



To: Public Works and Transportation Committee  
 From: Robert Gonzalez, P.Eng.  
 Director, Engineering  
 Re: Drinking Water Management Plan

*To Public Works & Transportation Feb 2, 2007*  
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Staff Recommendations

That:

- 1) The Greater Vancouver Water District's (GVWD) Drinking Water Management Plan for the GVRD and Member Municipalities be received for information; and
- 2) The regional Drinking Water Management Plan be adopted.

Robert Gonzalez, P.Eng.  
 Director, Engineering  
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Att. Appendix A – Goals and Strategies of the Drinking Water Management Plan

<b>FOR ORIGINATING DEPARTMENT USE ONLY</b>		
<b>CONCURRENCE OF GENERAL MANAGER</b>		
<b>REVIEWED BY TAG</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
<b>REVIEWED BY CAO</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

## Staff Report

### Origin

The Drinking Water Management Plan (DWMP) was initiated and prepared by the GVWD and the member municipalities. The draft Plan was completed and submitted to the GVWD Board in February, 2005. Consultation on the draft plan included workshops and discussions with GVRD Water Committee, Regional Engineers Advisory Committee (REAC), REAC Water Subcommittee, health authorities, municipal mayors and councillors at the Council of Councils, provincial and federal agencies, and eight public consultation events. The Plan was revised based on the input received.

The final DWMP is an action oriented plan which provides the direction and priority for drinking water initiatives in the region in order to have an affordable and sustainable water supply for at least the next 25 years. This will be achieved through the Plan's goals, strategies and actions.

The purpose of this report is to have Council consider and adopt the plan as required by the GVWD.

### Analysis

The Drinking Water Management Plan has the following three primary goals:

Goal 1: Provide Clean, Safe Drinking Water

Goal 2: Ensure the Sustainable Use of Water

Goal 3: Ensure the Efficient Supply of Water

The plan outlines strategies and actions required to achieve the above goals and will be successfully implemented through a joint effort between the GVWD and member municipalities. The details of the strategies and actions by the GVWD are provided in Appendix A.

The following outlines the municipal actions suggested under the plan, the current status of Richmond's actions, and its impact to Richmond if the plan is fully implemented.

#### Goal 1: Provide Clean, Safe Drinking Water

The first goal is to provide clean and safe drinking water. The strategy is to use a Risk Management Multi-Barrier approach from source to tap to manage the source watersheds, complete the Seymour-Capilano Filtration Project, and upgrade the primary disinfection treatment at the Coquitlam source. Water quality will be maintained throughout the transmission and distribution system by primary disinfection, chlorination, and rechlorination, water quality monitoring programs, proactive maintenance programs, and backflow prevention and cross-connection control programs.

1. **Water Quality Monitoring:** The GVWD will work with municipalities to establish water quality monitoring systems in the municipal distribution system and at the tap and

use this information to optimize water quality through operation of the municipal water system.

**Richmond Status:** Richmond and the GVWD already have a joint water quality monitoring program and will continue to work together to provide safe drinking water through proper monitoring.

**Impact:** None

2. **Maintenance Program:** The GVWD will work with municipalities to preserve water quality in the distribution system through proactive maintenance programs.

**Richmond Status:** The City already undertakes an infrastructure maintenance program that targets the preservation of water quality (eg. watermain unidirectional flushing and good design practices to reduce the number of dead end water pipes). Staff will work with the GVWD to improve our flushing program if necessary.

**Impact:** None

3. **Secondary Disinfection:** The GVWD and its member municipalities will reassess the secondary disinfection system after completion of the Seymour-Capilano Filtration Project.

**Richmond Status:** The City monitors the chlorine residual in the water system and will review the effects of the Seymour-Capilano Filtration Project to assess Richmond's need for a secondary disinfection system.

**Impact:** None

4. **Cross Connection Control:** The member municipalities and the GVWD will, over the next five years, examine the feasibility of implementing, administering and maintaining backflow prevention and cross-connection control programs to protect the public water system from hazards originating on the customers premises or from temporary connections.

**Richmond Status:** The City already has active backflow prevention and cross-connection control programs in place to protect the water system. Staff will work with the GVWD to improve this program and will report to Council if significant additional resources are required to satisfy regional standards.

**Impact:** None

## Goal 2: Ensure the Sustainable Use of Water

The second goal of the plan is to ensure the sustainable use of water. GVWD and its member municipalities are committed to pursuing Demand Side Management strategies to promote using water more sustainably.

1. **Water Pricing:** The GVWD will set its water rate structure to reflect the long-run marginal cost of regional water supply.

**Richmond Status:** The City's Water Utility incorporates the GVWD's predicted rate. The City and other municipalities may have to consider introducing a seasonal rate structure (more expensive in the summer) and an escalating block rate structure (more expensive for high volume users) at the retail level.

**Impact:** None

2. **Water Efficient Fixtures:** The GVWD will facilitate collective development of consistent municipal bylaws to eliminate once-through cooling water, and require water efficient fixtures in new construction and renovations. Some changes such as low flow toilets are already occurring.

**Richmond Status:** The BC Water Conservation Plumbing Regulation now requires the use of low flush (6 litre per flush) toilets in all new construction in the region. Staff will continue to work with the GVWD on the development of consistent bylaws.

**Impact:** Potential higher costs in new construction with savings in water and sewer costs to the utility customers in the long term.

3. **Sprinkling Restrictions:** The GVWD will facilitate the collective development of consistent municipal bylaws to improve implementation and enforcement of the Water Shortage Response Plan.

**Richmond Status:** Council already has endorsed the Water Shortage Response Plan and the City has implemented the sprinkling regulations contained therein through our Water Use Restrictions Bylaw No. 7784.

**Impact:** Additional resources could be required if more stringent enforcement efforts are found necessary.

4. **Water Audits for Large Water Users:** In partnership with member municipalities, the GVWD will assess the merits of standardized industrial, commercial and institutional water audits for the largest 25% of business water users as the basis for initiating water conservation improvements.

**Richmond Status:** Staff will work with the GVWD to assess the merits of such water audits. Reducing water consumption through conservation initiatives with the region's largest water consumers could significantly reduce consumption in the Industrial Commercial and Institutional (ICI) sector. Such reductions could help to defer the need for capital intensive regional and local supply projects.

**Impact:** Additional resources could be required to administer the audits.

5. **Water Metering:** The member municipalities will assess the merits of developing residential water metering programs, and municipal rebate programs for water efficient fixtures and appliances.

**Richmond Status:** The City currently has a successful Volunteer Water Meter Program for the existing single family dwellings with plans to expand this program to multi-family dwellings. In addition, a Mandatory Water Meter Program exists for new homes as well as new capital construction. Richmond currently has over 30% of the single family residents metered.

**Impact:** None

### Goal 3: Ensure the Efficient Supply of Water

The third goal of the plan is to ensure the efficient supply of water. The strategy is to manage infrastructure proactively, which will ensure a cost-effective, reliable and sustainable water supply. This will include renewing and replacing aging infrastructure, improving leak identification and repair programs, and implementing emergency and security program improvements. The GVWD will establish an asset management program for its own infrastructure and a reserve fund to ensure appropriate levels of funds are either spent on asset management or set aside in the reserve every year.

1. **Leak Detection:** Municipalities will continue leak identification and repair programs and implement operational programs to reduce leakage (such as pressure reduction / management).

**Richmond Status:** The City is assessing the merits of a pressure management program. We currently have a leak identification program on an as needed basis. Staff will examine an overall strategy for leak identification and repair programs to ensure that we are consistent with the other member municipalities.

**Impact:** None

2. **Infrastructure Replacement:** Municipalities will need to renew and replace aging infrastructure to provide appropriate levels of services and to assist in leak reduction.

**Richmond Status:** The City has incorporated a water infrastructure replacement program through the Water Utility Reserve. The program is designed to reduce overall costs by replacing aging components prior to failure. A report to the Public Works and Transportation Committee is forthcoming on this topic including the respective financing options.

**Impact:** Due to the soils and the large proportion of asbestos cement pipe in our distribution system, there may be a need for an aggressive replacement program in the next 30 years.

3. **Operating Agreements:** The GVWD is to establish operating agreements with municipalities to ensure facilities are operated for mutual benefit under normal and

emergency conditions and in a fashion that reflects the Regional Growth Management Plan.

**Richmond Status:** Staff support the concept establishing operating agreements with the GVWD as it will provide certainty and consistency on the level of service throughout the region.

**Impact:** None

### **Financial Impact**

The City has already implemented or commenced several of the strategies and actions and these will have minimal impacts on our water utility. Financial impacts primarily relating to future GVWD water supply costs and infrastructure replacement will be dealt with annually through the Water Utility.

The impact on the GVWD water rate from implementing DWMP actions could occur in two ways:

1. Actions that increase GVWD expenditures;
2. Actions that reduce demand for GVWD water would contribute to increases in the GVWD water rate (cents per cubic metre) as the GVWD budget must be recovered from lower water sales.

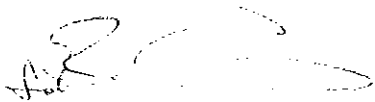
These two factors have roughly equal impact on the projected GVWD water rate.

The GVWD projects that the combined impact of these two factors would be a 2 cent per cubic metre increase in the GVWD water rate by 2009.

### **Conclusion**

The Drinking Water Management Plan is an action oriented plan which provides the direction and priority for drinking water initiatives in the region. The plan ensures that the water needs of the region will be met in an affordable and sustainable fashion for at least the next 25 years.

Richmond has already implemented or commenced several of the strategies and actions and these will have minimal impacts on our water utility. Financial impacts primarily relating to future GVWD water supply costs and infrastructure replacement will be dealt with annually through the Water Utility. These will be brought forward for Council's consideration through the annual budget process.



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## Appendix A

### Goals and Strategies of the Drinking Water Management Plan Action by Greater Vancouver Regional District

#### **Goal 1: Provide Clean, Safe Drinking Water**

Strategy #1: Use a risk management multi-barrier approach from source to tap.

1. The GVWD will continue to protect source water quality by managing watersheds in accordance with the Watershed Management Plan.
2. The GVWD will complete the Seymour-Capilano Filtration Project.
3. The GVWD will monitor water quality source to tap and use this information to optimize source water disinfection, operation of the GVWD water system, and rechlorination programs.
4. The GVWD will continue to preserve water quality in the GVWD system through proactive maintenance programs.
5. The GVWD will improve the primary disinfection treatment of Coquitlam source water for Cryptosporidium.
6. The GVWD will implement works to improve water quality, including completion of the Seymour-Capilano Filtration Project, the new Coquitlam intake and other improvements in the 10 year Capital Plan.

Strategy #2: Identify and secure additional water supplies for the region.

1. The GVWD to provide for additional capacity by securing full access to the Coquitlam source under the Coquitlam Water Use Plan, and then expanding storage capacity in Seymour and Capilano watersheds.
2. As new information on the potential impacts of climate change becomes available, the GVWD will provide updates in the DWMP progress reports.

#### **Goal 2: Ensure the Sustainable Use of Water**

Strategy #1: Use drinking water sustainably

1. In partnership with member municipalities and non-government organizations, the GVWD will deliver an education program promoting behaviour change and sustainable use of water.
2. The GVWD will request that the Province change the Provincial Plumbing Code to require water efficient fixtures in new construction and renovations.

Strategy #2: Match water quality to usage requirements

1. The GVWD will complete the Annacis Waste Water Treatment Plant pilot reclamation project and assess the potential for its expansion.

2. The GVWD will work with Health Authorities to request changes to the provincial health regulations to allow specific residential and commercial uses of non-potable water (grey water and rainwater).
3. In partnership with business association and/or non-government organizations, the GVWD will facilitate networking for the reuse of process wastewaters.
4. The GVWD will investigate the feasibility of substituting alternatives to drinking water for specific applications (eg use of rainwater stored in rooftop cisterns for irrigation) and locations (eg river water or sea water for use in waterfront businesses).

### **Goal 3: Ensure the Efficient Supply of Water**

#### **Strategy #1: Manage infrastructure proactively**

1. GVWD Operating Plan to include:
  - Consolidation of asset management databases to optimize decision making on maintenance and funding of assets.
  - Renewal and replacement of aging infrastructure to provide appropriate levels of service and assist in leak reduction.
  - Leak identification and repair programs and implementation of operational programs to reduce leakage (such as pressure reduction/management).
2. The GVWD will continue to conduct hazard assessments and implement emergency and security program improvements.
3. Given the water system is aging and infrastructure renewal and replacement costs are projected to increase, the GVWD to use the full cycle cost of assets to determine infrastructure funding requirements and ensure sustainable infrastructure funding is in place.
4. GVWD to establish a GVWD asset management reserve fund to ensure appropriate levels of funds are either spent on asset management or set aside in the reserve every year (to help ensure sustainable asset management).
5. The GVWD will follow sustainability principles in planning and implementing processes, programs and projects.
6. The GVWD to ascertain the costs and benefits of leak reduction programs specific to the GVWD water system and cost structure, and reassess whenever there are significant changes in the economic value of water to the costs of leak reduction initiatives.

#### **Strategy #2: Optimize capacity through effective partnership**

1. GVWD Operating Plan to include:
  - Planning and construction of GVWD facilities to meet the projected growth in population and economic activity in the approved Regional Growth Strategy.
  - A program to identify and implement improvements to the GVWD wholesale water metering system to ensure appropriate levels of services.
  - To facilitate the efficient planning of the future water system, the GVWD and member municipalities will follow the principles defining what facilities should be owned and operated by the GVWD and what facilities by the municipalities in Appendix 2 of the DWMP supporting document.



2. The GVWD will implement seasonal pricing on its wholesale water sales over a three year period beginning the 2006 budget year. In 2008, the summer season price will be 1.25 times the price during the remainder of the year (fall/winter/spring).
3. The GVWD to increase its operating reserve to 15% of its annual operating budget with a phase in period.
4. The GVWD and member municipalities to evaluate current sprinkling regulations and options for improvement.