Carmichael Water District
Cross-Connection Control Plan

(Updated 8/18/2025)

1. Authority and Purpose

The purpose of this document is to describe the Cross-Connection Control Plan (**CCCP**) implemented by Carmichael Water District (**CWD**) to protect the public water supply against actual or potential contamination through Cross-Connections and Backflow. In compliance with the Cross-Connection Control Policy Handbook (CCCPH) established by the California State Water Resources Control Board (SWRCB) and the Environmental Protection Agency (EPA), the Safe Drinking Water Act, and Uniform Plumbing Code (UPC) – relating to Cross-Connection; it is the intent of CWD to adopt standards that encompass the surveying of existing Premises for potential or actual Cross-Connection hazards to determine the requirement for hazard protection and level of protection required for a Service Connection. This would include review and approval of proposed plans for new construction installation, and maintenance or repair of Backflow Prevention Assemblies.

The CWD was formed and is operating under the Irrigation District Law (Water Code sections 20500 et seq.). Pursuant to the Irrigation District Law, CWD has the authority and obligation to implement and enforce the CCCPH through this CCCP and its Cross-Connection Control Regulation.

2. Definitions

The following definitions describe those terms and phrases that are relevant to the range of elements of the CCCP.

2.01 Air Gap Separation (AG): A physical vertical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressurized receiving vessel. An approved AG is defined as the vertical height of the open discharge end of a pipe above the overflow rim of a non-pressurized receiving vessel, being two times the diameter of the end of the discharge pipe, no less than one inch.

2.02 Approved Backflow Prevention Assembly: Any assembly approved through laboratory and field evaluation tests performed by the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California, or an entity with equivalent testing requirements approved by the Department of Public Health (DPH).

2.03 Approved Water Supply: A water supply whose potability is regulated by a State or local Health Agency.

2.04 Auxiliary Water Supply: Any supply on or available to the Premises other than that supplied by CWD. These Auxiliary Water Supplies may include, but are not limited to, water from another utility's potable water system or from any source such as a well, spring, river, pond, lake, reservoir stream or any other body of water.

2.05 AWWA Standard: An official standard developed and approved by the American Water Works Association (AWWA)

2.06 Backflow: A flow condition caused by a differential in pressure that causes the flow of water or other liquid, gases, mixtures or substances to flow in a direction reverse of intended, allowing non-potable water to flow into a potable water source and thus into the distributing pipes of CWD. Back pressure and back siphonage are causes of Backflow.

2.07 Backflow Prevention Assembly (BPA): A mechanical assembly designed and constructed to prevent Backflow, such that while in-line it can be maintained and its ability to prevent Backflow, as designed, can be field tested, inspected and evaluated.

2.08 Backflow Prevention Assembly Tester: A person who is currently certified by an authority recognized by DPH and is approved and recognized by CWD to test, repair, and maintain BPAs.

2.09 Cross-Connection: Any actual or potential unprotected connection or structural arrangement between a public water system, including a piping system connected to the Public Water System and located on the Premises of a water user or available to the water user, and any source or distribution system containing liquid, gas, or other substances not from an Approved Water Supply.

2.10 Customer: The person/entity accepting financial responsibility for water service from CWD. This would be inclusive of permanent Service Connections as well as temporary connections via portable meter/BPAs that are either provided by or approved for use by CWD.

2.11 Double Check Valve (DC): An assembly of at least two independently acting check valves, including tightly closing shut-off valves on each side of the check valve assembly, and test cocks available for testing the water tightness of each valve.

2.12 Health Agency: The California Department of Public Health or the local health officer with respect to small water systems.

2.13 Premises: The property under the ownership or control of the water user and served, or capable of being served, with water via a Service Connection with the Public Water System.

2.14 Public water system (PWS): A system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more Service Connections or regularly serves at least 25 individuals daily at least 60 days out of the year, as further defined in the California Health and Safety Code section 116275(h).

2.15 Reduced Pressure Principle Backflow Prevention Device (RP): A backflow preventer incorporating not less then two check valves, an automatically operated relief valve located between the two check valves, a tightly closing shut-off valve on each side

of the check valve assembly, and equipped with necessary test cocks for testing.

2.16 Service Connection: The terminal end of a connection from the PWS where CWD loses jurisdiction and sanitary control over the water at its point of delivery to the Customer's water system. If a meter is installed at the end of the Service Connection, then the Service Connection shall mean the down-stream end of the meter.

2.17 Thermal Expansion: Change in dimension of a material resulting from a change in temperature.

2.18 Water Supplier or Purveyor: Carmichael Water District

3. Responsibility

Under the CCCPH, the Water Supplier shall have the primary responsibility to prevent water from unapproved sources or any other substances, from entering the PWS. CWD will ensure adequate Backflow prevention protection is maintained at the Customer's Service Connection to the District's drinking water distribution system.

The Customer will have the primary responsibility of preventing contaminants and pollutants from their Premises from entering the District's water system as required by this plan, and the California Department of Public Health, in compliance with the CCCPH.

CWD will not be responsible for any loss or damage directly or indirectly resulting from or caused by any improper or negligent: installation, operation, use, repair or maintenance of (or interfering with the function or operation of) any approved BPA required by this CCCP, by any Customer or any other person.

The Customer must be aware that the installation of a BPA may result in a potential closed plumbing system within the Premises. As such, provisions may have to be made by the Customer to provide for Thermal Expansion within their system, i.e., the installation of Thermal Expansion devices and/or pressure relief valves.

BPAs shall be installed and maintained by the Customer, at the Customer's expense and in compliance with the **standards** **(link to construction standards)** and specifications adopted by CWD (and Section 3.3.2. of the CCCPH). The Customer is responsible for notifying CWD prior to any installation, repair, relocation or replacement to ensure installation of or changes to a BPA meet the requirements of this policy. The Customer will be responsible for ensuring adequate flow rate and line pressure, after the Service Connection at the water meter, for proper function of any fire systems installed on or existing on their Premises. CWD does not install, test, flush or maintain fire protection systems. Any upgrades (including booster pumps) due to decreases in line pressure attributed to the upgrading of existing BPAs or the installation of approved BPAs to meet the requirements of this policy will be at the Customer's expense.

The Customer shall bear all cost for the installation of any approved AGs or approved BPA required in accordance with this CCCP. Any AG and approved BPAs shall be kept in good working order, accessible for testing (being clear of vegetation overgrowth and debris) and in

safe condition. Upon notification by CWD, the Customer shall repair or replace existing assemblies determined to be unapproved, defective or not providing the level of protection specified by the District. The Customer shall ensure the necessary plumbing permits are obtained.

4. Level of Protection and Site Surveys

The type of protection that will be provided to prevent Backflow into the District's water system shall be equal to the degree of hazard that exists on the Customer's Premises. The degree of hazard and thus the Backflow prevention method shall be determined by CWD. At the discretion of CWD, a site survey may be performed. A request will be made in writing for a date and time to be agreed upon for a site survey. Should the request for a site survey be denied or inadequate access prevent the inspection of the plumbing system, letters shall be sent directing the installation of the appropriate BPA based on the knowledge of the specific property.

All factors found and recorded during a site survey shall be considered in the determination of Backflow prevention requirements.

All existing BPAs will be surveyed by certified District staff within 24 months of the adoption of the CCCP. Surveys will be conducted during the annual test cycle.

A comprehensive inventory of all Service Connections and associated risk categories will be developed.

Risk Level	Examples
High	Medical facilities, chemical plants, and large irrigation systems
Moderate	Commercial buildings, apartment complexes
Low	Residential homes

The survey schedule will be based on risk level:

Risk Category	Survey Frequency
High Risk	Every 2–3 years
Moderate Risk	Every 5 years
Low Risk	Every 10 years

GIS and Customer data are used to develop a rotating survey schedule by pressure zone.

Year	Zone	Risk Focus
2025-26	Zone 1, 2, & 3	High
2027	Zone 1 & 3	Moderate
2028	Zone 2	Moderate
2029	Zone 1 & 3	Low
2030	Zone 2	Low

Each Customer requiring a BPA shall be notified by letter. The Customer shall be notified of their responsibility to provide Backflow protection and the type of assembly required. As a minimum, a Customer requiring service protection shall install a RP or an approved AG. At the discretion of CWD, an alternative to the district standard BPA requirement may be allowable, dependent upon the degree of hazard determined during a site survey and in accordance with the CCCPH.

Site surveys may be triggered when a user's Premises changes account holder (excluding single family residences), a new user's Premises is connected, evidence exists of changes in activities or materials on a user's Premises, or Backflow from a user's Premises occurs, or periodically, as identified in CCCPH section 3.2.1(e).

Should it be determined that the Customer does not require a BPA, they shall be notified by letter. CWD will reserve the right to re-inspect the property at any time to ensure that the plumbing or water use has not changed.

5. New Construction

On new installation, the District will provide on-site evaluation and/or inspection of plans during plan check and review in order to determine the level of protection that will be required. As a minimum, all new construction will install an approved RP. At the discretion of CWD, an alternative to the district standard BPA requirement may be allowable, dependent upon the degree of hazard determined during a site survey and in accordance with the CCCPH. The Customer or developer shall remain responsible for design, construction, testing and approval of any site-specific fire suppression system or approach as required by the local fire jurisdiction.

6. Installation

A BPA shall be installed on each Service Connection to a Customer's water system at or near the property line or on private property immediately following the meter; but in all cases, before the first branch line leading off the Service Connection. Each AG used shall meet the requirements in Table 1, Minimum Air Gaps for Generally used Plumbing Fixtures, page 4 of the American Society of Mechanical Engineers (ASME) A112.1.2- 2012(R2017) in accordance with CCCPH section 3.3.1. All installations of BPAs shall be done in accordance with CWD Construction Improvement Standards amended January 2010 (Resolution 01212003-2) and CCCPH section 3.3.2. All BPA installations shall be inspected by a qualified employee from CWD. No person shall modify, bypass or remove a BPA without the approval of CWD. If a Customer fails to install a BPA to meet the requirements of this plan, CWD may deny or discontinue water service or the installation, inspection, field testing, and/or maintenance of a BPA. CWD may also impose fees for these corrective measures consistent with CWD's Fee Schedule, including any amendments thereto.

7. Existing Backflow Prevention Assemblies

Existing BPAs shall be allowed by the District to continue in service unless the degree of hazard is such as to supersede the effectiveness of the present assembly, the assembly continues to fail annual testing, or the device is found to be unapproved. As a minimum, all replacement assemblies will be an approved RP. At the discretion of CWD, an alternative to the District

standard BPA requirement may be allowable, dependent upon the degree of hazard determined during a site survey and in accordance with the CCCPH.

8. Fire Sprinkler Systems

8.01 Commercial Fire Protection: Commercial fire sprinkler systems currently protected with a minimum of a single DC will be required to have a BPA, commensurate with the degree of hazard, installed to meet the requirements of this plan within 10 years of the effective date of the CCCPH (July 1, 2025). Any new commercial fire sprinkler system or unprotected system shall install a BPA that ensures a level of protection commensurate with the degree of hazard. In the case of fire protection or sprinkler systems, the degree of hazard is based upon the class rating a fire protection or sprinkler system is categorized under.

8.02 Residential Fire Protection: Residential fire sprinkler systems currently protected with a minimum of a DC will be allowed to continue in service until such system is modified, updated or the valve is found to be defective. Any new residential fire sprinkler system or unprotected system shall as a minimum be protected by an RP. At the discretion of CWD, an alternative to the standard BPA requirement may be allowable, dependent upon the degree of hazard determined during a site survey and in accordance with the CCCPH. The Customer or developer shall remain responsible for design, construction, testing and approval of any site-specific fire suppression system or approach as required by the local fire jurisdiction.

9. Testing

CWD shall set test compliance dates. All approved BPAs must be tested immediately after installation and must pass field tests before delivering continuous service to a Customer. These assemblies shall also be tested after repairs, depressurization for winterizing, or permanent relocation, and **annually** thereafter to ensure proper operation. In instances where a high hazard exists, testing may be required at more frequent intervals. AGs must be visually inspected at least annually. Test procedures shall be those currently recommended by the University of Southern California Foundation for Cross-Connection Control or the AWWA.

Annual testing shall be performed by CWD staff who are AWWA certified Backflow Prevention Assembly Testers and/or Cross-Connection Control Specialists, or other certified testers, only as approved by the District. The testing will be done at the Customer's expense.

Testing shall be conducted during the District's regular business hours. Exceptions will be considered on a case-by-case basis.

Any BPA that fails the annual test will be required to be repaired or replaced at the Customer's expense within 30 days. CWD does not repair or replace BPAs. The Customer will be responsible for selecting a contractor for repair or replacement. Once repaired or replaced the District will provide one re-test at no additional charge to the Customer. If the device fails the retest, the Customer will be charged for any additional testing.

High-hazard situations will not be allowed to continue unprotected if the BPA fails the test and cannot be repaired immediately. Service will be terminated until repairs are made and a re-test

has been performed by CWD. The Customer will be responsible for scheduling a retest with the District.

Backflow Prevention Assembly Testers must notify the District as soon as possible, within 24 hours, if a Backflow incident or an unprotected Cross-Connection is observed at the BPA or prior to the Customer's Premises during field testing. The District will immediately conduct an investigation and discontinue service to the user's Premises if a Backflow incident is confirmed, and water service must not be restored to that user's Premises until the District receives a confirmation of a passing BPA field test from a Backflow Prevention Assembly Tester.

10. Compliance and Termination

When it is determined that a Customer is required to install an approved BPA, the owner shall be given 60 calendar days to comply.

When it is determined that a BPA has failed the annual test, the Customer will be given 30 days to repair or replace the assembly. The Customer is responsible for all necessary repairs, including replacement of the assembly, which will return the assembly to proper operating condition. The District may require the immediate repair or replacement of an assembly dependent upon the degree of hazard. No extensions will be given.

If the compliance date has passed, the District will deliver a 48-hour notice of termination of service to the property. The service will remain terminated until corrective action has been taken. Once a proper BPA has been installed, the Customer must contact CWD to schedule a re-test.

In addition to any other remedy provided by the CPPPH or by law, if a Customer fails to comply with any provision of this Section within the timeframe specified by the District at the time of notification, then the District may discontinue water service, in accordance with CWD Regulation 4060.60, to Customer's Premises until the Customer fully complies with this Section to the satisfaction of the District.

11. Maintenance of Records

The District will use Tokay software for the administration of the CCCP. Standardized forms for surveys, testing, and Customer notification are located within this software. The District's GIS program will be utilized for location and assembly information.

CWD will maintain the records of the two most recent hazard assessments and the most current Cross-Connection tests. For each BPA, records for the associated hazard or application, location, owner, type, manufacturer and model, size, installation date, and serial number will be kept. For each AG installation, records of the associated hazard or application and the location, owner, and as-built plans of the AG will be kept. These records will be kept both electronically and in hard copy form. Assembly records shall be kept for the life of the assembly.

The District shall keep and maintain written records of locations of Auxiliary Water Supplies and BPAs, BPA installation and repair records, AG and swivel-ell locations, survey, testing, and inspection reports. This includes the name, test date, repair date, certification number of the Backflow Prevention Assembly Tester for each BPA field test and AG and swivel-ell. Test results shall be kept for the mandatory 3 years as per CCCPH section 3.5.1.

The District will also maintain written records of all Backflow incidents, including descriptions and follow-up actions related thereto, and public outreach or education materials issued as required in CCCPH section 3.1.3.(a)(9) for the previous three calendar years.

12. Backflow Incident Response and Notification

To maintain compliance with CCCPH, the District will maintain on staff, no less than one employee holding an active AWWA Cross Connection Control Specialist certification. Site surveys and hazard assessments shall be performed by or reviewed by a certified Cross-Connection Control Program Coordinator. When a Backflow incident has been observed and reported to the District, a representative of the District shall be available to respond and investigate, record and document the incident so a determination of corrective action can be made and proper state reporting measures can be carried out. This investigation will include documenting complaints or reports of water quality changes, water quality sampling, pressure recording and ensuring any threat to the public water supply has been eliminated either by removal of the cross connection or discontinuance of service to the Premises until the appropriate degree of Backflow prevention has been installed on the service.

Current certified Cross-Connection Control coordinators on staff:

Bryce Watkins
AWWA Cross-Connection Control Specialist cert. # 03227
Phone: (916) 805-3408

Marc Matthews
AWWA Cross-Connection Control Specialist cert. #03010
Phone: (916) 206-5567

13. Public Outreach and Coordination

The District will provide outreach to consumers to raise awareness about cross connection hazards, the need for Backflow prevention, and how to prevent contamination of the public drinking water supply. Information will be available through the website, direct mailings or other literature.

In accordance with CCCPH, Section 3.1.3 (a)(10) and Section 3.1.4 (b)(13), the District must coordinate with local entities involved in matters related to Cross-Connection control or public health protection to ensure hazard assessments can be performed. Local entities may include, but are not limited to, plumbing, permitting, health officials, law enforcement, fire departments, maintenance, and public and private entities.

For the District, the local entities which may be involved in Cross-Connection control include, but are not limited to:

Sacramento Metropolitan Fire District
10545 Armstrong Ave, #200, Mather, CA 95655
916-859-4300
Community Risk Reduction Division
Questions regarding plan review
916-859-4330
planintake@metrofire.ca.gov

Questions regarding construction, code enforcement, inspections, or evacuation planning
916-859-4330
crrdstaff@metrofire.ca.gov
Coordination includes: Fire service laterals

Sacramento County Construction Management and Inspection
9700 Goethe Rd, Suite D
Sacramento, CA 95827
916-875-2700

Juan Chavez, Chief Construction Mgmt. & Inspection Div.
916-875-2727, Email: chavezj@saccounty.gov
Coordination includes: cross connections, internal plumbing

Sacramento Suburban Water District
3701 Marconi Avenue, Sacramento, CA 95821
916.972.7171
Benjamin Henderson
Environmental Compliance Supervisor
Coordination includes: Neighboring agency coordination

Fair Oaks Water District
10326 Fair Oaks Blvd.
Fair Oaks, CA 95628
(916) 967-5723
Coordination includes: Neighboring agency coordination

Citrus Heights Water District
6230 Sylvan Rd, Citrus Heights, CA 95610
(916) 725-6873
waterquality@chwd.org
Coordination includes: Neighboring agency coordination

The District intends to coordinate with other local PWS through events which may include, but not limited to, semi-annual gatherings with other PWS' Cross Connection Control Coordinators, public outreach events, and vendor workshops.

Resources & Reference Links: (to be added as links on website)

SWRCB: Cross-Connection Control Policy Handbook
Safe Drinking Water Act (SDWA):
Uniform Plumbing Code (UPC):
CWD Construction Improvement Standards: