Guide to Managing Wastewater

Building Management Industry

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Metro Vancouver is a federation of 21 municipalities, one electoral area, and one treaty First Nation that collaboratively plans for and delivers regional-scale services.

Metro Vancouver collects and treats wastewater to protect public health and the environment.

This guide was developed with the cooperation of and input from the building management industry.

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

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Introduction

The building management industry provides an important service to Metro Vancouver residents and businesses. Building managers contribute to the livability of the built environment by helping ensure building systems operate safely and efficiently.

Some of the materials found in the wastewater generated from commercial, residential and mixed-use buildings can damage the wastewater system and pose a risk to fish and the natural environment.

Metro Vancouver has created this guide to help building managers manage wastewater safely and responsibly. To make sure the guide is practical and easy to use, Metro Vancouver consulted with representatives from the building management industry.

We hope this guide reflects your business needs and provides you with convenient steps you can follow to manage wastewater in a way that safeguards the wastewater system and the natural environment.

Our region produces about 1 billion litres of wastewater every day – enough to fill BC Place. Metro Vancouver treats this wastewater at one of five regional wastewater treatment plants.

This guide will be of interest to building managers of residential, commercial and mixed-use buildings.

The practices described in this guide are appropriate for any building management operation.

Metro Vancouver and the Wastewater System

Metro Vancouver provides an important service to the region, collecting and treating wastewater to protect the environment and public health.

The wastewater system consists of private, municipal and regional trunk sewers that convey wastewater for treatment at one of five regional wastewater treatment plants. The treatment plants are regulated by the Provincial and Federal governments.

While Metro Vancouver and municipalities are responsible for managing most of the wastewater conveyance and treatment system, private businesses and residents have a duty to follow responsible practices that help support the management of the system. That means we have a shared responsibility to manage the wastewater system.

Metro Vancouver uses a range of tools including codes and bylaws, education programs, and guides to reduce or eliminate wastewater pollutants at their source.

In Metro Vancouver, there are an estimated 6,400 km of private sewers, 7,100 km of municipal sewers and 530 km of Metro Vancouver sewers. The entire wastewater treatment system is approximately 14,030 km in length – that's the total distance from Vancouver to Halifax and back.

Managing Wastewater Safely and Responsibly

Our research has shown most building managers care about the environment and want to manage their wastewater safely and responsibly.

The building management industry recognizes that developing and maintaining a good reputation with customers and tenants includes the responsible management of waste products from their buildings.

Wastewater from buildings is discharged to municipal sanitary sewers and then to larger regional trunk sewers. Gravity flow and pumping stations keep wastewater moving through the system until it reaches one of the region's five wastewater treatment plants.

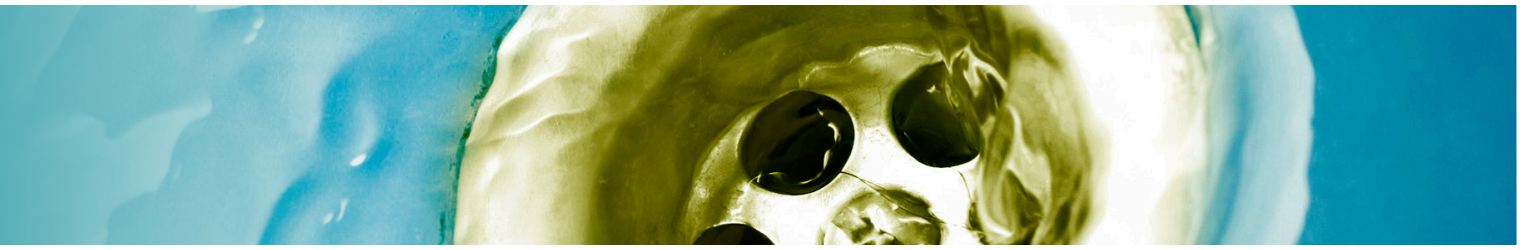
Stormwater goes into a separate system of mostly municipal stormwater sewers, which discharge directly into rivers, creeks or the ocean and is not treated. In some older parts of the region such as certain areas of Vancouver, Burnaby and New Westminster, sewage and stormwater may be collected in a single pipe known as a combined sewer.

It is important to identify what parts of a building's system discharge to a sanitary sewer, a combined sewer, or a storm sewer.

Common Sources of Wastewater	Common Sources of Stormwater
• Bathrooms • Kitchens • HVAC systems • Laundry • Covered parking • Pools • Garbage compactors • Vehicle wash stations	• Uncovered parking • Covered parking • Perimeter drains • Green roofs • Outdoor garbage areas

Some building managers are unaware that wastewater from buildings may contain sediments and pollutants that can damage pipes, clog pumps and block screens in the wastewater system. This stresses the wastewater system and costs money to maintain and repair.

Some of these pollutants may also pose a risk to fish and the natural environment.

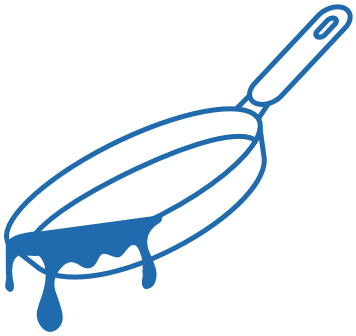


Wastewater from buildings may contain:

- Oil and grease
- Chemicals found in HVAC systems
- Chemicals found in cleaning products
- Grit
- Human waste
- Contaminants from vehicles
- Food waste

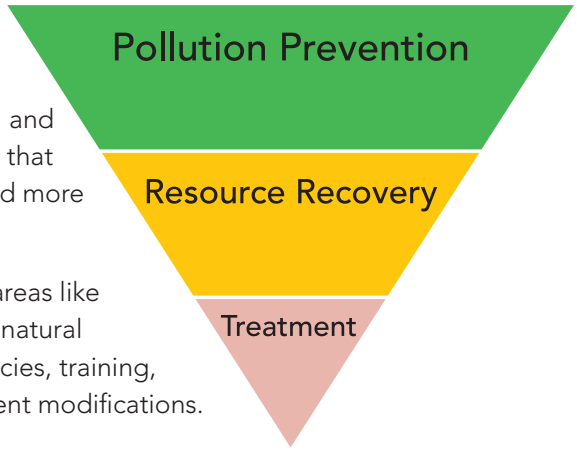
DID YOU KNOW

Cooking oil and grease can damage and clog pipes and lead to costly repairs. Maintaining grease interceptors and providing tenant education are effective ways to manage grease and reduce maintenance costs.



Pollution Prevention

The goal of pollution prevention is to eliminate the causes of pollution rather than treat the waste once it is generated. Pollution prevention involves continuous improvement through design, and technical, operational and behavioural changes. It also encourages transformations that are likely to lead to lower costs, increased efficiencies and more effective protection of the environment.



Pollution prevention practices and techniques focus on areas like substances of concern, efficient use and conservation of natural resources, on-site reuse and recycling, operating efficiencies, training, procurement techniques, process changes, and equipment modifications.

Safeguarding the Wastewater System and the Environment

Recommended Practices

Building managers play an important role in safeguarding the wastewater system and environment. Here are some recommended practices to help manage wastewater safely and responsibly.

1. Capture Wastewater

Ensure that all wastewater is discharged to a sanitary sewer. Never discharge wastewater to storm drains, lawns, ditches or manholes, or allow runoff to the street, as this can strain the wastewater system.

2. Minimize Stormwater Discharge to Sanitary and Combined Sewers

Prevent stormwater runoff from entering sanitary sewers and combined sewers as much as possible to prevent strain on the wastewater system. See "Guide to Stormwater Management" (also listed at the end of this guide).

3. Install a Grease Interceptor

Install a grease interceptor to capture any oil and grease generated from food service operations, in accordance with the Food Sector Grease Interceptor Bylaw. The "Grease Interceptor Sizing Tool" (also listed at the end of this guide) can provide assistance in determining grease interceptor requirements for your operation.

4. Maintain Grease Interceptor

Have grease interceptors fully pumped out by a qualified service provider when fats, oils and solids are more than 25% of the total liquid depth OR every 90 days (whichever occurs first). All components that may affect an interceptor's proper operation should be inspected when serviced.

5. Educate Building Users on Better Practices

Provide guidance to building users on practices they can adopt related to wipes, grease, laundry, soaps, and food scraps. Better practices will reduce stress on the wastewater system and prevent costly issues. See p.12 for tips.

6. Avoid Cleaning Products with Harsh Chemicals

Provide safe cleaning products for cleaning staff. Read labels and look for products low in phosphates, chlorines, dyes, and perfumes, and avoid products with the poisonous, flammable, corrosive, and explosive hazard symbols.

7. Reduce Blowdown from HVAC Equipment

Minimize wastewater discharged as blowdown (water intentionally wasted to remove dissolved impurities) by working with a water treatment vendor to optimize boiler and cooling tower systems. Minimizing blowdown will also reduce the amount of required make-up water. Blowdown wastewater should always be directed to sanitary drains, not storm sewers.

8. Install Make-up Water Meters

Install make-up meters on boilers and cooling towers. Having meters in place allows for make-up water use to be tracked, which is an indicator of boiler and cooling tower performance.

9. Establish a Regular Monitoring Program

Have routine processes in place to regularly track water consumption and quality. Consistent monitoring can help identify the need for preventative maintenance before issues become costly. See *Monitoring Practices* on p.10.

10. Train Staff

Train staff on the practices described in this guide, and maintain good inspection and maintenance records.

Monitoring Practices

Minimizing water leaks and HVAC equipment issues are important goals for maintaining healthy water systems and reducing wastewater in buildings. Regular monitoring of water consumption and quality helps to establish baselines, benchmark performance, and identify potential problems early on before they become costly issues.

Adopting these monitoring practices can help you track performance, troubleshoot potential issues, and identify maintenance needs.

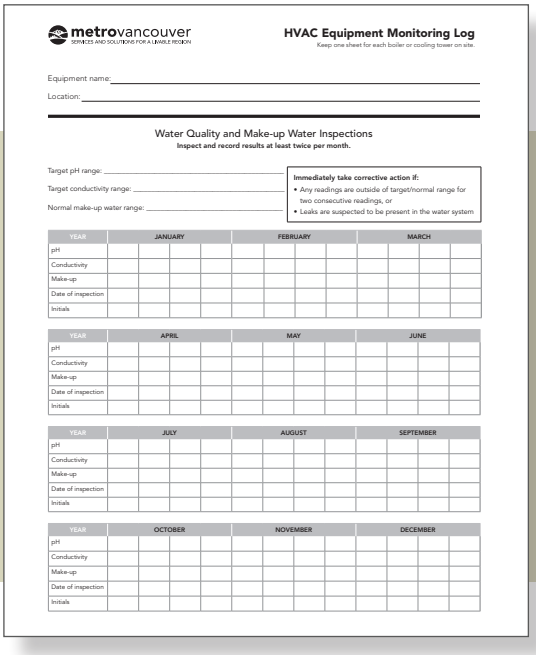
1. **Keep a log sheet** in the main water room to record daily water use readings from the building's main water meter. Spikes in water use may indicate that there is an issue in the system to troubleshoot, such as a leak that needs to be sealed.
2. **Record make-up water consumption** from make-up water meters for boilers and cooling towers every week. A large increase in make-up water consumption may indicate equipment inefficiencies or malfunctions.
3. **Perform routine visual inspections** on HVAC equipment to check for leaks or anything out of the ordinary and keep a record of these checks. Aim to do this daily or at least once a week.
4. **Invest in test equipment** (e.g. pH/conductivity meters plus test kits) to take readings from boilers and cooling towers weekly. Consult a professional water treatment vendor to determine the proper test ranges for your HVAC systems. Being able to identify when these parameters are outside their proper ranges is an important first step to troubleshoot corrosion, scale and microbiological issues.
5. **Put in place a comprehensive water quality monitoring and maintenance program** that involves either:
   - **Taking water samples** from boilers and cooling tower systems and sending them to a water testing facility monthly for water quality reports, or
   - **Hiring a professional water treatment vendor** to monitor and maintain appropriate water chemistry for efficient operation of your HVAC systems. Note that certain metals, such as molybdenum and zinc, should not be included in water treatment programs as they are classified as Restricted Wastes and are regulated through the Sewer Use Bylaw.

A regular monitoring program may also be necessary for claiming sewer credits, if your local municipality offers them. Please contact your local municipality for more information.

Example Maintenance Log

With readings from a pH probe, conductivity probe and make-up meters, maintenance staff can make use of this example log to track key parameters in cooling towers. Each building's needs are unique and building managers may need to adapt the log to reflect their maintenance requirements.

This template can be found at www.metrovancouver.org (search "wastewater management guides")



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HVAC Equipment Monitoring Log
Keep one sheet for each boiler or cooling tower on site.

Equipment name: _____

Location: _____

Water Quality and Make-up Water Inspections
Inspect and record results at least twice per month.

Target pH range: _____
Target conductivity range: _____
Normal make-up water range: _____

Immediately take corrective action if:
- Any readings are outside of target/normal range for two consecutive readings, or
- Leaks are suspected to be present in the water system

YEAR	JANUARY				FEBRUARY				MARCH			
pH												
Conductivity												
Make-up												
Date of inspection												
Initials												

YEAR	APRIL				MAY				JUNE			
pH												
Conductivity												
Make-up												
Date of inspection												
Initials												

YEAR	JULY				AUGUST				SEPTEMBER			
pH												
Conductivity												
Make-up												
Date of inspection												
Initials												

YEAR	OCTOBER				NOVEMBER				DECEMBER			
pH												
Conductivity												
Make-up												
Date of inspection												
Initials												

Complying with Regulations

Metro Vancouver's Sewer Use Bylaw protects the regional wastewater system and the environment.

This Bylaw restricts the discharge of specific pollutants into the sanitary sewer system. Building managers are required to comply with the Bylaw.

Contaminants of significant concern are listed under the Prohibited Wastes specified in the Sewer Use Bylaw. Spills of untreated chemicals or other contaminants can potentially have serious impacts on sewer infrastructure, human health and the environment. These contaminants include:

- Flammable wastes
- Explosive wastes
- Hazardous wastes that can cause significant risk to worker safety and infrastructure, including pH wastes less than 2.0 or greater than 12.0

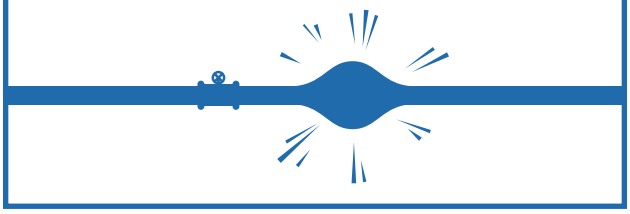
HVAC equipment and boiler system fluids may contain metals, corrosion inhibitors, and other contaminants that are defined as Restricted Wastes in Metro Vancouver's Sewer Use Bylaw. If maintenance work is scheduled to drain the contents of a building's HVAC or boiler system, building managers or contractors are required to first contact Metro Vancouver's Environmental Regulation & Enforcement department (regulationenforcement@metrovancouver.org) for authorization and guidance on how to comply with the Bylaw and safeguard the wastewater system and the environment.

Building management is also regulated by building and plumbing codes. Buildings codes set out technical provisions for alterations and repairs of buildings. The BC Building Code applies to all buildings in the region except for those within the City of Vancouver, which are regulated by the City of Vancouver Building Bylaw.

Plumbing codes set out technical provisions for the extension, alteration, renewal and repair of existing plumbing systems. These codes protect public health and prevent water or sewer damage. The BC Plumbing Code applies to all building plumbing systems in the region.

DID YOU KNOW

A blockage or back-up in a privately-owned section of the sewer system is the financial responsibility of the home or business owner.



All owners and operators should be familiar with Metro Vancouver's Sewer Use Bylaw. Non-compliance can result in penalties and fines.

Relevant Regulations

Metro Vancouver Sewer Use Bylaw

www.metrovancouver.org
(search for "Sewer Use Bylaw")

Metro Vancouver Food Sector Grease Interceptor Bylaw

www.metrovancouver.org (search for "Food Sector Grease Interceptor Bylaw")

BC Building Code

www.bccodes.ca

BC Plumbing Code

www.bccodes.ca

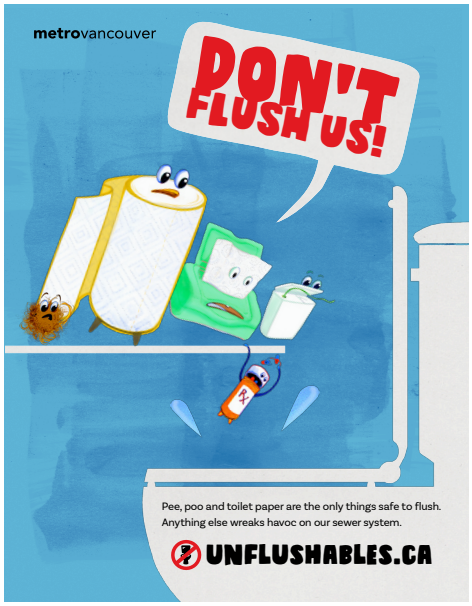
City of Vancouver Building Bylaw

www.vancouver.ca

Guidance for Educating Building Users

Building users may not be aware that what they put down the drain may damage plumbing systems, create problems for the wastewater system, and harm the environment.

Building managers can use Metro Vancouver campaign materials in common building areas, such as elevators and garbage rooms, to increase awareness and prevent costly plumbing issues. Campaign materials are available at: www.metrovancouver.org (search "Liquid Waste Campaign Materials").



Unflushables

Did you know? The only things that are OK to flush are pee, poo and toilet paper. Anything else wreaks havoc on building plumbing systems and the sewer system.

More information: unflushables.ca

Wipe It, Green Bin It

Did you know? Fats, oils and grease in sewers is an ongoing issue that can lead to clogged pipes and sewer overflows into homes, businesses and the environment.

More information: wipeitgreenbinit.ca

Microfibres Reduction – Our Ocean Thanks You

Did you know? Microfibres from our laundry are one of the largest sources of microplastics pollution in the ocean. Every year, in Canada and the United States, our household laundry sends about 878 tonnes of microfibres — the equivalent weight of ten blue whales — into our rivers, lakes and oceans.

More information: switchtocold.ca

Managing Soaps and Detergents

Did you know? Many soaps, detergents and other cleaning products contain chemicals that can't always be removed when wastewater is treated. These chemicals can end up in our local waters, where they can harm fish and aquatic plants.

More information: www.metrovancouver.org
(search "Managing soaps and detergents")

Food Scraps Recycling

Did you know? Separating food scraps has been mandatory for residents and businesses in Metro Vancouver since January 2015. This applies to apartments, condos and detached homes.

More information and tools: www.metrovancouver.org/foodscraps

Other Resources

Wastewater Management Guides

Metro Vancouver has a series of guides for managing commercial and industrial wastewater.

Commercial Vehicle Washing Industry

Swimming Pools and Ice Rinks

Carpet Cleaning Industry

Download the guides at www.metrovancouver.org (search "wastewater management guides")

Stormwater Management

Homeowner's Guide to Stormwater Management

More information on stormwater management and to download the guide: www.metrovancouver.org (search "stormwater management")

Water Use

How to reduce water use in your building: welovewater.ca

Water Efficiency Management Guide for Mechanical Systems (US EPA)

Grease Interceptor

Grease Interceptor Sizing Tool

More information on grease interceptors and to access the sizing tool: www.metrovancouver.org (search "Food Sector Grease Interceptor Regulatory Program")

Notes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