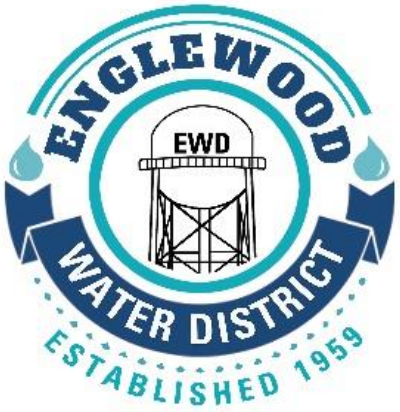


Cross Connection Control & Backflow Prevention Program Manual

Program Summary

The Englewood Water District's (District) main priority is to deliver clean safe drinking water to our customers. The District must act in accordance with state and federal requirements. These requirements, as stated in the Florida Administrative Code (F.A.C.) chapter 62-555.360, entitled "Cross Connection Control for Public Water Systems", requires the District as well as the other counties, districts, utilities,…etc… in the state of Florida, to establish and implement a Cross Connection Control program to protect the public drinking water system from contamination through cross connections. This program is based on the recommended practices of the American Water Works Association (AWWA) "Manual of Water Supply Practices" (M14 manual) and also complies with the Florida Administrative Code (F.A.C.) chapter 62-555.360 requirements.

The purpose of this manual is to establish an effective Cross Connection Control program (CCC program) within the District's water service area. The responsibilities of the CCC program are shared by the District, local plumbing companies, and the homeowners. The success of this program relies on the compliance and cooperation of all three parties. The District encourages local plumbing companies and homeowners to review this manual which provides understanding and knowledge of the importance of backflow prevention and cross connection control. The standards and specifications in this manual will be enforced in a consistent manner throughout the District's boundaries. The District will update this manual should any changes in policies or regulations from the Florida Department of Environmental Protection (FDEP) or AWWA occur.

Table of Contents

Section 1 – Purpose

The purpose of the Cross Connection Control program is:

-To protect the public potable water supply from contaminants or pollutants by isolating actual or potential cross connections in accordance with F.A.C. chapter 62-555.360 which could create a form of backflow into the public water system.

-To ensure the elimination or proper protection of actual or potential cross connections between the District's public potable water supply and any other unapproved water source, supply, or plumbing fixture.

-To enforce protection of the public potable water supply by containment. Protection through containment protects the public water supply at the point where the District's potable water system connects to the customers piping (at the outlet of the water meter). Containing a potential hazard at the point of delivery from the potable water system greatly reduces the risk of widespread contamination.

Section 2 – Authority

The Safe Water Drinking Act (SWDA), signed into law on December 16, 1974, was created to set standards for protecting drinking water systems in the U.S. In the 1990's, the Florida Department of Environmental Protection (FDEP) was created to regulate and modify those standards in the state of Florida. In 2014, the FDEP amended the rule that pertains to the protection of potable water systems requiring all water purveyors in the state of Florida to create and enforce a CCC program that protects the potable water system from possible contamination (F.A.C. 62-555.360). The District has created a CCC program based on the standards set by the FDEP and the recommendations of the M14 manual created by the AWWA.

Section 3 – Definitions

Air Gap (AG) – Physical separation between the free flowing discharge end of a potable water supply outlet and an open or non-pressure receiving vessel. An "approved" air gap separation shall be at least double the diameter of the water supply outlet measured vertically from the lowest point of the water outlet to the top most part of the rim of the vessel. In no case can the gap be less than 1 inch.

Approved – Accepted by the District as meeting a certain specification stated or meeting specification of state or local codes.

Auxiliary Water System – a pressurized system of piping and appurtenances using auxiliary water, which is water other than the potable water being supplied by the CWS (the District) and which includes water from any natural source such as a well, pond, lake, spring, stream, river, etc., includes reclaimed water and includes other used water or industrial fluids described in AWWA Manual M-14. However, "auxiliary water system" specifically excludes any water recirculation or treatment system for a swimming pool, hot tub, or spa. (F.A.C. 62-555.360)

Backflow – The reversal of flow of a liquid, gas or other substance in a piping system.

Contaminant – Any physical, chemical, biological, or radiological substance or matter in water. (F.A.C. chapter 62-550)

Cross-Connection – Any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, sewage or other waste, or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as the result of backflow. By-pass arrangements, jumper connections, removable sections, swivel or changeable devices, and other temporary or permanent devices through which or because of which backflow could occur are considered to be cross-connections. (F.A.C. 62-550.200)

Double Check Valve Assembly (DC) – A backflow prevention assembly consisting of two internally loaded independently operating check valves, located between two tightly closing resilient seated shutoff valves with four properly placed test ports. (AWWA Manual M-14)

Double Check Detector Assembly (DCDA) – A backflow prevention assembly specially designed with a line size approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly. (AWWA Manual M-14)

Dual Check (DuC) – A backflow prevention device that contains two internally loaded, independently operating check valves. (AWWA Manual M-14)

Potable Water – Water free from impurities present in amounts sufficient to cause disease or harmful effects. (AWWA Manual M-14)

Reclaimed Water (Reuse) – Water that has received at least secondary treatment and is reused after flowing out of a wastewater treatment plant. (F.A.C. chapter 62-550)

Reduced Pressure Backflow Assembly (RP) – A backflow prevention assembly consisting of a mechanical, independently acting, hydraulically dependent relief valve, located between two independently operating, internally loaded check valves that are located between two tightly closing resilient seated shutoff valves with four properly placed resilient seated test ports. (AWWA Manual M-14)

Reduced Pressure Detector Assembly (RPDA) – A specially designed backflow assembly composed of a line-size approved reduced pressure principle backflow prevention assembly with a bypass containing a specific water meter and an approved reduced pressure principle backflow prevention assembly. (AWWA Manual M-14)

Section 4 – Responsibility

The responsibilities of the CCC program are shared by the District, local plumbing companies, and the homeowners. The success of this program relies on the compliance and cooperation of all three parties. The responsibilities for each party are below:

4.1 The District

The District has the primary responsibility of maintaining an effective Cross Connection Control program that keeps the public potable water supply safe for customers to consume. The maintenance of this program comes with responsibilities such as enforcing the current policy created by the District to ensure that the proper backflow prevention devices are installed and functioning properly at each property, assessing new and existing properties for hazards to ensure that the property will be properly protected, and keeping records of customer backflow prevention devices such as past test records, future testing schedules and the type of backflow device installed. The District also has the responsibility of ensuring that the plumber/backflow technicians working with backflow prevention devices within the District's boundaries have the acceptable qualifications and comply to District policies set forth in this manual.

4.2 The Plumber/Backflow Technician

The plumber/backflow technicians installing, testing, repairing or removing backflow prevention devices within the District's boundaries have the responsibility of providing the District with current certification/licensing from an approved institution, submitting test reports to the District via online web entry in a timely manner, and complying with the installation requirements set by the District while in accordance with county plumbing codes.

4.3 The Customer

The customer has the responsibility of complying with the District's requirements of backflow prevention device installation and testing (sections 6 & 9). The customer is responsible for financing any installation, testing, repairs or removal relating to the backflow prevention device and contacting a certified plumber/backflow technician to complete the work. The customer is responsible for repairs or modifications to the plumbing on the customer's property including cross connection elimination.

Section 5 – Property Assessment

The District will assess each property to determine the potential hazards of the property. This could be accomplished by one or all of the following procedures:

5.1 New Connections

The District will not begin supplying water to a customer through a new connection until a property assessment by the District has been completed, the customer/plumber has been notified of the protection required at the property, and the proper device has been installed and certified.

New construction projects involving installation of new service connections shall be assessed through means of reviewing building plans before construction begins to determine the degree of hazard on the property. An onsite assessment may be made during or after construction has been completed to ensure the degree of hazard hasn't changed.

New residential connections shall be assessed by information given by the customer of any potential hazards the property contains or will contain in the future. This information shall be given to the District at the time of application for the new service. An onsite assessment may also be made to ensure the proper device has been installed and certified.

5.2 Existing Connections

The District shall assess properties with existing connections by obtaining records of auxiliary water systems from the Department of Health, use of online satellite imagery, and onsite inspection. The results of the inspections shall be recorded and may include photographs if necessary.

The District shall re-assess customer properties every 5 but not more than 10 years to determine if a different level of protection is needed. Should the hazards on a property change at any time, the customer shall notify the District and an onsite inspection will occur to determine the level of protection needed. A re-assessment of the property will also occur anytime a verified cross connection is discovered.

Section 6 – Backflow Device Installation

All backflow prevention devices must be installed immediately downstream (after) the water meter unless the District approves an alternative location.

6.1 – Approved Backflow Prevention Devices

All backflow prevention devices shall be lead free and in full conformance with the standards set by the AWWA and the Foundation for Cross Connection and Hydraulic Research of the University of Southern California. The District recognizes three methods of backflow prevention that are approved to be installed within the District's boundaries. Those assemblies/methods are below:

Reduced Pressure Backflow Assembly (RP) Dual Check (DuC) Air Gap (AG)

6.2 – Permit Requirement

Prior to the installation or replacement of a backflow prevention device, the customer should contact the proper county authorities as there may be a permit required to install or replace a backflow prevention device.

6.3 – Installation Criteria

All backflow prevention device installations shall be consistent with AWWA M14 manual recommendations and meet the requirements of county plumbing codes.

6.4 – Installation Requirements

All backflow prevention devices shall be installed immediately downstream (after) the water meter and shall be easily accessible.

RP assemblies shall be installed at a minimum of 12" above finished grade immediately downstream (after) the water meter. RP assemblies shall not be installed underground or in a housing below finished grade.

Dual Check devices (DuC's) shall be installed immediately downstream (after) the water meter and may be installed underground.

Air Gap (AG) structures shall not be located in an area where there is potential for the atmosphere around the AG to be contaminated nor shall the potable supply pipe be in contact with a contaminated surface or material. The vertical separation between the potable supply pipe and the receiving vessel shall be twice the inside diameter of the supply pipe and never less than 1".

6.5 – Installation Variance

In certain circumstances, a waiver may be made through the District to install the backflow prevention assembly at a location other than immediately after the water meter due to an increased risk of the assembly being damaged by an automobile or other heavy equipment.

Section 7 – Backflow Device Protection Requirements

Properties considered to be hazardous connections shall have an RP device installed at the water meter by a certified plumber. Listed below are the hazards that determine whether a property is a hazardous connection.

HAZARDOUS CONNECTIONS – REQUIRE REDUCED PRESSURE BACKFLOW ASSEMBLY (RP)
Non-Residential properties
Non-Residential properties with a fire service connection - (requires a RPDA) *
Residential properties with four or more residential units on a single meter
Residential properties with reclaimed water available
Residential properties with an irrigation system
Residential properties with a fire sprinkler system
Residential properties with a building 3 (or more) floors above finished grade elevation unless proof of no pressure booster pump exists
Residential properties with a private well or auxiliary water system
Residential properties with a water meter 1” in diameter or larger

* Any permitted fire service connection with a DC or DCDA installed prior to October 6, 2016 shall be allowed to be maintained/repaired only if documentation stating that no chemical additives are present in the fire system can be provided to the District.

All other residential properties shall have a Dual Check (DuC) device installed at the water meter by the District.

Section 8 – Technical Qualifications

The District requires the proper documentation that supports the qualifications of the technician and their equipment. The plumber/backflow technician is responsible for providing the District with their current certification and updating it as necessary. All dedicated fire line assemblies shall be maintained by certified personnel.

8.1 – Test Kits

All test kits used within the District's boundaries should be calibrated annually. The calibration report shall be provided to the District prior to the first use of the test kit.

8.2 – Plumber/Backflow Technician

Any plumber or backflow technician that installs, tests, or repairs a backflow prevention device within the District's boundaries shall provide the District with a current certification/licensing from an approved institution.

Section 9 – Testing, Repair, Replacement and Tagging

9.1 – Test Procedures

The District understands that testing procedures and equipment may vary between technicians and the District may choose to enforce a standardized method of testing. Currently, the District approves of the recommended testing procedures found in the AWWA Manual M14. Those procedures are below:

Reduced-Pressure Backflow Assembly (RP)

This field-test procedure evaluates the operational performance characteristics as specified by nationally recognized industry standards of the two independently operating internal spring loaded check valves and a mechanical, independently operating, hydraulically dependent relief valve located between the check valves while the assembly is in a no-flow condition. This field-test procedure utilizes a three valve differential pressure test kit to evaluate the tightness of both the first and second check valves, measure the static differential pressure across the first and second check valves, and test the operation of the relief valve. This field test procedure will reliably detect weak or broken check valve springs and validate the test results by determining that a no-flow condition exists while not closing the upstream shut-off valve. This test procedure will work with all three-valve differential pressure test kits.

Prior to initiating the test, the following preliminary testing procedures shall be followed.

1. The device has been identified.
2. The direction of flow has been determined.
3. The test cocks have been numbered and adapters have been installed.
4. The test cocks have been flushed. (See Note A)
5. Permission to shut down the water supply has been obtained.
6. The downstream shut-off valve has been closed.
7. No water is discharging from the relief valve opening.

The reduced pressure backflow assembly field-test procedure will be performed in the following sequence to evaluate that:

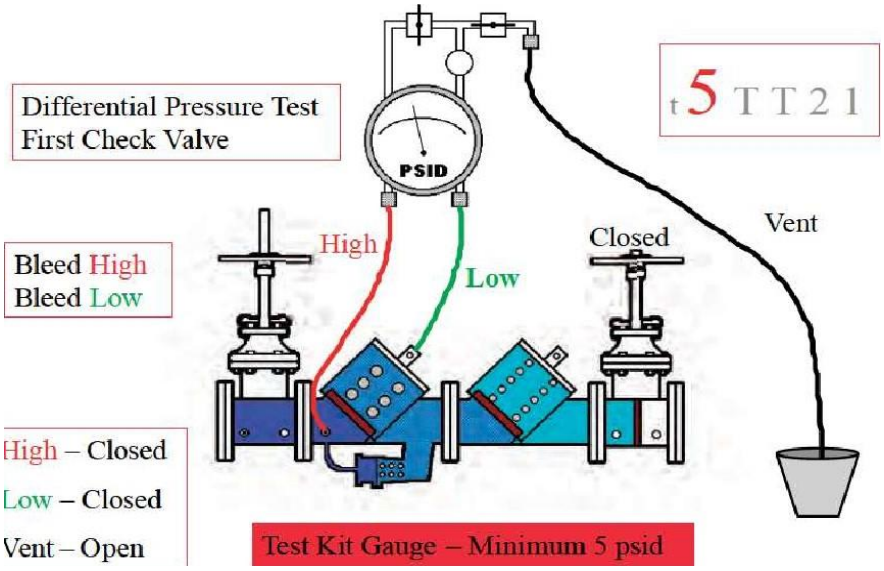
1. The first check valve will be tested to determine tightness and a minimum differential pressure across the first valve of 5.0 psid.
2. The second check valve will be tested to determine tightness against backpressure and a minimum differential pressure across the second check valve of 1.0 psid.
3. The downstream shut-off valve will be tested for tightness and/or the device is in a no-flow condition at the time of the test.
4. The relief valve will be tested to determine if the relief valve opens at a minimum differential pressure of 2 psid below the inlet supply pressure.

Note A: When flushing the test cocks on a reduced-pressure principle assembly, test cock #4 should be flushed first and left open with a small amount of flow, while flushing test cocks #1, #2, and #3. Once test cocks #1, #2, and #3 have been flushed, close test cock #4.

RP – Three Valve Test Kit – Field Test Procedure

Step 1: **Test the first check valve to determine if it is tight and has a minimum differential pressure across it of 5 psid.**

1. Verify that the upstream shut-off valve is open.
2. Close the downstream shut-off valve. If no water discharges from the relief valve, the first check valve is considered tight; proceed with the test. If water discharges from the relief valves, the first check valve is considered leaking and it must be repaired prior to completing the test.
3. Orientate the test kit; close the high and low control valves on test kit. Open the test kit bleeder/vent control valve.
4. Connect the high pressure hose to test cock #2.
5. Connect the low pressure hose to test cock #3.
6. Open test cocks #2 and #3.
7. Open the high control valve on the test kit to bleed the air from the high pressure hose.
8. Close the high control valve.
9. Open the low control valve on the test kit to bleed the air from the low pressure hose.
10. Close the low control valve.
11. The differential pressure gauge reading should be a minimum of 5 psid. This differential pressure gauge reading is the apparent reading, and it cannot be validated until it is confirmed that the device is in a no-flow condition.



RP – Step #1

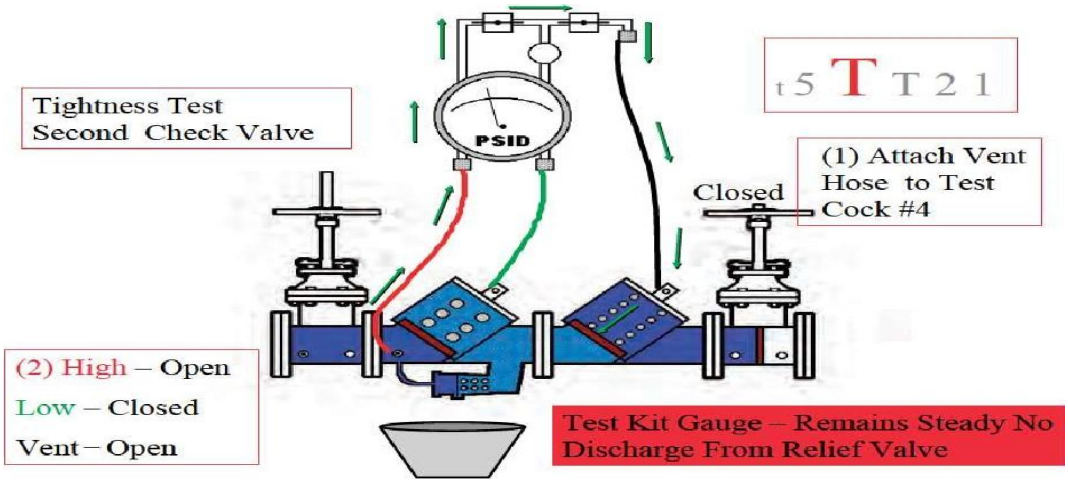
Step 2: Test the tightness of the second check valve against backpressure.

1. The test kit valves and hoses are in the same position as at the conclusion of Step 1. (High and low control valves are closed and the vent control valve is open.)
2. Elevate the vent hose and open the low control test kit valve to fill vent hose with water. Close the low control test kit valve.
3. Connect the water filled vent hose to test cock #4 and open test cock #4.
4. Open the high control test kit valve. (This supplies high-pressure water to the downstream side of second check valve.) If the differential pressure rises, close test cock #4 immediately. (See Note C) The second check valve is considered tight if the differential pressure gauge remains steady and no water is discharging from the relief valve. If the differential pressure gauge reading on the test kit drops and water discharges from the relief valve, the second check is leaking. (See Note B)

Note B: If the second check valve is leaking, the downstream shut-off valve and/or the no-flow test (Step 3) cannot be performed. However, an affirmation can be made that since water is discharging from the relief valve, the downstream shut-off valve is considered tight or the device is in a no-flow condition. The differential pressure test across the second check valve (Step 5) should still be performed since it may reveal a failed check or O-ring problem. If the differential pressure is 0 psid and backpressure is not present (See Step 5, #9) it is most likely a check valve failure. If the differential is positive, it is most likely an O-ring problem. The relief valve can and should be tested. To test the relief valve with a failed second check valve, close test cock #4 and proceed to Step 4.

Note C: If the differential pressure reading on the test kit increases when the high control test kit valve is opened (as stated in Step 2, Number 4), the device may be in a backflow condition with a leaking downstream shut-off valve. (High pressure water is flowing back through the leaking downstream shut-off valve, through test cock #4, through the test kit to test cock #2 and into the potable water supply.) If this occurs, test cock #4 should be closed immediately and the test should be terminated. The test kit should be removed and flushed out with potable water. Attempts should be made to reclose the downstream shutoff valve and a pressure gauge should be used to test for backpressure prior to retesting the assembly. The downstream shut-off valve should be confirmed closed or a no-flow condition achieved and validated prior to conducting the test of the assembly. (The downstream shut-off valve may need to be repaired or replaced.)

RP – Step #2

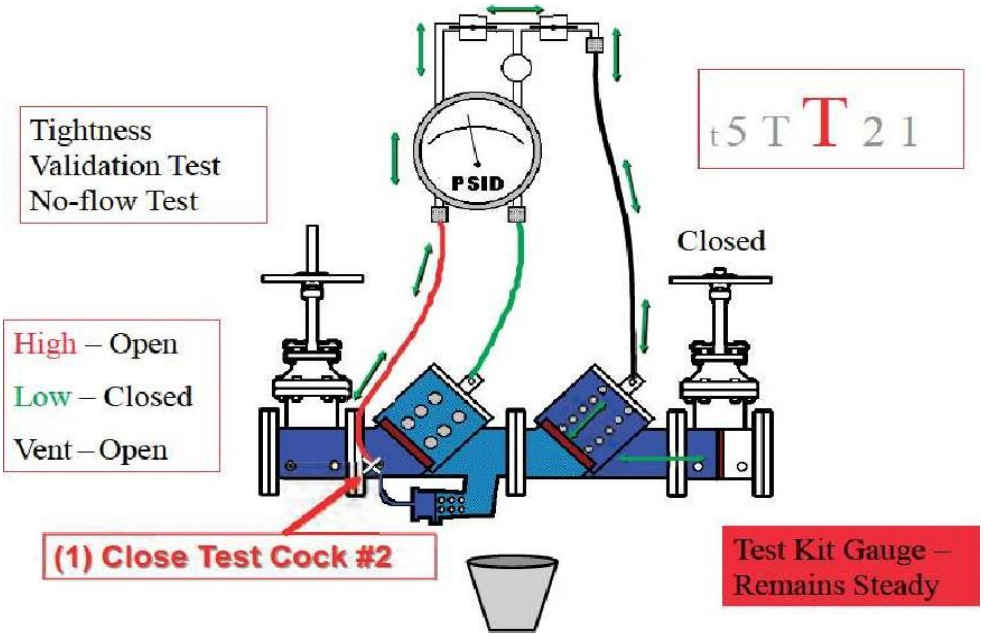


Step 3: Tightness validation test—test the device for no-flow to determine that the device is under a no-flow condition and validate differential pressure readings.

1. The test kit valves and hoses are positioned as at the conclusion of Step 2.
2. Close test cock #2. (This stops the supply of high-pressure water to the test kit and downstream of the second check valve.)
3. Observe the test kit needle. If the differential pressure gauge reading holds steady, the downstream shut-off valve is tight and/or the device is under a no-flow condition. If the differential pressure gauge drops to zero, the downstream shut-off valve is leaking and the device is in a flow condition. (See Note D)
4. Open test cock #2.

Note D: If the device is in a flow condition, the psid readings previously taken are invalid, and the device must be retested once a no-flow condition can be achieved. The device does not fail the test, since it cannot be tested in a flow condition. A no-flow condition shall be achieved, either through the repair of the downstream shut-off valve, the operation of an additional shut-off valve downstream, or by another means of validating that the device is in a no-flow condition. A compensating temporary bypass hose may be used in some cases. (See NEWWA Use of a bypass hose in Reduced-Pressure Backflow Device Testing).

Downstream Shut-off Valve Tightness: To determine the tightness of the downstream shut-off valve, a demand downstream of the backflow prevention device assembly shall be created while performing the no-flow test. If the needle on the test kit remains steady during a demand condition, the downstream shut-off valve is considered holding tight. If under a demand condition the needle on the test kit drops to zero, the downstream shut-off valve is considered leaking. If there is no water demand downstream of the backflow prevention device assembly, the tightness validation of the downstream shut-off valve may not be possible, since a leaking downstream shutoff valve with a no-flow condition will emulate a tight downstream-shutoff valve.

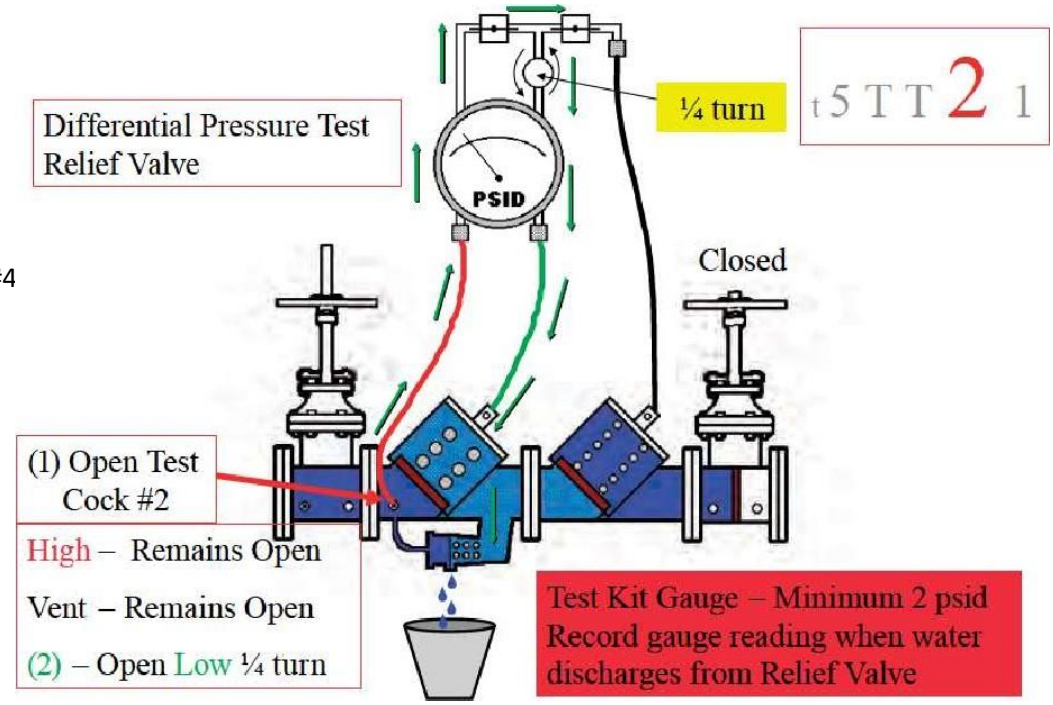


RP – Step #3

Step 4: Test the relief valve to determine that it opens at a minimum differential pressure of 2 psid below the inlet supply pressure.

1. The test kit valves and the hoses are positioned as at the conclusion of Step 3. Test cock #2 should be open.
2. Slowly open the test kit low control needle valve ¼ turn.
3. Record the differential pressure gauge reading at the point when water initially drips from the relief valve opening. The differential pressure gauge reading should be a minimum of 2 psid. If water does not discharge from the relief valve, it may be jammed (intentionally), the sensing line may be clogged, or the diaphragm cannot open due to mechanical wear.

RP – Step #4



Step 5: Test the second check valve differential pressure.

Testing the differential pressure across the second check valve will validate the tightness of the downstream shut-off valve and determine if a backpressure condition exists. If the downstream valve is leaking and the device is in a flow condition, the differential pressure test across the second check valve cannot be performed.

1. Orientate the test kit; close high and low control valves. Open the vent control valve.
2. Connect the high pressure hose to test cock #3.
3. Connect the low pressure hose to test cock #4.
4. Open test cocks #3 and #4.
5. Open the high control valve on the test kit to bleed the air from the high pressure hose.
6. Close the high control valve.
7. Open the low control valve on the test kit to bleed the air from the low pressure hose.

8. Close the low control valve.
9. Record the differential pressure gauge reading. It should be a minimum of 1 psid, if the second check valve was held tight against backpressure. If the differential pressure reading across the second check valve is 0 psid, this is an indication that the second check valve spring is damaged or the downstream shut-off valve is leaking and the device is under a backpressure condition. Evaluate for backpressure to eliminate this possibility. (See evaluation of backpressure when testing a DC)

Concluding Procedures: This completes the standard field test for a reduced-pressure Backflow assembly. Before removal of the test equipment, the tester should ensure that the test cocks have been closed, and the downstream shut-off valve is open, thereby re-establishing flow. All test data should be recorded on appropriate forms.

Double Check Valve Assembly (DCVA)

This field-test procedure evaluates the operational performance characteristics as specified by nationally recognized industry standards of the independently-operating internal spring loaded check valves while the assembly is in a no-flow condition. This field-test procedure utilizes a three-valve differential pressure test kit to measure the static differential pressure across the check valves. This field-test procedure will reliably detect weak or broken check valve springs and validate the test results by determining that a no-flow condition exists while not closing the upstream shut-off valve. This test procedure will work with all three-valve differential pressure test kits.

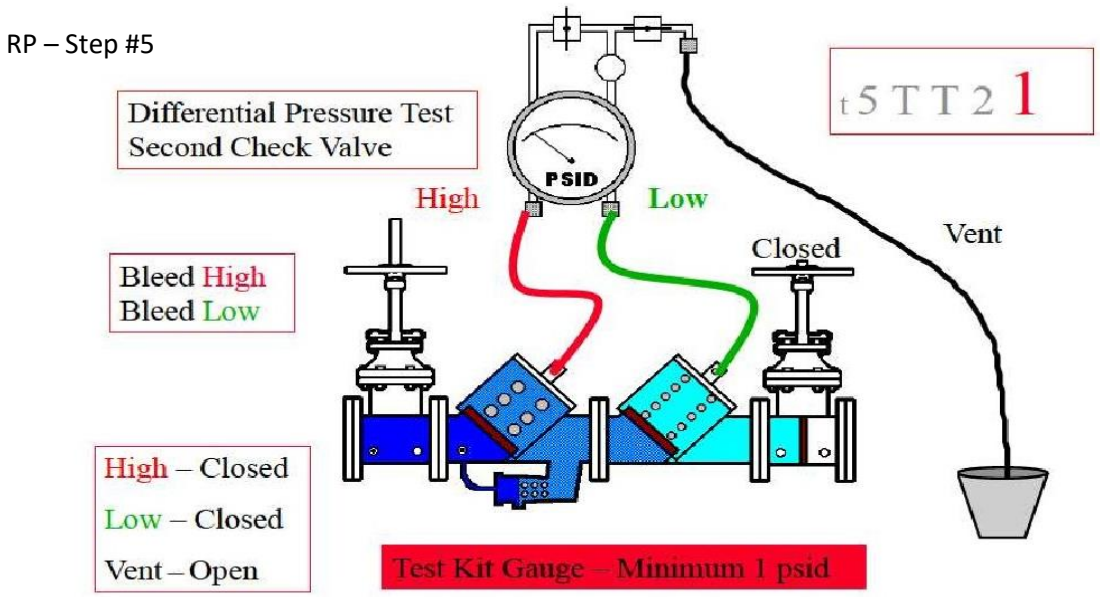


Figure B-14 RPZ—Step #5

Prior to initiating the test, the following preliminary testing procedures shall be followed.
1. The device has been identified.
2. The direction of flow has been determined.
3. The test cocks have been numbered and adapters have been installed.
4. The test cocks have been flushed.
5. Permission to shut-down the water supply has been obtained.
6. The downstream shut-off valve has been closed. (See Note A)
7. The device is inspected and evaluated for a backpressure condition.

The double check valve assembly field-test procedure will be performed in the following sequence to evaluate that:
1. The first check valve has a minimum differential pressure across it of 1 psid.
2. The second valve has a minimum differential pressure across it of 1 psid.
3. The downstream shut-off valve is tight and/or there is no-flow condition through the assembly (including backflow) or no demand downstream.

Note A: Prior to closing the downstream shut-off valve, if it is determined that the device may be prone to backpressure, a standard psi calibrated pressure gauge should be connected to test cock #1 and test cock #4. The pressure readings (psi) should be noted.

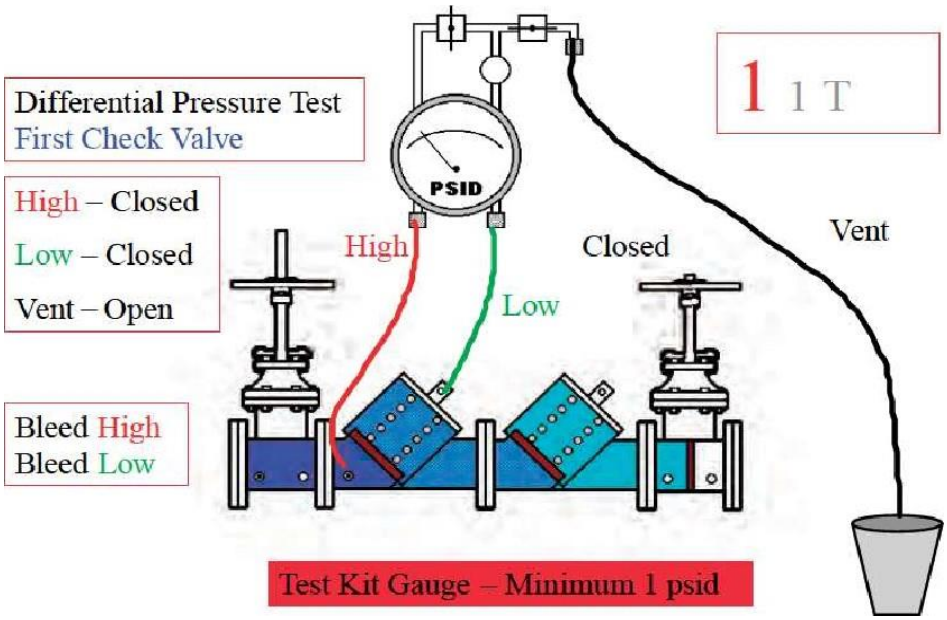
DCVA– Three Valve Test Kit – Field Test Procedure

Step 1: Test the first check valve to determine that it has a minimum static differential pressure across it of 1 psid.

1. Verify that upstream shut-off valve is open.
2. Close the downstream shut-off valve (If it is determined that the device is prone to backpressure as in a fire protection system, see Note A prior to closing the downstream shut-off valve.)
3. Orientate the test kit. Close high and low control valves on the test kit. Open the vent control valve.
4. Connect the high pressure hose to test cock #2.
5. Connect the low pressure hose to test cock #3.
6. Open test cocks #2 and #3.
7. Open the high control valve on the test kit to bleed the air from the high pressure hose. Close the high control valve. (Water will bleed through the vent hose.)
8. Open the low control valve on the test kit to bleed the air from the low pressure hose. Close the low control valve. (Water will bleed through the vent hose.)
9. The differential pressure gauge reading should be a minimum of 1 psid. This differential pressure gauge reading is the apparent reading. This gauge reading cannot be validated until it is confirmed that the device is in a no-flow condition. (See Note B)
10. Close test cocks #2 and #3. Disconnect the hoses.

Note B: If the differential pressure is 0 psid, this is an indication that the first check valve is leaking and the device and downstream-off valve cannot be tested for tightness using the procedure outlined in Step 3. However, an affirmation can be made that since the first check valve has a differential pressure of 0 psid, the device is in a no-flow condition. The gauge would record a positive psid if the device was in a flow condition. The second check valve can and should be tested to determine if the device is providing protection.

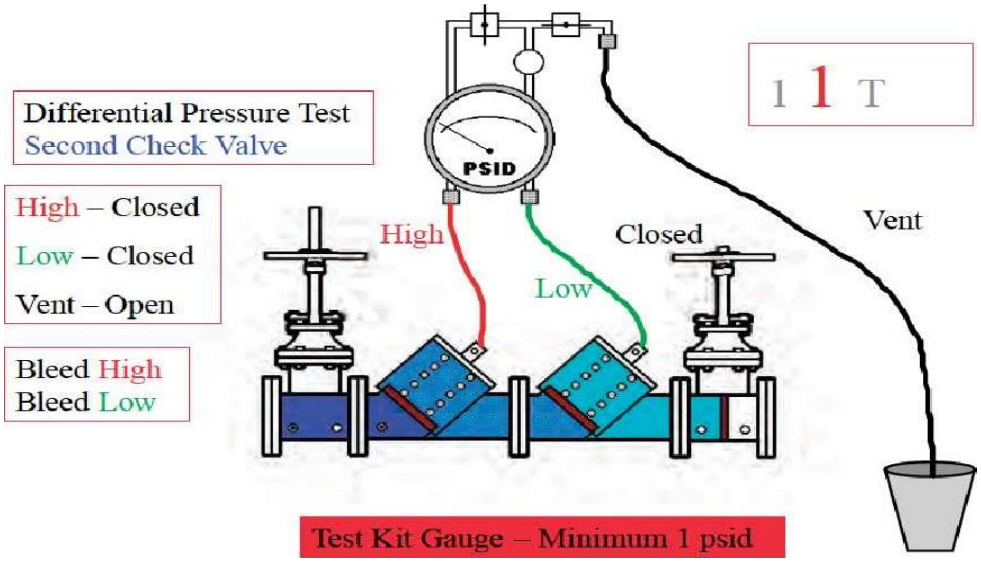
DCVA—Step #1



Step 2: Test second check valve to determine that it has a minimum static differential pressure across it of 1 psid.

1. Orientate the test kit. Close high and low control valves. Open vent control valve.
2. Connect the high pressure hose to test cock #3.
3. Connect the low pressure hose to test cock #4.
4. Open test cocks #3 and #4.
5. Open the high control valve on the test kit to bleed the air from the high pressure hose. Close the high control valve.
6. Open the low control valve on the test kit to bleed the air from the low pressure hose. Close the low control valve.
7. The differential pressure gauge reading should be a minimum of 1 psid. The differential pressure gauge reading is the apparent reading. This gauge reading cannot be validated until it is confirmed that the device is in a no-flow condition. (See Note C)
8. Close tests cocks #3 and #4. Disconnect the hoses.

Note C: If the differential pressure is 0 psid, this is an indication that the second check valve is leaking if the device is confirmed to be in a no-flow state (no backpressure). The device and downstream shut-off valve cannot be tested for tightness using the procedure outlined in Step 3. However, the device should be tested for backpressure, since a 0 psid reading across the second check valve may be an indication that the downstream shut-off valve is leaking and the device is in a backflow condition.



DC VA– Step #2

Step 3: Tightness validation test —test the device for no-flow. To test the device for no-flow, both check valves must be tight and holding a minimum differential pressure of 1 psid. There must be little or no fluctuation of inlet supply pressure. Any backpressure situation should be evaluated. The upstream shut-off valve is open and the downstream shut-off valve is closed.

1. Orientate test kit. Close high and low control valves. Open vent control valve.
2. Connect the high pressure hose to test cock #2 and the low pressure hose to test cock #3.
3. Open test cocks #2 and #3.
4. Open the high control valve on the test kit to bleed air from the high pressure hose. (Water will discharge out of the vent host.) Close the high control valve.
5. Open the low control valve on the test kit to bleed air from the low pressure hose. (Water will discharge out of the vent host.) Close the low control valve.
6. The differential pressure gauge reading should be a minimum of 1 psid.
7. Elevate the vent hose and open the low control valve to fill vent hose with water. Close the low control valve and connect the vent hose to test cock #4. Open test cock #4.
8. Open the test kit high control valve. (This supplies high pressure water downstream of check valve number 2.) If the differential pressure rises, close test cock #4 immediately. (See Note D)

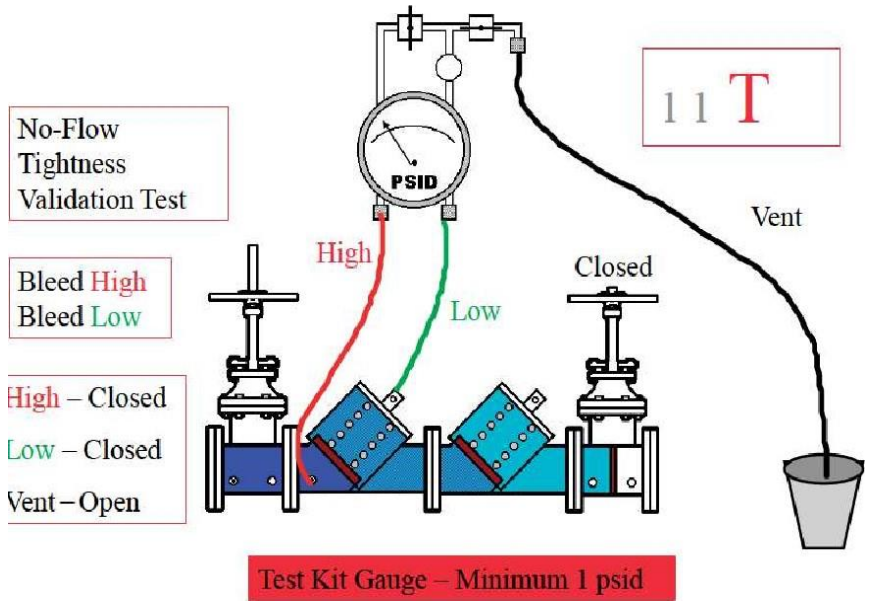
9. Close test cock #2. (This stops the supply of high pressure water to the test kit gauge and downstream of check valve number 2.)
10. Observe the test kit needle. If the differential pressure gauge reading holds steady, the device is recorded as being under a no-flow condition. (See Note E) If the differential pressure gauge reading drops to zero, the device is in a flow condition and downstream shut-off valve is recorded as leaking. (See Note F)

Note D: If a backpressure condition is present with a leaking downstream shut-off valve and with the high and vent control valves open, nonpotable water will pass through the test kit and be introduced into the potable water supply. If this occurs, test cock #4 should be closed immediately, the test should be discontinued, and the test kit should be removed and flushed-out with potable water. The assembly should be tested for backpressure as stated above and retested making sure that the downstream shut-off valve is closed tight or no-flow can be achieved and validated.

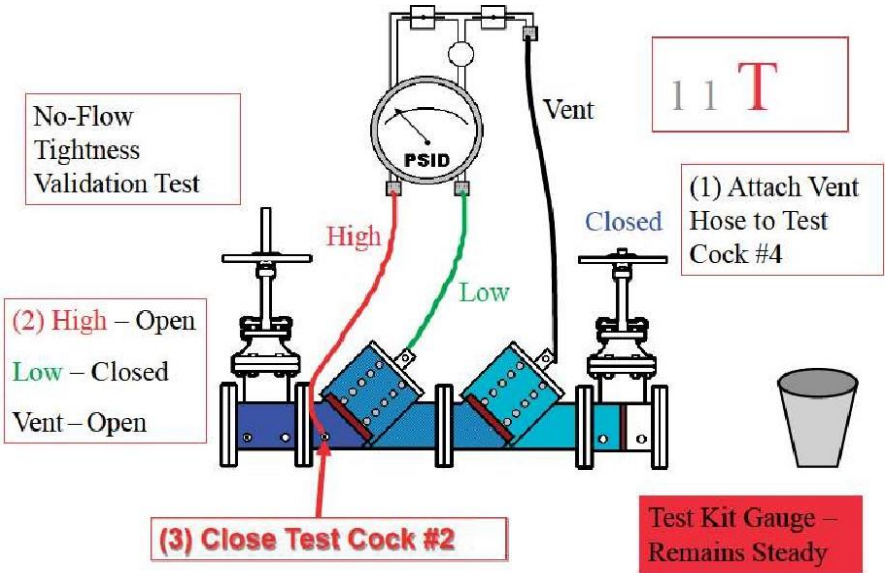
Note E: To determine the tightness of the downstream shut-off valve, a demand downstream of the backflow prevention device assembly shall be created while performing the no-flow test. If the needle on the test kit remains steady during a demand condition, the downstream shut-off valve is considered holding tight. If under a demand condition the needle on the test kit drops to zero, the downstream shut-off valve is considered leaking. If there is no water demand downstream of the backflow prevention device assembly, the tightness validation of the downstream shut-off valve may not be possible, since a leaking downstream shut-off valve with a no-flow condition will emulate a tight downstream shutoff valve.

Note F: With a leaking downstream shut-off valve, the device is in a flow condition and the previous readings taken are invalid. The device does not fail the test, since it cannot be tested in a flow condition. To proceed with the test of the device, a no-flow condition shall be achieved, either through the repair of the downstream shut-off valve, the operation of an additional shut-off valve downstream, or by another means of validating that the device is under a no-flow condition.

DCVA – Step #3



DCVA – Step #3A



Concluding Procedures: This completes the standard field test for a double check valve assembly. Before removing the test equipment, the tester should ensure that all test cocks have been closed and the downstream shut-off valve is open, thereby re-establishing flow. All test data should be recorded on appropriate forms.

9.2 – Testing Frequencies

The testing frequencies for backflow prevention assemblies are in accordance with F.A.C. chapter 62-555.360 which states:

> Non-Residential Connections – Assemblies being required at or for non-residential service connections shall be tested after installation or repair and at least annually thereafter and shall be repaired if they fail to meet performance standards.
>
> Residential Connections – Assemblies being required at or for residential service connections shall be tested after installation or repair and at least biennially (every 2 years) thereafter and shall be repaired if they fail to meet performance standards.
>
> Air Gaps – All AG's being required at or for service connections shall be inspected at least annually.
>
> Dual Checks – DuC's being required at or for service connections shall be refurbished or replaced at least once every 5 to 10 years or at a lesser frequency determined by the Community Water System (the District).

9.3 – Repair

Should a device not be functioning properly, a certified plumber/backflow technician shall repair the device immediately. Plumbers/backflow technicians should have tools and manufacturer replacement parts readily available to quickly repair the device.

9.4 – Replacement

Should a device need to be replaced, the replacement device shall meet the protection requirements based on whether or not the property is considered a hazardous connection. The replacement device shall also meet the installation criteria, and installation requirements set forth in this manual.

9.5 – Tagging

After a backflow prevention assembly is tested, the assembly shall be tagged with an updated certification. The tag shall contain information such as the certified testing companies name, contact information and license number and test result. The tag shall also clearly indicate the date on which the assembly was certified or the date on which the certification expires. The tag should be constructed of durable plastic and hung on the assembly securely. Tags shall be provided by the certified plumber/backflow technician. The District may establish a standardized tag should it be found necessary.

Section 10 – Moderation of Protection

In the event that a property has an installed backflow prevention device of higher protection than the protection required at the property according to this manual, the District may allow the customer to replace the current device of higher protection with a new device of lesser protection depending on whether or not the property is considered a hazardous connection. Before the current device is replaced, the District shall perform an on-site property assessment per the customer's request. The District shall then determine if the current device can be replaced with a device of lesser protection. If the existing device is replaced with a device that provides lesser protection, and in the future a higher protection is required at the property due to a change on the property that presents a hazard, the customer shall be required to upgrade to the necessary device that meets the protection requirement according to this manual, as may be amended.

Section 11 – New Installation and Retrofitting

When the District determines that a property that is considered a hazardous connection has inadequate backflow protection or no protection at all, the customer will be notified that the correct backflow prevention device needs to be installed/upgraded. The required installation/upgrade shall be done in the timeframe given by the District in the notification. Should the customer fail to complete the required work in the timeframe given by the District, the customer shall be considered non-compliant and shall be found in violation of this manual.

Section 12 – Test Reporting

Each test report submitted to the District must be completed thoroughly and only contain correct information based on the results of each test.

12.1 - Web-Based Reporting

The District requires plumber's/backflow technicians to submit test reports via a web based program. Test results are to be entered at https://englewood.tokaytest.com/. This link can also be found on the District's website at www.EnglewoodWater.com. A user ID and password shall be assigned to each plumber/backflow technician by the District.

After locating the backflow device in the web based program, other information may be required while entering test results such as pressure differentials, size, model, the read on the water meter…etc. Each plumber/backflow technician is expected to enter accurate information in the test report.

12.2 – Web Based Test Entry Requirements

Certain information such as a serial number of a backflow prevention device, the house address where the backflow device is being tested, or a hazard ID number is required to enter test results for a backflow prevention device. The hazard ID number (assigned to each backflow prevention device) will be located on the letter initially received by the customer which informs the customer that the device needs to be tested.

12.3 – Submittal of Test Reports

To ensure the continual protection of the public potable water supply, the District shall receive test reports from certified plumber's/backflow technicians in a timely manner. The allotted time frames are below:

Passing Devices – Annual/Biennial tests with passing test results shall be submitted via online web entry no later than 10 days from the date the initial test was performed.

Failing Devices – In the event that a backflow prevention device fails to meet performance standards and receives a failing test result, it shall immediately be repaired, re-tested and the passing test report containing the repairs that were made shall be submitted to the District via online web entry. If the device cannot be repaired immediately, the District may evaluate the hazardous factors on the property to determine whether the water service should be discontinued until the repairs can be made and a test sheet is submitted stating that the backflow device is functioning properly.

The certified plumber/backflow technician shall retain a record of any backflow related services including but not limited to test reports, repairs, invoices, and variance requests for a period of at least 3 years and be available to the District upon request.

Section 13 – Backflow Incident Response Plan

If a backflow condition has been confirmed in the distribution system, the following actions must be taken in the order they are listed below:

1. Find the cause of backflow and immediately eliminate the source.

2. Assess the risk and determine whether the contamination is chemical or microbial.

3. Identify the affected area and work to stop the spread of contamination.

4. Communicate with customers in the affected area and inform them of the situation. Tell the customers about any precautions they should take to protect their health and inform them of what Englewood Water District is doing to correct the problem.

5. Flush the affected parts of the distribution system to remove the contaminants from the system.

6. Disinfect the affected parts of the distribution system to reduce the risk of waterborne disease.

7. Collect the necessary water quality samples throughout the affected part of the distribution system to ensure that contamination is no longer present and that water quality has been restored to normal.

8. Communicate with customers in the affected area that normal water quality has been restored and is safe for use.

Section 14 – Enforcement

14.1 – Violation

The District shall not install, test, repair or remove any backflow prevention device owned by the customer. The customer is ultimately responsible for the proper maintenance of the backflow prevention device on their property. Should the device not be installed, tested or repaired according to this manual, the customer shall be considered non-compliant and is in violation of this manual.

14.2 – Penalty/Non-Compliance

Should the customer refuse to comply with the District's backflow prevention policy, the District may terminate potable water service to the customer's property.

Section 15 – Record Keeping

It shall be the responsibility of the District to maintain the CCC program records required by F.A.C. chapter 62-550 and the Public Records retention laws of the State of Florida, as may be amended. The records are to include but are not limited to:

An inventory of devices installed including customer information which must include customer ID and or location ID assigned by the District, including the owner's name, business name and site address.

A list of all customers with backflow prevention devices installed at the meter.

A list of pertinent information about each backflow prevention device (size, make, model…etc.)

A list of all backflow prevention assembly test reports (completed property assessment, retest date, and test report information)

A list of certified plumber/backflow technicians including their business name, address, and a copy of a current certification.

Correspondence – copies of all other CCC program documentation will be retained including service contracts, notifications to customers, enforcement actions, backflow incident reports and other related activity.

Section 16 – Reclaimed Water Program

F.A.C. chapter 62-610.419(3) states that no cross connection between a potable water system and a reclaimed water system shall be allowed. For systems permitted under F.A.C. subsection 62-610.418(2), the permittee shall develop and obtain Department (FDEP) acceptance for a cross connection control and inspection program as discussed in F.A.C. chapter 62-610.469(7A) and 62-555.360.

Section 17 – Thermal Expansion

After a backflow prevention device is installed, the customers piping system is considered a closed system. As water is heated by the water heater, the water pressure in the customers closed piping system increases which is known as thermal expansion. Closed systems are subject to high water pressure and it is the Districts recommendation that customers with a backflow prevention device install a pressure relief valve or thermal expansion tank (if not currently installed) somewhere in their piping system to accommodate the increase in water pressure due to thermal expansion.

Section 18 – Administration

The District Administrator or his/her designee is authorized to administer the CCC program in conformance with the specification set forth in this manual, as may be amended.

Section 19 – Conflicts with State and Federal Law

If at any time this manual is found in conflict with state and federal law, the state or federal law shall take precedence.