

CUSTOMER CARE & METERING



Burlington's Customer Care & Metering group is responsible for executing all functions related to utility billing for the **10,342** water, wastewater and stormwater accounts. This includes meter reading, repair & replacement of meter assets, analyzing meter data for anomalies, generating invoices, processing revenue, updating ownership & tenancies, ensuring compliance with state and local regulations, as well as answering all the questions about these critical components of the meter to cash cycle. This team also provides customer service to stakeholders about water quality, infrastructure repairs & maintenance and our ongoing capital improvements.

2019 BY THE NUMBERS

Water Resources Customer Service and Meter team is made up of 3 Customer Care Associates, and 3 Meter Technicians—with a combined 76 years of experience working in the Water Resources field.

Here's an overview of what our team has been up to this year:

- **785** scheduled property visits to repair / replace and investigate customer concerns
 - **213** meters and **246** radio transmitters upgraded
- **831** high consumption warnings and **248** no consumption warnings sent
 - **2,286** DigSafe tickets reviewed and marked
 - **682** mobile meter inspection forms completed

WATER SERVICE MATERIALS

A water service line constructed from galvanized steel pre-dates 1960, and has a higher probability of leaking or breaking, and over time will lead to reduced flow capacity (i.e. low pressure) due to the build up of mineral deposits in the line.

You can determine the material type of your water service visually, or with a magnet. A plastic service line will appear blue in color—the image below shows a copper and galvanized line for reference. A copper pipe will appear greenish (if oxidized) —whereas a galvanized pipe will appear grey in color. Alternatively, you may take a heavy duty magnet and try sticking it to the pipe. If it sticks, it's galvanized steel—but a magnet won't adhere to copper or plastic.



We recommend that homeowners replace galvanized steel service lines before they become compromised. If you determine that you have a galvanized line in your home, contact us at (802) 863-4501 to schedule an appointment for a technician to provide a free replacement estimate.

CURRENT RATES & MEASUREMENTS

MEASUREMENTS

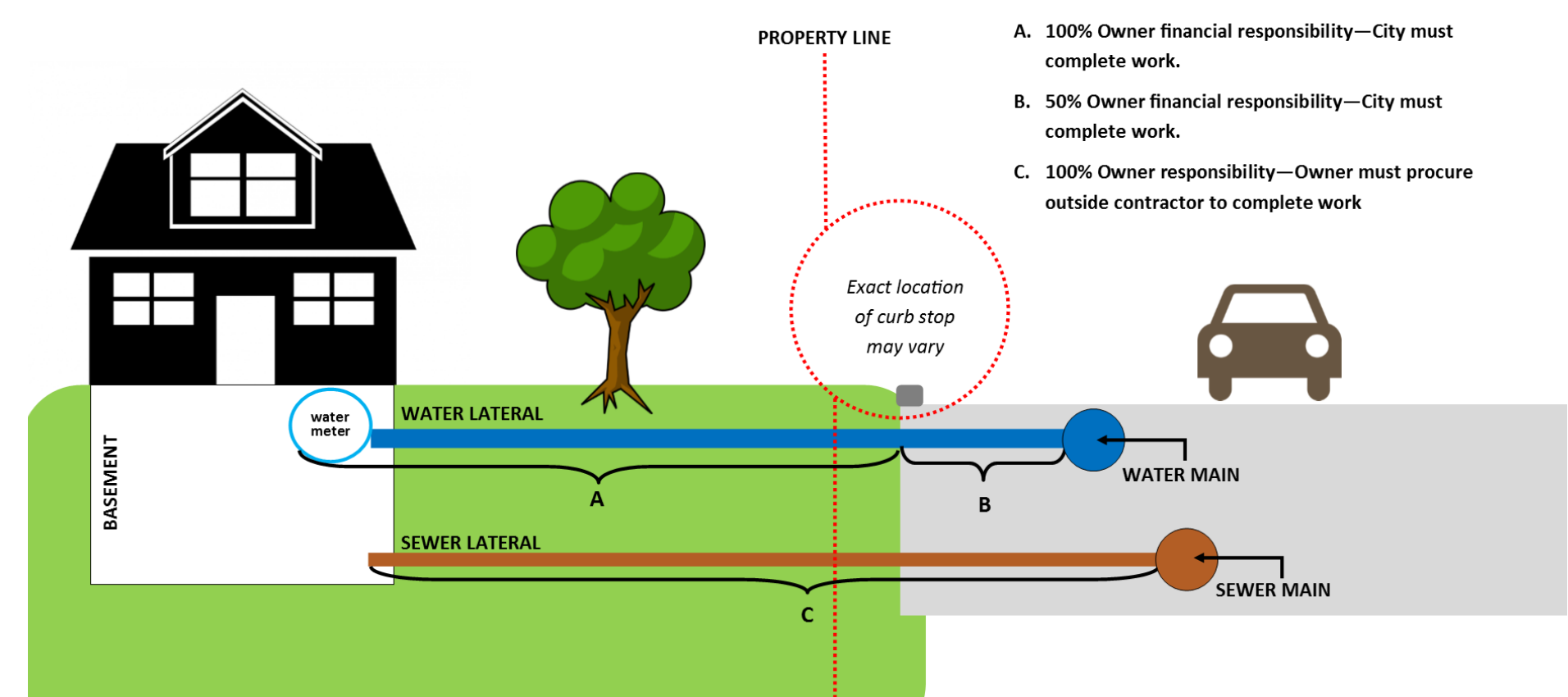
100 cubic feet (CF) = 748 gallons

1 impervious surface unit (ISU) = 1,000 square feet

Current Rate / 100 cubic feet	Stormwater Rates
Water \$4.44	Single Family \$6.60 / month
Wastewater \$6.20	Duplex \$6.56 / month
	Triplex \$7.56 / month
	All other \$2.47 / ISU



What infrastructure am I financially responsible for as a homeowner?



PAYMENT OPTIONS

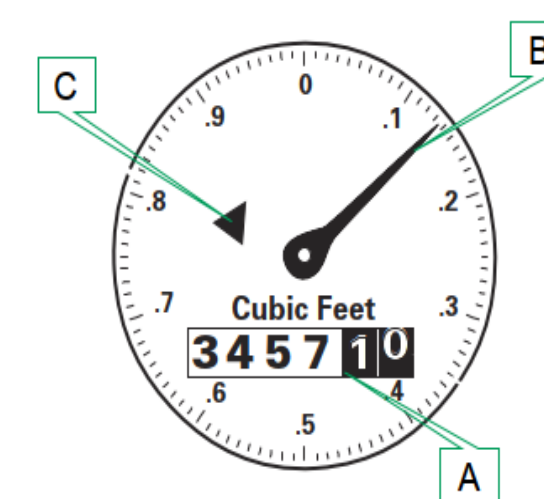
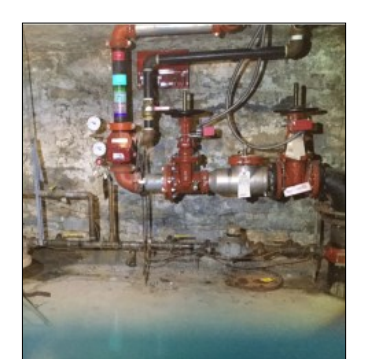


- * Cash
- * Credit Card (fees apply)
- * Check / Money Order
- * Automatic Debit (Checking or Savings)

CAPTURING METER ATTRIBUTES ON-THE-GO!

Our technicians utilize a web-based form (GoCanvas) to record meter and plumbing attributes during field inspections. The data is captured via a smartphone or tablet, and is then available for review by office staff in real time. This allows us to establish a baseline for new water meters, and validate the configuration of existing meters more efficiently.

Diameter inflow pipe	1.5
Strainer installed?	No
Is flow direction arrow on meter going in correct direction?	Yes
Service (before meter) Shut off valve present?	Yes
Type of shut off (before meter) valve	ball valve
Is there a backflow preventer installed?	Yes



Typical Water Meter Register

A. Dials

The dials of a water meter register function like the mileage odometer on a car. These numbers indicate the total flow that has passed through the meter. The register shown has recorded 345.710 cubic feet (CF) of water while in service.

B. Sweep Arm

Each full revolution of the register sweep arm indicates that 1 cubic foot (7.48 gallons) of water has passed through the meter. The markings at the outer edge of the register indicate tenths and hundredths of a cubic foot.

C. Flow Indicator

The flow indicator rotates when the water flows through the meter. If the triangle turns when all plumbing fixtures are off, then you may have a leak. This should be investigated.



We are excited to announce several upcoming enhancements to your Water Resources billing experience!

- * New online account portal
- * Budget Billing
- * Opt out of return envelopes
- * Online appointment scheduling

We are further considering the following ideas for improving our service:

- * Absorbing the convenience fee charged to online credit card payments; Fees are currently \$3.00, or 2.65% of the transaction (whichever is greater) and go directly to the processing entity
- * Expansion of available times for meter troubleshooting appointments; Current availability is between 8:00 a.m. and 2:00 p.m.

STORMWATER



SEPARATE STORMWATER POLLUTION

Stormwater runoff comes from urban development—what we call ‘impervious surfaces.’ Parking lots, buildings, roads, sidewalks, and any surface where water is unable to infiltrate to the ground.

Stormwater contains a variety of pollutants—including nutrients, bacteria, and hydrocarbons. While one storm may not be responsible for a large slug of pollutants, the total amount of stormwater runoff in a year can represent significant pollutant loads. These pollutants are often contributing factors to beach closures related to bacteria levels and Cyanobacteria blooms.

In separate storm areas, filtration practices like bioretention systems and gravel wetlands will clean stormwater before it is discharged to a waterbody, and runoff reduction practices like infiltration systems allow stormwater to soak back into the ground and will remove pollutants in the process.



COMBINED SEWER OVERFLOWS

A combined sewer area is where stormwater runoff and wastewater enter the same pipe, and under normal conditions are routed to a wastewater treatment plant. Overall, this provides water quality benefits since the stormwater (with its pollutants) ends up receiving full treatment - however problems arise when a large or intense rain storm occurs and the system is overwhelmed. In this instance, the excess combined sewer flow is discharged via a ‘relief’ point, directly to a waterbody. There are 5 such points in Burlington—known as Combined Sewer Overflow points (CSOs). These CSOs occur much less frequently than in Burlington’s past, but we are working every year to further reduce their frequency and volumes.

The primary issue with CSOs when they occur is the spike in bacteria levels (due to the small amount of sewage contained within the overflow) for a short term after the CSO occurs. Since CSOs are driven by excess stormwater volume, we use practices that will store or otherwise infiltrate stormwater as this prevents CSOs from occurring.



In late 2018, the City was awarded a \$1 million grant to construct green stormwater practices to manage CSO's. Design work on those projects is currently underway, with construction anticipated to begin early next year!

CAPITAL INVESTMENT

Burlington’s Stormwater Program is responsible for a wide range of capital investment work in any given year. The Program works to construct as many new retrofit projects as possible, to slow and filter stormwater from impervious surfaces where no management practice currently exists. This is paired with capital work focused on the repair and replacement of existing infrastructure, such as deteriorated storm drains and storm outfalls.



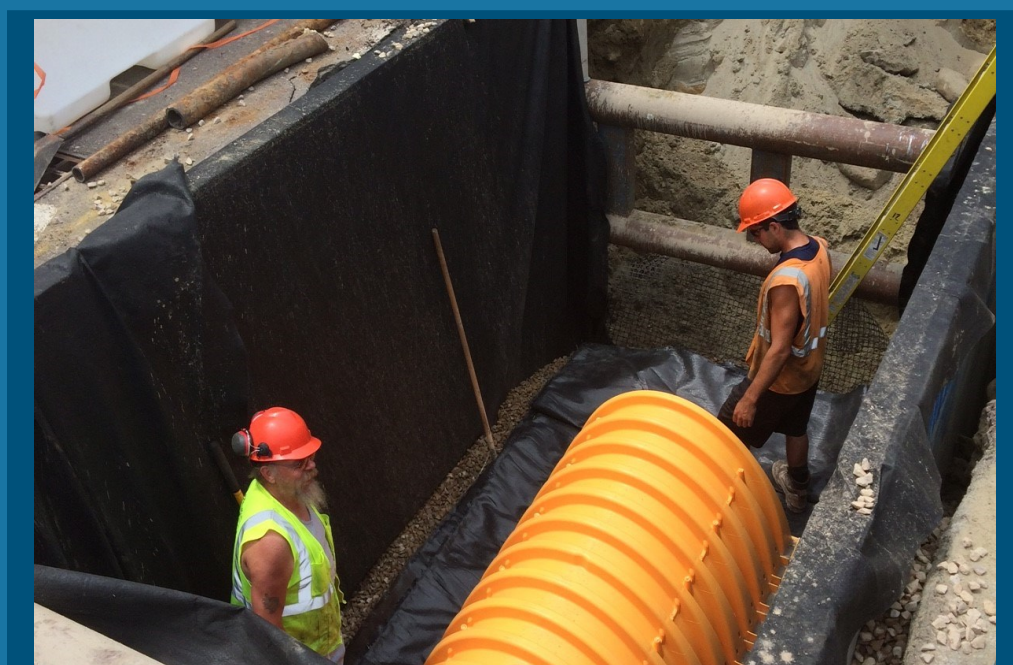
BOOTH STREET BIORETENTION

- Completed July 2019
- Slows stormwater runoff from ~8,000 square feet of impervious surface in the City’s Combined Sewer System during a rain storm
- Provides traffic calming co-benefits



WARD STREET BIORETENTION

- Completed August 2019
- Slows stormwater runoff from 2,500 square feet of impervious surface in the City’s combined sewer system during a rain storm.
- Provides traffic calming co-benefits



ALLEN STREET INFILTRATION

- Completed September 2019
- Fully disconnects runoff from 55,321 square feet of impervious surface from the City’s combined sewer system

In addition to capital investments, the Stormwater Program is also responsible for a number of ongoing operational tasks to keep the City’s stormwater infrastructure running, and our State & Federal regulatory requirements met. The items highlighted below are just a few of the tasks Stormwater Program staff oversee in a given year to meet these goals.

OPERATIONS



CATCH BASIN CLEANING

- City staff inspect and clean an average of around 500 stormwater catch basins each year—the city contains approximately 3,200 of these basins in total
- This keeps drains operating properly, and provides information on where replacements need to be made ahead of paving work



DRAIN DEFENDER

ADOPT-A-DRAIN

- Since City staff can’t get to every drain ahead of a storm, we enlist the help of willing citizens to help keep drains clear
- This helps us ensure drains are open ahead of rain storms, and provides us with data on what basins are clogged most often



WORKSHOPS & TRAININGS

- BTV Stormwater hosted a Rain Barrel building workshop in 2019, with support from our partners at the Chittenden County Stream Team
- Participants constructed 30 barrels, which are now distributed across the city and catching rain that would otherwise be entering the City’s drains!

WASTEWATER



CAPITAL INVESTMENT

Thanks in large part to the overwhelming approval we received from Burlington voters in 2018 in support of our Bond request, this year has included the kickoff of a significant number of capital improvements to our wastewater infrastructure. The projects highlighted here are just a sample of the work we currently have underway as part of that effort.



PUMP STATION UPGRADES

- Upgrades to hardware from the 1960's
- Upgrades to meet the VT requirements for on-site storage, ensuring sewage stays out of the Lake in the event of a pump failure!
- Safety improvements to ensure safe confined space entry



SCADA UPGRADES

- Upgrades to overall computerized control system—the 'brains' of the plant
- Replacement of key hardware components
- Integration of access controls throughout the plant, to improve overall efficiency of the system



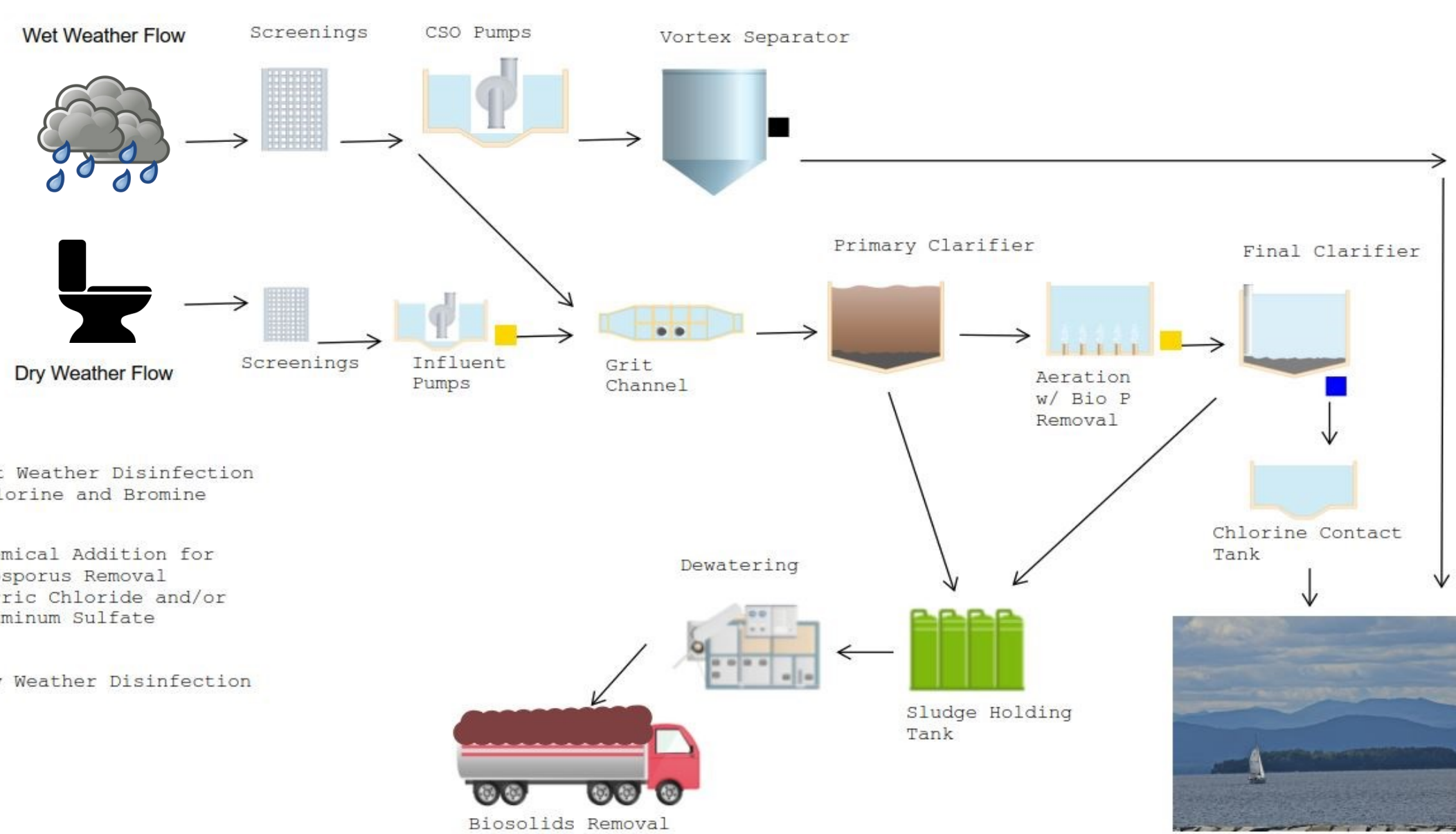
PLANT UPGRADES

- Modernization of buildings and HVAC systems
- Upgrades to aeration systems
- Replacement of outdated mechanical equipment integral to disinfection
- Upgrades to primary and secondary clarifiers

Wastewater staff operate 3 wastewater treatment plants, and 25 pump stations across the City. Staff conduct a variety of tasks, including monitoring plant infrastructure, managing and monitoring SCADA systems, sampling and processing effluent in the laboratory, and performing mechanical repairs both at the plants as well as the various pump stations.

OPERATIONS

A Simplified Overview of the Wastewater Treatment Process



WASTEWATER BY THE NUMBERS

- Main Plant treats an average total of **1.8 billion** gallons of combined wastewater and stormwater each year. For context, if Lake Champlain were completely empty, it would take us nearly **3,500 years** to fill it back up!
- Main Plant receives **87,400** pounds of Phosphorous in wastewater flows each year, and discharges only **2,577** pounds after treatment—that's just about a **97%** removal rate overall.



FLOW METERING

- Monitoring is being conducted throughout the City's collection system to improve our modeling—which will ultimately allow us to make more informed decisions about where to install stormwater storage systems to reduce CSOs and wet weather impacts at the plant



BIOSOLIDS MANAGEMENT

- Main Plant produces approximately 10,000 tons of biosolids each year—enough to fill about 350 tractor trailers!
- Biosolids are either shipped to a facility in Chateaugay, NY where they are recycled into other useful products, or sent to Coventry landfill for disposal



SAMPLING & MONITORING

- The lab processes over 15,000 samples annually
- Operators collect and record over 100,000 data points each year, which help us refine our treatment processes and ensure we are complying with state and federal regulations

DRINKING WATER



CAPITAL INVESTMENT

The Water Resources Division has been providing water services to the community since 1867, when the original pumphouse was constructed at the waterfront. As you can imagine, our infrastructure has grown significantly over the last 150 years. We have been able to complete a number of vital upgrades over the last several years.



WATER MAIN UPGRADES

- Improvements to spatially-based water main asset program have let us prioritize replacement of mains with the highest risk of failure
- To date, we have fully replaced 2.1 miles of water mains and relined an additional 5.5 miles!



WATER TANK UPGRADE

- Rehabilitation is needed to ensure the continued structural and sanitary condition of the tank
- The tanks coating needed to be completely stripped down and re-applied at an appropriate thickness
- Welding repairs were also completed to ensure structural integrity



RESERVOIR RELINING

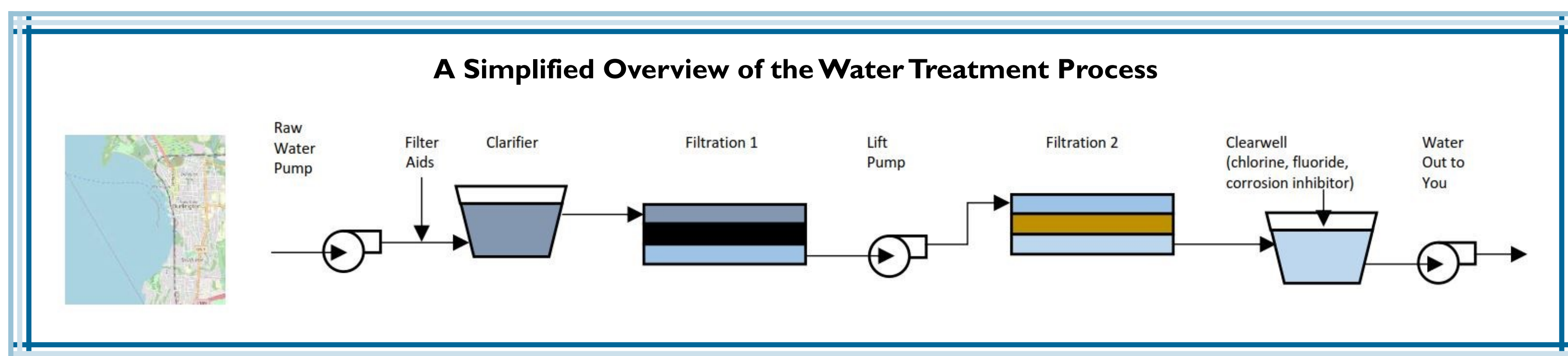
- The North and South reservoirs were originally built in 1868 and 1888, respectively
- New liner membranes were installed in 2016 to protect drinking water and reduce water loss via infiltration
- Roof relining will occur in the next few years

Burlington's Water Treatment Facility is staffed by a team of Operators 24 hours a day, 365 days a year. The plant treats approximately 4 million gallons of water from Lake Champlain each day, which is then distributed throughout the City for potable consumption by our more than 40,000 residents, business, and visitors alike. Operators monitor water quality, perform mechanical repairs, and respond to customer calls and dispatch work crews for repairs after normal business hours.

The Distribution Team is made up of 9 technical professionals who repair and maintain all of the City's water mains, water service lines, fire hydrants, and valve systems. In addition to their regular responsibilities, they are also responsible for inspections of all work completed by outside contractors, and are on-call throughout the year to respond to emergency water main breaks.

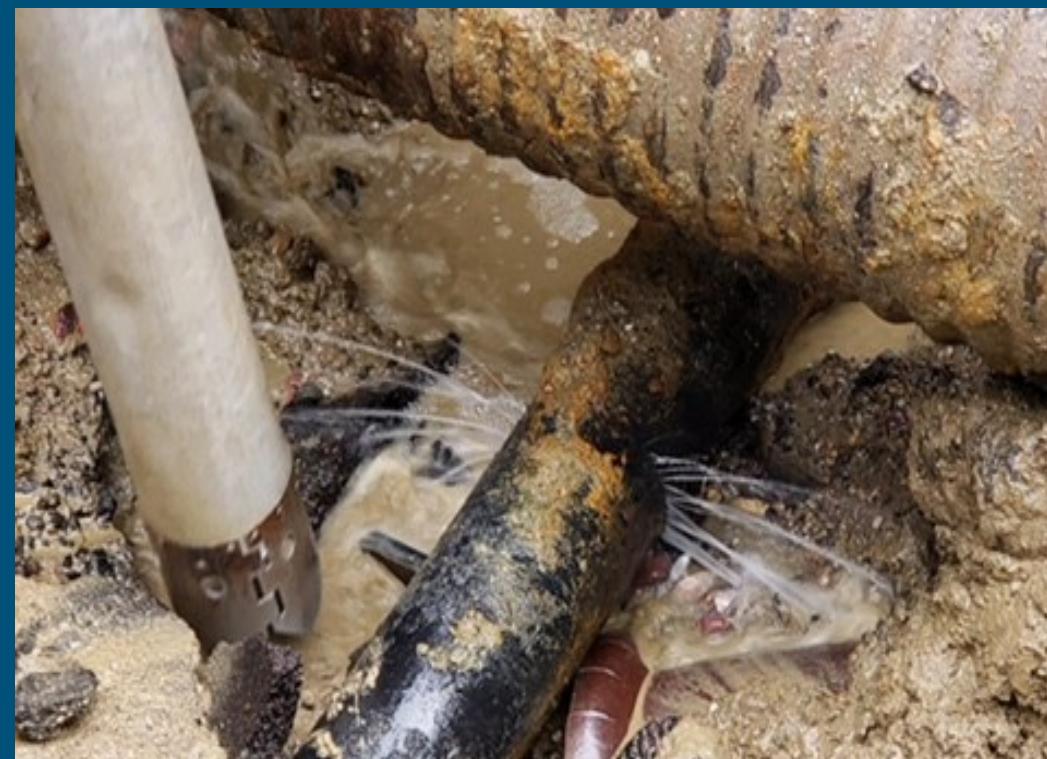
OPERATIONS

A Simplified Overview of the Water Treatment Process



HYDRANT FLUSHING

- The City of Burlington contains 911 fire hydrants as of today's date—additional hydrants are installed periodically when a new or redevelopment project requires it
- Hydrants across the City are flushed and tested for flow annually to ensure they are operating properly



BREAK RESPONSE

- Distribution Team staff are always on-call after hours to respond to breaks as they occur
- Staff are often dispatched in the middle of the night, on the coldest days of winter to get water restored to impacted customers as quickly as possible



WATER SAMPLING

- Real time monitoring is done of raw & finished water turbidity, pH, and finished water Chlorine levels
- QA/QC samples are processed every 4 hours on site to confirm online analyzer results
- Weekly bacteria and chlorine testing is conducted at 9 sites throughout the City

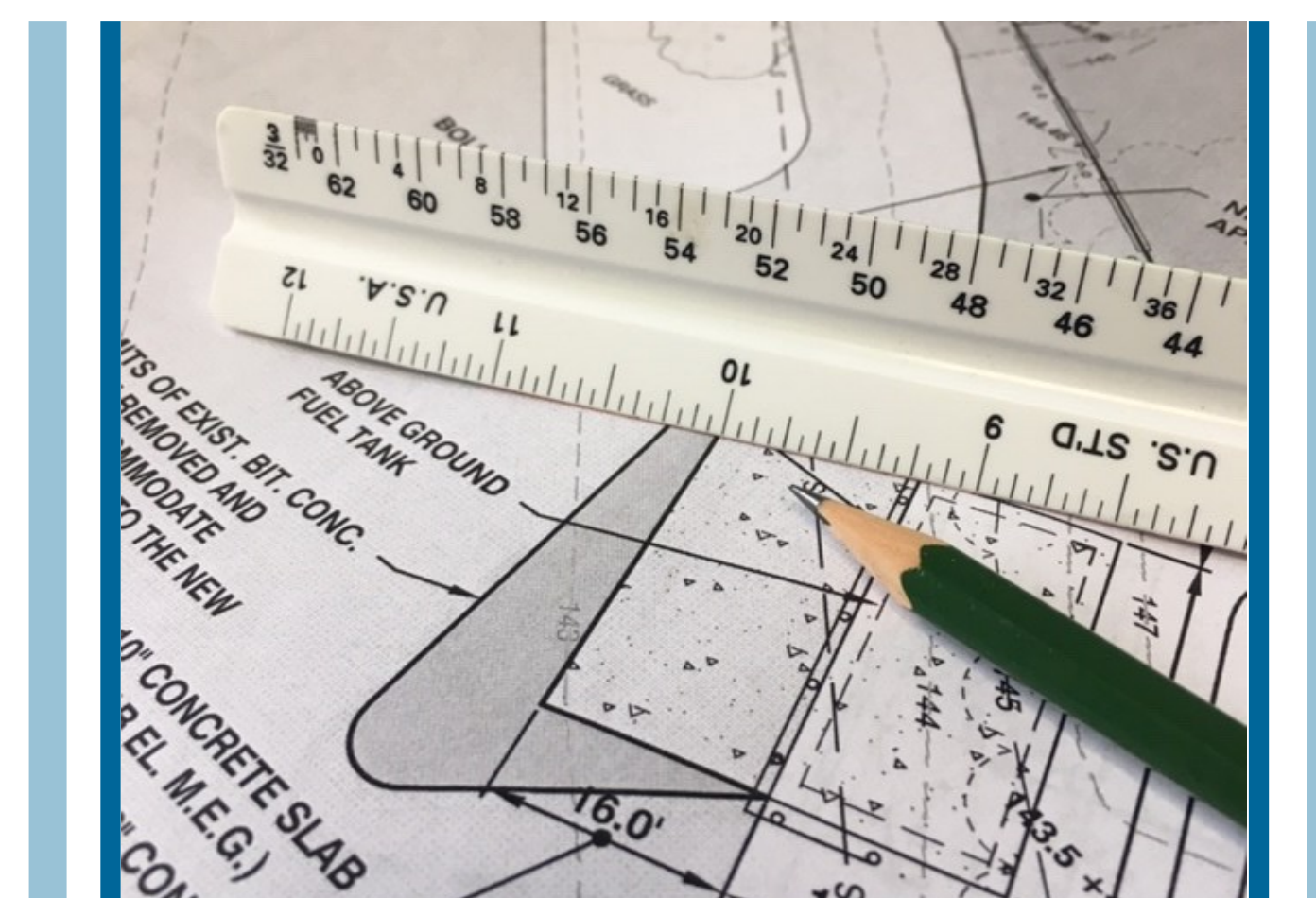
PROJECT REVIEW



How does the city ensure development projects aren't negatively impacting the lake, or the City's water, wastewater, and stormwater infrastructure?

Project Review Components

- **Determination of sufficient wastewater capacity and drinking water supply:** design flows for water and wastewater flows are reviewed by the Water Resources Engineer who confirms the capacity to serve the project
- **Wastewater offset: requirements** a significant increase in wastewater flow may require that additional stormwater flows are mitigated on or off-site to maintain or improve overall wastewater capacity and ensure the project is not contributing to combined sewer overflows
- **Sizing and selection of water meter type:** a fixture count based (or other approved method) water flow calculation must be submitted for proper sizing and selection of a water meter by staff
- **Backflow prevention:** projects are reviewed to determine the risk of cross contamination related to on-site uses and backflow device requirements to prevent cross contamination of the water supply.
- **Meter location review:** mechanical plans showing where the water meter will be installed are reviewed to ensure that sufficient room is provided for all necessary components.
- **Erosion prevention and sediment control plan:** projects generating 400 square feet or more of earth disturbance during construction must submit a plan showing the implementation of proper Erosion Prevention & Sediment Control practices to keep sediment laden stormwater runoff on site
- **Stormwater management plan:** projects that will result in more than 2,500 square feet of impervious surface on-site (including redevelopment projects) must implement stormwater management practices to manage the impact of new impervious or mitigate the impact of existing impervious in the case of redevelopment projects. Runoff reduction and other green stormwater infrastructure practices are strongly encouraged through the review process.
- **High strength wastewater:** Projects that will involve the discharge of high strength wastewater (food or beverage processing businesses) may be required to implement pollution prevention plans (including side-streaming of organic wastes) or other pre-treatment practices to minimize the impact to the Wastewater Treatment Plant.



Other requirements for construction projects:

- Water service lines or mains may only be worked on by City staff or authorized contractors (with City inspectors)
- Water meters may only be worked on by City staff
- Projects may additionally need to obtain a State water/wastewater permit (after obtaining a capacity letter from the Water Resources Division).

PROJECTS SHOULD MEET WITH WATER RESOURCES EARLY IN THE PROJECT PLANNING PHASE!

SUCCESS STORIES

The following projects were subject to review by the City's Water Resources staff, and as a result included features to address water quality and infrastructure concerns.



CAMBRIAN RISE

- Includes extensive treatment on-site via infiltration practices, and green infrastructure on new roadways
- Developer will be constructing a large subsurface infiltration system under North Avenue, effectively removing storm runoff from 2.3 acres of impervious surface that would otherwise be entering the City's combined sewer system



BURLINGTON HARBOR MARINA

- City Staff were able to advocate for the use of permeable asphalt and permeable pavers in lieu of traditional impervious material.
- As a result, this project prevented 33,547 square feet of impervious surface from installation.