



REQUIREMENTS:



PROTECTING DRINKING WATER

Your public water system is responsible for keeping the water safe as it travels to homes. There are many safety measures along the way. This guidance contains a detailed explanation of backflow prevention and cross-connection control specifically for public water systems with private cisterns. It is the department's expectation that systems with cisterns will meet all compliance requirements in the Colorado Primary Drinking Water Regulations (Reg. 11) and the Backflow Prevention and Cross-connection Control Policy. Private cisterns connected to public water systems can be a threat if not handled properly.

Public water systems cannot allow cross connections because they can affect the water quality by allowing non-potable into the system lines. This backflow usually happens when there is a loss of water pressure in the distribution water line or a pressure in the private line higher than the distribution line. This is called a backflow event and creates a potential health risk for anyone on the system. You are in charge of controlling these cross-connections through backflow prevention.

Water stored in privately owned cisterns may be non-potable. Cisterns at residential properties can also be the source of backflow issues. Just like fire sprinkler systems can cause backflow threats, so can water cisterns. All private cisterns at residential connections must have approved backflow prevention. If a cistern is permanently connected to the public water supply, it requires tracking and approved backflow prevention. If a cistern is not directly connected to the public water supply with a permanent fixture, it is considered controlled. Cisterns installed per the plumbing code do not need additional tracking.

IMPORTANT RESOURCES

- Colorado's Primary Drinking Water Regulations (Regulation 11)
- DW Policy 007 - Backflow prevention and cross-connection control policy
- WQ Guidance 007 - 11.39 BPCCC Guidance Document
- Colorado Plumbing Code

Systems that do not maintain compliance are subject to enforcement or disciplinary action.

1 MEET THE PLUMBING CODE

Potable water cisterns that meet the 2018 International Plumbing Code (IPC) requirements are controlled. No additional prevention or control measures are needed. Tanks with vertical standpipes with fill valves installed above the water line that have an appropriately sized overflow automatically meet the IPC.

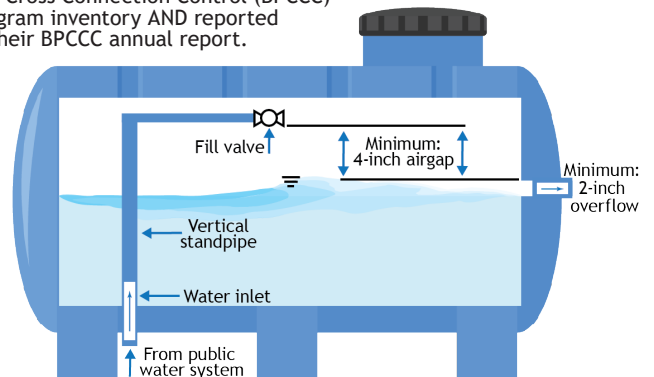
INLET PIPE

- Controlled by a fill valve or other automatic supply valve
- Ends with an air gap at least 4 inches above the overflow as shown in the figure below.

OVERFLOW PIPE

- Minimum 2 inches in diameter. (Actual size is calculated by maximum capacity of water supply line to tank)
- Covered with a corrosion-resistant screen not less than 16x20 mesh per inch and 1/4-inch hardware cloth **OR** ends in a horizontal angle seat check valve.

Systems that do not meet the plumbing code must either install a testable assembly or utilize the method as described below. Utilizing an assembly or a method requires extra tracking. These cross-connections must be shown in the system's Backflow Prevention and Cross Connection Control (BPCCC) program inventory **AND** reported in their BPCCC annual report.



2 BACKFLOW PREVENTION ASSEMBLY

Systems may choose to install a backflow prevention assembly instead of determining if the cistern is in compliance with the plumbing code. If the cistern fills from the bottom, the tank is subject to backpressure. Backflow assemblies meet rigid safety requirements and control the cross connection. All backflow protection assemblies installed by the system must be tested annually by a certified cross-connection control technician.

ASSEMBLY CHOICES

- Double Check Assembly (DC) - allows water to push through two check valves when flowing the right way. Valves close when water goes the wrong way. **OR**
- Reduced Pressure zone assembly (RP) - which uses two independently acting valves to equalize pressure.

3 BACKFLOW PREVENTION METHOD

Systems may find that some cisterns have air gaps less than the standard 4 inches. As long as there are not added chemicals, cisterns with combined methods below meet requirements.

COMBINED OPTION

Adding a dual check at the service connection. Acceptable only when **COMBINED** with the modified air gap (less than 4 inches). A dual check without an air gap is unacceptable. The air gap **MUST** be inspected annually.