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**MAGIC LAKE ESTATES WATER AND SEWER LOCAL SERVICES COMMITTEE
REPORT ON OPERATIONS
TUESDAY 26 APRIL 2011**

This report provides information relating to the operation of the Magic Lake Estates water and sewer systems.

Drinking Water Supply and Demand

Buck Lake levels are shown in Figure 1, compared to the 15-year average (pre-2008) and 2008-2010 levels. Buck and Magic Lakes were both at full pool at the end of March.

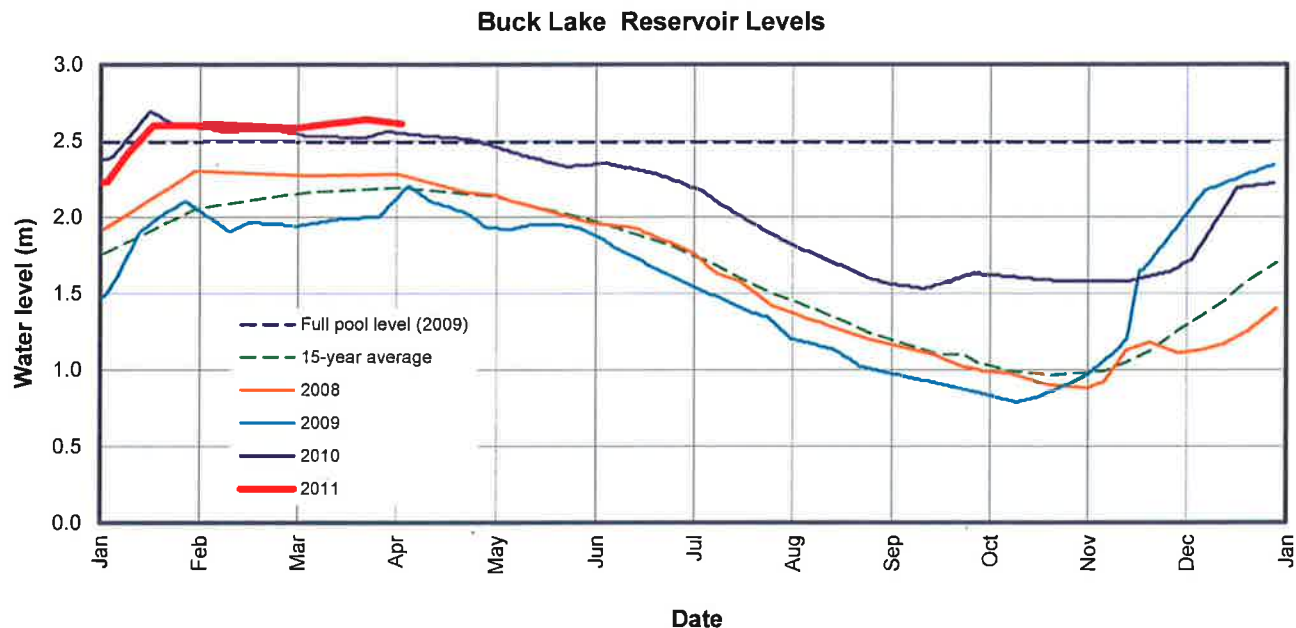


Figure 1. Buck Lake Levels

The total water production by the Buck Lake and Magic Lake water treatment plants in the first quarter of 2011 was 36,339 cubic metres (m³). This production is 7% lower than the same period in 2010, and 26% lower than the same period in 2008 (Figure 2).

Winter daily average flow and overnight flow (an indicator of leakage) are shown in Figure 3. A reduction of approximately 50 litres per day was achieved in February when substantial household leaks were identified by reading customer meters, and were subsequently isolated or repaired.

Drinking Water Quality

Water supplied by the Magic Lake Estates water service is safe to drink, and typically meets most of the guidelines set out in the Health Canada *Guidelines for Canadian Drinking Water Quality (GCDWQ)* and the requirements of the British Columbia *Drinking Water Protection Act and Regulation* as administered by the Vancouver Island Health Authority (VIHA). However, turbidity of the treated water is frequently greater than the

GCDWQ guideline limit of 1 NTU (Figure 4). A new water treatment plant to be constructed by 2013 will consistently maintain treated water turbidity below 1 NTU.

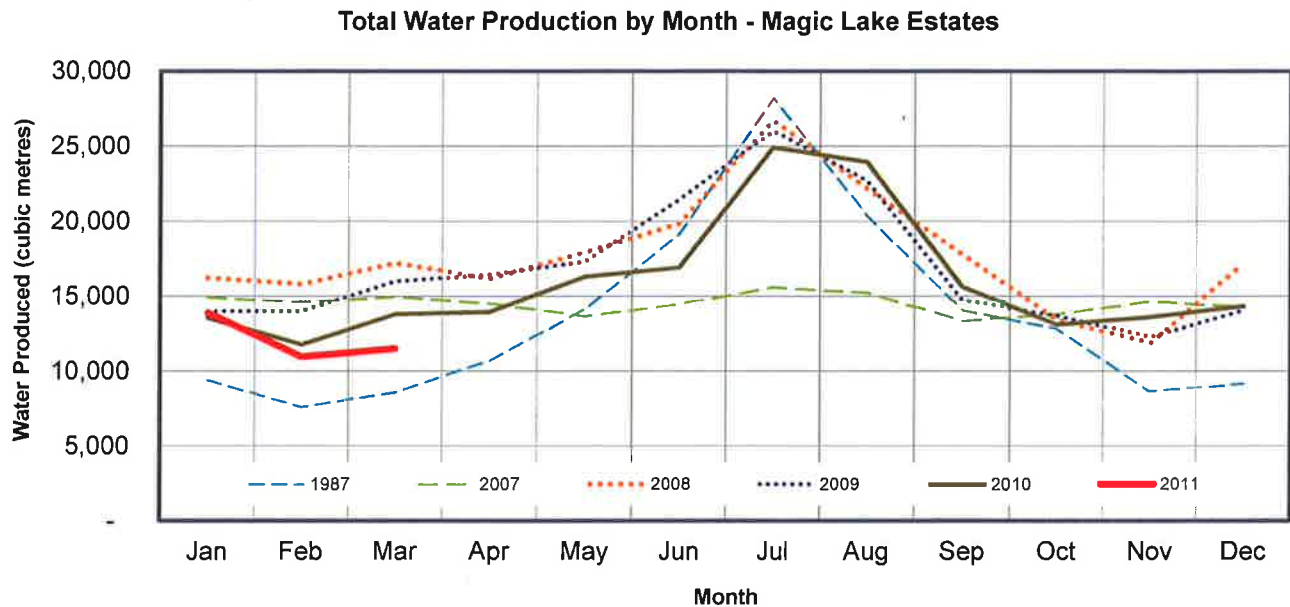


Figure 2. Monthly Water Production

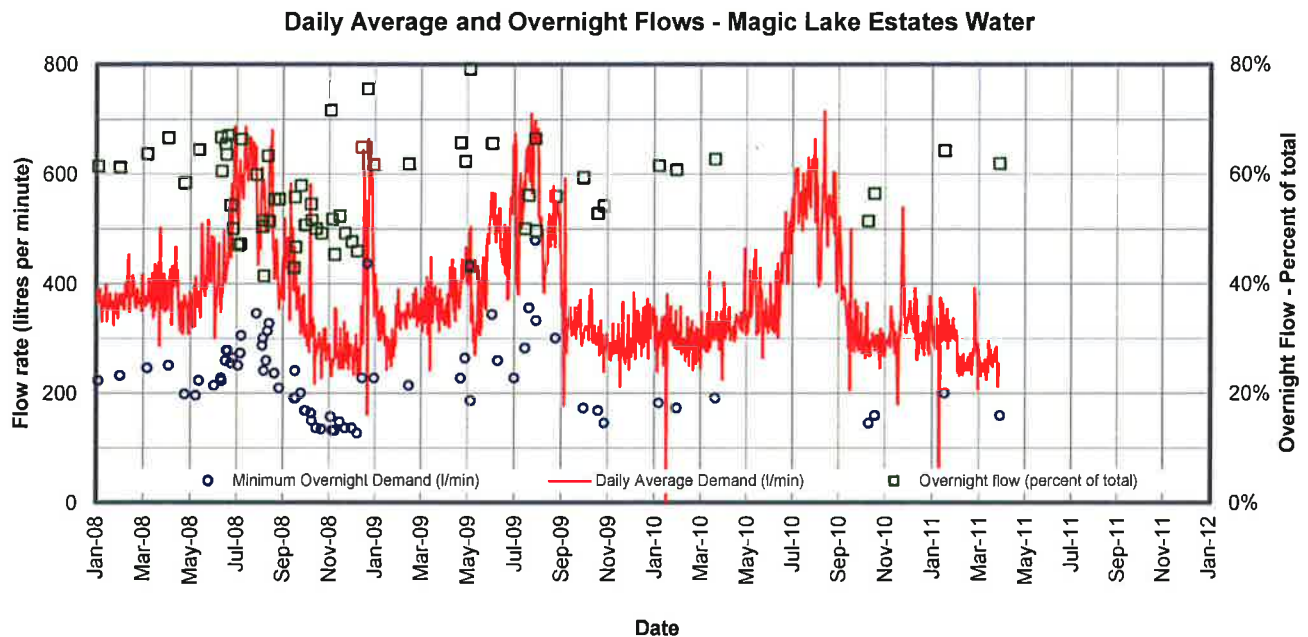


Figure 3. Daily Average and Minimum Overnight Flows

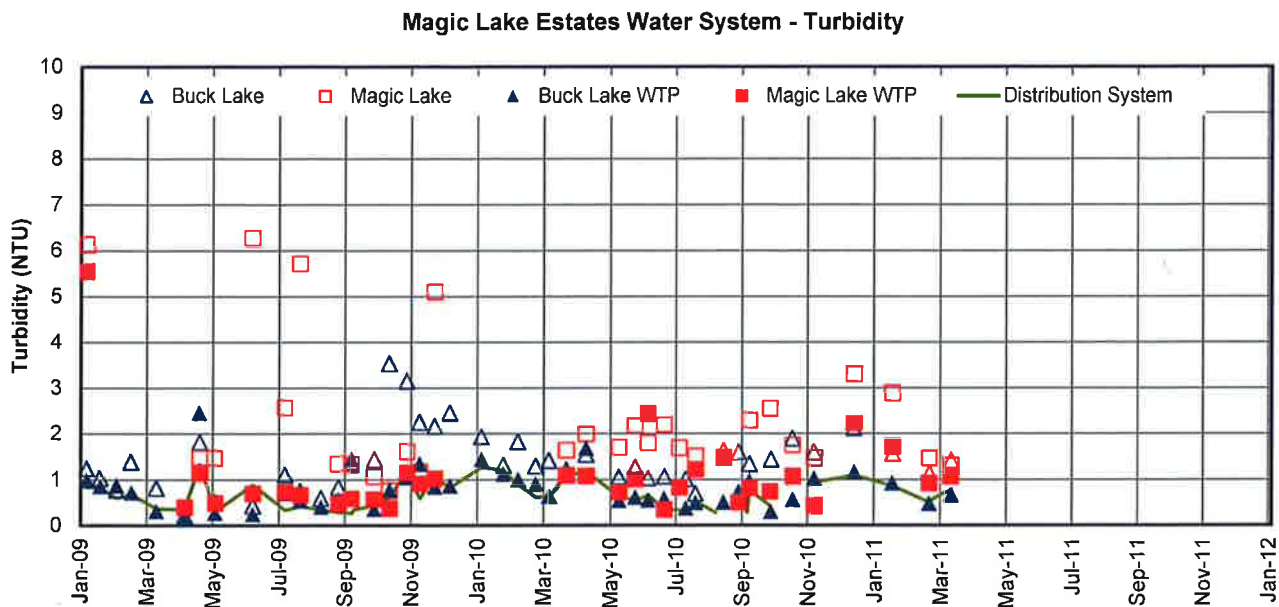


Figure 4. Raw and treated water turbidity

Drinking Water Operations

Weekly dam inspections are now required under provincial dam safety regulations for Buck and Magic Lakes, requiring approximately hours per week of operator effort. The annual cost to meet this new requirement will be in the range of \$10,000-15,000.

As the customer meters have entered service, significant operator effort has been applied in the last several months to investigate high usage and support the meter reading process. In future years a budget will need to be established for meter maintenance and replacement, which will increase as the meters age.

A variable frequency drive (VFD) for one of the main process pumps in the Buck Lake water treatment plant is failing and requires replacement, at a cost of approximately \$5,000-7,000.

Water System Upgrade Project

The major water system upgrade project consists of two main sub-projects: Water treatment and distribution upgrades (partially funded by the federal/provincial grant) and safety improvements to the Buck Lake Dam including a new spillway (not funded by the grant). The status of these projects is as follows:

1. Treatment and Distribution Upgrades

Engineering consultant AECOM has substantially completed the pre-design phase of its assignment, including a comprehensive review of the water system. The review concludes that distribution system leakage is relatively low for the overall length of watermains, number of service connections, and operating pressures in the system. A water system hydraulic model has been developed and used to identify areas where upgrades are required to maintain normal service pressures and residual pressures under fire flow conditions within an acceptable range. A ten-year infrastructure replacement program is recommended, with an annual budget of approximately \$750,000. The first year or two of such a program may be funded as part of the grantable upgrade project.

A process flow diagram and preliminary building layout have been completed for the new water treatment plant, and related water supply works. A predesign construction cost estimate has been

prepared for the treatment plant, totalling \$3.2 million including a 20% contingency. Work has begun on the tender specification package for the major treatment process equipment package. AECOM is approximately three months behind the schedule presented in its proposal.

2. Buck Lake Dam Upgrades

Consultant Kohn Crippen Berger (KCB) has completed a seismic evaluation and predesign for a spillway on the Buck Lake dam. The proposed design consists of a sharp-crested weir at elevation 63.75m (original spillway elevation) discharging through a pair of oversized box culverts in approximately the same alignment as the existing spillway culvert (requiring realignment of an existing watermain). Detail design is approximately 50% complete.

The predesign construction cost estimate is \$525,700 excluding engineering, taxes and contingency. A 30% contingency is appropriate for a construction estimate at the pre-design stage, indicating that a construction budget in the order of \$700,000 would be appropriate. Engineering is included in the current KCB contract (\$188,589 + tax). Based on these preliminary costs it is anticipated that the budget of \$937,500 will be adequate to complete the work, allowing roughly 5% (\$45,000) for staff engineering and contract administration services.

Of the total \$8,012,500 project budget, \$205,563 has been expended as of 4 April. Of this total, \$38,937 is grantable work by AECOM on treatment and distribution, \$27,005 is non-grantable staff time for administration of the treatment and distribution project, and the balance of \$139,621 is consulting and staff services related to the Buck Lake dam work (non-grantable).

Metering Project

The customer metering project is essentially complete. One installation remains to be completed on Spyglass Road, pending permission from the absentee homeowner for staff to enter the house to locate the water service. The remaining 2010 budget of \$16,702 is sufficient to complete this connection and repair a small number of installations where winter weather has eroded backfill and topsoil.

Wastewater Operations

The sewer system is being scrutinized closely by the Ministry of Environment (MOE) due to excessive inflow and infiltration (I&I) which frequently causes effluent from both the Cannon and Schooner discharges to exceed regulatory limits for flow and effluent quality in winter. A formal inspection and repair program to reduce I&I will be required beginning in 2011 to demonstrate to MOE that the issue is being managed effectively. The sewer system study will include plans to address the longer-term management of I&I by prioritizing asset replacement.

Sewer System Engineering Study

A request for proposals has been issued for the engineering study included in the 2011 sewer capital plan, and may be viewed at <http://www.crd.bc.ca/business/opportunities/Tender.aspx?status=O> (RFP No. 2011-491). It is anticipated that a contract will be awarded in May for this assignment.

2011 Budgets, Taxes and Fees

The 2011 operating and capital budgets recommended by the Magic Lake Estates Water and Sewer Services Committee at the November 2010 budget meeting were approved by the CRD Board in March. The approved budgets result in the following changes to fees and charges for 2011:

- **Water:** No changes
- **Sewer:** Annual User Charge increases from \$252.00 to \$272.00

The increase in the sewer user charge is a result of increases in operating costs, including engineering and administrative staff time, regulatory compliance monitoring and reporting, and a substantial increase in the contingency. The water upgrade project and the sewer engineering study are the only capital projects planned for 2011.



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