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DISTRICT OF WEST VANCOUVER
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COUNCIL REPORT

Date: October 10, 2015 File: 1815-08
From: Emily Willobee, Engineering Outreach Coordinator
Subject: **Water Conservation Program Update**

RECOMMENDED THAT:

The report dated October 10, 2015 titled "Water Conservation Program Update" be received for information.

Purpose

The purpose of this report is to provide Council with an update on water conservation programs in the District and to summarize the taken during the drought response in summer of 2015.

1.0 Background

1.1 Prior Resolutions

On November 25, 2002, Council endorsed a District "Water Conservation Strategy", which included the introduction of District-wide water metering and a number of public education and encouragement initiatives to support a water conservation ethic.

On April 22, 2005, Council adopted the Water Shortage Response Plan Bylaw No. 4418, 2005. This bylaw sets out municipal water shortage response measures, including the specification of water use restrictions and activation of water restriction stages. The provisions included with this bylaw are consistent with those for the rest of Metro Vancouver.

On April 23, 2012, Council endorsed the Greater Vancouver Water District's (GVWD) Drinking Water Management Plan for the GVWD and Member Municipalities and directed staff to continue working to implement municipal actions described in the plan, many of which are a complement West Vancouver's Water Conservation Strategy adopted in 2002.

1.2 History

The Engineering and Environment Services Division is responsible for providing safe, potable drinking water throughout the District and works closely with Metro Vancouver to deliver this service.

The Engineering and Environment Services Division is also responsible for implementing municipal actions of the GVWD's Drinking Water Management Plan and the local Water Conservation Strategy.

Regionally, the approach to water conservation programming is evolving through best practice research and a series of new pilot projects. Improvements to conservation outreach and education can also be informed by lessons learned during the 2015 summer drought.

Additionally, the Engineering and Environment Services Division has begun a process to create a Drinking Water Master Plan for West Vancouver, with results forthcoming in 2016.

2.0 Policy

2.1 Policy

West Vancouver's Water Conservation Strategy, 2002

GVWD Drinking Water Management Plan, 2012

2.2 Bylaw

Water Shortage Response Plan Bylaw 4418, 2005

3.0 Analysis

3.1 Discussion

In comparison to some arid cities around the world, West Vancouver is in an enviable position in terms of potable water supply. The climate on the North Shore has enabled the development of Eagle Lake which supplies up to 50 per cent of the municipal needs. Connections to Metro Vancouver's larger reservoirs have provided the balance and offset any supply issues we might have with Eagle Lake. However, recent weather events may be an indication that the climate may be shifting.

Weather during the last 12 months has been very difficult to predict. The mild winter of 2014/15 left scant snow pack on the local mountains, and was followed by an unusually warm, dry spring and unprecedented drought in the summer, which ended abruptly with unseasonably heavy rainfall in the last days of August.

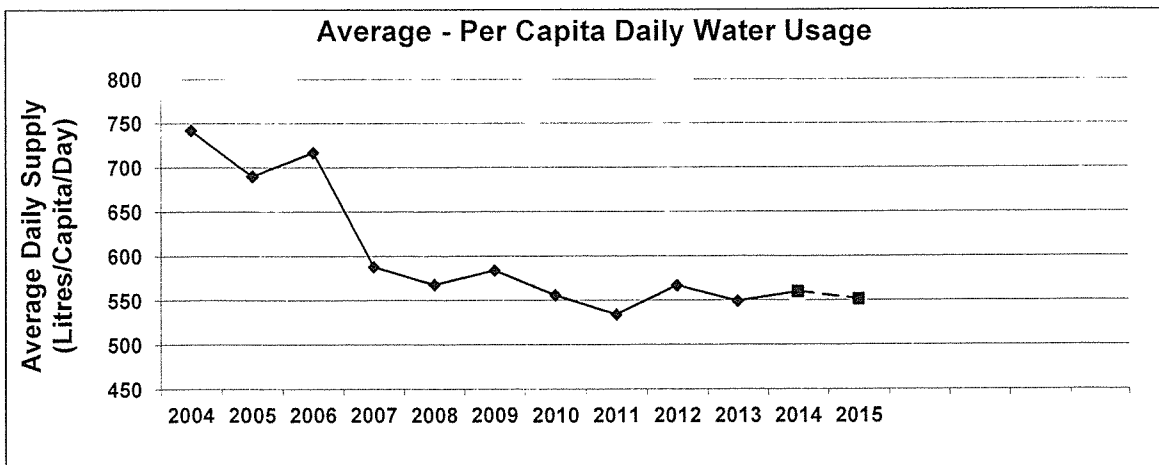
Unpredictable weather makes water supply forecasting extremely difficult, especially for the relatively small catchment surrounding Eagle Lake. As the weather becomes more difficult to predict, and the reliance on Eagle Lake supplies increases, the importance for strong demand management or conservation strategies also rises.

A key component of West Vancouver Water Conservation Strategy was the introduction of universal water metering, which took place in 2007. The Universal Metering project was implemented to promote water conservation, to provide customer equity, a user-pay system and to detect leaks. Under the metered system, water utility charges are based on an escalating tariff structure and the actual volume of water consumed. This has resulted in a system that creates an economic incentive for conservation efforts.

West Vancouver's Water Conservation Strategy also included launching conservation education and encouragement programs that target water conservation at home, as more than 80 per cent of water use in West Vancouver is residential. Launched beginning in 2004, these programs included:

- High-efficiency toilet rebates (\$50/toilet);
- Subsidized rain barrel sales directly to residents; and
- Sponsorship of water conservation plays for children in West Vancouver schools.

Universal metering and improved leak detection had an immediate and dramatic effect of reducing overall consumption. As can be seen on the graph below, an initial drop in consumption of approximately 20 per cent was realized between 2006 and 2007. Since the implementation of universal metering in 2007, the initial drop in annual water use has tapered, however a downward trend remains. Over the seven-year period from 2007 to 2014, the municipality saw a further five per cent reduction. While five per cent may not seem significant, it is equivalent to approximately 500 million litres of water!



Across the region, the approach to water conservation programming is evolving through best practice research and a series of new pilot projects. When reviewing the local approach to water conservation encouragement and education, staff will also consider lessons learned during the drought in summer of 2015.

2015 Drought Response

During the spring and summer of 2015, West Vancouver and the Metro Vancouver area experienced a severe and prolonged drought resulting in challenges that required interdepartmental coordination. Enhanced water conservation measures were put in place across the region beginning July 3, 2015. Stage 3 of the Water Shortage Response Plan was enacted for an unprecedented and prolonged period, from July 21 to September 10, 2015.

Staff from Communications, Engineering, Parks, and Fire Departments formed an ad hoc committee to manage response to drought and fire risk. Past policy work and preparation enabled the District of West Vancouver to respond quickly and effectively in unprecedented circumstances. The experience shed light on opportunities to improve public outreach and education initiatives, as well as areas for improvement within District operations which are being considered moving forward.

Specific measures taken during the drought response included:

- Leading by example, and reducing municipal use by 48 per cent from June to August. In addition to adhering to Stage 3 restrictions (by reducing field and golf course irrigation, halting all non-essential fleet washing, and postponing pool preventative maintenance by one year), the District also lead by example by voluntarily reducing hours of the user-activated splash pad and reducing watering of artificial turf at Rutledge field for health and safety reasons;
- Adapting drinking water operations to maximize drinking water supply;
- Adapting the Bylaw Dept operations to respond to tremendous resident call volume;
- Expanding education and enforcement effort within the Bylaw dept by:
 - Enabling District field crews to provide Stage 3 education materials;
 - Hiring a water conservation ambassador to support Bylaw staff with education, and to conduct targeted neighbourhood patrols; and
- Coordinating with Metro Vancouver and the other North Shore municipalities on media releases, newspaper advertisements, and news coverage.

During Stage 3 activation, the District also leveraged local water meter data in new ways to create targeted outreach and education. Some 2,000 letters were sent from the CAO to high water users to educate residents about Stage 3 water

conservation measures.

Together, these measures were effective in reducing water consumption across the District. Activation of the Water Shortage Response Plan resulted a 13 per cent reduction from June to July (roughly corresponds with activation of Stage 2), and an additional 36 per cent reduction in consumption from July to August (roughly corresponds with activation of Stage 3).

Summary of New Initiatives Planned for 2016

Regionally, the best practices in water conservation programming have been evolving due to new research and pilot projects. Improvements to conservation outreach and education can also be informed by lessons learned during drought of summer 2015.

In 2015-16, West Vancouver will redirect available resources and pilot several new projects to replace or enhance existing initiatives, with a goal of reinvigorating water conservation. These include:

- High efficiency clothes washer rebates (to replace existing toilet rebates);
- Rain barrel truckload sale (to replace existing direct rain barrel sales); and
- In-classroom conservation education for West Van schools (pilot, as potential option to replace water conservation plays).

A more detailed description of these programs is included in Appendix 1.

Additionally, staff are exploring tools to help residents better understand their water consumption patterns or to compare their consumption with similar households (e.g.: a personalized chart of consumption history printed on quarterly utility bill, or on the MyDistrict site).

Finally, staff are also considering ways to better leverage local water meter data to target outreach and trigger behavior change among some of the District's heaviest water users. The intention to use meter data to create targeted outreach campaigns is based on the success of a letter sent to heavy water users during activation of Stage 3 of the WSRP this summer. The letter was tremendously effective in drawing attention to current consumption levels and educating residents about potential water savings.

Demand for water nearly doubles in the summer, largely due to the increase in irrigation and outdoor water use. Annually and for many years, West Vancouver has coordinated with Metro Vancouver to share information about lawn sprinkling restrictions and other outdoor conservation tips with residents through media, advertisements, outreach collateral like postcards or magnets, and in the West

Vancouver utility brochures. Metro Vancouver and West Vancouver also send annual letters to the irrigation association and local service providers, to remind them about seasonal watering restrictions and to encourage conservation.

However, many residents remain unaware of how dramatically discretionary seasonal use affects their consumption in the summer months.

Meter data could be used to target residents with high-use to receive information about common causes of high consumption, such as irrigation systems or leaks. Pilot programs could include offering these residents home water conservation assessments or irrigation system audits. Another option is to expand upon existing leak notice procedures, in collaboration with the Finance Department.

Conservation Initiatives to Consider Beyond 2016

The Utilities Department is currently engaged in a Drinking Water Master Plan process for the District with results forthcoming. Staff plan to report back next year with a draft water master plan.

The Master Plan may suggest additional demand management measures for consideration in the future. These could include:

- Seasonal water pricing;
- Punative third block pricing;
- Requirements for drought resistant landscaping or xeriscaping in new construction;
- Requirements for pool covers to prevent evaporation;
- Expanding targeted demand management education or encouragement programs;
- Additional water conservation measures within District operations, such as:
 - Developing water managements plan for sports fields and golf courses; and
 - Exploring potential groundwater sources for golf course irrigation.

3.2 Sustainability

Promoting a water conservation ethic through education programs and metering encourages the sustainable use of our limited natural resources.

3.3 Consultation

Launch a water survey on WestVancouverITE in early 2016 to collect information from residents about their water consumption habits, in order to drive dialogue and collect new baseline data to inform future decisions.

3.4 Communications Process

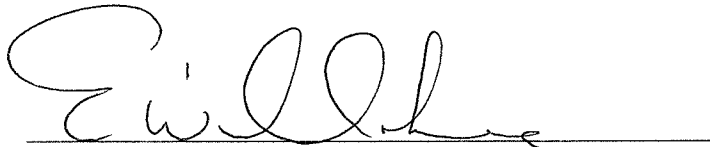
The District's Communications, Engineering and Finance Divisions, in collaboration with Metro Vancouver, actively promotes water conservation and conservation initiatives to residents and the public. Multiple communication tools are utilized including the district website, social media, brochures mailed with quarterly utility bills and print advertisements.

The changes to the rain barrel and rebate programs will be communicated to residents using multiple communication channels once work plans and schedules have been developed.

4.0 Options

This report is for information only.

Author:



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Appendix:

1 Evolution of Water Conservation Programs in West Vancouver

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Evolution of Water Conservation Programs in West Vancouver

Below is an update on existing programs, and a snapshot of how existing water conservation encouragement efforts are currently evolving in West Vancouver.

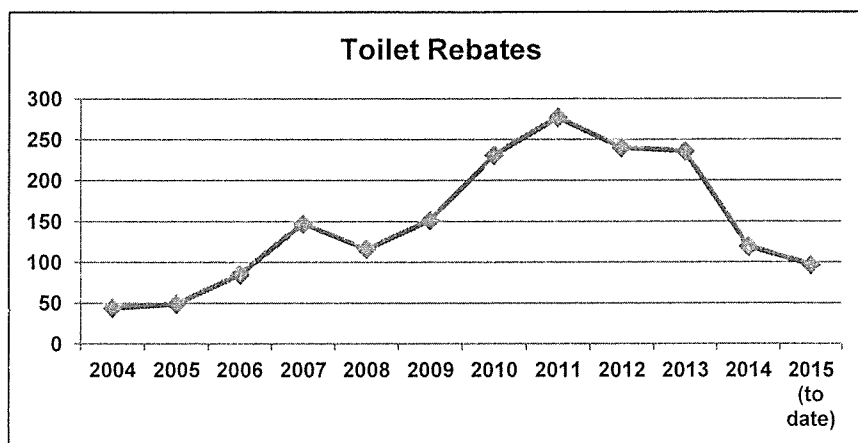
Toilet Rebates

Toilet rebate programs gained popularity in the 2000's, as it was recognized that typical toilets (using 13.25L per flush) accounted for nearly 30 percent of in-home water use.

Since 2004, West Vancouver has provided 1,576 rebates for residents to replace toilets with Ultra-Low Flow (6L flush) or High-Efficiency Toilets (4.8L flush), at a total cost of \$78,800.

Resident demand for \$50 toilet rebates peaked in 2011, and interest has dropped off in recent years.

In 2011, the BC Building Code was amended to require a High Efficiency Toilet (HET) (4.8L per flush or less) any time a new toilet is installed in a residential setting. Additionally, there has been a market shift toward HETs, and they now comprise the majority of models available. The existing rebate program is administratively burdensome, requiring several hours of staff time in various departments to process each \$50 rebate. As a result of these factors, most municipalities that have established high-efficiency toilet rebate programs in Metro Vancouver either have discontinued or are considering discontinuing them.



West Vancouver intends to phase out toilet rebates in 2016. The toilet rebate will be replaced with a pilot program to provide \$50 rebates for high-efficiency clothes washers that consume less water, and less electricity. Clothes washers are responsible for approximately 23 per cent of in-home water use. An additional benefit of the new rebate program is that it is coordinated entirely by BC Hydro, substantially reducing staff administration time.

Rain Barrels

West Vancouver began selling subsidized rain barrels directly to residents in 2008. The 55 gallon barrels are made of recycled plastic included a downspout attachment, and were purchased from a supplier and stored at the Operations

Appendix 1: Evolution of Water Conservation Programs in West Vancouver

Centre. Residents could purchase a rain barrel from the District for a subsidized price of \$67.20 (tax included). For the last few years, West Vancouver has sold approximately 12 rain barrels per year.

At this time, the District is out of stock of rain barrels and, due to low sales and high overhead cost of operating the program, is re-evaluating the direct sale of rain barrels to residents.

In 2015, the City of Vancouver spearheaded coordination of a regional “truckload sale” pilot, modelled on a successful program offered in Halton Region in Ontario. In the truck-load model, municipalities coordinate with a rain barrel manufacturer to provide direct sales residents at several one-day events. Municipalities contribute to promotion and marketing, but do not handle sales or manage rain barrel inventories.

The 2015 pilot was very successful for the three participating municipalities. West Vancouver plans to collaborate with other municipalities to host a local truckload sale in spring of 2016, with the intention to adopt this as a new and improved way to connect residents with low-cost rain barrels.

Water Conservation Plays

The District, in partnership with the City and District of North Vancouver, has sponsored plays for West Van schools every-other-year. Since 2002, DreamRider Productions has presented more than 60 educational water conservation plays in West Vancouver, reaching more than 5,000 students and teachers.

Although the plays are generally well-received by the schools and students, the price per play has recently increased and the extent of its impact on behavior is difficult to measure.

In 2016, West Vancouver will pilot a new program of DreamRider Productions called the Planet Protector Academy in lieu of our regular sponsorship of the plays. The Planet Protector Academy is an in-classroom, curriculum-linked resource that uses a multi-media format to promote and track sustainable behaviours at school and at home (e.g.: waste reduction, water conservation).

Seven West Vancouver classrooms will participate in the pilot, and participating classes will compete to win a DreamRider water conservation assembly for their whole school.