PREPARED BY:

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Water. Engineered.

THE CITY OF
PLEASANTON

CITY OF PLEASANTON

CROSS-CONNECTION CONTROL PLAN

IN ACCORDANCE WITH THE CROSS-CONNECTION CONTROL POLICY HANDBOOK ADOPTED IN 2023

JUNE 2025

Cross-Connection Control Plan

Prepared for

City of Pleasanton

Project No. 680-A1-24-09

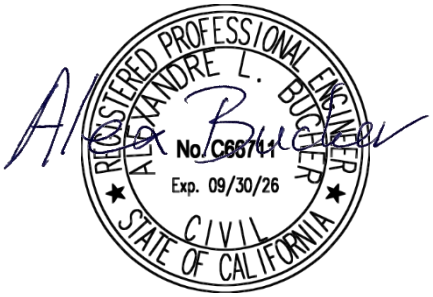
The information submitted in this Cross-Connection Control Plan is drafted to be in compliance with the Cross-Connection Control Policy Handbook and an accurate description of the Cross-Connection Control Program intended to protect the Public Water System.

June 24, 2025

Public Water System Representative:
Jeremy Cox, Utilities Division Manager
AWWA Cross-Connection Control Specialist #01732 — Date

June 24, 2025

Prepared by: Courtney Rubin
AWWA Cross-Connection Control Specialist #01854 — Date



June 24, 2025

QA/QC Review: Alex Bucher
AWWA Cross-Connection Control Specialist #10708 — Date

REVISION LOG

Revisions to this Cross-Connection Control Plan will be maintained in the Revisions Log provided below.

Revision No.	Section Reviewed, Revised, and Amended	Effective Date	Reviewer/ Author
1			
2			
3			
4			
5			
6			
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10			
11			
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City of Pleasanton Cross-Connection Control Program Contact Information			
Title	Name	Contact Information	Backflow Certifications
Director of Public Works	Siew-Chin Yeong	syeong@cityofpleasantonca.gov 925-931-5506	NA
Assistant Director, Utilities and Environmental Services	Vacant	-	NA
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Environmental Services Division Manager	Rita Di Candia	rdicandia@cityofpleasantonca.gov 925-931-5513	NA
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Emergency Line	During Business Hours: 925-931-5500 After Hours: 925-931-5100		

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LIST OF ACRONYMS

AG	Air Gap Separation
ANSI	American National Standard Institute
ASSE	American Society of Safety Engineers
BPA	Backflow Prevention Assembly
BPA Tester	Backflow Prevention Assembly Tester
CCCP	Cross-Connection Control Plan
CCCPH	Cross-Connection Control Policy Handbook
CCR	California Code of Regulation
City	City of Pleasanton
DC	Double Check Valve Backflow Prevention Assembly
DCDA	Double Check Detector Backflow Prevention Assembly
DCDA-II	Double Check Detector Backflow Prevention Assembly – Type II
DDW	Division Of Drinking Water
ESD	Environmental Service Division
FCCHR	Foundation for Cross-Connection Control and Hydraulic Research
PMC	Pleasanton Municipal Code
Program	Cross-Connection Control Program
PVB	Pressure Vacuum Breaker Backsiphonage Prevention Assembly
PWS	Public Water System
RP	Reduced Pressure Principle Backflow Prevention Assembly
RPDA	Reduced Pressure Principle Detector Backflow Prevention Assembly
RPDA-II	Reduced Pressure Principle Detector Backflow Prevention Assembly – Type II
SVB	Spill-Resistant Pressure Vacuum Breaker
Swivel-Ell	Swivel-Ell Backflow Prevention Assembly
SWRCB	State Water Resource Control Board

Cross-Connection Control Plan

1.0 INTRODUCTION

The State Water Resources Control Board (State Water Board) adopted the Cross-Connection Control Policy Handbook (CCCPH) on December 19, 2023. The effective date for the CCCPH is July 1, 2024, replacing the previous regulations covered under Title 17, Chapter V, Sections 7583-7622 under California Code of Regulations (CCR) (Title 17). The 2023 adopted version of the CCCPH is included in Appendix A of this document. Title 17 became inoperative and repealed 90 days after July 1, 2024. The CCCPH expands on the previous Title 17 requirements for initial and follow-up hazard assessments, program training, backflow prevention testing and certification, maintenance of records, incident response, reporting and notification, public outreach and education, and local entity coordination. The CCCPH requires any public water system (PWS) to develop a Cross-Connection Control Plan (CCCP) to describe how the PWS will manage and administer their Cross-Connection Control Program (Program).

1.1 Purpose

The intent of this document is to describe the Program implemented and administered by the City of Pleasanton (City). The purpose of this CCCP is to protect the health of the water customers by:

1. Preventing the occurrence of backflow into the City's PWS.
2. Proper installation and maintenance of backflow preventers on services to premises where actual or potential cross-connections exist. The presence of backflow preventers is intended to prevent the backflow of contaminants or pollutants from a customer's premises into the City's PWS.
3. Promoting the elimination of existing or future cross-connections through inspection and regulation of plumbing and water piping within or between a customer's premises and the City's PWS.

This CCCP will demonstrate how the City's Program will meet the ten elements required by the CCCPH.

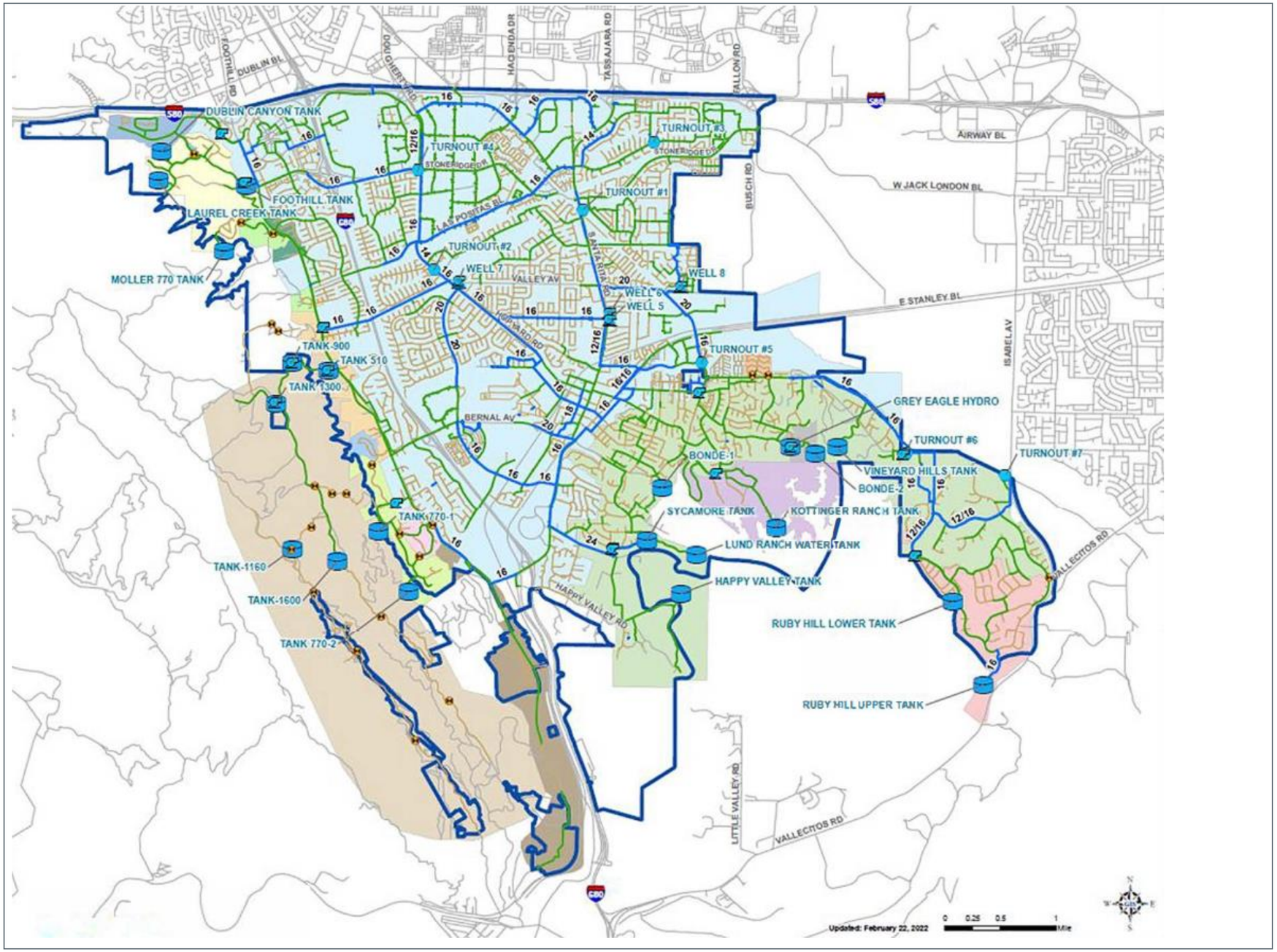
1. Operating Rules and Ordinances
2. Cross-Connection Control Program Coordinator
3. Hazard Assessments
4. Backflow Protection
5. Certified Backflow Assembly Testers and Cross-Connection Control Specialist
6. Backflow Prevention Assembly Testing
7. Recordkeeping
8. Backflow Incident Response, Reporting and Notification
9. Public Outreach and Education
10. Local Entity Coordination

1.2 City Service Area

The City serves potable water and recycled water to customers located within the city limits and about 250 customers in unincorporated Alameda County. The City services single-family residential customers, commercial, multifamily, dedicated irrigation, and industrial customers. The City receives treated potable water from their wholesaler Zone 7 and historically from City owned wells, which are currently not in use as new water supply alternatives are being investigated. Recycled water is delivered to customers within parts of the City for landscape irrigation. The City owns and operates a separate storage and pipeline system for recycled water.

The City is approximately 22 square miles and is located in southeastern Alameda County at the junction of Interstate 580 and Interstate 680. The water operations are governed by an elected City Council. The City is considered a public community water system with approximately 22,000 water service connections.

Figure 1-1 shows the area served by the City. Figure 1-2 is a map of the City's Recycled Water Distribution System.



Legend

Existing System

- Tanks
- Wells
- Pump Stations
- Valves
- Turnouts

Water Mains by Diameter

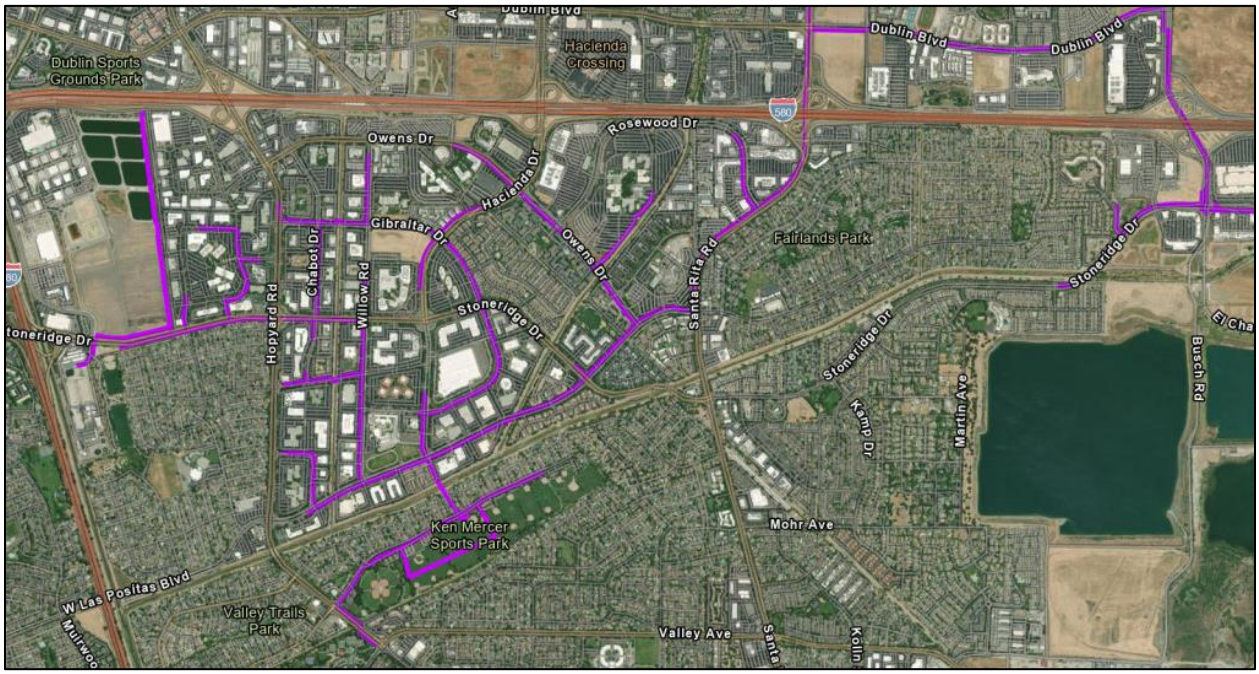
- 8" and Smaller
- 10" - 12"
- 14" - 27"

Pressure Zones

- 510 ZONE
- 770 ZONE
- FOOTHILL 770 ZONE
- BONDE ZONE
- DEER OAKS ZONE
- DUBLIN CANYON ZONE
- GREY EAGLE ZONE
- KILKARE ZONE
- KOTTINGER RANCH ZONE
- LOWER ZONE
- LOWER 770 ZONE
- MOLLER 770 ZONE
- MOLLER LOWER ZONE
- MOLLER PRV ZONE
- RUBY HILL UPPER ZONE
- SHADOW CLIFFS ZONE
- Water Service Area
- Streets

Figure 1-1. Existing Water Distribution System

Source: The City of Pleasanton Water System Management Plan, October 2024



Source: City of Pleasanton

Figure 1-2. City of Pleasanton - Recycled Water Distribution System

2.0 DEFINITIONS

The following definitions describe terms and phrases pertinent to the various elements of this CCCP. The definitions presented in this section are divided into three groups, within which each definition is listed alphabetically: 1) Water and Water System Definitions; 2) Agencies/Personnel; and 3) Equipment Definitions. Definitions are derived from and/or consistent with CCCPH definitions.

2.1 Water and Water System Definitions

Air-Gap Separation (AG)

The term "air-gap separation" shall mean a physical vertical separation of at least two 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 inch.

Approved Water Supply

A water source that has been approved by the State Water Board for domestic use in a PWS and designated as such in a domestic water supply permit.

Auxiliary Water Supply

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

The undesirable flow of water or other liquids, gases, mixtures, or substances into the distributing pipes or approved water supply of a PWS. Backsiphonage or backpressure are causes of backflow.

City Water System

The City water system consists of the source facilities and distribution system under the control of the City Public Works Division up to and including water meters. The City water system may also be referred to as the PWS or the distribution system.

Contamination/Contaminant

Any impairment of the quality of the potable water by any substance that creates an actual hazard to the public health.

Cross-Connection

Any actual or potential connection or structural arrangement between a PWS, including a piping system connected to the PWS 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.

Customer's Water System

All facilities beyond the water meter. The customer's system or systems may include both potable and non-potable water systems.

Distribution System

Shall include the network of conduits used for the delivery of water from the source to the customer's water system. See also City Water System. Includes any combination of pipes, tanks, pumps to deliver drinking water from a source or treatment facility to the customer.

Hazard, Degree of

A hazard assessment must identify the degree of hazard (or no hazard) to the PWS through evaluation of user premises based on the following classifications:

High Hazard Cross-Connection

A cross-connection that poses a significant 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. Appendix D of the CCCPH provides examples of high hazard premises (see Appendix A of this document).

Low Hazard Cross-Connection

A cross-connection that has been found to not pose a significant 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.

Pollution/Pollutant

The presence of any foreign substance in water that tends to degrade its aesthetic quality and does not constitute a health hazard.

Premises

Any and all areas on a customer's property that are served or have the potential to be served by the PWS.

Premises Containment

Protection of a PWS distribution system from backflow from a user's premises through the installation of one or more air gaps or BPAs, installed as close as practical to the user's service connection, in a manner that isolates the water user's water supply from the PWS distribution system.

Public Water System (PWS)

A system for the provision of piped water to the public for human consumption, which has 15 or more service connections or regularly serves an average of 25 individuals daily at least 60 days out of the year. Additionally, a PWS consists of the source facilities and the distribution system and shall include all those facilities of the water system under the complete control of the City up to the point of the service connection to the customer's water system.

Recycled Water

Wastewater that is suitable for uses other than potable use as a result of appropriate levels of treatment.

User Service Connection

Refers to 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 the air gap or backflow prevention assembly.

Used Water

Any water supplied by the City from the PWS to a customer's water system after it has passed through the service connection and is no longer under the control of the City.

Water System

The water system shall be considered as made up of two parts: The PWS and customer's water system.

2.2 Agencies/Personnel

Backflow Prevention Assembly Tester

A person who is certified as a backflow prevention assembly tester pursuant to Section 4 of this CCCP.

Cross-Connection Control Program Coordinator

The designated individual involved in the development of and being responsible for reporting, tracking, and other administration duties for the Program. This person must hold a cross-connection control specialist certification.

Cross-Connection Control Specialist

A person who is certified as a cross-connection control specialist pursuant to Section 4 of this CCCP.

State Water Resources Control Board (State Water Board)

Unless otherwise specified, means the State Water Board-Division of Drinking Water (DDW) or the local primacy agency having been delegated by the State Water Board the authority to enforce the requirements of Chapter 3 of the CCCPH.

User Supervisor

A person designated by a water user to oversee a water use site and is responsible for the avoidance of cross-connections.

Water Supplier

The person who owns or operates the approved water supply system.

Water User

Any person or entity who is authorized by the PWS to receive water.

2.3 Equipment Definitions

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.

Double Check Detector Backflow Prevention Assembly (DCDA)

A double check valve backflow prevention assembly that includes a bypass with a water meter and double check backflow prevention assembly, with the bypass water meter accurately registering flow rates up to two gallons per minute and visually indicating all rates of flow. This type of assembly may only be used for protection from backsiphonage and backpressure events (low hazard cross-connection). A schematic of this assembly is provided in Appendix C of the CCCPH (see Appendix A of this document).

Double Check Detector Backflow Prevention Assembly – Type II (DCDA-II)

A double check valve backflow prevention assembly that includes a bypass around the second check, with the bypass having a single check valve and a water meter accurately registering flow rates up to two gallons per minute and visually indicating all rates of flow. This type of assembly may only be used for protection from backsiphonage and backpressure events (low hazard cross-connection). A schematic of this assembly is provided in Appendix C of CCCPH (see Appendix A of this document).

Double Check Valve Backflow Prevention Assembly (DC)

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 for protection from backsiphonage and backpressure events (low hazard cross-connection).

Pressure Vacuum Breaker Backsiphonage Prevention Assembly (PVB)

An assembly with an independently-acting internally-loaded check valve and an independently-acting loaded air inlet valve located on the discharge side of the check valve; with test cocks and tightly closing shutoff valves located at each end of the assembly that enable accurate field testing of the assembly. This type of assembly may only be used for protection from backsiphonage (low hazard and high hazard

cross-connection) events and is not to be used to protect from backpressure events. A schematic of this assembly is provided in Appendix C of the CCCPH (see Appendix A of this document).

Reduced Pressure Principle Backflow Prevention Assembly (RP)

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. This type of assembly may be used for protection from backsiphonage and backpressure events (low hazard and high hazard cross-connection). A schematic of this assembly is provided in Appendix C of CCCPH (see Appendix A of this document).

Reduced Pressure Principle Detector Backflow Prevention Assembly (RPDA)

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 water meter accurately registering flow rates up to two gallons per minute and visually indicating all rates of flow. This type of assembly may be used for protection from backsiphonage and backpressure events (low hazard and high hazard cross-connection). A schematic of this assembly is provided in Appendix C of CCCPH (see Appendix A of this document).

Reduced Pressure Principle Detector Backflow Prevention Assembly – Type II (RPDA-II)

A reduced pressure principle backflow prevention assembly that includes a bypass around the second check, with the bypass having a single check valve and a water meter accurately registering flow rates up to two gallons per minute and visually indicating all rates of flow. This type of assembly may be used for protection from backsiphonage and backpressure events (low hazard and high hazard cross-connection). A schematic of this assembly is provided in Appendix C of CCCPH (see Appendix A of this document).

Spill-Resistant Pressure Vacuum Breaker Backsiphonage Prevention Assembly (SVB)

An assembly with an independently-acting internally-loaded check valve and an independently-acting loaded air inlet valve located on the discharge side of the check valve; with shutoff valves at each end and a test cock and bleed/vent port, to enable accurate field testing of the assembly. This type of assembly may only be used for protection from backsiphonage events (low hazard cross-connection) and is not to be used to protect from backpressure events. A schematic of this assembly is provided in Appendix C of the CCCPH (see Appendix A of this document).

Swivel-Ell

An assembly consisting of a reduced pressure principle backflow prevention assembly combined with a changeover piping configuration (swivel-ell connection) designed and constructed pursuant to Appendix C of the CCCPH.

3.0 PROGRAM ADMINISTRATION

This section describes the legal authority and chain of command for administering the Program.

3.1 Legal Authority (CCCPH 3.1.3 & PMC Chapter 14.16)

The City administers the Program in accordance with the Pleasanton Municipal Code (PMC) Title 14, Chapter 14.16 – Regulations for Protection from Water Contamination. The original ordinance adoption was in 1983 in agreement with Title 17, Chapter V, Sections 7583-7622, California Code of Regulations. The ordinance is currently being revised to include new elements presented in this CCCP, in compliance with CCCPH, and is expected to be adopted in July of 2025. The current PMC Chapter 14.16 is included in Appendix B.

Under PMC Chapter 14.16[1], the City has the legal authority to implement corrective actions in the event a water user fails to comply in a timely manner to provisions regarding the installation, inspection, field testing, or maintenance of a backflow prevention assembly required within the CCCPH. The City's corrective action includes the ability to discontinue water service until the correction(s) have been made.

3.2 Chain of Command

The Program is administered within the City's Public Works Department under the Environmental Services Division (ESD), with additional assistance from the Utilities Division. ESD is responsible for several programs including water conservation, recycled water, and cross-connection control. Program administration under the cross-connection control program includes cross-connection control reporting, backflow testing notification and tracking, and conducting hazard assessments. The Utilities Division provides as-needed technical and staff response assistance.

Figure 3-1 shows the current organizational chart for the Public Works Department, specific to the Utilities and Environmental Services Divisions. Additional Program activities spanning across other departments are discussed in more detail in Section 10 of this CCCP.

The Environmental Services Specialist holds the Cross-Connection Control Specialist certification and is responsible for carrying out the administrative responsibilities of the program. The City uses a third-party company to send test notifications to customers, track backflow compliance testing, confirm accuracy of backflow test reports, confirm backflow tester credentials, collect backflow assembly fees, and store backflow test documentation. The City has access to the data for viewing at all times via a web-based platform.

The Emergency Dispatch line is the City's emergency after-hour phone number that is answered by Police Dispatch after business hours. Dispatch Operators will dispatch calls to the correct personnel and departments, including the designated on-call Utilities Division water operator, to investigate a potential backflow event. The on-call water operator can communicate with the Utilities Division Manager (Cross-Connection Control Specialist), as needed.

[1] https://ecode360.com/43030034

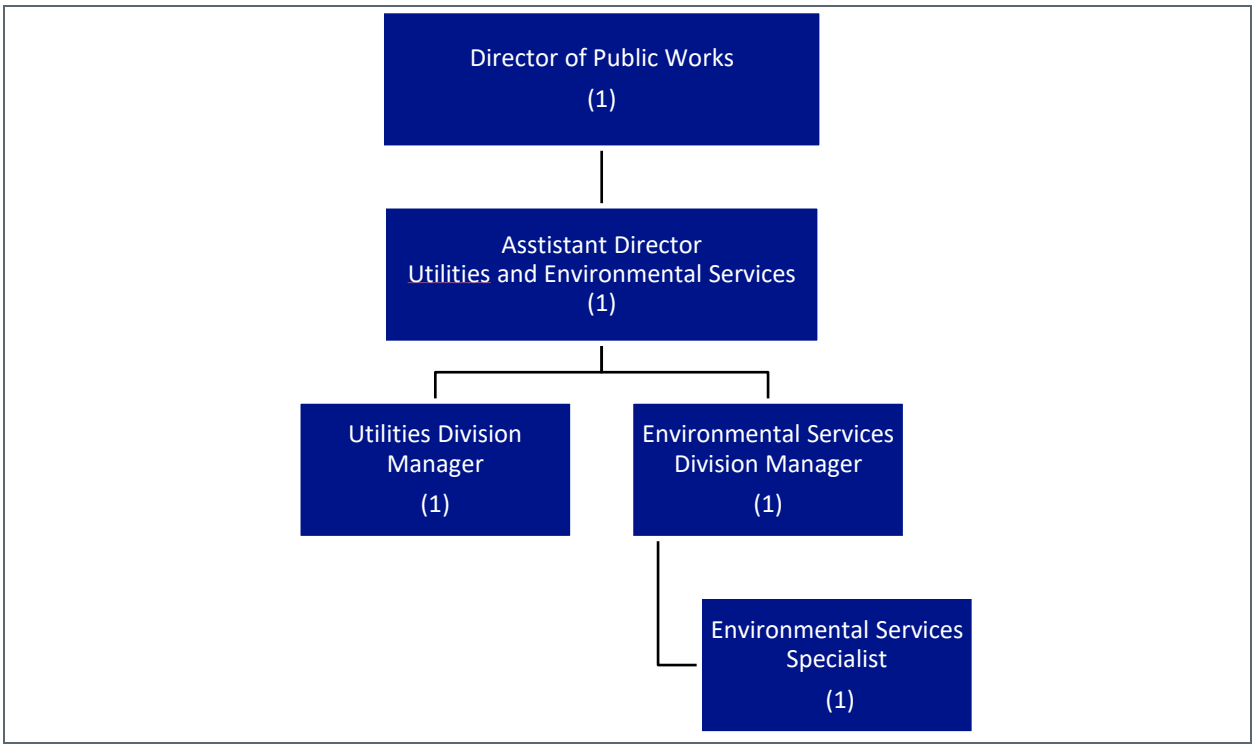


Figure 3-1. Organizational Chart for the Public Works Department, Utilities and Environmental Services Divisions

4.0 CCCPH BACKFLOW PREVENTION ASSEMBLY TESTER REQUIREMENTS

Chapter 3, Article 4 of the CCCPH outlines the general requirements of a State Water Board-recognized and American National Standards Institute (ANSI) accredited organization for backflow prevention assembly testers. The State Water Board will use the ANSI to accredit an organization. State Water Board Accredited Program components must include the following items:

- Timed and proctored written exams with prescribed number of test questions and covering specified material.
- Performance of a hand-exam demonstrating proficiency in accurately determining the operating condition of an RP, DC, PVB, and SVB.
- Require recertification no less frequently than every three years including both a written and performance exam.
- Provisions for revocation of a backflow prevention assembly testers certification.
- Publicly available list of backflow prevention assembly testers
- Pre-requisite of either two years prior experience or competition of an instructional training course.

4.1 Approved Backflow Prevention Assembly Tester List (CCCPH 3.4.1)

The City maintains a list of approved backflow assembly testers who are authorized to perform backflow related work within the service area. The list of certified testers is provided to assembly owners with the test notification.

Below are the requirements that are included on the City's list:

- The tester must hold a valid certification from an accredited State Water Board for backflow prevention assembly testing.
- The tester must provide a yearly copy of tester gauge calibration report results that include detail regarding the test gauge's make, model, and serial number.
- The tester must hold a valid company contractor's license as well as a City of Pleasanton business license.

Backflow testers are required to ensure that the City has the most recent copy of their certifications and tester gauge calibration reports. Backflow testers submit their qualifications and completed test reports through an online portal held by the City's third-party backflow service provider, Aqua Backflow. Aqua Backflow confirms the data is current. Appendix C provides the procedures for submitting a completed test report to the Aqua Backflow online portal.

Testers are removed from the approved list if any of the following conditions apply:

- Certification expires
- Gauge calibration expires
- Business license expires
- Improper testing or repairs

- Falsifying results or documents
- Failure to enter completed tests reports online

4.2 Cross-Connection Control Specialist Requirement (CCCPH 3.4.2)

Cross-Connection Control Specialists utilized by the City shall maintain valid certification from a certifying organization recognized by the State Water Board pursuant to CCCPH Chapter 3 Article 4 and must recertify no less frequently than every three years.

Certified Organization Program certification specifications include:

- Timed and proctored written exams with prescribed number of test questions covering specified material.
- Require recertification no less frequently than every three years.
- Recertification can occur through an exam, 12 hours of continuing education contact hours.
- Provisions for revocation of a specialist's certification.
- Publicly available list of certified specialists.
- For initial certification or when an examinee has not held a valid certification for three or more years a valid backflow prevention assembly tester certification will be required as well as competition of an instructional training course.

5.0 CROSS-CONNECTION CONTROL PROTECTION REQUIREMENTS (CCCPH 3.2.2 & PMC SECTION 14.16.010)

Unprotected cross-connections with the PWS are prohibited. No water service connection to any premises shall be installed or maintained by the City unless the water supply is protected from contamination and pollution. Whenever backflow protection is found to be necessary, the City will require the water user to install, test, and maintain an approved BPA at the expense of the water user for continued water service or before a new water service will be granted.

Wherever backflow protection is found to be necessary on a water supply line entering a water user's premises, then any and all water supply lines from the City's potable mains entering such premises, buildings, or structures shall be protected by an approved BPA.

The type of assembly required to be installed in accordance with the CCCPH requirements is described in this section. If it is found that a backflow protection control or assembly has been removed or bypassed, water service will be discontinued until corrected, and fines may be imposed.

Topics addressed in this section include:

- Backflow Protection Requirements
- Hazard Assessments
- Minimum BPA Type by Degree of Hazard

5.1 Backflow Protection Requirements (PMC Section 14.16.050)

An approved BPA shall meet CCCPH Section 3.3.1 standards and be installed per the City's most current standard drawings and details. Assemblies are installed prior to the initiation of water service on each service line to a customer's water system at or near the property line and before the first branch line leading off the service line.

The type of backflow protection required will be determined based on the degree of hazard present on the premises. High hazard sites that must have backflow protection include those listed within Appendix D of the CCCPH, as well as sites described below:

- Premises containing an auxiliary water supply, such as wells.
- When a premises has the potential for any onsite industrial fluid or any other objectional substance handled in such a manner that could permit the fluid or substance to enter the water system.
- When a premises has internal cross-connections that cannot be permanently corrected or controlled to the satisfaction of the state or local health department.
- When a premises has intricate piping arrangements or where entry to all or portions of the site are restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that no cross-connection exist.
- When a premises has a history of repeated cross-connections being established or reestablished.

Premises identified as low hazard sites that contain pollutants that might make the water supply aesthetically objectional but do not pose a public safety concern will require DC/DCDAs.

5.2 Hazard Assessments (CCCPH Article 2)

An evaluation of hazards on a user's premises will be performed by a certified Cross-Connection Control Specialist, either inhouse or contracted, to determine whether high, low, or no hazard is present. The required BPA at a user's premises will be determined by the degree of hazard and observed water use. The observations and final determination of the required BPA will be included in a final report that will be maintained by the City for reference.

5.2.1 Access for Inspection (PMC Section 14.16.050)

The customer's water system shall be accessible for inspection at all times to an authorized representative of the City to assess whether a cross-connection or hazard exists. When an imminent hazard to public health or safety becomes known, the City may deny or immediately discontinue water service to the premises until the customer has corrected the condition to the satisfaction of the City.

5.2.2 Initial Hazard Assessment (CCCPH Article 2)

The City will evaluate for the potential of backflow into the PWS through an initial hazard assessment of existing customers. The assessment will consider the following items:

1. The existence of cross-connections
2. The type and use of materials handled and present, or likely to be, on the user premises
3. The degree of piping system complexity and accessibility
4. Access to auxiliary water supplies, pumping systems, or pressure systems
5. Distribution system conditions that increase the likelihood or a backflow event
6. User premises accessibility
7. Any previous backflow incidents on the user premises
8. The requirements and information provided in the CCCPH

The City will perform the initial assessment using a combination of the following actions, appropriate for the specific premises and situation being assessed:

1. Review of building permits
2. Review of as-built or record drawings
3. Review of customer classification and business SIC code designation, if applicable
4. Consideration of the date of construction
5. Cross referencing of billing records with known BPA record
6. Field inspections
7. Review of Google maps and aerial photos
8. Reporting from backflow assembly testers

5.2.3 Initial Hazard Assessment for Existing Services

Table 5-1 provides the City's current approach, methodology, and timeframe for completion of the initial hazard assessments. The City is taking a phased approach with hazard assessments targeting categorized users with the potential for having higher hazards present on the premises. The phased approach allows the City to systematically evaluate the PWS using the limited staffing, resources, and funding available to prioritize users based on potential hazards. The timeframe for completion is projected under the assumption of current staffing levels and budget availability remaining constant. The City will continue to include the obligations under the CCCPH in future water rate studies to provide the utility with the resources to achieved/maintain compliance.

Hazard assessments will be tracked and documented through backflow software, the City's CMMS system and when possible, the City's Geographic Information System.

5.2.4 New Construction

Commercial, industrial, multi-family, and dedicated potable irrigation metered parcels currently require application plan check reviews during the planning process, and additionally building official inspections to confirm construction is compliant with City code and current plumbing requirements before permitting is signed off. Regardless of degree of hazard, all new commercial, industrial, multi-family and potable irrigation water services are required to install RPs. Single-family residential properties being newly constructed or undergoing renovations triggering a requirement for a fire sprinkler system will be required to have a DC installed on the fire service line or branch to the fire system or to have a pass-through/purged system that complies with the following CCCPH requirements:

1. The premises has one service connection from the PWS.
2. A single service line on the premises exists that split on the property for domestic flow and fire protection system flow, isolating the fire protection system from the rest of the premises.
3. A single, water industry standard, water meter is provided to measure the domestic and fire protection system flow.
4. The fire protection system is constructed of piping materials certified as meeting NSF/ANSI Standard 61.
5. The fire protection system's piping is looped within the structure and connected to one or more routinely used fixtures to prevent stagnant water.

5.2.5 Follow Up Hazard Assessments

The Program Administrator or the Cross-Connection Control Specialist will conduct hazard assessments under the following criteria:

1. If a user's premises changes ownership, excluding single-family residences or individually metered condo units.
2. If a user's premises is newly or re-connected to the PWS (through permitting approval process). Follow up with cross-connection control specialist as needed.
3. If evidence exists of potential changes in the activities or materials on a user's premises.
4. If backflow from a user's premises occurs.

5. Every twenty-years following the completion of the initial system-wide hazard assessment, (initial hazard assessment is estimated to be completed by July 2035).
6. Following any SWB request for hazard assessment of a user's premises.

The methods used to perform follow-up hazard assessments may include the following:

- Biannual review of new business license issued by City's Permit Center against listed NAICS/SIC code.
- Notification from Billing/Customer Service of the opening of a new account.
- Periodic review of service account billing data.
- If needed, Field Assessment to confirm degree of hazard.
- Self-reporting paper surveys to determine potential hazard.
- Building and Plumbing permit documents.

5.2.6 Hazard Assessment Outcomes

Following completion of hazard assessments, the City may need to address various outcomes related to backflow protection as further described below.

5.2.6.1 Meets Requirements

If the presently installed BPA is found to meet the requirements of the CCCPH and is found to be in good working order, then it will remain in place and be considered adequate protection.

5.2.6.2 Non-Complying Assembly

All presently installed BPAs that do not meet the requirements set forth in the CCCPH will be replaced by a BPA meeting the requirements of the CCCPH and approved by the City. The City anticipates discovery of these non-complying assemblies as part of the hazard assessment process, which is expected completion of initial hazard assessment to be by July 2035 (consistent with Table 5-1). Informational and education outreach will be provided to the user premises that fall in this category. Additionally, the parcel owner will be notified regarding the required BPA replacement with the appropriate BPA/protection required options within 90 calendar days from the notice. Note that the City is currently in the process of updating PMC 14.16 to allow the City the authority to require replacements of previously approved assemblies. Code modifications will also include a 90-day window for BPA replacements that fall under this category.

5.2.6.3 Without an Assembly

All customers and premises existing prior to the adoption of the CCCPH are subject to a hazard assessment by the City. If it is determined that an existing premises requires backflow prevention under CCCPH requirements, the City will provide customer education regarding the CCCPH requirements, followed by a written notice to the parcel owner to install an approved BPA within 90 calendar days or the City will discontinue water service, with exception to extensions approved by City following case-by-case circumstance evaluation. As noted above, the City's authority to conduct this work is currently being added to PMC 14.16 updates which are pending adoption.

Table 5-1. City of Pleasanton Initial Hazard Assessment Approach

Priority	Customer Types	Implementation Approach	Estimated Start Timeframe	Estimated Completion Timeframes
1	Residential With Possible or Known Auxiliary Water Supplies (Wells)	• Evaluate areas of the City that may have auxiliary water supplies • Follow up on data review and perform field visits for reported interconnection • Provide customer education and notification of requirement to add BPA • Address any non-compliant, non-responsive well users	In Progress	July 2028
2a	Commercial/Multi-Family/Dedicated Irrigation Services with Unknown Backflow Protection Assemblies	• Audit of billing system versus backflow database system to determine services without backflows • Categorize groups based on business code classification to assign a high or low hazard • Survey approach prioritized by high to low estimated hazard	In Progress	July 2035[(a)]
2b	Commercial Fire	• Audit to determine sites without a backflow • Survey existing sites suspected lacking a backflow on fire service • Work with premises owners on services requiring backflow installation	In Progress	July 2035[(a)]
3	Single-Family Residential Services with Possible or Known Fire Systems	• Records obtained through City's Building permitting records under review • Provide customer education and notification for required compliance • City Ordinance update to codify requirement • All new and underway development is currently required to meet compliance	In Progress	January 2035[(a)]
4	Commercial/Multi-Family/Dedicated Irrigation Services with Known Backflow Protection Assemblies	• Assign Degree of Hazard for existing backflow preventors based on current business code classification • When necessary, field inspection to confirm degree of hazard • Review backflow type to ensure compliant with determined degree of hazard	In Progress	July 2030
5	Single-Family Residential Properties with other Potential Hazards	Multi-factored approach: • During upcoming city-wide meter replacement project, implementation will include front yard site visit including customer education handout/doorhanger. City consultant/staff member conducting visit can denote need for cross-connection control specialist follow up. • Provided customer education handout/doorhanger to include list of potential hazards and City contact to request assessment if hazards are applicable to their premises. • As-needed building permit reviews for potential hazards (i.e. onsite pumps, complicated graywater/auxiliary water, onsite storage of water, etc.) followed by site hazard assessment and/or customer contact, if warranted • Work with premises owners identified as needing to install BPA/applicable appropriate level of protection with notification of necessary action to meet CCCPH compliance	January 2026	July 2035[(a)]
Additional Hazard Assessments				
-	PWS Owned Non-Testable Devices	• Evaluate and document (according to CPC Table 603.2) PWS facilities such as pump stations, well sites, and reservoirs to make sure plumbing fixtures are up to code	In Progress	July 2027
-	Hydrant Meters	• City sets AMI meter and RP backflow. Backflows are tested after installation by a City Certified Tester	Program development completed and under implementation for all new temporary hydrant meter set requests and in-service meters.	

(a) Estimated completion timeframe is based upon current staffing level to conduct work and funding projected available in the City's current proposed 2-year budget planning process, with the assumption of no changes in subsequent years.

5.2.7 Minimum BPA Type by Degree of Hazard (PMC Section 14.16.050)

Unless specified otherwise, the PWS must, at all times, be protected from high hazard cross-connections pursuant to the example high hazard cross-connection control premises listed in Appendix D of the CCCPH, by way of premises containment, using one or more AGs or RPs. In premises that require AG protection under CCCPH Section 3.3.2 (a), following State Water Board review and approval, the City may implement an alternate method of protection in lieu of an AG provided that the proposed alternative would provide at least the same level of protection to public health. Additionally, following State Water Board review and approval, the City may use internal protection in lieu of premises containment when premises containment is infeasible.

The following cross-connection control premises are considered by the City to be high hazard cross-connections and are subject to the following requirements to protect the approved water supply at the user's water connection to premises. Situations that are not covered below shall be evaluated on a case-by-case basis, and the appropriate backflow protection shall be determined by the City pursuant to the CCCPH Section 3.2.2 and the high hazard examples provided in Appendix D of the CCCPH.

5.2.8 Toxic, Sewage, or Hazardous Substances

On a premises where toxic or hazardous substances are handled in any manner that may allow for contamination for the water systems, the PWS shall be protected by an RP at the service connection.

5.2.9 Auxiliary Water Supplies

Protection from auxiliary water supplies shall comply with the following:

1. On a premises where there is an unapproved auxiliary water supply that is interconnected with the PWS, an AG shall be used.
2. On a premises where there is an unapproved or approved auxiliary water supply and there are no interconnections with the PWS, an RP shall be used.

5.2.10 Fire System

Protection of the PWS from fire protection systems shall comply with the following:

1. A high hazard cross-connection fire protection system, including but not limited to fire protection systems that may utilize chemical addition (e.g., anti-freeze) or an auxiliary water supply, must have no less than RPDA protection.
2. Premises where the fire system is directly supplied from the PWS and where there is an unapproved auxiliary water supply on or to the premises (not interconnected) will install a RPDA with the exception of single-family premises.
3. Premises where the fire system is supplied from the PWS and where either elevated storage tanks or fire pumps that take suction from the private reservoirs or tanks are used will install an RPDA, with the exception of single-family premises.
4. Premises where a fire system is interconnected with more than one service connection from the PWS, and where no other system hazard exists, will install a DCDA, with the exception of single-family premises.
5. Single family homes with fire sprinkler systems are to be protected with no less than a DC or a Pass-through/Purge system.

6.0 BACKFLOW PREVENTION ASSEMBLIES (CCCPH ARTICLE 3)

This section provides a description of approved BPAs and BPA installation requirements.

6.1 Approved BPAs (CCCPH 3.3.1)

Only approved BPAs shall be allowed for installation by a water user to protect the PWS. Approved backflow preventors, which may be subjected to back-pressure or backsiphonage, must be fully tested and granted a certificate of approval by a certified laboratory. The City will provide guidance, upon request, to any water user required to install a backflow preventer, on how to ensure selection of an approved BPAs.

Approved BPAs must have passed both laboratory and field evaluation tests in accordance with standards found in any of the following:

- The latest edition of the Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR) of the University of Southern California Manual of Cross-Connection Control;
- The certification requirements for BPAs in the latest edition of the Standards of American Society of Safety Engineers (ASSE) International; or
- An equivalent testing organization approved by the State Water Board.

BPAs must not be modified from the configuration granted approval. Backflow prevention assembly testers are required to notify the City if a water user or City-owned BPA has been modified.

6.2 Installation Requirements (CCCPH 3.3.2)

BPAs shall be installed by the customer on the customer's water service side according to City standards and tested when water is provided to the site. The BPAs shall be installed in a manner prescribed in the CCCPH and as close as practical to the user's service connection on the user's premises. The City shall provide final authority in determining the required location. If internal protection is proposed for the purpose of containment, the City must be able to access the user's premises and ensure that the on-site protections meet the requirements of the CCCPH. All BPAs shall be readily accessible for field testing and maintenance. Requirements for the specific type of BPAs are described in the following subsections.

Appendix D includes the City's Standard Details for BPA installation.

6.2.1 Air Gap Separation (AG)

An AG is to be installed on the user's premises at the water user's service connection and in accordance with CCCPH requirements. The received water container must be located on the water user's premises at the water user's service connection. Alternate locations must be approved by the City. All piping between the water user's service connection and the discharge location of the receiving water container must be above grade and accessible for visual inspection. All new AG installation at the user service connection, must be approved by the State Water Board prior to installation. The water inlet piping shall terminate a distance of at least two pipe diameters of the supply inlet, but in no case less than one inch above the overflow rim of the receiving tank.

6.2.2 Reduced Pressure Principle Backflow Prevention Assembly (RP)

The approved RP assembly shall be installed on the user's side of and as close to the service connection as is practical. The assembly shall be installed such that the lowest point of the assembly is a minimum of 12 inches above the finished grade and not more than 36 inches above grade measured from the bottom of the assembly and with a minimum of 12 inches side clearance, unless an alternative is approved by the City. However, a minimum side clearance of 24 inches must be provided on the side of the assembly that contains the test cocks. The assembly should be installed so that it is readily accessible for maintenance and testing. The assembly is required to be installed in the orientation that it is approved by FCCHR and in a manner to protect from weather conditions or traffic related incidents.

6.2.3 Reduced Pressure Principle Detector Backflow Prevention Assembly (RPDA and RPDA II)

The approved RPDA and RPDA II assembly shall be installed on the user's side of and as close to the service connection as is practical. The assembly shall be installed such that the lowest point of the assembly is a minimum of 12 inches above the finished grade and not more than 36 inches above grade measured from the bottom of the assembly and with a minimum of 12 inches side clearance, unless an alternative is approved by the City. However, a minimum side clearance of 24 inches must be provided on the side of the assembly that contains the test cocks. The assembly should be installed so that it is readily accessible for maintenance and testing. The assembly is required to be installed in the orientation that it is approved by FCCHR and in a manner to protect from weather conditions or traffic related incidents.

6.2.4 Double Check Valve Backflow Prevention Assembly (DC)

DCs installed or replaced must be installed on the user's side of and as close to the service connection as is practical. The assembly must be installed with its lowest point at least 12 inches and no more than 36 inches above the finished grade, measured from the bottom of the assembly, and should maintain a minimum side clearance of 12 inches unless an alternative is approved by the City. However, a minimum side clearance of 24 inches must be provided on the side of the assembly that contains the test cocks. The assembly should be installed so that it is readily accessible for maintenance and testing. Alternate locations for internal protection may be allowed by the City if approved first. Below ground installation may be approved by the City where no alternative option is available. The assembly is required to be installed in the orientation that it is approved through FCCCHR and in a manner to protect from weather conditions or traffic related incidents.

6.2.5 Double Check Detector Backflow Prevention Assembly (DCDA and DCDA II)

DCDAs and DCDA IIs installed or replaced must be installed on the user's side of and as close to the service connection as is practical. The assembly must be installed with its lowest point at least measured from the bottom of the assembly, and should maintain a minimum side clearance of 12 inches unless an alternative is approved by the City. However, a minimum side clearance of 24 inches must be provided on the side of the assembly that contains the test cocks. The detection water meter located on the bypass shall be approved by the City. The assembly should be installed so that it is readily accessible for maintenance and testing. Alternate locations for internal protection may be allowed by the City if approved first. Below ground installation may be approved by the City where no alternative option is available. The assembly is required to be installed in the orientation that it is approved through FCCCHR and in a manner to protect from weather conditions or traffic related incidents.

6.2.6 Pressure Vacuum Breaker Backflow Backsiphonage Prevention Assembly (PVB)

Existing PVBs must be a minimum of 12 inches above all downstream piping and outlets. The City does not allow PVBs to be used for containment (service protection); only for the protection from back siphonage, such as in irrigation systems along road right-of-way. Once an existing PVB fails, the City requires it be upgraded with a lead free RP.

6.2.7 Swivel Ells (CCCPH 3.2.2(d))

The City does not have or plan to allow swivel ells within the service area. This language is found under PMC Section 14.16.030, and is planned to be maintained in the pending code update.

7.0 NOTIFICATION AND TESTING OF BACKFLOW PREVENTION ASSEMBLIES

7.1 BPA Testing and Notification Procedures (CCCPH 3.3.3)

This section outlines the City's BPA testing and notification procedures.

7.1.1 Testing

7.1.1.1 Frequency of Testing

The City requires all backflow prevention assemblies with active water services to be field tested upon installation, repair, or when relocated. Thereafter, the City requires backflow prevention assemblies to be field tested no less than once per year by a certified Backflow Prevention Assembly Tester acceptable to the City as described in Section 4.1. of this CCCP. Prior to the City initiating water service, the City must receive a passing backflow prevention assembly field test results for the given backflow prevention assembly. For water services that have been suspended, the City requires a passing backflow assembly field test upon initiation of the water service.

The City, at its discretion, may require more frequent testing intervals or inspections than the requirement of once per year. AG installations providing protection at the water service, are required to be inspected annually to ensure compliance.

7.1.1.2 Procedures

Backflow Prevention Assembly Tester (BPA Testers) are required to follow the testing procedures according to the latest edition of the University of Southern California's Manual of Cross-Connection Control. All costs associated with testing, repairing, replacing, or overhauling a BPA is at the expense of the water user. Testing results are submitted to the City on an approved testing form in electronic format through the City's online backflow testing platform.

Appendix E contains the approved testing form and shows the information collected by the City for each assembly.

7.1.1.3 New Installations

The City requires a passing field test for all newly installed BPAs providing containment protection before water service can be provided. In addition, all newly installed assemblies require submittal to the City for an encroachment permit and are inspected to confirm proper installation in accordance with City Standard and Details.

7.1.1.4 Failed Test

Assemblies that are no longer on the City's list of approved assemblies may remain in place if the assembly passes field tests. When an assembly fails the field test, a new assembly must be installed per this CCCP. The City is currently in the process of proposing modifications to PMC 14.16 which would provide the City with the authority to require the replacement of BPAs that were previously approved, but no longer fall under compliance with the CCCPH requirements.

7.1.2 Notifications

7.1.2.1 Notification Process: Annual Testing

The City's notification process for annual required backflow testing can potentially result in a total of one reminder notice, one past due notice, and one water service termination notification. Backflow assembly owners receive a first notification notice, providing a reminder 45 days in advance of the annual test due date. The water user must hire a certified backflow assembly tester from a list of City-approved testers, to perform a field test and submit the test report on the condition of the backflow assembly. If a test report is not received by the test due date, a past due notice is sent providing 15 days to have the assembly tested. The past due notice is sent after the test due date, informing the backflow assembly owner the assembly is past due for the yearly testing requirement. In cases where a backflow assembly test remains delinquent following the past due notice, a water service termination notice is sent providing 15 days to resolve the delinquent testing status before the water service will be shutdown. The City's goal is to work with customers to ensure timely backflow testing. Customer communication and correspondence is archived by the City for reference as needed.

The City sends both the reminder notification and past due notification letters through the City's contracted on-line backflow software system vendor, (currently Aqua Backflow). Whereas, the water service termination notification is sent by staff through certified mail and/or in person, as-needed, to ensure receipt of the letter by the water user. Notifications are sent out on a monthly basis, except for the month of December which is reserved to focus on addressing compliance with any remaining delinquent testing. The City's backflow software system has a dashboard that allows for ease of viewing real-time status of field tests and outstanding field tests.

7.1.2.2 Notification Process: Failed Backflow Assembly

Upon receipt of a failed test report through the City's online backflow testing platform from the backflow tester, the City sends an automated notification requiring that the backflow be repaired or replaced within 30 days of the notification. If additional time is needed to address acquisition of required permits, the customer must seek an extension from the City.

7.1.2.3 Notification of Imminent Hazard

BPA testers are required to notify the City within 24 hours if a backflow incident or an unprotected cross-connection is observed at a user premises during field testing. The City will immediately investigate the incident as described in Section 9 of this CCCP and discontinue water service to the premises if an imminent hazard to public health is found. The water service will not be restored until confirmation of a correction is made and a passing backflow assembly field test is received.

8.0 RECORD MAINTENANCE

The City retains the below listed information with its records in electronic form and can make them available to the SWRCB upon request. Unless otherwise noted, the City maintains records within their contracted online backflow software platform. The current program vendor used since 2016, is Aqua Backflow, Inc.

1. Cross-Connection Control Plan - This CCCP will be retained and updated as-needed to reflect changes in the operation of the City's Cross-Connection Control Program. A final electronic version will be saved within the City's online folders accessible to relevant City staff.
2. Hazard Assessments - The City will retain the two most recent hazard assessments for each user premises conducted according to Section 5.2 of this Plan, as indicated under the CCCPH.
3. Assembly Records - For each BPA type, the associated hazard, location, owner, manufacturer and model, size, installation date, serial number, account number, customer of record, and repair history are retained electronically under contracted services provided by the selected online software platform service.
4. AG Records - For each new AG installation, the associated hazard and/or application, location, owner, and as built plans of the AG will be retained.
5. Testing Results - Test results on all BPAs and AGs are kept electronically for a minimum of three calendar years and include the name, test date, repair date, and certification number of the BPA tester.
6. Repairs - All repairs made to BPAs for the previous three calendar years are retained.
7. User Supervisors -
    a. The City actively requires all recycled water use premises to remain current with a designated Recycled Water User Supervisors per CCR Title 22 requirements, who receives recycled water site supervisor training through the City's Recycled Water Program. These site supervisors are instructed that one of their responsibilities is to help ensure the avoidance of any cross-connections between the potable water and recycled water systems on their property.
    b. If the City or State Water Board deems it necessary to require a user premises outside of the City's recycled water system to designate a user supervisor, due to a complicated nature of a multi-piping system at the premises, the City will include these user supervisors into an extension of the recycled water site supervisor training and record keeping process. When necessary, the City will obtain current contact information for the designated user supervisor and water user, and any applicable training previously received or qualifications as described by Section 10.1.3 of this Program.
8. Cross-Connection Control Tests - such as shutdown test or dye tests. The most current test will be retained by the City. The City will follow CCR Title 22 recycled water regulations for all properties serviced with recycled water.
9. Contracts or Agreements - to the City will retain all contracts and agreements related to the CCCP.

10. Incident Reports - Descriptions and follow-up actions related to any known or suspected incidents of backflow are retained within the City's internal records and CMMS system.
11. Public Outreach Education – The City will retain public outreach conducted, as well the outreach material examples developed, for a minimum of the previous three calendar years.

9.0 INCIDENT RESPONSE AND NOTIFICATION

The City will investigate potential backflow incidents when suspected reports or situations arise, such as, but not limited to:

- Water quality complaints that cannot be explained as a "normal" aesthetic problem
- Backflow incident has been suspected or has known to have occurred
- Unknown increase of system pressure reported
- Unknown decrease of system pressure reported

Additionally, the City will initiate notification and water quality sampling procedures when a water main break or power outage causes a negative loss of water pressure within a significant area of the distribution system.

9.1 Incident Response Procedure (CCCPH 3.5.2)

In the event of a potential backflow or cross-connection related incident, the City will take the actions detailed below, as applicable.

9.1.1 Incident Investigation

During business hours the City's Public Works Department will investigate a potential incident by dispatching Utilities Division staff and/or cross-connection control certified staff to the location of the reported incident. Through a field investigation, City staff will determine if contamination is present in the PWS and the extent of the impacted area. Utilities staff will perform the following tasks to investigate for the potential cross-connections, and follow up with the cross-connection control specialist if not present:

- Coordinate investigation findings with the Utilities Manager/Environmental Services Specialist staff
- Survey the location and surrounding area for possible main breaks
- Investigate the location to observe for potential source(s) for negative consumption
- Observe the domestic meter(s) for negative consumption
- Survey hydrants, blow-offs, and air inlet valves for possible sources of contamination

If a backflow incident is discovered the City will discontinue water service to that location until corrective action is taken.

If an incident is suspected during non-business hours, the on-call Utility Maintenance Worker will contact the Utilities Manager (holds a cross-connection control certification) within one hour of discovery, begin the incident investigation as directed, and report findings to the Environmental Services Division's Environmental Service Specialist with cross-connection control certification, as soon as their shift begins for further investigation and response.

9.1.2 Source of Contamination Isolation

The City will also isolate the portion of the system suspected of being contaminated by closing isolation valves and notifying impacted customers.

9.1.3 Notification and Coordination with Outside Agencies

The City will be responsible for notifying, within 24 hours, the SWRCB and Alameda County Environmental Health Department's Chief of Land and Water Protection Division of a potential incident.

9.1.4 Sampling Plan

A sampling plan will be implemented to confirm that the potable system meets Safe Drinking Water Standards. The Sampling Plan will be submitted to the SWRCB and the Alameda County Environmental Health Department and will describe the steps required to identify the contaminants, assess the extent of the contamination, and define the necessary remediation efforts.

9.1.5 Notification of Affected Customers

When required, the City will issue a Tier 1 public notification pursuant to CCR, Title 22, Section 64463.1. If the contamination is of biological nature, the City will issue a Boil Water Order Notice. If the contamination is of chemical nature, the City will issue an Unsafe Water Alerts as "Do-Not-Use" or "Do-not-Drink" Notices. Notices include instructions on what consumers should do, where potable water is available, and if applicable, dates of notice issuance and expected resolution and location where additional information can be obtained. The City will follow the current version of the Water Quality Emergency Notification Plan.

9.1.6 Incident Reporting (CCCPH 3.5.3)

If required by the SWRCB, the City will submit, by a date specified by the SWRCB, a written incident report describing the nature and severity of the backflow, the actions taken by the City in response to the incident, and any follow up actions required to prevent future incidents. The written report will contain, at a minimum, the information provided in Appendix F of the CCCPH.

10.0 PUBLIC OUTREACH, EDUCATION, AND COORDINATION

10.1 Public Outreach and Education

The City uses public outreach as an opportunity to educate the general public, staff, and BPA owners on the City's Program and the importance of testing and maintaining BPAs. Public outreach opportunities include:

- Flyers or pamphlets on the basics of cross-connection control handed out during outreach events
- New construction guidance for developers and applicable project applicants
- Water bill inserts or electronic flyers through online payment system
- Consumer confidence report
- Posted website resources and information
- Developed material guidance for targeted users on installing new assemblies to be in compliance with CCCPH requirements specific to their situation

The City's outreach program will evolve and be compatible with the City's hazard assessment progression, as outlined in Table 5-1. As outreach and hazard assessment are conducted with targeted customers, the website and written materials will be developed and updated to include BPA installation guidance and resources messaged and targeted to appropriate audiences.

10.1.1 User Supervisors (CCCPH 3.2.2.-f)

The City may require, when necessary and at its discretion, a water user to designate a user supervisor. The intent of the user supervisor will be for sites with complicated plumbing systems to have a designated person connected to the site to be responsible for ensuring cross-connections do not occur on the site. Each site required to have a user supervisor will be responsible for identifying a designated person on, at a minimum, an annual basis and whenever a change occurs.

Similar to the Recycled Water Site Supervisor program for recycled water customers, the user supervisor of a complicated potable site will be responsible for monitoring BPAs and avoiding cross-connections. In the event of contamination or pollution of the PWS due to a cross-connection on the premises, the City will be promptly notified by the user supervisor.

The user supervisor will be required to attend, at the owner's expense, a training provided by the City that covers the Program, types of hazards, and concerns typically found on the user's premises. The frequency of refresher trainings will be at the City's discretion based on changes to requirements and consideration of premises compliance with regulations.

At the time of this writing, no sites require a User Supervisor other than those sites that have designated Recycled Water Site Supervisors.

10.1.2 Inter-Agency Coordination

The City coordinates, when required, with Alameda County Environmental Health Department for public health concerns. The City sets up reoccurring meetings to coordinate efforts across Public Works, Building, Fire, and Water; coordinating on specific issues within departments related to backflow compliance. Additionally, the City participates in a CCCPH Technical Work Group with EBMUD, DSRSD, Contra Costa Water District, and the City of Livermore with the purpose of program informational sharing and network on the implementation of the CCCPH regulations.

Appendix A

Cross-Connection Control Policy Handbook
(Amended June 17, 2025)

State Water Resources Control Board

Cross-Connection Control Policy Handbook

Standards and Principles for California's Public Water Systems

Adopted: December 19, 2023
Effective: July 1, 2024
Amended: June 17, 2025

California Environmental Protection Agency

Table of Contents

Appendix

Acronyms and Abbreviations

As used in this policy, acronyms and abbreviations reference the following:

Acronym or Abbreviation	***Meaning***
AB	Assembly Bill
AG	Air Gap separation
BAT	Best Available Technology
BPA	Backflow Prevention Assembly
Bus. & Prof. Code	Business and Professional Code
CA	California
CBSC	California Building Standards Commission
CCCPH	Cross-Connection Control Policy Handbook
CCR	California Code of Regulations
C.F.R.	Code of Federal Regulations
CHSC	California Health and Safety Code
Civ. Code	Civil Code
DC	Double Check valve backflow prevention assembly
DCDA	Double Check Detector backflow prevention Assembly
DCDA-II	Double Check Detector backflow prevention Assembly – type II
Division	Division of Drinking Water
EPA	Environmental Protection Agency
Gov. Code	Government Code
MCL	Maximum Contaminant Level
Pen. Code	Penal Code
PVB	Pressure Vacuum Breaker backsiphonage prevention assembly
PWS	Public Water System
RP	Reduced Pressure principle backflow prevention assembly
RPDA	Reduced Pressure principle Detector backflow prevention Assembly
RPDA-II	Reduced Pressure principle Detector backflow prevention Assembly – type II
RW	Recycled Water
SB	Senate Bill
SDWA	Safe Drinking Water Act
State Water Board	State Water Resources Control Board
SVB	Spill-resistant Pressure Vacuum Breaker backsiphonage prevention assembly
U.S.	United States

Chapter 1 – Policy Overview

1.1 Objective

The primary objective of the Cross-Connection Control Policy Handbook (CCCPH) is the protection of public health through the establishment of standards intended to ensure a public water system's (PWS) drinking water distribution system will not be subject to the backflow of liquids, gases, or other substances. In addition, by providing basic educational information on backflow prevention, the State Water Resources Control Board (State Water Board) intends to build a foundation of awareness within the regulated community regarding the importance of backflow protection and cross-connection control, leading to the implementation of a robust cross-connection control program for PWSs.

1.2 Applicability

The CCCPH and its standards apply to all California PWSs, as defined in California's Health and Safety Code (CHSC, section 116275 (h)). Compliance with this CCCPH is mandatory for all California PWSs.

1.3 Policy Development Background and Legal Authorities

Through the adoption of the CCCPH, the State Water Board is exercising its authority, under California's Safe Drinking Water Act[1] (SDWA), to establish enforceable standards applicable to California's PWSs. Failure to comply with the CCCPH may result in the issuance of compliance, enforcement, or other corrective actions against a PWS.

1.3.1 California Safe Drinking Water Act

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 G.

On October 2, 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 13521.2 to the Water Code. AB 1180 requires that the CCCPH include provisions for the use of a swivel or changeover device (swivel-ell).

[1] CHSC, div. 104, pt. 12, ch. 4, section 116270 et seq.

AB 1671 and 1180 established the following:

- The State Water Board must adopt standards for backflow protection and cross-connection control by January 1, 2020.
- The State Water Board may establish standards for backflow protection and cross-connection control through the adoption of the CCCPH, with the CCCPH not being subject to the requirements of the CA Administrative Procedure Act.[2]
- If standards for backflow protection and cross-connection control are established via the CCCPH, the State Water Board must:
    - Consult with state and local agencies and persons, identified by the State Water Board, as having expertise on the subject of backflow protection and cross-connection control.
    - Hold at least two public hearings before adoption of the CCCPH.
    - Post the CCCPH on the State Water Board website.
- Upon the effective date of the CCCPH, the previous cross-connection control standards[3] become inoperative, and are repealed 90 days later, unless the State Water Board determines not to repeal a specific existing regulation.
- A PWS must implement a cross-connection control program that complies with the standards adopted by the State Water Board.
- Use of a swivel-ell must be consistent with any notification and backflow protection provisions contained in the CCCPH.

The development of the 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.

Prior to adoption of the CCCPH, in accordance with the statutory mandate, the State Water Board held two public hearings - one on April 27, 2021, and the other on December 5, 2022. A Board Workshop was held on October 18, 2023.

Pursuant to sections 116407 and 116555.5 of the CHSC, the State Water Board chose to adopt standards for backflow protection and cross-connection control through the adoption of this CCCPH, which became effective July 1, 2024.

Aside from the mandates of AB 1671 related to the State Water Board's need and authority to develop and adopt an enforceable CCCPH, there are long-standing statutory mandates in California's SDWA concerning backflow protection and cross-connection control, some of which are summarized below.

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[2] Gov. Code, tit. 2, div. 3, pt. 1, ch. 3.5, section 11340 et seq.
[3] Cal. Code Regs., tit. 17, div. 1, ch. 5, subch. 1, grp. 4, arts. 1 & 2, section 7583 et seq.

- The State Water Board is required to adopt regulations for the control of cross-connections that it determines to be necessary for ensuring PWSs "distribute a reliable and adequate supply of pure, wholesome, potable, and healthy water." (CHSC section 116375, subd. (c).)
- Any person who owns a PWS is required to ensure that the distribution system will not be subject to backflow under normal operating conditions. (CHSC section 116555, subd. (a)(2).)

Prior to AB 1671 and the adoption of this CCCPH, California's regulations pertaining to cross-connection control were set forth in regulations in CCR Title 17,[4] which were adopted in 1987 with minor revisions in 2000. Although still protective to public health, the CCR Title 17 cross-connection regulations required updating as both the drinking water and cross-connection control industries had evolved. This CCCPH updates those regulations, which as previously noted are no longer operative following the adoption of the CCCPH.

The State Water Board may update its standards for backflow protection and cross-connection control through revisions of the CCCPH. Prior to adopting substantive revisions to the CCCPH, the State Water Board will consult with state and local agencies and persons identified as having expertise on the subject by the State Water Board, and the State Water Board will hold at least one public hearing to consider public comments.

[4] Cal. Code Regs., tit. 17, div. 1, ch. 5, subch. 1, grp. 4, arts. 1 & 2, section 7583 et seq.

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Chapter 2 – Background on Backflow Protection and Cross-Connection Control

2.1 What is a Cross-Connection?

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 considered to be cross-connections.[5] The CCCPH includes acceptable installation criteria for swivel-ell and other types of backflow prevention assemblies (BPAs) to prevent backflow.

Backflow is the undesired or unintended reversal of flow of water and/or other liquids, gases, or other substances into a 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 backsiphonage or backpressure. Backsiphonage 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.

Backsiphonage 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.

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[5] California Department of Health Services (DHS), Public Water Supply Branch. (1988). *Guidance Manual for cross connection Control Program (Green Manual).* California Department of Health Services.

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, backsiphonage 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 actually 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 amount of contaminants.

2.2 Purpose of a Cross-Connection Control Program

The purpose of a cross-connection control program is to prevent the occurrence of backflow into a PWS's distribution system in order to protect customers from contamination or pollution from any on-site hazards. Properly installed and maintained BPAs, devices or methods provide protection against the threat posed by many conditions typically found on a user's premise.

The use of approved BPAs ensures that the appropriate performance evaluation of the assembly was conducted. It is important and required by the CCCPH to select and properly install an approved BPA that is capable of protecting the distribution system from the hazard identified. The success of a program depends on individuals that are knowledgeable about cross-connection control to identify actual and potential hazards, apply principles of backflow protection and prevention, and implement cross-connection control policies and procedures. A successful program will have ongoing surveillance of a PWS to ensure BPAs, devices or methods are working, and identify new hazards or changes in the distribution system. Certified specialists are needed to properly evaluate the degree of hazard that exists in the distribution system. Hazards typically identified in distribution systems along with the required level of protection are specified in Chapter 3 of the CCCPH.

2.3 Notes on Applicability of the Cross-Connection Control Policy Handbook

The CCCPH provides the basis for regulating the use and management of cross-connection control programs and BPAs in PWSs, and related requirements for supporting programs and policies. Activities or uses outside of the scope of the

authority of the State Water Board to regulate PWSs are not regulated by the CCCPH, including California Plumbing Code requirements and definitions not related to PWSs.

Recycled water cross-connection control installations and programs for the purposes of protecting the recycled water supply are not regulated by the CCCPH, although a PWS that uses recycled water is regulated by the CCCPH to ensure that a PWS's drinking water system has adequate backflow protection from a recycled water system.

Water systems that do not meet the definition of a PWS (e.g. "State Small Water Systems" under CCR Title 22, Article 3) are not regulated by the CCCPH, although they may need to comply with the California Plumbing Code, local health agencies, and other laws or entities.

Transient noncommunity and nontransient noncommunity systems are PWSs and must comply with both the California Plumbing Code and CCCPH. The California Plumbing Code and the CCCPH will overlap in protection of these user premises. To ensure compliance, these noncommunity water systems may need to have internal cross-connection control programs within the user premises.

Noncommunity water systems must have the ability to enforce backflow protection within the premises. Compliance with the California Plumbing Code can be verified by the PWS and used for compliance with the CCCPH. Compliance with the CCCPH is documented through the hazard assessment and maintenance of an inventory of field-testable BPAs and methods. Annual field testing of BPAs is required. Where the minimum backflow protection differs between the California Plumbing Code and the CCCPH, the more protective minimum protection will be required.

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Chapter 3 – Standards for Backflow Protection and Cross-Connection Control

Article 1 – Definitions and General Requirements

3.1.1 Definitions

The following definitions apply to the terms used in the CCCPH:

"**Air-gap separation**" or "**AG**" means a physical vertical separation of at least two (2) times the effective opening, as defined in section 207.0 of the California Plumbing Code, 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.

"**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**" or "BPA" 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 yearlong residents of the area served by the system.

*"***Contact hour"** means not less than 50 minutes of a continuing education course.

*"***Continuing education course"** means a presentation or training that transmits information related to cross-connection control programs and backflow prevention and protection.

"**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 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.

"**Cross-connection control specialist**" means a person who is certified as a cross-connection control specialist.

"**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. See Diagram 1, Appendix C.

"**Double check detector backflow prevention assembly – type II**" or "**DCDA-II**" means a double check valve backflow prevention assembly that includes a bypass around the second check, with the bypass having a single check valve and a 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. See Diagram 2, Appendix C.

"**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. See Diagram 3, Appendix C.

"**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. See Appendix D for some examples.

"**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.

"**New public water system**" or "**new PWS**" means a public water system permitted after July 1, 2024 as a public water system by the State Water Board. A new public water system includes a public water system receiving a new permit because of a change in ownership.

"**Noncommunity water system"** means a public water system that is not a community water system.

"**Nontransient noncommunity water system"** means a public water system that is not a community water system and that regularly serves at least 25 of the same persons over six months per year.

"**Premises containment**" means protection of a public water system's distribution system from backflow from a user's premises through the installation of one or more air gaps or BPAs, installed as close as practical to the user's service connection, in a manner that isolates the water user's water supply from the public water system's distribution system.

"**Pressure vacuum breaker backsiphonage prevention assembly**" or "**PVB**" means an assembly with an independently-acting internally-loaded check valve and an independently-acting loaded air inlet valve located on the discharge side of the check valve; with test cocks and tightly closing shutoff valves located at each end of the assembly that enable accurate field testing of the assembly. This type of assembly may only be used for protection from backsiphonage and is not to be used to protect from backpressure. See Diagram 4, Appendix C.

"**Public water system**" or "**PWS**" has the same meaning as defined in section 116275(h) of the CHSC.

"**Recycled Water"** is a wastewater which as a result of treatment is suitable for uses other than potable use.

"**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. See Diagram 5, Appendix C.

"**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. See Diagram 6, Appendix C.

"**Reduced pressure principle detector backflow prevention assembly – type II**" or "**RPDA-II**" means a reduced pressure principle backflow prevention assembly that includes a bypass around the second check, with the bypass having a single check valve and a water meter accurately registering flow rates up to two gallons per minute and visually showing a registration for all rates of flow. See Diagram 7, Appendix C.

"**Spill-resistant pressure vacuum breaker backsiphonage prevention assembly**" or "**SVB**" means an assembly with an independently-acting internally-loaded check valve and an independently-acting loaded air inlet valve located on the discharge side of the check valve; with shutoff valves at each end and a test cock and bleed/vent port, to enable accurate field testing of the assembly. This type of assembly may only be used for protection from backsiphonage and is not to be used to protect from backpressure. See Diagram 8, Appendix C.

"**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 pursuant to this Chapter. See design and construction criteria, as well as Diagrams 9a and 9b, Appendix C.

"**Transient noncommunity water system"** means a noncommunity water system that does not regularly serve at least 25 of the same persons over six months per year.

"**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.

"**Water supplier**" means a person who owns or operates a public water system.

"**Water user**" means a person or entity who is authorized by the PWS to receive water.

3.1.2 Applicability

A public water system (PWS) must comply with the requirements of the CCCPH.

3.1.3 Program for Public Water System Cross-Connection Control

(a) A PWS must protect the public water supply through implementation and enforcement of a cross-connection control program. Unless otherwise specified by this Chapter or directed by the State Water Board, a PWS may implement its cross-connection control program, in whole or in part, either directly or by way of contract or agreement with another party. The PWS, however, shall not be responsible for abatement of cross-connections which may exist within a user's premises. The cross-connection control program must include at a minimum the following elements:

(1) **Operating rules or ordinances** – Each PWS must have operating rules, ordinances, by-laws or a resolution to implement the cross-connection program. The PWS must have legal authority to implement corrective actions in the event a water user fails to comply in a timely manner with the PWS's provisions regarding the installation, inspection, field testing, or maintenance of BPAs required pursuant to this Chapter. Such corrective actions must include the PWS's ability to perform at least one of the following:

(A) deny or discontinue water service to a water user,
(B) install, inspect, field test, and/or maintain a BPA at a water user's premises, or
(C) otherwise address in a timely manner a failure to comply with the cross-connection control program.

(2) **Cross-Connection Control Program Coordinator** – The PWS must designate at least one individual involved in the development of and be responsible for the reporting, tracking, and other administration duties of its cross-connection control program. For PWS with 3,000 service connections or more the Cross-Connection Control Program Coordinator must be a cross-connection control specialist.
(3) **Hazard Assessments** – The PWS must survey its service area and conduct hazard assessments per Article 2 of this Chapter that identifies actual or potential cross-connection hazards, degree of hazard, and any backflow protection needed.
(4) **Backflow Prevention** – The PWS must ensure that actual and potential cross-connections are eliminated when possible or controlled by the installation of approved BPAs or AG's consistent with the requirements of the Article 3 of this Chapter.

(5) **Certified Backflow Prevention Assembly Testers and Certified Cross-Connection Control Specialists** – The PWS must ensure all BPA testers and cross-connection control specialists used are certified per Article 4 of this Chapter.
(6) **Backflow Prevention Assembly Testing** – The PWS must develop and implement a procedure for ensuring all BPAs are field tested, inspected, and maintained and AG's are inspected and maintained in accordance with CCCPH section 3.3.3.
(7) **Recordkeeping** – The PWS must develop and implement a recordkeeping system in accordance with CCCPH section 3.5.1.
(8) **Backflow Incident Response, Reporting and Notification** – The PWS must develop and implement procedures for investigating and responding to suspected or actual backflow incidents in accordance with Article 5 of this chapter.
(9) **Public Outreach and Education –** The PWS must implement a cross-connection control public outreach and education program element that includes educating staff, customers, and the community about backflow protection and cross-connection control. The PWS may implement this requirement through a variety of methods which may include providing information on cross-connection control and backflow protection in periodic water bill inserts, pamphlet distribution, new customer documentation, email, and consumer confidence reports.
(10) **Local Entity Coordination** – The PWS must coordinate with applicable local entities that are involved in either cross-connection control or public health protection to ensure hazard assessments can be performed, appropriate backflow protection is provided, and provide assistance in the investigation of backflow incidents. Local entities may include but are not limited to plumbing, permitting, or health officials, law enforcement, fire departments, maintenance, and public and private entities.

(b) The cross-connection control program must be developed in consultation with a cross-connection control specialist if:

(1) The PWS has 1,000 or more service connections, or
(2) required by the State Water Board.

(c) A PWS must have at least one cross-connection control specialist as a permanent or contracted employee of the PWS, and that specialist, or their designee, must be able to be contacted within one hour, if:

(1) The PWS has 3,000 or more service connections, or
(2) the PWS has less than 3,000 service connections and is directed by the State Water Board based on hazard assessments conducted pursuant to CCCPH section 3.2.1. or the PWS's history of backflow incidents.

3.1.4 Plan for Public Water System Cross-Connection Control

(a) After adoption of the CCCPH, each PWS must submit a written Cross-Connection Control Plan for State Water Board review in accordance with the following schedule:

(1) An Existing PWS must submit the Cross-Connection Control Plan no later than 12 months after the effective date of the CCCPH.
(2) A new PWS must submit the Cross-Connection Control Plan for review and approval prior to issuance of a domestic water supply permit.
(3) A PWS may submit a written request to the State Water Board for an extension of the deadline for submittal of its initial Cross-Connection Control Plan. The PWS's application must include a written description of the need for an extension. Approval of an extension will be at the sole discretion of the State Water Board.

(b) The Cross-Connection Control Plan for a community water system must include, at a minimum, the following cross-connection control program procedures and documentation:

(1) a description of how the community water system will achieve and maintain compliance with each requirement in this Chapter;
(2) a description of the process, personnel, and timeframes for completing initial and ongoing hazard assessments pursuant to CCCPH section 3.2.1;
(3) a description of the legal authority pursuant to CCCPH section 3.1.3 to implement corrective actions in the event a water user fails to comply in a timely manner with the provisions of the PWS's cross-connection control program;
(4) a description of the process and timeframes for ensuring each BPA is inspected and field tested, and AG is inspected, at a frequency no less than required by this Chapter;
(5) a description of the process and timeframe for ensuring each non-testable backflow preventer that is under the PWS ownership or administration is installed and maintained according to the California Plumbing Code;
(6) a description of the process for ensuring individuals field testing and inspecting BPAs are no less qualified than required by this Chapter, including but not limited to confirmation of the individual's:

(A) certification as a backflow prevention assembly tester,
(B) field test kit or gage equipment accuracy verification, and
(C) BPA field test result reports;

(7) a description of the procedures and timeframes of activities for responding to backflow incidents, including notification of customers, and reporting of backflow incidents pursuant to CCCPH section 3.5.2;
(8) contact information for cross-connection control personnel including any cross-connection control program coordinator and specialist;
(9) a description of the tracking system that maintains current and relevant information, including:

(A) recordkeeping information required pursuant to CCCPH section 3.5.1,
(B) location and type of each BPA, and
(C) highest threat potential hazard from which a given BPA is protecting the public water system distribution system;

(10) for user supervisors, if used, the required information pursuant to CCCPH section 3.2.2 (f);
(11) the corrective actions, including timeframes for the corrective actions, that a community water system will implement when:

(A) a cross-connection exists and the BPA installed is not commensurate with the user premises' hazard or no BPA has been installed, or
(B) a BPA needs to be replaced or maintained;

(12) a description of the public outreach and education program to comply with CCCPH section 3.1.3(a)(9); and
(13) the procedures for coordination with local entities

(c) The Cross-Connection Control Plan for a noncommunity water system must include, at a minimum, the following cross-connection control program procedures and documentation:

(1) a description of how the noncommunity water system will achieve and maintain compliance with each requirement in this Chapter that is applicable to the noncommunity water system;
(2) a description of the process, personnel, and timeframes for completing initial and ongoing hazard assessments pursuant to CCCPH section 3.2.1;
(3) a description of the legal authority pursuant to CCCPH section 3.1.3 to implement corrective actions in the event a water user fails to comply in a timely manner with the provisions of the PWS's cross-connection control program;
(4) a description of the process and timeframes for ensuring each BPA is inspected and field tested and AG is inspected, at a frequency no less than required by this Chapter;
(5) a description of the process and timeframe for ensuring each non-testable backflow preventer for internal protection that is under the PWS ownership or administration is installed and maintained according to the California Plumbing Code;
(6) a description of the process for ensuring individuals field testing and inspecting BPAs are no less qualified than required by this Chapter, including but not limited to confirmation of the individual's:

(A) certification as a backflow prevention assembly tester,
(B) field test kit or gage equipment accuracy verification, and
(C) BPA field test result reports;

(7) a description of the procedures and timeframes of activities for responding to backflow incidents, including notification of customers, and reporting of backflow incidents pursuant to CCCPH section 3.5.2;
(8) contact information for cross-connection control personnel including the cross-connection control program coordinator;
(9) maintaining a tracking system with current and relevant information, including:

(A) recordkeeping information required pursuant to CCCPH section 3.5.1,
(B) location and type of each BPA,
(C) location and type of each non-testable backflow preventer used for internal protection in accordance with the California Plumbing Code, if applicable, and
(D) potential hazard from which a BPA is protecting the public water system distribution system;

(10) for user supervisors, if used, the required information pursuant to CCCPH section 3.2.2(f);
(11) the corrective actions, including timeframes for the corrective actions, that a noncommunity water system will implement when:

(A) a cross-connection exists and the BPA installed is not commensurate with the user premises' hazard or no BPA has been installed, or
(B) a BPA or non-testable backflow preventer needs to be replaced or maintained;

(12) a description of the public outreach and education program to comply with CCCPH section 3.1.3(a)(9); and,
(13) the procedures for coordination with local entities (e.g., local health departments with internal cross-connection control programs, building officials, plumbing officials, etc.).

(d) A PWS must ensure its Cross-Connection Control Plan is, at all times, representative of the current operation of its Cross-Connection Control program. The PWS must make its Cross-Connection Control Plan available to the State Water Board for review upon request. If a PWS makes a substantive revision to its Cross-Connection Control Plan, the PWS must submit the revised Cross-Connection Control Plan to the State Water Board for review.

Article 2 – Hazard Assessments and Required Protection

3.2.1 Hazard Assessments

(a) To evaluate the potential for backflow into the PWS, each community water system must conduct an initial hazard assessment of the user premises within its service area and each noncommunity water system must conduct an initial hazard assessment of its water distribution system. The hazard assessment must consider:

(1) The existence of cross-connections;
(2) the type and use of materials handled and present, or likely to be, on the user premises;
(3) the degree of piping system complexity and accessibility;
(4) access to auxiliary water supplies, pumping systems, or pressure systems;
(5) distribution system conditions that increase the likelihood of a backflow event (e.g., hydraulic gradient differences impacted by main breaks and high water-demand situations, multiple service connections that may result in flow-through conditions, etc.);
(6) user premises accessibility;
(7) any previous backflow incidents on the user premises; and
(8) the requirements and information provided in the CCCPH.

(b) Each hazard assessment must identify the degree of hazard to the PWS's distribution system as either a high hazard cross-connection, a low hazard cross-connection, or having no hazard. Examples of some high hazard cross-connection activities may be found in Appendix D.

(c) The hazard assessment must determine whether an existing BPA, if any, provides adequate protection based on the degree of hazard.

(d) Hazard assessments completed prior to the adoption of the CCCPH may be considered as an initial hazard assessment provided that such hazard assessments and associated backflow protection provide protection consistent with the CCCPH and the PWS describes their review of these assessments in the Cross-Connection Control Plan required in CCCPH section 3.1.4.

(e) Subsequent to the initial hazard assessment described in subsection (a), a community water system must perform a hazard assessment under the following criteria:

(1) if a user premises changes account holder, excluding single-family residences;
(2) if a user premises is newly or re-connected to the PWS;
(3) if evidence exists of changes in the activities or materials on a user's premises;
(4) if backflow from a user's premises occurs;
(5) periodically, as identified in the PWS's Cross-Connection Control Plan required pursuant to CCCPH section 3.1.4.;

(6) if the State Water Board requests a hazard assessment of a user's premises; or
(7) if the PWS concludes an existing hazard assessment may no longer accurately represent the degree of hazard.

(f) Noncommunity water systems must conduct an initial or follow-up hazard assessment within three years of the effective date of the CCCPH.

(g) Noncommunity water system must conduct a follow-up hazard assessment of its water distribution system if any changes are made that could result in a cross-connection or any backflow incidents occur.

(h) A cross-connection control specialist must review or conduct each initial and follow-up hazard assessment pursuant to this section and make a written finding that, in the specialist's judgment based on cross-connection control principles, the PWS's hazard assessment properly identified all hazards at the time of the assessment, the appropriate degree of hazards, and the corresponding backflow protection.

3.2.2 Backflow Protection Required

(a) A PWS must ensure its distribution system is protected from backflow from identified hazards through the proper installation, continued operation, and field testing of an approved BPA (see Article 3 for installation and approved BPA criteria). When a DC is required or referenced in the CCCPH, a DCDA or DCDA-II type of assembly may be substituted if appropriate. When an RP is required or referenced in the CCCPH, an RPDA or RPDA-II type of assembly may be substituted if appropriate.

(b) The BPA installed must be no less protective than that which is commensurate with the degree of hazard at a user premises, as specified in this Chapter and as determined based on the results of the hazard assessment conducted pursuant to CCCPH section 3.2.1.

(c) Unless specified otherwise in this Chapter, a PWS must, at all times, protect its distribution system from high hazard cross-connections (see Appendix D for examples), through premises containment, through the use of AG(s) or RP(s).

(1) Following State Water Board review and approval, a PWS may implement an alternate method of premises containment in lieu of a required AG provided that the proposed alternative would not increase the level of risk to protection of public health.
(2) Following State Water Board review and approval, a PWS may accept internal protection in lieu of containment when premises containment is not feasible.

(d) Except as otherwise allowed or prohibited in statute or in CCR Title 22, Division 4, Chapter 3, a swivel-ell may be used instead of an AG for premises containment protection when temporarily substituting tertiary recycled water use areas with potable water from a PWS if all the following criteria are met:

(1) the swivel-ell is approved by the State Water Board;
(2) the PWS has a cross-connection control program, required pursuant to CCCPH section 3.1.3, and the use and operation of the swivel-ell is described in the Cross-Connection Control Plan required pursuant to CCCPH section 3.1.4;
(3) the design and construction-related requirements of the swivel-ell adheres to the criteria in Appendix C;
(4) at least every 12 months, inspections are performed and documented to confirm ongoing compliance with the design and construction-related requirements in Appendix C;
(5) the RP used in conjunction with the swivel-ell is field tested and found to be functioning properly:

(A) immediately upon each switchover to potable water use, a visual inspection of the RP must be completed
(B) within 72 hours of each switchover to potable water use, a field test must be completed, and
(C) at least every 12 weeks the use site is supplied with potable water; and

(6) there is a legally binding agreement between the PWS and the entity supplying the recycled water, signed by those with relevant legal authority, that includes the following requirements:

(A) The State Water Board will be notified within 24 hours of all switchovers to or from potable water, will be given an estimate of the timeframe until the next switchover, and will be provided the results of the field testing required in paragraph (5);
(B) a trained representative of the PWS be present to supervise each switchover; and
(C) within seven days of each switchover, if requested by the State Water Board, the PWS will submit a written report describing compliance with this subsection, as well as potable and recycled water usage information.

(e) Except as noted below, 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 ten years of the effective date of the CCCPH.

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

(2) For existing fire protection systems that do not meet Section 3.2.2 (e)(3) or cannot install DC protection within ten years of the effective date of the CCCPH, a PWS may propose in the cross-connection control plan submitted for CCCPH Section 3.1.4:

(A) an alternative date; or
(B) an alternative method of backflow protection that provides at least the same level of protection to public health.

(3) A BPA is not necessary for a low hazard fire protection system on a residential user premises if the following criteria are satisfied:

(A) the user premises has only one service connection to the PWS;
(B) a single service line onto the user premises exists that subsequently splits on the property for domestic flow and fire protection system flow, such that the fire protection system may be isolated from the rest of the user premises;
(C) a single, water industry standard, water meter is provided to measure combined domestic flow and fire protection system flow;
(D) the fire protection system is constructed of piping materials certified as meeting NSF/ANSI Standard 61; and
(E) the fire protection system's piping is looped within the structure and is connected to one or more routinely used fixtures (such as a water closet) to prevent stagnant water.

(f) The State Water Board and PWS may, at their discretion, require a water user to designate a user supervisor when the user premises has a multi-piping system that conveys various types of fluids and where changes in the piping system are frequently made. If a user supervisor is designated the following is required:

(1) The user supervisor is responsible for the avoidance of cross-connections during the installation, operation and maintenance of the water user's pipelines and equipment. The user supervisor must be trained on the fluids used and backflow protection for the premise, and must inform the PWS of changes in piping, and maintain current contact information on file with the PWS; and
(2) The PWS must include in the Cross-Connection Control Plan required in CCCPH section 3.1.4 the training and qualification requirements for user supervisors, identify the entity that will provide the user supervisor training, and frequency of any necessary recurring training. The training must adequately address the types of hazards and concerns typically found.

(g) Facilities producing, treating, storing, or distributing drinking water that are an approved water supply or water recycling plants as defined by CCR Title 22, Section 60301.710 must have proper internal protection from cross-connections to ensure that all drinking water produced and delivered to customers and workers at those facilities is free from unprotected cross-connections.

Article 3 – Backflow Prevention Assemblies

3.3.1 Standards for Types of Backflow Protection

(a) The PWS must ensure that each AG used for its Cross-Connection Control Program meets 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) (See Appendix B).

(b) The PWS must ensure that each replaced or newly installed PVB, SVB, DC, and RP for protection of the PWS is approved through both laboratory and field evaluation tests performed in accordance with at least one of the following:

> (1) Standards found in Chapter 10 of the *Manual of Cross-Connection Control, Tenth Edition*, published by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research; or
> (2) certification requirements for BPAs in the Standards of ASSE International current as of 2022 that include ASSE 1015-2021 for the DC, ASSE 1048-2021 for the DCDA & DCDA-II, ASSE 1013-2021 for the RP, and ASSE 1047-2021 for the RPDA & RPDA-II and must have the 1YT mark.

(c) BPAs must not be modified following approval granted under section 3.3.1 (b). PWS must require BPA testers to notify the PWS if a water user or PWS-owned BPA has been modified from the CCCPH section 3.3.1 (b) approval.

3.3.2 Installation Criteria for Backflow Protection

(a) For AGs, the following is required:

> (1) 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 PWS;
> (2) 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 PWS;
> (3) the PWS must ensure that the AG specified in CCCPH section 3.3.1 (a) has been installed; and
> (4) any new air gap installation at a user's service connection must be reviewed and approved by the State Water Board prior to installation.

(b) RPs must be installed such that the lowest point of an assembly is a minimum of twelve inches above grade, and, unless an alternative is approved by the PWS, 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 CCCPH section 3.3.2 (b). Below ground installation can be considered if approved by the PWS where it determines no alternative options are available.

(d) A PVB or SVB must be installed a minimum of twelve inches above all downstream piping and outlets.

(e) SVBs may not be used for premises containment. PVBs may only be used for roadway right of way irrigation systems as premises containment where there is no potential for backpressure.

(f) A RP or DC 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. The PWS may approve alternate clearances providing that there is adequate clearance for field testing and maintenance.

(g) Backflow protection must be located as close as practical to the water user's service connection unless one or more alternative locations have been approved by the PWS. If internal protection is provided in lieu of premises containment, the PWS must obtain access to the user premises and must ensure that the on-site protection meets the requirements of this Chapter for installation, field testing, and inspections.

(h) Each BPA and air gap separation must be accessible for field testing, inspection, and maintenance.

3.3.3 Field Testing and Repair of Backflow Prevention Assemblies and Air Gap Inspection

(a) PWS must ensure that all BPAs installed for its Cross-Connection Control Program are field tested following installation, repair, depressurization for winterizing, or permanent relocation. All required field testing must be performed by certified backflow prevention assembly testers.

(b) BPAs must be field tested at least annually. The CCCPH does not preclude a PWS, the State Water Board, or a local health agency from requiring more frequent field testing for premises with high hazard cross-connection or BPA at increased risk of testing failure.

(c) Air-gap separations must be visually inspected at least annually to determine compliance with this Chapter by persons certified as backflow prevention assembly testers or certified as a cross-connection control specialist pursuant to this Chapter.

(d) PWS must receive passing field tests before providing continuous service to a water user with a newly installed BPA.

(e) PWS must ensure that BPAs that fail the field test are repaired or replaced within 30 days of notification of the failure. Extensions may be allowed by the PWS if included as part of the Cross-Connection Control Plan.

(f) PWS must require backflow prevention assembly testers to notify the PWS 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 user premises during field testing. PWS must immediately conduct an investigation and discontinue service to the user premises if a backflow incident is confirmed, and water service must not be restored to that user premises until the PWS receives a confirmation of a passing BPA field test from a backflow prevention assembly tester and the assembly is protecting the PWS.

Article 4 – Backflow Prevention Assembly Testers and Cross-Connection Control Specialists

3.4.1 Backflow Prevention Assembly Tester Certification

(a) A PWS must ensure that each BPA required by this Chapter to protect the public water system is field tested by a person with valid certification from a certifying organization recognized by the State Water Board pursuant to this Article.

(b) A State Water Board-recognized organization certifying backflow prevention assembly testers is one that has a certification process that, at a minimum, includes the following:

(1) A timed and proctored written[6] exam, using a closed-book, objective grading format, consisting of no less than 100 questions for initial certification and no less than 50 questions for recertification. A passing score must be achieved by an examinee as a requirement for certification.

(A) Written exam proctors must:

1. not provide an examinee any assistance in answering exam questions, verbal or otherwise; and
2. be impartial.

(B) Passing scores for the written exams are to be determined prior to exam sessions, such that passing a written exam demonstrates sufficient knowledge of subjects associated with the proper field testing of BPAs, including but not limited to:

1. the hydraulics and theory of backflow;
2. California's laws, regulations, and requirements related to cross-connection control;
3. types of BPA field test equipment and the need to verify accuracy, at least annually and when otherwise necessary, to ensure accuracy of field test results;
4. field test procedures for an RP, RPDA, RPDA-II, DC, DCDA, DCDA-II, PVB, and SVB using the procedures provided in the *Manual of Cross-Connection Control, Tenth Edition,* published by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or equivalent;
5. identification of improperly functioning BPAs (i.e., diagnostics or troubleshooting); and
6. recordkeeping and safety.

[6] The requirement for a written exam does not preclude using computerized exams.

(2) A performance (i.e., hands-on) exam, using a closed-book, objective grading process and the field test procedures in paragraph (1)(B)(4), designed such that passing the performance exam demonstrates proficiency in accurately determining the operating condition of an RP, DC, PVB, and SVB, when properly or improperly functioning, including but not limited to BPAs with leaks in shutoff valves, and failures in check valves, air inlet valves, or relief valves. A passing score must be achieved by an examinee as a requisite for certification. The performance exam process must include the following:

(A) Performance exam proctors must:

1. be certified as a backflow prevention assembly tester pursuant to this Article;
2. evaluate no more than one examinee at a time;
3. not provide an examinee any assistance in answering exam questions, verbal or otherwise;
4. provide no indication an examinee has erred until completion of a BPA field test, at which time only the fact the examinee has erred may be indicated (i.e., not the nature of the error);
5. be impartial and not affiliated with the certifying organization's preparation of, or preparatory course for (if applicable), the performance exam; and
6. not evaluate an examinee who was trained by the proctor during the six-month period prior to the exam or other conflict of interest.

(B) An examinee is considered to have failed a performance exam if the examinee:

1. makes a field test procedure or recording error that could impact an accurate determination of the operating condition of a BPA,
2. completes the BPA performance exam form with an error,
3. is informed of making an error (see subparagraph (A)(4)) and begins the procedure a second time, and
4. errs a second time and completes the BPA performance exam form accordingly.

(3) recertification requirements of no less frequently than every three years which includes both a written and performance exam;
(4) provisions for revocation of a backflow prevention assembly tester's certification, including but not limited to, revocation for falsifying field test results or field test reports;

(5) a website providing public access to the most recent list of backflow prevention assembly testers:

(A) who hold a valid certification from the certifying organization. At a minimum, the list is to include each backflow prevention assembly tester's last name, first name, certification number, and the date on which each backflow prevention assembly tester's certification expires; and
(B) whose certification was revoked, pursuant to paragraph (4), in the three years preceding the date of the list. At a minimum, the list is to include each backflow prevention assembly tester's last name, first name, revoked certification number, the date on which each backflow prevention assembly tester's certification was revoked, and the reason for revocation.

(6) as a prerequisite to sections 3.4.1(b)(1) and (b)(2), completion of an instructional training course accepted by the certifying organization[7] that covers the subjects in subsection (1)(B) and is no less than 30 hours in length over no fewer than four days for:

(A) a backflow prevention assembly tester's initial certification;
(B) a backflow prevention assembly tester's recertification as a result of revocation; or

(7) In lieu of compliance with section 3.4.1(b)(6) a certifying organization may accept two years prior experience in backflow prevention assembly testing.

(c) To be recognized by the State Water Board as a certifying organization for backflow prevention assembly testers, a certifying organization shall:

(1) submit an application with the following information to the State Water Board for review:

(A) written documentation of a certification program that includes a process that is no less stringent than the criteria in subsection (b);
(B) evidence that the organization's certification program and exam process has been reviewed, with concerns adequately addressed, by a credentialed psychometrician proficient in the design of objective exams, experienced in the assessment of certification or licensing organizations, and familiar with the application of the requirements of *ISO[8]/IEC[9] 17024: Conformity Assessment- General Requirements for Bodies Operating Certification of Persons*; and

[7] But not limited only to training provided by the certifying organization or its affiliates.
[8] International Organization for Standardization
[9] International Electrotechnical Commission

(C) a written statement, signed by the certifying organization's representative(s) having the authority and legal responsibility for operation of the certifying organization, attesting that the certifying organization will implement its certification program in a manner meeting or exceeding the criteria in subsection (b) and consistent with the application submitted to the State Water Board.

(2) adequately address each State Water Board comment and/or question concerning the application, and
(3) receive written acknowledgment from the State Water Board that the application is complete.

(d) A certifying organization, accredited by the American National Standards Institute (ANSI) in accordance with ISO/IEC 17024, which complies with subsection (b), will be considered to be a State Water Board-recognized certifying organization. Beginning three years after the effective date of the CCCPH, only those testers with a valid certification from an ANSI-accredited certifying organization shall satisfy subsection (a) and certifications obtained by organizations in accordance with subsection (c) will be invalid.

(e) This Article does not preclude a local health agency from maintaining a backflow prevention assembly tester certification program for the field testing of BPAs within the local health agency's jurisdiction. Accepting a tester certified by a local health agency does not relieve a PWS from meeting the requirements of this Article.

(f) This Article does not preclude a PWS from disallowing the use of an individual tester certified pursuant to this Article if the PWS has reason to believe a certified tester may not be proficient in accurately determining the operating condition of BPA, or for any other reason (e.g., fraud, deceit, negligence, misconduct, etc.). A PWS must report any evidence of a tester falsifying reports to that tester's certifying organization.

(g) This Article is effective July 1, 2026.

3.4.2 Cross-Connection Control Specialist Certification

(a) A PWS must ensure that cross-connection control specialists, used pursuant to the CCCPH, have valid certification from a certifying organization recognized by the State Water Board pursuant to this Article.

(b) A State Water Board-recognized organization certifying cross-connection control specialists is one that has a certification process that, at a minimum, includes the following:

(1) A timed and proctored, written[10] exam, using a closed-book, objective grading format, consisting of no less than 100 questions for certification. A passing score must be achieved by an examinee as a requirement for certification.

(A) Written exam proctors must:

1. not provide an examinee any assistance in answering exam questions, verbal or otherwise; and
2. be impartial.

(B) Passing scores for the exams are to be determined prior to exam sessions, such that passing an exam demonstrates sufficient and comprehensive range of knowledge of the subjects provided in Appendix E, as they may relate to cross-connection control and the causes, effects, and prevention of backflow.

(2) recertification requirements of no less frequently than every three years. Recertification may be done through at least one of the following:

(A) an exam as required by section 3.4.2 (b)(1),
(B) through 12 contact hours from continuing education courses covering material in Appendix E or,
(C) a combination of exam and continuing education contact hours equivalent to (A) or (B);

(3) provisions for revocation of a specialist's certification, including but not limited to, falsifying information or providing negligent recommendations inconsistent with industry-standard cross-connection control guidelines;
(4) a website providing public access to the most recent list of cross-connection control specialists:

(A) who hold a valid certification from the certifying organization. At a minimum, the list is to include each specialist's last name, first name, certification number, and the date on which each specialist's certification expires; or

[10] The requirement for a written exam does not preclude using computerized exams.

(B) whose certification was revoked, pursuant paragraph (3), in the three years preceding the date of the list. At a minimum, the list is to include each specialist's last name, first name, revoked certification number, the date on which each specialist's certification was revoked, and the reason for revocation.

(5) initial certification requirements:

(A) a valid backflow prevention assembly tester certification from a certification organization recognized by the State Water Board pursuant to section 3.4.1; and
(B) completion of an instructional training course (acceptable to the certifying organization[11]) that covers the subjects in Appendix E and is no less than 30 hours in length over no fewer than five days (inclusive of an exam, if provided). This paragraph does not preclude a certification organization from providing the instructional training course to the public, including certified specialists.
(C) As an alternative to (A) the certifying organization may accept additional instruction in the subject areas of testing, maintaining and repairing BPAs equivalent in length and scope to the requirements in 3.4.1(b)(6).
(D) As an alternative to (A) the certifying organization may accept a minimum of five (5) years documented experience performing cross-connection control specialist duties, as outlined in Appendix E.

(c) To be recognized by the State Water Board as a certifying organization for cross-connection control specialists, a certifying organization shall:

(1)submit an application with the following information to the State Water Board for review:

(A) Written documentation of a certification program that includes a process that is no less stringent than the criteria in subsection (b);
(B) evidence that the organization's certification program and exam process has been reviewed, with concerns adequately addressed, by a credentialed psychometrician proficient in the design of objective exams, experienced in the assessment of certification or licensing organizations, and familiar with the application of the requirements of *ISO[12]/IEC[13] 17024: Conformity Assessment- General Requirements for Bodies Operating Certification of Persons*; and

[11] But not limited only to training provided by the certifying organization or its affiliates.
[12] International Organization for Standardization
[13] International Electrotechnical Commission

(C) a written statement, signed by the certifying organization's representative(s) having the authority and legal responsibility for operation of the certifying organization, attesting that the certifying organization will implement its certification program in a manner meeting or exceeding the criteria in subsection (b) and consistent with the application submitted to the State Water Board.

(2) adequately address each State Water Board comment and question concerning the application, and
(3) receive a written acknowledgment from the State Water Board that the application is complete:

(d) A certifying organization, accredited by the American National Standards Institute (ANSI) in accordance with ISO/IEC 17024, which complies with subsection (b), will be considered to be a State Water Board-recognized certifying organization. Beginning three years after the effective date of the CCCPH, only those specialists with a valid certification from an ANSI-accredited certifying organization shall satisfy subsection (a) and certifications obtained by organizations in accordance with subsection (c) will be invalid.

(e) This Article does not preclude a local health agency from maintaining a cross-connection control specialist certification program for specialists within the local health agency's jurisdiction. Using a specialist certified by a local health agency does not relieve a PWS from meeting the requirements of this Article.

(f) This Article does not preclude a PWS from disallowing the use of an individual cross-connection control specialist certified pursuant to this Article if the PWS has reason to believe a certified specialist may not be proficient in their knowledge of cross-connection control and the causes, effects, and prevention of backflow, or for any other reason (e.g., fraud, deceit, negligence, misconduct, etc.). A PWS must report any evidence of a specialist falsifying reports to that specialist's certifying organization.

(g) This Article is effective July 1, 2026.

Article 5 – Recordkeeping, Backflow Incident Response, and Notification

3.5.1 Recordkeeping

(a) Each PWS must maintain the following records:

(1) The two most recent hazard assessments for each user premise, conducted pursuant to CCCPH section 3.2.1 (Hazard Assessment);
(2) for each BPA, the associated hazard or application, location, owner, type, manufacturer and model, size, installation date, and serial number;
(3) for each AG installation, the associated hazard or application and the location, owner, and as-built plans of the AG;
(4) results of all BPA field testing, AG inspection, and swivel-ell inspections and field tests for the previous three calendar years, including the name, test date, repair date, and certification number of the backflow prevention assembly tester for each BPA field test and AG and swivel-ell;
(5) repairs made to, or replacement or relocation of, BPAs for the previous three calendar years;
(6) the most current cross-connection tests (e.g. shutdown test, dye test);
(7) if a user supervisor is designated for a user premise, the current contact information for the user supervisor and water user, and any applicable training and qualifications as described by CCCPH section 3.2.2(f);
(8) descriptions and follow-up actions related to all backflow incidents;
(9) if any portion of the cross-connection control program is carried out under contract or agreement, a copy of the current contract or agreement;
(10) the current Cross-Connection Control Plan as required in CCCPH section 3.1.4.; and
(11) any public outreach or education materials issued as required in CCCPH section 3.1.3.(a)(9) for the previous three calendar years.

(b) All information in subsection (a) must be available to the State Water Board upon request.

3.5.2 Backflow Incident Response Procedure

Each PWS must include backflow incident response procedures in the Cross-Connection Control Plan required in CCCPH section 3.1.4. The PWS must describe its procedures for investigating and responding to suspected backflow incidents including, but not limited to, the following:

(a) Consideration of complaints or reports of changes in water quality as possible incidents of backflow;

(b) Water quality sampling and pressure recording; and

(c) Documentation of the investigation, and any response and follow-up activities.

3.5.3 Backflow Incident Notification

(a) Each PWS must notify the State Water Board and local health agencies of any known or suspected incident of backflow within 24 hours of the determination. If required by the State Water Board, a PWS must issue a Tier 1 public notification pursuant to CCR, Title 22, Section 64463.1.

(b) If required by the State Water Board, the PWS must submit, by a date specified by the State Water Board, a written incident report describing the details and affected area of the backflow incident, the actions taken by the PWS in response to the backflow incident, and the follow up actions to prevent future backflow incidents. The written report must contain, at a minimum, the information requested in Appendix F.

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Appendix

Appendix A: Assembly Bill 1671 (2017, Chapter 533) and Assembly Bill 1180 (2019, Chapter 455).
Appendix B: ASME A112.1.2-2012(R2017) Table 1, Minimum Air Gaps for Generally used Plumbing Fixtures, page 4
Appendix C: Backflow Prevention Assembly Diagrams
Appendix D: High Hazard Premises
Appendix E: General Range of Knowledge for Cross-Connection Control Specialists
Appendix F: Example Backflow Incident Reporting Form
Appendix G: Related Statutes and Regulations

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Appendix A

Assembly Bill 1671 (2017, Chapter 533)
Assembly Bill 1180 (2019, Chapter 455)

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Assembly Bill No. 1671

CHAPTER 533

An act to amend Section 116810 of, and to add Sections 116407 and 116555.5 to, the Health and Safety Code, relating to drinking water.

[Approved by Governor October 6, 2017. Filed with Secretary of State October 6, 2017.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1671, Caballero. Backflow protection and cross-connection controls: standards.

(1) Existing law, the California Safe Drinking Water Act, requires the State Water Resources Control Board to administer provisions relating to the regulation of drinking water to protect public health, including, but not limited to, conducting research, studies, and demonstration projects relating to the provision of a dependable, safe supply of drinking water, enforcing the federal Safe Drinking Water Act, adopting regulations, and conducting studies and investigations to assess the quality of private domestic water wells. Existing law makes certain violations of the act a misdemeanor.

Existing law requires any person who owns a public water system to ensure that the system does certain things, including, but not limited to, that it will not be subject to backflow under normal operating conditions. Existing law, to ensure that testing and maintenance of backflow prevention devices are performed by persons qualified to do testing and maintenance, authorizes local health officers to maintain programs for certification of backflow prevention device testers and requires the certification program to be consistent with backflow protection regulations adopted by the state board. A violation of these provisions, or an order by a local health officer pursuant to these provisions, is a misdemeanor.

This bill would require a public water system to implement a cross-connection control program that complies with, and would require the certification program to be consistent with, applicable regulations and the standards described in (2).

(2) Existing regulations establish standards for a backflow prevention device and cross-connection control.

This bill, on or before January 1, 2020, would require the state board to adopt standards for backflow protection and cross-connection control and would authorize the state board to do so through the adoption of a policy handbook, as specified. By authorizing the state board to adopt standards, the violation of which would be a crime, the bill would create a new crime and impose a state-mandated local program.

(3) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Section 116407 is added to the Health and Safety Code, to read:

116407. (a) On or before January 1, 2020, the state board shall adopt standards for backflow protection and cross-connection control.

(b) The state board may implement subdivision (a) through the adoption of a policy handbook that is not subject to the requirements of Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code. The policy handbook shall include standards for backflow protection and cross-connection control. In developing the standards and any amendments to those standards, the state board shall consult with state and local agencies and other persons whom the state board has identified as having expertise in the subject of backflow protection and cross-connection control. The state board shall hold at least two public hearings before adopting the policy handbook. The policy handbook shall be posted on the board's Internet Web site.

(c) (1) Upon the effective date of a policy handbook adopted by the state board pursuant to subdivision (b), the regulations set forth in Article 1 (commencing with Section 7583) and Article 2 (commencing with Section 7601) of Group 4 of Subchapter 1 of Chapter 5 of Division 1 of Title 17 of the California Code of Regulations shall become inoperative, and, 90 days thereafter, are repealed, unless the state board makes a determination not to repeal a specific regulation.

(2) If the state board determines not to repeal a specific regulation pursuant to paragraph (1), the state board shall provide to the Office of Administrative Law and the Secretary of State written notice of its determination, including identification of the specific regulation that is not repealed. That regulation, upon the provision of that written notice to the Office of Administrative Law and the Secretary of State, shall become operative.

SEC. 2. Section 116555.5 is added to the Health and Safety Code, to read:

116555.5. A public water system shall implement a cross-connection control program that complies with applicable regulations and with standards adopted by the board pursuant to Section 116407.

SEC. 3. Section 116810 of the Health and Safety Code is amended to read:

116810. To ensure that testing and maintenance of backflow prevention devices are performed by persons qualified to do testing and maintenance,

local health officers may maintain programs for certification of backflow prevention device testers. The local health officer may suspend, revoke, or refuse to renew the certificate of a tester, if, after a hearing before the local health officer or his or her designee, the local health officer or his or her designee finds that the tester has practiced fraud or deception or has displayed gross negligence or misconduct in the performance of his or her duties as a certified backflow prevention device tester. The local health officer may collect fees from certified testers to offset the cost of the certification program provided pursuant to this section. The certification standards shall be consistent with standards adopted by the state board pursuant to Section 116407 and any other applicable backflow protection regulations.

SEC. 4. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

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Assembly Bill No. 1180

CHAPTER 455

An act to amend Section 116407 of the Health and Safety Code, and to add Section 13521.2 to the Water Code, relating to water.

[Approved by Governor October 2, 2019. Filed with Secretary of State October 2, 2019.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1180, Friedman. Water: recycled water.

(1) Existing law, the California Safe Drinking Water Act, requires the State Water Resources Control Board to administer provisions relating to the regulation of drinking water to protect public health. Existing law requires, on or before January 1, 2020, the state board to adopt standards for backflow protection and cross-connection control through the adoption of a policy handbook, as specified.

This bill would require that handbook to include provisions for the use of a swivel or changeover device to supply potable water to a dual-plumbed system during an interruption in recycled water service.

(2) Existing law requires the state board to establish uniform statewide recycling criteria for each varying type of use of recycled water where the use involves the protection of public health.

This bill would require the state board, on or before January 1, 2023, as specified, to update the uniform statewide criteria for nonpotable recycled water uses.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares all of the following:

(a) On December 11, 2018, the State Water Resources Control Board unanimously adopted an amendment to the policy for water quality control for recycled water, which included a goal to increase the use of recycled water in the state from 714,000 acre-feet per year in 2015 to 1,500,000 acre-feet per year by 2020 and 2,500,000 acre-feet per year by 2030.

(b) Section 13521 of the Water Code requires the state board to establish uniform statewide recycling criteria for each varying type of use of recycled water where the use involves the protection of public health.

(c) The regulations establishing the uniform statewide criteria for recycled water uses are set forth in Chapter 3 (commencing with Section 60301.050) of Division 4 of Title 22 of the California Code of Regulations. The regulations that pertain to nonpotable recycled water uses have not been updated since 2000.

(d) The regulations relating to backflow protection and cross-connection control for recycled water are set forth in Article 1 (commencing with Section 7583) and Article 2 (commencing with Section 7601) of Group 4 of Subchapter 1 of Chapter 5 of Division 1 of Title 17 of the California Code of Regulations. These regulations have not been updated since 1987.

(e) Section 1 of Chapter 533 of the Statutes of 2017 (Assembly Bill 1671 of the 2017–18 Regular Session) requires, on or before January 1, 2020, the state board to adopt backflow protection and cross-connection control standards and authorizes their implementation through a policy handbook.

(f) In order to maximize the amount of recycled water California can safely use for beneficial purposes, it is necessary to update the uniform statewide criteria for nonpotable recycled water uses and specify certain associated backflow protection and cross-connection control provisions.

SEC. 2. Section 116407 of the Health and Safety Code is amended to read:

116407. (a) On or before January 1, 2020, the state board shall adopt standards for backflow protection and cross-connection control.

(b) (1) The state board may implement subdivision (a) through the adoption of a policy handbook that is not subject to the requirements of Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code. The policy handbook shall include standards for backflow protection and cross-connection control. In developing the standards and any amendments to those standards, the state board shall consult with state and local agencies and other persons whom the state board has identified as having expertise in the subject of backflow protection and cross-connection control. The state board shall hold at least two public hearings before adopting the policy handbook. The policy handbook shall be posted on the board's internet website.

(2) (A) The policy handbook described in this subdivision shall include provisions for the use of a swivel or changeover device to supply potable water to a dual-plumbed system during an interruption in recycled water service.

(B) The use of a swivel or changeover device shall be consistent with any notification and backflow protection provisions contained in the policy handbook.

(c) (1) Upon the effective date of a policy handbook adopted by the state board pursuant to subdivision (b), the regulations set forth in Article 1 (commencing with Section 7583) and Article 2 (commencing with Section 7601) of Group 4 of Subchapter 1 of Chapter 5 of Division 1 of Title 17 of the California Code of Regulations shall become inoperative, and, 90 days thereafter, are repealed, unless the state board makes a determination not to repeal a specific regulation.

(2) If the state board determines not to repeal a specific regulation pursuant to paragraph (1), the state board shall provide to the Office of Administrative Law and the Secretary of State written notice of its determination, including identification of the specific regulation that is not repealed. That regulation, upon the provision of that written notice to the

Office of Administrative Law and the Secretary of State, shall become operative.

SEC. 3. Section 13521.2 is added to the Water Code, to read:

13521.2. (a) On or before January 1, 2023, the state board shall update the uniform statewide criteria for nonpotable recycled water uses established in Chapter 3 (commencing with Section 60301.050) of Division 4 of Title 22 of the California Code of Regulations. The deadline imposed by this section is mandatory only if the Legislature has appropriated sufficient funds, as determined by the executive director of the state board, in the annual Budget Act or otherwise to cover the state board's costs associated with the performance of the duties imposed by this section.

(b) For purposes of the update to the uniform statewide criteria for nonpotable recycled water uses described in subdivision (a), the state board shall adopt a regulation that incorporates by reference the criteria and applicable backflow protection provisions, including the provisions for the use of a swivel or changeover device for dual-plumbed systems, that are contained in the most recently adopted version of the policy handbook adopted pursuant to Section 116407 of the Health and Safety Code and any future versions of the policy handbook.

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Appendix B

ASME A112.1.2-2012(R2017) Table 1, Minimum Air Gaps for Generally used Plumbing Fixtures, page 4

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Appendix B
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 C

Backflow Prevention Assembly Diagrams

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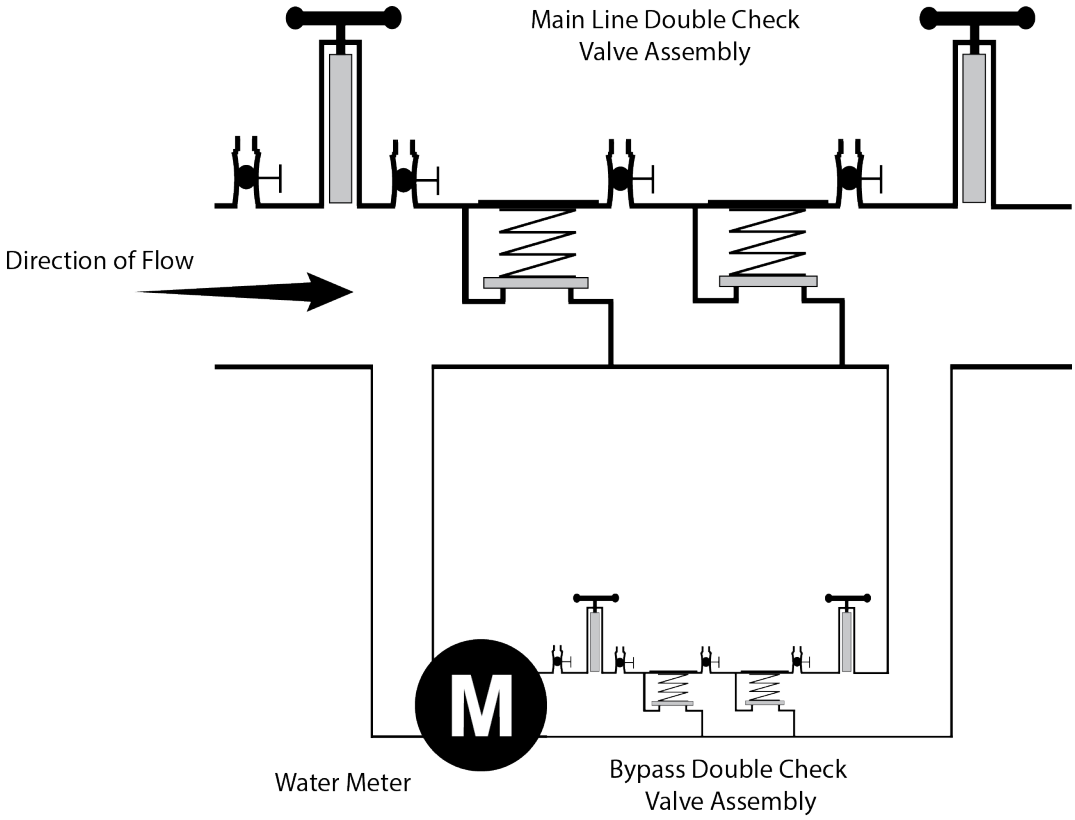
Appendix C

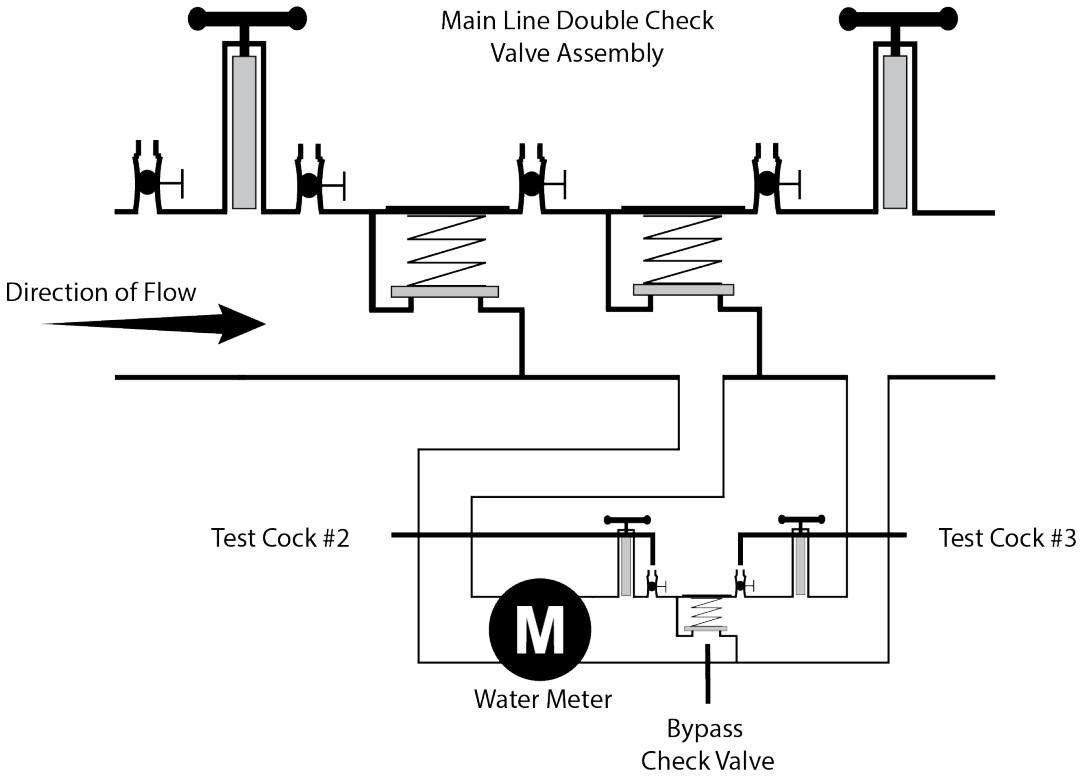
Diagram 1
Double check detector backflow prevention assembly[1]



[1] © 2023 University of Southern California. Used with permission.

Appendix C

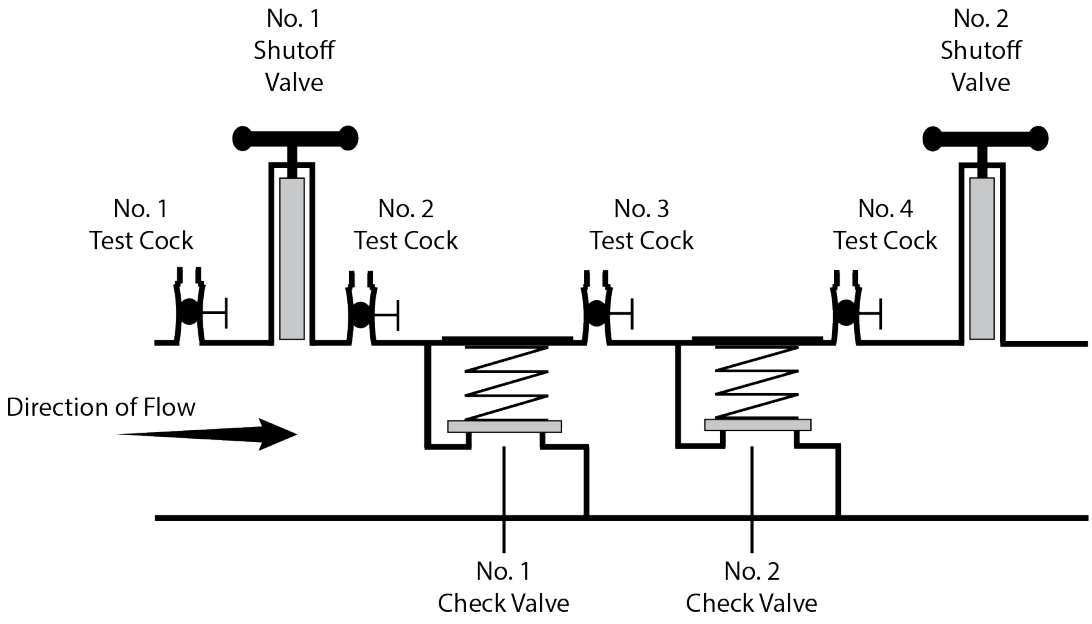
Diagram 2
Double check detector backflow prevention assembly – type II [2]



[2] © 2023 University of Southern California. Used with permission.

Appendix C

Diagram 3
Double check valve backflow prevention assembly[3]

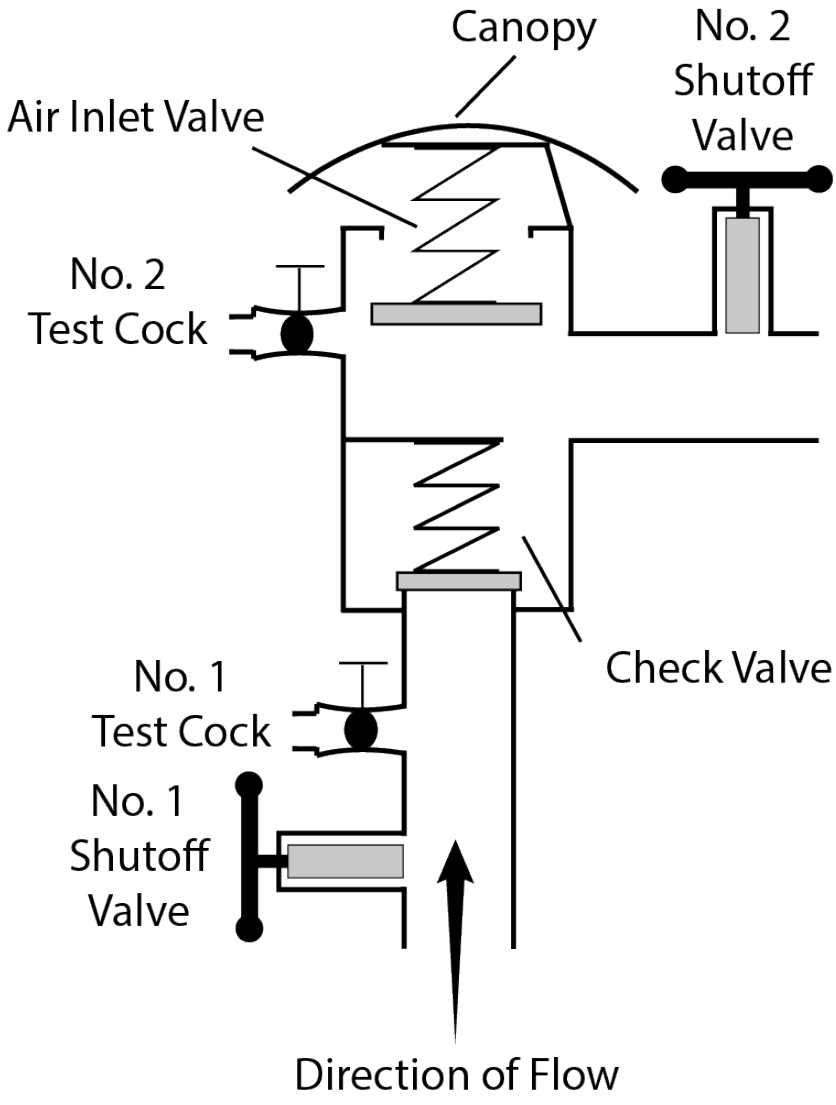


[3] © 2023 University of Southern California. Used with permission

Appendix C

Diagram 4

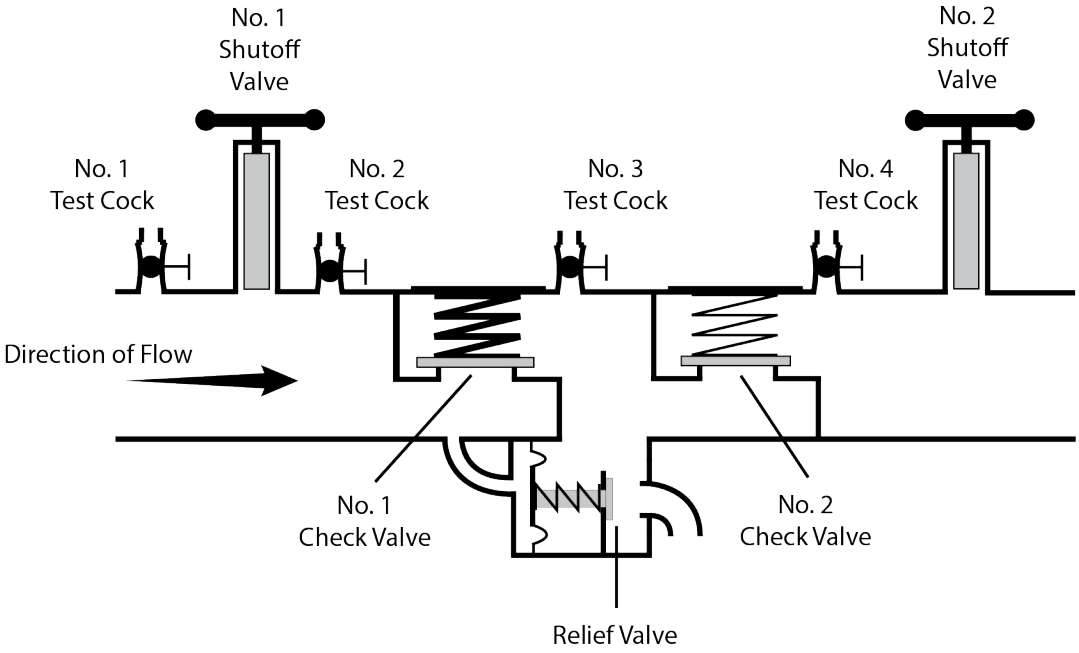
Pressure vacuum breaker backsiphonage prevention assembly [4]



[4] © 2023 University of Southern California. Used with permission

Appendix C

Diagram 5
Reduced pressure principle backflow prevention assembly [5]

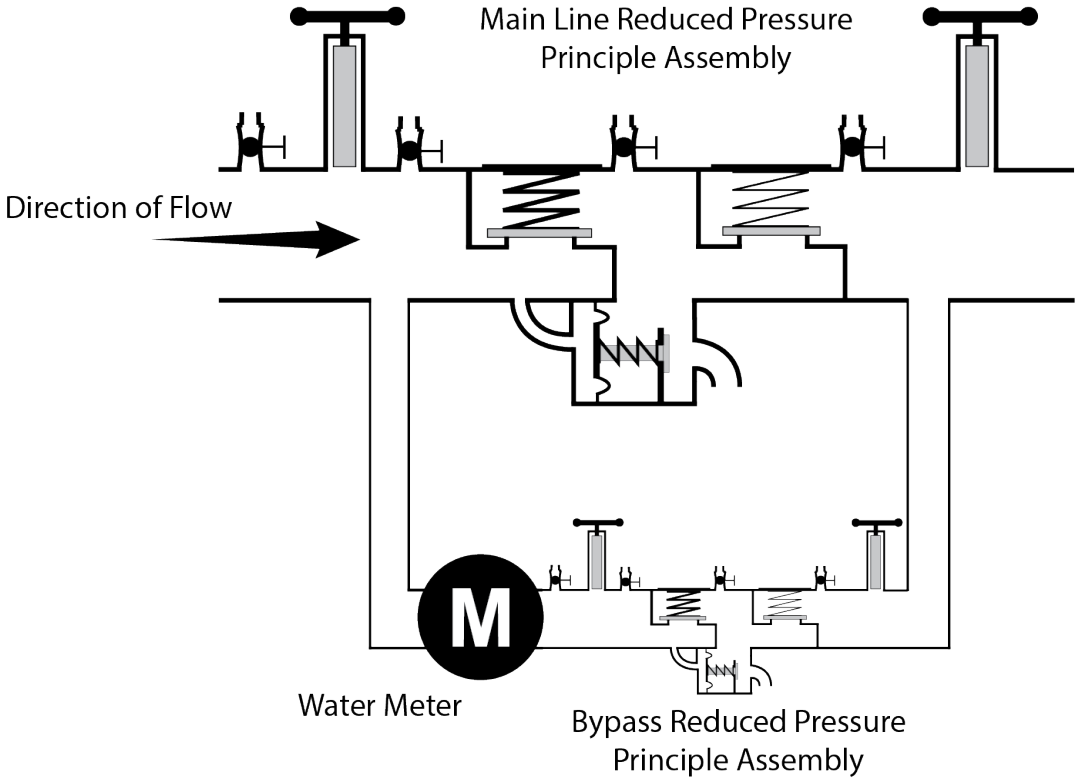


[5] © 2023 University of Southern California. Used with permission

Appendix C

Diagram 6

Reduced pressure principle detector backflow prevention assembly [6]

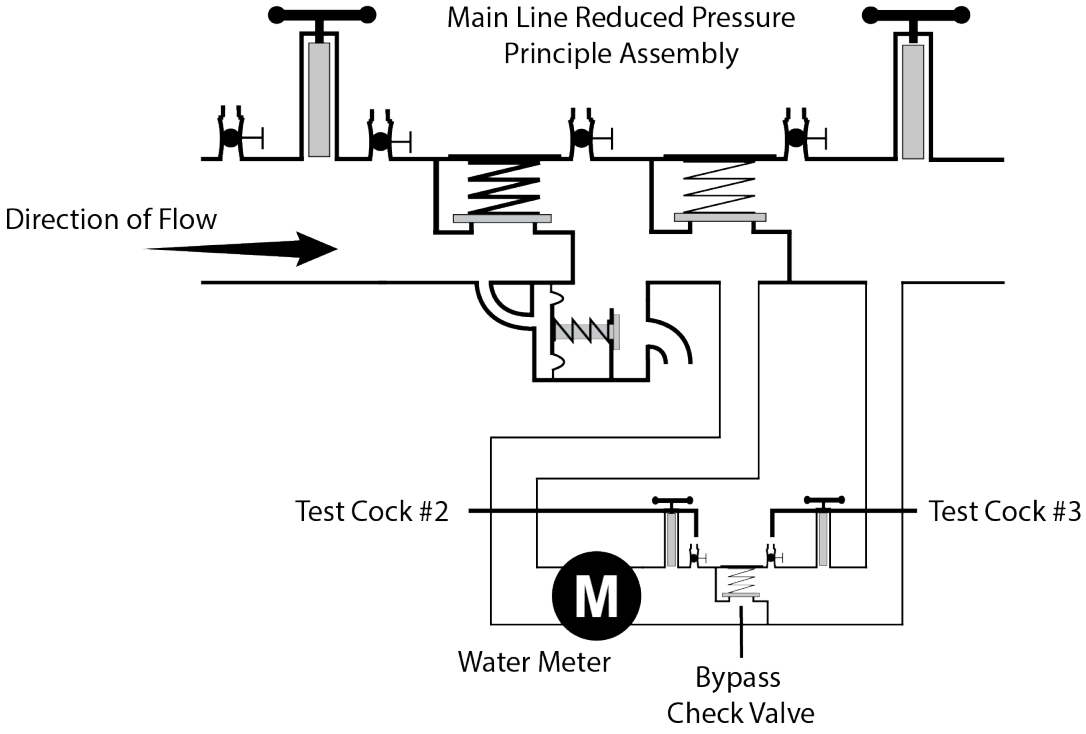


[6] © 2023 University of Southern California. Used with permission

Appendix C

Diagram 7

Reduced pressure principle detector backflow prevention assembly – type II [7]

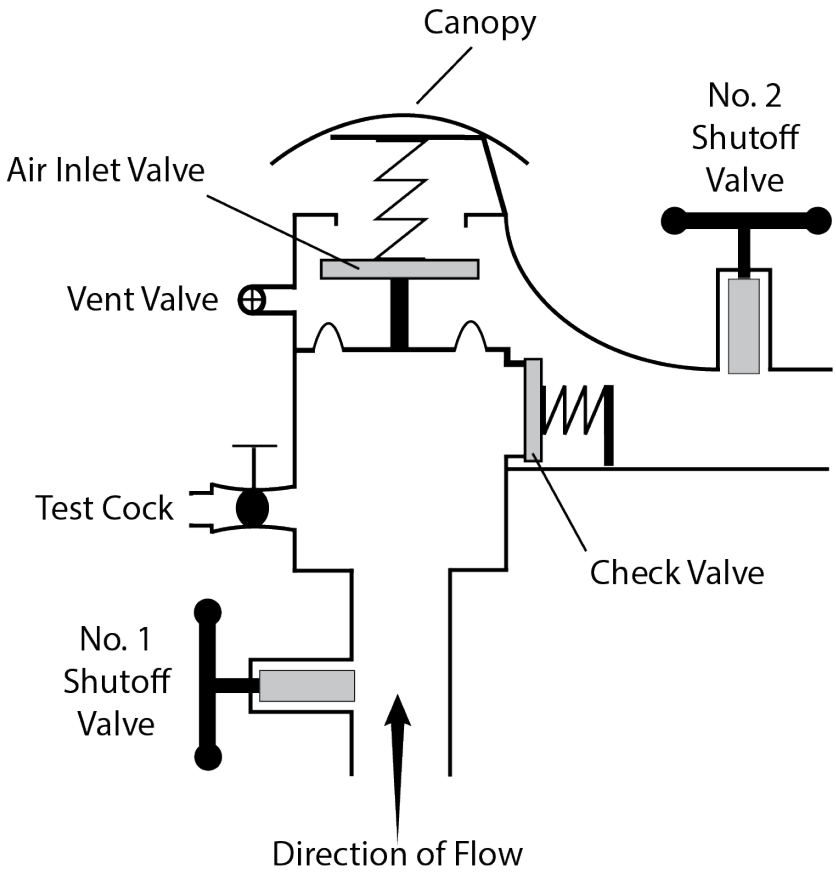


[7] © 2023 University of Southern California. Used with permission

Appendix C

Diagram 8

Spill-resistant pressure vacuum breaker backsiphonage prevention assembly [8]



[8] © 2023 University of Southern California. Used with permission

Appendix C

Swivel-Ell Design and Construction Criteria

The criteria below, in conjunction with the swivel-ell diagrams that follow (Diagrams 9a and 9b), are **minimum** acceptable design and construction-related requirements for utilizing a swivel-ell. For restrictions and allowances for utilizing a swivel-ell, see CCCPH section 3.2.2.

A. Prior to operation of a swivel-ell, the PWS will receive approval for the design and construction plans of that swivel-ell from the State Water Board.

B. The drinking water supply must not, under any circumstances, be directly connected to the recycled water supply, nor be designed such that the recycled water use site could be supplied concurrently by a recycled water supply and a drinking water supply.

C. The drinking water supply line and the recycled water supply line must be offset (see Diagram 9b) in a manner that ensures a tee-connection, spool, or other prefabricated mechanical appurtenance(s) could not be readily utilized in lieu of the swivel-ell connection, nor result in the recycled water use site being supplied concurrently by recycled water and drinking water.

D. The recycled water supply line used in conjunction with the swivel-ell must be the only recycled water supply to the recycled water use area.

E. The swivel-ell must be located as close as practical to the public water system service connection, with the swivel-ell connection being located as close as practical to the RP upstream of the swivel-ell.

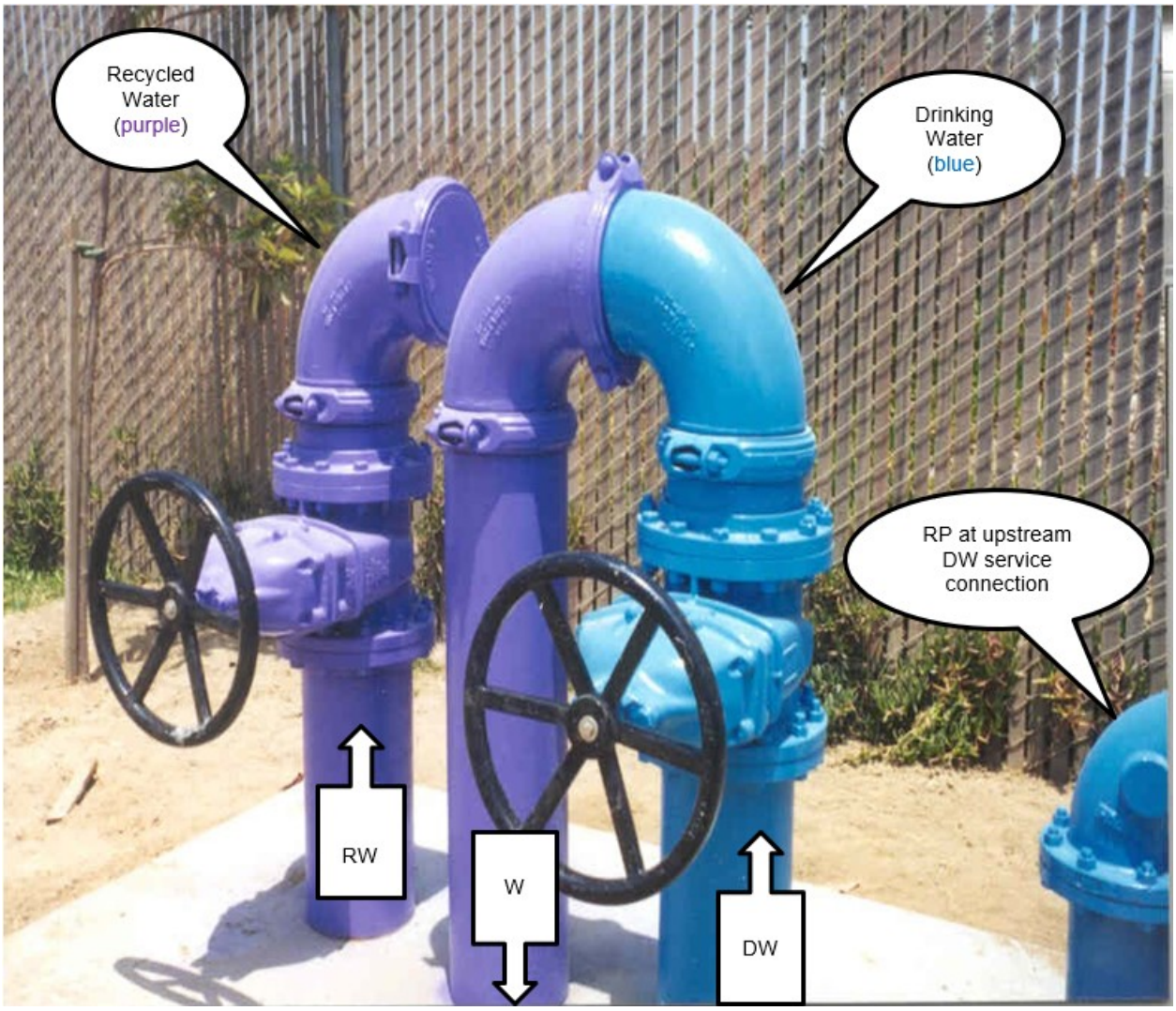
F. The swivel-ell must:

1. be located above ground;
2. be color-coded pursuant to section 116815 of the CHSC and its implementing regulations;
3. include appropriate signage, as required by regulation and the State Water Board;
4. be provided the security necessary to prevent interconnections, vandalism, unauthorized entry, etc.; and
5. be provided with meters on both the recycled water service and drinking water service connections.

Legend for Diagram 9a and 9b (also see next page)

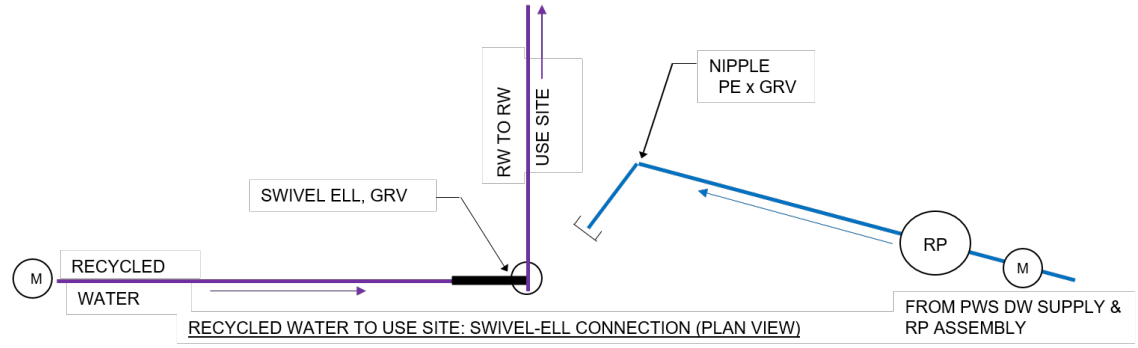
RP = Reduced pressure principle backflow prevention assembly
RW = Tertiary-treated recycled water originating from wastewater treatment facility
DW = Drinking water originating from a public water system
W = Water (tertiary recycled water **or** drinking water) to use site. As pictured, configured for supplemental drinking water to the use site.
M = Meter (*next page*)
PE = Plain End (*next page*)
GRV = Groove (*next page*)
PWS = Public Water System (*next page*)

Diagram 9a: Example Swivel-Ell Pictorial (also see Plan View Schematics)

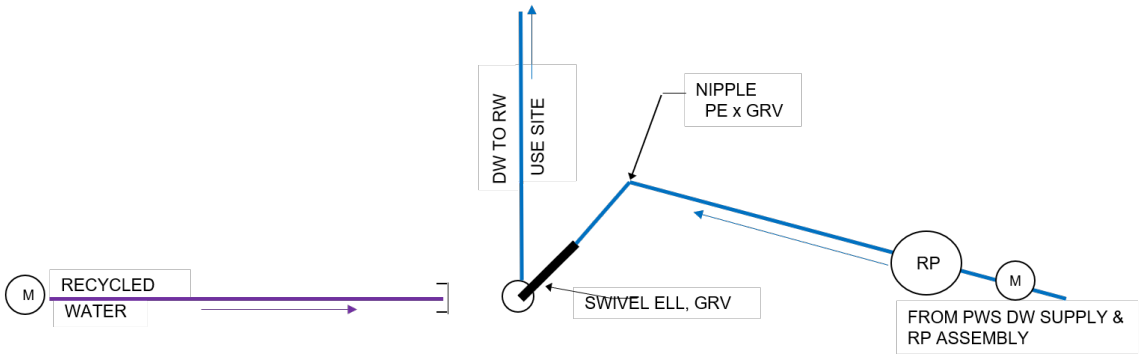


Note: The RP, a required component of an acceptable swivel-ell, is not shown in the picture.

Diagram 9b: Swivel-Ell Typical Plan View Schematics
(not intended to be an exact portrayal of the pictorial)



RECYCLED WATER TO USE SITE: SWIVEL-ELL CONNECTION (PLAN VIEW)



POTABLE WATER TO USE SITE: SWIVEL-ELL CONNECTION (PLAN VIEW)

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Appendix D

High Hazard Premises

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APPENDIX D

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 Chapter 3, section 3.2.1. 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 Chapter 3, section 3.2.1.

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.

(+++) 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, at a minimum, a DC. If the water supplier is also the supplier of the recycled water, then the recycled water supplier may obtain approval of the local public water supplier or the State Water Board, to utilize an alternative backflow protection plan that includes an annual inspection of both the recycled water and potable water systems and an annual cross-connection test of the recycled water and potable water systems pursuant to subsection 60316(a) in lieu of any BPA.

(++++) All connections must receive at least the same level of protection excluding fire protection when connected to the PWS distribution system (e.g. if one connection requires an RP then all connections must have RPs installed).

Appendix E

General Range of Knowledge for Cross-Connection Control Specialists

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APPENDIX E

General Range of Knowledge for Cross-Connection Control Specialists

To effectively prevent unintended backflow into a PWS's distribution system, it is necessary for a cross-connection control specialist to have an understanding of a range of subjects related to cross-connection control. This appendix provides a list of such subjects.

This appendix is not meant to preclude instruction of additional subjects that may be necessary or beneficial to the goal of a prospective or existing cross-connection control specialist in being proficient in protecting public health from backflow through cross-connection control measures. Emphasis on particular subjects should be in a manner that best achieves that goal.

(a) GENERAL

(1) Cross-connection control terminology.
(2) The history leading to the need for cross-connection control, including causes, impacts, including but not limited to:

(A) potable water distribution systems;
(B) examples of backflow incidents and actual or potential public health impacts; and
(C) evolution of methods of cross-connection control and backflow prevention assemblies.

(3) Hydraulics (general) – An understanding of hydraulic gradients, pressure variations, flow rates, temperature, the properties of water, backsiphonage, backpressure, and other elements necessary to understand the causes for backflow.
(4) Public outreach – How to appropriately convey the value of cross-connection control to PWS personnel and the public.

(b) LAWS, REGULATIONS, AND GUIDANCE

(1) Federal – Applicable federal laws, regulations, and guidance.
(2) State – California laws and regulations, including, but not limited to, the State Water Resources Control Board's most recent edition of its *Cross-Connection Control Policy Handbook* and other requirements related to cross-connection control.
(3) Local – An understanding of the need to ensure local requirements are considered and how best to find such requirements.

(c) HAZARD ASSESSMENTS AND METHODS TO PREVENT BACKFLOW

A comprehensive understanding of how to conduct cross-connection surveys of water systems for the purpose of identifying cross-connections, assessing hazards, and identifying the most effective and legally appropriate methods for protection from backflow. At a minimum, the following topics should be considered to achieve such an understanding:

(1) Surveys:

(A) Preparation (e.g., authority, notification, prioritizing customers/premises, coordinating with public water systems, etc.);
(B) Design and as-built drawings related to water supply and cross-connection control;
(C) Public water system schematics;
(D) How to identify existing and new construction, with an understanding of how construction may impact backflow protection;
(E) How to identify cross-connections (actual and potential);
(F) How to identify and differentiate between high hazard and low hazard cross-connections; and
(G) Problems associated with multi-story buildings, multiple service connections at a premises, typical water-use equipment, etc., and varying types of water service, including irrigation, recycled water, gray water, fire prevention systems, and dual plumbed premises.

(2) Assessing Hazards:

(A) Identifying and differentiating between premises activities leading to high hazard cross-connections and low hazard cross-connections (for examples of high hazard activities, see Appendix D); and
(B) Understanding potential public health impacts from backflow associated with the problems in section (c)(1)(G) of this appendix.

(3) Assemblies and Methods for Backflow Prevention:

(A) A comprehensive understanding of approved methods for cross-connection control and preventing backflow with respect to an assessed hazard;
(B) Identifying unapproved methods for cross-connection control and preventing backflow;
(C) An understanding of components, design and operation, proper installation and location of backflow prevention assemblies, including air gaps, and backflow prevention assembly field test methods, field test results, and the assessment of air gaps; and
(D) Identifying unapproved assemblies, as well as those assemblies whose operation and/or state of repair necessitates replacement with an approved assembly.

(d) CROSS-CONNECTION CONTROL PROGRAMS

A comprehensive understanding of the development, elements, and administration of cross-connection control programs, including, but not limited to:

(1) An ability to assess the federal, state, and local requirements applicable to a public water system's cross-connection control program, such that adherence to the cross-connection control program would result in compliance with the requirements;
(2) The roles, responsibilities, and authority of individuals and entities involved in the critical elements of a successful plan for cross-connection control (see CCCPH section 3.1.4); and
(3) The ability to assess the components of a public water system's Cross-Connection Control Plan (see CCCPH section 3.1.4) that best assures the prevention of undesired backflow into the public water system's distribution system, and to communicate deficiencies to public water system personnel.

(e) CROSS-CONNECTION TESTS

A comprehensive understanding of:

(1) The purpose of a cross-connection test and when a cross-connection test should be performed;
(2) The ability to develop protocols and make arrangements for cross-connection tests, and subsequently oversee and/or perform such cross-connection tests, in a manner that determines whether interconnections exist between unapproved sources and approved water supplies; and
(3) Follow-up actions and notifications if a cross-connection test indicates an interconnection.

(f) RECORDKEEPING AND INCIDENT RESPONSE

A comprehensive understanding of:

(1) The agencies and authorities to be notified in the event of a backflow incident;
(2) How to determine the cause of a backflow incident and the actions necessary to prevent similar incidents in the future;
(3) How to properly document a backflow incident, including but not limited to the information in the example backflow incident response form in Appendix F; and
(4) How to properly document the elements associated with surveys and hazard assessments, including those identified in section (c) of this appendix.

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Appendix F

Example Backflow Incident Reporting Form

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BACKFLOW INCIDENT REPORT FORM

Water System: _____

Water System Number: _____

Incident Date: _____

Incident Time (if known):_____

Incident Location: _____

How was the incident discovered?

_____

Backflow Originated from:

Premise Location: _____

Address: _____

Premise Contact Person: _____ Title:_____

Phone:_____ Email: _____

Connection Type: (please check one)

□ Industrial □ Commercial □ Single-Family Residential □ Multi-Family Residential

□ Irrigation □ Recycled Water □ Water System Facility

□ Other: _____

Description and source of backflow substance (please be as descriptive as possible):

_____

_____

If available, please attach an MSDS or other chemical description form

Was the backflow fluid contained within the user side? YES □ NO □

Estimated Number of Affected Persons: _____

Number and description of consumer complaints received:

_____

_____

Did any consumers report illness? Please describe.

_____

_____

If applicable, please describe the consumer notification:

_____

_____

INVESTIGATION

Please describe the water system investigation including time frames:

_____
_____
_____
_____
_____
_____

What was the area system pressure? _____

Is this within typical range: YES ☐ NO ☐ - typical pressure: _____

Was a sample of the water contaminated by the backflow incident collected and stored before flushing? YES ☐ NO ☐

Please describe all sampling:

_____

_____

_____

DDW recommends laboratory or field sampling for the following parameters: total coliform, E. coli, free and total chlorine residual, pH, odor, turbidity, temperature, and color. Additional sampling should be collected at the PWS and regulatory agency's discretion.

CORRECTIVE ACTIONS

Please describe the corrective actions taken by the water system:

_____
_____
_____
_____
_____
_____

Was the chlorine residual increased after discovery of backflow incident? YES ☐ NO ☐

Date of the last cross-connection control hazard assessment of the premise with the backflow incident conducted: _____

Did the premise have backflow prevention assemblies? YES ☐ NO ☐

Date of most recent backflow prevention assembly test(s): _____

When was the Division of Drinking Water or Local County Health office notified?

Date: _____Time: _____ Contact Person: _____

Was the Division or Local County Health notified within 24 hours? YES ☐ NO ☐

Other agencies or organizations contacted?

CERTIFICATION

Name: _____ Job Title: _____

Certification(s): _____

_____

Please list all cross-connection control related certifications including number and expiration date

I certify that the forgoing information is true and correct to the best of my ability.

Signature: _____ Date: _____

Attach the following applicable documentation

1. Laboratory Test Results
2. Sketch of the cross-connection and modifications
3. MSDS or chemical information forms if chemical hazard is known
4. Applicable backflow assembly test reports including the most recent test before the incident
5. Other relevant supporting documentation

Appendix G

Related Statutes and Regulations

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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[1] (BPA) testers, and other discretionary elements. Local health officer BPA 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 BPA. (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

[1] California statutes use a variety of terms when referencing a 'backflow prevention assembly' (e.g., backflow protective device, backflow protection equipment, backflow prevention device, backflow or back siphonage protection device, backflow preventer, or backflow device). For consistency with industry terminology, 'backflow prevention assembly' is used in the CCCPH, unless directly quoted otherwise.

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 BPA 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)[2]

- 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[3] 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

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[2] CHSC section 13114.7 historically provided potential limits for backflow prevention assemblies on fire sprinklers. Even though current standards differ from the language stated in CHSC section 13114.7, it is still being provided as a historical reference as there may still be installations with the now outdated limits established in section 13114.7

[3] The California Department of Public Health's authority and responsibility pertaining to this reference was transferred to the State Water Board via Senate Bill 861 (2014, Chapter 35). As such, applicable statutory mandates that may refer to "California Department of Public Health" or "Department" may be referred to as "State Water Board" in this document.

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 report[4] 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

[4] California Department of Water Resources. (2003). *Water Recycling 2030: Recommendations of California's Recycled Water Task Force*

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 (BPA) 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))

[5] For requirements unrelated to cross-connection control, please consult California's laws and regulations specific to the topic of interest. California may have more stringent requirements (e.g., reduced monitoring allowed via federal regulations may be prohibited in California).

Appendix B

City of Pleasanton Municipal Code Chapter 14.16 Regulations for Protection from Water Contamination and Staff Report to City Council for the Introduction of Proposed Changes to PMC 14.16

CHAPTER 14.16
REGULATIONS FOR PROTECTION FROM WATER CONTAMINATION

§ 14.16.010. Purpose.

The purpose of this chapter is:

A. To protect the public potable water supply of the city from the possibility of contamination or pollution by isolating within its customers' internal distribution system(s) or its customers' private water system(s) such contaminants or pollutants which could backflow or back-siphon into the public water supply system and by isolating contaminants or pollutants of potential intermittent, temporary and emergency users of the water system, including but not limited to use of fire hydrants or blow-offs; and

B. To promote the elimination or control of existing cross-connections actual or potential, between its customers' in-plant potable water system(s) and nonpotable water systems, plumbing fixtures and industrial piping systems; and

C. To provide for the maintenance of a continuing program of cross-connection control which will systematically and effectively prevent the contamination or pollution of all potable water systems.

(Prior code § 2-16.48 (1); Ord. 1073 § 3, 1983)

§ 14.16.020. Responsibility.

The operations services director shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow or back-siphonage of contaminants or pollutants through the water service connection. If, in the judgment of the operations services director, an approved backflow prevention device is required at the city's water service connection to any customer's premises, for the safety of the water system, the operations services director or designated agent shall give notice in writing to the customer to install such an approved backflow prevention device at each service connection to his or her premises. The customer shall immediately install such approved device or devices at his or her own expense; and failure, refusal or inability on the part of the customer to install the device or devices immediately shall constitute a ground for discontinuing water service to the premises until such device or devices have been properly installed.

(Prior code § 2-16.48 (2); Ord. 2000 § 1, 2009)

§ 14.16.030. Definitions.

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

"Approved" means accepted by the operations services director as meeting an applicable specification stated or cited in this chapter, or as suitable for the proposed use.

"Auxiliary water supply" means any water supply on or available to the premises other than the purveyor's approved public potable water supply. These auxiliary waters may include water from another purveyor's public potable water supply or any natural source(s) such as a well, spring, river, stream, harbor, etc., or "used waters" or "industrial fluids." These waters may be polluted or contaminated or they may be objectionable and constitute an unacceptable water source over which the water purveyor does not have sanitary control.

"Backflow" means the flow of water or other liquids, mixtures or substances under pressure into the distributing pipes of a potable water supply system from any source or sources other than its intended source.

"Backflow preventer" means a device or means designed to prevent backflow or back-siphonage.

"Back-siphonage" means the flow of water or other liquids, mixtures or substances into the distributing pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

"Contamination" means an impairment of the quality of the potable water by sewage, industrial fluids or waste liquids, compounds or other materials to a degree which creates an actual hazard to the public health through poisoning or through the spread of disease.

"Cross-connection" means any physical connection or arrangement of piping or fixtures between two otherwise separate piping systems one of which contains potable water and the other nonpotable water or industrial fluids of questionable safety, through which, or because of which, backflow or back-siphonage may occur into the potable water system. A water service connection between a public potable water distribution system and a customer's water distribution system which is cross-connected to a contaminated fixture, industrial fluid system or with a potentially contaminated supply or auxiliary water system, constitutes one type of cross-connection. Other types of cross-connections include connectors such as swing connections, removable sections, four-way plug valves, spools, dummy sections of pipe, swivel or changeover devices, sliding multiport tube, solid connections, etc.

"Cross-connections, controlled" means a connection between a potable water system and a nonpotable water system with an approved backflow prevention device properly installed that will continuously afford the protection commensurate with the degree of hazard.

"Cross-connection control by containment" means the installation of an approved backflow prevention device at the water service connection to any customer's premises where it is physically and economically infeasible to find and permanently eliminate or control all actual or potential cross-connections within the customer's water system; or, it shall mean the installation of an approved backflow prevention device on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross-connections which cannot be effectively eliminated or controlled at the point of cross-connection.

"Operations services director." The operations services director as head of the water and utilities department of the city is invested with the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this ordinance.

"Double check valve assembly" means an assembly of two independently operating approved check valves with tightly closing shut-off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve. The entire assembly shall meet the design and performance specifications and approval of a recognized and city-approved testing agency for backflow prevention devices. To be approved, these devices must be readily accessible for in-line maintenance and testing.

"Hazard, degree of" is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

"Hazard, health" means any condition, device or practice in the water supply system and its operation which could create, or in the judgment of the operations services director may create a danger to the health and well-being of the water consumer. An example of a health hazard is a structural defect, including cross-connections, in a water system.

"Hazard, plumbing" means a plumbing type cross-connection in a customer's potable water system that has not been properly protected by a vacuum breaker, air-gap separation or backflow prevention device. Unprotected plumbing type cross-connections are considered to be a health hazard.

"Hazard, pollutional" means an actual or potential threat to the physical properties of the water system or to the potability of the public or the consumer's potable water system but which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

"Hazard, system" means an actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

"Industrial fluids system" means any system containing a fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollutional or plumbing hazard if introduced into an approved water supply. This may include, but not be limited to: polluted or contaminated waters; all types of processed waters and "used waters" originating from the public potable water system which may have deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalis, circulated cooling waters connected to an open cooling tower and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters such as from wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, etc.; oils, gases, glycerine, paraffins, caustic and acid solutions and other liquid and gaseous fluids used in industrial or other purposes or for firefighting purposes.

"Pollution" means the presence of any foreign substance (organic, inorganic, or biological) in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

"Reduced pressure principle device" means an assembly of two independently operating approved check valves with an automatically operating differential relief valve between the two check valves, tightly closing shut-off valves on either side of the check valves, plus properly located test cocks for the testing of the check and relief valves. The entire assembly shall meet the design

and performance specifications and approval of a recognized and city-approved testing agency for backflow prevention assemblies. The device shall operate to maintain the pressure in the zone between the two check valves at a level less than the pressure on the public water supply side of the device. At cessation of the normal flow the pressure between the two check valves shall be less than the pressure on the public water supply side of the device. In case of leakage of either of the check valves the differential relief valve shall operate to maintain the reduced pressure in the zone between the check valves by discharging to the atmosphere. When the inlet pressure is two pounds per square inch or less, the relief valve shall open to the atmosphere. To be approved, these devices must be readily accessible for in-line maintenance and testing and be installed in a location where no part of the device will be submerged.

"Water, nonpotable" means water which is not safe for human consumption or which is of questionable potability.

"Water, potable" means any water which, according to recognized standards, is safe for human consumption.

"Water service connections" means the terminal end of a service connection from the public potable water system; i.e., where the water purveyor 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 downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or backflow prevention device located at the point of delivery to the customer's water system. "Service connection" shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system.

"Water, used" means any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.
(Prior code § 2-16.49; Ord. 2000 § 1, 2009)

§ 14.16.040. Requirements—Water system.

A. The water system shall be considered as made up of two parts: the utility system and the customer system.

B. The utility system shall consist of the source facilities and the distribution system, and shall include all those facilities of the water system under the complete control of the utility, up to the point where the customer's system begins.

C. The source shall include all components of the facilities utilized in the production, treatment, storage, and delivery of water to the distribution system.

D. The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system.

E. The customer's system shall include those parts of the facilities beyond the termination of the utility distribution system which are utilized in conveying utility-delivered domestic water to points of use.

(Prior code § 2-16.50 (1))

§ 14.16.050. Policy.

A. No water service connection to any premises or from a fire hydrant or any other temporary or emergency water service connection from the public potable water system shall be installed or maintained by the water purveyor unless the water supply is protected as required by state laws and regulations and this chapter. Service of water to any premises shall be discontinued by the water purveyor if a backflow prevention device required by this chapter is not installed, tested and maintained, or if it is found that a backflow prevention device has been removed, bypassed or if an unprotected cross-connection exists on the premises. Service will not be restored until such conditions or defects are corrected. Temporary, intermittent and emergency users of the water system shall be considered as consumers on premises for the purposes of this chapter and shall be subject to the same cross-connection control requirements as water service connections to any premises.

B. The customer's system should be open for inspection at all reasonable times to authorized representatives of the operations services director to determine whether cross-connections or other structural or sanitary hazards, including violations of these regulations, exist. When such a condition becomes known, the operations services director shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the conditions in conformance with state and city statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto.

C. An approved backflow prevention device shall also be installed on each service line to a customer's water system in all cases, before the first branch line leading off the service line wherever the following conditions exist:

   1. In the case of premises having an auxiliary water supply which is not or may not be of safe bacteriological or chemical quality and which is not acceptable as an additional source by the operations services director, the public water system shall be protected against backflow from the premises by installing a backflow prevention device in the service line appropriate to the degree of hazard.

   2. In the case of premises on which any industrial fluids or any other objectionable substance is handled in such a fashion as to create an actual or potential hazard to the public water system, the public system shall be protected against backflow from the premises by installing a backflow prevention device in the service line appropriate to the degree of hazard. This shall include the handling of processed waters and waters originating from the utility system which have been subject to deterioration in quality.

   3. In the case of premises having (a) internal cross-connections that cannot be permanently corrected and controlled, or (b) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-connections exist, the public water system shall be protected against backflow from the premises by installing a backflow prevention device in the service line.

D. The type of protective device required under subsections (C)(1), (2) and (3) of this section shall depend upon the degree of hazard which exists as follows:

1. In the case of any premises where there is an auxiliary water supply as stated in subsection (C)(1) of this section and it is not subject to any of the following rules, the public water system shall be protected by an approved airgap separation or an approved reduced pressure principle backflow prevention device.

2. In the case of any premises where there is water or substance that would be objectionable but not hazardous to health, if introduced into the public water system, the public water system shall be protected by an approved double check valve assembly.

3. In the case of any premises where there is any material dangerous to health which is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected by an approved air-gap separation or an approved reduced pressure principle backflow prevention device. Examples of premises where these conditions will exist include chemical manufacturing plants, hospitals, mortuaries and plating plants.

4. In the case of any premises where there are "uncontrolled" cross-connections, either actual or potential, the public water system shall be protected by an approved air-gap separation or an approved reduced pressure principle backflow prevention device at the service connection.

5. In the case of any premises where, because of security requirements or other prohibitions or restrictions it is impossible or impractical to make a complete in-plant cross-connection survey, the public water system shall be protected against backflow or back-siphonage from the premises by the installation of a backflow prevention device in the service line. In this case, maximum protection will be required; that is, an approved air-gap separation or an approved reduced pressure principle backflow prevention device shall be installed in each service to the premises.

6. In the case of premises with cross-connections to sewage lines, pumps, flushers, etc., the public water system shall be protected by an approved air-gap separation or an approved reduced pressure principle backflow prevention device. Examples include sewage treatment plants and pumping stations.

7. In the case of tanker and spray tanks of forty-nine gallons or more, air-gap separation or an approved reduced pressure principle backflow prevention device is required.

E. Any backflow prevention device required in this chapter shall be of a model and size approved by the operations services director. The term "approved backflow prevention device" means a device that has been manufactured in full conformance with the standards established by the American Water Works Association (AWWA) entitled:

AWWA C506-78 Standards for Reduced Pressure Principle and Double Check Valve Backflow Prevention Devices:

and, have met completely the laboratory and field performance specifications of the Foundation for Cross-connection Control and Hydraulic Research (FCCC & HR) of the University of Southern California established by:

Specifications of Backflow Prevention Devices fi69-2 dated March 1969 or the most current issue.

Said AWWA and FCCC & HR standards and specifications have been adopted by the operations services director. Final approval shall be evidenced by a certificate of approval issued by an approved testing laboratory certifying full compliance with said AWWA standards and FCCC & HR specifications. The following testing laboratory has been qualified by the operations services director to test and certify backflow preventers:

Foundation for Cross-connection
Control and Hydraulic Research
University of Southern California
University Park
Los Angeles, California 90007

Testing laboratories other than the laboratory listed above will be added to an approved list as they are qualified by the operations services director.

Backflow preventers which may be subjected to back pressure or back-siphonage that have been fully tested and have been granted a certificate of approval by the qualified laboratory and are listed on the laboratory's current list of approved devices may be used without further test or qualification.

F. It shall be the duty of the customer-user at any premises where backflow prevention devices are installed to have certified inspections and operational tests and repairs made at least once per year. In those instances where the operations services director deems the hazard to be great enough, he or she may require certified inspections at more frequent intervals. These inspections, tests and repairs shall be at the expense of the water user and shall be performed by the device manufacturer's representative, or by a certified tester approved by the operations services director. It shall be the duty of the operations services director to see that these timely tests are made. The customer-user shall notify the operations services director in advance when the tests are to be undertaken so that he or she or his or her representative may witness the tests if so desired. These devices shall be repaired, overhauled or replaced by a certified individual or agency at the expense of the customer-user whenever the devices are found to be defective. Records of such tests, repairs and overhaul shall be kept and made available to the operations services director.

G. All presently installed backflow devices which do not meet the requirements of this section but were approved devices for the purposes described herein at the time of installation and which have been properly maintained, shall, except for the inspection and maintenance requirements under subsection F of this section, be excluded from the requirements of these rules so long as the operations services director is assured that they will satisfactorily protect the utility system. Whenever the existing device is moved from the present location or requires more than minimum maintenance or when the operations services director finds that the maintenance constitutes a hazard to health, the unit shall be replaced by a backflow prevention device meeting the requirements of this section.

H. All existing water connections which may be deemed by the operations services director to

be subject to backflow prevention will, upon written notice, have an appropriate backflow prevention device installed and inspected within 60 days of the notification.

(Prior code § 2-16.50 (2); Ord. 1073 § 3, 1983; Ord. 2000 § 1, 2009)

CITY COUNCIL AGENDA REPORT

June 17, 2025
Public Works - Utilities Division

TITLE: INTRODUCE AN ORDINANCE UPDATING PLEASANTON MUNICIPAL CODE, CHAPTER 14.16, TO CONFORM WITH OBLIGATIONS SPECIFIED IN THE STATE WATER RESOURCES CONTROL BOARD'S ADOPTED CROSS-CONNECTION CONTROL POLICY HANDBOOK

SUMMARY

Amendment of the City's Regulations for Protection from Water Contamination Ordinance, Pleasanton Municipal Code (PMC) Chapter 14.16 is necessary to conform with the obligations in the State Water Resources Control Board (SWRCB) adopted Cross-Connection Control Policy Handbook (CCCPH), effective July 1, 2024. The proposed changes ensure the City's ability to effectively comply with CCCPH requirements, add language consistent with CCCPH obligations, delete obsolete and non-applicable language, and add enforcement language to protect the City's drinking water distribution system.

RECOMMENDATION

Introduction an ordinance updating Pleasanton Municipal Code, Chapter 14.16, to conform with obligations specified in the State Water Resources Control Board adopted Cross-Connection Control Policy Handbook.

BACKGROUND

The passage of Assembly Bill 1671 in October 2017 directed the State Water Resources Control Board (SWRCB) to adopt standards for backflow protection and cross-connection controls. The SWRCB adopted the Cross-Connection Control Policy Handbook (CCCPH) on December 19, 2023, which went into effect on July 1, 2024. The State's governing backflow regulations are under the California Code of Regulations (CCR) Title 17. The CCCPH expands those backflow regulations to protect public health by establishing standards to ensure the public water system will not be impacted by backflow of non-potable liquids or other substances.

Pleasanton Municipal Code (PMC) Chapter 14.16 codifies the City's regulations that protect the potable water system from contamination, which had conformed to CCR Title 17. Since its adoption, only minor amendments have been made to PMC Chapter 14.16. The most recent amendment occurred in 2009 with Ordinance No. 2000, which replaced department director authority designations following organizational changes. However, with the SWRCB's adoption of the CCCPH, the City's obligations expanded from those originally set forth under CCR Title 17. Because PMC Chapter 14.16 was modeled after the requirements described in CCR Title 17, the SWRCB's adoption of the CCCPH creates inconsistencies between PMC Chapter 14.16 and the City's obligations under the CCCPH. The proposed amendments to PMC Chapter 14.16 resolve these inconsistencies.

Staff included updates on the CCCPH regulations and the progress towards CCCPH

implementation in the Water System Activity updates provided to City Council at the July 16, 2024, October 15, 2024, and January 21, 2025, meetings. On October 1, 2024, the City Council approved the professional services agreement related to cross-connection control plan assistance directly related to the CCCPH obligations.

DISCUSSION

Update of PMC Chapter 14.16 Regulations for Protection from Water Contamination is a component of the developing approach to address the City's obligations under the CCCPH. Updating the chapter to incorporate CCCPH requirements provides staff responsible for implementing the regulations the necessary authority to require water users to protect the City's potable water system from contamination as specified under the CCCPH. The proposed amendment also provides staff with enforcement mechanisms to effectuate the protection of the City's water system.

The implementation of the proposed PMC updates will impact the existing water customers that are ultimately identified as out of backflow protection code compliance over an estimated ten-year time span. Staff's implementation approach will include an emphasis on customer education of the requirements and benefits of appropriate backflow protection to protect the water system and customer's drinking water supply. Material, installation, and maintenance costs associated with new or updated backflow control measures necessary to address out-of-code private premises will be the responsibility of the water user/private property owner.

The proposed amendments to PMC Chapter 14.16 Regulations for Protection from Water Contamination are summarized below and are further described in Attachment 1:

Section 14.16.010 - Minor word replacement intended to provide more clarity.

Section 14.16.020 - Replacement of department nomenclature reference consistent with City department organizational title change, and addition of language to clarify City authority to terminate water service immediately for the protection of public health.

Section 14.16.030 - Addition and updates to definitions to conform with CCCPH definitions.

Section 14.16.040 - Minor editorial change.

Section 14.16.050 - Adds language to include the SWRCB CCCPH as an included governing regulation, replaces department title authorized representative consistent with organizational title change, replaces all naming references of backflow "device" to "assembly" for CCCPH nomenclature consistency, updates approved backflow protection standard references for manufactured and testing conformance, and adds the following subsections:

- Section 14.16.050(C)(4) - CCCPH requirement language requiring premises with fire protection systems or to be designed with fire protection systems, to include backflow protection in accordance with CCCPH
- Section 14.16.050(C)(5) - Language clarifying all commercial, industrial, dedicated irrigation, and multi-family residential premises with water meter service must have appropriate backflow protection in accordance with CCCPH, and includes exception language criteria suitable under the CCCPH
- Section 14.16.050(G) - Language requiring backflow testers to notify the public works

department of any suspected incidents of cross connection per CCCPH requirements
- Section 14.16.050(H) - Modifies prior language to ensure City has the authority to require the update of CCCPH noncompliant backflow protections to be brought into compliance
- Section 14.16.050(I) - Expands on the water user responsibility to obtain proper backflow protection per CCCPH when notified by the City and establishes the timelines for compliance.

Section 14.16.060 - Added provision to provide clarity regarding all circumstances in which the City has the authority to terminate water service and how it may be restored, for the protection of the public water system.

Section 14.16.070 - Added provision to enhance the City's mechanisms for enforcement of violations that result in a threat to public heath and safety, establishing cost recovery, and the City's ability to seek civil action if deemed necessary.

The proposed amendments would update the City's water contamination protection regulations to achieve consistency with the CCCPH, which expands on backflow protection and cross-connection control requirements to protect public health. Furthermore, the CCCPH requirements are current regulatory obligations. Incorporating these expanded requirements within the City's PMC provides greater transparency and ensures staff has the authority to carry out CCCPH obligations.

EQUITY AND SUSTAINABILITY

Ensuring the quality of Pleasanton's water supply provides an essential benefit for the entire Pleasanton community.

OUTREACH

Staff has been engaging with current applicants with building permits to inform them during the construction phase of applicable projects impacted by the new CCCPH requirements.

STRATEGIC PLAN ALIGNMENT

Approval of this action advances the Citywide strategic goal of *Safeguarding our City* through the strengthening of requirements that provide protection for the City's public water system and the protection of public health.

FISCAL IMPACT

There are limited potential fiscal impacts to the City associated with this action. City costs associated with the implementation of the CCCPH obligations will largely be due to the staff and consultant time required to conduct detailed water customer hazard assessments in the short term and as an ongoing operational practice to fulfill CCCPH requirements.

Prepared by:	Submitted by:	Approved by:
		
Siew-Chin Yeong, Director of Public Works	Siew-Chin Yeong, Director of Public Works	Gerry Beaudin, City Manager

Attachments:

1. Ordinance amending Chapter 14.16 of the Pleasanton Municipal Code

ATTACHMENT 1

ORDINANCE NO.

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF PLEASANTON AMENDING CHAPTER 14.16 OF THE PLEASANTON MUNICIPAL CODE TO CONFORM WITH THE OBLIGATIONS SPECIFIED IN THE STATE WATER RESOURCES CONTROL BOARD ADOPTED CROSS-CONNECTION POLICY HANDBOOK

WHEREAS, in October of 2017 the passage of Assembly Bill 1671 directed the State Water Resources Control Board to adopt standards for backflow protection and cross connection controls; and

WHEREAS, on December 19, 2023, the State Water Resources Control Board adopted the Cross-Connection Control Policy Handbook; and

WHEREAS, the regulations as described in the State Water Resources Control Board adopted Cross-Connection Control Policy Handbook became effective on July 1, 2024; and

WHEREAS, the regulations as described in the Cross-Connection Control Policy Handbook are necessary to protect public health by establishing standards to ensure public water systems will not be impacted by the backflow of non-potable liquids or other substances; and

WHEREAS, Chapter 14.16 of the Pleasanton Municipal Code, most recently amended in 2009 by Ordinance No. 2000, details the City of Pleasanton's regulations for protection of the public potable water supply; and

WHEREAS, the State Water Resources Control Board's adoption of the Cross-Connection Policy Handbook created inconsistencies between those regulations described in the Cross-Connection Policy Handbook and Chapter 14.16 of the Pleasanton Municipal Code; and

WHEREAS, an amendment to Chapter 14.16 of the Pleasanton Municipal Code is necessary to resolve these inconsistencies.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF PLEASANTON DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Chapter 14.16 of the Pleasanton Municipal Code is hereby amended as described in Exhibit A.

SECTION 2. A summary of this ordinance shall be published once within fifteen (15) days after its adoption in "The Valley Times," a newspaper of general circulation published in the City of Pleasanton, and the complete ordinance shall be posted for fifteen (15) days in the City Clerk's office within fifteen (15) days after its adoption.

SECTION 3. This ordinance shall be effective thirty (30) days after its passage and adoption.

The foregoing Ordinance was introduced at a regular meeting of the City Council of the City of Pleasanton on _____, 2025 by the following vote:

Ayes:
Noes:
Absent:
Abstain:

_____
Jack Balch, Mayor

ATTEST:

_____
Jocelyn Kwong, City Clerk

Dated: _____

APPROVED AS TO FORM:

_____
Daniel G. Sodergren, City Attorney

EXHIBIT A

CHAPTER 14.16

REGULATIONS FOR PROTECTION FROM WATER CONTAMINATION

§ 14.16.010. Purpose.

The purpose of this chapter is:

A. To protect the public potable water supply of the city from the possibility of contamination or pollution by isolating within its customers' internal distribution system(s) or its customers' private water system(s) such contaminants or pollutants which could backflow or back- siphon into the public water supply system and by isolating contaminants or pollutants of potential intermittent, temporary and emergency users of the water system, including but not limited to use of fire hydrants or blow-offs; and

B. To promote the elimination or control of existing cross-connections actual or potential, between its customers' side ~~in-plant~~ potable water system(s) and nonpotable water systems, plumbing fixtures and industrial piping systems; and

C. To provide for the maintenance of a continuing program of cross-connection control which will systematically and effectively prevent the contamination or pollution of all potable water systems.

(Prior code § 2-16.48 (1); Ord. 1073 § 3, 1983)

§ 14.16.020. Responsibility and Authority.

Thise chapter shall be administered by the public works director or designee ~~operations services director shall be responsible~~ for the protection of the public potable water distribution system from contamination or pollution due to the backflow or back-siphonage of contaminants or pollutants through the water service connection. If, in the judgment of the public works~~operations services~~ director or their designee, an approved backflow prevention assembly~~device~~ is required at the city's water service connection to any customer's premises, for the safety of the water system, the public works~~operations services~~ director or designee~~eated agent~~ shall give notice in writing to the customer to install such an approved backflow prevention assembly~~device~~ at each service connection to his or her premises. The water user~~customer~~ shall immediately install such approved assembly~~device~~ or assemblies~~devices~~ at his or her own expense; and failure, refusal or inability on the part of the customer to comply with this chapter~~install the device or devices immediately~~ shall constitute a ground for discontinuing water service to the premises until ~~such device or devices have been properly installed~~compliance has been met.

The city has the authority to terminate water service immediately without notification in the interest of protecting public health if at any time a real or potential hazard is evidenced, such as failure to conform to timely required testing, standard construction design, or removal of unapproved connections

(Prior code § 2-16.48 (2); Ord. 2000 § 1, 2009)

§ 14.16.030. Definitions.

"Air-gap separation" or "AG" means the ~~unobstructed~~ physical vertical separation~~distance through the free atmosphere between the lowest opening from any pipe or~~

~~faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the vessel. An approved air-gap shall be of~~ at least two (2) times~~double~~ the effective ~~diameter~~opening, as defined in section 207.0 of the California Plumbing Code, between the free-flowing discharge end of a~~the~~ supply pipeline and the flood level of an open or non-pressurized receiving ~~, measured vertically, above the top of the rim of the~~ vessel, and, in no case less than one (1) inch. ~~When an air-gap is used at the service connection to prevent the contamination or pollution of the public potable water system, an emergency bypass shall be installed around the air-gap system and an approved reduced pressure principle device shall be installed in the bypass system.~~

"Approved" means accepted by the public works~~operations services~~ director or designee, as meeting an applicable specification stated or cited in this chapter, or as suitable for the proposed use.

"Auxiliary water supply" means any water supply on or available to the premises other than the purveyor's approved public potable water supply, that is either used or equipped, or can be equipped, to be used as a water supply. These auxiliary waters may include water from another purveyor's public potable water supply or any natural source(s) such as a well, spring, river, stream, harbor, etc., or "used waters" or "industrial fluids." ~~These waters may be polluted or contaminated or they may be objectionable and constitute an unacceptable water source over which the water purveyor does not have sanitary control.~~

"Backflow" means an undesired or unintended reversal of flow of water and/or other liquids, gases, or other substances into the public water system distribution system or approved water supply ~~the flow of water or other liquids, mixtures or substances under pressure into the distributing pipes of a potable water supply system from any source or sources other than its intended source~~.

"Backflow prevention~~er~~ assembly" or "BPA" 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~~device or means designed to prevent backflow or back-siphonage~~.

"Back-siphonage" means the flow of water or other liquids, mixtures or substances into the distributing pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.
"Contamination" means an impairment of the quality of the potable water by sewage, industrial fluids or waste liquids, compounds or other materials to a degree which creates an actual hazard to the public health through poisoning or through the spread of disease.

"Cross-connection" means any actual or potential ~~physical~~ connection or structural arrangement between the 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 the approved water supply.~~of piping or fixtures between two otherwise separate piping systems one of which contains potable water and the other nonpotable water or industrial fluids of questionable safety, through which, or because of which, backflow or back-siphonage may occur into the potable water system. A water service connection between a public potable water distribution system and a customer's water distribution system which is cross-connected to a contaminated fixture, industrial fluid system or with a potentially contaminated supply or auxiliary water system,~~

~~constitutes one type of cross-connection.~~ Other types of cross-connections include connectors such as swing connections, removable sections, four-way plug valves, spools, dummy sections of pipe, swivel or changeover devices, sliding multiport tube, solid connections, etc.

"Cross-connection~~s,~~ controlled" means a connection between a potable water system and a nonpotable water system with an approved ~~backflow prevention assembly~~BPA~~device~~ properly installed that will continuously afford the protection commensurate with the degree of hazard.
"Cross-connection control by containment" means the installation of an approved backflow prevention device at the water service connection to any customer's premises where it is physically and economically infeasible to find and permanently eliminate or control all actual or potential cross-connections within the customer's water system; or, it shall mean the installation of an approved backflow prevention device on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross-connections which cannot be effectively eliminated or controlled at the point of cross-connection.

"Cross-connection control specialist" means a person who is certified as a cross-connection control specialist.

"Customer" or "water user" means a person or entity who is authorized by the City to receive water.

"Public works~~Operations services~~ director." ~~The operations services director as h~~Head of the engineering, environmental services,~~water~~ and utilities divisions~~department~~ of the city is invested with the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this ordinance.

"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 of consisting of two independently-acting internally-loaded ~~operating approved~~ check valves, with tightly closing shut-off valves located on each end~~side~~ of the assembly (upstream and downstream of the two check valves) and fitted with ~~, plus properly located~~ test cocks that enable accurate field testing of the assembly~~for the testing of each check valve~~. This type of assembly may only be used to isolate low hazard cross-connections. The entire assembly shall meet the design and performance specifications and approval of a recognized and city-approved testing agency for backflow prevention assembly~~devices~~. To be approved, these devices must be readily accessible for in-line maintenance and testing.

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

"Hazard, degree of" is derived from a hazard assessment~~n~~ for the evaluation of ~~the~~ potential risk to public health and the adverse effect of the hazard upon the potable water system.
"Hazard, health" means any condition, assembly~~device~~ or practice in the water supply system and its operation which could pose ~~create, or in the judgment of the operations services director~~

~~may create~~ a danger to the health and well-being of the water consumer. An example of a health hazard is a structural defect, including cross-connections, in a water system.

"Hazard, plumbing" means a plumbing type cross-connection in a customer's potable water system that has not been properly protected by a vacuum breaker, air-gap separation or backflow prevention device. Unprotected plumbing type cross-connections are considered to be a health hazard.

"Hazard, pollutant~~pollutional~~" means an actual or potential threat to the physical properties of the water system or to the potability of the public or the consumer's potable water system but which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.
"Hazard, system" means an actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

"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.

"Industrial fluids system" means any system containing a fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollutional or plumbing hazard if introduced into an approved water supply. This may include, but not be limited to: polluted or contaminated waters; all types of processed waters and "used waters" originating from the public potable water system which may have deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalis, circulated cooling waters connected to an open cooling tower and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters such as from wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, etc.; oils, gases, glycerine, paraffins, caustic and acid solutions and other liquid and gaseous fluids used in industrial or other purposes or for firefighting purposes.

"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.

"Pollution" means the presence of any foreign substance (organic, inorganic, or biological) in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

"Reduced pressure principle backflow prevention assembly~~device~~" or "RP" means an assembly with~~of~~ two independently acting internally-loaded~~operating approved~~ check valves, with a~~n~~ hydraulically operating mechanically independent ~~automatically operating~~ differential-pressure relief valve located between the ~~two~~ check valves and below the upstream check valve~~, tightly closing shut-off valves on either side of the check valves, plus properly located test cocks for the testing of the check and relief valves~~. 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. The entire assembly shall meet the design and performance specifications and approval of a recognized and city-approved testing agency for backflow prevention assemblies. The device shall operate to maintain the pressure in the zone between the two check valves at a level less than the pressure on the public water supply side of the device. At cessation of the normal flow the pressure between the two check valves shall be less than the pressure on the public water supply side of the device. In case of leakage of either of the check valves the differential relief valve shall operate to maintain the reduced pressure in the zone between the check valves by discharging to the atmosphere. When the inlet pressure is two pounds per square inch or less, the relief valve shall open to the atmosphere. To be approved, these devices must be readily accessible for in-line maintenance and testing and be installed in an above-ground location where no part of the device will be submerged.

"State Water Board" 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.

"Water, nonpotable" means water which is not safe for human consumption or which is of questionable potability.

"Water, potable" means any water which, according to recognized standards, is safe for human consumption.

"Water service connections" means the terminal end of a service connection from the public potable water system; i.e., where the water purveyor 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 downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or backflow prevention device located at the point of delivery to the customer's water system. "Service connection" shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system.
"Water, used" means any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.

(Prior code § 2-16.49; Ord. 2000 § 1, 2009)

§ 14.16.040. Requirements—Water Ssystem.

A. The water system shall be considered as made up of two parts: the utility system and the customer system.

B. The utility system shall consist of the source facilities and the distribution system, and shall include all those facilities of the water system under the complete control of the utility, up to the point where the customer's system begins.

C. The source shall include all components of the facilities utilized in the production, treatment, storage, and delivery of water to the distribution system.

D. The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system.

E. The customer's system shall include those parts of the facilities beyond the termination of the utility distribution system which are utilized in conveying utility-delivered ~~domestic~~ water to points of use.

(Prior code § 2-16.50 (1))

§ 14.16.050. Policy.

A. No water service connection to any premises or from a fire hydrant or any other temporary or emergency water service connection from the public potable water system shall be installed or maintained by the water purveyor unless the water supply is protected as required under the State Water Resouces Control Board most current adopted Cross-Connection Control Policy Handbook (CCCPH),~~by~~ effective statut~~e laws~~ and regulations, and this chapter. Service of water to any premises shall be discontinued by the water purveyor if a BPA~~backflow prevention device~~ required by the CCCPH, and/or this chapter, is not installed, tested and maintained, or if it is found that a BPA~~backflow prevention device~~ has been removed, bypassed or if an unprotected cross-connection exists on the premises. Service will not be restored until such conditions or defects are corrected. Temporary, intermittent and emergency users of the water system, including those outside of the city boundary, shall be considered as consumers on premises for the purposes of this chapter and shall be subject to the same cross-connection control requirements as water service connections to any premises.

B. The public works director or designee, has the authority to conduct inspections, including sampling, related to purposes of implementing this chapter on private or public property. The customer's system sh~~ould~~all be open for inspection at all reasonable times to authorized representatives of the city~~operations services director~~ to determine whether cross-connections or other structural or sanitary hazards, including violations of these regulations, exist. When such a condition becomes known, the public works~~operations services~~ director or designee, shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the conditions in conformance with state and city statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto.

C. An approved BPA~~backflow prevention device~~ shall also be installed as close as possible to~~on~~ each service line to a customer's water system in all cases, before the first branch line leading off the service line wherever the following conditions exist:

1. In the case of premises having an auxiliary water supply which is not or may not be of safe bacteriological or chemical quality and which is not acceptable as an additional source by the public works~~operations services~~ director or designee, the public water system shall be protected against backflow from the premises by installing a BPA~~backflow prevention device~~ in the service line appropriate to the degree of hazard.

2. In the case of premises on which any industrial fluids or any other objectionable substance is handled in such a fashion as to create an actual or potential hazard to the public water system, the public system shall be protected against

backflow from the premises by installing a BPA~~backflow prevention device~~ in the service line appropriate to the degree of hazard. This shall include the handling of processed waters and waters originating from the utility system which have been subject to deterioration in quality.

3. In the case of premises having (a) internal cross-connections that cannot be permanently corrected and controlled, or (b) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-~~-~~connections exist, the public water system shall be protected against backflow from the premises by installing a BPA~~backflow prevention device~~ in the service line appropriate for the high degree of hazard.

4. In the case of premises having or is designed to have, a fire protection system in place, the public water system must be protected by installing a BPA in the service line appropriate to the degree of hazard in accordance with CCCPH.

i. All premises assessed as high hazard must have no less than RP protection.

ii. A BPA is not required for low hazard single-family residential premises that satisfy the CCCPH Section 3.2.2(e)(3) requirements.

5. In the case of premises with water meter services that are commercial, industrial, dedicated irrigation and multi-family residential, the public water system must be protected against backflow with an approved BPA in the service line appropriate to the degree of hazard.

i. An exception may be granted for an alternate method of premises containment if the customer can definitively provide documentation certified by a cross-connection control specialist, that there is no alternative option available for the installation of the type of BPA required under the CCCPH and the alternative method of backflow protection provides at least the same level of protection as the CCCPH required BPA, and there is no potential hazard possible from the premises protected with the alternative method; which upon review is approved by the public works director or designee, Fire Marshall, city cross-connection control specialist, and if not permitted under the CCCPH, approval by State Water Board staff is required. Such an exemption can be revoked at anytime an actual or potential hazard is suspected or until time of any change to either the status of no alternative or degree of hazard changes.

D. The type of BPA~~protective device~~ required under subsections (C)(1), (2), (3), (4) and (5~~3~~) of this section shall depend upon the degree of hazard which exists in accordance with City Standards, State Water Resources Control Board, Cross-Connection Control Policy Handbook Appendix C, and as follows:

1. In the case of any premises where there is an auxiliary water supply as stated in subsection (C)(1) of this section and it is not subject to any of the following rules, the public water system shall be protected by an approved airgap separation or an approved RP~~reduced pressure principle backflow prevention device~~.

2. In the case of any premises where there is water or substance that would be objectionable but not hazardous to health~~,~~ if introduced into the public water system, the public water system shall be protected with no less than~~by~~ an approved RP assembly~~double check valve assembly~~.

3. In the case of any premises where there is any material dangerous to health which is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected by an approved air-gap separation or an approved reduced pressure principle backflow prevention assembly~~device~~. Examples of premises where these conditions will exist include chemical manufacturing plants, hospitals, mortuaries and plating plants.

4. In the case of any premises where there are ~~"uncontrolled"~~ cross-connections, either actual or potential, the public water system shall be protected by an approved AG~~air-gap separation~~ or an approved RP~~reduced pressure principle backflow prevention device~~ at the service connection.

5. In the case of any premises where, because of security requirements or other prohibitions or restrictions it is impossible or impractical to make a complete in-plant cross-connection survey, the public water system shall be protected against backflow or back-siphonage from the premises by the installation of a BPA~~backflow prevention device~~ in the service line. In this case, maximum protection will be required; that is, an approved AG~~air-gap separation~~ or an approved reduced pressure principle backflow prevention assembly~~device~~ shall be installed in each service to the premises.

6. In the case of premises with cross-connections to sewage lines, pumps, flushers, etc., the public water system shall be protected by an approved AG~~air-gap separation~~ or an approved reduced pressure principle backflow prevention device. Examples include sewage treatment plants and pumping stations.

7. In the case of tanker and spray tanks of forty-nine gallons or more, air-gap separation or an approved reduced pressure principle backflow prevention device is required.

E. Any BPA~~backflow prevention device~~ required in this chapter shall be of a model and size approved by the public works~~operations services~~ director or designee. The term "approved BPA~~backflow prevention device~~" means a BPA~~device~~ that has been manufactured in full conformance with the standards established by and approved through both laboratory and field evaluation tests in accordance with either Chapter 10 of the Manual of Cross-Connection Control, Tenth Edition (or most recent edition), published by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC FCCC & HR); or certification requirements for BPAs in the

Standards of ASSE International as of 2022 (refer to CCCPH).~~the American Water Works Association (AWWA) entitled:~~

~~AWWA C506-78 Standards for Reduced Pressure Principle and Double Check Valve Backflow Prevention Devices:~~

~~and, have met completely the laboratory and field performance specifications of the Foundation for Cross-connection Control and Hydraulic Research (FCCC & HR) of the University of Southern California established by:~~

~~Specifications of Backflow Prevention Devices fi69-2 dated March 1969 or the most current issue.~~

~~Said AWWA and FCCC & HR standards and specifications have been adopted by the public worksoperations services director or designee.~~

Final approval shall be evidenced by a certificate of approval issued by an approved testing laboratory certifying full compliance with said ~~AWWA standards and~~ USC FCCC & HR standards or ASSE International specifications.

The following testing laboratory has been qualified by the public works~~operations services~~ director or designee, to test and certify backflow preventers:

Foundation for Cross-connection
Control and Hydraulic Research
University of Southern California
University Park
Los Angeles, California 90007

Testing laboratories other than the laboratory listed above will be added to an approved list as they are qualified by the public works~~operations services~~ director or designee.

Backflow preventers which may be subjected to back pressure or back-siphonage that have been fully tested and have been granted a certificate of approval by the qualified laboratory and are listed on the laboratory's current list of approved assemblies~~devices~~ may be used without further test or qualification.

Approved AG must meet the requirements as specified under the CCCPH.

F. It shall be the duty of the customer~~user~~ at any premises where a BPA or AG~~backflow prevention devices~~ is~~are~~ installed to have certified inspections and operational tests and repairs made at least once per year, and submitted per the city's Backflow Program instructions. In those instances where the public works~~operations services~~ director or their designee, deems the hazard to be great enough, he or she may require certified inspections at more frequent intervals. These inspections, tests and repairs shall be at the expense of the water user and shall be performed by the assembly~~device~~ manufacturer's representative, or by a certified tester approved by the public works~~operations services~~ director or designee. It shall be the duty of the public works~~operations services~~ director or designee to see that these timely tests are made. The customer~~user~~ shall notify the city's Backflow Program staff representative~~operations services director~~, in advance when the tests are to be undertaken so that he or she or his or her representative may witness the tests if so desired. These assemblies~~devices~~ shall be repaired, overhauled or replaced by a certified individual or agency at the expense of the

customer ~~user~~ whenever the assemblies~~devices~~ are found to be defective. Records of such tests, repairs and overhaul shall be kept and made available to the city's authorized representative~~operations services director~~.

G. It is the duty of the BPA tester to notify the city's public works department as soon as possible within 24 hours if a backflow incident is suspected, or an unprotected cross-connection is observed at the BPA, AG or prior to the assembly at any time.

H. All BPA and AG~~backflow assembly devices~~, regardless of when they were installed or whether they had been previously approved by the City, must meet the requirements as described in this chapter. All exsisting~~presently~~ installed backflow assemblies~~devices~~ which do not meet the requirements of this chapter, in accordance with CCCPH requirements~~section~~ but were previously approved, are required to comply with the updated requirements in the time specified by the city through notification to the water user. ~~devices~~

~~F. for the purposes described herein at the time of installation and which have been properly maintained, shall, except for the inspection and maintenance requirements under subsection F of this section, be excluded from the requirements of these rules so long as the operations services director is assured that they will satisfactorily protect the utility system. Whenever the existing device is moved from the present location or requires more than minimum maintenance or when the operations services director finds that the maintenance constitutes a hazard to health, the unit shall be replaced by a backflow prevention device meeting the requirements of this section.~~

I. All existing water connections which may be deemed by the public works~~operations services~~ director or designee, to be subject to backflow prevention will, upon written notice, have an appropriate BPA or AG~~backflow prevention device~~ installed, ~~and~~ inspected and tested by a city approved tester.~~within 60 days of the notification.~~ The water user is responsible for obtaining all necessary permits, including encroachment and Fire permits for assembly replacement and installations. Extensions may be granted by the public works director or designee, for additional time necessary to complete the permitting approval process in situations of newly required BPA under city notification or replacement of failed assemblies. The customer must provide documentation showing good faith effort towards achieving compliance.

1. In the case of a user premises with a failed field-tested BPA, the customer is responsible for the repair or replacement and retesting of the BPA/replaced approved BPA within 30 days of notification of the failure. Customers may request extensions up to 90 days~~,~~ as stipulated above~~,~~ by approval of the authorized city representative.

2. In the case of an existing user premises with a service identified requiring a BPA, which previously did not have one, or previously approved device which does not met the current CCCPH requirements and therefore requires replacement with an approved BPA, the customer is responsible for the installation or replacement, as applicable, within 90 days of notification.

(Prior code § 2-16.50 (2); Ord. 1073 § 3, 1983; Ord. 2000 § 1, 2009)

§ 14.16.060. ~~Failure to Comply~~Water Service Termination

A. When the City encounters water use that represent a clear and immediate hazard to the potable water supply that cannot be immediately abated, the City shall institute the procedure for discontinuing the water service. The basis for such termination shall include, but are not limited to:

1. Failure to install a required BPA;

2. Failure to comply with annual BPA testing requirements by a certified tester;

3. Failure to repair or replace a failed or faulty BPA;

4. Any unprotected direct or indirect connections have been made between the City's water system and a sewer line, system, or equipment containing contaminants;

5. Any other type of connection to the City's water system where the required BPA has been removed or bypassed; and

6. Any other circumstances presenting an immediate health hazard to the City's water system.

B. Any corrective measures required to maintain the customer's water service shall be at the sole cost of the customer.

C. Water services shall not be restored until:

1. The customer has demonstrated compliance with the requirements as set forth in this chapter to the satisfaction of the City; and

2. The City has received reimbursement for any costs incurred by the City to enforce the requirements of this chapter.

§ 14.16.070. Violations Deemed a Public Nuisance

A. In addition to any other remedies provided in this chapter, any condition caused or permitted to exist in violation of this chapter is a threat to the public health, safety and welfare, and is declared and deemed a nuisance. Such condition may be summarily abated and/or restored by an authorized city representative to compel the cessation of such nuisance.

B. The cost of such abatement and any resulting restoration shall be borne by the responsible person for the premises, and the cost thereof shall be a lien upon and against the property. The procedures of Chapter 19.28.160 of the Pleasanton Municipal Code shall be followed for any such lien.

C. The City reserves the right to seek enforcement by civil action for any violation of this Chapter. In any such action, the City may seek and the court shall grant, as appropriate, any or all of the following remedies:

1. A temporary and/or permanent injunction;

2. Any costs incurred by the City including but not limited to the cost of investigation, inspection, and monitoring, as well as reasonable costs of preparing and bringing legal action; and

3. Any other costs incurred by the City to abate the nuisance.

Appendix C

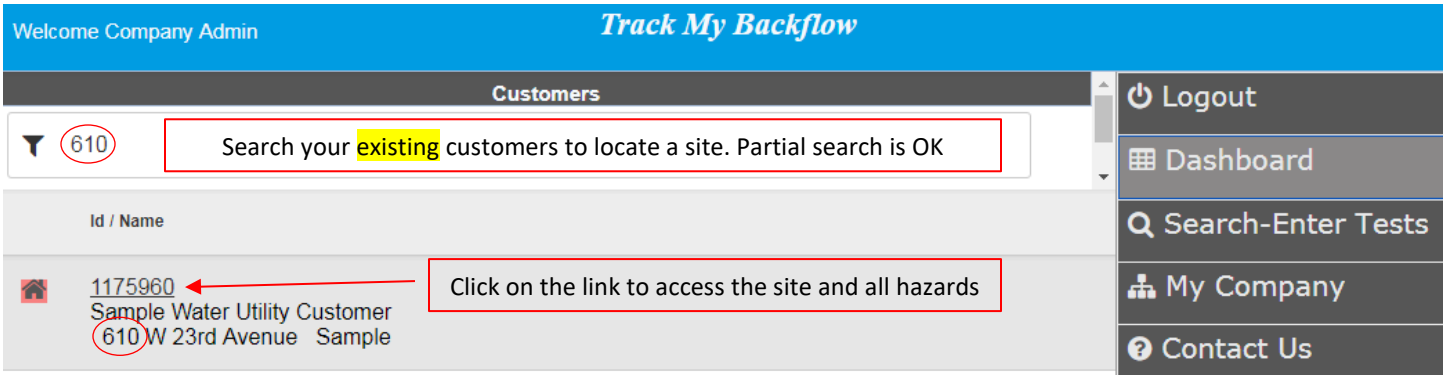
Aqua Backflow BPA Tester Tutorial

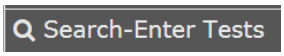
Questions?
847-742-2296
info@aquabackflow.com

TrackMyBackflow.com

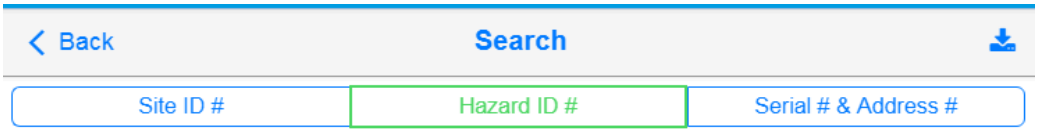
TEST SUBMISSION TUTORIAL

1) Upon login, you'll see your existing customers and you can either search thru them in the Search field at the top

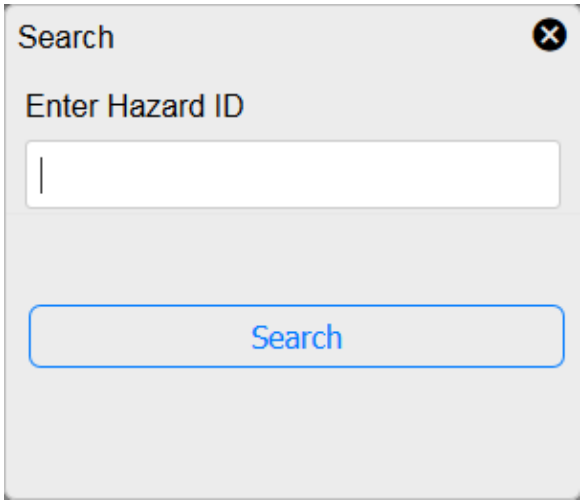


or select 

2) Selecting Search-Enter Tests takes you to the screen below. Select your search method: IE Site ID #, Hazard ID #, or Serial # and Address # (address number only, NOT street name)



3) Enter your search value:

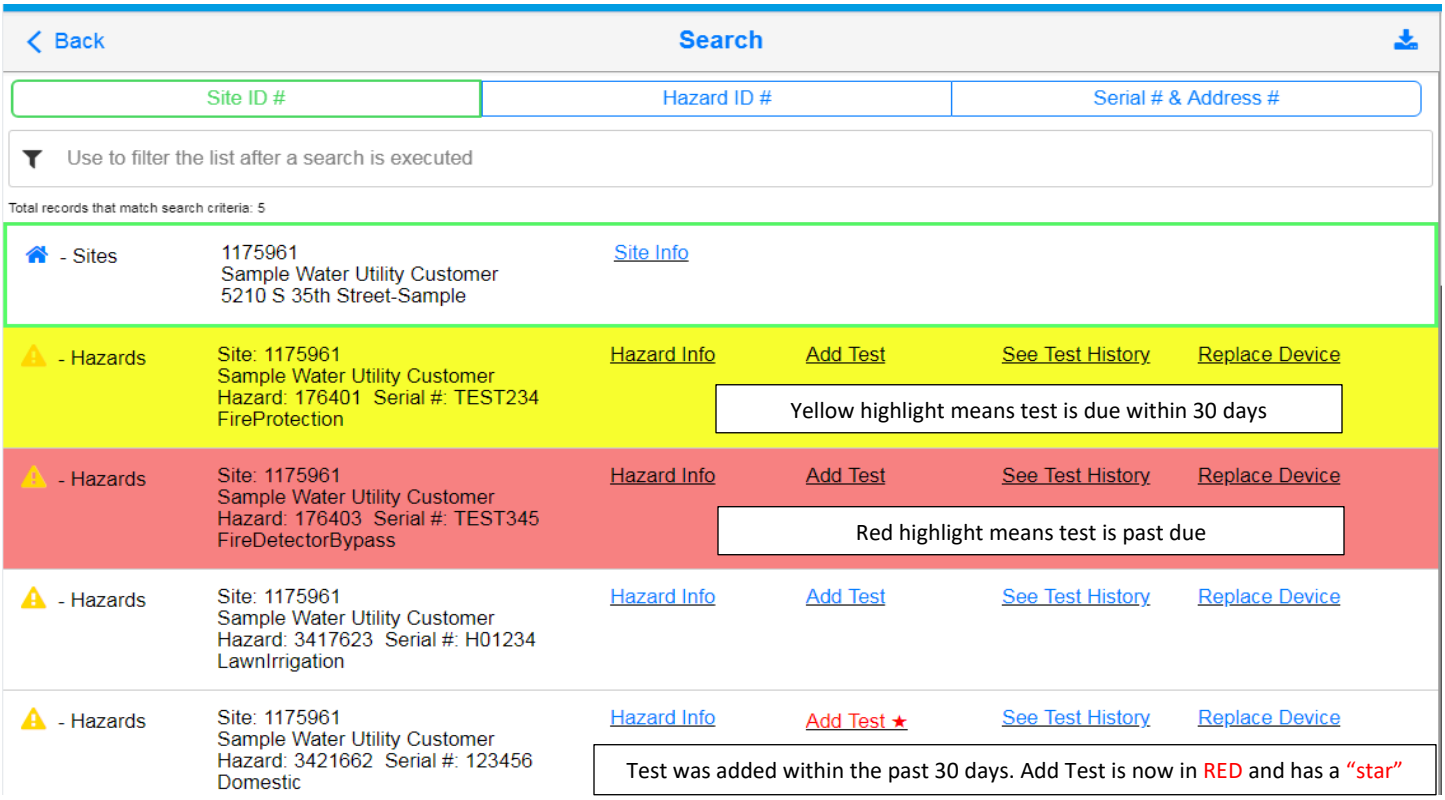


NOTES:

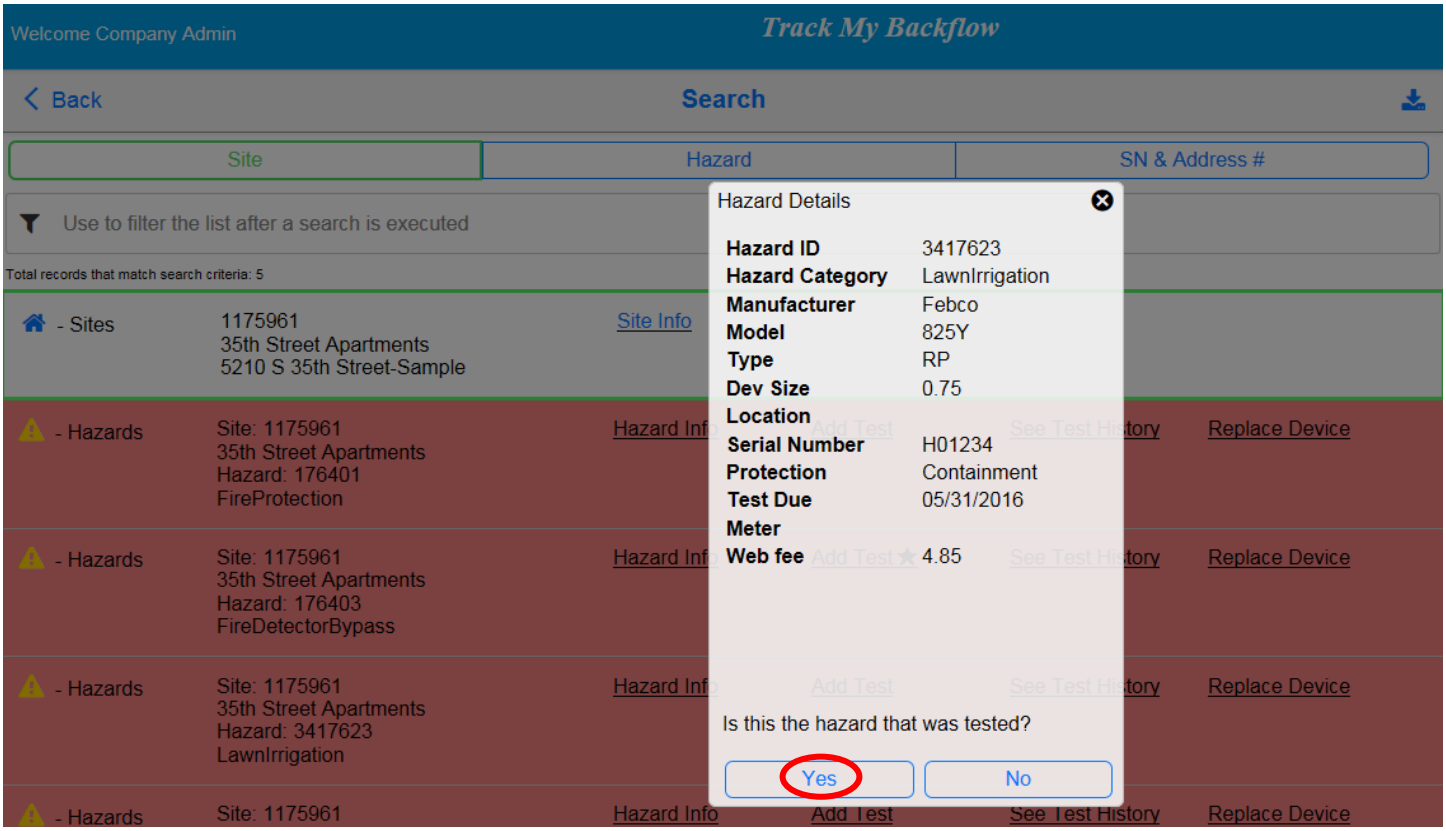
Site ID # and Hazard ID # are on all communications with your customer. Make a note of them to ease future test submissions

When searching using a Serial #, you will also need to enter the Address #. This is done for data security purposes.
DO NOT ENTER THE STREET NAME

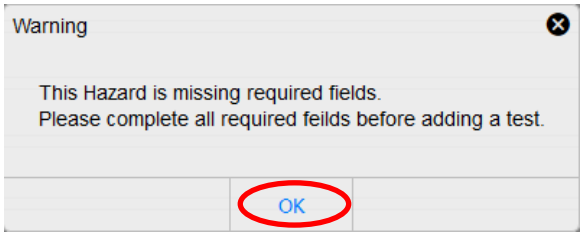
4) **ALL** hazards at this site will now be shown.
You can access Hazard Info, Add Test, See Test History, and Replace Device from this screen.



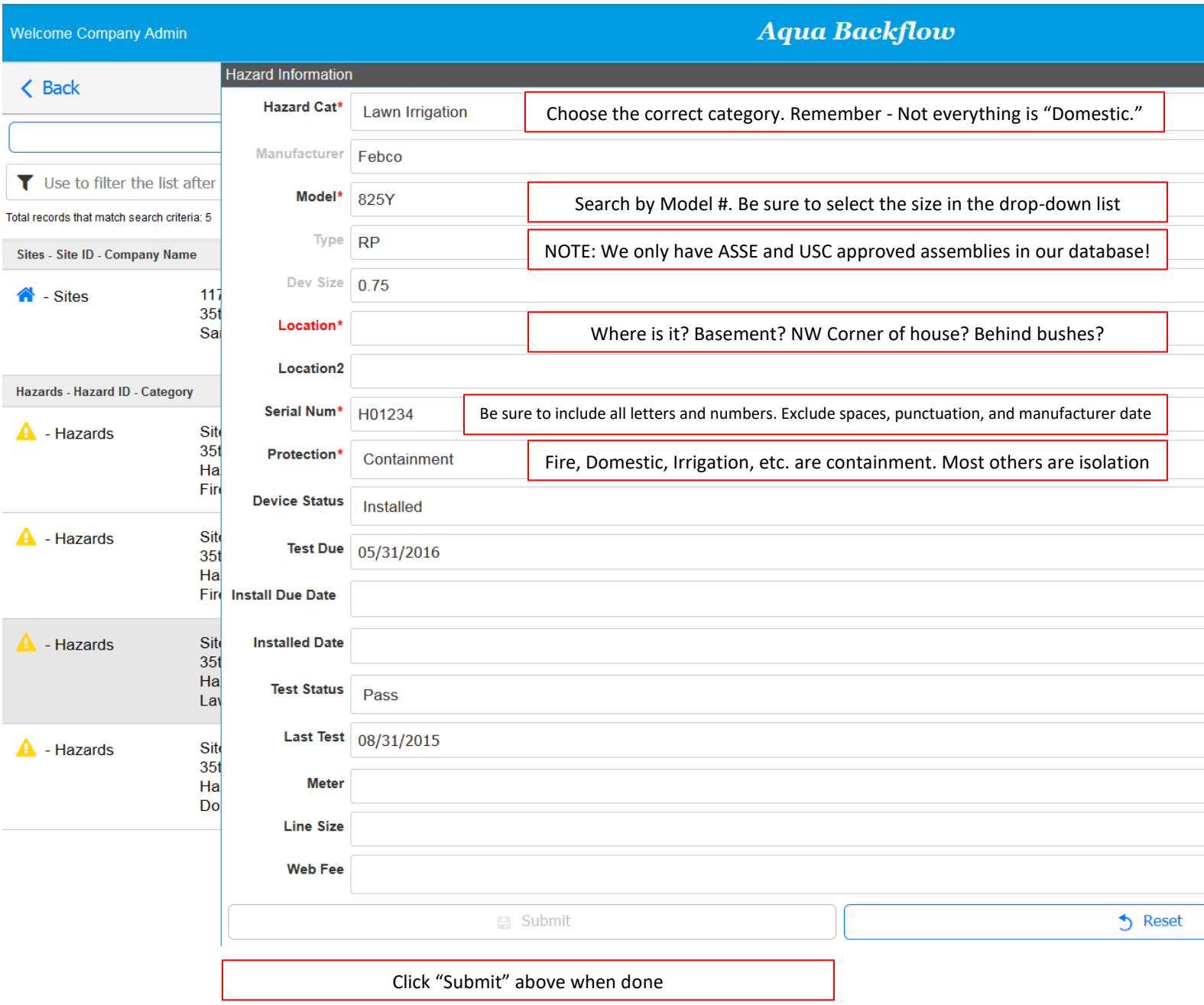
5) When you click Add Test, confirm the hazard details and select "Yes." If you replaced the device, select "No."



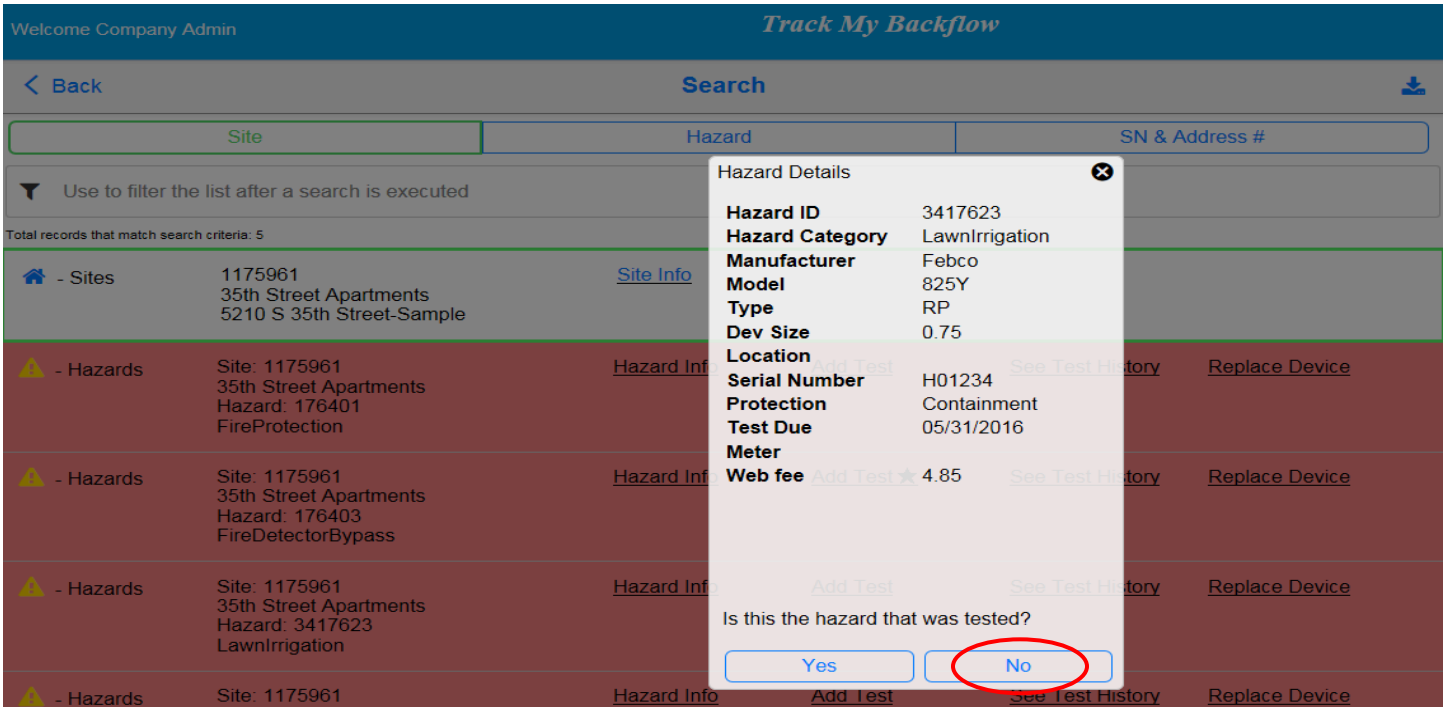
6) …after clicking “Yes,” if the hazard is missing any required information you will see the warning box below. When this warning box is closed, the Edit Hazard screen will automatically open.



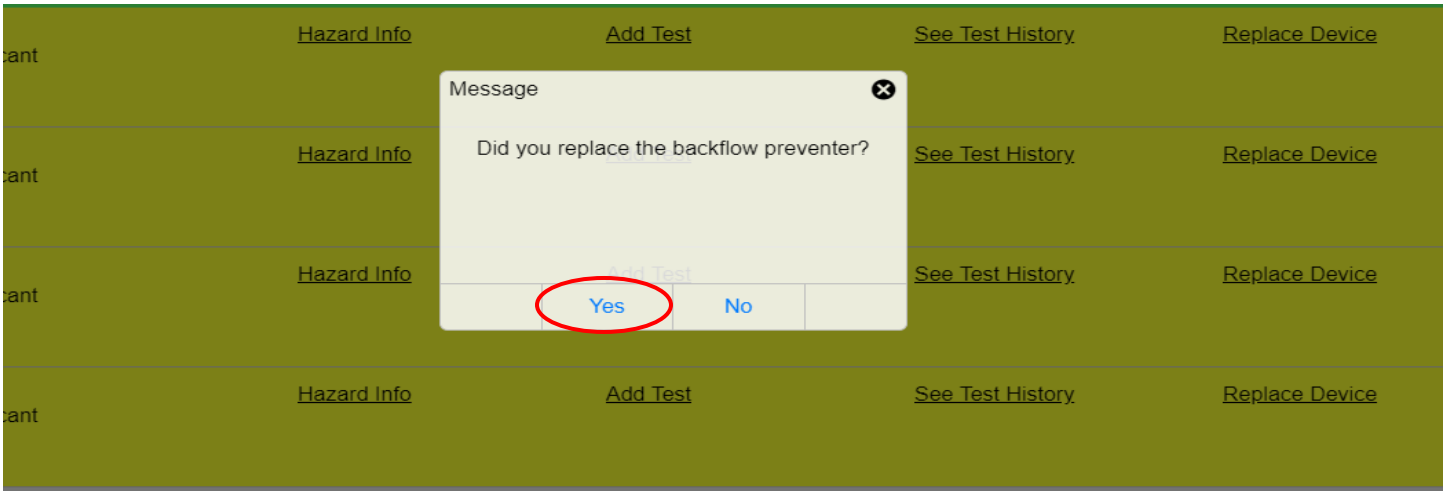
7) Missing required information is identified in red.
Enter the required information and click “Submit.” The add test screen will automatically open.



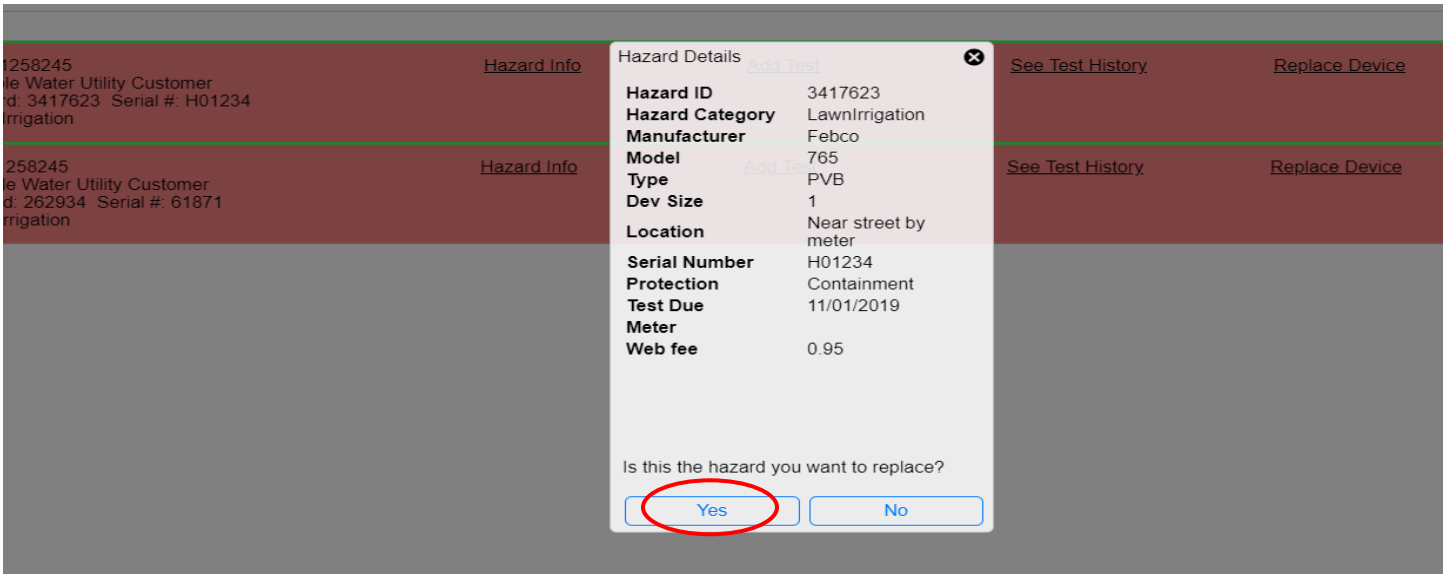
8) If this was not the device tested, select “No.”



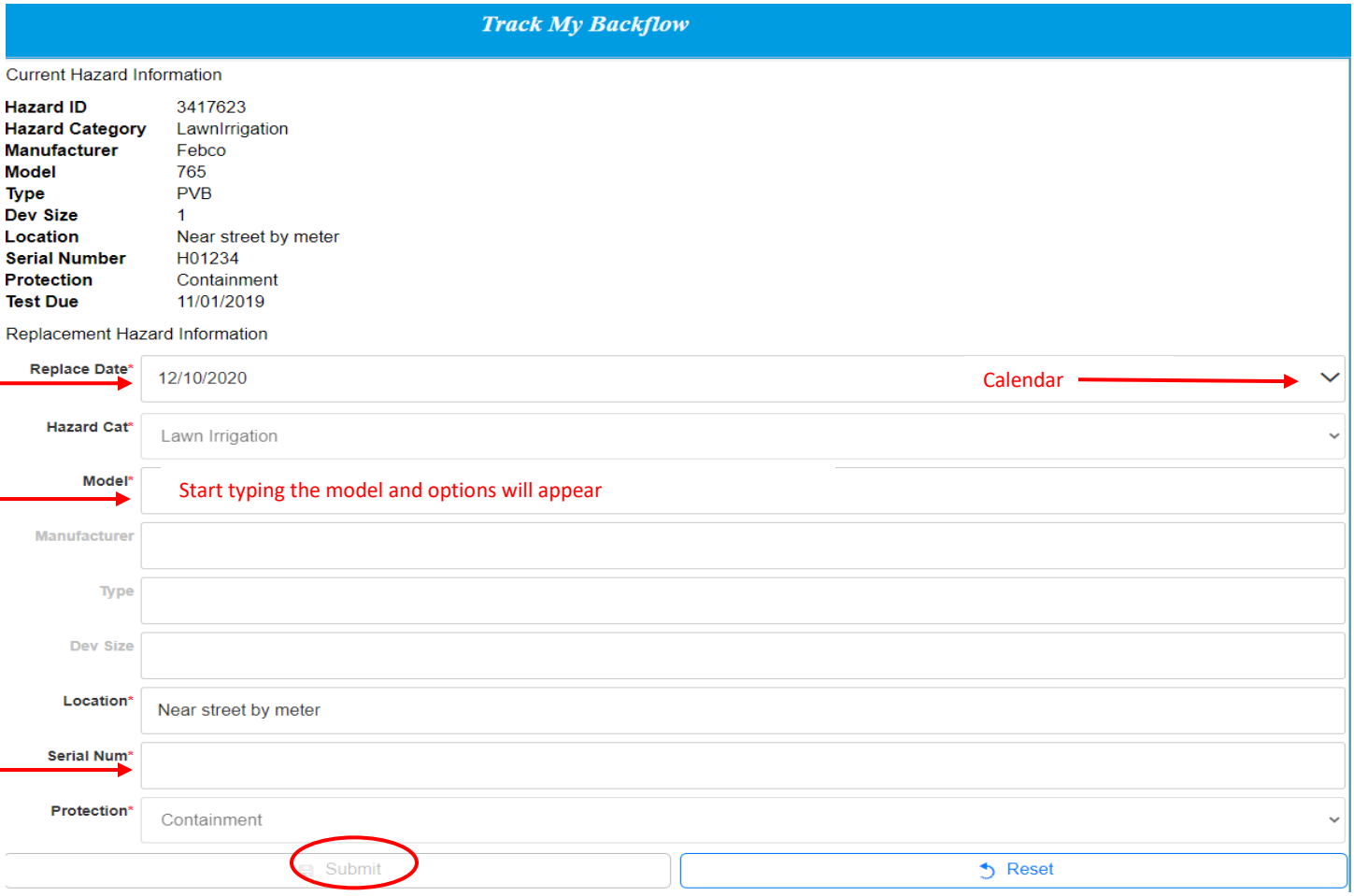
9) You are then asked if you replaced the device. Selecting “No” will instruct you to perform a new search. Select “Yes.”



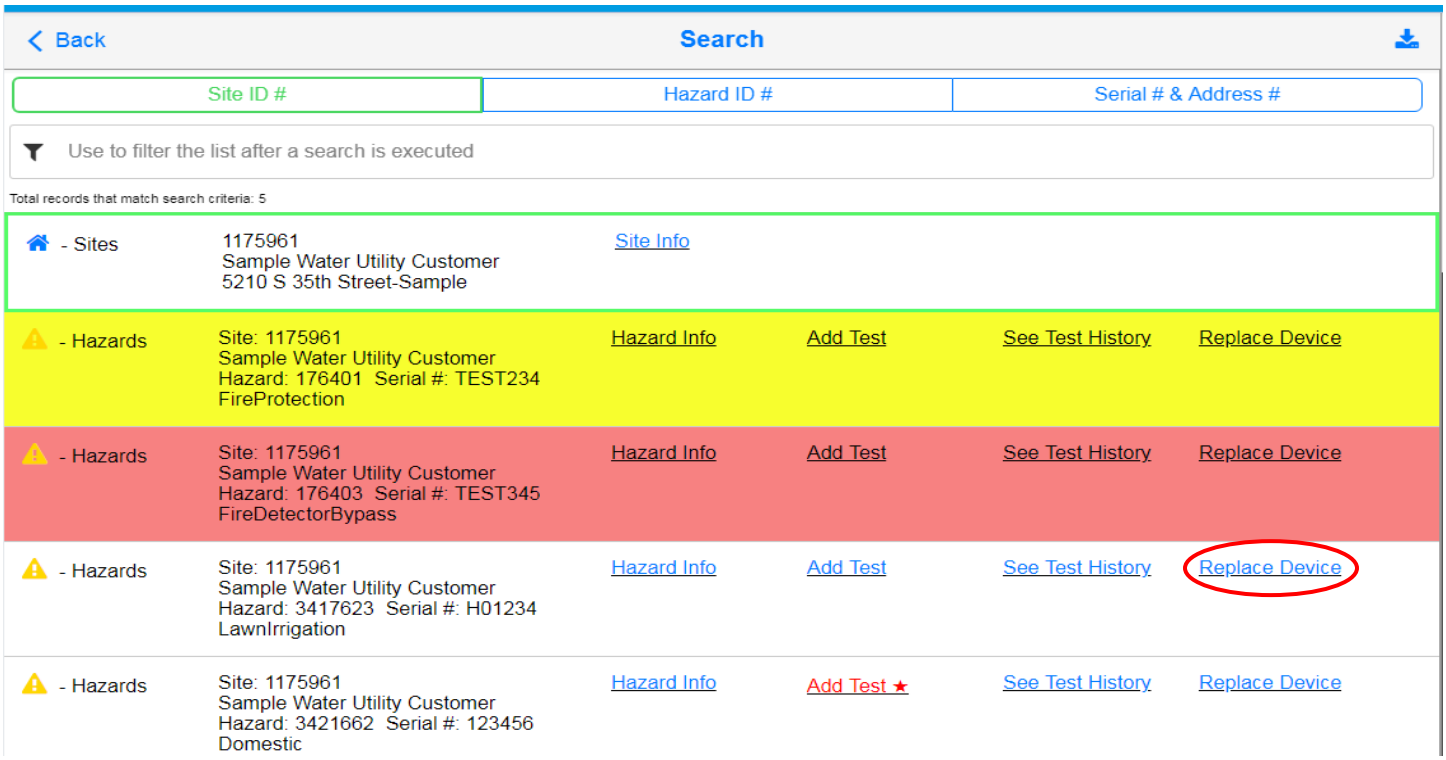
10) Confirm that this is the hazard you want to replace.



11) Then, simply select the date replaced, the model #, enter the serial #, and click submit. Afterwards, enter the test.



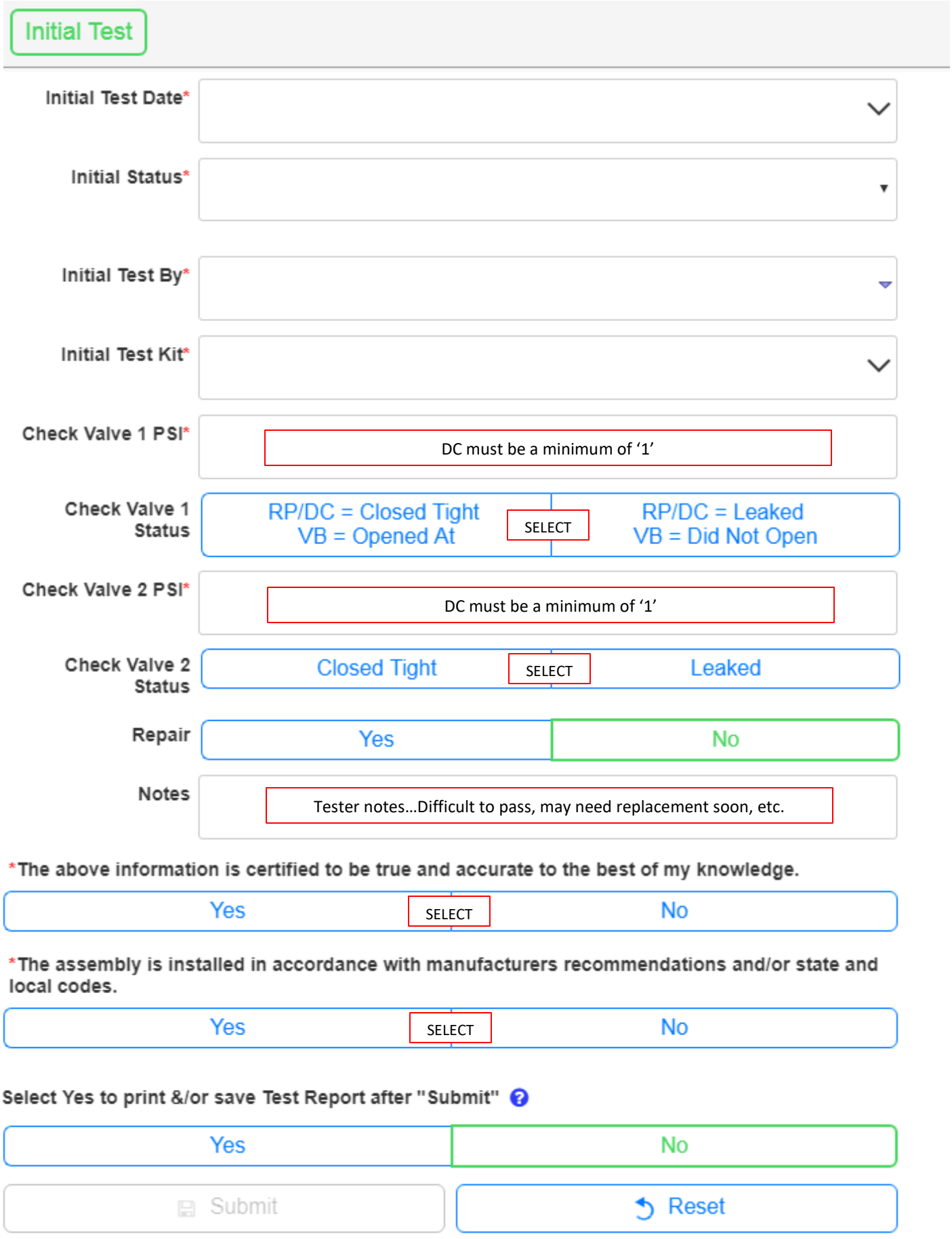
12) You can skip many of the steps above simply by originally clicking on “Replace Device.”



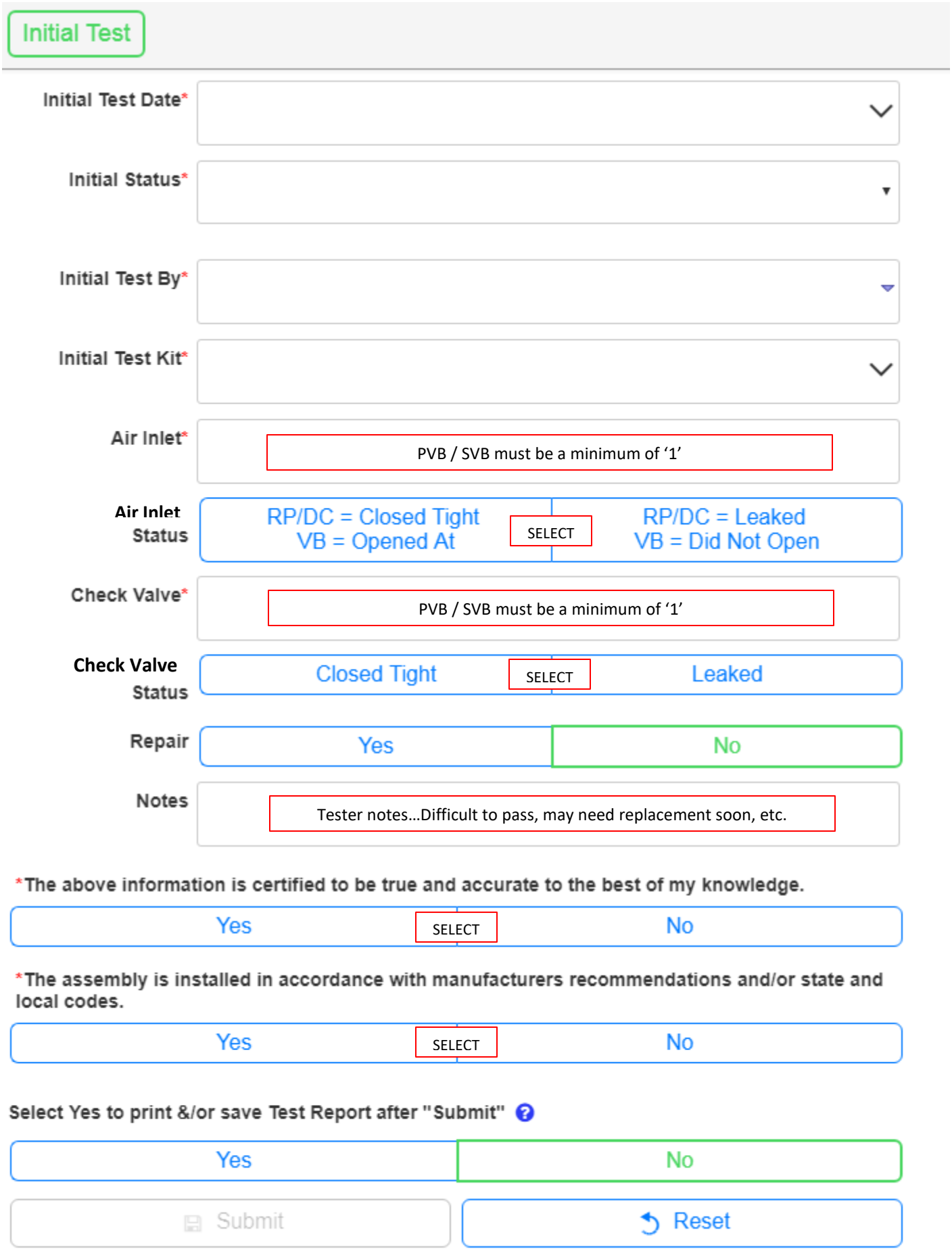
12) **RPZ** – **Reduced Pressure Zone**: Enter the test results. Notice the questions at the bottom of the form.

Single-click Submit, as you don't want to duplicate the test submission

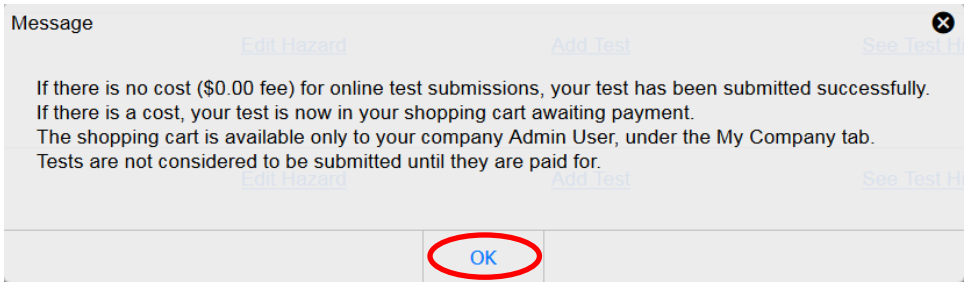
13) **DC** – **Double Check**: Enter the test results. Notice the questions at the bottom of the form.



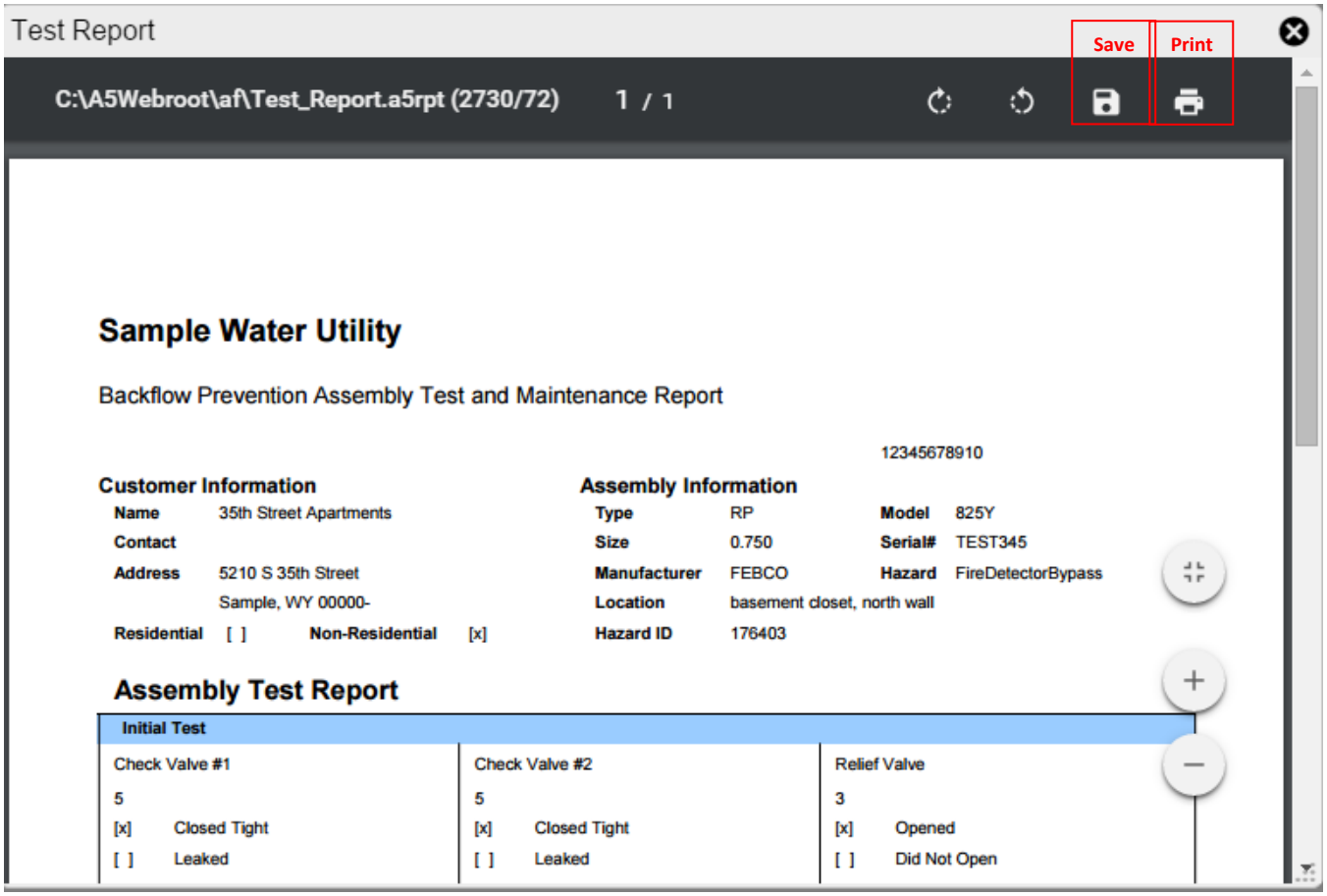
14) **PVB / SVB – Pressure Vacuum Breaker / Spill-proof Vacuum Breaker**: Enter the test results.

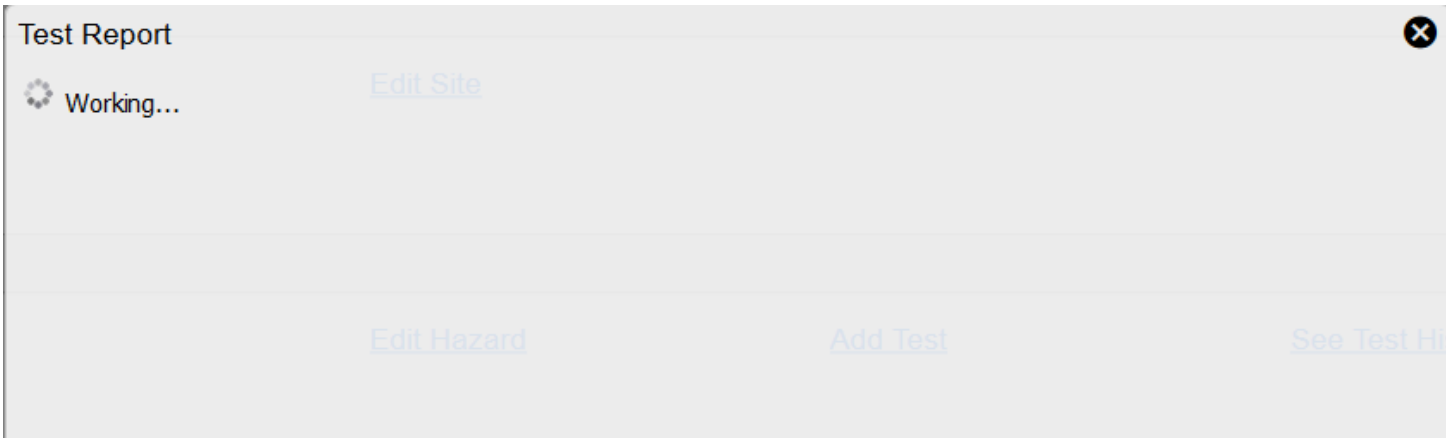


15) After you click “Submit,” you will see the message box below. You must click OK to proceed.



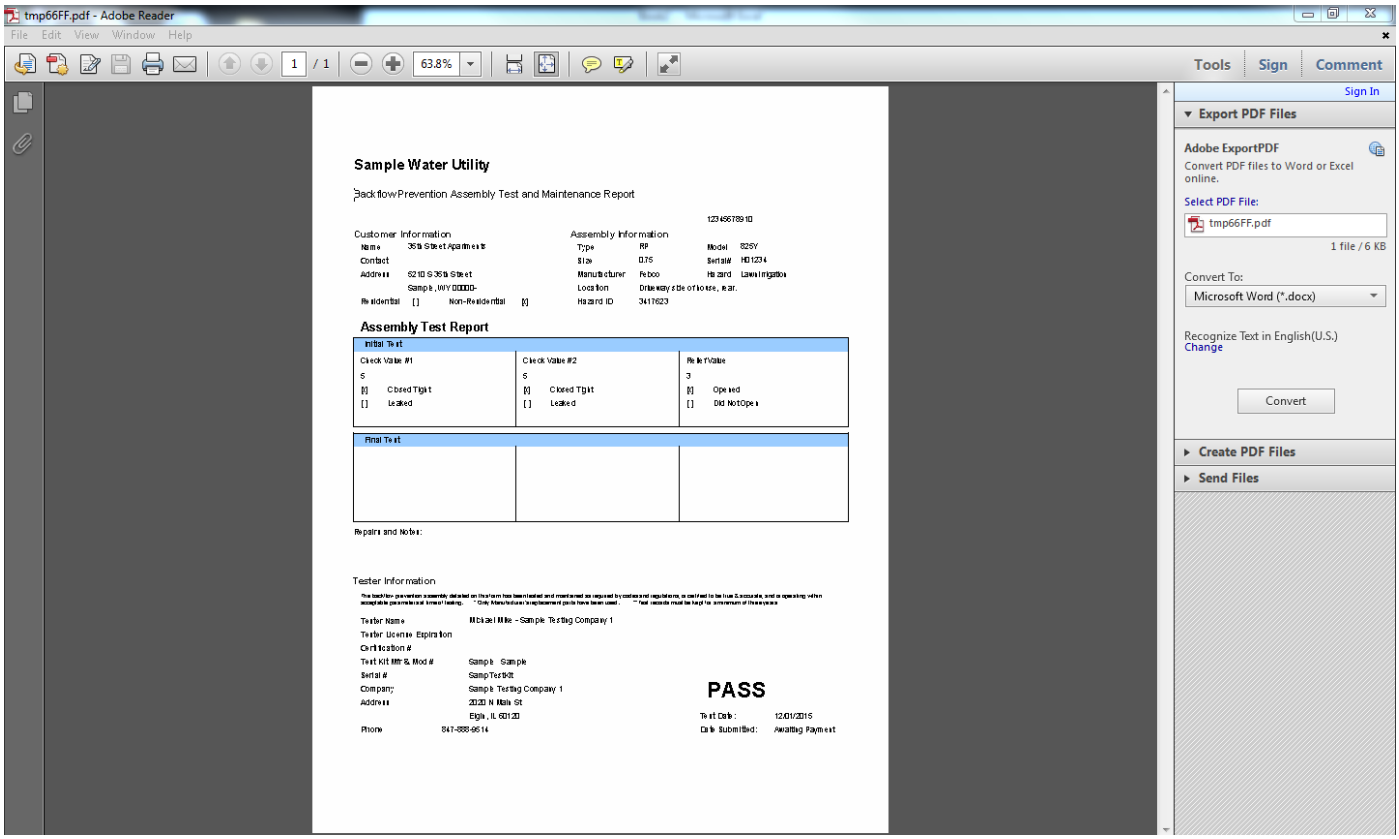
16) IF you selected ‘Yes’ to print or save the Test Report on the previous page, you should see one of the screens below, depending upon your web browser and the settings you have chosen...



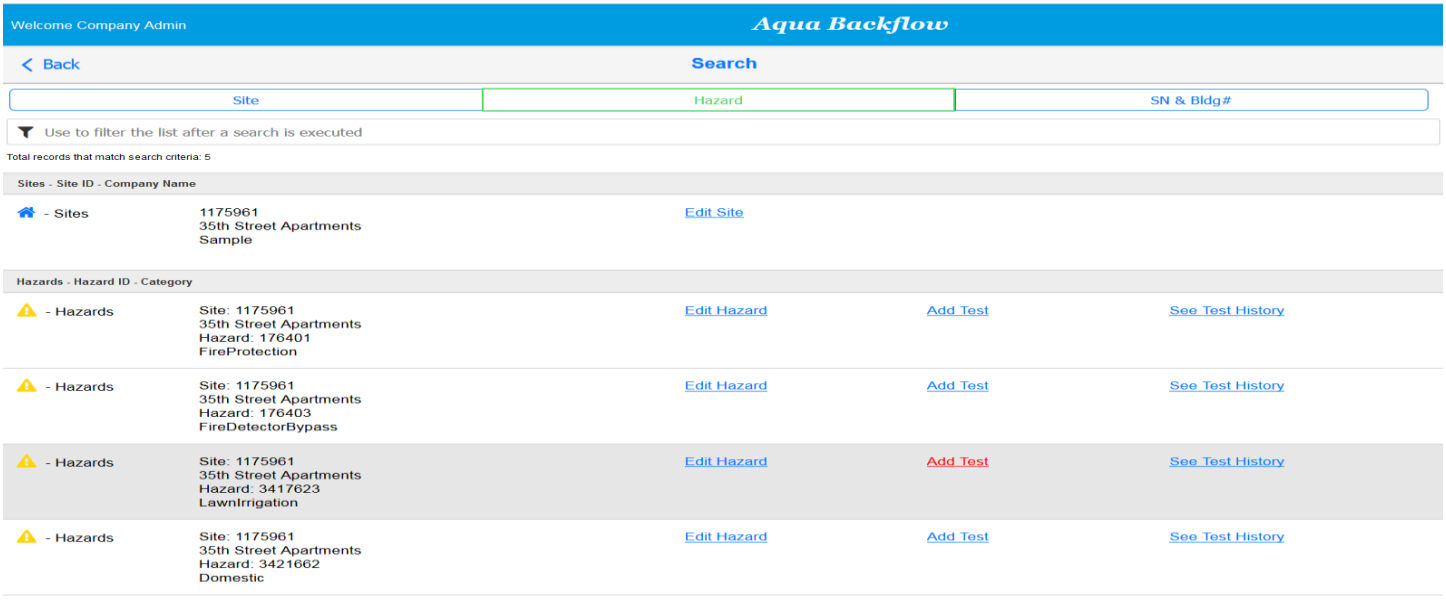


17) If the complete form does not appear in the pop-up box, it is because your browser is not set up to automatically download and you will need to select 'download' from your browser.

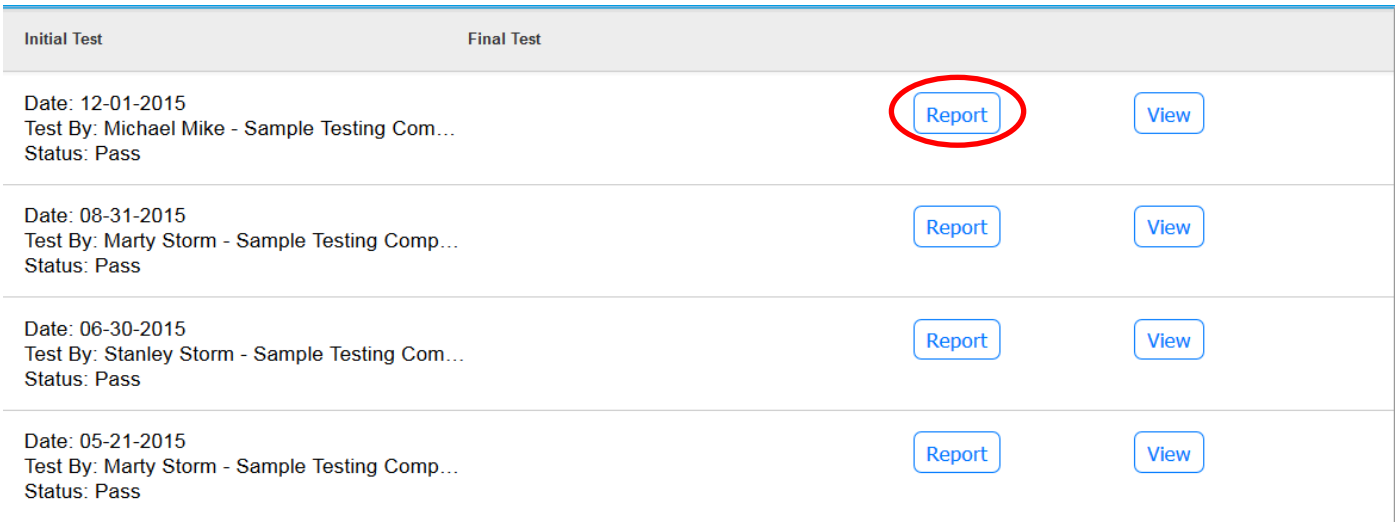
The completed test form will open as a PDF in a new window.



18) After you close the box (either blank or containing the completed test form), you will be returned to your search screen containing your search results. Notice 'Add Test' is now shown in red. This indicates that a test for this hazard has been entered in the past 30 days and helps you to avoid duplicate entries.

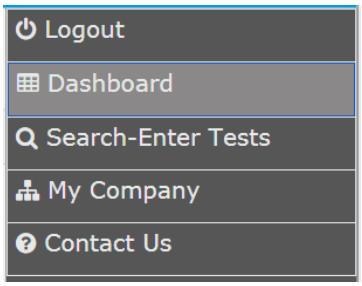


19) Completed test reports can be printed at any time by selecting See Test History at the hazard level, and Report.



14) The payment process and your Shopping Cart

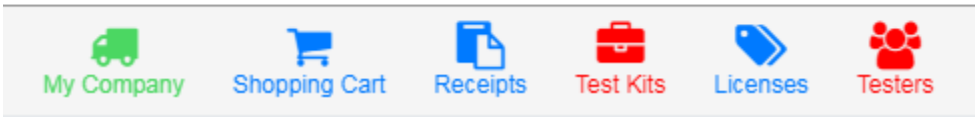
Select "My Company"

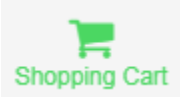


You'll see the icons below across the bottom of your screen

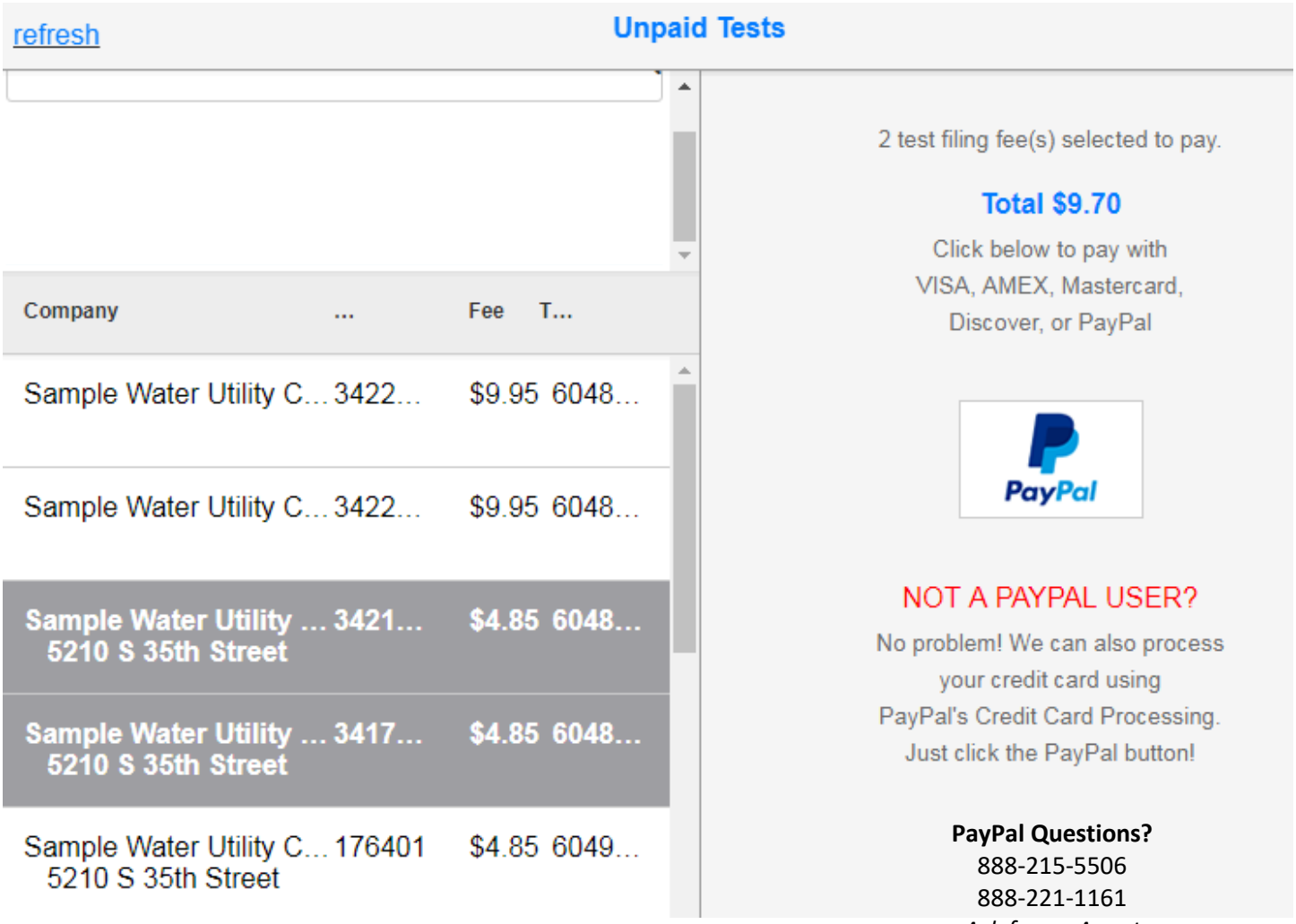
Red indicates that attention is needed in that particular category, such as an expired test kit.

Click into each category as needed to edit/add/delete tester or test kit information, print receipts, to checkout, etc.



To pay for tests in your cart, click on the Shopping Cart icon 

Single-click the tests to be submitted. You can select and unselect tests as needed.



Click on the PayPal button, even if you don't have a PayPal account 

[Avoid double-clicking during the payment process and be patient]

Do not close the payment window until the payment has been processed.

To save time, you may submit ALL of your tests with one transaction. An itemized receipt will be emailed to you and receipts are also accessible on your My Company page.

Setting up a PayPal account can expedite test payments, as your information is saved. Contact them with questions.

Can't locate a Site or Hazard in TrackMyBackflow?

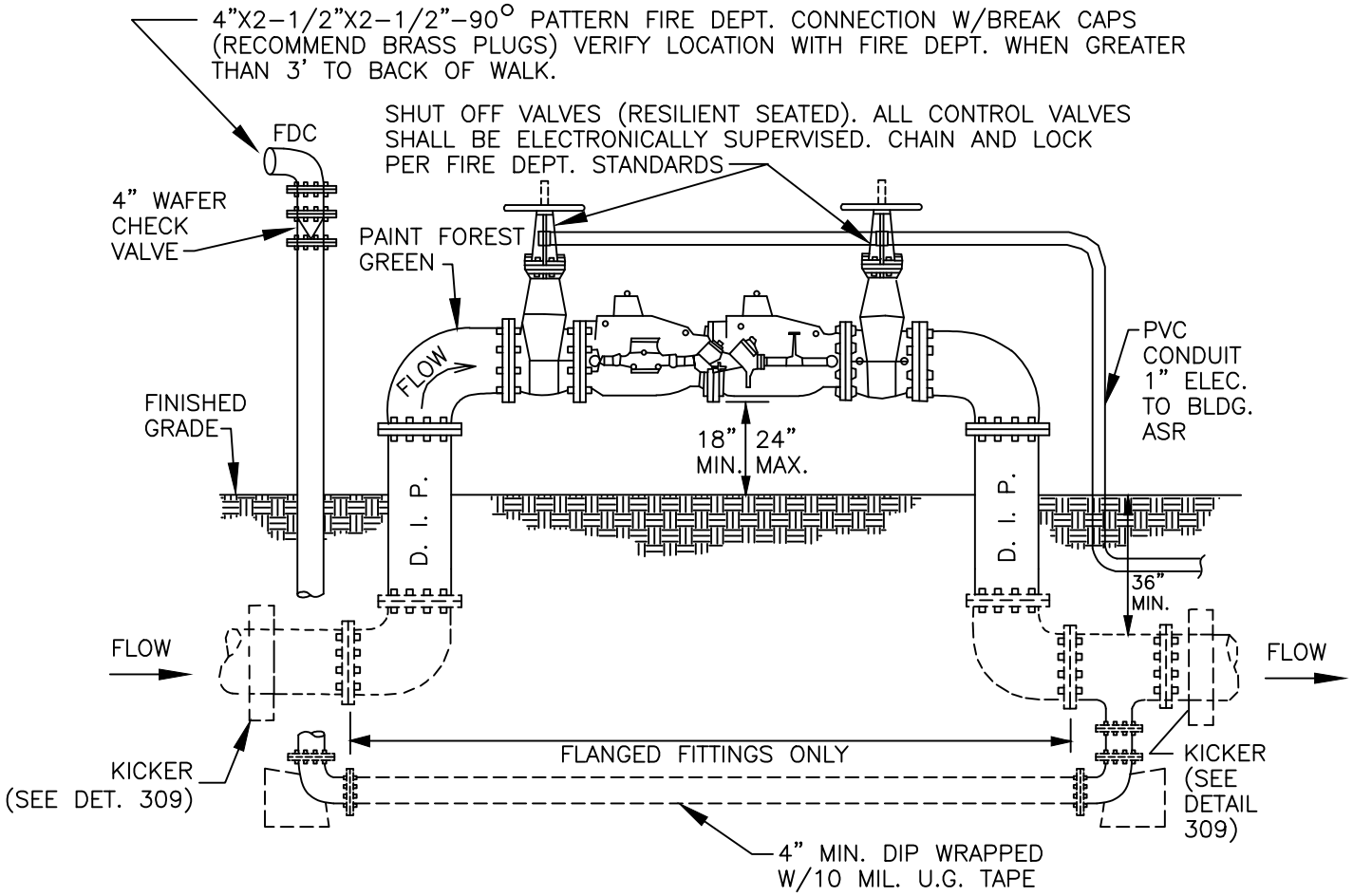
Contact us at 847-742-2296 or email: info@aquabackflow.com

New backflow preventer installation?

Different utilities have different methods. Contact us if you have questions about a specific utility's process. Standard procedure is to contact us, obtain a Hazard ID #, and enter the installation information / test results. That specific backflow preventer information will then appear on your dashboard.

Appendix D

Standard Details (2024)



TYPICAL DOUBLE CHECK DETECTOR CHECK SIDE VIEW
TYPICAL REDUCED PRESSURE DETECTOR ASSEMBLY SIDE VIEW

NOTES:

1. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE ON THE APPROVED LIST OF THE USCFCCCHR.
2. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE INSTALLED ABOVE FINISHED GRADE AT BACK OF PSE.
3. MAXIMUM DISTANCE BETWEEN FIRE DEPARTMENT CONNECTION (FDC) AND PUBLIC FIRE HYDRANT SHALL BE 50', UNLESS SPECIFICALLY APPROVED BY FIRE DEPT.
4. FDC TO REMAIN ACCESSIBLE AND FIRE APPARATUS ACCESS ROAD MARKED PER VEHICLE CODE.
5. DIP BELOW GROUND SHALL BE ENCASED IN POLYETHYLENE TUBING. SEE SPEC. 14-03B.
6. ALL CONNECTIONS TO BE FLANGED.
7. ALL TRIM HARDWARE TO BE BRASS OR BRONZE.
8. METER TO REGISTER IN GALLONS.
9. BY-PASS METER PIPING TO BE INSULATED AGAINST FREEZING.
10. MASTIC ALL BOLTS/NUTS OR USE STAINLESS STEEL COMPONENTS.
11. BACKFLOW PREVENTION ASSEMBLIES SHALL BE RETESTED AT THE TIME THE VALVE TO THE STREET IS OPENED.

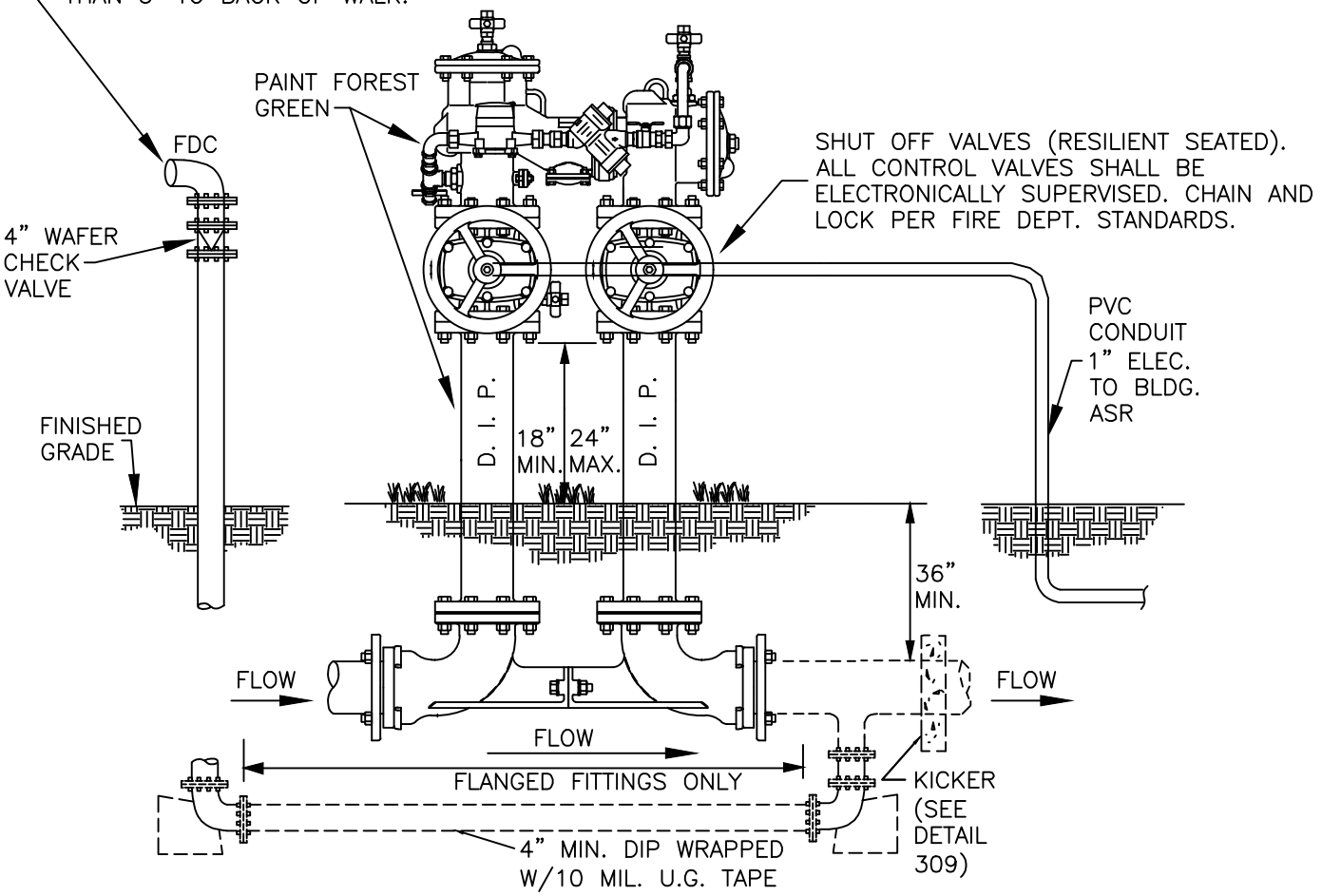
DRAWN BY: STAFF		
CHECKED BY: AN		
SCALE: N.T.S.		

CITY OF PLEASANTON
STANDARD DETAILS

BACK FLOW PREVENTION
FIRE SERVICE CONNECTION TYPE 1
TO SPRINKLERED BUILDINGS

REGISTERED PROFESSIONAL ENGINEER
ADAM MATTHEW NELKIE
No. 78830
Exp. 9/30/2025
CIVIL
STATE OF CALIFORNIA

DATE: 7/24 | DWG NO. 704



TYPICAL DOUBLE CHECK DETECTOR CHECK SIDE VIEW
TYPICAL REDUCED PRESSURE DETECTOR ASSEMBLY SIDE VIEW

NOTES:

1. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE ON THE USC FCCCHR APPROVED LIST.
2. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE INSTALLED ABOVE FINISHED GRADE AT BACK OF PSE.
3. MAXIMUM DISTANCE BETWEEN FIRE DEPARTMENT CONNECTION (FDC) AND PUBLIC FIRE HYDRANT SHALL BE 50', UNLESS SPECIFICALLY APPROVED BY FIRE DEPT.
4. FDC TO REMAIN ACCESSIBLE AND FIRE APPARATUS ACCESS ROAD MARKED PER VEHICLE CODE.
5. DIP BELOW GROUND SHALL BE ENCASED IN POLYETHYLENE TUBING. SEE SPEC. 14-03B.
6. ALL CONNECTIONS TO BE FLANGED.
7. ALL TRIM HARDWARE TO BE BRASS OR BRONZE.
8. METER TO REGISTER IN GALLONS.
9. BY-PASS METER PIPING TO BE INSULATED AGAINST FREEZING.
10. MASTIC ALL BOLTS/NUTS OR USE STAINLESS STEEL COMPONENTS.
11. BACKFLOW PREVENTION ASSEMBLIES SHALL BE RETESTED AT THE TIME THE VALVE TO THE STREET IS OPENED.

DRAWN BY: STAFF		
CHECKED BY: AN		
SCALE: N.T.S.		

CITY OF PLEASANTON

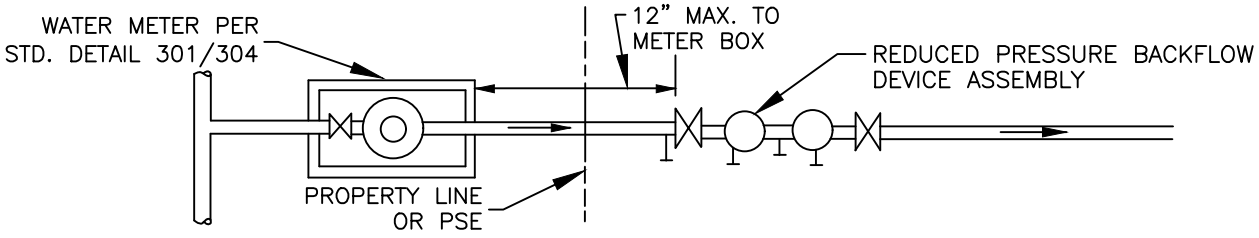
STANDARD DETAILS

BACK FLOW PREVENTION
FIRE SERVICE CONNECTION TYPE 2
TO SPRINKLERED BUILDINGS

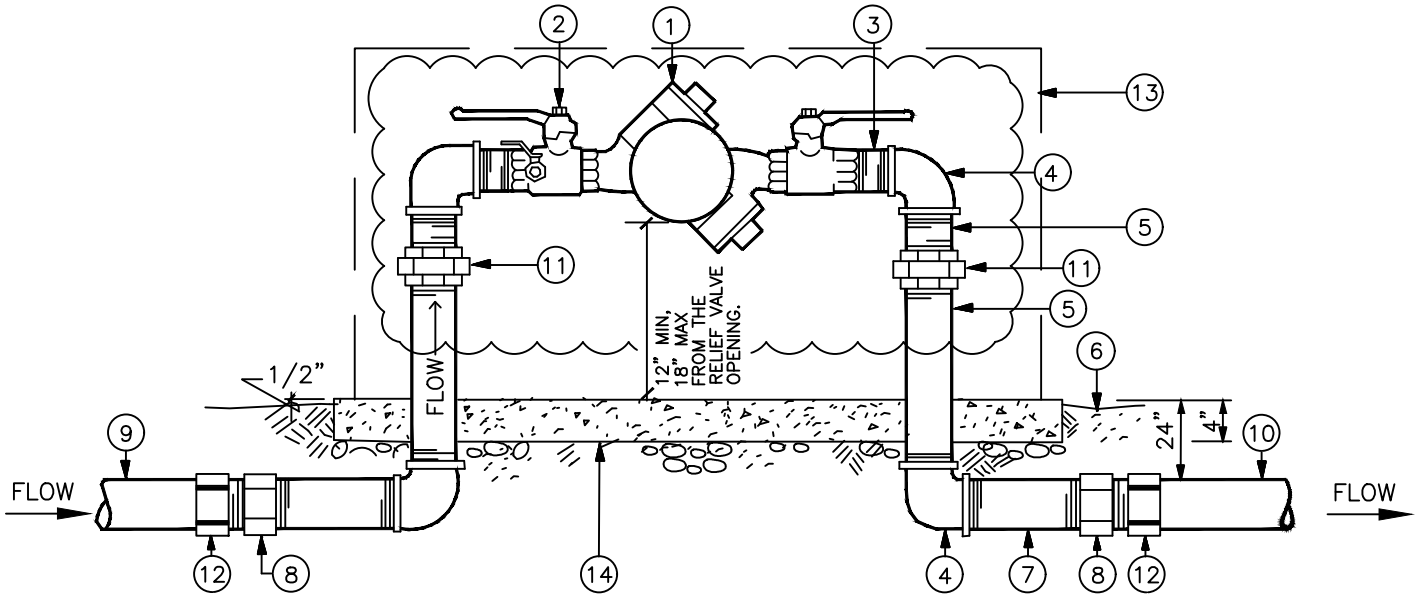
REGISTERED PROFESSIONAL ENGINEER
JOHN MATTHEW NELKIE
No. 78830
Exp. 9/30/2025
CIVIL
STATE OF CALIFORNIA

DATE: 7/24

DWG NO. 705



TOP VIEW



1. REDUCED PRESSURE BACKFLOW PREVENTER DEVICE
2. SHUTOFF VALVE, BALL TYPE
3. SHORT NIPPLE; RED BRASS
4. ELBOW; BRONZE
5. NIPPLE; LENGTH AS REQUIRED, RED BRASS
6. FINISH GRADE
7. SHORT NIPPLE; RED BRASS
8. COUPLING; RED BRASS
9. PRESSURE LINE FROM WATER METER
10. MAIN LINE; SIZE PER PLAN
11. UNION; BRONZE OR BRASS
12. SCH 80 PVC MALE ADAPTER (SXT)
13. PROVIDE INSULATED BAG INSIDE "STRONG BOX" (SEE NOTE 4)
14. CONCRETE PAD AS REQ'D FOR "STRONG BOX" (SEE NOTE 4)

NOTES:

1. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE ON THE USC FCCCHR APPROVED LIST.
2. IF MAX. DISTANCE BETWEEN WATER METER BOX AND REDUCED PRESSURE PRINCIPAL ASSEMBLY EXCEEDS 12", A CONCRETE CAP SHALL BE PLACED OVER THE WATER LINE.
3. ALL PIPING SHALL CONFORM WITH THE LATEST EDITION OF THE UNIFORM PLUMBING CODE.
4. WEATHER PROTECTION DEVICES TO PROTECT PIPES FROM FREEZING SHALL REQUIRE APPROVAL BY THE PLANNING DIVISION PRIOR TO INSTALLATION. SUCH MATERIAL SHALL BE REPLACED AS THEY BECOME WORN OUT. CITY MAINTAINED SYSTEMS SHALL HAVE "STRONG BOX" AND INSULATED BAGS UNLESS NOTED OTHERWISE.
5. TYPE "L" COPPER CAN BE USED FOR ALL FITTINGS ONLY WITH THE APPROVAL OF THE ENGINEER.
6. FITTINGS SHALL HAVE CLASSIFICATION OF 125 LBS.

DRAWN BY: STAFF
CHECKED BY: AN
SCALE: N.T.S.

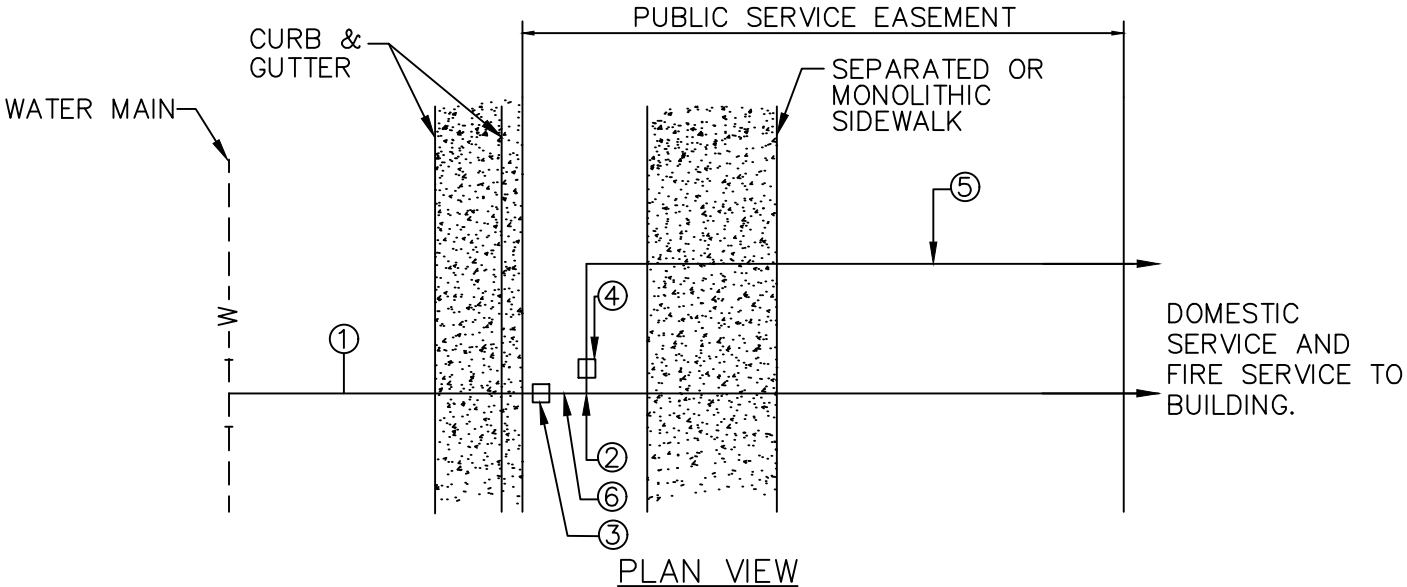
CITY OF PLEASANTON

STANDARD DETAILS

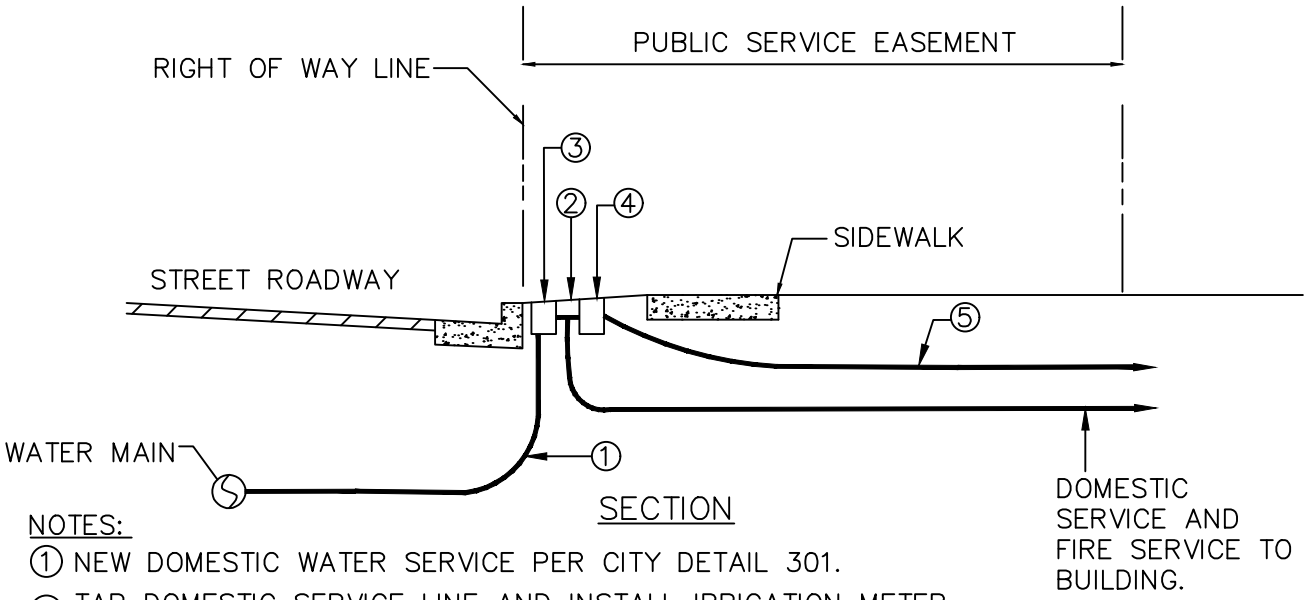
BACKFLOW PREVENTER FOR DOMESTIC OR IRRIGATION SERVICE

REGISTERED PROFESSIONAL ENGINEER
ADAM MATTHEW NELKIE
No. 78830
Exp. 9/30/2025
CIVIL
STATE OF CALIFORNIA

DATE : 7/24 | DWG NO. 706



PLAN VIEW



SECTION

NOTES:

① NEW DOMESTIC WATER SERVICE PER CITY DETAIL 301.

② TAP DOMESTIC SERVICE LINE AND INSTALL IRRIGATION METER BOX FOR IRRIGATION SERVICE PER DETAIL 301.

*③ NEW DOMESTIC WATER METER PER DETAIL 301.

*④ IRRIGATION SUB METER. (OWNER/DEVELOPER PAYS FOR METER COST ONLY)

⑤ IRRIGATION SERVICE AS PER CITY BUILDING DEPARTMENT AND UPC REQUIREMENTS.

*⑥ PRESSURE REDUCER AND/OR REDUCED PRESSURE BACK FLOW DEVICE ON DOMESTIC AND IRRIGATION SERVICE IF REQUIRED.

* METER BOXES AND PRESSURE REDUCER AND/OR REDUCED PRESSURE BACK FLOW DEVICE SHALL BE PLACED OUTSIDE OF SIDEWALK.

DRAWN BY: STAFF		
CHECKED BY: AN		
SCALE: N.T.S.		

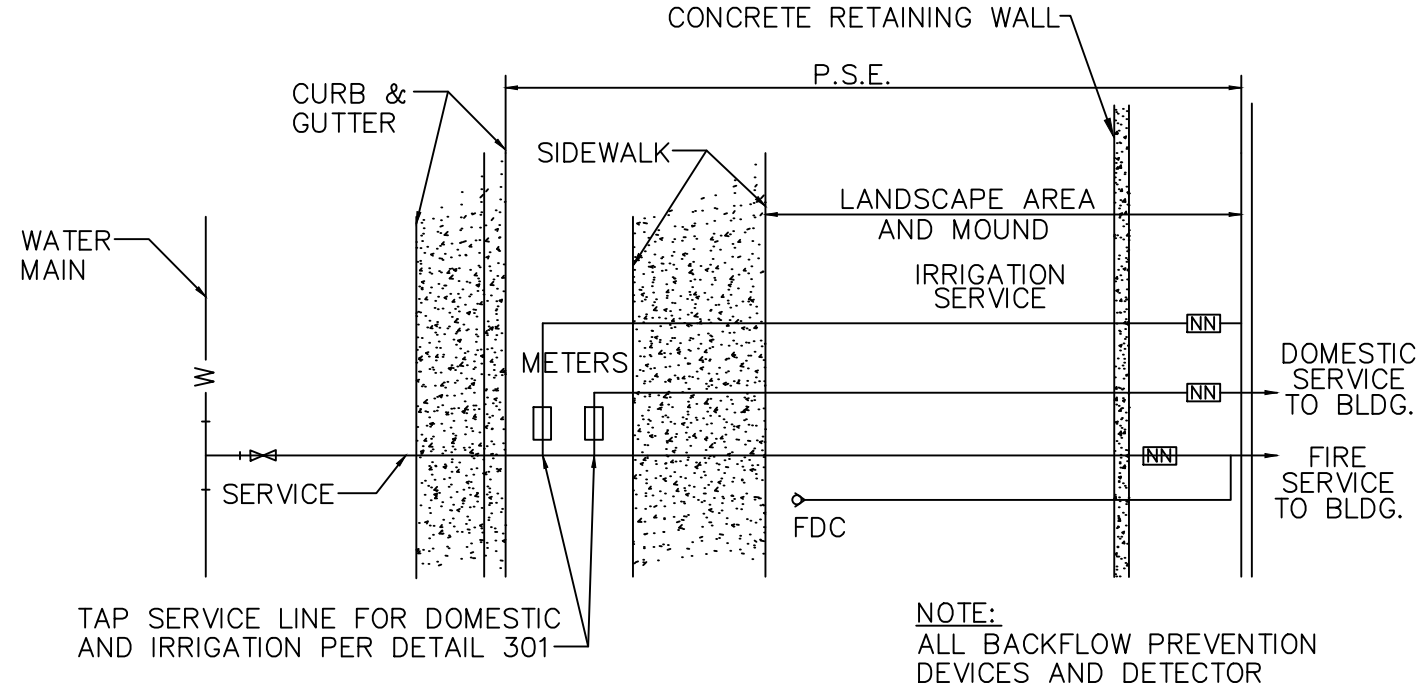
CITY OF PLEASANTON

STANDARD DETAILS

RESIDENTIAL DOMESTIC WATER SERVICE AND IRRIGATION SERVICE

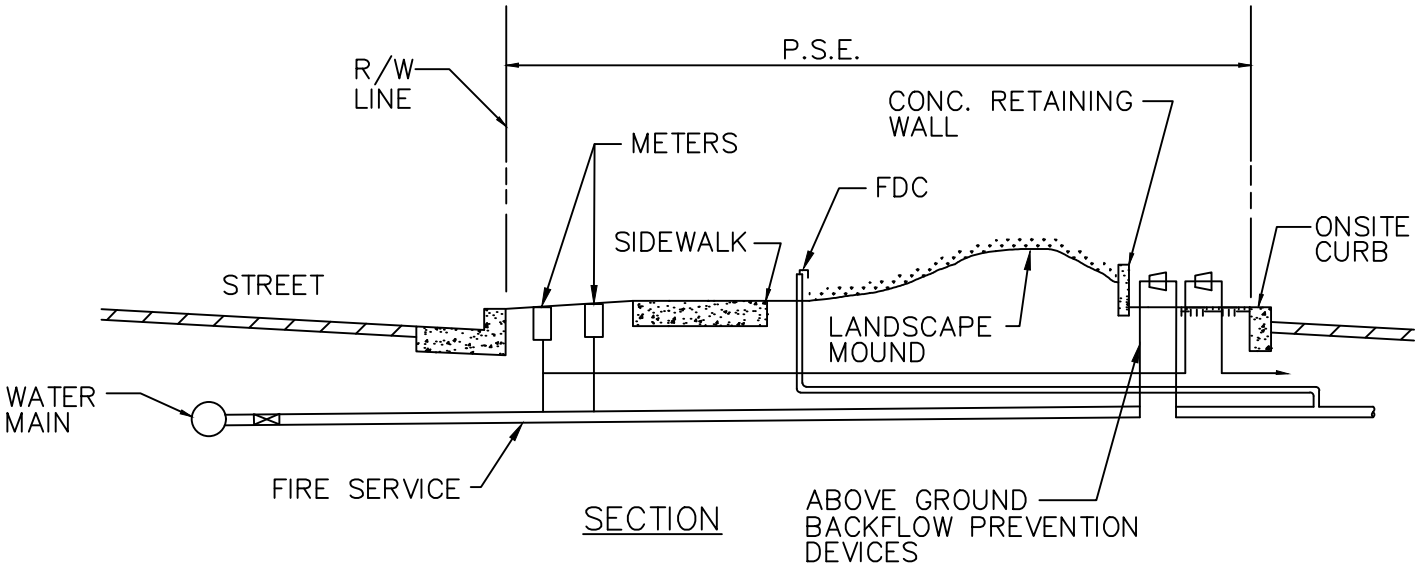
REGISTERED PROFESSIONAL ENGINEER
ADAM MATTHEW NEENIE
No. 78830
Exp. 9/30/2025
CIVIL
STATE OF CALIFORNIA

DATE : 7/24 | DWG NO. 707



PLAN VIEW

NOTE:
ALL BACKFLOW PREVENTION DEVICES AND DETECTOR CHECKS TO BE ON THE BACKSIDE OF LANDSCAPE BERM, AWAY FROM STREET, WITHIN PUBLIC SERVICE EASEMENT.



SECTION

NOTE:
WHERE DISTANCE FROM METER TO BACKFLOW DEVICE EXCEEDS 12 INCHES, SERVICE LINE FROM METER TO BACKFLOW DEVICE SHALL HAVE A 4 INCH THICK CONCRETE CAP.

DRAWN BY:	STAFF
CHECKED BY:	AN
SCALE:	N.T.S.

CITY OF PLEASANTON

STANDARD DETAILS

COMMERCIAL AND INDUSTRIAL FIRE AND WATER SERVICES BUSINESS PARKS

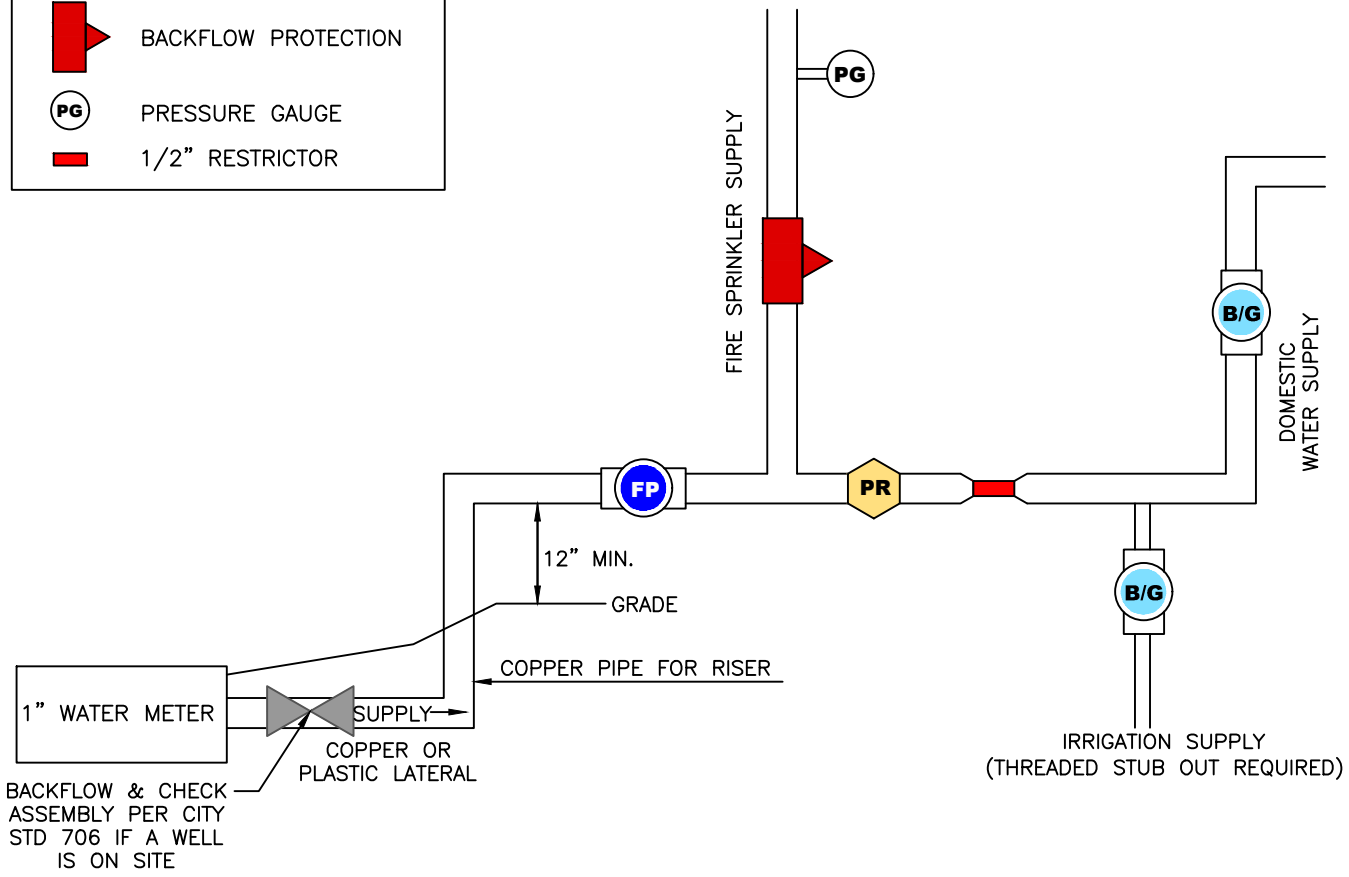
REGISTERED PROFESSIONAL ENGINEER
ADAM MATTHEW NELKIE
No. 78830
Exp. 9/30/2025
CIVIL
STATE OF CALIFORNIA

DATE : 7/24 | DWG NO. 708

LEGEND

- FP — FULL PORT BALL VALVE
- B/G — BALL OR GATE VALVE
- PR — PRESSURE REGULATOR
- BACKFLOW PROTECTION
- PG — PRESSURE GAUGE
- 1/2" RESTRICTOR

(HOUSES WITH FIRE SPRINKLERS)



NOTES: ALL PIPING SHALL FOLLOW THIS SEQUENCE

1. 1" WATER METER
2. SUPPLY LINE (SIZED FOR DEMAND)
3. FULL PORT BALL VALVE
4. FIRE SPRINKLER BRANCH
5. PRESSURE REGULATOR (WHEN REQUIRED–80LBSMAX.)
6. 1/2" RESTRICTOR BRANCH
7. IRRIGATION AND HOUSE WITH BALL OR GATE VALVES

ATTENTION: ONLY FIRE SPRINKLER SUPPLY MAY BE CONNECTED BEFORE 1/2" REDUCER!

DRAWN BY: STAFF
CHECKED BY: AN
SCALE: N.T.S.

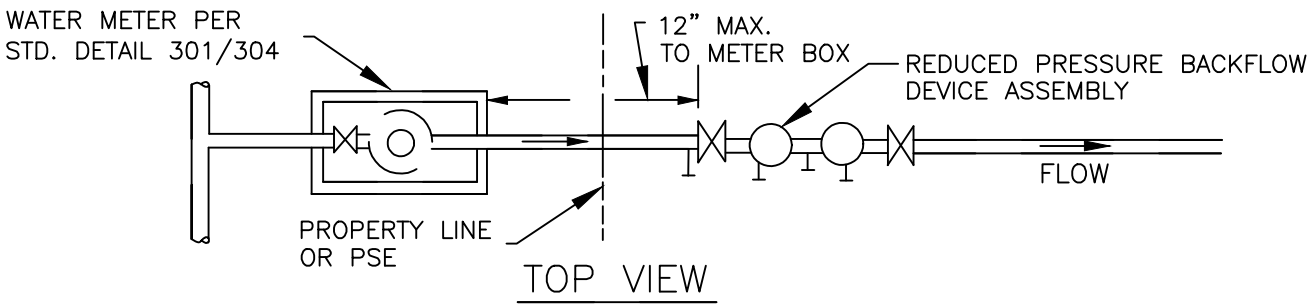
CITY OF PLEASANTON

STANDARD DETAILS

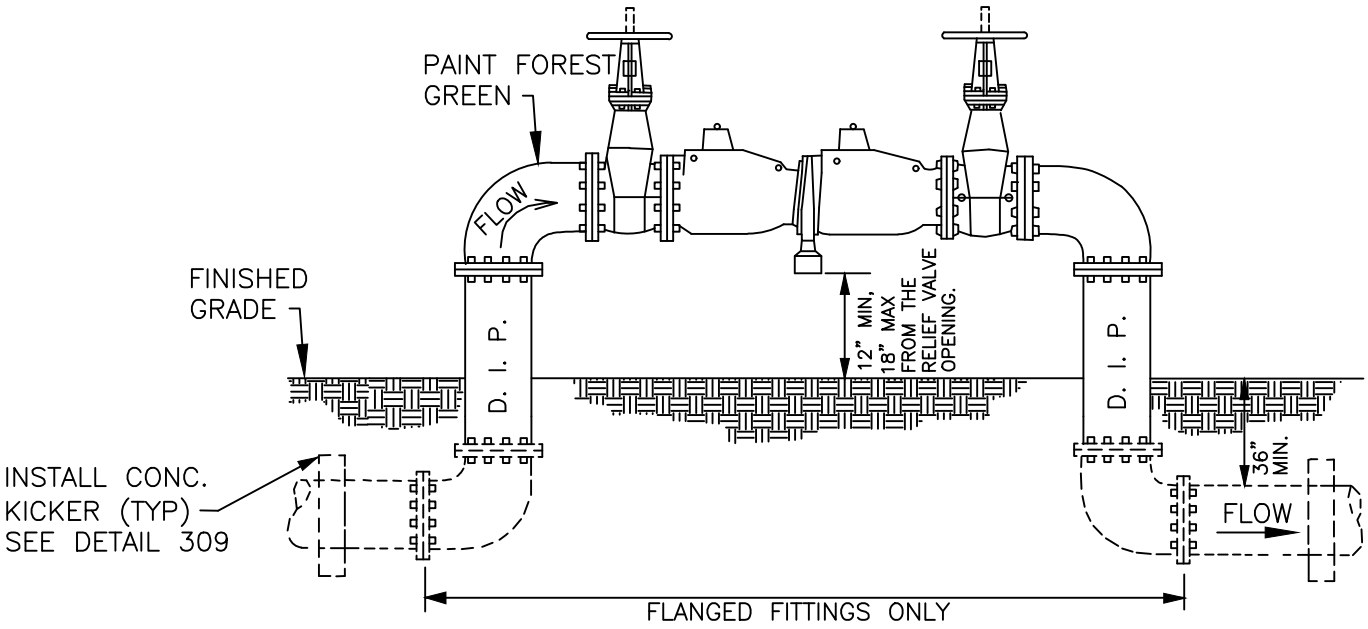
WATER SERVICE RISER REQUIREMENTS

REGISTERED PROFESSIONAL ENGINEER
ADAM MATTHEW NELKIE
No. 78830
Exp. 9/30/2025
CIVIL
STATE OF CALIFORNIA

DATE : 7/24 | DWG NO. 709



TOP VIEW



NOTES:

1. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE ON THE USC FCCCHR APPROVED LIST, SEE SPECIFICATIONS 14–02J.
2. THE BOTTOM OF THE RELIEF VALVE ON REDUCED PRESSURE PRINCIPAL ASSEMBLY SHALL BE INSTALLED A MINIMUM OF 12" OR MAXIMUM OF 18" ABOVE FINISHED GRADE.
3. DIP BELOW GROUND SHALL BE ENCASED IN POLYETHYLENE TUBING. SEE SPEC. 14–03B.
4. ALL CONNECTIONS TO BE FLANGED.
5. ALL TRIM HARDWARE TO BE BRASS OR BRONZE.
6. MASTIC ALL BOLTS AND NUTS UNDERGROUND OR USE STAINLESS STEEL COMPONENTS.
7. BACKFLOW PREVENTION ASSEMBLIES SHALL BE TESTED WITHIN 14 DAYS AFTER THE VALVE IN THE STREET IS OPENED.
8. IF MAX. DISTANCE BETWEEN WATER METER BOX AND REDUCED PRESSURE PRINCIPAL ASSEMBLY EXCEEDS 12", A CONCRETE CAP SHALL BE PLACED OVER THE WATER LINE, SEE DET. NO. 114.
9. WEATHER PROTECTION DEVICES TO PROTECT PIPES FROM FREEZING SHALL REQUIRE APPROVAL BY THE PLANNING DIVISION PRIOR TO INSTALLATION. SUCH MATERIAL SHALL BE REPLACED AS THEY BECOME WORN OUT.

DRAWN BY: STAFF		
CHECKED BY: AN		
SCALE: N.T.S.		

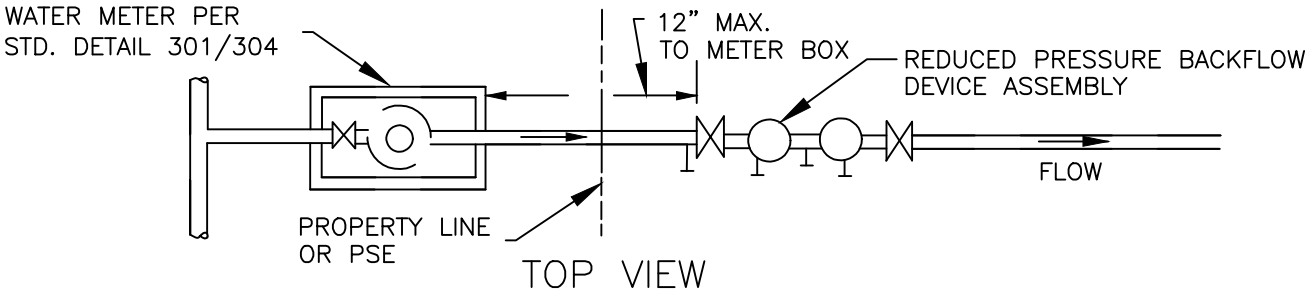
CITY OF PLEASANTON

STANDARD DETAILS

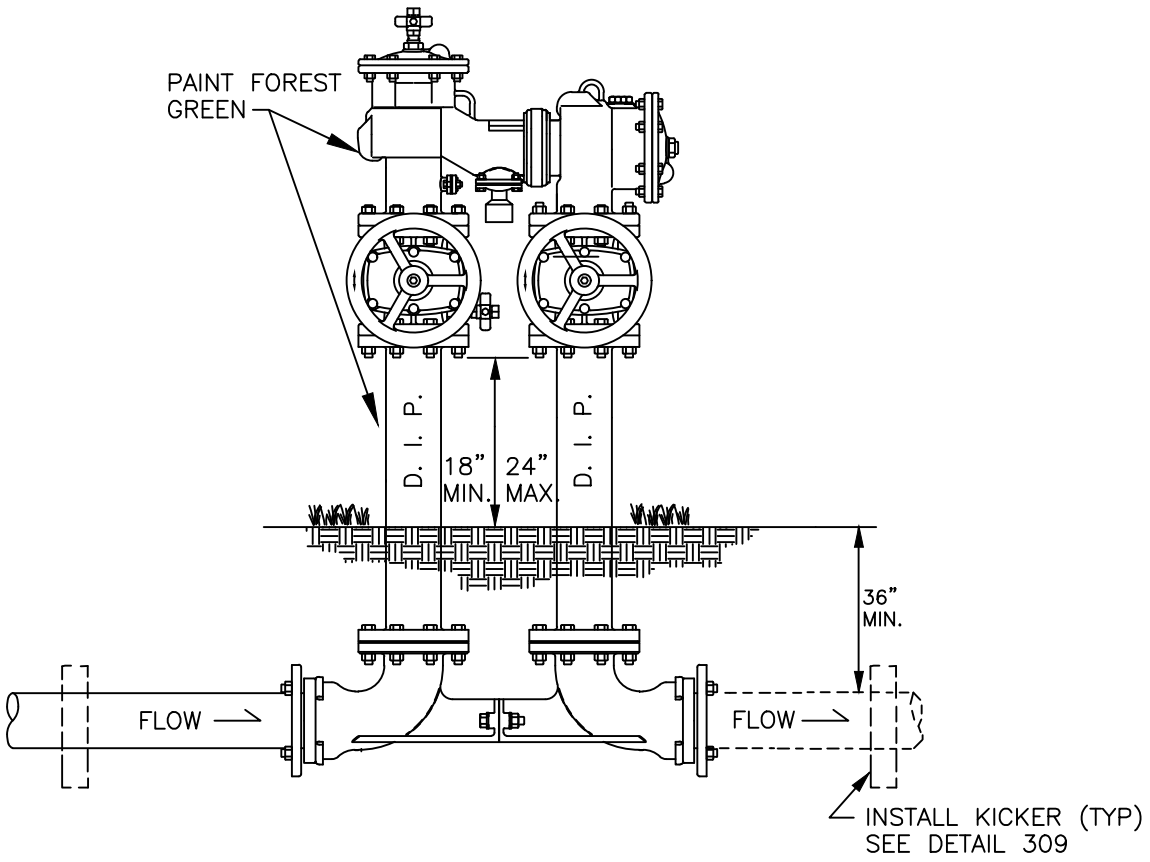
BACK FLOW PREVENTER
INSTALLATION FOR 3" & LARGER

REGISTERED PROFESSIONAL ENGINEER
ADAM MATTHEW NELKIE
No. 78830
Exp. 9/30/2025
CIVIL
STATE OF CALIFORNIA

DATE : 7/24 | DWG NO. 710



TOP VIEW



NOTES:

1. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE ON THE USCFCCCHR APPROVED LIST, SEE SPEC. 14–02J.
2. DIP BELOW GROUND SHALL BE ENCASED IN POLYETHYLENE TUBING. SEE SPEC. 14–03B.
3. ALL TRIM HARDWARE TO BE BRASS OR BRONZE.
4. MASTIC ALL BOLTS AND NUTS UNDERGROUND OR USE STAINLESS STEEL COMPONENTS.
5. BACKFLOW PREVENTION ASSEMBLIES SHALL BE TESTED WITHIN 14 DAYS AFTER THE VALVE IN THE STREET IS OPENED.
6. IF MAX. DISTANCE BETWEEN WATER METER BOX AND REDUCED PRESSURE PRINCIPAL ASSEMBLY EXCEEDS 12", A CONCRETE CAP SHALL BE PLACED OVER THE WATER LINE, SEE DETAIL NO. 114.
7. WEATHER PROTECTION DEVICES TO PROTECT PIPES FROM FREEZING SHALL REQUIRE APPROVAL BY THE PLANNING DIVISION PRIOR TO INSTALLATION. SUCH MATERIAL SHALL BE REPLACED AS THEY BECOME WORN OUT.

DRAWN BY:	STAFF
CHECKED BY:	AN
SCALE:	N.T.S.

CITY OF PLEASANTON

STANDARD DETAILS

BACK FLOW PREVENTER COMPACT INSTALLATION FOR 3" & LARGER

REGISTERED PROFESSIONAL ENGINEER
ADAM MATTHEW NELKIE
No. 78830
Exp. 9/30/2025
CIVIL
STATE OF CALIFORNIA

DATE : 7/24 | DWG NO. 711

Appendix E

BPA Test and Maintenance Report

Backflow Prevention Assembly Test & Maintenance Report

Water Purveyor _____
Public Water Supplier #

□usiness Name or Property O□ner□ _____ **Contact Person□** _____

Ser□ice A□□ress: _____ **P□one:** □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

Resi□ential ☐ **Non□Resi□ential** ☐ **Assembly Type□RP**☐ **RPDA** ☐ **DC**☐ **DCDA**☐ **P□□**☐ **S□□**☐ **AG**☐

Manufacturer _____ **Mo□el** _____ **Serial** _____ **Si□e** _____

E□istin□☐ **Replacement** ☐ **Ne□** ☐ **Location of □ac□flo□ Assembly□** _____

□a□ar□□ Domestic ☐ **Irri□ation** ☐ **Fire** ☐ **Fire Detector** ☐ **Ot□er** ☐ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□a□ar□ID □ **Site ID □** **Meter □** **Containment** ☐ **Isolation** ☐

PSI	Re□uce□Pressure Principle Assembly / Double C□ec□ □al□e Assembly		RELIEF □AL□E	P□□S□□
	C□EC□ □AL□E □1	C□EC□ □AL□E □2		
INITIAL TEST	Leaked ☐ Closed Tight ☐ PSID _____	Leaked ☐ Closed Tight ☐ PSID _____	Opened at _____PSID Did Not Open ☐	Air Inlet Opened at _____PSID Did Not Open ☐ Check Valve _____PSID Leaked ☐
	Cleaned / Repaired□	Cleaned / Repaired□	Cleaned / Repaired□	Cleaned / Repaired□
FINAL TEST	PSID _____ Closed Tight ☐	PSID _____ Closed Tight ☐	Opened at _____PSID Did Not Open ☐	Opened at _____PSID Did Not Open ☐ Check Valve _____PSID Leaked ☐

Air Gap Required Separation: □es ☐ No ☐

Installe□ in accor□ance □it□ manufacturer recommen□ations an□□or local co□es? □es ☐ No ☐
Is t□e assembly installe□ on a non□potable □au□iliary□□ater supply□ □es ☐ No ☐
If irri□ation□is t□ere an OSSF □Septic or similar□on□site□ □es ☐ No ☐ N/A ☐

Remar□s□ _____

TESTER CERTIFICATIONS

The backflow prevention assembly detailed on this form has been tested and maintained as required by codes and regulations, is certified to be true & accurate, and is operating within acceptable parameters at time of testing. * Only Manufacturer's replacement parts have been used. ** Test records must to be kept for a minimum of three years.

Company Name □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ **Company P□one □** □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

Company A□□ress □□ _____ **Contact P□one □or E□tension** _____

Company City□State□□ip _____ **Company License □** □□□□□□□□□□□□□□□□□□□□□□□□

Tester Name _____ **Tester Si□nature** □□ □□

Tester License or Certification □ □ _____ □□□□□□□□□□□□□□□□□□ **Tester License E□piration** □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

Test □it Mfr. □□ _____ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ **Mo□□** □□ _____ **Ser □** _____

□ac□flo□ Pre□enter Test Date □□□□ _____ □□□□□□□□□□□□□□□□□□ **Test □it Date Last Teste□ for Accuracy** _____ □□□□□□□□□□□□□□□□

PASS ☐ **FAIL** ☐

WEST YOST

Water. Engineered.