



ADMINISTRATIVE REPORT

Report Date: July 2, 2011  
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Meeting Date: July 14, 2011

TO: Standing Committee on Planning and Environment

FROM: General Manager of Engineering Services

SUBJECT: Greenest City 2020 - Clean Water Work Program Residential Water Metering Policy

**RECOMMENDATION**

- A. THAT Council approve the Clean Water Work Program to develop water conservation programs as described in this report in support of the Greenest City 2020 Action Plan establishing work priorities from 2011 through to 2014.
- B. THAT Council, in support of the Clean Water Work Program, endorse, in principle, a new policy to require water meters on all new single family and duplex connections and changes of the residential rate structure starting January 2012 to be preceded with stakeholder engagement this summer. Staff will report back this fall with program details for Council approval.
- C. THAT Council receive FOR INFORMATION a work plan to develop additional implementation strategies to meet the City's longer term water conservation goals including the acceleration of water meter installations on existing single family and duplex residential connections and associated water pricing models.
- D. THAT Council approve the funding plan for the Clean Water Work Program at a cost of \$555,700 in the annual water utility operating budget through increased utility rates.
- E. THAT Council approve the following bylaw amendments which aim to reduce water wasted as a result of lawn sprinkling, in support of the Clean Water Work Program, described below:

- i. To amend the Water Shortage Response By-law No. 8912 to reflect the lawn sprinkling guidelines approved by Metro Vancouver board on March 18, 2011, as generally set out in Appendix B;
  - ii. To amend the Ticket Offences By-law No. 9360 to designate lawn sprinkling violations as a ticketable offence, as generally set out in Appendix C; and
  - iii. To amend the Water Works By-law No. 4848 to define water wastage and designate same as a ticketable offence, as generally set out in Appendix D.
- F. THAT the Director of Legal Services be instructed to bring forward for enactment amendments to the Water Shortage Response By-law; the Ticket Offences By-law; and the Water Works By-law; all substantially as set out in Appendices B through D, to give effect to Recommendation E(i), (ii), and (iii) above.

### ***CITY MANAGER'S COMMENTS***

The Greenest City 2020 Action Plan maps out key long term strategies to make Vancouver the world's Greenest City by 2020 and highlights a number of short term high priority actions for achieving each goal in the plan. While many of the actions can be achieved through a reprioritization of work programs with existing funding and staffing resources, some strategies involve a policy shift or require the allocation of financial resources outside of the City's existing budget. In these situations, staff will present the opportunity to Council for consideration.

This report presents the initial work program to begin achieving the water goals and targets outlined in the Greenest City Action Plan 2020.

### ***COUNCIL POLICY***

In January 2011, Council adopted 14 Greenest City targets as Council policy. Staff were directed to develop a 15<sup>th</sup> target on greening existing workplaces, as well as to continue the public engagement process with the purpose of finalizing the Greenest City 2020 Action Plan in consultation with stakeholders and the community.

In February 2010, Council adopted the long term goals recommended by the Greenest City Action Team (GCAT) and directed staff to proceed with the development of a Greenest City 2020 Action Plan. Council approved a motion directing staff to report back on any recommended revisions to the targets laid out in the GCAT report, as well as with a report outlining how the action plans can optimize these targets. Staff also provided Council with an update as to the status of the original Quick Start actions outlined by GCAT.

In October 2009, Council received the Greenest City Action Team's report entitled *Vancouver 2020: A Bright Green Future*, which recommended ten long-term goals and thirteen 2020 targets that would chart Vancouver's course in becoming the greenest city in the world by 2020. Council approved a motion directing staff to report back with an implementation plan for the recommended actions.

In May 2009, Council received the GCAT *Quick Starts* report, which recommended early actions the City could take to help Vancouver become the greenest city by 2020. Council approved a motion directing staff to report back with an implementation plan for the recommended actions.

### ***PURPOSE***

This report provides Council with an initial plan, including associated staffing and funding request, to implement the high priority actions for the Clean Water goal of the Greenest City Action Plan. This initial plan provides a strategy to achieve up to 21% (of the 33% goal) reduction in total water consumption, and provides direction towards a comprehensive strategy to meet the Clean Water targets by 2020.

The work program will include the development of a plan for mandatory water metering of all new connections for single family and duplex homes (including major renovations), the development of a comprehensive water use awareness program, bylaw amendments to facilitate conservation efforts, and the expansion of lawn sprinkling education and enforcement efforts.

The work program also includes the implementation of conservation programs which will be delivered through innovative partnerships with utilities and non-profit organizations. Additionally the work program will explore grant and alternate funding opportunities and the implementation of pilot programs as a basis for longer term conservation programs to achieve the 33% water use reduction target.

### ***BACKGROUND***

The 8<sup>th</sup> goal of the Greenest City Action Plan is for Vancouver to have the best drinking water of any city in the world. To achieve this status by 2020, two targets were approved by Council.

- |                  |  |
|------------------|--|
| <b>Target 1.</b> | <b>Water Quality</b><br>Meet or beat the most stringent of British Columbian, Canadian and international drinking water standards and guidelines |
| <b>Target 2.</b> | <b>Water Conservation</b><br>Reduce per capita water consumption by 33% over 2006 levels   |

An external Advisory Committee worked with staff to evaluate and prioritize action items to meeting the two targets. The GCAP highest short term (3 years) priority actions are::

#### ***Highest Priority Actions (3 year):***

1. Require water metering on all new single and dual family home services (new construction and major renovations) effective 2012;
2. Develop and commence enhanced water education, incentive and conservation programs;
3. Continue to expand public access to drinking water;

4. Eliminate combined sewer overflows from sewage outfalls at Crowe and Burrard Streets and develop Integrated Stormwater Management Plan.

### ***DISCUSSION***

The next section of the report provides details on the proposed work programs for both the Water Quality and the Water Conservation targets.

In general, the Water Quality target and related work program are considered attainable with only a minor need for extra resources. The recently completed Seymour Capilano water filtration plant commission in 2010 by Metro Vancouver has had a profoundly positive effect on water quality. Equally important, the City has made great strides to accelerate the sewer separation program to improve receiving water quality.

The Water Conservation target is a more challenging goal requiring new policies and programs in order to change behaviours and redefine the way the public views our precious fresh water resource. The bulk of the discussion is focused on the conservation target and the proposed work plan designed to achieve a 21% total water consumption reduction by 2020.

### **TARGET 1 - Water Quality - Clean Water Work Program (2011-2014)**

The City's Water Quality Monitoring Program involves ongoing extensive testing for microbiological, physical and chemical water quality parameters, as required by Vancouver Coastal Health Authority's Drinking Water System Operating permit. Drinking water samples are collected from fifty-three dedicated sampling stations located in representative locations across the City.

Metro Vancouver supplies the City with treated, high quality, bulk drinking water. From that point, the City's water system delivers water across the City for both fire suppression and public consumption. Water delivered to Vancouver by Metro Vancouver is generally filtered and treated with UV at the water sources with chlorine added to provide protection as the water makes its way to the customer's tap. Metro Vancouver has made significant investment to their water treatment facilities over the last few years with the construction and commissioning of the Seymour-Capilano Filtration Plant. As such, the City's water quality is consistently in compliance with all health based water quality parameters.

The City manages a number of ongoing programs to improve the water delivery system and safeguard the drinking water from contamination including:

- An infrastructure replacement program which aims to replace approximately 0.8 per cent of water mains each year to prevent most pipe breaks and maintain reliable water service.
- The distribution flushing program which involves discharging water through hydrants at a high speed to scour sediment from the mains.
- The Cross Connection Control Program which works to ensure the potable water supply is protected from contamination in the event of back siphonage or back pressure.
- The use of real-time water quality monitoring stations to increase water sampling frequency and allow rapid response to changes in water quality.

## **Greenest City 2020 Water Quality Work Plan (2011-2014)**

With the City's track record of consistently good water quality, the strategy adopted to meet the water quality target was to continue our current efforts and to stay at the forefront of emerging water quality science and industry best practices.

The Water Quality Work Plan 2011-2014 includes the following short term actions:

- Expanding the use of real-time water quality monitoring technology.
- Continue capital programs to minimize breaks, leaks, and to "loop" dead end water mains to decrease stagnation of water.
- Update water system computer model and review water sampling locations.
- Explore the expansion of the cross connection control program (to reduce to protect water system from contaminants)
- Strengthen the City's advocacy and leadership role in regional water quality.
- Establish an emerging water quality issues forum with partner agencies and academia.
- Eliminate combined sewer overflows at Crowe Street and Burrard Street outfalls.
- Develop an Integrated Stormwater Management Plan for the City and the Musqueam watershed.

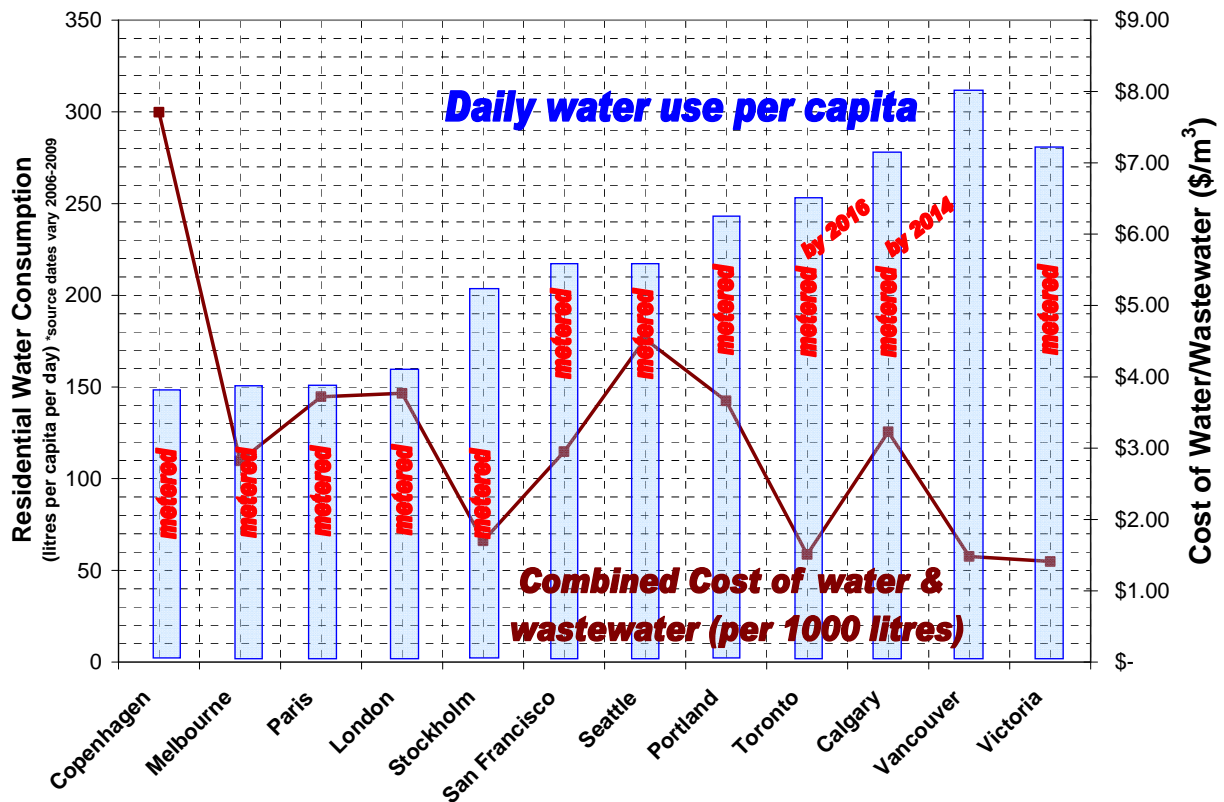
Further details of the work program are described in Appendix A.

## **TARGET 2 - Water Conservation - Clean Water Work Program (2011-2014)**

### **Water Conservation Program**

Vancouver average per capita water use, at more than 320 litres per day, is fourth highest among Canada's 20 largest cities and more than double the consumption of leading European cities.

This is due to water's low cost resulting from both the abundance of rainfall in the region and a geography that supports a gravity fed system that does not rely heavily on energy intensive pumping to deliver water from source to tap.



The City’s current water conservation program is modest and focuses on relatively low cost strategies directed primarily towards the residential sector. These strategies include educational programs such as Waterwise Gardening, and regulatory initiatives such as mandates for low flow fixtures in new construction.

Additionally the City has pursued water conservation strategies in the operation of the water utility, including:

- Water loss management programs such as active leak detection and repair programs.
- Aging Infrastructure replacement programs to prevent or minimize leaks.
- A conservation program for Parks including metering of large volume uses.

#### Greenest City 2020 Water Conservation Work Plan (2011-2014)

Through the analysis supported by the Greenest City planning process, it was determined that reducing total water consumption by 33% would allow all new demand by population and industry growth to be offset by conservation alone. In addition, if all other municipalities in Metro Vancouver followed Vancouver’s lead, it would extend the life of the region’s current water sources well beyond 2100. In other words, with effective demand management, the region can meet future demands without raising the height of the Seymour Falls dam or adding a fourth lake to the source system.

The Water Conservation Work Plan 2011-2014 includes: (Additional details of the work program are described in Appendix A)

- Developing a suite of conservation tools to encourage water conservation.
- Implement changes to water metering policy including mandatory water meter installation for all new services for single/dual family dwellings and major renovations.
- Pursuing policy and regulatory changes to support enforceable regulation against the wastage of water such as for the violation of lawn sprinkling times.
- Developing and implementing a water conservation communications plan, led by Corporate designed to promote, educate, and inspire water efficient behaviour.

### *Developing Conservation Tools*

As part of the Greenest City planning process, a review of best practices of other municipalities considered leaders in water conservation identified a number of program opportunities that should be explored in Vancouver's context to promote more efficient water use across all sectors. The work program includes the development of water audit, rebate, incentive and retrofit programs that will be delivered through innovative partnerships with utilities and non-profit organizations.

### *Water Meter Policy*

Vancouver's distribution network supplies drinking water to properties throughout the City through approximately 100,000 service connections. Approximately 14,000 of those service connections are metered where customers are billed based on the amount of water used plus a fee to cover costs of billing, meter maintenance and replacement. Metered customers, which include all multi-family dwellings, industrial, commercial and institutional customers, comprise about half (50%) of the total water consumption in the City. Of the remainder, thirty percent (30%) is consumed by the 85,000 single and dual family dwellings in the City who are billed an annual flat fee based on an average consumption. The rest is considered non-revenue usage which includes water used in parks, civic facilities and losses through system leakage.

Current City policy does not require metering single and dual family dwellings (SF/DF). The cost of installing, billing, and maintaining meters on single and dual family residential services was traditionally seen to outweigh the benefits as water is a relatively inexpensive commodity.

However, this approach did not acknowledge the impacts of having to expand the region's water sources by either raising the dams or developing another fresh water lake (estimated at \$500M plus associated environmental impacts). This was, in part, because source expansion was accepted as a requirement to support growth. For example, projections based on current rates of consumption by Metro Vancouver, predict that Seymour and Capilano Lake reservoirs levels will need to be raised between 2050 and 2070. However, if Vancouver was to meet our water conservation target (reduce total water consumption by 33% over 2006 levels), and if other member municipalities followed suit, it would extend the life of our current water sources well beyond 2100.

To achieve this goal, a more comprehensive conservation program including metering of all SF/DF residential services will eventually be necessary.

The current flat fee structure for water consumption for single/dual family connections has certain benefits. The fee is simple to calculate and administration costs are low as there are no costs to read meters and process billing. The fee also does not fluctuate for the property owner, simplifying financial planning.

However, the flat fee structure presents the following drawbacks:

- All SF/DF customers pay the same amount regardless of how much water they use. This leads to a perception of inequitable treatment.
- Little water consumption information is provided to the customer. As such, there is little incentive for conservation, controlling private side leaks or addressing inefficient behaviour. Conversely, there is no penalty for inefficient water use.

With more than 40 years before the water supply may need to be expanded, we have many years to retrofit SF/DF connections with water meters. Thus, the Greenest City Action Plan recommends that meters for this sector be installed gradually and in concert with the implementation of a comprehensive conservation program. Together, these programs will encourage more efficient water use. Meter installations are considered a foundational step that will enable a host of other benefits.

Benefits of metering SF/DF water connections include:

- Achieving up to 20% reduction in water use in this sector through changes in consumer behaviour.
- Reducing the stress on the City's water system (and that of Metro Vancouver's) by reducing peak summer demands.
- Informing water use behaviour by providing volumetric billing and consumption data provided to customers.
- Achieving billing equity among all customers - resulting in savings for those who consume wisely.
- Reducing the stresses on our sanitary sewer system.
- Collecting system data that aids in directing capital investment.
- Increasing capacity for identifying and addressing potential cross connections.

The disadvantages of metering SF/DF water connections include:

- Additional administration and maintenance costs to operate the system.
- Two-tiered billing system during transition to universal water metering (part of sector charged flat fee while others charged a metered rate).

A number of comparable North American cities and local municipalities are either fully metered or anticipate universal metering in the near future.

Metro Vancouver Water Metering Examples	
West Vancouver	Universally metered since 2005
Surrey	51% Metered

Richmond	55% metered
Abbotsford	Universally metered since 1970s
<b>North American Water Metering Examples</b>	
Victoria	Universally metered
Calgary	Universal metering by 2014
Toronto	Universal metering by 2016
Portland, OR	Universally metered
Seattle, WA	Universally metered

### Recommended Policy for Meter Installations

As per the Greenest City Action Plan, the recommendation is to require water meters on all new SF/DF connections beginning in January 2012. Metered water services will be required for new house connection applications, major renovations, and any other situation where a new water service is required. It is expected that this policy will result in an annual increase of approximately 800 meters in to our existing inventory depending on construction activity.

At this point, the recommended policy only applies to new single family and dual family connections. Finding ways to expedite residential metering will be the subject of a future report back. Details on proven methods to increase the rate of residential metering is covered later in this report.

Phasing in water meters is the best way to achieve universal metering while maintaining affordability, good service, and minimizing the disruption to neighbourhoods. The estimated pace of 800 meters per year will not achieve a fully metered system by 2020.

While water meters are being phased in there will be two billing structures:

- Flat rate structure for SF/DF dwellings that are not yet metered
- Volumetric billing for metered SF/DF dwellings

Staff will explore an inclining metered rate structure for new SF/DF meters calculated to provide a rate for an average water user equal to or less than the current flat rate and which would provide much more incentive for high volume users to conserve water.

The initial capital cost of the supply and installation of new meters is proposed to be funded through a \$450 fee increase to the permit issued for a new water service; a cost which will ultimately be passed on to the purchaser of the home or the initiator of the major renovation. Refinement of the billing and funding details will be ongoing through stakeholder engagement that will be conducted this summer and early fall.

### *Lawn Sprinkling*

#### Alignment of Water Shortage Response Bylaw with Lawn Sprinkling Guidelines

On March 18th, 2011, the GVWD Board adopted a new Water Shortage Response Plan that includes changes to the lawn sprinkling regulations allowable sprinkling days and times, with enforcement to begin June 1, 2012. This change is in response to GVWD transmission system

being stressed during peak demand periods of hot, dry summers, and help to extend the life of the supply sources and infrastructure. The new regulations reduce the allowable sprinkling times to mornings only when demand is typically lower and spread the allowable sprinkling times over 3 days rather than 2 previously.

To support this regional initiative, the City of Vancouver's Water Shortage Response bylaw (#8912) requires amendment to match the sprinkling days and times set out in the approved regional Water Shortage Response Plan. The new regulations are:

Residential addresses:

- Even addresses Monday, Wednesday and Saturday mornings (4 - 9 am);
- Odd addresses Tuesday, Thursday and Sunday mornings (4 - 9 am);

Non-Residential addresses:

- Even non-residential addresses may sprinkle lawns on Monday and Wednesday mornings from (1 - 6 am);
- Odd non-residential addresses may sprinkle lawns on Tuesday and Thursday mornings from (1 - 6 am);
- All non-residential addresses may sprinkle Friday mornings (4 - 9 am);

### **Designation of Water related bylaw infractions as Ticketable Offences**

Enforcement of water related bylaw infractions related to lawn sprinkling and water wastage is currently hampered by being a court-based model that has proven onerous in terms of time and resources to prosecute offences. Although compliance has been sought and in most cases achieved by issuing letters of warning, no fines have been levied. Designation of these infractions as ticketable offences would enable appropriate enforcement capacity in a timely fashion without contributing to backlog of the court system.

To date enforcement has been complaint driven and through ad hoc patrol by non-designated field staff. Through this system approximately 200 violations are reported each year, which are followed up with warning letters. Although the incidence of second offences is very low the passive nature of the reporting system makes actual numbers of repeated offences difficult to establish.

While the main focus of the conservation program will continue to inform and educate the citizenry about efficient water use, the ability to issue tickets to offenders would send a stronger message to offenders and collect violation information that would guide future targeted outreach programs.

### ***Communications to Inspire Behaviour Change***

The uptake and efficacy of water conservation programs is directly related to their promotion and the level of program awareness by their target audience. As such, the implementation of a comprehensive communications plan to promote, educate and increase awareness toward efficient water use, is a vital component of the work plan. Building on the experience gained through the Greenest City public engagement process, Corporate Communications will lead the development of an appropriate plan that could include such components as the use of

various social media, a comprehensive web portal, calendar of public educational workshops, and development of advertising and outreach print material.

### *“CLOSING THE CONSERVATION GAP”*

The proposed Clean Water Work Program provides an initial strategy to develop conservation programs projected to reduce total water consumption by 21% by 2020. Reducing water consumption further to achieve our target of 33% will involve options to expedite water meter installations for the SF/DF sector and the introduction of demand management pricing. These strategies can be costly, complex to administer and will need to be carefully considered to provide the benefit expected without burdening residents and businesses.

A number of options are currently being studied to provide Council with options to ‘close the gap’. Factors such as cost to implement, cost of ongoing maintenance, and impact to water rates will be weighed against amount of water saved and projected delays to source expansion. Several options that are currently being studied include:

- Options to expedite residential (SF/DF) water meter program by:
  - Implementing voluntary metering program
  - Requiring meters on City initiated service replacements and in concert with other capital construction (water & sewer replacement, major streetwork)
  - Initiating a meter retrofit program
  - Exploring district or area metering as an interim strategy
  
- Implementation of conservation rate structures including
  - Seasonal pricing
  - Conservation/Inclining block pricing
  - Rate programs for low-income residents

Included in the work plan is the delivery of a comprehensive package of strategies above to close the conservation gap for Council consideration in 2012.

### *FINANCIAL IMPLICATIONS*

The following table summarizes the capital and operating budget requests associated with delivery of the Clean Water Work Program, as described in this report with further detail in Appendix A.

### Budget Request for Clean Water Work Program

Description	Annual Operating Budget Request	Performance Metric	
<b>Water Quality</b>			
<ul style="list-style-type: none"> <li>Real-time water quality monitoring</li> </ul>	\$50,000	Increased response time to potential contaminants. 1 additional water quality station and annual operating costs for all 3 stations. Sampling data frequency from 2 days to 15 min	
<ul style="list-style-type: none"> <li>Eliminate combined sewer overflows from sewage outfalls at Crowe and Burrard Streets</li> </ul>	Included in 2012-2014 Draft Capital Plan	Target Completion 2014	
<ul style="list-style-type: none"> <li>Develop an Integrated Stormwater Management Plan.</li> </ul>	Included in 2012-2014 Draft Capital Plan	Target Completion 2014	
Other Water Quality Actions described further in Appendix A.			
<b>Water Conservation</b>		<b>Expected % reduction Water Saved</b>	<b>Typical Annual Metric (if applicable)</b>
<ul style="list-style-type: none"> <li>Mandate use of efficient water fixtures and support alternate water sources through the City's development and zoning regulations and policy</li> </ul>	To be completed with existing resources	2.0% 2.5 billion litres	Dependent on rate of redevelopment
<ul style="list-style-type: none"> <li>Implementing metering policy for new single/dual family dwelling connections</li> </ul>	Details to follow in report back to Council, Fall 2011	2.0% 2.5 billion litres	Up to 800 meters per year
<ul style="list-style-type: none"> <li>Education, awareness and behaviour change</li> </ul>	\$100,000	3.5% 4.4 billion litres	Monitoring of total water consumption
<ul style="list-style-type: none"> <li>Water audit program for industrial, commercial and institutional sector <i>2012 programs: LiveSmart for small business</i></li> </ul>	\$25,000	3.0% 3.8 billion litres	500 business audits
<ul style="list-style-type: none"> <li>Partnership with utility companies in full service retrofit program for water efficiency</li> </ul>	\$185,000	2.5% 3.2 billion litres	Approx 1500 high efficiency toilets
<ul style="list-style-type: none"> <li>Lawn sprinkling education and enforcement</li> </ul>	\$85,300	3.0% 3.8 billion litres	# of participants
<ul style="list-style-type: none"> <li>Water system leak detection <i>Consultancy &amp; Pilot</i></li> </ul>	\$25,000	2.0% 2.5 billion litres	Water saved # leaks detected
<ul style="list-style-type: none"> <li>Civic Water Conservation <i>Facilities &amp; Parks</i></li> </ul>	Included in 2012-2014 Draft Capital Plan	3.0% 3.8 billion litres	Litres consumed by civic facilities
<b>Staffing</b>			
<ul style="list-style-type: none"> <li>Policy Analyst - Water Conservation</li> </ul>	\$85,400		
Totals:	\$555,700 (2012+ Operating)	21% 26.5 billion litres	

The work program budgets presented above represent the initial estimated annual expenditures based on projected uptake and efficacy. Performance will be reviewed on an annual basis and program budgets may require adjustment to continue to achieve the greatest water saved per dollar of program funding to meet water conservation targets. Budget adjustments, if necessary, will be brought forward to Council as part of annual rate reports for the utility.

In summary, a \$555,700 increase to the Water Design Operating budget for 2012 onward to fund the programs and staffing described above through a 0.5% increase to water rates. Despite the increased funding in water conservation, the City's investment remains modest when compared to other municipalities as demonstrated in the following table:

**Conservation Program Budgets of other Municipalities for Comparison**

Municipality/Agency	Population	Current Conservation Budget	Current per capita	Proposed per capita
Seattle Public Works	1300000	\$3,500,000	\$2.69	
Capital Regional District	370000	\$1,000,000	\$2.70	
Surrey	400000	\$183,000	\$0.46	
Vancouver	670000	\$150,000	\$0.22	
<b>Vancouver (proposed)</b>	<b>670000</b>	<b>\$705,700</b>		<b>\$1.05</b>

***ENVIRONMENTAL IMPLICATIONS***

The Clean Water Work Program will ensure that residents will continue to have access to high quality drinking water and enables the City to assume a leadership role in water quality advocacy. In addition, the City will explore water conservation measures across all sectors to reduce our total water consumption beyond the 21% that we project to achieve with the actions outlined in this report to eventually achieve the 33% target.

If successful, these efforts will allow all water demands of projected population growth to be addressed from existing sources which provides a less expensive alternative to expanding new water supply. In addition, this would make Vancouver one of the most efficient water users when compared with other major North American cities.

***PERSONNEL IMPLICATIONS***

The Clean Water Work Plan recommends that a new regular full time Policy Analyst be created to assist with the delivery of the program. This position will be subject to classification by Human Resources. Costs are noted in the previous table.

***SOCIAL IMPLICATIONS***

In the preparation of this work plan and through the delivery of the recommended actions, it is recognized that water is not only a commodity but also has ecological and social value. This sentiment has been supported by input from the Clean Water Advisory Committee and the general public through the Greenest City consultation process.

Specifically, the work plan will acknowledge/consider the following:

- Prioritization of efforts to provide public access to water and outreach.
- Safeguarding of interests of low income seniors and individuals.
- Providing opportunities for partnerships with agencies offering low-threshold employment options for people entering or re-entering the work force

#### ***IMPLEMENTATION PLAN***

The Work Plan described in this report outlines immediate priorities as well as action items through to 2014.

#### ***COMMUNICATIONS PLAN***

The education, outreach and awareness component to the work program is expected to provide the greatest reduction in water use by inspiring and supporting behaviour changes in water use to achieve the City's conservation target.

Corporate Communications, along with Engineering - Waterworks Design and the Sustainability Group, will be developing a strategic outreach plan for the Clean Water goal.

#### ***CONCLUSION***

This report provides Council and the community with details on a proposed work plan to make near term gains towards the City's Clean Water Greenest City goal of having the best drinking water in the world.

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Greenest City 2020 - Clean Water Work Program (not including staffing)

<b>Water Quality Actions</b>	
<b>Strengthen Water Quality and Protection</b>	
Increase the use of real-time water quality monitoring technology for early detection of contaminants.	\$50,000
Continue the replacement of water mains, and valves on a life-cycle basis to minimize pipe breaks, leakage, and maintain reliable water service.	Ongoing through existing staffing and capital budget
Decrease potential for stagnation by increasing water circulation through the "looping" of dead end water mains.	Ongoing through existing staffing and capital budget
Examination of best locations for dedicated sampling stations through hydraulic modeling	Ongoing through existing staffing and funding
Ensure the appropriate water quality parameters are being measured for compliance with health standards and security monitoring.	Ongoing through existing staffing and funding
Ensure the number of water quality tests conducted exceeds requirements in regulatory plans	Ongoing through existing staffing and funding
Explore expansion of the Cross Connection Control Program (contamination protection.	Ongoing through existing staffing and funding
<b>Leadership and Advocacy</b>	
Accelerate combined sewer separation in the areas discharging into False Creek.	Ongoing through existing staffing and capital budget
Strengthen advocacy and leadership role through the Regional Engineers Advisory Committee	Ongoing through existing staffing and funding
Establish emerging water quality issues forum with partner agencies (eg. Vancouver Coastal Health) and universities.	Ongoing through existing staffing and funding
Develop an integrated rainwater management plan including infiltration and rainwater capture.	Ongoing through existing staffing and capital budget
<b>Public access to drinking water</b>	
Continue to expand options for year-round public access to municipal drinking water in public spaces	Included in capital budget
<b>Water Conservation Actions</b>	
<b>Policy</b>	
Water audit program for industrial, commercial and institutional (ICI) sector	Ongoing through existing staffing and funding

Partnership with utility companies in full service retrofit program for water efficiency - targeted housing stock	\$185,000
Mandate use of efficient water fixtures and support alternate water sources through the City's development and zoning regulations and policy.	Ongoing through existing staffing and funding
Expand Sprinkling Regulation Education and Enforcement Program	\$85,300
Research options to achieve additional water use reduction through exploring alternate sources of water, acceleration of single/dual family metering program, and introduction of alternate pricing models. Possible grant funding will be investigated.	Ongoing through existing staffing and funding
<b>Engagement</b>	
Establish and implement an ongoing communications plan that includes promotion, education, and behaviour change campaigns	\$100,000
Conduct ICI audits for water efficiency and for sewer discharge pollution prevention	\$25,000
<b>Leadership</b>	
Reduce system leakage through proactive leak detection and implement pressure management program to reduce background leakage from the water system.	\$25,000
Develop and establish water use program to reduce consumption by 33% - Parks	Ongoing through existing staffing and capital funding
Develop and establish water use program to reduce consumption by 33% - Civic Facilities	Ongoing through existing staffing and capital funding
<b>Technology</b>	
Develop incentive programs to accelerate installation of water efficient fixtures, including rebate programs for low flow toilets and rain sensors for in ground sprinkler systems.	Ongoing through existing staffing and funding
<b>Totals:</b>	<b>\$470,300</b>

**A By-law to amend Water Shortage Response By-law No. 8912  
regarding 2011 Water Shortage Response Plan**

THE COUNCIL OF THE CITY OF VANCOUVER, in public meeting, enacts as follows:

1. This By-law amends the indicated provisions and schedules of the Water Shortage Response By-law.
2. In section 1.2:
  - a) after the definition of "lawns", Council adds:  
" "non-residential" means a site which is not located in a zoning district listed in Schedule A;" ;
  - b) after the definition of "public announcement", Council adds:  
" "residential" means a site which is located in a zoning district listed in Schedule A;" ; and
  - c) Council repeals the definition of "water" used as a noun and substitutes:  
" "water" used as a noun means treated drinking water supplied directly or indirectly by GVWD or the city;" .
3. In section 2.5, Council:
  - a) Repeals:  
"• lawn sprinkling is allowed only from 4:00 a.m. to 9:00a.m. and 7:00 p.m. to 10:00 p.m." ,  
and substitutes,  
"• residential lawn watering is only allowed from 4:00 a.m. to 9:00 a.m." ;  
and
  - b) Repeals:  
"• even-numbered addresses may sprinkle only on Wednesdays and Saturdays and that odd-numbered addresses may sprinkle only on Thursdays and Sundays" ,

and substitutes,

- “• even numbered residential addresses may only water on Monday, Wednesday and Saturday
- odd numbered residential addresses may only water on Tuesday, Thursday and Sunday
- non-residential lawn watering is only allowed from 1:00 a.m. to 6:00 a.m. on Monday, Tuesday, Wednesday and Thursday and from 4:00 a.m. to 9:00 a.m. on Friday
- even numbered non-residential addresses may only water on Monday, Wednesday and Friday; and
- odd numbered non -residential addresses may only water on Tuesday, Thursday and Friday”

4. In section 2.6, Council :

a) Repeals:

- “• lawn sprinkling is allowed only from 4:00 a.m. to 9:00a.m. and 7:00 p.m. to 10:00 p.m.”,

and substitutes,

- “• residential lawn watering is only allowed from 4:00 a.m. to 9:00 a.m.
- non residential lawn watering is only allowed from 1:00 a.m. to 6:00 a.m.
- even numbered residential addresses may only water on Monday
- odd numbered residential addresses may only water on Thursday; and
- even numbered non -residential addresses may only water on Wednesday
- odd numbered non residential addresses may only water on Tuesday”

5. Council repeals section 5.1 and substitutes :

“5.1 Subject to section 5.2, when stage 1 restrictions are in force and effect, a person must not:

(a) water lawns at a residential address, except:

- (i) at even numbered addresses, on Monday, Wednesday and Saturday, from 4:00 a.m. to 9:00 a.m., and
- (ii) at odd numbered addresses, on Tuesday, Thursday and Sunday, from 4:00 a.m. to 9:00 a.m.;

- (b) water lawns at a non-residential address, except:
  - (i) on Friday from 4:00 a.m. to 9:00 a.m.,
  - (ii) at even numbered addresses, on Monday and Wednesday, from 1:00 a.m. to 6:00 a.m., and
  - (iii) at odd numbered addresses, on Tuesday and Thursday, from 1:00 a.m. to 6:00 a.m.; or
- (c) use a hose to wash boats or motor vehicles, unless the hose has an automatic shut-off device."

6. Council repeals subsection 5.3(a), renumbers subsections 5.3(b), (c), and (d) as 5.3(c), (d) and (e) respectively, and substitutes:

- "(a) water lawns at a residential address, except:
  - (i) at even numbered addresses, on Monday, from 4:00 a.m. to 9:00 a.m., and
  - (ii) at odd numbered addresses, on Thursday, from 4:00 a.m. to 9:00 a.m.;
- (b) water lawns at a non residential address, except:
  - (i) at even numbered addresses, on Wednesday, between 1:00 a.m. and 6:00 a.m., and
  - (ii) at odd numbered addresses, on Tuesday, between 1:00 a.m. and 6:00 a.m.;"

7. Council adds Schedule A to the by-law as follows:

"Schedule A

RA-1 District  
RS-1 District  
RS-1A District  
RS-1B District  
RS-2 District RS-3 and RS-3A Districts  
RS-4 District  
RS-5 District  
RS-6 District  
RS-7 District  
RT-1 District  
RT-2 District  
RT-3 District  
RT-4, RT-4A, RT-4N and RT-4AN Districts  
RT-5, RT-5A, RT-5N and RT-5AN Districts  
RT-6 District  
RT-7 District  
RT-8 District  
RT-9 District

RT-10 and RT-10N Districts  
RM-1 and RM-1N Districts  
RM-2 District  
RM-3 District  
RM-3A District  
RM-4 and RM-4N Districts  
RM-5, RM-5A, RM-5B and RM-5C Districts  
RM-6 District  
FM-1 District  
FSD District "

8. At the end of the Table of Contents, Council adds:

"SCHEDULES

Schedule A"

9. A decision by a court that any part of this By-law is illegal, void, or unenforceable severs that part from this By-law, and is not to affect the balance of this By-law.

10. This By-law is to come into force and take effect on the date of its enactment.

ENACTED by Council this  
2011

day of \_\_\_\_\_,

\_\_\_\_\_  
Mayor

\_\_\_\_\_  
City Clerk

**A By-law to amend Ticket Offences By-law No. 9360  
regarding Water Shortage Response By-law**

THE COUNCIL OF THE CITY OF VANCOUVER, in public meeting, enacts as follows:

1. This By-law amends the indicated provisions of Ticket Offences By-law No. 9360.
2. Council adds the following Table 6 to the By-law:

"

**Table 6  
Water Shortage Response By-law**

<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>	<u>Column 4</u>
City Engineer	Water residential lawn outside permitted hours Stage 1	Section 5.1(a)	\$100.00
	Water non-residential lawn outside permitted hours Stage 1	Section 5.1(b)	\$100.00
	Water residential lawn outside permitted hours Stage 2	Section 5.3(a)	\$200.00
	Water non-residential lawn outside permitted hours Stage 2	Section 5.3(b)	\$200.00

"



**A By-law to amend Water Works By-law No. 4848  
regarding 2011 Water Shortage Response Plan**

THE COUNCIL OF THE CITY OF VANCOUVER, in public meeting, enacts as follows:

1. This By-law amends the indicated provisions and schedules of the Water Works By-law.
2. To section 2, after the definition of "FIRE SERVICE PIPE", Council adds:  
" "GVWD" means the Greater Vancouver Water District;"
3. To section 2, after the definition of "UNIT", Council adds:  
" "WASTE WATER" and "WASTING WATER" means:
  - (a) causing, allowing or failing to prevent the free discharge or flow of water from a property, on or into a sanitary sewer, watercourse, storm drain, street or adjacent property;
  - (b) causing, allowing or failing to prevent leaking of water, from outdoor fixtures including irrigation systems, ponds, fountains and water features, from indoor appliances and plumbing fixtures and from heating and cooling devices;
  - (c) using and maintaining ponds, waterways, water features, fountains or swimming pools, which do not have a water recirculation device;
  - (d) using an irrigation system, which applies water to an impervious surface; and
  - (e) using a water hose, which is not equipped with an automatic shut-off device;  
"WATER" means treated drinking water supplied directly or indirectly by GVWD or the city;"
3. In section 9, Council strikes out the words "or wastage" wherever they occur.
4. Council repeals section 12 and substitutes:  
**"12. Prohibitions against wasting water**  
12.1 A person must not:
  - (a) sell or convey water beyond the property lines of a property, to which water service is provided; or
  - (b) use water to power machinery,  
without having first obtained a permit to do so from the Engineer.

- 12.2 A person must not waste water.
- 12.3 A person must not use or permit the use of an air-conditioning unit which:
- (a) is designed to discharge water without recirculation; and
  - (b) draws 28.4 litres of water per minute or more,
- unless the unit was installed before February 1, 1970, and is subject to an annual flat rate charge, pursuant to Schedule H, payable on January 1 of each calendar year, in addition to the metered consumption rate.
- 12.4 If, in the opinion of the Collector, a person is contravening the provisions of sections 12.1, 12.2, or 12.3, the Collector may issue a notice requiring that the contravention cease by the date specified in the notice.
- 12.5 A person who receives a notice pursuant to section 12.4, must cease the contravention by the date and time stipulated in the notice.
- 12.6 If a person does not comply with a notice issued pursuant to section 12.4, the Collector may:
- (a) shut off the service pipe supplying water to the property; or
  - (b) in the case of an unmetered service, install a meter.
- 12.7 If the Collector takes steps to shut off water service or install a meter pursuant to section 12.6, the costs so incurred may be recovered by insertion on the real property tax roll.
- 12.8 A notice issued in accordance with this by-law is deemed to have been received:
- (a) four days after mailing, if sent by ordinary prepaid mail to the address of the premises, which are the subject of the notice; and
  - (b) 24 hours after sending, if sent by electronic mail to the electronic mail address of the owner of the premises, which are the subject of the notice."
5. In section 14:
- a) in the first paragraph, Council strikes out the words "water, waste water, or any harmful liquid or", and substitutes "any"; and

b) in the eighth paragraph, Council strikes out the words “, non-potable water or waste water”, and substitutes “and non-potable water”.

6. A decision by a court that any part of this By-law is illegal, void, or unenforceable, severs that part from this By-law, and is not to affect the balance of this By-law.

7. This By-law is to come into force and take effect on the date of its enactment.

ENACTED by Council this \_\_\_\_\_ day of \_\_\_\_\_, 2011

\_\_\_\_\_  
Mayor

\_\_\_\_\_  
City Clerk