CITY OF VANCOUVER

ADMINISTRATIVE REPORT

Report Date: March 31, 2017
Contact: Daniel Roberge
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VanRIMS No.: 08-2000-20
Meeting Date: April 12, 2017

TO: Standing Committee on City Finance and Services

FROM: General Manager of Engineering Services

SUBJECT: Prohibition of Non-recirculating Uses of Water and Enhanced Water Efficiency Requirements to Support Water Conservation

RECOMMENDATION

A. THAT Council approve the amendments to the Water Works By-law, generally as set out in Appendix B, to expand the prohibition of non-recirculating uses of drinking water, including certain commercial air conditioners, coolers, ice machines, and liquid ring vacuum pumps, in support of the Greenest City Action Plan.

B. THAT Council approve the amendments to the Vancouver Building By-law, generally as set out in Appendix C, to enhance water efficiency requirements pertaining to plumbing fixtures and equipment in support of the Greenest City Action Plan and to create consistency with the 2015 National Plumbing Code.

C. THAT Council direct staff to review opportunities to further strengthen performance requirements beyond the 2015 National Plumbing Code for commercial and household fixtures and appliances to support improved water efficiency and receiving water quality, considering full life cycle costs.

D. THAT Council instruct the Director of Legal Services to bring forward for enactment amendments to the Water Works By-law as set out in Appendix B, to take effect upon enactment.

E. THAT Council instruct the Director of Legal Services to bring forward for enactment amendments to the Vancouver Building By-law as set out in Appendix C, to take effect January 1, 2018.

REPORT SUMMARY

The Greenest City Action Plan (GCAP) includes a target to reduce total per capita water consumption by 33% from 2006 levels. Thus far, the City has reduced its per capita water consumption by 17% from 2006 levels.

An additional 3% reduction can be achieved by 2020 by phasing out non-recirculating uses of drinking water such as once through cooling. A prohibition on once through cooling will align the City of Vancouver with jurisdictions ranging from Abbotsford to New York City and Edmonton to Maui. Research by consultants and staff reveals that it is economically feasible to retrofit or replace the majority of the identified non-recirculating systems in Vancouver, and existing non-recirculating systems will be grandfathered until 2020. Additionally, a time-restricted permitting system is proposed for existing non-recirculating systems which serve an emergency back-up function.

Alternatively, Council may consider choosing to allow existing systems to be grandfathered to the end of their service life. However, this will effectively allow water intensive practices to continue for between 8 to 30 years and will not allow any meaningful water savings to be realized until such systems are removed.

An additional 0.4% reduction can be achieved by 2020 by enhancing plumbing fixture and equipment water efficiency requirements for all building types through the Building By-law. Applicable to new construction and renovations, the amendments will raise plumbing fixture performance standards to meet those of the 2015 National Plumbing Code, add fixtures absent from the Building By-law and introduce requirements for vehicle wash facilities and residential irrigation systems. The Province of Alberta adopted the 2015 National Plumbing Code in January 2017.

Further policies and programs are being developed and staff will continue to bring reports forward to increase the City's water efficiency.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

In October 2015, Council adopted the 2016-2020 Greenest City Clean Water Work Plan to expand water conservation programs in support of the Greenest City Action Plan.

In September 2013, Council adopted the 2014 Vancouver Building By-law.

In December 2011, Council adopted the 2011-2014 Greenest City Clean Water Work Plan.

In July 2011, Council updated the prohibitions on wasting water in Water Works By-law 4848.

In July 2011, the Greenest City Action Plan was adopted by Council.

In January 2011, Council adopted 14 Greenest City targets as Council policy, including a target to reduce per capita water consumption by 33% from 2006 levels by 2020.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager and General Manager of Engineering Services recommend approval of recommendations A, B, C, D and E above.

REPORT

Background/Context

The Greenest City Action Plan (GCAP) includes a target to reduce total per capita water consumption by 33% from 2006 levels by 2020. The City's objective for water efficiency is to promote the sustainable use of the current water supply, aspiring to completely offset population and economic growth through efficient use of drinking water to avoid the financial, environmental and social costs associated with expanding water and sewer infrastructure. While water use has decreased as the City's various programs have taken hold, the observed rate of water use reduction year to year to date makes it unlikely that the City will achieve its 33% target. Notwithstanding, staff will continue to bring reports forward to increase water efficiency across the City.

In 2015, Vancouver's daily drinking water consumption was 493 litres per person. Neighbouring Richmond and Burnaby had a daily drinking water consumption of 449 and 469 litres per person, respectively. Los Angeles, the most water efficient big city in America, has a daily consumption of 394 litres per person.

Water conservation programs have been in place since 1994 largely focusing on education and awareness relating to residential outdoor water use. The 2011-2014 Greenest City Clean Water Work Plan expanded the scope of activities within the single/dual family residential sector. The 2016-2020 Greenest City Clean Water Work Plan further broadened the scope to other sectors, including the industrial, commercial and institutional (ICI) sector.

Identified as a priority within the ICI sector was the phasing out of non-recirculating water uses and systems, in which drinking water flows through a piece of equipment or machine in a single pass and then is discharged, without recirculation, to a drain. The Water Works By-law has, since its origin in December 1975, prohibited non-recirculating water systems exceeding a defined, high flow-rate. This report proposes to expand the prohibition of non-recirculating uses of drinking water in the Water Works By-law.

Within the Building By-law, plumbing fixture efficiency requirements for new buildings of all types are largely based on the 2010 National Plumbing Code. In an average household, fixtures account for approximately 40% of overall water consumption. This report proposes to update plumbing fixture standards in new construction in support of the Greenest City Action Plan and to create consistency with the 2015 National Plumbing Code.

Strategic Analysis

The proposed amendments are discussed below and organized in accordance with the By-law affected.

PART I: Water Works By-law 4848

Summary of Proposed Amendments

The proposed amendments to Water Works By-law 4848 broaden the definition of equipment and practices that waste drinking water and for which there are economically feasible, practical and more environmentally responsible alternatives. These amendments would prohibit the following non-recirculating uses of water:

1) Once through cooling (OTC) equipment;
2) Liquid ring vacuum pumps, wet-hood scrubbers and venturi-type vacuum generators;
3) Thermal conditioning of building surfaces or roofs, or ancillary use of water to supplement building mechanical systems; and
4) Running water as a form of freeze protection, for melting or for thawing, except that this does not apply to food preparation applications.

The estimated water consumption by OTC and liquid ring vacuum pumps in the City is 3.9 billion litres (L) per year. This is equivalent to 1.5 times the estimated total annual consumption by all City of Vancouver and Vancouver Board of Parks and Recreation indoor and outdoor facilities. It also represents a substantial load on sewer infrastructure. Phasing out these non-recirculating water uses will, by 2020, reduce the City's per capita water consumption by an additional 3% over 2006 levels.

The public consultation process on prohibiting non-recirculating water uses began in 2012 (see Appendix A). In 2016, an engineering consulting firm retained by the City completed a prevalence study, retrofit research and cost-benefit analyses of non-recirculating water uses (a Green Municipal Fund grant subsidized this work). The proposed amendments were developed by considering staff and consultant research, economic and environmental costs, stakeholder input, international green plumbing codes and the regulatory requirements of other jurisdictions.

a) Once through cooling (OTC) systems

A subset of non-recirculating water systems is once through cooling (OTC) equipment, which can include certain air conditioners, refrigerators, freezers, coolers and ice machines. In the City of Vancouver, there are an estimated 1,500 OTC units.

OTC systems are banned in jurisdictions across North America, ranging from Abbotsford to New York City and Edmonton to Maui. The Capital Regional District (CRD) took a leadership role in 2016 by not only prohibiting new OTC systems but also requiring the removal of all existing systems by January 1, 2019. The staff recommendation is to mirror the two-phase approach of the CRD.

OTC systems have practical, less water-intensive alternatives (Table 1). There are a range of OTC system sizes, from ice machines to server room cooling systems. Alternatives to OTC units typically have an agreeable payback period when compared to the average life cycle of the unit. Table 1 uses a 1 ton OTC system[1] as an example, as this represents the majority of OTC systems in the City (retrofitting larger OTC systems may have a shorter payback period).

Table 1. Compliance Options for Once Through Cooling (OTC) Equipment (compliance deadline: January 1, 2020)

Compliance Options for Existing OTC Equipment	Simple Payback (years) (1 ton OTC used as an example)
Replace with air-cooled system	1.3 – 2.2
Connect to existing chilled water loop	7.0 – 7.5
Improve ventilation to enable direct replacement with air-cooled system	< 7.0
Relocate heat pump to a suitable location for air-cooling	7.0 – 7.5
Install chilled water system	Cost effective when several OTC units are located in a common area

In general, for every ton of OTC eliminated, net annual savings will be $2,250 to $2,600. The two most common alternatives to OTC are replacement with an air-cooled system or connection to an existing, recirculating, chilled water loop. For the latter, the infrastructure life cycle is at least equivalent to a major building renovation cycle of 25 years or more. In the vast majority of cases, replacement of OTC equipment provides a substantial life cycle benefit.

There are existing OTC systems which serve as an emergency back-up to a building's primary cooling system, or provide a temporary cooling solution during scheduled maintenance. Through the consultation process, stakeholders noted that some of these systems are complex and will require additional time to replace. The staff recommendation is to provide time-limited permits for these exceptions.

[1] This is commercial refrigeration terminology. A "1 ton OTC system" means a system with the refrigeration power required to make one short ton of ice from liquid water at 0°C in 24 hours.

b) Liquid ring vacuum pump systems

Vacuum pumps are commonplace in dental and medical facilities. Of the estimated 720 units in the City of Vancouver, 20% are dry vacuum pumps (which use no water) and the remainder are liquid ring vacuum pumps. In the latter, a continuous flow of water is used to cool the pump and/or to create a seal inside the pump chamber.

Liquid ring vacuum pumps can be fully-recirculating or non-recirculating. A standard, dual, 2 horsepower (hp) system consumes 450 litres (L) of drinking water per hour if non-recirculating, versus 76 L per hour if fully-recirculating.

The subject of this proposal is non-recirculating liquid ring vacuum pumps, used by an estimated 30% of dentists in Vancouver. Each year, these pumps consume 274 million L of drinking water, equivalent to 550 single family Vancouver residences.

A leading international green building code recommends allowing only dry vacuum pumps, with a complete prohibition on liquid ring vacuum pumps. The staff recommendation is to allow both dry vacuum pumps and fully-recirculating liquid ring vacuum pumps, recognizing that some manufacturers provide an option to retrofit existing liquid ring pumps. This provides an alternative, potentially less capital-intensive compliance option for dental and medical practices with non-recirculating or partially-recirculating liquid ring vacuum pumps in existence before enactment of the by-law (Table 2).

Table 2. Compliance Options for Non-Recirculating and Partially-Recirculating Liquid Ring Vacuum Pumps (compliance deadline: January 1, 2020)

Compliance Options for Existing Liquid Ring Vacuum Pumps	Life Cycle of Retrofit or Replacement (years)	Simple Payback (years)
Retrofit to a fully-recirculating liquid ring vacuum pump system	6 — 8	2.5 — 8.5
Replace with a dry vacuum pump	15	11

Fully-recirculating liquid ring pumps and dry vacuum pumps provide annual water and sewer savings when compared to non-recirculating liquid ring pumps. In the vast majority of cases, the simple payback period for retrofitting or replacing an existing liquid ring vacuum pump is less than the anticipated life cycle of the pump (Table 2), meaning a net savings accrues to the owner over the life cycle of the pump. Furthermore, it is expected that the cost of dry vacuum pump systems will decrease as they gain North American market share.

Implementation Plan

A two-phase approach to the proposed prohibition is recommended:

- First phase: Upon enactment of the by-law amendments, new installations of the equipment listed in the preceding Summary under 1) and 2) and the water uses described in 3) and 4) are prohibited. No opposition to this was expressed in the consultation process. Terms and conditions for OTC exemption permits will be shared with industry.

- Second phase: By January 1, 2020, equipment listed above in 1) and 2) and in place before enactment of the by-law amendments must be disconnected. This provides a grace period of over 2.5 years, during which time some existing systems would be expected to reach the end of their life cycle and require replacement anyway. To address a concern shared in the consultation process, a time-limited permit process will allow for the use of OTC systems serving an emergency back-up function or a temporary cooling function during scheduled maintenance.

  Council may consider choosing to allow existing systems to be grandfathered and replaced at the end of service life. However, this will effectively allow water intensive practices to continue for between 8 to 30 years and will not allow any meaningful water savings from existing systems to be realized until then.

Information sessions will be held with building inspections and development services to inform front-line City staff of the by-law amendments. Case studies of OTC retrofits will be generated by the City of Vancouver and made public. Retrofits are currently underway (subsidized by a Green Municipal Fund grant) at civic facilities including the Downtown South Gathering Place Community Centre and the Queen Elizabeth Theatre and Vancouver Playhouse.

Communications with provincial professional associations, building owner groups and other stakeholders will be coordinated as applicable with the Capital Regional District. Within the City of Vancouver, outreach will be conducted with building owners, facility managers, mechanical consultants and contractors, suppliers, the hospitality industry, medical and dental professionals and other stakeholders.

PART II: Vancouver Building By-law

Summary of Proposed Amendments

This update raises plumbing fixture performance standards in the Building By-law to those of the 2015 National Plumbing Code, and introduces fixtures absent from the Building By-law. It also ensures that newly-installed vehicle wash facilities and residential landscape irrigation systems align with and contribute to Greenest City Action Plan objectives. The updates apply to buildings of all types.

Through these amendments, 570 million litres (L) of drinking water are conservatively estimated to be saved annually by January 1, 2020. This reduces the City's per capita water consumption by an additional 0.4% over 2006 levels, and also means a decreased load on sewer infrastructure. Through reductions in hot water usage, an estimated 2,600 tonnes CO_2e per year will be eliminated (equivalent to 540 passenger vehicles off the road). The water, sewer and energy savings are expected to increase over subsequent years through attrition.

The proposed amendments were developed by considering the 2015 National Plumbing Code, international green plumbing codes, regulatory requirements of other jurisdictions, research, stakeholder input, and economic and environmental costs. Consultation was conducted in 2016 (Appendix A).

a) Plumbing Fixtures

The proposed efficiency requirements summarized below (details in Appendix C) were widely supported through the consultation process:

- Water closet: 4.8 litres per flush (Lpf), with discretion of the Chief Building Official for up to 6.0 Lpf in retrofits
- Shower head: 7.6 litres per minute (L/min)
- Lavatory faucet: 1.9 L/min, except 5.7 L/min for private use areas
- Pre-rinse spray valve: 4.8 L/min
- Wash fountain: 6.8 L/min for each plumbing fixture

b) Equipment

Equipment efficiency requirements — applicable to new construction and substantial renovations — are proposed for vehicle wash facilities and residential landscape irrigation systems. For vehicle wash facilities, the proposed amendments will require conveyor and in-bay vehicle washes to recycle at least 60% of water.

For residential landscape irrigation systems, the proposed amendments will require a dedicated shut-off valve; prohibit systems that apply herbicides, fungicides, insecticides, fertilizers, soil amendments or other chemicals or pesticides by means of irrigation water; and, in certain cases, require a pressure reducing valve. Additionally, to encourage proper installation and maintenance of landscape irrigation systems, it is proposed to amend Water Works By-law 4848 to discontinue the current practice of adjusting water bills for leaks associated with landscape irrigation systems.

Implementation Plan

The proposed amendments will be effective as of January 1, 2018, coinciding with various other Building By-law changes. Information sessions will be held with building inspections and development services to inform front-line City staff of the by-law amendments. Through the consultation process (Appendix A), industry is already aware of these proposed changes, and follow-up outreach will be conducted with professional associations, building owners, facility managers, mechanical consultants and contractors and suppliers.

Implications/Related Issues/Risk (if applicable)

Financial

Some civic facilities will require retrofits to comply with the proposed Water Works By-law amendments. Smaller projects may be subsidized by Green Operations funds, and larger projects will be integrated into the capital plans of Real Estate and Facilities Management and the Vancouver Board of Parks and Recreation.

Reduced bulk water purchases from Metro Vancouver can reduce, defer or even eliminate large capital upgrades — raising dams, flooding watersheds, upgrading reservoirs and expanding treatment plants — which would otherwise be required to increase regional water supply and wastewater capacity.

Human Resources/Labour Relations

Under the proposed Water Works By-law amendments, permit applications and the anticipated mandatory reporting requirements associated with the permits will require administrative and technical staff support. It is estimated that sufficient capacity exists within the Water Design Branch. Should additional resources be required, funding will be recovered through the permit fees.

Environmental

The proposed by-law amendments will contribute to ensuring that the drinking water demands from projected economic and population growth can be addressed by existing sources, providing a less costly alternative to expanding water supplies and sewer capacity. The City will move closer to its GCAP target of reducing total per capita water consumption by 33% from 2006 levels. Environmental benefits from the proposed amendments to the Vancouver Building By-law include reduced water and energy consumption and reduced greenhouse gas production.

Legal

The amendments to the Water Works By-law and Vancouver Building By-law are contained in Appendix B and Appendix C, respectively.

CONCLUSION

This proposal provides a targeted regulatory strategy which would contribute to the achievement of the Greenest City 2020 Action Plan goals.

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Public Consultation Process & Summary

Consultation began in 2012, focusing on the large subset of non-recirculating (single pass) water systems referred to as once through cooling (OTC) equipment, which includes certain air conditioners, refrigerators, freezers, coolers and ice machines. Targeted meetings and discussions involved:

- British Columbia Restaurant & Food Services Association (BCRFA)
- Building Owners and Managers Association of British Columbia (BOMA BC)
- Heating, Refrigeration, and Air Conditioning Institute of Canada (HRAI Canada)
- Mechanical Contractors Association of British Columbia (MCABC)
- Engineering firms
- North American cities and utilities

In 2015-2016, an engineering consulting firm retained by the City engaged with building owners, facility managers, manufacturers, local service contractors and suppliers to examine non-recirculating (single pass) water uses. In addition to OTC, the consultant identified liquid ring vacuum pumps — used within dental and medical practices — as a primary opportunity for water savings. Consequently, the City reached out in May 2016 to:

- BC Dental Association
- College of Dental Surgeons of BC
- College of Denturists of BC
- College of Physicians and Surgeons of BC
- Dental equipment suppliers

Also in 2016, final development of enhanced efficiency requirements for plumbing fixtures and equipment involved Vancouver Coastal Health, Metro Vancouver, the Vancouver Board of Parks and Recreation and various City of Vancouver departments:

- Chief Building Official & Building Review
- Corporate Communications
- Financial Services
- Legal Services
- Real Estate and Facilities Management
- Sustainability Group
- Waste Management & Resource Recovery Division
- Water & Sewers Division

On August 31, 2016, a public engagement letter summarizing the suite of proposals — the prohibition on non-recirculating uses of water and efficiency requirements for plumbing fixtures and equipment — was sent to over 150 professional and industry associations, utilities, consultants, contractors, manufacturers, wholesalers, suppliers, property managers, owners and others (listed on the following pages), and was shared with Corporate Communications and 311 Operations. The engagement letter was further distributed by associations to their members and other organizations.

Additionally, formal meetings with external stakeholders introduced the proposal, answered questions, and collected feedback:

- September 7, 2016: Design, development and construction stakeholders.
- September 21, 2016 (open house): Attended by a range of developers, builders, engineers, architects, energy modellers and others.
- September 28, 2016: Non-residential stakeholders.

Staff also presented the proposals to local organisations:

- Association of Professional Engineers and Geoscientists of British Columbia (APEGBC)
- British Columbia Restaurant & Food Services Association (BCRFA)
- Greater Vancouver Board of Trade
- Greater Vancouver Home Builders' Association (GVHBA)
- Urban Development Institute (Pacific Region)
- Vancouver Tourism Facility Managers Association (VTFMA)

Stakeholder concerns and input were reviewed and staff modified recommendations to improve outcomes and address unanticipated hardships where consistent with the City's objectives and the public interest.

Below is a summary of the recipients of and respondents to the August 31, 2016, public engagement letter. Those entities prefixed with an asterisk submitted comments:

a) Professional and Industry Associations & Utilities

- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), BC Chapter
- American Society of Plumbing Engineers (ASPE), BC Chapter
- * Association of Home Appliance Manufacturers Canada (AHAM Canada)
- Association of Professional Engineers and Geoscientists of BC (APEGBC)
- Architectural Institute of BC (AIBC)
- BC Advanced Conservation and Efficiency Association
- * BC Dental Association & College of Dental Surgeons of BC (CDSBC)
- British Columbia Golf Course Superintendent's Association (BCGSA), Lower Mainland Chapter
- BC Housing
- * BC Hydro
- BC Landscape & Nursery Association
- BC Non-Profit Housing Association

- BC Real Estate Association
- * BC Restaurant & Food Services Association (BCRFA)
- BC Safety Authority
- Building Officials' Association of BC (BOABC)
- Building Owners and Managers Association of BC (BOMA BC)
- * Canadian Institute of Plumbing & Heating (CIPH)
- Canadian Federation of Independent Grocers (CFIG)
- * Canadian Water Quality Association (CWQA)
- Canadian Water Works Association (CWWA)
- City Green Solutions
- Climate Smart
- College of Denturists of BC
- College of Physicians and Surgeons of BC
- Commercial Food Equipment Service Association (CFESA)
- Condominium Home Owners Association (CHOA)
- Creative Energy
- Doctors of BC
- Fortis
- * GeoExchange BC
- Greater Vancouver Board of Trade
- Greater Vancouver Home Builders' Association (GVHBA)
- Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI Canada)
- Homeowner Protection Office (HPO, BC Housing)
- Hotel Association of Vancouver
- * International Carwash Association
- International Facility Management Association (IFMA), BC chapter
- * Irrigation Industry Association of BC
- * Landlord BC
- Light House Sustainable Building Centre
- Mechanical Contractors Association of BC (MCABC)
- Natural Resources Canada
- * Plumbing Manufacturers International (PMI)
- Plumbing Officials' Association of British Columbia (POABC)
- Real Estate Foundation BC
- Retail Council of Canada
- Society Promoting Environmental Conservation (SPEC)
- Tourism Industry Association of BC (TIABC)
- Tourism Vancouver
- * Urban Development Institute (Pacific Region)
- Vancouver Economic Commission
- Vancouver Tourism Facility Managers Association (VTFMA)

b) Consultants & Contractors

- Able Irrigation
- AME Consulting
- Ameresco
- Artee Lawn Sprinkler Systems
- AYO Energy Solutions
- BES Consulting
- Black & McDonald
- Broadway Refrigeration
- Cimco Toromont
- Coastal Irrigation Inc.
- Davidson Bros.
- DMS Mechanical
- Enviro-Tech Mechanical
- Fraser Valley Refrigeration
- Fred Welsh Mechanical
- IB&T Consulting and Technologies
- Insightful Healthy Homes Inc.
- * Integral Group
- Just Mechanical
- Keith Plumbing & Heating
- * Kore
- KWL
- Lathams
- MCW Consultants Ltd.
- National Plumbing
- Perkins + Will
- Pitt Meadows Plumbing & Mechanical
- Prism Engineering
- Rocky Point Engineering Ltd.
- Ron Wong & Associates Inc.
- SES Consulting
- Stantec
- Sterling Cooper
- Summit Irrigation
- T. Moscone & Bros. Landscaping Ltd.
- Trotter & Morton
- WSP Group
- University Sprinklers
- Uptime Industrial
- Urban Systems

c) Manufacturers, Wholesalers & Suppliers

- Andrew Sheret Ltd.
- Appliance Outlet
- * B.A. Robinson Co. Ltd.
- Bartle & Gibson
- * BaseVac Dental
- Best Buy
- Chem-Aqua Canada
- Coast Appliances
- * Cool Air Rentals
- Costco Wholesale
- Edmonds Fine Appliances
- EMCO Plumbing & Heating Supplies
- * Emerson Commercial & Residential Solutions
- Enviro-smart Organics Ltd.
- Executive Dental Supply Ltd.
- Henry Schein Canada
- Hillcrest Plumbing & Heating
- Home Depot
- Home Hardware
- * Hoshizaki America, Inc.
- Key Food Equipment Services
- * Kohler
- Lockerbie & Hole
- * Masco Canada
- Midland Appliances
- * Moen
- Patterson Dental
- Recycling Alternative
- Rona
- Sinclair Dental
- * Sloan
- Trail Appliances
- Universal Supply Co. Inc.
- Westcoast Dental Supplies
- * Whirlpool
- Wolseley

d) Property Managers, Owners & Others

- BC Pavco
- * Bentall Kennedy
- Brookfield GIS
- Cadillac Fairview
- Catholic Independent Schools of the Vancouver Archdiocese
- Clean Bin Project
- Coast Hotels
- Coast Mountain Bus Company
- Delta Hotel
- Fairmont Hotel
- Federation of Independent School Associations in BC (FISA)
- * Fortinet Technologies
- Four Seasons
- GWL Realty Advisors
- * Hyatt Regency
- Ivanhoe Cambridge
- Leverage Lab
- Listel Hotel
- Oxford Properties
- Pacific Gateway Hotel
- Riocan
- Science World
- * Squamish Streamkeepers Society
- Triovest
- * University of British Columbia
- * VanCity
- Vancouver Aquarium
- Vancouver Convention Centre
- * Vancouver School Board
- Wall Centre
- * Wesgroup Properties
- Westin
- Westin Grand Vancouver

BY-LAW NO. _____

A By-law to amend Water Works By-law No. 4848 regarding water conservation and housekeeping

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

1. This by-law amends the indicated provisions of By-law 4848.

2. In section 1.1, Council strikes out the definitions of "WASTE WATER" and "WASTING WATER" and adds the following definition in alphabetical order:

> ""EMERGENCY ONCE THROUGH COOLING EQUIPMENT" means *once through cooling equipment* that is existing on [*date of enactment*], is not normally operated and is only activated in accordance with this by-law and with the permission of the Engineer, in the event of a sudden, unforeseen failure of an otherwise properly designed, operated and maintained primary cooling system.
>
> "MAINTENANCE ONCE THROUGH COOLING EQUIPMENT" means *once through cooling equipment* that is existing on [*date of enactment*], is not normally operated and is only activated in accordance with this by-law and with the permission of the Engineer, to temporarily supplement or replace the primary cooling system during scheduled maintenance on the primary cooling system.
>
> "NON-RECIRCULATING LIQUID RING PUMP" means a vacuum pump that uses water to cool the pump or to create a seal and recirculates less than 60% of the water that passes through the pump.
>
> "ONCE THROUGH COOLING EQUIPMENT" means equipment that produces a cooling effect by transfer of heat to water that is only circulated once through the equipment and is then discharged, and includes but is not limited to commercial and industrial air conditioners, refrigerators, freezers, coolers and ice machines;

3. Council strikes out 1.6 and substitutes:

> **"1.6 Remedies for Non-compliance**
>
> If a person fails to comply with a notice issued pursuant to this By-law, the Collector or Engineer may:
>
> (a) shut off the water supply to any part of the premises, and bill the costs to the property owner in accordance with Schedule H;
>
> (b) reduce the water supply to the premises to a maximum flow of one litre per minute, until the necessary repairs have been completed, and bill the costs to the property owner in accordance with Schedule H;
>
> (c) in the case of an un-metered service, install a meter, and bill the costs to the property owner in accordance with Schedule G;

(d) in the case of a metered service, install an additional meter on city property, and bill the costs to the property owner in accordance with Schedule G; or

(e) carry out such repairs, either on or off the premises as, in the opinion of the Engineer, are necessary to repair any defective apparatus, fitting or fixture, or to prevent or eliminate excessive noise, pressure surges, or damage to a private water system or the City's water system, and bill the costs to the property owner in accordance with Schedule H."

4. Council strikes out section 1.7 and substitutes:

"1.7 Insertion of Costs on Tax Roll

If the Collector or Engineer takes steps to reduce or shut off water service, install a meter or an additional meter, or carry out repairs pursuant to this By-law, the costs so incurred may be recovered by insertion on the real property tax roll."

5. In section 3.4, Council strikes out "property" and substitutes "premises".

6. In section 3.5, Council strikes out the words "building or".

7. Council re-numbers sections 3.9 through 3.12 as 3.11 through 3.14 respectively.

8. Council strikes out sections 3.7 and 3.8 and substitutes:

"3.7 Prohibition Against Wasting Water

A customer or other person must not waste water, or suffer, permit or allow waste of water, including but not limited to:

(a) the free discharge or flow of water from premises, on or into a sanitary sewer, watercourse, storm drain, street or adjacent premises;

(b) leaking of water from appliances, devices, machines, equipment, systems, ponds, fountains or water features;

(c) the use of ponds, waterways, water features, fountains or swimming pools, which do not have a water recirculation device;

(d) the use of an irrigation system which applies water to an impervious surface; or

(e) the use of a water hose, which is not equipped with an automatic shut-off device.

3.8 Prohibition Against Using Water in Non-Recirculating Applications

A customer or other person must not use, or permit, suffer or allow the use of water in the following non-recirculating uses, equipment, or systems:

(a) thermal conditioning of building surfaces or roofs, or ancillary use of water to supplement building mechanical systems or equipment, except that this does not apply to emergency fire protection of buildings using fire sprinklers;

(b) running water as a form of freeze protection, through piping, hoses, fixtures, or building equipment or systems, except that this does not apply to City of Vancouver and Metro Vancouver water quality sampling stations; or

(c) use of water for melting or thawing, except that this does not apply to food preparation applications.

3.9 Prohibition Against Connecting to Non-Recirculating Applications

A customer or other person must not connect, or permit, suffer or allow connection of the City's water system to any of the following non-recirculating uses, equipment, or systems:

(a) once through cooling equipment, except that this prohibition does not apply to mobile emergency once through cooling equipment or mobile maintenance once through cooling equipment that is operated with a permit from the Engineer;

(b) venturi-type flow-through vacuum generators or aspirators in which running water is used solely for the venturi effect;

(c) non-recirculating liquid ring pumps; or

(d) non-recirculating wet-hood scrubbers.

3.10 Disconnection of Non-Recirculating Applications

All non-recirculating uses, equipment and systems listed in section 3.9 of this by-law must be disconnected from the City's water system by January 1, 2020, except that:

(a) emergency once through cooling equipment and maintenance once through cooling equipment may be operated with a permit from the Engineer; and

(b) uses, equipment and systems in a building for which a demolition permit has been issued before January 1, 2020, may be operated with a permit from the Engineer, who may extend the disconnection deadline to January 1, 2021."

9. Council strikes out section 6.14 and substitutes:

"6.14 Insertion of Outstanding Water Rates on Tax Roll

Fees, rates, meter charges, meter installation charges, repair or shut off rates and other water rates that remain unpaid on the due date:

(a) may be inserted by the Collector in the property tax roll as charges imposed with respect to the parcel upon which the water was used or to which it was made available for use; and

(b) once entered on the property tax roll in accordance with this by-law, are subject to any applicable property tax penalty and interest by-laws as if such charges were general taxes within the meaning of such penalty and interest by-laws."

10. Council strikes out section 6.20 and substitutes:

"6.20 Adjustment for Underground Leak

If, in the opinion of the Engineer, an underground leak on a metered service:

(a) has resulted in an inaccurate water consumption record;

(b) could not reasonably have been detected by the customer;

(c) is not associated with a landscape irrigation system; and

(d) has, in the opinion of the Engineer, been repaired by the customer in such a manner as to effectively prevent future leaks of a similar nature;

the water consumption rate may be adjusted by the Collector, as provided in section 6.18(a), except that the adjustment must only be made for the period between two weeks after the first meter billing date on which the meter bill indicates an unusual increase in water consumption, as determined by the Collector, and the meter reading date for the meter bill immediately preceding the meter bill containing the unusual increase, to a maximum adjustment period of six months."

11. Council strikes out Schedules H and J and substitutes the Schedules H and J attached as Appendix A to this By-law.

12. Council amends the index to reflect the changes in numbering and section titles in Part III of the Waterworks By-law.

13. 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.

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

ENACTED by Council this day of , 2017

_____
Mayor

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City Clerk

SCHEDULE H
Miscellaneous Fees and Charges

Cross connection control administration fees	
First assembly	$ 29.00
Additional assembly	13.00
Extra charge for inaccessible meter (per incident)	75.00
Special meter reading (per occurrence)	100.00
Customer requested meter test (deposit)	200.00
Charge for returned cheque	35.00
Residual water pressure estimate fee	
Original calculation	36.00
Additional copies for same location	10.00
Miscellaneous water information requests (per hour)	44.00
Shutdown, service request or service by the City fee (per occurrence, during normal working hours)	100.00
Shutdown, service request or service by the City fee (per occurrence, outside of normal working hours)	200.00
Frozen pipe thawing fee	At cost (section 5.4)

SCHEDULE J

Acid Wash or Hot Tank	High	RPBA
Air Compressor – Commercial or Industrial	High	RPBA
Air Conditioning Systems	High	RPBA
Animal Cage Washer	High	RPBA
Animal Wash	High	RPBA
Animal Watering	High	RPBA
Aquarium Make up	High	RPBA
Aspirator	High	RPBA
Autoclave	High	RPBA
Autopsy/Mortuary Equipment	High	RPBA
Auxiliary Water	High	RPBA/AG
Baptismal Fountain	High	RPBA
Beverage Dispenser - Carbonated	High	DCAPc
Beverage Dispenser – Non Carbonated	Low	DuC
Bidet	High	AVB
Boiler – All Commercial Installations	High	RPBA
Boiler - Residential Greater than 400,000 btu	High	RPBA
Boiler - Residential w/o Chemical Addition and less Than 400,000 btu	Low	DCAP
Bottle Washer	High	RPBA
Bread Making Equipment	Low	DCVA
Brewery Equipment	High	RPBA
Brine Tank	Low	DCVA
CO_2 Injection	High	DCAPc
Chemical Cleaning Tank	High	RPBA
Chemical Feed/Mixing Station	High	RPBA
Chemical Holding/Storage Tank	High	RPBA
Chilled Water System	High	RPBA
Chlorinator	High	RPBA
Clothes Washer or Laundry Machine – Commercial with Chemical Feed	High	RPBA
Commercial Kitchen Equipment – Coffee Urn	Low	DuC
Commercial Kitchen Equipment – Commercial Dishwasher with Chemical Feed Downstream of Backflow Preventer	High	AVB
Commercial Kitchen Equipment – Commercial Dishwasher with Chemical Feed Upstream of Backflow Preventer	High	RPBA
Commercial Kitchen Equipment – Espresso Machine	Low	DCVA
Commercial Kitchen Equipment – Dipper Well	Low	AG
Commercial Kitchen Equipment – Food Steamer	Low	DCVA
Commercial Kitchen Equipment – Food Waste Disposer	High	RPBA
Commercial Kitchen Equipment – Glass washer (Hot and Cold Feed)	High	RPBA
Commercial Kitchen Equipment – Hood Wash Down	High	RPBA
Commercial Kitchen Equipment – Hot Chocolate or Hot Water Dispenser	Low	DuC
Commercial Kitchen Equipment – Ice Cream Machine	High	RPBA
Commercial Kitchen Equipment – Ice Machine – Condenser Cooling	High	RPBA
Commercial Kitchen Equipment – Ice Machine – Water Feed – See Note #1 Below	High	AG or RPBA
Commercial Kitchen Equipment – Juice Machine	Low	DuC

Commercial Kitchen Equipment – Rotisserie Oven	Low	DCVA
Commercial Kitchen Equipment – Pot Washer	High	RPBA
Commercial Kitchen Equipment – Potato Peeler	Low	DCVA
Commercial Kitchen Equipment – Steam Cooker	Low	DCVA
Commercial Kitchen Equipment – Steam Table	Low	DCVA
Commercial Kitchen Equipment – Steamer Oven	Low	DCVA
Commercial Kitchen Equipment - Waste Food Tray Line/Trough	High	RPBA
Commercial Kitchen Equipment – Waste Pulper	High	RPBA
Condensate Cooling/Receiver/Tank	High	RPBA
Cooling Condenser - AC unit	High	RPBA
Cooling Tower	High	RPBA
Dental Equipment – Cuspidor	High	RPBA
Dental Equipment – Film Processor	High	RPBA
Dental Equipment – Model Trimmer	High	RPBA
Dental Equipment – Sterilizer and Instrument Washer	High	RPBA
Dental Equipment – Vacuum Pump	High	RPBA
Dental Equipment – Water Supply to Dental Chair – For Multiple Chairs on one Dedicated Water Connection - See Note #1	High	RPBA
Dental Equipment – X-ray Machine	High	RPBA
Descaling Equipment	High	RPBA
Detergent/Soap Dispenser	High	RPBA
Dishwasher (Commercial) with Chemical Feed Downstream of Backflow Preventer	High	AVB
Dishwasher (Commercial) with Chemical Feed Upstream of Backflow Preventer	High	RPBA
Distiller	High	RPBA
Dockside Water Connection – For Multiple Connections to a Dedicated Water Connection - See Note #1	High	RPBA
Dry Cleaning Equipment	High	RPBA
Dye Equipment	High	RPBA
Engine/Genset Cooling System	High	RPBA
Film Processor	High	RPBA
Fire Hose Cabinet (Connected to Domestic Piping)	Low	DCVA
Fire Service Connection w/o Chemical Addition	Low	DCVA
Fire Service Connection with Chemical Addition	High	RPBA
Floor Drain with Flushing Rim	High	RPBA
Food Waste Disposer	High	RPBA
Fountain/Ornamental Water Feature	High	RPBA
Frozen Carbonated Beverage (FCB) Maker	High	RPBA
Fume Hood Scrubber	High	RPBA
Garbage Chute Washdown	High	RPBA
Garbage Disposal Unit	High	RPBA
Geothermal	High	RPBA
Glass Rinser	Low	DuC
Heating System - Residential w/o Chemical Addition and less than 400,000 btu	Low	DCAP
Hot Tub/Spa - Direct Feed	High	RPBA
Humidifier w/o Chemical Addition	Low	DCVA

Humidifier with Chemical Addition	High	RPBA
Hydronic Heating System – Commercial	High	RPBA
Hydronic Heating System – Residential w/o Chemical Addition and less than 400,000 btu	Low	DCAP
Ice Machine – Condenser Cooling	High	RPBA
Ice Machine – Residential Refrigerator-type w/o Built-in Filter	Low	DuC
Ice Machine – Water Feed – See Note #1 Below	High	AG or RPBA
Ice Making/Resurfacing Equipment	Low	DCVA
Irrigation System with Chemical Addition – Commercial	High	RPBA
Irrigation System w/o Chemical Addition	Low	DCVA
Janitor Sink with Hose Connection	High	AVB
Jug Rinser	Low	DuC
Laboratory Equipment – Air compressor	High	RPBA
Laboratory Equipment – Animal Cage Washer	High	RPBA
Laboratory Equipment – Animal Water Bottle Filler	High	RPBA
Laboratory Equipment – Animal Watering System	High	RPBA
Laboratory Equipment – Aspirator	High	RPBA
Laboratory Equipment – Autoclave	High	RPBA
Laboratory Equipment – Electron Microscope	High	RPBA
Laboratory Equipment – Equipment Cooling	High	RPBA
Laboratory Equipment – Fume Hood Scrubber	High	RPBA
Laboratory Equipment – Pipette Washer	High	RPBA
Laboratory Equipment – Serrated Faucet	High	RPBA
Laboratory Equipment – Specimen Tank	High	RPBA
Laboratory Equipment – Spray Hose	High	RPBA
Laboratory Equipment – Vacuum Pump	High	RPBA
Laundry Tub with Hose Bibb Connection	Low	HBVB
Lens Cutting/Grinding Equipment	High	RPBA
Medical Equipment – Air Compressor	High	RPBA
Medical Equipment – Angio/MRI Cooling	High	RPBA
Medical Equipment – Aspirator	High	RPBA
Medical Equipment – Autoclave/Sterilizer	High	RPBA
Medical Equipment – Bedpan Macerator	High	RPBA
Medical Equipment – Bedpan Washer/Sterilizer	High	RPBA
Medical Equipment – Blood Analysis Equipment	High	RPBA
Medical Equipment – Burn Shower	High	RPBA
Medical Equipment – CT Scan	High	RPBA
Medical Equipment – Cart Washer	High	RPBA
Medical Equipment – Dialysis Equipment - For Multiple Dialysis Machines on One Dedicated Water Connection - See Note #1 Below	High	RPBA
Medical Equipment – Dye Slide Table	High	RPBA
Medical Equipment – Endoscope	High	RPBA
Medical Equipment – Film Processor	High	RPBA
Medical Equipment – Hydrotherapy Bath	High	RPBA
Medical Equipment – Laser Cooling	High	RPBA
Medical Equipment – MRI Cooling	High	RPBA
Medical Equipment – Patient Tub with Flexible Hose	High	RPBA

Medical Equipment – Renal Processor	High	RPBA
Medical Equipment – Steris Washer	High	RPBA
Medical Equipment – Ultrasonic Washer	High	RPBA
Medical Equipment – Vacuum Pump	High	RPBA
Medical Equipment – Washdown Station	High	RPBA
Medical Equipment – X-ray Equipment	High	RPBA
Paint Booth	High	RPBA
Pedicure Spa/Bowl – For Multiple Pedicure Spa/Bowls on One Dedicated Water Connection - See Note #1 Below	High	RPBA
Photo Developing Equipment	High	RPBA
Photo Lab Sink/Tank	High	RPBA
Plating Tank	High	RPBA
Pressure Washer w/o Chemical Aspirator - Commercial	Low	DCVA
Pressure Washer with Chemical Aspirator - Commercial	High	RPBA
Produce Misting System	High	RPBA
Proofer Oven	Low	DCVA
Pump Primer Line - Non-toxic	Low	DCVA
Pump Primer Line - Toxic	High	RPBA
Pump Primer Line for Auxiliary Water Source Pump	High	AG
Radiator Flushing Equipment	High	RPBA
Refrigeration Unit – Industrial	High	RPBA
Restricted Area	High	RPBA
Reverse Osmosis Equipment - Inlet 25mm or Larger	High	RPBA
Reverse Osmosis Equipment - Inlet less than 25mm	Low	DCVA
Rock Polisher	High	RPBA
Sanitary Equipment	High	RPBA
Sewage Ejector	High	AG&RPBA
Sewage Lift Station Standpipe	High	RPBA
Sewage Pump	High	AG&RPBA
Sewer Connected Equipment	High	AG&RPBA
Shampoo Sink	Low	AVB or DuC
Steam Generator – w/o Chemical Addition	Low	DCVA
Steam Generator – with Chemical Addition	High	RPBA
Storm Sewer	High	RPBA
Sump	High	RPBA
Swimming Pool – Direct Feed	High	RPBA
Tanning Booth	High	RPBA
Trap Primer	High	AG
Vacuum Pump	High	RPBA
Vehicle Washing Equipment	High	RPBA
Vending Machine (No Carbonator)	Low	DCVA
Wash Rack	High	RPBA
Washdown Equipment	High	RPBA
Wastewater Treatment Process	High	RPBA
Water Filter – Inlet less than 25mm	Low	DCVA
Water Filter – Inlet 25mm and Larger	High	RPBA
Water Softener	High	RPBA

X-ray Equipment	High	RPBA
Yard Hydrant	Low	HBVB

NOTE 1: Check with Plumbing Inspections for zone isolation requirements for multiple (identical) fixtures serviced by one dedicated water connection.

NOTE 2 : The water supply to a commercial ice machine must be protected by an Air Gap, verified by a City Inspector. Commercial ice machine water connections without a verifiable Air Gap must be protected by a Reduced Pressure Backflow Assembly.

BY-LAW NO. _____

A By-law to amend Building By-law No. 10908
Regarding sustainability and water conservation

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

1. This by-law amends the indicated provisions of Building By-law 10908.

2. In Book I, Division A, Part 1, in Article 1.4.1.2., Council adds the following definitions in alphabetical order:

"***Acceptable equivalency*** means:

(a) that the person proposing to use a ***plumbing fixture*** that does not conform with the specifications in this By-law must, at their expense, ensure that

(i) an independent qualified third party tests the ***plumbing fixture*** and documents that the ***plumbing fixture*** meets or exceeds the specifications of this By-law,
(ii) the test procedures and documented results are reviewed and verified by an independent qualified ***registered professional***,
(iii) copies of all test procedures, documented results and verification reports are provided to the ***Chief Building Official***, and

(b) the test procedures, documented results and verification are ***acceptable***.

Conveyor vehicle wash means a system for washing vehicles where the vehicle moves through a tunnel during the wash and the driver of the vehicle can remain in, or wait outside of, the vehicle.

Clear-water waste means waste water with impurity levels that will not be harmful to health and may include cooling water and condensate drainage from refrigeration and air-conditioning equipment and cooled condensate from steam heating systems, but does not include ***storm water***. (See Book II, Division A, Appendix A.)

Drainage system means an assembly of pipes, fittings, ***fixtures***, ***traps*** and appurtenances that is used to convey ***sewage***, ***clear-water waste*** or ***storm water*** to a public ***sewer*** or a ***private sewage disposal system***, but does not include ***subsoil drainage pipes***. (See Figure A-1.4.1.2.(1)-I in Book II, Division A, Appendix A.)

Fixture means, in relation to plumbing, a receptacle, appliance, apparatus or other device that discharges ***sewage*** or ***clear-water waste***, and includes a ***floor drain***.

In-bay vehicle wash means a non-domestic vehicle wash where the driver pulls into a bay, parks the vehicle, and the vehicle remains stationary while either a machine moves over the vehicle to clean it or one or more employees of the facility clean the vehicle, instead of the vehicle moving through a tunnel.

Leader means a pipe that is installed to carry ***storm water*** from a roof to a ***storm building drain*** or ***sewer*** or other place of disposal.

Metering fixture means a ***self-closing plumbing fixture*** that dispenses a specific volume of water for each actuation cycle.

Pre-rinse spray valve means a handheld device for use with commercial dishwashing and ware washing equipment that sprays water on dishes, flatware, and other food service items for the purpose of removing food residue before cleaning and sanitizing the items.

Private use (as applying to the classification of ***plumbing fixtures***) means ***fixtures*** in residences and apartments, in private bathrooms of hotels, and in similar installations in other ***buildings*** for one family or an individual.

Public use (as applying to the classification of ***plumbing fixtures***) means ***fixtures*** in general washrooms of schools, gymnasiums, hotels, bars, public comfort stations and other installations where ***fixtures*** are installed so that their use is unrestricted.

Self-service vehicle wash means a commercial vehicle wash where a customer washes their own vehicle.

Sewage means any liquid waste other than ***clear-water waste*** or ***storm water***.

Shower head means any fitting that transmits water for the purposes of showering and includes rain heads, rain tiles, rain systems, waterfalls, body sprays and jets. A hand-held shower shall be considered a ***shower head***.

Storm water means water that is discharged from a surface as a result of rainfall or snowfall.

Subsoil drainage pipe means a pipe that is installed underground to intercept and convey subsurface water.

Trap means a fitting or device that is designed to hold a liquid seal that will prevent the passage of gas but will not materially affect the flow of a liquid."

3. In Book I, Division B, Part 10, Council strikes out Section 10.3 and substitutes:

"10.3.1. DESIGN AND INSTALLATION

10.3.1.1. Compliance

1) In addition to the requirements in this section, all ***plumbing fixtures*** must comply with Book II Division B, Part 2 of this By-law.

2) In addition to the requirements of this By-law, all water uses and discharges are subject to Water Works By-law 4848 and Sewer and Watercourse By-law 8093.

10.3.1.2. Plumbing Fixture Fitting Maximum Flow Rates

1) The flow rates of fittings that supply water to ***plumbing fixtures*** must not exceed the maximum flow rate at the test pressures listed for that fitting in Table 10.3.1.2.

Table 10.3.1.2.
Maximum Flow Rate
Forming part of Sentence 10.3.1.2.(1)

Fitting	Maximum Flow Rate (L/min)	Test Pressure (kPa)
Lavatory Faucet (for ***private use***)	5.7	415
Lavatory Faucet (for ***public use***)	1.9(1)(2)	415
Kitchen Faucet (non-residential)	8.3	415
Kitchen Faucet (residential)	8.3	415
Shower Head	7.6(3)	550
Pre-Rinse Spray Valve	4.8(4)	415
Wash Fountain, per ***plumbing fixture*** fitting	6.8(5)	415

Notes to Table 10.3.1.2:

(1) A ***metering fixture*** faucet is limited to 1.0 L per cycle.
(2) A lavatory faucet in a health care facility is permitted a maximum flow rate of 8.3 L/min (at 415 kPa test pressure). The ***Chief Building Official*** may, for human health reasons, permit exemptions within other facilities, to a maximum flow rate of 8.3 L/min (at 415 kPa test pressure).
(3) Emergency and safety ***shower heads*** and ***shower heads*** in health care facilities and correctional facilities are exempted from this requirement.
(4) Each ***pre-rinse spray valve*** must be equipped with an automatic shut-off.
(5) A maximum flow rate of 6.8 L/min is permitted for each 508 mm of rim space. For a wash fountain with ***metering fixture*** faucets, a maximum of one ***metering fixture*** faucet is permitted for each 508 mm of rim space. A ***metering fixture*** faucet is limited to 1.0 L per cycle.

10.3.1.3. Plumbing Fixture Efficiency

1) The flush cycle for the installation of a water closet or urinal must not exceed the flush cycle listed for that ***plumbing fixture*** in Table 10.3.1.3.(1)

Table 10.3.1.3.(1) Maximum Flush Cycle Forming part of Sentence 10.3.1.3.(1)	
Plumbing Fixture	Maximum Flush Cycle (L)
Water Closet (Tank Type)	4.8[(1)(2)]
Water Closet (Direct Flush)	4.8[(1)]
Urinal (Tank Type)	1.9[(3)]
Urinal (Direct Flush)	1.9

Notes to Table 10.3.1.3.(1):

(1) A maximum flush cycle of 6.0 L may be permitted where, in the opinion of the ***Chief Building Official***, the existing ***plumbing system*** cannot accommodate or be updated to accommodate the required flush cycle.
(2) A water closet with a dual flush cycle of 4.1 L or less and 6.0 L complies with this requirement.
(3) The water supply to flush tanks equipped for automatic flushing shall be controlled with a timing device that limits operation to the period during which the building is normally occupied.

10.3.1.4 Residential Landscape Irrigation Systems

1) Residential landscape irrigation systems that apply herbicides, fungicides, insecticides, fertilizers, soil amendments or other chemicals or pesticides by means of irrigation water are prohibited.

2) Residential landscape irrigation systems shall be equipped with a shut-off valve, which shall be located upstream of the backflow preventer and provided with unobstructed access.

3) Where the water pressure supplied to a property exceeds 550 kPa, the residential landscape irrigation system shall be equipped with a pressure reducing valve providing a maximum supplied pressure of 415 kPa and located downstream of the backflow preventer.

10.3.1.5 Geoexchange Systems

1) Make-up water for a closed loop geoexchange (geothermal) ground heat exchanger must be provided by a feeder tank isolated from the domestic water supply

2) The use of a direct connection to the domestic water supply as a source of make-up water for a closed loop geoexchange (geothermal) ground heat exchanger is prohibited.

10.3.1.6. Vehicle Wash Facilities

1) The maximum flow rate of a spray wand, foamy brush or similar ***plumbing fixture*** shall not exceed 11.4 L/min at a ***self-service vehicle wash***.

2) A water recycling system that recycles and reuses at least 60% of the water and rinse water shall be installed, used and maintained at a ***conveyor vehicle wash*** or ***in-bay vehicle wash***."

4. In Book II, Division A, Part 1, in Article 1.4.1.2., Council adds the following definitions in alphabetical order:

"***Acceptable equivalency*** means:

(a) that the person proposing to use a ***plumbing fixture*** that does not conform with the specifications in this By-law must, at their expense, ensure that

(i) an independent qualified third party tests the ***plumbing fixture*** and documents that the ***plumbing fixture*** meets or exceeds the specifications of this By-law,
(ii) the test procedures and documented results are reviewed and verified by an independent qualified ***registered professional***,
(iii) copies of all test procedures, documented results and verification reports are provided to the ***Chief Building Official***, and

(b) the test procedures, documented results and verification are ***acceptable***.

Pre-rinse spray valve means a handheld device for use with commercial dishwashing and ware washing equipment that sprays water on dishes, flatware, and other food service items for the purpose of removing food residue before cleaning and sanitizing the items.

Shower head means any fitting that transmits water for the purposes of showering and includes rain heads, rain tiles, rain systems, waterfalls, body sprays and jets. A hand-held shower shall be considered a shower head."

5. In Book II, Division B, Part 2, Council:

(a) strikes out Articles 2.2.2.6. and 2.2.2.7. and substitutes:

"**2.2.2.6. Low Consumption Water Closets**

1) Every water closet installed in a building shall have a maximum flush cycle in compliance with Book I Division B Article 10.3.1.3.

2.2.2.7. Low Consumption Urinals

1) Every urinal installed in a building shall have a maximum flush cycle in compliance with Book I Division B Article 10.3.1.3.

2.2.2.8. Lavatory Faucets

1) { Reserved}

2.2.2.9. Pre-Rinse Spray Valves

1) Every ***pre-rinse spray valve*** shall be certified to the performance criteria of the WaterSense Specification for Pre-Rinse Spray Valves version 1.0, or be of ***acceptable equivalency***.

2) Every ***pre-rinse spray valve*** shall be equipped with an automatic shut-off."; and

(b) strikes out Sentence 2.2.10.6.(3) and substitutes:

"3) Every lavatory faucet, kitchen faucet and ***shower head*** shall conform with CAN/CSA-B125.3, "Plumbing Fittings.", and have a maximum flow rate in compliance with Book I Division B Article 10.3.1.2.".

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 January 1, 2018.

ENACTED by Council this day of , 2017

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Mayor

_____
City Clerk