Backflow Prevention / Cross-Connection Control Program
Frequently Asked Questions

Q: What is a "cross-connection"?
A cross-connection is an actual or potential connection between a public water system or consumer's potable (drinking) water system and any source or system containing non-potable water or other substances. (Non-potable water is water that is unfit or unsafe to drink.)

Q: What is "backflow"?
Water normally flows in one direction, from the public water system through your water service, to your plumbing fixtures. However, under certain conditions water can flow in the reverse direction – creating "backflow". Backflow can contaminate the water supply and cause serious health issues. Backflow is the reverse flow of non-potable water or other substances through a cross-connection hazard into the piping of the consumer's potable water system or the public water system.

Q: What causes backflow?
There are two conditions that can cause backflow:

1. **Backsiphonage** – occurs due to a loss of pressure in the public water system providing your water. This can be caused by a rapid withdrawal of a high volume of water from the system due to a system shutdown, a break in the supply mains, or active fire protection. This reduction of pressure creates a vacuum in the piping which draws water back into your home from your irrigation lines, hot tub, or any plumbing fixture with a submerged inlet. These sources of water can contaminate your home's drinking water and even enter the public system contaminating others' potable water.

2. **Backpressure** – is created when the source of pressure, such as a household pump, creates pressure greater than that supplied through the public water system. A pump from a landscape pond, pool, hot tub, hydronic heating system, fire sprinkler system or other system containing non-potable water, pumps that water into the potable water supply affecting your home, and even the entire public drinking water system.

Q: How can I prevent contamination of my own home and the public water system?
You can determine if your property has any potential cross connections by completing a Cross-Connection Survey on our website or by calling the Compliance Services Division to schedule a Cross-Connection Control inspection.

Please note that you are also required to install an approved backflow prevention assembly on any identified cross-connections per District requirements and to test this assembly annually.

Q: What is a backflow prevention assembly?
A backflow prevention assembly is a mechanical device that prevents water from "backflowing" into a potable water system (either the consumer's internal system, the public water system, or both).

Q: Are there different types of backflow prevention assemblies?
Yes, there are several different types of backflow prevention assemblies, which are listed below:

Air Gap (AG)
Reduced Pressure Principle Backflow Prevention Assembly (RP)
Double Check Valve Backflow Prevention Assembly (DC)

Pressure Vacuum Breaker (PVB)
Atmospheric Vacuum Breaker (AVB)
Spill-Proof Pressure Vacuum Breaker (SVB)

The Tahoe City Public Utility District (District) recognizes all of these as acceptable forms of cross-connection control. However, each assembly must be approved prior to installation to ensure that the assembly is on the approved list and that the type of assembly used shall be based on the existing or potential degree of hazard.

Q: How do I know which assembly I need?
The District can tell you which type of assembly is appropriate for your particular need. You may then choose the specific model from a list of approved assemblies available at the District office, or you can work with a Backflow Prevention Assembly General Tester or Cross-Connection Control Specialist to select a specific assembly.

Q: How do I find a Backflow Prevention Assembly General Tester or Cross-Connection Control Specialist?
The District maintains a list of currently approved testers, available on our website. Some of these testers are also Cross-Connection Control Specialists, which can be determined by speaking with each company.

Q: Why do I need to install a backflow prevention assembly?
In order to protect your family's health and the public drinking water system, the State of California requires all water suppliers to maintain ongoing backflow prevention and cross-connection control programs so that your water is protected from hazards that originate on private property. The California Department of Public Health requires the District to eliminate cross-connections by maintaining these programs. The backflow prevention and cross-connection control program mandates the installation of backflow prevention assemblies by the consumer where the District determines they are needed, in accordance with Title 17 of California state law and District Water Ordinance 263.

Q: Who can install and test the assembly?
A plumber, fire sprinkler contractor, landscaper, Backflow Prevention Assembly General Tester, or anyone with plumbing expertise can install an assembly.

However, only Backflow Prevention Assembly General Testers holding current certification by the California-Nevada Section of the American Water Works Association (AWWA) can test, maintain and repair backflow prevention assemblies. The tester must provide the District with evidence of AWWA certification and proof that the test equipment he or she will use is currently calibrated. The District maintains a list of currently approved testers, available on our website.

Q: My backflow prevention assembly is installed. Now what?
The installation of the assembly must be inspected and approved by the District. Call the Compliance Services Division to schedule an inspection.

After the installation has been inspected and approved, the assembly must be tested. Per California State Law, all backflow prevention assemblies must be tested upon installation. A District-approved, certified Backflow Prevention Assembly General Tester must test the assembly to ensure that it is operating correctly and will complete the District's "Backflow Prevention Assembly Test Report", available on our website or at our office. The tester will then mail, fax, or email the completed form back to the District.

Q: What kinds of hazards do appropriate backflow prevention assemblies protect from?
Backflow prevention assemblies protect against two types of hazards: pollutants and contaminants.

1. **A Pollutant** is any substance which affects the aesthetic quality of the water (taste, color or odor), but does not pose a health hazard.

2. **A Contaminant** may cause illness or death when ingested, and is considered to be a health hazard. Some common examples of hazards or systems requiring backflow prevention assemblies are:
   Fire Sprinkler Systems
   Hydronic Heating Systems
   Irrigation Systems
   Boilers/Water Heat Exchangers
   Auxiliary Water Supplies (e.g., lake intakes, wells)

Q: What is an auxiliary water supply and why is it a potential cross-connection?
An auxiliary water supply is a water source on your property in addition to the public drinking water service. An auxiliary water supply can be any one of the following: well, lake intake, stream/river intake, spring, rainwater cistern, grey water, etc.

When there is an auxiliary water supply on a property, it can be a potential cross-connection if that auxiliary supply accidentally gets connected to the public drinking water supply. For example, if your property has a lake intake or a private well that feeds your irrigation system, but your irrigation system is also fed from the public water system, the water from the auxiliary supply could get into the public drinking water system. For properties with an auxiliary water supply, the District requires an approved backflow prevention assembly to be installed at the meter.

Q: Do I need to install a backflow prevention assembly on my residential irrigation system?
Yes, even if it is a drip irrigation system. Weed killers, fertilizers and animal waste may enter the water supply through an irrigation system that is not properly protected with a backflow prevention assembly, contaminating the water. District staff will help you determine which assembly is the right one for your particular needs.

Q: Does a fire sprinkler system need a backflow prevention assembly?
Yes. In our cold climate, fire sprinkler systems are typically charged with a glycol solution. Additionally, systems constructed out of black iron pipe typically contain a rust inhibitor. Even systems that are charged only with water may be hazardous to the water supply. Bacterial growth can occur in the stagnant water, which sits undisturbed in the pipes for many years. A loss of system pressure can draw this polluted or contaminated water into your own system and potentially into the District's water supply. Systems that are charged only with air, but include a Fire Department Connection (FDC) also pose a hazard to the water supply; if the FDC is connected to a fire truck during a fire situation, the potential exists for water that may contain other substances to backflow into the drinking water supply.

Q: Why do I have to test my backflow prevention assembly every year?
Title 17 of California state law and District Water Ordinance 263 requires annual testing of backflow prevention assemblies to ensure that they are functioning properly. With the exception of the air gap, backflow prevention assemblies are mechanical units with internal seals, springs, and moving parts that are subject to fouling, wear, or fatigue. The annual test ensures a properly functioning assembly, and certifies that the assembly has not been removed or had a by-pass line installed around it. Air gaps are "tested" by conducting a visual inspection.

Q: Does my backflow prevention assembly have to be installed immediately behind my meter?
Not for most hazards. However, when there is an auxiliary water supply, medical facility, lethal hazard, failure to allow the District to perform a cross-connection inspection, or other circumstance, as determined by the District, backflow prevention assemblies must be installed immediately behind the meter, on private property. RP backflow prevention assemblies installed at the meter must be installed in an above-ground, continually heated enclosure. DC backflow prevention assemblies installed at the meter may be installed in an underground box or vault, but must be approved on a case-by-case basis.

In general, the District has taken the approach of requiring internal protection with regards to the installation of backflow prevention assemblies, in order to protect the drinking water within the property

as well as the public water system. This approach has been determined to be the best method for the protection of public health and safety. Furthermore, requiring internal protection, at the point of potential cross-connection, typically allows our customers to install smaller backflow prevention assemblies within their structure, and generally eliminates the need to house these assemblies in an above-ground, continually heated enclosure.

Q: Can my backflow prevention assembly be installed in an underground box or vault?
Backflow prevention assemblies are designed to be installed above-ground. However, because of our severe winters, the District may approve the installation of a DC within an underground box, on a case-by-case basis. RPs and vacuum breakers may never be installed in a box or vault, as this installation would subject the assembly to potentially becoming submerged in the underground box or vault, rendering it ineffective. (RPs and vacuum breakers are open to the atmosphere, which, if submerged, would create another cross-connection).

Q: What happens if I don't install a required backflow prevention assembly?
Failure to install the required type of assembly could result in termination of water service as described in the District's Water Ordinance 263. The District will work with you to ensure that you are able to install the assembly, by selecting a location that would allow for the smallest size and fewest amount of assemblies, if more than one assembly is required. The District will also work with you to select a due date that is reasonable given your budget and schedule, while still addressing this matter in a timely fashion.

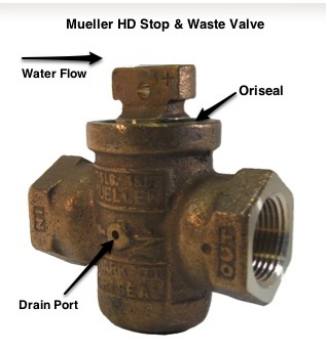
Q: How do I get a copy of the District's test form?
This form is available on the District's website: TCPUD Backflow Prevention Assembly Test Report (Revised September 2018). Alternatively, you can call the District and request that a copy be emailed, faxed or mailed to you, or stop by the office to pick one up.

Q: Can my backflow prevention assembly freeze?
Yes! Backflow prevention assemblies, particularly irrigation assemblies, will freeze if left exposed. They must be kept from freezing by providing insulation and by providing a heat source, if needed. Irrigation assemblies are recommended to be installed with unions on either side, which will allow them to be removed during the winter months. Other assemblies can often be installed within the building in a heated area. District staff will help determine what location is appropriate for the assembly. We will endeavor to allow you to install the assembly within the building to prevent it from freezing.

Q: How do I know when my backflow prevention assembly needs to be tested?
The District maintains a database containing all of the permitted backflow prevention assemblies within our water system. We will notify you when your assembly is due to be tested, and we will provide you with a test form accompanied by a list of certified Backflow Prevention Assembly General Testers. It is the customer's responsibility to schedule the test with the tester. These notifications are typically sent out in March of every year, with a typical test due date of the end of May. Mark your calendars to have your assembly tested every spring!

Q: Is the Tahoe City Public Utility District required to comply with these same regulations?
Yes. The District owns and maintains 42 backflow prevention assemblies throughout our service area. We test all irrigation assemblies prior to first use each season, and test the remaining assemblies by the same due date as our customers.

Q: What is a stop and waste drain/valve? Why is it a potential cross-connection?
A stop and waste drain and a stop and waste valve are the same thing. A stop and waste valve is used to drain the piping above or beyond it, when it is in a closed position. These are typically used on irrigation lines and for domestic water service lines.



These can be a potential cross-connection if the stop and waste valve is installed below the ground surface; the water (including any contaminants, such as chemicals, dirt, bacteria, fertilizer, etc.) can pool up and then enter your internal plumbing and potentially the drinking water system through the valve when it is opened back up. The California Plumbing Code and the District requires that "Combination stop-and-waste valves…shall not be installed underground."

Q: What is a yard hydrant or frost-free hose bibb and why is it a potential cross-connection? Are there "approved" yard hydrants?
A yard hydrant and a frost-free/freeze proof hose bibb are the same thing. A yard hydrant is an outdoor water supply outlet that has a valve and outlet above ground and a drain opening below the frost level. When the valve is opened, water flows. When the valve is closed, the water supply to the hydrant is shut off below the frost level and a drain hole is opened that allows the water in the yard hydrant pipe to drain into a gravel bed. This drains the yard hydrant and its riser so that the hydrant will not freeze.

A yard hydrant can be a potential cross-connection through the drain hole; when a backsiphonage condition occurs, contaminants (such as chemicals, dirt, bacteria, fertilizer, etc.) can potentially enter your internal plumbing and the public drinking water system through the drain hole.

The District requires that yard hydrants have an RP assembly installed upstream of them, or that they are replaced with a sanitary yard hydrant. A sanitary yard hydrant still has a drain hole, but the water drains into a sealed tank. When the hydrant is turned on again, the water in the tank is expelled; there is no cross-contamination with the yard hydrant and the soil.

For approved sanitary yard hydrants, see http://www.freezeflow.com/ , http://www.jrsmith.com/product.aspx?ProductId=334&title=Non-Freeze+Sanitary+Post%2FYard+Hydrants , https://www.plumbingsupply.com/sanitaryyardhydrants.html or contact the District.

For more information:

- Visit our website, at https://www.tcpud.org/utility-services/water/regulations-requirements/cross-connection-controlbackflow
- View the District's Water Ordinance at https://www.tcpud.org/utility-services/water/regulations-requirements
- For any other questions, call the **Technical Services Division** at (530) 580-6281, or contact Barbara Smith at (530) 580-6321 or barbsmith@tcpud.org
- Main Office Phone: (530) 583-3796
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