

THE CONSOLIDATED MUTUAL WATER COMPANY
CROSS-CONNECTION CONTROL PROGRAM
GENERAL

1.0 Authority & Purpose.

This program is adopted to protect public health and to ensure compliance with Colorado Primary Drinking Water Regulations 11.39, CRS 25-1-114 and 25-1-114.1, and CDPHE Safe Drinking Water Policy DW-007. These rules establish enforceable requirements for cross-connection control and backflow prevention within the Company's service area. These requirements represent both the mandatory regulatory obligations and the Company program standards adopted to reduce risk to the public water supply.

1.1 Responsibility.

The Company maintains legal authority to implement and enforce these rules as part of its commitment to operate a safe public drinking water system. The Company shall enforce a Cross-Connection Control Program designed to identify, evaluate, and control actual or potential cross-connections that may pose a risk to the public water system. For the purposes of administering the cross-connection control program, the Company has the authority to require the installation of backflow protection, require testing and maintenance of a backflow preventer, conduct surveys, control hazards, and suspend water service for noncompliance. If a backflow preventer is required at the Company water service connection or any specific hazard on the property, the Stockholder shall install an approved backflow preventer at the Stockholder's sole expense. The Company reserves the right to determine the appropriate type and level of backflow protection necessary to protect the public water system based on site-specific conditions, degree of hazard, and regulatory requirements. The Company is in no way liable for any damage resulting from the installation, testing, repair, malfunction, or correction of a backflow preventer or cross connection.

1.2 Definitions.

When not otherwise clearly indicated by the context, the following words and phrases have the meanings described below:

Air Gap – the unobstructed vertical distance through the free atmosphere between the lowest opening from any supplying pipe, faucet, tank, plumbing fixture, or other device and the flood level rim of the receiving vessel. An approved air gap will be at least double the diameter of the supply pipe, measured vertically, above the top rim of the vessel; and, in no case, less than one inch. When an air gap is used at the service connection to prevent contamination or pollution of the potable water system, an emergency bypass shall be installed around the air gap system, and an approved reduced pressure principle assembly shall be installed in the bypass system.

Approved – accepted by the COMPANY as adequate backflow protection. All backflow preventers must be lead-free and meet the laboratory & field performance specifications of ASSE or the Foundation for Cross-Connection Control and Hydraulic Research (FCCHR) of the University of Southern California.

Auxiliary Water Source – any water source on or available to the premises other than the COMPANY potable water supply. These auxiliary waters may include water from another purveyor's potable water supply, natural sources (i.e., a well, spring, river, stream, pond, lake, etc.), "used waters", or industrial fluids. These waters may be polluted, contaminated, or may be objectionable and constitute an unacceptable water source over which the COMPANY does not have sanitary control.

Backflow – the undesirable reversal of flow of water, liquids, mixtures, gases, or other substances into the distributing pipes of the COMPANY potable water system from any source by backpressure or backsiphonage.

Backpressure – a form of backflow from pressure within a private plumbing system that exceeds the COMPANY supply pressure and allows for the reversal of the normal direction of flow. Some causes of backpressure include pumps, elevated piping, thermal expansion, and other factors.

Backflow Preventer – any device, method, assembly, or type of plumbing configuration designed to prevent backflow.

Backsiphonage – a form of backflow caused by a negative atmospheric pressure. This can occur in a potable distribution system during periods of heavy consumption (e.g., firefighting, main breaks, main flushing).

Certified Backflow Tester – any person who has passed an ASSE (American Society of Sanitary Engineering) or ABPA (American Backflow Prevention Association) backflow prevention assembly tester exam, and who is listed by ASSE or ABPA as a certified tester. The certified backflow tester must abide by all CMWC policies.

Change of Use – When any of the following conditions occur at a property that currently receives potable water from the COMPANY: the division of ownership of any property served; the construction of additional structures; significant alterations to the existing property; neighborhood densification or redevelopment; the COMPANY discovers that an existing meter and tap size are insufficient to meet the Stockholder’s current demand for their property; water flow exceeds the originally designed parameters of the current meter and tap, or a significant change in use occurs for the property.

Check Valve – a self-closing device designed to permit the flow of fluids in one direction and to close when flow reverses. Check valves are not considered backflow preventers.

COMPANY and CMWC – The Consolidated Mutual Water Company.

Compliance Period – the allowable time between a failed survey and the installation, testing, correction, or repair of a backflow preventer or cross connection that must be completed or ready for inspection by an authorized CMWC representative. Compliance Period may also refer to scheduling an inspection or survey.

Containment – the type or method of backflow protection that is appropriate for the degree of hazard installed at the water service connection to the Stockholder’s private plumbing system. No branches, tees, or threaded connections are permitted upstream of the service connection backflow protection.

Containment by Isolation – the type or method of backflow protection that is appropriate for each cross-connection identified within a Stockholder’s private plumbing system.

Contaminant – any substance that could impair the quality of water to a degree that would create a hazard to public health.

Critical Level – the C-L or C/L marking on a backflow preventer that determines the minimum elevation above the flood level rim of the fixture or downstream uses at which the backflow preventer may be installed. When a backflow preventer does not bear a critical level marking, the bottom of the backflow preventer shall constitute the critical level.

Critical Service – a domestic water service connection that requires a continuous supply of potable water to maintain public health or safety, demands a large volume of water to sustain economic resiliency, or serves a susceptible population (i.e., hospitals, first responders, nursing homes, assisted living, schools, etc.).

Cross-Connection – any physical arrangement whereby the COMPANY water supply is or could become contaminated or polluted through backflow. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, and other temporary or permanent devices through which, or because of which, backflow could occur are cross connections.

Cross-Connection, controlled – any cross connection between a potable water system and a non-potable or potentially non-potable supply that poses a contaminant or pollution hazard, which is adequately protected by a properly installed and approved backflow preventer that will continuously protect the COMPANY’s potable water system for the degree of hazard.

DOMESTIC Backflow Preventer – a lead-free Reduced Pressure Principle Assembly (RP) that conforms to ASSE standard 1013 unless the Cross-Connection Control Department has granted a variance in writing.

Double Check Valve Assembly (DC) – a testable assembly that conforms to ASSE standard 1015, consisting of (2) independently operating check valves. The COMPANY must grant a variance in writing before a DC can be accepted as adequate backflow protection. DC assemblies must be readily accessible for testing and maintenance.

Double Check Detector Assembly (DCDA) – a specially designed assembly that conforms to ASSE standard 1048 consisting of a line-size DC with a protected bypass containing a specific water meter. The meter shall accurately register flow rates up to 2gpm and display a reading for all flow rates. The COMPANY must grant a variance in writing before a DCDA can be accepted as adequate backflow protection. DCDA assemblies must be readily accessible for testing and maintenance.

Dual Water Service Agreement – Properties supplied with water from a non-Company source are not eligible for the COMPANY’s domestic water service unless the Stockholder for such properties enters into a Dual Water Supply Agreement. The Agreement is binding upon the Stockholder and any successors and recorded in the public records of Jefferson County, Colorado. The Agreement stipulates that the Stockholder will not make or permit any cross-connections between any non-COMPANY water sources and the Stockholder’s service connection supplied from the COMPANY’s potable water system.

FIRE LINE Backflow Preventer – a lead-free Reduced Pressure Detector Assembly (RPDA) that conforms to ASSE standard 1047 unless the COMPANY has granted a variance in writing.

Flood Level Rim – the top edge of a receiving vessel from which water can overflow.

Gauge Calibration – any gauge used to test backflow preventers in the CMWC service area, which must be calibrated annually. A copy of each calibration must be submitted through the online portal in a timely manner to maintain an active status within the CMWC service area.

Hazard, health – an actual or potential threat of impairment to the quality of water within a potable water system to a degree that could create or, in the judgment of the COMPANY, may create a hazard to public health and well-being.

Hazard, pollution – an actual or potential threat of impairment to the quality of water within a potable water system to a degree that does not create a hazard to public health but would affect the aesthetic qualities for domestic use.

Hose Connection Backflow Preventer – a testable device that conforms to ASSE standard 1052, consisting of (2) independently acting check valves with an intermediate atmospheric vent. This type of device is utilized for backsiphonage and low backpressure protection but cannot be subjected to more than twelve (12) hours of continuous pressure. The COMPANY must grant a variance in writing before a hose connection backflow preventer can be accepted as adequate backflow protection.

Multipurpose Piping Sprinkler System – a piping system intended to serve both domestic needs in excess of a single fixture and fire protection needs from one common piping system throughout the dwelling unit(s). Design verification is required from the Authority Having Jurisdiction for this type of system to satisfy backflow prevention requirements.

New Construction – any project involving the installation of a new water service connection, the construction of a new structure or facility served by an existing or new service connection, or any development that results in a new or modified plumbing system before initial occupancy or activation of water service.

Non-potable Water – water that is not safe for human consumption or is of questionable potability.

Parallel Protection – two or more approved backflow preventers of the same type installed for containment protection in parallel to provide uninterrupted water service to the private plumbing system. Several hydraulic conditions should be considered when installing backflow preventers in parallel. CMWC requires parallel protection for all critical services and may require parallel protection for other situations deemed critical.

Passive Purge Sprinkler System – a type of sprinkler system that serves a single toilet in addition to the fire sprinklers. Design verification is required by the authority having jurisdiction for this type of system to satisfy backflow prevention requirements.

Pollution – any substance that could impair the quality of water to a degree which would affect the aesthetic water qualities (i.e., taste, odor, color) but would not constitute a hazard to public health.

Potable Water – water sources that have been investigated by the Colorado Department of Health & Environment (CDPHE) and have been approved for human consumption.

Pressure Vacuum Breaker (PVB) – a testable assembly that conforms to ASSE standard 1020, consisting of (1) independently operating check valve and an independently operating air-inlet valve located on the discharge side of the check valve. Temporary variances may be granted by the COMPANY for properly installed existing PVBs; however, a lead-free Reduced Pressure Principle Assembly would be required if the existing PVB requires extensive repair or replacement.

Private Plumbing System – all plumbing located on the downstream side of the water meter, including pipes, conduits, tanks, receptacles, fixtures, equipment, and appurtenances used to move water from the COMPANY potable water system to the Stockholder's property.

Reduced Pressure Principle Assembly (RP) – a testable assembly that conforms to ASSE standard 1013, consisting of (2) independently operating check valves with an automatically operating differential relief valve. The assembly will operate to maintain the pressure in the zone between the (2) check valves at a level less than the pressure on the COMPANY water supply side of the assembly. In the event of leakage from either check valve, the differential relief valve will operate to maintain reduced pressure in the zone between the check valves by discharging to the atmosphere. Before the pressure between the check valves is within 2psi of the inlet pressure, the relief valve will open to the atmosphere. RP assemblies must be readily accessible for testing and maintenance and installed in a location where no part of the assembly will be submerged.

Reduced Pressure Detector Assembly (RPDA) – a specially designed assembly that conforms to ASSE standard 1047, consisting of a line-size approved RP with a protected bypass containing a specific water meter. The meter shall accurately register flow rates up to 2gpm and display a reading for all flow rates. RPDA assemblies must be readily accessible for testing and maintenance and installed in a location where no part of the assembly will be submerged.

Retrofit – The installation, replacement, relocation, or upgrade of a backflow prevention assembly at an existing service connection where water service has already been established, and the structure has not been significantly modified.

Single-Family-Residential (SFR) – A property consisting of one living unit supplied by an individual water service connection, or two separate living units supplied by a common service line, where the primary use is domestic in nature and not commercial, industrial, institutional, or multi-family. A property classified as SFR may still be subject to backflow prevention requirements and enforcement when actual or potential cross-connection hazards are present.

Stand-Alone Sprinkler System – a sprinkler system where the aboveground piping serves only fire sprinklers. Approved backflow prevention is required.

Suspension of Service – termination of domestic and/or fire suppression water service due to noncompliance with CDPHE regulations or COMPANY rules.

Vacuum Breaker – any backflow preventer that introduces atmospheric pressure into the plumbing system or plumbing fixture to stop water from being siphoned backward.

Water Service Connection – the terminal end of the COMPANY service connection from the COMPANY potable water system (i.e., at the Stockholder's stop box shut-off valve or meter). If a meter is installed at the end of the service connection, the service connection refers to the downstream end of the meter. Any unprotected takeoffs from the service line ahead of the meter or backflow preventer located at the point of delivery to the Stockholder's private plumbing system are prohibited. Service connections will also include water service connections from a fire hydrant and all other temporary or emergency water service connections from the COMPANY's potable water system.

Water System – The COMPANY water system consists of the source and distribution system to the point where the Stockholder's private plumbing system begins. The source includes all components of the facilities utilized in the production, treatment, storage, and delivery of water to the distribution system. The distribution system includes the network of pipelines used to deliver water from the source to the Stockholder's system. The Stockholder's system begins at the water service connection.

REQUIREMENTS

2.0 Surveys.

- A. The COMPANY must conduct official onsite backflow surveys for all applicable water service connections to determine whether the COMPANY's potable water system is at risk or has the potential to be at risk of any contaminants or pollutants entering the COMPANY's potable water system from backpressure or backsiphonage. As a CMWC program standard to reduce public health risk, water service connections without the highest level of backflow protection at the service line must be reinspected every 3-5 years. However, the COMPANY reserves the right to reinspect any water service at its discretion.
- B. Should the COMPANY determine that a water service connection poses an actual or potential risk to the COMPANY's water system, the Stockholder shall complete all required corrections or backflow preventer installations at their sole expense within the given compliance period.
- C. The COMPANY will be notified through the CMWC Tap Sales Department of all applicable properties that apply for a change of use. Properties without the highest form of backflow protection at the service line will require a resurvey.
- D. The COMPANY must complete surveys at the time of new service connections or change of use modifications.

2.1 Installations.

- A. New Construction & Change of Use
 1. Approved backflow prevention assemblies are required to be installed on the following water service lines:
 - Non-SFR domestic service lines
 - Fire service lines
 - Irrigation service lines
 - SFR property with a multipurpose or passive purge fire suppression system that is not properly designed to preserve water quality to the potable water standards.
 2. RP assemblies are required on domestic and irrigation service lines. The RP assemblies must be lead-free, USC-approved, and conform to ASSE 1013 standards.
 3. RPDA assemblies are required on fire service lines. The RPDA assemblies must be lead-free, USC-approved, and conform to ASSE 1047 standards.
 4. Backflow prevention assemblies must be installed before all branches or tees and within 5ft of the entry point or outside at least 5ft downstream from the meter vault in a heated enclosure that meets ASSE 1060 Class I standards.
 5. Containment protection for multifamily service connections cannot be installed in residential units and must be accessible from the exterior of the structure(s).
 6. Drainage options shall be designed in accordance with the manufacturer's assembly model discharge rates.
- B. Existing Structures – Retrofit
 1. Installation of an approved backflow preventer will be required wherever any of the following conditions exist, including but not limited to those listed below:
 - It is any property where potential or existing hazards are present.
 - It is any property with a dedicated fire suppression system or a multipurpose/passive purge system that is not properly designed to preserve water quality to the potable water standards.
 - It is any property where auxiliary water sources are identified.
 - It is any property where hazardous materials or processes may be present.
 - It is any property where complex plumbing configurations are present.
 - In the case of construction or other projects that utilize the COMPANY potable water system or appurtenances to the COMPANY potable water system.
 2. The COMPANY will determine whether containment or containment by isolation backflow protection is required based on the results of the on-site backflow survey.
- C. Single-Family-Residential (SFR)
 1. Containment protection at SFR properties may be required if the COMPANY becomes aware of high hazards, including but not limited to:
 - Auxiliary water sources
 - Dedicated or stand-alone fire suppression systems
 - Dedicated irrigation systems
 - Pools/hot tubs
 - On-site storage tanks

- D. Parallel backflow prevention assembly installations are required for all critical services. CMWC strongly recommends consulting a licensed plumber to verify any hydraulic requirements when designing the parallel installation.
- E. Complete lists of approved backflow preventer models are available upon request through the COMPANY when provided with the connection size and orientation needed. Certified backflow tester reference lists are also available upon request.
- F. Replacement backflow preventers must be lead-free USC-approved RP assemblies unless otherwise approved by the COMPANY.
- G. An authorized CMWC representative must be present to witness the initial testing of all new or replacement backflow preventers for containment or containment-by-isolation protection**
- H. Backflow preventers are to be installed in readily accessible and safe locations to facilitate inspection, testing, and maintenance. Adequate drainage must be provided to accommodate water discharge at minimum and maximum rates. Backflow preventers shall not be installed in areas with hazardous gases, extreme temperatures, or underground.
- I. Approved backflow preventers shall be installed by a licensed plumber in accordance with the manufacturer's specifications and only in the USC-approved orientation. In no case shall the assembly be installed less than 12 inches above the surrounding ground or floor. Applicable backflow preventers must also maintain a proper air gap of at least (2) times the connection size, but no less than 1-inch, between the bottom of the assembly and any flood level rims.
- J. The installation of a backflow preventer may create a closed plumbing system, and any backpressure created within a private plumbing system may cause excess stress on the piping or plumbing fixtures. CMWC highly advises consulting with a licensed plumbing professional to avoid potential damage to the private plumbing system.
- K. If a property is required to install a backflow preventer and an unauthorized connection has also been discovered in the water meter pit, the unauthorized connection must be removed in addition to the backflow preventer installation. The removed connection can be reinstalled in the private plumbing system at least 5ft downstream from the water meter pit. No soldering is permitted when making corrections in the meter pit; the work must undergo a final inspection and receive approval from an authorized CMWC representative.

2.2 Backflow Preventers.

- A. Required backflow preventers will be of a model and size approved by the COMPANY (full lists available upon request).
- B. Backflow preventers currently installed that are not approved shall be replaced with a lead-free USC-approved backflow prevention assembly within 60 days of notification unless otherwise approved by the COMPANY.
- C. The COMPANY has qualified the following testing laboratory to test and certify backflow prevention assemblies:

Foundation for Cross-Connection Control and Hydraulic Research
University of Southern California University Park
Los Angeles, CA 90089-0231

2.3 Testing, Reporting, and Record-Keeping.

- A. It is the responsibility of the Stockholder to have all backflow preventers tested by a certified backflow tester upon installation, after any repairs or maintenance, and at least once per year thereafter (tester reference list available upon request). The Stockholder shall ensure that the tester/testing company properly submits their results no later than the annual due date. The COMPANY may require more frequent testing.
- B. Certified backflow testers and testing companies must submit all test results through the CMWC online portal (Sprybackflow.cmwc.net) and to the Stockholder/designee. Testing companies can set up an online account by contacting the Cross-Connection Control Department. New or updated credential documents must be submitted promptly through the online portal. Testing results can only be accepted once properly submitted by the backflow tester or testing company through the CMWC online portal**
- C. CMWC reserves the right to perform random testing on assemblies to compare the submitted results.
- D. Annual test due dates will not be altered based on delinquent testing. Stockholders can request due date changes in writing to the Company, provided the backflow preventer(s) passed testing the previous calendar year.
- E. Required irrigation backflow prevention assemblies must be tested at the beginning of spring each year to ensure the internal components will operate correctly throughout the season.

- F. Test results must be accurately submitted with the correct tester and test gauge selections. Inaccurate submissions must be reported to the COMPANY immediately**
- G. Verbal or written notification must be given to the COMPANY within 24 hours for all failed containment or containment by isolation tests via phone (303-274-7433) or email (Backflow@cmwc.net). The failed reports must be properly submitted within 3 business days of the failed test**
- H. Test results must be properly submitted within 5 business days following the completion of a passing test or maintenance of a backflow preventer. Records of all tests or maintenance activities, including materials and parts changed, shall be kept by the certified backflow tester, the Stockholder, and CMWC for a period of at least three years**
- I. No testing company shall delay test result submissions for any reason**
- J. The COMPANY reserves the right to refuse tests from anyone who has not displayed honest and appropriate testing or reporting.
- K. All required repairs or replacements must be completed within 10 business days unless otherwise approved by the Cross-Connection Control Department and at the expense of the Stockholder to avoid water service interruptions. Repairs must only be made with manufacturer and model-specific repair parts. The COMPANY reserves the right to expedite repairs based on the degree of hazard the backflow preventer protects against.
- L. All required backflow testing must comply with the following:
 1. A value must be provided for the static pressure drop across check valve #2 in the direction of flow. Testing will not be accepted if check valve #2 is only marked as 'tight'.
 2. A value must be provided for the line pressure found at the inlet of the backflow prevention assembly.
 3. Testers must verify that the inlet shut-off valve fully closes.
 4. The certified backflow tester shall attach a tag to the backflow preventer following each test or maintenance activity with the following information:
 - The name and contact information of the business with which the certified backflow tester is affiliated
 - The date the service was provided
 - A description of the service provided
 - The ASSE or ABPA certification number of the certified backflow tester

2.4 Backflow Testing Accountability Program.

- A. All backflow testing companies will be required to meet with the COMPANY and submit a signed Backflow Testing Agreement to maintain an active status. Testing companies that do not meet with the COMPANY and/or do not submit a signed agreement will be placed on a 'Hold', which would prohibit testing or result submissions for assemblies in the CMWC service area. The 'Hold' would remain in place until the meeting and agreement requirements are properly completed.
- B. Policies that could lead to a violation have been noted with an asterisk (**). It is strongly advised that special attention be given to those policies.
- C. Violations of the CMWC Cross-Connection Control Program will be handled as follows:
 - 1st Violation – A certified letter will be sent to the testing company specifying which part of the CMWC Cross-Connection Control Program was violated, and a 2nd violation will result in a monetary fine. A (1) year review begins. The Stockholder on the account(s) will also be notified of the violation.
 - 2nd Violation – A certified letter will be sent to the testing company specifying which part of the CMWC Cross-Connection Control Program was violated. This letter would also advise the testing company that they have been placed on a 'Hold' until a \$1,000 fine has been paid.
 - 3rd Violation – A certified letter will be sent to the testing company specifying which part of the CMWC Cross-Connection Control Program was violated. This letter would also advise the testing company that they have been placed on a 'Hold' until a \$2,000 fine has been paid AND the testing company attends a final meeting with the COMPANY. The review process will be extended up to 6 months.
 - 4th Violation – A certified letter will be sent to the testing company specifying which part of the CMWC Cross-Connection Control Program was violated. This letter would also advise the testing company that they are officially prohibited from testing any backflow assemblies within the CMWC service area.

****Reinstatement requests will be handled on a case-by-case basis after a request is submitted to the Company for review****

COMPLIANCE AND ENFORCEMENT

3.0 Compliance.

The standard compliance periods are as follows:

<u>Survey:</u>	By or before the 'Due Date' stated on the CMWC survey request notice
<u>Installation:</u>	Within 60 days of a failed survey, unless otherwise approved by the COMPANY.
<u>Testing:</u>	Annually, upon installation, and after any maintenance or repairs
<u>Repair:</u>	Within 10 business days of a failed backflow test or assembly malfunction, unless otherwise approved by the COMPANY.

Noncompliance with any backflow requirements will result in the termination of water service

3.1 Enforcement.

- A. Accounts that are delinquent on any backflow compliance requirements will have the domestic and/or fire water service discontinued until the contractor contacts the COMPANY directly to verify when the account is expected to be in compliance via phone (303-274-7433) or email (Backflow@cmwc.net) between 7:30 AM - 3:30 PM Monday-Friday before water service will be restored. The Authority Having Jurisdiction will be notified of all suspensions of fire suppression services.
- B. Water services that are discontinued for 30 days or more will require the testing company to schedule an appointment for service restoration, and an authorized CMWC representative must witness testing. Appointments must be scheduled with at least 48 hours' notice.
- C. A penalty fee of \$100 will be assessed to the Stockholder's account for any removed or damaged locking devices that the COMPANY uses to terminate service for noncompliance. Continuous violation of the service termination may result in civil and/or criminal charges.
- D. The COMPANY reserves the right to prohibit any certified backflow tester or testing company that does not comply with the CMWC Cross-Connection Control Program or Backflow Testing Agreement.
- E. The COMPANY will not approve variances that conflict with CDPHE Regulation 11.39 or Safe Drinking Water Policy DW-007.

All variance requests must receive approval from the Company in writing