



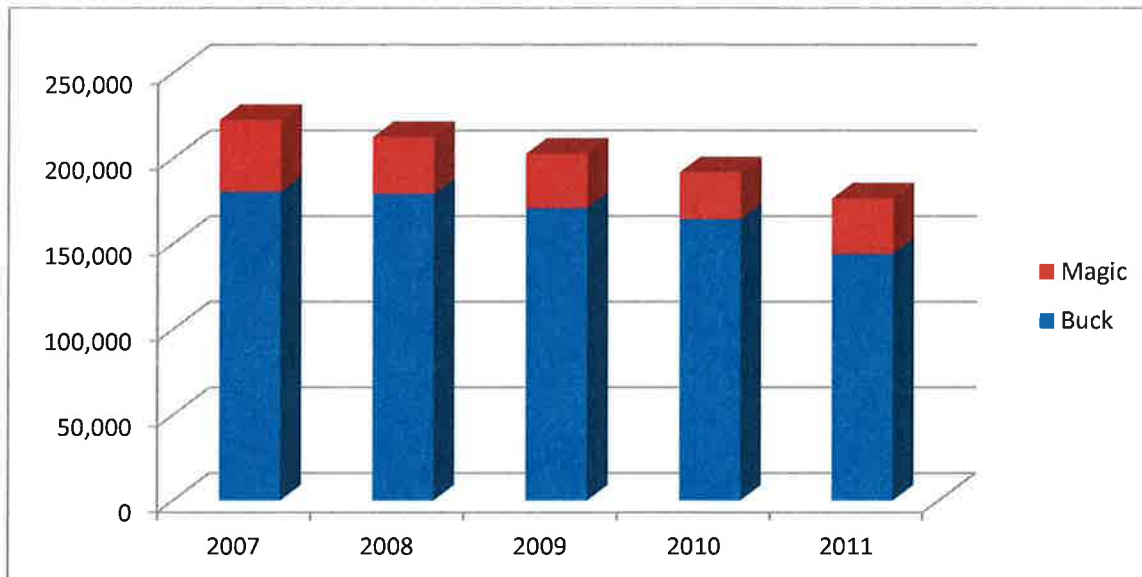
Making a difference...together

**MAGIC LAKE ESTATES WATER AND SEWER SERVICES  
2011 ANNUAL REPORT  
AUGUST 11, 2012**

**Water Supply and Demand**

Total annual water production through the two MLE water treatment plants in 2011 was 176,450 m<sup>3</sup>, down 15,215 m<sup>3</sup> or 7.9% from the 2010 production volume of 191,665 m<sup>3</sup>. The total draw from the two lakes (Buck and Magic) has decreased each year since 2007 at an average annual rate of approximately 5.5% (Figure 1).

Figure 1

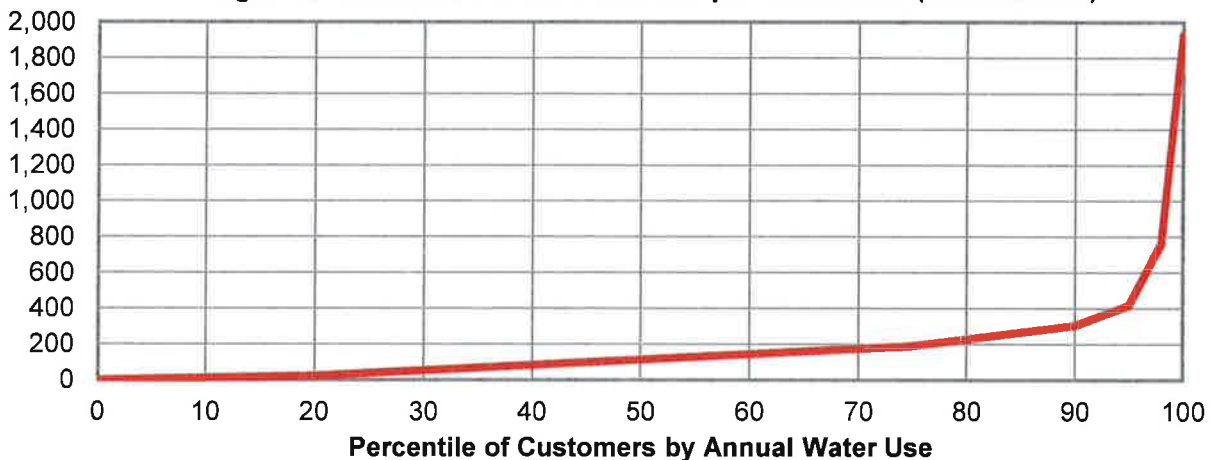


The reduction in annual water production is attributed to substantial reductions in baseline (winter) flow since 2007, while summer production has remained essentially unchanged.

Water meters have been read every three months since June 2010. The total amount of water delivered to customer connections in 2011 was 122,800 m<sup>3</sup>, or 123 m<sup>3</sup> per connection based on 997 connections. The difference between total production through the plants and total metered customer use (called non-revenue water) of 53,650 m<sup>3</sup> equates to 30% of total production. This is well above the 20% average for a typical Canadian municipal water system (Environment Canada Report 2004, *Threats to Water Availability in Canada*). Based on CRD experience with other small water utilities, installation of meters (already complete) and replacement of infrastructure (planned for current and subsequent years) will lead to significant reductions in non-revenue water. Non-revenue water is attributed primarily to system leaks, fire-fighting and system flushing (filters and distribution system) activities. Leaks on private side plumbing are recorded by the individual meter at property line and not considered as non-revenue water.

The variation in water usage by customers is shown in **Figure 2**. Approximately 20% of customers use less than 22 m<sup>3</sup>/year, 50% use less than 113 m<sup>3</sup>/year and 75% use less than 192 m<sup>3</sup>/year of water. The large variation is evidence of the seasonal nature of occupancy in Magic Lake Estates. Approximately 100 customers are estimated to use more than 300 cubic metres per year of water, representing a significant opportunity for water savings.

**Figure 2. Estimated Annual Water Use per Connection (cubic metres)**



The Magic Lake Estates Water and Sewer Local Services Committee is considering options for introducing a water usage charge, and now that a full year of meter data has been collected, the Committee will work with staff to develop and present alternatives to the community.

## DRINKING WATER SYSTEM

### Drinking Water Quality

Typical Magic Lake Estates drinking water quality characteristics include:

- Treated water is bacteriologically safe to drink;
- Treated water turbidity (cloudiness) is usually less than the *Guidelines for Canadian Drinking Water Quality* (GCDWQ) limit of 1 nephelometric turbidity units (NTU);
- Total organic carbon is moderate to high (ranging from 4 to 24 milligrams per litre (mg/L)). This can cause disinfection by-products such as trihalomethanes (THM) to occasionally exceed the GCDWQ limit of 100 mg/L;
- Metals are typically below limits;
- The raw source waters are quite coloured but once disinfected with ozone and chlorine, the treated water falls within the limit of 15 true colour Units (TCU);
- The water sources are subject to algal blooms which can affect taste and odour and clog home filters.

By 2011 year end, Water Quality Division staff has been posting water quality data collected from this drinking water system on the CRD website.

## **Operations**

The Magic Lake Estates (MLE) water system has operated reliably in the past year. Events and activities included:

- Repairs to the Buck Lake ozone generator;
- Replacement of Buck Lake pump variable frequency drives;
- Installation of new Magic lake intake check valve;
- Completion of various service leak repairs;
- Responded to various communication failures at both Buck and Magic Lake plants, and
- Experienced multiple hydro failures at both Magic and Buck treatment plants.

## **Water System Upgrade Project**

Proposed upgrades to the Buck Lake Dam and Magic Lake Estates (MLE) Water System will begin in late summer of 2012 and be completed by fall 2013.

### **Buck Lake Dam Spillway Replacement:**

The design and construction supervision services for a new culvert and spillway at Buck Lake Dam were awarded to Klohn Crippen Berger (KCB). This structure is required to replace the existing corrugated pipe through the dam which the Ministry of Environment Dam Safety Branch (Dam Safety) has advised is unsuitable to meet present standards. This culvert was installed in 2009, on a temporary basis, when the previous one had deteriorated to the point it was jeopardizing the integrity of Buck Lake Dam. At that time Dam Safety approved the installation "on an interim basis" until MLE could fund the appropriate structure and they gave MLE until 2013 as the latest allowable completion date. KCB has now completed their design and the project has been tendered and awarded to G&E Construction in the amount of \$457,200+HST. Construction will occur in September/October when Buck Lake Reservoir is at its lowest level.

Buck Lake Dam has a "High Hazard" consequence rating, meaning that if it failed there would be a HIGH risk of damage to people and property downstream. The discharge culvert is designed to mitigate this risk. KCB has designed the inlet structure to the new box culvert to limit the outflow, even during the design flood event, to that which can be passed safely through the existing downstream culverts. The work will require removal of the existing culvert and replacement with a 1.8 m square concrete box culvert and inlet structure. During construction, access over the dam will be limited and once construction is complete access over the dam will resume.

### **Water Treatment and Infrastructure Improvements:**

Design and construction services for the second project were awarded to AECOM Canada Ltd (AECOM). The first part of the AECOM work was to undertake a review of the existing MLE system and determine the required water system improvements. This review was completed in September 2011.

AECOM have combined the work into a single contract which includes:

- New water treatment plant, to be located at the CRD yard at 47284 Schooner Way
- New raw water pump stations from Magic and Buck Lakes
- New raw water main from Buck Lake to the water treatment plant
- Replacement of the Frigate Reservoir at the existing site
- Replacement of some existing water distribution mains

AECOM completed the final design phase for the works and the project was been publicly tendered, closing June 29, 2012 with construction expected to start this fall and extending through 2013.

MLE received a 2/3 grant from the Building Canada Fund on these water treatment and Infrastructure Improvement projects. The overall grantable budget for these works is \$6,925,000 with an additional \$150,000 allocation for CRD to oversee the works and Consultant which is non-grantable.

## **SEWER SYSTEM**

### **Permit Compliance – Marine Discharges**

Both the Schooner and Cannon wastewater treatment plants have operated out of compliance with permits at times during the past several years. The most persistent compliance problems relate to excessive flows during wet weather due to inflow and infiltration (rain-water entry and groundwater leaking into sewers). These conditions cause the discharge flow rates to exceed permit limits, and excessive flow rates through the treatment plants also occasionally cause effluent quality limits to be exceeded.

### **Asset Condition Evaluation and Engineering Study**

The 2011 Capital Plan for the MLE Sewer Service included \$50,000 for an engineering study and asset management plan to address the needs for upgrading or replacement of sewer system assets. The study, completed by Stantec Inc. includes a prioritized list of recommended capital works, including conceptual designs and cost estimates for projects in order that the MLE Committee can consider a public approval process to borrow funds. The recommended list of upgrades will address the ongoing permit compliance issues mentioned above.

### **Operations**

Aside from the wet weather problems noted above, the Schooner and Cannon treatment plants continue to perform well considering their age. Events and activities in the past year included:

- Numerous call-outs regarding Schooner treatment plant re-activated sludge (RAS) pump blockages resulting in the replacement of the Schooner RAS pumps;
- Repaired plugged sewer lines on Signal Hill and Privateers;
- New outfall marine monitoring requirements and procedures issued.

### **Chart Drive Septic System**

The Chart Drive septic system is at the end of its useful life and requires replacement. Staff are monitoring the system closely for evidence of failure; however, the system appears to have operated without evidence of serious problems in the past year.

### **ANNUAL BUDGET AND FINANCIAL REPORT**

Attached are copies of the *Statements of Operations (Unaudited)* for Magic Lake Estates Water and Sewer services as prepared by CRD Finance and Corporate Services for the year 2011. The statements provide an overview of the revenues and expenditures for the year.

*Revenue* includes parcel taxes (*Transfers from government*) and user fees (*Sale of services*), and small amounts for interest on savings and miscellaneous revenue such as connection charges and late payment charges (*Other revenue*). *Expenses* include all costs of providing the service. *General government services* include budget preparation, financial management, utility billing, and risk management services. *Other expenses* includes all other costs to administer and operate the water system, and the principal and interest payments on borrowing to finance capital projects. *Other fiscal services* includes administration costs for loans.

The difference between *revenue* and *expenses* is reported as *Net revenue (expenses)*. Any transfers to or from capital or reserve accounts for the service (*Transfers to own funds*) are deducted from this amount and it is then added to any surplus or deficit carry forward from the prior year, yielding an *Accumulated surplus (or deficit)* that is carried forward to the following year.

### **Magic Lake Water #1 and #2**

Magic Lake Estates includes two water services. Magic Lake #1 is the primary service, which provides for the operation and maintenance of the water system and most of its capital improvements. Magic Lake #2 was established in 2000 to fund the debt servicing for a watermain replacement project in 2000 and 2001. The area boundaries for both services are the same, except that owners who elected to prepay their parcel tax for the watermain replacement project are excluded from the Magic Lake #2 service and are not assessed a parcel tax for the service. The financial statement includes both services.

### **Magic Lake Water – 2011 Statement of Operations**

The MLE Water 2011 revenue of \$1,076,657 includes \$807,044 parcel tax and \$250,632 user fees. The total expenses of \$679,288 includes \$20,790 for administration, \$656,808 for all operating expenses and \$1,690 *Other fiscal services*. The difference between revenue and expenses in 2011 amounted to a net revenue of \$397,369.

Adding the 2011 \$397,369 net revenue to the 2010 carry forward balance of \$241,293 created a 2011 year end surplus of \$638,662, of which \$352,000 was transferred to the capital fund for the upgrade project and \$193,997 transferred to reserve funds leaving an accumulated surplus of \$92,665 carried forward to 2012.

**Magic Lake Sewer – 2011 Statement of Operations**

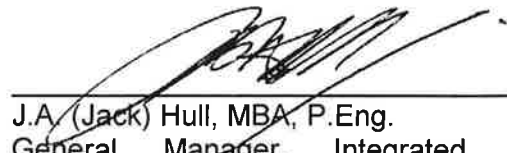
The MLE Sewer 2011 revenue of \$443,280 includes \$272,220 parcel tax and \$167,998 user fees. The total expenses were \$354,048.

The difference between revenue and expenditures in 2011 resulted in an accumulated end-year surplus of \$89,232. There were no transfers out to reserve or capital funds.



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



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J.A. (Jack) Hull, MBA, P.Eng.  
General Manager, Integrated Water  
Concurrence

Attachment: 2  
GP/TT:ls

**CAPITAL REGIONAL DISTRICT**

**WATER REVENUE FUND  
Statement of Operations (Unaudited)  
For the Year Ended December 31, 2011**

		Magic Lake Estates Water Supply
<b>Revenue</b>		
Transfers from government	\$	807,044
Sale of services		250,632
Other revenue from own sources:		
Licenses and permits		-
Interest earnings		6,523
Other revenue		11,723
Grants in lieu of taxes		735
Total revenue		1,076,657
<b>Expenses</b>		
General government services		20,790
Other expenses		656,808
Other fiscal services		1,690
Total expenses		679,288
<b>Net revenue (expenses)</b>		
		397,369
Transfers to own funds:		
Capital Funds		352,000
Reserve Funds		193,997
Equipment Replacement Fund		-
<b>Annual surplus</b>		
		(148,628)
Accumulated surplus, beginning of year		241,293
Accumulated surplus, end of year	\$	92,665

## CAPITAL REGIONAL DISTRICT

### Sewer Revenue Fund Statement of Operations (Unaudited) For the Year Ended December 31, 2011

		Magic Lake Estates Sewerage System
<b>Revenue</b>		
Transfers from government	\$	272,220
Sale of services		167,998
Other revenue from own sources:		
Permits		-
Interest earnings		691
Other revenue		1,987
Grants in lieu of taxes		384
<b>Total revenue</b>		<b>443,280</b>
<b>Expenses</b>		
General government services		11,930
Other		341,289
Salaries and wages		-
Other fiscal services		829
Recovery		-
<b>Total expenses</b>		<b>354,048</b>
<b>Net revenue (expenses)</b>		<b>89,232</b>
Transfers to own funds:		
Capital Funds		-
Reserve Funds		-
Equipment Replacement Fund		-
Transfers from own funds:		
Sewer Capital Fund		-
Revenue Funds		-
<b>Annual surplus</b>		<b>89,232</b>
Accumulated surplus, beginning of year		-
<b>Accumulated surplus, end of year</b>	\$	<b>89,232</b>