Prepared for:
City of Merced
678 West 18th Street
Merced, CA 95340

CROSS CONNECTION CONTROL PLAN

For

The City of Merced

City Approved: June 25, 2025

Prepared by:
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Attachment 3

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1. INTRODUCTION

The Cross Connection Control Plan for the City of Merced (City) is designed to protect the public water system from contamination and pollution caused by backflow incidents. This plan is meticulously aligned with the guidelines and requirements outlined in the State Water Resources Control Board (SWRCB) "Cross Connection Control Policy Handbook," which became effective on July 1, 2024. Our objective is to ensure that the potable water supply remains safe and secure by preventing any possible cross connections that could lead to backflow into the water distribution system.

The purpose of this document is to outline the City's Cross Connection Control policies for all non-residential, institutional, industrial, residential and miscellaneous water customers, and are summarized as follows:

- Protect the public water system from contaminants and/or pollutants that could backflow through the customer service connection.
- Promote the elimination of actual and/or potential cross connections between the public potable water system and non-potable water systems, plumbing fixtures, sources and/or systems containing substances of unknown or questionable quality.
- Provide guidance for the maintenance of a continuing Cross Connection Control program.

1.1. Applicability

In accordance with CA-EPA-CCCPH Standards and Principles for California's Public Water Systems as defined in California Health and Safety Code (CHSC section 116275 (h)). Compliance with the CA-EPA-CCCPH is mandatory for the City.

Prior to the CA-EPA-CCCPH, the City conformed to the standards established by the American Water Works Association (AWWA), as set forth in its publications entitled: AWWA C506-78 Standards for Reduced Pressure Principle, and Double Check backflow prevention devices, AWWA M-14 Backflow Prevention and Cross Connection Control Recommended Practices, and Title 17, California Code of Regulations.

1.2. California Safe Drinking Water Act

In 2014, the State Water Resources Control Board assumed responsibility for drinking water, and financial programs throughout the State, prior to that it was CA-DHS. On October 6, 2017, Assembly Bill 1671 (AB 1671) was approved and filed with the Secretary of State (see Appendix A). AB 1671 amended California's SDWA through the establishment of CHSC sections 116407 and 116555.5. AB 1671 also amended section 116810 of the CHSC, which is briefly discussed in Appendix C.

On October 2nd, 2019, Assembly Bill 1180 (AB 1180) was approved and filed with the Secretary of State. AB 1180 Amended Section 116407 of the CHSC and added section 13521.1 to the water code. AB 1180 requires that the CA-EPA-CCCPH includes provisions of the swivel or change over device (swivel-ell).

1.3. The California EPA's Cross Connection Control Policy Handbook Adoption

The California Environmental Protection Agency completed the development of the Cross Connection Control Policy Handbook for standards and principles for California's Public Water Systems. In this document for the City, it will be referred to as the CA-EPA-CCCPH. The State Water Resources Control Board adopted the CA-EPA-CCCPH on December 19th, 2023, and went into effect on July 1st, 2024. Upon the effective date of the CA-EPA-CCCPH.

A PWS must implement a cross connection control program that complies with the standards adopted by the State Water Board. The development of the CA-EPA-CCCPH included consultation with stakeholders, including state and local agencies, on an array of subjects related to cross connection control, consistent with the statutory mandate, as well as consideration of input from other stakeholders and the general public in a February 20, 2020, workshop.

1.4. Legal Authority

The City Municipal Codes established enforcement throughout the distribution system. The City's Ordinance #15.32.080 established these rules for water service connections.

2. BACKFLOW PROTECTION AND CROSS CONNECTION CONTROL

A cross connection is an interconnection between a potable water supply and a non-potable source via any actual or potential connection or structural arrangement between a PWS and any source or distribution system containing liquid, gas, or other substances not from an approved water supply. Bypass arrangements, jumper connections, removable sections, improperly installed swivel, or change-over devices and other temporary or permanent devices through which, or because of which backflow can occur are cross connections. The CA-EPA-CCCPH includes acceptable installation criteria for swivel-ell and other types of backflow prevention assemblies to prevent backflow.

Backflow is the undesired or unintended reversal of flow of water and/or other liquids, gases, or other substances into PWS's distribution system or approved water supply. The presence of a cross connection represents a location in a distribution system through which backflow of contaminants or pollutants can occur. Backflow occurs when a non-potable source is at a greater pressure than the potable water distribution system. Backflow can occur from either back-siphonage or backpressure. Back-siphonage occurs when a non-potable source enters the drinking water supply due to negative (i.e., sub-atmospheric) distribution system pressure. Backpressure occurs when the pressure from a non-potable source exceeds the pressure in the potable water distribution system.

Back-siphonage may be caused by a variety of circumstances, such as main breaks, flushing, pump failure, or emergency firefighting water demand. Backpressure may occur when heating, cooling, waste disposal, or industrial manufacturing systems are connected to potable supplies and the pressure in the external system exceeds the pressure in the distribution system. Both situations act to change the direction of water, which normally flows from the distribution system to the customer, so that non-potable substances from industrial, commercial, or residential premises flows back into the distribution system through a cross connection.

Cross connections are not limited to industrial or commercial facilities. Submerged inlets are found on many common plumbing fixtures and are sometimes necessary features of the fixtures if they are to function properly. Examples of this type of design are siphon-jet urinals or water closets, flushing rim slop sinks, and dental cuspidors.

Older bathtubs and lavatories may have supply inlets below the flood level rims, but modern sanitary design has minimized or eliminated this cross connection in new fixtures. Chemical and industrial process vats sometimes have submerged inlets where the water pressure is used as an aid in diffusion, dispersion, and agitation of the vat contents. Even though a supply pipe may be installed above a vat, back-siphonage can still occur. Siphon action has been shown to raise a liquid in a pipe such as water almost 34 feet. Some submerged inlets are difficult to control, including those which are not apparent until a significant change in water level occurs or where a supply may be conveniently extended below the liquid surface by means of a hose or auxiliary piping. A submerged inlet may be created in numerous ways, and its detection may be difficult.

Chemical and biological contaminants have caused illness and deaths during known incidents of backflow, with contamination affecting several service connections, and the number of incidents reported is believed to be a small percentage of the total number of backflow incidents that occur. The public health risk from cross connections and backflow is a function of a variety of factors including cross connection and backflow occurrence and type and number of contaminants.

2.1. Definitions

"**Air-Gap Separation**" or "**AG**" means a physical vertical separation of at least two (2) times the effective pipe diameter between the free-flowing discharge end of a potable water supply pipeline and the flood level of an open or non-pressurized receiving vessel, and in no case less than one (1) inch.

"AMI" means automated meter infrastructure. Smart Meter, Electronic Meter

"**Approved Water Supply**" means a water source that has been approved by the State Water Board for domestic use in a public water system and designated as such in a domestic water supply permit issued pursuant to section 116525 of the CHSC.

"**Auxiliary Water Supply**" means a source of water, other than an approved water supply, that is either used or equipped, or can be equipped, to be used as a water supply and is located on the premises of, or available to, a water user.

"**Backflow**" means an undesired or unintended reversal of flow of water and/or other liquids, gases, or other substances into a public water system's distribution system or approved water supply.

"**Backflow Prevention Assembly**" means 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.

"**Backflow Prevention Assembly Tester**" means a person who is certified as a backflow prevention assembly tester.

*"***Community Water System"** means a public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 year-long residents of the area served by the system.

"CA-EPA-CCCPH" means California Cross Connection Control Policy Handbook

"**Cross Connection**" means any actual or potential connection or structural arrangement between a public water system, including a piping system connected to the public water system 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.

"**Cross Connection Control Specialist**" means a person who is certified as a cross connection control specialist.

"District Boundary" Is a boundary established by a local agency formation commission or organization, established within the county where services are served, and may not serve outside the District Boundary.

"**Distribution System**" has the same meaning as defined in section 63750.50 of CCR, Title 22, Division 4, Chapter 2.

"**Double Check Detector Backflow Prevention Assembly**" or "**DCDA**" means a double check valve backflow prevention assembly that includes a bypass with a water meter and double check backflow prevention assembly, with the bypass's water meter accurately registering flow rates up to two gallons per minute and visually showing a registration for all rates of flow. This type of assembly may only be used to isolate low hazard cross connections.

"**Double Check Valve Backflow Prevention Assembly**" or "**DC**" means an assembly consisting of two independently acting internally loaded check valves, with tightly closing shut-off valves located at each end of the assembly (upstream and downstream of the two check valves) and fitted with test cocks that enable accurate field testing of the assembly. This type of assembly may only be used to isolate low hazard cross connections.

"**Existing Public Water System**" or "**Existing PWS**" means a public water system initially permitted on or before July 1, 2024, as a public water system by the State Water Board.

"Hazard Assessment" means an evaluation of a user premises designed to evaluate the types and degrees of hazard at a user's premises.

"**High Hazard Cross Connection**" means a cross connection that poses a threat to the potability or safety of the public water supply. Materials entering the public water supply through a high hazard cross connection are contaminants or health hazards.

"Low Hazard Cross Connection" means a cross connection that has been found to not pose a threat to the potability or safety of the public water supply but may adversely affect the aesthetic quality of the potable water supply. Materials entering the public water supply through a low hazard cross connection are pollutants or non-health hazards.

"PWS" means Public Water System.

"Reduced Pressure Principle Backflow Prevention Assembly" or "**RP**" means an assembly with two independently acting internally-loaded check valves, with a hydraulically operating mechanically independent differential-pressure relief valve located between the check valves and below the upstream check valve. The assembly shall have shut-off valves located upstream and downstream of the two check-valves, and test cocks to enable accurate field testing of the assembly.

"**Reduced Pressure Principle Detector Backflow Prevention Assembly**" or "**RPDA**" means a reduced pressure principle backflow prevention assembly that includes a bypass with a water meter and reduced pressure principle backflow. prevention assembly, with the bypass's water meter accurately registering flow rates up to two gallons per minute and visually showing a registration for all rates of flow.

"**State Water Board**", unless otherwise specified, means the State Water Resources Control Board or the local primacy agency having been delegated the authority to enforce the requirements of the CCCPH by the State Water Resources Control Board.

"**Swivel-Ell**" means a reduced pressure principle backflow prevention assembly combined with a changeover piping configuration (swivel-ell connection) designed and constructed for recycled water/non-potable switchover situations within a Services District.

"**User Premises**" means the property under the ownership or control of a water user and is served, or is readily capable of being served, with water via a service connection with a public water system.

"**User's Service Connection**" means either the point where a water user's piping is connected to a water system or the point in a water system where the approved water supply can be protected from backflow using an air gap or backflow prevention assembly.

"**User Supervisor"** means a person designated by a water user to oversee a water use site and responsible for the avoidance of cross connections.

3. PROGRAM APPROACH

The process for conducting initial and ongoing hazard assessments under the CCCPH involves a structured approach to identifying potential cross connection risks and implementing the necessary protective measures. This process ensures the safety and integrity of the water distribution system by evaluating all existing and proposed water service connections for potential contamination hazards.

The water connections and plumbing systems of all water customers or accounts shall be initially assessed for the presence of cross connections. As a result of the initial assessment, a detailed record of each account shall be established. A representative of the water utility or their designated agent shall be responsible for assessments. Individuals responsible for conducting inspections shall have obtained sufficient training on cross connection rules, identification, and corrective actions.

The highest priority for assessments shall be placed on facilities that pose a high degree of hazard, that have a high probability that backflow will occur or are known/suspected to have cross connections.

Once initial assessments are completed an assessment frequency shall be determined for each account based on the degree of hazard and potential for backflow. The AWWA M14 Cross Connection Rules Manual will be a guide in classifying the degree of hazard of each account. However, in general, situations in which backflow could cause illness, or death shall be considered high hazard. Other factors such as new construction, water quality complaints, or anomalies in customer billing may prompt immediate re-inspection. After initial cross connection assessments are complete, a comprehensive list or inventory of all backflow prevention assemblies, methods and devices shall be on record including all pertinent data.

3.1. Initial Hazard Assessment

All new water service connections must undergo an initial assessment before activation. Existing connections shall be assessed in accordance with the City's cross connection control program timeline. City owned facilities (well sites, treatment plants, booster pump stations, tanks and reservoirs tanks, etc.) will undergo an initial hazard assessment that will be surveyed within two years of this plan's acceptance. Commercial, industrial, public authority, and other potential high-hazard facilities that have not received an initial hazard assessment will be surveyed within seven years of this plan's acceptance. Residential and multifamily facilities without prior assessment will be surveyed within twenty years of the plan's adoption.

To evaluate the potential risk of backflow into the public water system, the City will carry out an initial hazard assessment of user premises within its service area. This hazard evaluation will take into account the following considerations as necessary:

a) The presence of cross connections;
b) the types of materials handled or present on the premises, including those likely to be encountered;
c) the complexity and accessibility of the piping system;
d) access to auxiliary water supplies, pumping systems, or pressure systems;

e) conditions within the distribution system that may increase the likelihood of a backflow event, such as hydraulic gradient differences caused by main breaks, high water demand, or multiple service connections that could lead to flow-through conditions;
f) accessibility of the premises;
g) any history of backflow incidents on the premises or similar sites; and
h) the requirements and guidance provided in the CCCPH.

Each hazard assessment must classify the level of risk to the distribution system as a high-hazard cross connection, a low-hazard cross connection. Examples of high-hazard cross connection activities can be found in Appendix B.

- The hazard assessment must determine whether an existing backflow prevention assembly (if any) provides adequate protection based on the degree of hazard.

3.2. Hazard Assessment of Properties

Water Supply and Equipment Identification
Main Water Supply: Central point of inspection**.**

- **Water Meters**:
  - Typically located outside the property.
  - **Common locations**:
    - Front of the property (most typical)
    - Side or rear of the property
    - Inside/Outside fence**,** gate**,** or block wall areas
    - Parking Lots
    - Traffic medians
    - Near entrances
  - In some areas meters may be buried under dirt**,** making them difficult to locate.

- **Backflow Preventers**:
  - Usually near the water meter.
  - May also be located inside vegetation**,** such as:
    - Untamed plants
    - Hedge**s**
    - Overgrown landscaping
    - Traffic medians
    - Retaining Walls
    - Inside/Outside Fences.

Backflow Device Assessment

- Determine the type of backflow preventer in place (e.g., RPZ, DCVA).
- Determine the backflow preventer is appropriate for the hazard level of the property.
- Observe any leaks which may indicate a possible failed backflow Preventer**.**

Building and Property Type

- Identification of building type is crucial for hazard classification.
- Building use and layout affect hazard level determination.

Hazard Level Classification

- Low Hazard: Minimal risk of contamination (e.g., office buildings).
- High Hazard: Significant risk of contamination (e.g., facilities with chemicals, medical waste, etc.).
- Classification informs regulatory requirements.

Code and Regulation Compliance

- Follow local city ordinances**,** standards**,** and state regulations**.**
- Requirements vary depending on the assigned hazard level**.**
    - May affect:
        - Type of backflow preventer required
        - Inspection and testing frequency
        - Maintenance responsibilities

3.3. Ongoing Hazard Assessment

Ongoing or follow-up hazard assessments are required following the initial hazard assessment described in Section 3.1. A follow-up hazard assessment will be conducted under the following circumstances:

a) if a user premises change ownership, excluding single-family residences;
b) if a user premises is newly connected to the PWS;
c) if evidence exists of potential changes in the activities or materials on a user's premises.
d) if backflow from a user's premises occurs;
e) periodically, as identified in the Cross Connection Control Plan;
f) if the State Water Board requests a hazard assessment of a user's premises; and
g) if the City concludes, an existing hazard assessment may no longer be correct.

The City must ensure a cross connection control specialist reviews the hazard assessments and makes a written finding that, in their judgment based on cross- connection control principles, the hazard assessment properly identified all hazards, the appropriate degree of hazards, and the corresponding backflow protection.

3.4. Public Water System Information

Public Water System Name:	City of Merced
Public Water System Number:	2410009
Number of single-family residential service connections:	21,449
Number of multifamily residential service connections (duplex, apartments, etc.):	1,506
Number of commercial service connections:	1,191
Number of industrial service connections:	31
Number of agricultural irrigation service connections:	0
Number of landscape irrigation service connections:	344
Number of Fire Service connections	269
Water System Ownership Type *(check one):* ☒ Public ☐ State or Federal Government ☐ CPUC regulated ☐ Mutual Water Co. ☐ HOA ☐ Private – Other ☐ Other, describe:	
Add any additional details:	

Non-Residential schedule for initial hazard assessment is outlined in the following table. The schedule starts from the date the CCC program is established (no later than July 1, 2025).

Initial Assessment Task	**Estimated number to be completed per year**	**Estimated Completion Timeframe**
Hazard assessment of new connections will be conducted within 90 days after initiating water service.	20	Ongoing
Hazard assessment of high-hazard non-residential service connections which are listed on Appendix D of the CCCPH	114	Seven Years
Hazard assessment of non-high hazard non-residential service connections	158	Seven Years
Fire Protection (Sprinkler) Connections BPA assessment and installation	38	**July 1, 2034** (see note below)

Fire Protection Systems Per the CCCPH, a PWS must ensure its distribution system is protected with no less than DC protection for a user premises with a fire protection system within 10 years of the effective date of the CCCPH.

For existing fire protection systems where DC or RP protection cannot be installed, the PWS may propose an alternative completion date or alternative method of backflow protection that provides at the least the same level of protection to the public water supply (CCCPH Section 3.2.2(e)).

Residential schedule for initial hazard assessment is outlined in the following table. The schedule starts from the date the CCC program is established (no later than July 1, 2025).

Initial Assessment Task	Estimated number to be completed per year	Estimated Completion Timeframe
Hazard assessment of residential service connections with special plumbing facilities or auxiliary water use	57	20 years
Hazard assessment of all other residential service connections	1,147	20 years

4 APPLICATION OF BACKFLOW PREVENTERS

4.1 Backflow Protection Table

The following table outlines acceptable backflow protection for certain types of cross connection conditions that may be encountered. The table is to be used as a guideline in determining adequate cross connection control measures, not as an absolute requirement.

Backflow Preventer Type	Degree of Hazard	Application	Applicable Standard
Backflow prevention assemblies:			
Double Check Valve Assembly (DCV)	Low hazard	Backpressure or backsiphonage	ASSE 1015, AWWA C510, CSA B64.5, CSA B64.5.1
Double Check Detector Assembly (DCDA)Type I & II	Low hazard	Backpressure or backsiphonage	ASSE 1048
Pressure Vacuum Breaker Assembly (PVB)	High or low hazard	Backsiphonage	ASSE 1020, CSA B64.1.2
Reduced Pressure Principle Backflow Prevention Assembly (RP)	High or low hazard	Backpressure or backsiphonage	ASSE 1013, AWWA C5411, CSA B64.4, CSA B64.4.1
Reduced Pressure Detector Assembly (RPDA) Type I & II	High or low hazard	Backpressure or backsiphonage	ASSE 1047
Spill-resistant Vacuum Breaker Assembly (SVB)	High or low hazard	Backsiphonage	ASSE 1056
Backflow prevention devices and Method:			
Atmospheric Vacuum Breaker (AVB)	High hazard	Backsiphonage	ASSE 1001, CSA B64.1.1
Dual Check (DC)	Low hazard	Backpressure or backsiphonage	ASSE 1024, CSA B64.6
Hose Connection Backflow Preventer (HCBP)	High or low hazard	Low head backpressure or backsiphonage	ASSE 1052, ASME A112.21.3, CSA B64.2.1.1
Hose Bibb Vacuum Breaker (HBVB)	High or low hazard	Low head backpressure or backsiphonage	ASSE 1011, ASME A112.21.3, CSA B64.2, CSA B64.2.1
Anti-frost Hoe Bibb Vacuum Breaker	High or low hazard	Low head backpressure or backsiphonage	ASSE 1011, ASME A112.21.3, CSA B64.2, CSA B64.2.1
Vacuum Breaker Wall Hydrants (HBIVB)	High or low hazard	Low head backpressure or backsiphonage	ASSE 1019, ASME A112.21.3, CSA B64.2.2
Air Gap (AG)	High or low hazard	Backsiphonage	ASME A112.1.2

4.2 Standards for Types of Backflow Protection

a) AG's must meet the requirements in section 603.3.1 of the 2019 California Plumbing Code (See Appendix A).
b) Newly installed pressure vacuum breaker, DCVs, and RPs for protection of the PWS is approved through both laboratory and field evaluation tests performed in accordance with either:
    i. Standards found in the 10th edition of the Foundation for Cross Connection Control and Hydraulic Research of the University of Southern California Manual of Cross Connection Control;
    ii. certification requirements for backflow prevention assemblies in the Standards of ASSE International current as of 2020; or
    iii. a testing process with equivalent testing requirements to (1) or (2).
c) Backflow prevention assemblies must not be modified from the approval granted in CCCPH section 3.3.1 (b). The City will require backflow prevention assembly testers to notify the City if a water user or utility-owned backflow prevention assembly has been modified from section 4.2 b) approval.

4.3 Installation Criteria for Backflow Protection

a) For AGs, the following is required:
    i. The receiving water container must be located on the water user's premises at the water user's service connection unless an alternate location has been approved by the City
    ii. all piping between the water user's service connection and the discharge location of the receiving water container must be above finished grade and be accessible for visual inspection unless an alternative piping configuration is approved by the City.
    iii. the City will ensure that the AG specified in section 4.1 a) has been installed; and
    iv. any new air gap installation at a user service connection must be reviewed and approved by the State Water Board prior to installation.
b) A RP must be installed such that the lowest point of the assembly is a minimum of twelve inches and, unless an alternative is approved by the City, a maximum of thirty- six inches above the finished grade.
c) DCs installed or replaced after the adoption of the CCCPH must be installed according to section 4.3 ii. Below ground installation can be considered by the City if it determines no alternative options are available.
d) A PVB or SVB must be installed a minimum of twelve inches above all downstream piping.
e) PVBs and SVBs may not be used for premises isolation.
f) A RP or DCV installed after the adoption of the CCCPH must have a minimum side clearance of twelve inches, except that a minimum side clearance of twenty-four inches must be provided on the side of the assembly that contains the test cocks.
g) Backflow protection must be located at the water user's service connection unless one or more alternative locations have been approved by the City. If internal protection is provided the City or designated agent must obtain access to the user premises and must ensure that the on-site protection meets the requirements of this Chapter for installation, testing and inspections.

h) Each backflow prevention assembly and air gap separation must be accessible for field testing and maintenance.

4.4 Fire Protection System Cross Connection Control Requirements

Except as noted below, City must ensure that its distribution system is protected with no less than Double Check Valve Assembly (DCV) protection for a user premises with a fire protection system within ten years of the effective date of the CCCPH.

a) A high-hazard cross connection fire protection system—including, but not limited to, systems that may utilize chemical additives (e.g., wetting agents, foam, anti-freeze, corrosion inhibitors) or an auxiliary water supply—must have no less than Reduced Pressure (RP) protection.

b) Backflow prevention assembly is not required for a low-hazard fire protection system on residential user premises if all of the following criteria are met:
   i. The user premises have only **one** service connection to the PWS.
   ii. A single service line enters the premises and then splits on the property for both domestic and fire protection system flow, allowing the fire protection system to be isolated from the rest of the premises.
   iii. A single, industry-standard water meter measures combined domestic and fire protection system flow.
   iv. The fire protection system is constructed of piping materials certified to meet NSF/ANSI Standard 61.
   v. The fire protection system's piping is looped within the structure and connected to one or more routinely used fixtures (e.g., a water closet) to prevent stagnant water.

5 TESTING BACKFLOW PREVENTION ASSEMBLIES

5.1 Inventory and Testing Schedule

Following cross-connection assessments, the City shall maintain an inventory of all backflow prevention assemblies installed on customer plumbing systems. All testable assemblies will be placed on a routine testing schedule. The City is responsible for conducting testing:

- At the time of initial installation
- After any repairs made by the City
- On an annual basis

5.2 Responsibilities

- City Responsibility: The City will perform all initial and annual testing, as well as minor repairs (e.g., valve seat cleaning, disk and O-ring replacement, etc.).
- Customer Responsibility: The water customer is responsible for major repairs, full replacement, and the installation of any required backflow prevention assemblies.

5.3 Customer Notification

Customers will receive written notice of:

- Scheduled testing
- Results of testing and any required actions
- Any deficiencies requiring customer correction (e.g., major repairs or replacement)

If a backflow assembly fails testing and cannot be repaired by the City through minor work, the customer will be notified and shall complete any required major repairs or full replacement within thirty (30) days of notice.

5.4 Compliance and Enforcement

If customer-required corrective actions (installation, replacement, or major repair) are not completed:

- A second and third notice will be issued, spaced thirty (30) days apart
- If no action is taken within ninety (90) days of the first notice, water service may be discontinued
- A final notice will be provided at least forty-eight (48) hours before discontinuation of service

5.5 Test Reporting and Records

All testing shall be conducted by certified personnel. The City is responsible for:

- Reviewing all test result reports for completeness and accuracy
- Verifying tester certification and the validity of results
- Storing and archiving reports in compliance with state regulations

Test results are only valid if completed by a certified tester recognized by the State Water Resources Control Board (see Section 6).

5.6 Failure Reporting and Emergency Conditions

- Assemblies that fail testing and cannot be corrected with minor repairs must be repaired or replaced by the customer within thirty (30) days
- Testers must notify the City within one (1) day if a backflow incident or cross-connection is discovered

5.7 Air-Gap Inspections

Air-gap separations installed pursuant to Sections 4.2 and 4.3 shall be visually inspected at least once per year by certified personnel.

6 BACKFLOW PREVENTION ASSEMBLY TESTER AND CROSS CONNECTION CONTROL SPECIALIST

To comply with the California Cross Connection Control Policy Handbook, it is essential that all individuals responsible for testing, inspecting, and maintaining backflow prevention assemblies meet the necessary qualifications and certifications. This process ensures that the water distribution system is safeguarded from contamination risks by having only competent, certified professionals handle backflow prevention assemblies. Key elements of this process include verifying the individual's certification, ensuring the calibration of test equipment, and maintaining accurate reports of test results.

a) Certified Backflow Prevention Assembly Tester- The City must ensure all backflow prevention assembly testers hired by their customers are currently CA-NV AWWA or ABPA certified per Article 4 of the SWRCB CCCPH
b) Certified Backflow Prevention Assembly Testers and Certified Cross Connection Control Specialists – The City must ensure their Cross Connection Control Specialists be currently certified as both a CA-NV AWWA or ABPA Cross Connection Control Specialist and CA-NV AWWA or ABPA Backflow Prevention Assembly Tester per Article 4 of the SWRCB CCCPH. City of Merced CCC Specialist contact:

   Philip Vaughn, Cross Connection Control Specialist
   City of Merced Public Works
   PH: (209)564-2536
   Email: VaughnP@cityofmerced.org
   CA-NV AWWA CCC Specialist Certification #03418

Process for Ensuring Qualifications

a) Verification of Certification as a Backflow Prevention Assembly Tester:
   i. **Certification Requirements:** Every individual performing testing or inspections on backflow prevention assemblies must be a certified Backflow Prevention Assembly Tester, as defined by the SWRCB CCCPH. Certification typically requires passing a written and practical examination administered by a state-approved certification agency.
   ii. **Initial Verification:** Before authorizing a tester to conduct work within the water system, the water utility must confirm the individual holds a valid certification. This is typically done by requesting a copy of the tester's certification and checking it against a list of approved certification agencies.
   iii. **Ongoing Compliance:** The utility must regularly verify that the tester's certification remains current. Certification usually requires periodic renewal, which may include continuing education or retesting. A record of certification status should be maintained for each tester authorized to work within the utility's service area.

b) Test Kit Calibration:
   i. **Calibration Requirements:** To ensure the accuracy of backflow prevention assembly testing, testers must use calibrated testing equipment. Test kits must be calibrated at least annually or more frequently if recommended by the manufacturer.

ii. **Verification of Calibration:** Before permitting a tester to perform inspections or testing, the utility must verify that their test kit has been calibrated within the required timeframe. This can be done by reviewing a calibration certificate from an accredited calibration facility or manufacturer.

iii. **Ongoing Monitoring:** The utility should maintain a schedule of calibration due dates for each tester's equipment and require updated calibration certificates as a condition for continued work. Uncalibrated equipment should not be allowed for testing until calibration is confirmed.

7 RECORD KEEPING

A robust tracking system is essential for managing and maintaining compliance with the California Cross Connection Control Policy Handbook (CCCPH). This system ensures that all relevant information about backflow prevention assemblies is readily available, up-to-date, and meets the recordkeeping requirements outlined in the CCCPH. The system is designed to track vital details, including recordkeeping information, the location and type of backflow prevention assemblies, and the specific hazards each assembly protects against.

A system of cross connection record keeping shall be maintained. Special software specifically for cross connections may be used for:

- Efficient record searches
- Easy reporting
- Simple updating
- Automatic letter generation
- Automatic deadline notification

All hazard assessment information must be in the records including:

- Address and location
- Owner name and contact information
- List of testable assemblies
- Description of other cross connections within the facility
  - Air gaps
  - Non-testable assemblies
- Degree of hazard classification and basis
- Required re-inspection frequency

All testable assemblies must be in the records including:

- Location of the assembly
- Name and contact information of assembly owner
- Make, model, and size of assembly
- Degree of hazard classification
- Required testing frequency and basis
- Test history

Standard letter, form, and report templates may be used to simplify the program requirements including:

- Inspection forms
- Assembly testing forms
- Inspection and/or assembly testing notification letters
- Noncompliance letters
- Water service termination notice
- Hydrant use authorization forms

Monitoring changes in water usage and identifying new customers are essential aspects of the cross connection control program. The City will make every effort to prevent and eliminate cross connections during installations to ensure ongoing compliance. Collaboration and communication with the local plumbing code inspector will be prioritized to support this objective.

8 ENFORCEMENT

To safeguard public health, water customers found in violation of cross connection regulations will be required to comply promptly or risk losing their connection to the public water system. The City's ordinance grants authority to inspect facilities, terminate water service, and impose fines to enforce these rules.

Following an inspection, if a violation is identified, the customer will be issued a non-compliance notice. The timeframe for completing corrective actions will be determined by the City, based primarily on the severity of the risk posed by the violation, but also considering the complexity and cost of the required actions. Cross connections that present an imminent and extreme hazard will be immediately disconnected and remain so until proper protection is installed. Less severe cross connections are generally expected to be resolved within 30 to 60 days. The City may grant an extension beyond 60 days at its discretion. The request for extensions must be submitted in writing and include a detailed plan and timeline for any corrective actions to be completed.

Failure to submit a test form for a backflow prevention assembly that has passed testing requirements is considered a cross connection violation and must be corrected. Non-compliance may result in water service termination and/or fines.

In cases where water service must be shut off to protect the public water system, the local health department, fire department, law enforcement, and the City manager may need to be notified.

9 PUBLIC EDUCATION

The cross connection control program staff must have a good understanding of the program. The City shall ensure their cross connection control staff receives proper in-the-field training as well as classroom education focusing on terminology, backflow prevention devices/assemblies, regulations, and hydraulic concepts. In addition, cross connection control staff will be encouraged to receive continuing education to be made aware of new backflow prevention devices/assemblies, regulation changes (i.e. plumbing code updates), new water use devices that pose cross connection concerns, etc.

Furthermore, attempts to educate the public about cross connections may be made by distributing pamphlets on common residential cross connections, visiting schools, providing onsite education of facility management and maintenance staff during routine inspections, speaking at condominium association meetings, showing videos on local access channels, or posting newspaper announcements.

The public outreach and education program is designed to raise awareness about the importance of cross connection control and the potential risks associated with backflow. The program aims to inform and educate property owners, businesses, and the general public about their responsibilities in preventing cross connections and ensuring the safety of the public drinking water system.

Target Audience:

- Property owners
- Businesses
- Building officials
- Plumbing officials
- General public

Key Components:

- Educational Materials:
    - Develop informative materials such as brochures, flyers, posters, and fact sheets that explain the concept of cross connections, the potential risks, and the importance of backflow prevention.
    - Include clear and concise information about the requirements of the CCCPH and the role of property owners and businesses in preventing cross connections.
- Public Workshops and Seminars:
    - Organize workshops and seminars for property owners, businesses, and professionals to provide in-depth information about cross connection control.
    - Cover topics such as the identification of potential cross connections, the selection and installation of appropriate backflow prevention assemblies, and the importance of regular testing and maintenance.

- Online Resources:
    - Develop a dedicated website or online portal with resources related to cross connection control, including educational materials, FAQs, and contact information.
    - Provide online training modules or webinars to reach a wider audience.
- Media Outreach:
    - Utilize social media, local newspapers, radio, and television to disseminate information about cross connection control and the importance of public participation.
    - Conduct media interviews to raise awareness and address questions from the public.
- Collaboration with Local Entities:
    - Establish strong working relationships with local building officials, plumbing officials, and other relevant entities.
    - Coordinate outreach efforts and ensure that they are aligned with local regulations and requirements.
    - Provide training and educational materials to local officials to enhance their understanding of cross connection control.

10 BACKFLOW INCIDENT RESPONSE PLAN

The City shall develop and maintain an Emergency Response Plan document to appropriately respond to a backflow event. The written ERP shall be readily available to designated personnel. This procedure outlines the process for investigating and responding to suspected backflow incidents to safeguard public health and ensure the safety and quality of the water supply. It addresses steps from initial reporting through investigation, corrective actions, and follow-up. A sample incident response can be found in Appendix D.

10.1 Incident Identification and Initial Response

Consideration of Complaints or Reports of Changes in Water Quality as Possible Backflow Incidents.

- When a complaint or report of a change in water quality is received, further investigation will be conducted by the [Utility Name] to determine if a potential backflow incident may have occurred. Common complaints that could indicate backflow include:
    - Unusual taste, odor, or color in water
    - Visible debris or particles in water
    - Reports of illness that could be linked to water quality
    - Changes in water pressure or flow

Initial Response:

- Customer Interview: Contact the customer to gather detailed information about the complaint (e.g., location, time, and description of the issue).
- Dispatch Team: Send a field technician to the reported location for an initial assessment and water quality sampling.

10.2 Investigation and Verification

Water Quality Sampling and Pressure Recording.

- Once a suspected backflow incident is reported, a thorough investigation will be initiated, involving both water quality testing and pressure monitoring.

Steps:

1. Water Quality Sampling
    - On-Site Testing: Field personnel will conduct immediate water quality tests at the site of the reported incident, which may include testing for parameters such as:
        - Chlorine residual
        - pH
        - Turbidity
        - Presence of bacteria or contaminants
    - Laboratory Analysis: If required, water samples will be sent to a certified laboratory for more comprehensive testing, including testing for chemicals, pollutants, or pathogens that may indicate contamination from backflow.

2. Pressure Recording
    - System Pressure Evaluation: Review pressure data from the local area, focusing on any recent drops in system pressure that could indicate a backflow event.

Field technicians may also install temporary pressure loggers in the affected area to monitor any ongoing pressure fluctuations.

- Backflow Prevention Device Inspection: Inspect and test any backflow prevention devices in the area to ensure they are functioning correctly. This includes reduced pressure zone (RPZ) devices, check valves, or other cross connection control devices.

3. Cross Connection Inspection
   - Perform a survey of the suspected location and surrounding areas to identify potential cross connections that could have led to backflow. Verify that these connections are properly protected by backflow prevention assembly(s)/devices.

10.3 Backflow Incident Response, Notification, and Follow-Up Actions

Documentation of Investigation, Response, and Follow-Up Activities.

- Every step of the investigation, response, and follow-up will be documented to ensure a clear record of actions taken and to maintain compliance with regulatory requirements.

- The City must notify the State Water Resources Control Board, Division of Drinking Water (DDW), and the applicable local health department within 24 hours of determining whether a backflow incident has occurred or is suspected to have occurred. State Water Resources Control Board Contact:

  - State Water Board – Division of Drinking Water
  - DDW District # – District 11, Merced
  - Office Phone: 559-447-3300
  - Emergency Phone: 559-447-3300

- If required by the State Water Board, the Public Water System, City must issue a Tier 1 Public Notification in accordance with California Code of Regulations, Title 22, Section 64463.1.

- The written report must include, at a minimum, the elements listed in Appendix D of this document.

- Upon request by the State Water Board, City must submit a written incident report by the date specified by the State Water Board. The report must describe:

Steps:

1. Incident Report
   - Details of the Report: The utility will create a formal report documenting the nature of the complaint, location, time of the report, and the suspected cause of the backflow incident.
   - Investigation Summary: The report may include details of the investigation, such as:
     - The nature and extent of the backflow incident,

- The location(s) and area(s) affected,
- The immediate corrective actions taken, and
- Results of water quality testing
- Pressure monitoring data
- Findings from cross connection inspections
- Condition of backflow prevention devices
- Any follow-up actions planned to prevent recurrence.

2. Corrective Actions
   - Immediate Actions: If backflow is confirmed, the utility will isolate the affected area, notify customers, and initiate system flushing and disinfection procedures.
   - Repair or Replacement: Backflow prevention devices that are malfunctioning or improperly installed will be repaired or replaced. Any identified cross connections will be corrected.
   - Customer Notification: Affected customers will be informed of the findings and the steps taken to restore safe water quality.

3. Follow-Up Activities
   - Continued Monitoring: After the incident has been resolved, water quality in the affected area will continue to be monitored to ensure no further issues occur.
   - Regulatory Reporting: A formal report will be submitted to the State Water Resources Control Board or other relevant regulatory bodies, detailing the incident and corrective measures taken.

4. Recordkeeping and Review
   - Documentation Retention: All documentation, including the incident report, test results, and corrective action logs, will be stored in the utility's records management system for future reference and auditing.
   - Incident Review: The utility will conduct an internal review to assess whether any changes are needed in cross connection control measures or backflow prevention device maintenance practices.

APPENDIX A - ASME A112.1.2-2012(R2017)

Table 1, Minimum Air Gaps for Generally used Plumbing Fixtures,1 page 4

TABLE 1
Minimum Air Gaps for Generally used Plumbing Fixtures[4]

FIXTURES	WHERE NOT AFFECTED BY SIDEWALLS[1] (inches)	WHERE AFFECTED BY SIDEWALLS[2] (inches)
Effective opening[3] not greater than ½ of an inch in diameter	1	1 1/2
Effective openings[3] not greater than ¾ of an inch in diameter	1 1/2	2 1/4
Effective openings[3] not greater than 1 inch in diameter	2	3
Effective openings[3] greater than 1 inch in diameter	Two times the diameter of effective opening	Three times the diameter of effective opening

For SI units: 1 inch = 25.4 mm

Notes:

[1] Sidewalls, ribs, or similar obstructions do not affect air gaps where spaced from the inside edge of the spout opening at a distance exceeding three times the diameter of the effective opening for a single wall, or at a distance exceeding four times the effective opening for two intersecting walls.

[2] Vertical walls, ribs, or similar obstructions extending from the water surface to or above the horizontal plane of the spout opening other than specified in Footnote 1 above. The effect of three or more such vertical walls or ribs has not been determined. In such cases, the air gap shall be measured from the top of the wall.

[3] The effective opening shall be the minimum cross-sectional area at the seat of the control valve or the supply pipe or tubing that feeds the device or outlet. Where two or more lines supply one outlet, the effective opening shall be the sum of the cross-sectional areas of the individual supply lines or the area of the single outlet, whichever is smaller.

[4] Air gaps less than 1 inch (25.4 mm) shall be approved as a permanent part of a listed assembly that has been tested under actual backflow conditions with vacuums of 0 to 25 inches of mercury (85 kPa).

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APPENDIX B - HIGH HAZARD CROSS CONNECTION CONTROL PREMISES

The list below identifies premises that require backflow protection provided by an air gap or a reduced pressure principle backflow prevention assembly, unless noted otherwise. The list below is not intended to be all-inclusive. A PWS, State Water Board, or local health agency may require an AG, RP, or both to protect a PWS from other hazards not listed below and identified in premises through the hazard assessment completed in CCCPH section 3.1. A PWS may reduce or increase the minimum protection required for a previously hazard-assessed user premise following a hazard reassessment as described in CCCPH section 3.1.

1. Sewage handling facilities
2. Wastewater lift stations and pumping stations
3. Wastewater treatment processes, handling, or pumping equipment that is interconnected to a piping system connected to a PWS (+)
4. Petroleum processing or storage plants
5. Radioactive material storage, processing plants or nuclear reactors
6. Mortuaries
7. Cemeteries
8. Sites with an auxiliary water supply interconnected with PWS (+)
9. Sites with an auxiliary water supply not interconnected with PWS
10. Premises with more than one connection to the PWS (++++)
11. Recycled water (++)(+++)
12. Recycled water interconnected to piping system that contains water received from a PWS (+)
13. Graywater systems, as defined in California Water Code Section 14876, that are interconnected to a piping system that is connected to a PWS
14. Medical facilities
15. Kidney dialysis facilities
16. Dental office with water-connected equipment
17. Veterinarian facilities
18. Chemical plants
19. Laboratories
20. Biotech facilities
21. Electronics manufacture
22. Dry cleaner facilities
23. Industrial or commercial laundry facilities
24. Metal-plating facilities
25. Business park with a single meter serving multiple businesses
26. Marine-port facilities
27. Car wash facilities
28. Mobile home park, RV park, or campgrounds with RV hookups
29. Hotels/motels
30. Gas stations
31. Fire stations
32. Solid waste disposal facilities
33. Pet groomers
34. Agricultural premises

35. Hazard assessment access denied or restricted
36. Railroad maintenance facilities
37. Incarceration facilities (e.g. prisons)
38. Temporary connections to fire hydrants for miscellaneous uses, including construction
39. Private water distribution mains
40. Drinking water storage tank overflow connected to a sump or storm drain (+)
41. Airports

(+) Premise isolated by air gap only except as allowed through CCCPH Section 3.2.2 (c)

(++) Dual-plumbed use areas established per CCR Title 22, Section 60313 through 60316 where recycled water is used for individually owned residential unit.

(+++) Residences using recycled water for landscape irrigation as part of an approved dual plumbed use area established pursuant to CCR Title 22, sections 60313 through 60316 shall use a DC backflow prevention device. The recycled water supplier may obtain approval of the local public water supplier or the State Water Board, if the water supplier is also the supplier of the recycled water, to utilize an alternative backflow protection plan that includes an annual inspection of both the recycled water and potable water systems and an annual shutdown test of the recycled water and potable water systems pursuant to subsection 60316(a) in lieu of any backflow prevention assembly.

(++++) All connections must receive at least the same level of protection (e.g. if one connection requires an RP then all connections must have RPs installed).

APPENDIX C – RELATED STATUTES AND REGULATIONS

The following laws and regulations are considered related or tangential to the CCCPH, and are included in a descriptive format to provide additional, relevant background information

California Laws and Regulations

In addition to the California SDWA statutory requirements cited in CCCPH Chapter 1, section 1.3.1, California has statutes addressing certain authorities and requirements that may have influenced the CCCPH or may otherwise be of interest.

- Urban and community water systems must have a written policy on discontinuation of residential service for nonpayment and must not discontinue residential service for nonpayment if certain conditions are met. (CHSC sections 116900 – 116926)

- Senate Bill 1263 (2017) requires that before a person submits an application for a permit for a proposed new public water system, the person shall first submit a preliminary technical report which must include a cost comparison of a new public water system and consolidations with an existing system. (CHSC section 116527)

- Effective June 24, 2015, Senate Bill 88 (SB 88) (Statutes 2015, Chapter 27) added sections 116680-116684 to the CHSC, allowing the State Water Board to require certain water systems that consistently fail to provide safe drinking water to consolidate with, or receive an extension of service from, another public water system. The consolidation can be physical or managerial.

- Local health officers may maintain programs for the control of cross connections by water users, within water users' premises, where public exposure to backflow may occur. Such programs may include water user premises inspections, collection of fees, certification of backflow prevention assembly testers, and other discretionary elements. Backflow tester certification standards must be consistent with the standards prescribed in the CCCPH. Water users are required to comply with all orders, instructions, regulations, and notices from the local health officer regarding installation, testing, and maintenance of a backflow prevention assembly. (CHSC sections 116800 - 116820).

- Pursuant to the California Building Standards Law (CHSC sections 18901 – 18949.31), the California Building Standards Commission (CBSC) must administer the processes related to the adoption, approval, and publication of regulations referred to as the California Building Standards Code (Title 24, California Code of Regulation). Title 24 serves as the basis for the minimum design and construction of buildings in California and includes the California Plumbing Code (Part 5 of Title 24), which contains requirements pertaining to cross connection control and backflow prevention.

- A backflow preventer intended to convey or dispense water for human consumption via drinking or cooking must meet California's "lead free" requirements. (CHSC section 116875)

- Limits are established for the installation of backflow protection equipment where automatic fire sprinkler systems are utilized. (CHSC section 13114.7)

- Cross connection control must be addressed in engineering reports that are required (CCR Title 22, section 60323) for recycled water projects. (Wat. Code section 13552.8)

- If a public agency requires the use of recycled water for toilet and urinal flushing in a structure (except certain mental health facilities), the public health agency must prepare an engineering report that addresses cross connection control. (Wat. Code section 13554)

- Prior to indoor use of recycled water in a condominium project, the entity delivering the recycled water must submit a report, for State Water Board approval, and include the following related to cross connection control (Wat. Code section 13553(d)(1)):

    - The condominium project must be provided with a backflow prevention assembly approved by the State Water Board.
    - The backflow prevention assembly must be inspected and tested annually by a certified tester.
    - The condominium project must be tested by the recycled water agency or local agency at least once every four years for indications of possible cross- connections between the condominium's potable and non-potable systems

- California's Department of Water Resources was required to convene a task force, known as the 2002 Recycled Water Task Force, to identify constraints, impediments, and opportunities for the increased use of recycled water and report to the Legislature by July 1, 2003. The task force was also asked to advise and make recommendations concerning cross connection control, including the applicability of visual inspections instead of pressure tests for cross connections between potable and non-potable water systems. (Wat. Code section 13578(b)(1). The final report4 provided the following recommendations to the State Water Board – Division of Drinking Water (Division):
    - Prepare guidance on dual plumbed regulations (22 CCR sections 60313-60316) consistent with Appendix J of plumbing code (Chapter 15 of 2019 California Plumbing Code, formerly Chapter 16A).
    - Support thorough assessment of risk associated with cross connections between disinfection tertiary recycled water and potable water.
    - Ensure uniform interpretation of cross connection control requirement of Title 22 regulations (recycled water) and Title 17 (cross connection control regulations)
    - Recommend stakeholders to review draft Title 17 regulations.

- A person engaged in the salvage, purchase, or sale of scrap metal who knowingly possesses a backflow prevention assembly (or connections to the assembly or any part of the assembly), or who failed to report the possession of such items, which was previously owned by a utility or public agency, is guilty of a crime. (Pen. Code section 496e)

- Junk dealers or recyclers who possess a backflow prevention assembly (or connections to that assembly or any part of the assembly) without a written certification from the agency or utility

owning or previously owning the assembly will be liable to the agency or utility for the wrongful possession. (Civ. Code section 3336.5 and, similarly, Bus. & Prof. Code section 21609.1)

Please note that a number of the codes, regulations, and statutes cited above are implemented under the authority of regulatory entities other than the State Water Board and would therefore be beyond the scope of this CCCPH. The intent of providing such citations is to increase general awareness with respect to other potential statutory requirements associated with cross connection control. The list is not exhaustive and does not include other requirements that may exist, including those via regulations that may have been adopted by an appropriate regulatory entity.

Federal Laws and Regulations

All suppliers of domestic water to the public are subject to regulations adopted by the U.S. Environmental Protection Agency (EPA) under the U.S. Safe Drinking Water Act (SDWA) of 1974, as amended (42 U.S.C. section 300f et seq.), as well as by the State Board under the California SDWA (Health & Saf. Code, div. 104, pt. 12, ch. 4, section 116270 et seq.). Additionally, the State Water Board has been delegated primacy - the responsibility and authority to administer U.S. EPA's drinking water regulations within California – on the condition that California adopt enforceable requirements no less stringent than U.S. EPA's.

The U.S. EPA currently has no distinct cross connection control requirements that apply broadly to public water systems (PWS); however, the importance of cross connection control is evident by the issue papers and guidance documents developed by U.S. EPA and their recognition that cross connections and backflow represent a significant public health risk (see discussion in Chapter 2). Although U.S. EPA currently has no distinct cross connection control requirements, the subject of cross connection or backflow prevention assemblies is included in the U.S. SDWA and the Code of Federal Regulations (C.F.R.) in relation to PWS, including the following:5

- If used exclusively for non-potable services, a backflow prevention assembly is exempt from the federal lead prohibitions. (42, U.S.C. section 300g)

- Allows increasing disinfectant concentrations in a PWS distribution system in the event of a cross connection (backflow) event. (40 C.F.R. section 141.130(d))

- Proper maintenance of the distribution system, including cross connection control, is identified as a best available technology (BAT) for microbial contaminant control. (40 C.F.R. section 141.63(e))

- Under the federal Revised Total Coliform Rule, a PWS having a cross connection control program is one of the enhancements necessary to reduce monitoring for a PWS that had been under an increased monitoring frequency. (40 C.F.R. section 141.854(h)(2))

- Under the federal Revised Total Coliform Rule, a PWS having a cross connection control program is a criterion for a state to allow a reduced monitoring frequency (40 C.F.R. section 141.855(d)(1))

- If a state allows the monitoring frequency reductions previously mentioned under the federal Revised Total Coliform Rule, a state is required to include in its primacy package to U.S. EPA how a PWS will be required to demonstrate cross connection control. (40 C.F.R. section 142.16(q))

APPENDIX D – SAMPLE BACKFLOW INCIDENT RESPONSE FORM

BACKFLOW INCIDENT REPORT FORM

Many backflow incidents occur that are not reported. This is usually because they are of short duration, are not detected, the customer needs to be made aware they should be reported, or it may not be known to whom the incident should be reported. If you have any knowledge regarding incidents, please complete the form below and return it to the Municipal Engineer at the above address.

Reporting Agency: _____ Report Date: _____
Reported By: _____ Position: _____
Mail Address: _____ City: _____
Province: _____ Postal Code: _____ Telephone: _____
Date of Incident: _____ Time of Occurrence: _____
General Location (Street, etc.): _____

1. **Backflow Originated From:**

   Name of Premise: _____
   Street Address: _____ City: _____
   Contact Person: _____ Telephone: _____
   Type of Business: _____

2. **Description of Contaminant(s):**
   (Attach Chemical Analysis if available)
   _____
   _____

3. **Distribution of Contaminant(s):**

   Contained within customer's property: Yes: ___ No: ___
   Number of persons affected: _____

4. **Effect of Contamination:**

   Illness reported: _____

   Physical irritation reported: _____
   _____

5. **Cross Connection Source of Contaminant:**
   (boiler, chemical pump, irrigation system, etc.)
   _____
   _____

6. **Cause of Backflow:**
   (main break, fire flow, etc.)
   _____
   _____

7. **Corrective Measures Taken to Restore Water Quality:**
   (main flushing, disinfection, etc.)
   _____
   _____

8. **Corrective Action Ordered to Eliminate or Protect from Cross Connection:**
   (type of backflow preventer, location, etc.)
   _____

_____

9. Previous Cross Connection Survey of Premise:

Date: _____ By: _____

10. Type(s) of Backflow Preventer Isolating Property:

RP: ___RPDA: ___ DCVA: ___ DCDA: ___ PVB: ___ SVBA: ___
AVB: ___ Air Gap: ___ None: ___ Other Type: _____

11. Date of Latest Test of Device: _____

12. Notification of Health Department:
Date: _____ Time: _____ Person Notified: _____

Attach sheets containing any additional information, sketches, etc., to the back of this form.

APPENDIX E – ORDINANCE

15.32.080 State connection regulations—Backflow control devices.

A. In making plumbing connections, the customer shall comply with the regulations of the state and county departments of public health.

   1. In addition to the applicable state and county regulations, the following is prohibited, unlawful and a misdemeanor subject to punishment in accordance with Chapter 1.12 of this code, because of the threat to the public health:
      a. Unprotected cross connections between a public supply and any unapproved source of water; and
      b. Water service to premises where there is a possibility of contaminated water back flowing into the public water system.
   2. In addition, approved double check valves or other protective devices shall be installed on water services when:
      a. Another source of water, whether cross connected or not, is in use or is available for use; or
      b. Containing liquid substances of any kind are used, produced, or processed.

B. The director shall determine the type, design and layout of backflow control devices required at each premises, and the devices shall be installed at the expense of the customer. The control devices shall be inspected, tested, and approved by the director as a condition of services to the premises.

C. Pursuant to Merced Municipal Code Sections 17.28.020 and 17.32.080, the only approved residential fire sprinkler system shall be a 'multipurpose' design and shall be a 'passive purge' system as per NFPA 13D and the California Building Code.

(Ord. No. 2501, § 1, 6-17-2019; Ord. 2167 § 2, 2004: prior code § 31.10(b))

15.32.090 Valve inspections—Responsibility.

The owner of any premises on or for which check valves or other protective devices are installed shall inspect these devices for water tightness and reliability at least once per year. Double check valves and other protective devices may, in addition, be inspected and tested for water tightness by the city at any time. If the inspection cannot be made without undue difficulty because of an obstruction or other interference, the customer will be notified and requested either to correct the condition or have the inspection made at his own expense and witnessed by the city. Any defects found in any backflow control device shall be corrected by the customer within three (3) days. Failure to correct such defects is cause for discontinuance of water service.

(Prior code § 31.10(c)