, the best project to spend capital on would be either on a new Buck Lake intake, or new Buck Lake and Magic Lake intake. It should be emphasized that the estimated yearly operations costs, payback period, and 20 year costs are significantly affected by the potential for emergency divers. If the frequency of emergency divers increase over time then it becomes more cost effective to construct new adjustable water intake platforms to clean and maintain the screens and check valves using on-island operators.

RECOMMENDATION

Present a staff report to the MLE Committee that includes a summary of the adjustable intake options with a recommendation to close this project. An upgrade to the Buck Lake intake should be considered, in approximately 5 years, at the end of its service life. At that time it may also be prudent to re-evaluate the business case and consider the replacement of the Magic Lake intake as well.

Ian Sander, P.Eng., Manager, Capital Projects
Concurrence

Dan Robson, ASct., Manager, Saanich Peninsula and Gulf Island Operations
Concurrence

Attachment: Appendix 2

Option 1: Adjustable Water Intake - Partial Contracted Design: The design & off site assembly of the service platform is contracted out with CRD forces to design and assemble the remainder of the overall apparatus. The works and associated Class C estimate are summarized in the table below:

Item	Description	Cost
Floating Service Platform	An estimated cost for an engineer designed and manufactured floating platform 12'X12' in size with adequate floatation to support up to 1500 lbs complete with a 3' 11" railing and a 4'X6' center hatchway is approx. \$11,000.00 . This is based on an actual estimate provided by Nelco Marine who specializes in dock & platform building. This platform can be altered in shape or size as requested. This configuration was chosen for this estimate to help address some of the requests from the operators. Delivery of the platform from the main land to the CRD office at 479 Island Hwy in Victoria is approx. \$1,200.00.00 as per the Nelco Marine quote. <i>*This does not include delivery from Victoria to Pender Island.</i>	\$12,200
Water Intake Suction Hose	The material cost of a 10m x 150mm diameter G741-600 suction hose as specified in the 2004 Buck Lake engineered design is approx. \$1,200.00 . This is based on a 2015 quote from Coast Industrial Parts.	\$1,200
Partial Assembly & Installation	Assuming CRD forces to perform the work, the estimated cost of construction & materials including: partial assembly of the platform with the addition of a winch and anchor cable system, as well as the assembly of the flexible pipeline with rigid pipe head, back check valve and screens prior to installation by a diver is approx. \$20,000.00 . This is based on the final CRD labour costs for the Buck Lake adjustable water intake installed in 2005. Work options could include: multiple trips because of a shortened work day or possibly paying for CRD operations crew to overnight on island to accomplish work. Contracting of some services to existing Pender Island contractors may be cost efficient as well.	\$20,000
Diving Services	Diving services are approx. \$3,500.00 per day and the installation would require two days for an approx. total of \$7,000.00	\$7,000
Project Management	Coordinating design, approvals, construction administration and project closeout.	\$8,000
		Sub - Total
Contingency	Class C - 25% Assumed	\$12,100
		Total
		\$61,000

Option 2: Adjustable Water Intake – Full Contracted Design: The design of the service platform, winch & cable system, & intake suction hose are contracted out. The works and associated Class C estimate are summarized in the table below:

Item	Description	Cost
Consultant Design Cost	The engineering cost to contract out the full design of the adjustable water intake with service platform is approx. \$5,000.00 .	\$5,000
Water Intake Suction Hose	The material cost of a 10m x 150mm diameter G741-600 suction hose as specified in the 2004 Buck Lake engineered design is approx. \$1,200.00 . This is based on a 2015 quote from Coast Industrial Parts.	\$1,200
Full Assembly & Installation	Assuming CRD forces to perform the work, the estimated cost of construction & materials including: full assembly of the platform with the addition of a winch and anchor cable system, as well as the assembly of the flexible pipeline with rigid pipe head, back check valve and screens prior to installation by a diver is approx. \$30,000.00 . This is based on the final CRD labour costs for the Buck Lake adjustable water intake installed in 2005. Work options could include: multiple trips because of a shortened work day or possibly paying for CRD operations crew to overnight on island to accomplish work. Contracting of some services to existing Pender Island contractors may be cost efficient as well.	\$30,000
Diving Services	Diving services are approx. \$3,500.00 per day and the installation would require two days for an approx. total of \$7,000.00	\$7,000
Project Management	Coordinating design, approvals, construction administration and project closeout.	\$8,000
		Sub - Total
Contingency	Class C - 25% Assumed	\$12,800
		Total
		\$64,000

Option 3: No Adjustable Intake – Remains as Fixed Water Intake: In this option the existing fixed water intake remains in its current form. No changes are made. The works and associated Class C estimate are summarized in the table below:

Item	Description	Cost
Design & Construction Costs	No design or construction costs. Continue the practice of hiring divers to inspect and repair the water intake as required.	\$0
Diving Services	Currently the Magic Lake intake is inspected twice annually at an estimated cost of \$3,500.00 per inspection for a yearly total of \$7,000.00 . This does not include additional callouts for repairs.	\$7,000
Budget Allocation	Directing this budget to cover diver costs for maintenance will cover approx. 2-3 years of inspections or this budget could be allocated to another MLE project with a higher safety priority with MLE Commission approval.	\$0,000
Project Management	Coordinating design, approvals, construction administration and project closeout are not required.	\$0
	Sub – Total	\$0
Contingency	Class C - 25% Assumed	\$1,750
	Total	\$8,750



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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, JANUARY 12, 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 November 10, 2015 committee meeting, the committee was provided with further information on the Alternative Approval Process (AAP); which was the process approved by the committee on October 13, 2015 to seek elector approval for funding for the projects.

Since that time, staff prepared a loan authorization bylaw No. 4048 (see Appendix A) for the AAP and the CRD Board approved the first three readings of the bylaw and forwarded it to the Inspector of Municipalities for their approval, which is anticipated by January 25, 2016.

Alternative Approval Process Update

Assuming the Inspector of Municipalities approves the bylaw, it will be taken back again to the CRD Board on February 10, 2016 for approval to commence with the AAP notifications.

Staff then proposes to publish the first and second Statutory Notices in the newspaper on February 17 and 24, 2016, respectively.

CRD Legislative Services are determining the fair total number of electors of the area to which the AAP applies with methods like the resident and non-resident voter's lists and overlaying the data onto the Magic Lake Estates Sewer Service Area. The fair total number of electors will be presented at the February committee meeting.

In addition to the statutory notices, staff are preparing for a public open house on February 27, 2016 and also plan to engage the public as outlined below.

Public Engagement

There were a number of communication steps outlined in the November 10, 2015 staff report and, to-date, the CRD website has been updated and notices of the public open house were included with the fourth quarter sewer utility bills. In addition, staff have prepared a communications plan to facilitate public engagement (see Appendix B). Communication materials will be provided to the committee in advance of distribution, for their information and reference.

Chart Drive Replacement Design

At the September 8, 2015 meeting, the committee directed staff to commence with two detailed designs for the Chart Drive Replacement (one was for a new septic treatment system and the other was for a pump station and forcemain). Urban Systems was awarded a contract, through a competitive process, and commenced with the design in November 2015. The design work is progressing as planned and two issues have been identified as follows:

1. The septic tank has a significant amount of infiltration. This was not noticed in 2014-2015 due to the lower rainfall, but has been quite evident after/during this fall's storm events. The consultant's scope of work included an inspection of the septic tank to determine whether it could be reused. The inspection will coincide with planned entry into the septic tank to see where the problems are and determine the most cost-effective short-term solution to minimize infiltration and determine if the tanks can even be re-used or if they have to be replaced as part of the new septic design.
2. The existing septic tank encroaches on the adjacent property, Lot 64, currently owned by the Ministry of Transportation Infrastructure (MoTI). Staff will notify MoTI and work with them to obtain an easement for the encroachment in addition to getting approval to use Lot 64 as a staging area during construction.

The detailed designs are expected to be completed by the end of March. Further information about the designs can be provided at the Open House.

ALTERNATIVES

Alternative 1

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

Alternative 2

That the Magic Lake Estates Water and Sewer Committee:

1. Receive this report for information; and
2. Request additional information from staff.

IMPLICATIONS

Alternative 1 – Staff will continue with advancement of the AAP and public engagement preparing presentation boards and handouts for the public open house.

Alternative 2 – Staff will present a report addressing the request for information in a subsequent staff report.

CONCLUSION

The Magic Lake Estates wastewater system requires improvements, initial works identified as Phase 1 of the system improvements require additional funds through a loan. Progress through the Alternative Approval Process for loan authorization is continuing along with detailed design for the replacement of the Chart Drive septic system.

RECOMMENDATION(S)

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

Dale Puskas, P.Eng.
Project Engineer
Infrastructure Engineering

Malcolm Cowley, P.Eng.
Acting Senior Manager
Infrastructure Engineering

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

DP/MC:

Attachments: 2

BYLAW 4048

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4048

A BYLAW TO AUTHORIZE THE BORROWING OF
ONE MILLION FIVE HUNDRED AND THIRTY THOUSAND DOLLARS (\$1,530,000)
FOR THE MAGIC LAKE ESTATES WASTEWATER SYSTEM RENEWAL AND UPGRADE

WHEREAS:

- A. Under Bylaw No. 1873, "Outer Gulf Islands Magic Lake Estates Sewage System Local Service Establishment Bylaw, 1990", the Capital Regional District established a local service for the operation of a service for the collection, conveyance, treatment and disposal of sewage;
- B. It is deemed desirable to provide sewerage system facilities described hereunder;
- C. The works shall include the replacement of the Chart Drive septic field, upgrade of the Buck Lake and Privateers sewers, completion of the inflow and infiltration program, and assessment of tanks at the Schooner Waste Water Treatment Plant;
- D. The estimated cost of the works, facilities and equipment, including expenses incidental thereto to be funded from debt servicing, is the sum of One Million Five Hundred and Thirty Thousand Dollars (\$1,530,000) which is the amount of debt intended to be authorized by this bylaw, subject to receiving funding from other sources;
- E. It is proposed that the financing of the said sewerage system facilities is to be undertaken by the Municipal Finance Authority of British Columbia pursuant to proposed agreements between that Authority and the Capital Regional District;
- F. Pursuant to Section 823.1 of the Local Government Act, participating area approval is required and shall be obtained by alternative approval process under Section 801.3 of the Local Government Act; and
- G. The approval of the Inspector of Municipalities is required under Section 819 of the Local Government Act.

NOW THEREFORE the Board of the Capital Regional District in open meeting assembled enacts as follows:

- 1. The Board is hereby empowered and authorized to undertake and carry out or cause to be carried out the capital renewal and upgrade of the Magic Lake Estates sewerage wastewater system, which will involve the planning, study, project administration, project communications, staff time required for design and construction of facilities, design and construction of facilities for the collection, conveyance, treatment and disposal of wastewater, as well as other related works, facilities and equipment purchases, and do all things necessary in connection therewith and without limiting the generality of the foregoing:

- (a) to borrow upon the credit of the Capital Regional District a sum not exceeding One Million Five Hundred and Thirty Thousand Dollars (\$1,530,000);
 - (b) to acquire all such real property, easements, rights-of-way, leases, licenses, rights or authorities as may be requisite or desirable for or in connection with the planning, study, design and construction of a system for the collection, conveyance, treatment and disposal of sewage and all related ancillary works, studies and equipment deemed necessary by the Board.
2. The maximum term for which debentures may be issued to secure the debt intended to be created by this bylaw is 10 years.
 3. This Bylaw may be cited as the "Magic Lake Estates Wastewater System Loan Authorization Bylaw No. 2, 2015".

READ A FIRST TIME THIS 9th day of December 2015

READ A SECOND TIME THIS 9th day of December 2015

READ A THIRD TIME THIS 9th day of December 2015

APPROVED BY THE INSPECTOR OF MUNICIPALITIES
THIS th day of 2016

RECEIVED THE ASSENT OF THE ELECTORS UNDER SECTION 801.3 OF THE LOCAL
GOVERNMENT ACT THIS th day of 2016

ADOPTED THIS th day of 2016

CHAIR

Corporate Officer

FILED WITH THE INSPECTOR OF MUNICIPALITIES THIS th day of 2016

I hereby certify the foregoing to be a true and correct copy of the Bylaw which was given third reading by the Board on the 9th day of December, 2015.
Dated this 16th day of December, 2015.

S. M. Newton
Deputy Corporate Officer

Magic Lake Estates Wastewater Infrastructure Projects

Phase 1

Communications Plan

Purpose

Develop an effective communications plan to engage and inform Magic Lake Estates Wastewater system customers about the Phase 1 plan to address the failing infrastructure components and long term needs of the system. The primary objective is to provide background information to prepare residents to be informed for the upcoming Alternative Approval Process (AAP).

Background

A comprehensive short- and long-term plan is needed to provide a fiscally responsible approach to the replacement of existing infrastructure as many of the major facilities and the collection system of the Magic Lake Estates (MLE) wastewater system are at or near end of life.

Many of the system components are very old and at end of life, with the risk of failure at any time, resulting in Out-of-Compliance orders from the Ministry of Environment (MOE). Island Health Authority has already issued an Order to stop discharging to the Chart Drive septic field. As well, exceeding the peak capacity at Cannon and Schooner Wastewater Treatment Plants (WWTP) results in discharge of untreated sewage posing environmental and social risks, as well the risk to public safety. If upgrades are not done and repairs are completed on an emergency basis, high costs can be expected in the long term.

The Magic Lake Estates Water and Sewer Local Services Committee has approved bringing one Phase of a four phase plan to the community in order to seek their approval for borrowing the required funds. Phase 1 addresses the immediate needs of the system including replacement of the Chart Drive septic system, upgrading of two sewers on Buck Lake Road and Privateers Road, completing Inflow & Infiltration (I&I) reduction program and assessing the integrity of the clarifier tanks at Schooner Wastewater Treatment Plant. These Phase 1 projects were chosen because they address the immediate needs of the Magic Lake Estates system, while keeping costs reasonable.

The open house will explain why the Phase 1 projects are essential and inform residents how the AAP works.

Target Audiences

- Customers of the Magic Lake Estates Wastewater system
- Stakeholders in the project

Communications Objectives

The communications objectives for this plan are:

1. Encourage residents to attend the public open house on February 27, 2016.
2. Inform the public of the immediate and long-term needs for the Magic Lake Estates Wastewater system.
3. Ensure the public is proactively informed and educated about the next steps and progress of the project.
4. Ensure that effective feedback mechanisms are implemented and that comments are collected from the public.

Key Messages

The key messages for this plan are:

1. Members of the Pender Island community are invited to attend a public open house on the proposed solution for addressing the issues with the Magic Lake Estates Wastewater system infrastructure at St. Peter's Anglican Church on February 27, 2016 between 11am to 3pm.
2. The CRD is providing information on the proposed Phase 1 Wastewater projects in order to help residents understand why they are needed.
3. The CRD is proposing a solution that best addresses the immediate needs of the Magic Lake Estates system while keeping costs reasonable.

Challenges

Sewer and wastewater infrastructure is not highly visible to the resident unless there's an issue that is directly impacting them. For this reason, they may not see the importance of addressing the issues and unable to justify paying more taxes to pay for the project. Also an increase in taxes could pose a hardship for some households.

Opportunities

The Phase 1 projects will eliminate the temporary pump and hauling cost of approximately \$1,000/week from the failed Chart Drive system

The Inflow and Infiltration program could reduce peak flows and reduce wastewater overflows at the Cannon and Schooner Wastewater Treatment Plants.

Strategies & Tactics

COMMUNICATION OBJECTIVE

STRATEGIES	Objective 1: Encourage residents to attend the public open house on February 27, 2016.	Objective 2: Inform the public of the immediate and long-term needs for the Magic Lake Estates Wastewater system.	Objective 3: Ensure the public is proactively informed and educated about the next steps and progress of the project.	Objective 4: Ensure that effective feedback mechanisms are implemented and that comments are collected from the public.
Public open house	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Media Release	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Earned media	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Website	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Display boards	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
FAQ	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Online Comment Form		<input checked="" type="checkbox"/>		
Mail-Out Invite	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>

Media Plan

Media Distribution Overview

Free Advertising

- Social Media/ Online/ Digital & Video
 - CRD website
 - Online community boards (Pender Island Community Network, Pender Post Calendar)

Earned Media

- Place notifications in newspapers

Budget

The budget for the communications activities is \$5,000 and includes the following:

- Printing and Materials - \$1,000
- Open house Rental (5 hrs) - \$50
- Travel (CRD Vehicle, Ferry) - \$250
- Refreshments (Coffee, Cookies, Water) - \$100
- Media (Advertising) - \$1,100
- Staff Time - \$2,500



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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, JANUARY 12, 2016**

SUBJECT PROPOSED WATER CONSERVATION BYLAW

ISSUE

To seek approval to proceed with preparing a staff report to identify options for implementing water conservation measures by bylaw for the Magic Lake Estates Water Service.

BACKGROUND

The Magic Lake Estates Water and Sewer Committee requested Capital Regional District (CRD) staff to prepare a report on the issue of a water conservation bylaw. The committee has imposed voluntary water use restrictions for many years and communicated the restrictions by use of signage boards, newsletters and local newspaper advertisements. Formal water restrictions are not included in the existing bylaws and therefore, the restrictions are voluntary and unenforceable.

Although the water system has been able to meet the demand of its customers over the years, there is a desire of the committee to formalize water conservation measures within a bylaw, whether it is within the existing bylaw or the creation of an independent bylaw.

At its meeting of June 17, 2014 the Magic Lake Estates Water and Sewer Committee adopted a recommendation to endorse a water conservation plan (copy of the staff report and conservation plan are attached). The plan was prepared for several reasons including to achieve reduced water demand and as a requirement of the agreement with the Provincial and Federal governments in order to receive funding for the water treatment plant project. Amongst the topics discussed and implemented in the water conservation plan, watering restrictions were described that were based on the Greater Victoria water conservation bylaw, Stages 1, 2 and 3.

It is proposed to impose water conservation measures for the peak water demand period of 2016. In doing so, it is proposed to report to the committee at a future meeting with options regarding water conservation measures and proposed bylaw details for consideration and adoption by the committee. In doing so the CRD will enlist Demand Management, Legislative Services and Integrated Water Services staff. Further, the process and schedule would be identified including report preparation, presentation to the committee, adoption by the committee, Electoral Area Services Committee (EASC) and the CRD Board, communication strategy to the customers and so on.

Also, for consideration, is an issue of messaging that arose during the summer of 2015. Many stakeholders in the province created their own messaging regarding drought conditions and water use restrictions which were created for their own reasons, but were inconsistent and often confusing. There is an opportunity to create a common water conservation detail (restrictions) for all of the CRD water services.

ALTERNATIVES

Alternative 1

That the Magic Lake Estates Water and Sewer Committee direct CRD staff to:

1. Prepare a report for a future committee meeting to identify options for water conservation measures and proposed bylaw details; and
2. Fund the initial effort by transferring up to \$5,000 from the capital reserve fund, and request the EASC to support funding from all other electoral area water utility services for the development and implementation of the bylaw.

Alternative 2

That the Magic Lake Estates Water and Sewer Committee receive this report and request the CRD staff to provide further information.

IMPLICATIONS

Alternative 1 – by directing the CRD staff to proceed with preparing a report with initial funding from the capital reserve account, the committee will receive a report with options and bylaw information for its consideration. An electoral area water utility water conservation bylaw could be adopted for all of the water services which would provide a consistent approach to conservation and provide the ability to manage summer demand and water supply through bylaw requirements and enforcement.

Alternative 2 – by receiving the report there is no direct implication.

CONCLUSION

The Magic Lake water system has imposed voluntary water use restrictions for many years and it is proposed to impose measures under a bylaw. The water system has been able to meet the demand of its customers over the years.

RECOMMENDATION

That the Magic Lake Estates Water and Sewer Committee direct CRD staff to:

1. Prepare a report for a future committee meeting to identify options for water conservation measures and proposed bylaw details; and
2. Fund the initial effort by transferring up to \$5,000 from the capital reserve fund, and request the EASC to support funding from all other electoral area water utility services for the development and implementation of the bylaw.

Scott Mason, B.Sc., P.Eng.
Manager, Water Engineering and Planning

Malcolm Cowley, P.Eng.
Acting Senior Manager
Infrastructure Engineering
Concurrence

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

SM:ls

Attachments: 1

Staff report and minutes from the June 17, 2014 MLE Committee meeting.



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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER LOCAL SERVICES
COMMITTEE
MEETING OF TUESDAY, JUNE 17, 2014**

SUBJECT WATER CONSERVATION PLAN

ISSUE

A water conservation plan, endorsed by the Magic Lake Estates Water and Sewer Local Services Committee (Committee), is required as a condition of the Building Canada Fund grant agreement for the water system upgrade project.

BACKGROUND

The Magic Lake Estates water service was awarded a grant under the Building Canada Fund in 2009 for up to \$7,875,000 (3/3rds) for water system improvements. The funding agreement obligates the CRD to provide an effective water conservation plan that is endorsed by the Committee. The Province expects that an effective water conservation plan includes:

1. Identify current water consumption (e.g. 600L/capita/day);
2. Set a water reduction target (e.g. 350L/capita/day by a certain year);
3. Outline the communities current and planned water conservation action/measures (e.g. universal metering, incline block rates, conservation plumbing fixtures, leakage reduction, rebate programs, education programs, xeriscaping, etc.);
4. Identify current and planned mitigation and adaptation strategies to address climate change (e.g. installing water meters to secure water supply, lowering demand to reduce pumping requirements);
5. Detail how strategies/initiatives will be implemented (e.g. schedule, funding, staff responsibility, etc.); and
6. Link the plan to other regulatory mechanisms, policies and plans (e.g. Official Community Plan, water master plan, wastewater management strategy, BC Living Water Smart, Climate Action Plan, etc.)

Of the reporting to date by the CRD staff regarding this agreement condition, the Province has confirmed that conditions 3 and 4 as noted above have been achieved. In order to meet the remaining conditions, the CRD staff have prepared a draft Magic Lake Estates Water Conservation Plan for endorsement by the Committee (Attachment 1).

ALTERNATIVES

1. That the Magic Lake Estates Water and Sewer Local Services Committee endorse the Magic Lake Water Conservation Plan.

Tim Tanton, MPA, P.Eng.
Senior Manager, Infrastructure Engineering

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

TT:ls

Attachment: 1



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ATTACHMENT 1

Magic Lake Estates Water Service WATER CONSERVATION PLAN

DRAFT

June 2014

As a condition of the Building Canada Fund grant awarded for upgrades to the Magic Lake water system, this Water Conservation Plan identifies targets and opportunities for sustainable water use in the Magic Lake community.

Population and Potential Growth

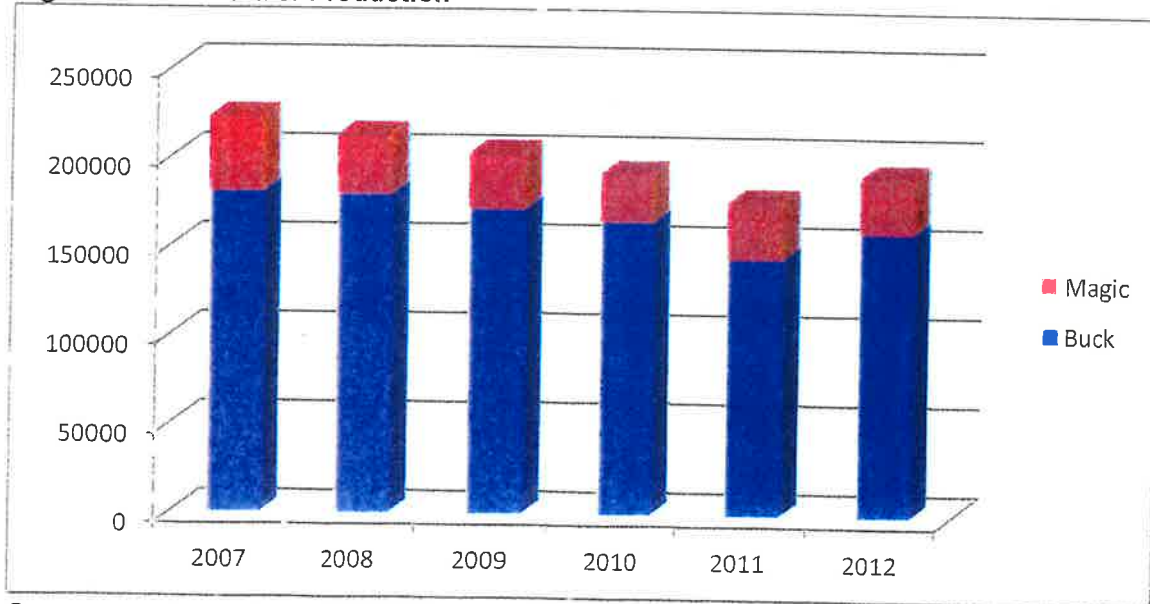
The Magic Lake Water Service Area includes 1,206 taxable folios, of which 1,005 are connected to the water system. All of the connections are for residential use.

There is limited potential for population growth within the existing Magic Lake Water Service Area. The 201 undeveloped folios in the area will likely be connected to the water system in the future. The Islands Trust governs land use on Pender Island. Its environmental protection mandate and supporting land use bylaws and policies strictly limit new development, and effectively prohibit subdivision for new development in Magic Lake Estates. We therefore assume that the population growth will be limited to an ultimate buildout of the 1,206 lots in Magic Lake Estates.

Current Water Demand

Water treated and supplied to the distribution system is measured monthly. Total annual water production for the years 2007-2012 is shown in Figure 1. In 2012, a total of 180,883 m³ of water was produced, or 180 m³ per connection.

Figure 1 – Total Water Production



Customer water meters were installed in 2010 as part of the grantable project, and have been read every three months since June 2010. The total amount of water delivered to customer connections in 2012 was 131,803 m³, or an average of 131 m³ per connection. This compares very favourably to the 235 m³ per connection for the Greater Victoria water system in the same year.

The difference between total production through the plants and total metered customer use (non-revenue water) is 49,080 m³. This equates to 27% of total production, and is excessive compared to other similar systems. Non-revenue water includes system leaks, fire-fighting and system flushing (filters and distribution system) activities. Leaks on private side plumbing are recorded by individual meters at property line and are not considered as non-revenue water. Replacement of watermains through the Water Improvements Project (two-thirds financed by the Building Canada Fund) is an important step in reducing this non-revenue water.

Water Demand Reduction Target

The following water conservation targets are proposed by 2022:

- Reduce annual production to 105 m³ per connection (42% reduction)
- Reduce residential demand to 100 m³ per connection (24% reduction)

These targets are readily achievable by:

1. Elimination of water system leakage losses through replacement of older pipe, especially in higher pressure areas of the system.
2. Gradual adoption of current, cost-effective technologies including high efficiency toilets and front loading washing machines. Rainwater harvesting for nonpotable uses and leak reduction may also be implemented cost-effectively as existing infrastructure is replaced and annual costs of water service increase over the next 10-20 years. In order to achieve the conservation targets, the value of water efficient technologies and practices must be effectively communicated to the community.

Current and Planned Water Conservation Measures

A planned adaptive strategy for water conservation is proposed for Magic Lake Water System, enabling conservation measures to be tailored to meet the changing needs of the community over time. This approach has proven successful for the CRD Greater Victoria water system. The following conservation measures are proposed as elements of a water conservation plan for Magic Lake:

1. **Universal metering** (complete) – As part of the grantable project, each customer connection to the water system was retrofitted with a water meter. The meters have been read quarterly since June 2010. Water production has decreased from 223 m³/connection to 180m³/connection (19%) since 2007, the year before the first meters were installed.
2. **Reporting usage on water bills** (current) – Information about water use has been displayed on water bills since January 2011, raising customer awareness about their water use. Further information is presented at annual general meetings and in community newsletters, enabling customers to compare their own usage with the range and average in their community and others.
3. **Consumption based water billing** (current) – Starting on July 1, 2013, Magic Lake Estates has implemented consumption based billing, comprised of the following charges:
 - \$62.50 fixed fee (payable by all water users)
 - \$0.50/ m³ extra charge for quarterly usage over 50 m³ (applies to top 15% of water users only)
 - \$1.00/ m³ extra charge for quarterly usage over 80 m³ (applies to top 6% of water users only)

Such a structure maintains stable revenue for fixed costs, provides a sufficient quantity of water at an affordable cost for essential customer needs, and provides a strong price signal to reduce excessive usage in any of the four billing cycles. Based on recent implementation of similar structures in other CRD water services, further reductions in overall demand reduction are expected.

4. **Community Awareness and Education** (current) – Information about water use and conservation is provided in community newsletters and at typically well attended annual general meetings in August. A more formal conservation awareness program has been implemented by linking information presented by mail and at the AGM with a community homepage on the CRD website that includes:
- a. water use statistics, and comparison with other areas and benchmarks/targets
 - b. best practice guides (e.g. fixture and appliance standards, rainwater harvesting, leak prevention)
 - c. links to CRD regional water conservation resources
 - d. links to other organizations that provide water conservation resources tailored to the Gulf Islands (e.g. Mayne Island Integrated Water Systems Society, Salt Spring Island Water Council).

5. **Watering Restrictions** (current)

As a further measure, the Magic Lake Water and Sewer Local Services Committee encourages water conservation through voluntary adoption of the Stage 1, 2 and 3 watering restrictions described in the Greater Victoria Water Conservation Bylaw:

Stage 1:

- in effect from May 1 to September 30 every year
- even numbered addresses may only water lawns 4-10am and 7-10pm on Wednesday and Saturday
- odd numbered addresses may only water lawns 4-10am and 7-10pm on Thursday and Sunday
- micro-drip irrigation allowed anytime

Stage 2:

- in effect as determined by the Magic Lake Estates Water and Sewer Local Services Committee
- even numbered addresses may only water lawns 4-10am and 7-10pm on Wednesday
- odd numbered addresses may only water lawns 4-10am and 7-10pm on Thursday
- micro-drip irrigation allowed anytime

Stage 3:

- in effect as determined by the Magic Lake Estates Water and Sewer Local Services Committee
- no lawn watering
- micro-drip irrigation allowed between 4-10am and 7-10pm.

6. **Water Conservation Plan Renewal** (2019, and every five years thereafter) – A review of this plan will be conducted approximately every five years to update forecasts and targets, consider new information, and adjust program activities as required to meet targets.

Program Implementation Responsibility, Cost and Schedule

This Water Conservation Plan will be implemented by CRD staff, under the authority of the Magic Lake Estates Water and Sewer Local Services Committee, and the CRD Board.



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Minutes of a Meeting of the Magic Lake Estates Water and Sewer Local Services Committee
Held Tuesday, June 17, 2014 in the Main Conference Room, 479 Island Highway, Victoria, BC

- PRESENT:** **Committee Members Representing Sewer:** A. Wilson, J. Petrie, J. Gill
 Committee Members Representing Water: J. Fisher, P. Watson
 Representing Water and Sewer: D. Howe, Southern Gulf Islands Regional Director
 Also present: M. Brady, AECOM
 Staff: T. Tanton, Senior Manager, Infrastructure Engineering, P. Sparanese, Senior Manager, Infrastructure Operations, S. Mason, Manager, Regional Water, D. Robson, Manager, Saanich Peninsula and Gulf Islands Operations, J. Marr, Project Engineer, G. Harris, Senior Manager, Environmental Protection and Water Quality, J. Blaney, Manager Water Quality Laboratory, L. Siemens (recorder)
- ABSENT:** M. Steel, Water Representative

The meeting was called to order at 9:30 am.

1. Approval of Agenda

MOVED by A. Wilson, **SECONDED** by P. Watson,
That the agenda be approved as distributed.

CARRIED

Water Quality staff G. Harris and J. Blaney were in attendance to address odour and taste concerns. The committee was advised that the water quality is potable with no health concerns and that water is being sampled and monitored to address the odour and taste issues. It was agreed that a letter would be mailed to the Magic Lake Estates water service area owners encouraging them to forward all concerns to CRD Water Quality staff.

Water Quality staff responded to several questions from the committee.

G. Harris and J. Blaney left the meeting at 10:02 am.

2. Adoption of Minutes of May 13, 2014

MOVED by A. Wilson, **SECONDED** by J. Fisher,
That the minutes of May 13, 2014 be adopted as previously distributed.

CARRIED

3. Water Project Update (AECOM)

M. Brady (AECOM) provided a verbal update as follows:

- Buck Lake pump station work started on May 10.

- The final inspection of the Magic Lake pump station noted some issues that are being corrected. Deficiencies are expected to be corrected by June 20.
- Training manuals are drafted.

M. Brady left the meeting at 10:28 am.

4. Water System Capital Improvement Project

T. Tanton presented a written report.

MOVED by P. Watson, **SECONDED** by J. Fisher,
That the Magic Lake Estates Water and Sewer Local Services Committee:

1. Receive the Water System Improvement Project Update for information;
2. Direct the Capital Regional District staff to prepare and issue a request for quotation in order to procure engineering services to complete the water main work; and
3. Direct CRD staff to proceed with transferring \$100,000 from the Magic Lake Estates Water Reserve Fund #1024 to the operating account to fund project commissioning costs.

CARRIED
Wilson OPPOSED

5. Water Conservation Plan

T. Tanton presented a written report including a *Draft* Water Conservation Plan.

MOVED by A. Wilson, **SECONDED** by J. Fisher,
That the Magic Lake Estates Water and Sewer Local Services Committee endorse the Magic Lake Estates Water Conservation Plan.

CARRIED

6. Summary of Capital Project Delays and Changes in the Work

T. Tanton presented a written report.

MOVED by P. Watson, **SECONDED** by J. Fisher,
That the Magic Lake Estates Water and Sewer Local Services Committee direct the Capital Regional District staff to request Rohl Enterprises to provide details related to the four issues resulting in the project schedule delay and changes in the work and then to prepare a report to the committee.

CARRIED

7. Chart Drive Septic System – Evaluation of Replacement Options

Discussion took place on the eligibility of voting on sewer issues. A response received from the CRD Senior Manager, Legislative and Information Services after referring to Bylaw 2339 follows:

S. 1(a) of the bylaw states that all appointed members can vote on matters relating to the establishment and operation of the water system. BUT, only each person resident or owning property within the sewer local service area plus the EAS director can vote on matters relating to the establishment and operation of the sewer system. S. 1(b) says that three shall be residents or property owners of the Magic Lake Estates Sewer Local Service Area and three shall be residents or property owners of the Magic Lake Estates Water Local Service Area.

"Having said that, the way that I interpret S. 1(a) is that if there happens to be four members that reside or own property in the Sewer Local Service Area then all four of those members can vote on the matter."

J. Fisher left the meeting at 12 pm.

MOVED by J. Gill, **SECONDED** by A. Wilson,
That the Magic Lake Estates Water and Sewer Local Services Committee:

1. Direct staff to conduct geotechnical investigations and refine cost estimates for the following two replacement alternatives for the Chart Drive septic system:
 - Replacement of the Chart Drive septic system with new raised sand beds;
 - Replacement of the Chart Drive septic system with a new pump station, septic tank and force main to the Schooner wastewater system.
2. Authorize the transfer of \$10,000 from Sewer Capital Reserve No. 1042 to a capital project for staff to investigate the two above alternatives.
3. Direct staff to report back with:
 - Refined cost estimates for the above two alternatives;
 - A list, including cost estimates, of the highest priority capital items from the 2012 Stantec report entitled "Asset Condition and Engineering Study"; and
 - A draft referendum question.

CARRIED

MOVED by J. Gill, **SECONDED** by A. Wilson,
That the remaining items (Items 8 – 12) be tabled for discussion at the next meeting and that the meeting be adjourned.

CARRIED

The meeting was adjourned at 12:20 pm.



Making a difference...together

**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, JANUARY 12, 2016**

SUBJECT WATER SYSTEM CAPITAL IMPROVEMENT PROJECT UPDATE

ISSUE

This report is provided as a general update regarding the activities and financial summary related to the water system capital improvement project (the water treatment plant).

BACKGROUND

This information report is provided to the Magic Lake Estates Water and Sewer Committee as an update for the water system capital improvement project. At the time of authoring this report the following work has been completed or is planned:

Activity Since Last Report

- The Capital Regional District (CRD) and Rohl have been working to finalize payments regarding the claims and liens filed against the project.
- The CRD and Rohl have been discussing the extent and any conditions related to the proposed repair work to the corroding stainless steel pipe segments. Rohl has engaged Acuren (a materials engineering firm) to investigate newly discovered pipe leaks and provide an updated report.

Planned Work for Next Period

- Rohl proposes to prepare a plan to resolve the stainless steel pipe issue.
- CRD staff will work on completing miscellaneous project close-out tasks including reporting to the Province of BC regarding agreement deliverables and liens issue oversight.

Project Financial Summary

The CRD staff conducted a project budget review and the project expenditure items still to be finalized include:

1. Finalizing lien claims, liquidated damages and legal costs;
2. Resolution of deficiency and/or warranty issues; and
3. Finalization of any interest credits or deductions related to the project;

The CRD staff will provide further financial details at the meeting based on possible outcomes.

ALTERNATIVES

Alternative 1

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

Alternative 2

That the Magic Lake Estates Water and Sewer Committee request the CRD staff to provide further information.

IMPLICATIONS

Alternative 1 – That the Magic Lake Estates Water and Sewer Committee receive this report information.

Alternative 2 - If the Magic Lake Estates Water and Sewer Committee requests further information, CRD staff will provide information at a future meeting.

CONCLUSION

The water system capital improvement project has been commissioned and operational for over 1.5 years now. The contractor is preparing for the resolution of the stainless steel pipe issue.

RECOMMENDATION

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

Scott Mason, B.Sc., P.Eng.
Manager, Water Engineering and Planning

Malcolm Cowley, P.Eng.
Acting . Senior. Manager
Infrastructure Engineering
Concurrence

Ted Robbins, B.Sc., C. Tech
General Manager, Integrated Water Services
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JM/SM:ls



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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, JANUARY 12, 2016**

**SUBJECT WATER AND WASTEWATER OPERATIONS REPORT – NOVEMBER AND
DECEMBER 2015**

ISSUE

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

During the months of November and December 2015, operations staff attended to the regular operational and maintenance activities for the water and wastewater service. The activities list below is intended to capture significant regular maintenance undertakings, capital project activities and unplanned emergency events.

Wastewater Service Activities

- Chart Drive septage hauling and disposal activities were ongoing. Due to extreme wet weather during this reporting period, hauling frequency has increased significantly requiring additional support from off-island operations staff. Operating hours for this activity has increased from approximately 7 hours per week to 30 hours per week.
- Emergency response and reporting for the Cannon Wastewater Treatment Plant as a result of permit exceedances due to wet weather. Marine surface water sampling was conducted on December 15, 2015 as a result of four consecutive days of permit exceedances for this treatment facility.
- Multiple emergency response for pump overloads due to “ragging” at the Schooner Wastewater Treatment Plant.
- Emergency repairs to the Schooner Lift Station pumping equipment. Electrical repairs were completed and equipment placed back into service.
- Emergency repairs/replacement of the Cannon Wastewater Treatment Plant Remote Terminal Unit (RTU) electronic equipment.

Water Service Activities

- Increased the frequency of the Buck Lake raw water quality monitoring resulting in frequent potassium permanganate dosage rate adjustments.
- Installation of the Magic Lake spillway log boom; approved 2015 capital project (Magic Lake Dam Safety Upgrades).
- Installation of the Magic Lake water level staff gauge commenced; approved 2015 capital project (Magic Lake Dam Safety Upgrades). Fabrication of the staff gauge is complete. Installation expected January/February 2016 pending weather conditions.
- Replacement of distribution system air valves; approved 2015 capital project.

- Commenced Buck Lake building alterations; approved 2015 capital project. Building restoration work will be performed over the next few months and expected to be completed by March 2016.
- Emergency response due to hydro power outages throughout November and December.
- Operational staff time expended identifying and documenting stainless steel piping corrosion/leak locations within the Magic Lake Estates Water Treatment Plant.
- Leak repair at the Ketch Road micro-flusher and sampling station site.
- Trouble shooting of the filter waste/sludge storage tank pumps at the Magic Lake Estates Water Treatment Plant. Both pumps were removed and cleared of coagulated material. Pump discharge piping was also inspected and cleared of blockages.
- Responded to customer concern regarding potential flooding on private property at 3608 Masthead from the Buck Lake inflow channel. Inflow channel was cleared of debris alleviating the concern.
- Responded to water quality complaint at 3721 Jolly Rodger. Customer was concerned about the high level of chlorine odours. Water sample were collected for taste and odour analysis.
- Responded to a report of a dead deer floating in Buck Lake. The deer was located and removed.

ALTERNATIVES

Alternative 1

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

Alternative 2

That the Magic Lake Estates Water and Sewer Committee request CRD staff to provide further information.

IMPLICATIONS

Alternative 1 - There are no implications.

Alternative 2 - There will be extra staff time required in order to; collect additional information; prepare and present a staff report to the committee for their consideration. As a result there will be additional costs.

CONCLUSION

The operations staff attended to the regular operational and maintenance activities for the water and wastewater service for November and December 2015.

RECOMMENDATION

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

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

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

DR:ls:



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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE
MEETING OF TUESDAY, JANUARY 12, 2016**

**SUBJECT REQUEST FOR EXPRESSION OF INTEREST – PILOT TESTING OF
WASTEWATER TREATMENT TECHNOLOGIES**

ISSUE

To provide information on the steps involved in pursuing a potential pilot wastewater treatment technology for the Schooner Wastewater Treatment Plant (WWTP).

BACKGROUND

At the November 10, 2015 committee meeting, staff were requested to provide a report on the steps involved in pursuing a potential pilot wastewater treatment technology for the Schooner Wastewater Treatment Plant. The committee's request is as a result of the tour of Boydel's demolab in Chemainus and subsequent visit from Boydel representatives to the Magic Lake Estates Wastewater facilities on Pender Island.

Boydel is a wastewater technology development and manufacturing company and they have expressed interest in piloting their "WaterMiner" electrocoagulation technology at Schooner WWTP. To pursue a potential pilot treatment plant further, the Capital Regional District (CRD) would have to follow its procurement policy to "ensure that all goods, services and construction will be acquired in a competitive, fair and open manner". This means that a "Request for Expression of Interest" (RFEI) would have to be issued publically.

Typically, the steps involved to complete a RFEI for a pilot treatment plant would be as follows:

1. Prepare a Draft RFEI for Pilot Testing of Wastewater Treatment Technologies.
2. Circulate the RFEI to the committee for their review.
3. Forward RFEI to CRD Legislative Services for review and approval.
4. Finalize RFEI and post on CRD Website for four weeks.
5. Evaluate RFEI submissions.
6. Prepare staff report to MLE Committee with evaluation results along with costs and risks to implement at the Schooner WWTP.
7. If the MLE Sewer Local Service Area has enough funds and to decides to proceed, then prepare a RFP to retain a 3rd party wastewater treatment engineering firm to establish performance and monitoring criteria.
8. Proceed to retain a 3rd party wastewater treatment engineering firm.
9. Seek approval from Ministry of Environment for the pilot plant.
10. Prepare contract documents for pilot plant with preferred vender.
11. Legal review and execution of documents.
12. Mobilize, prepare the site, install the pilot plant and complete all associated civil, process, mechanical, and electrical upgrades.
13. Monitor the performance of the pilot plant for 6-8 months including one winter season.

14. Prepare a report on the pilot plant's treatment performance (including lifecycle costing analysis).

As can be seen, there are a number of steps and depending on a number of factors, the cost and the timeline to initiate the pilot test could be considerable.

However, the cost and commitment will not be known until submissions are received from RFEI proponents and contract documents are executed. There will be some staff time required to prepare the RFEI and evaluate the submissions, but if proponents are eager to test their technology at Schooner WWTP the CRD could have some leverage in transferring some of the cost and risk to the proponents.

ALTERNATIVES

Alternative 1

That the Magic Lake Estates Water and Sewer Committee:

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

Alternative 2

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

IMPLICATIONS

Alternative 1 – Staff will prepare the RFEI document and forward it to the Committee and CRD Legislative Services for their review and comment. It is anticipated that the RFEI could be submitted sometime in February depending on staff availability (due to the Open House and other projects).

Alternative 2 – By receiving the report there is no direct implication..

CONCLUSION

The committee has expressed an interest in pursuing pilot testing of a wastewater treatment technology at the Schooner WWTP. Upon visiting the facility, Boydel has expressed an interest in trying their "WaterMiner" electrocoagulation plant at this site. In accordance with the CRD Procurement Policy, a Request for Expression of Interest would have to be issued so that all treatment technology vendors would have the ability to submit their proposed technologies as well. There are some costs involved in preparing and evaluating the RFEI submissions, but there is an opportunity for interested proponents to submit their proposed treatment solutions for the Schooner WWTP.

RECOMMENDATION

That the Magic Lake Estates Water and Sewer Committee:

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

Dale Puskas, P.Eng.
Project Engineer
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**MAGIC LAKE ESTATES WATER AND SEWER LOCAL SERVICE COMMITTEE
ACTION LIST**

	TASK	ACTION	STATUS
July 9, 2013			
1.	Negotiate for R/W over dam with property owners.	J. Petrie	Ongoing
November 10, 2015			
2.	Request Operations staff on Pender Island to update the lake level sign on a weekly basis.	D. Robson	
3.	Prepare report to document the next steps for the pilot project with Boydel.	M. Cowley	