City of Tega Cay, Utility Department Back flow & Cross Connection Policy Manual

SECTION 1 - PURPOSE

1. To protect the public potable water supply served by the City of Tega Cay from the backflow or back-siphoning of pollutants or contaminants that may be present within its customer's water distribution system.
2. To eliminate or control existing cross connections between its customers' potable and non-potable water systems.
3. To prevent the contamination or pollution of City of Tega Cays potable water system by establishing an ongoing maintenance program for cross connections.

SECTION 2 - AUTHORITY

The Federal Safe Drinking Water Act of 1974 and South Carolina State Primary Drinking Water Regulations promulgated pursuant to Section 44-55-30 through 44-55-60 of the 1976 South Carolina Code of Laws, Regulation 61-58.7(F) requires that the water purveyor has the primary responsibility for preventing water from unapproved sources, or any other substances, from entering the public potable water system.

SECTION 3 – REGULATION

State Regulation 61-58.7(F) requires that all public water systems initiate and maintain a viable cross connection control program. The program shall consist of:

1. Locating and eliminating unprotected cross connections
2. Maintaining records pertaining to the location of existing backflow prevention assemblies, type, and size of each assembly and test results (when applicable).

No person shall install, permit to be installed or maintain any cross connection between a public water system and any other non-public water system, sewer, or a line from any container or liquids or other substances, unless an approved backflow prevention device or assembly is installed between the public water system and the source of contamination.

SECTION 4 – DEFINITIONS

Approved means accepted by the City of Tega Cay as meeting the applicable specification stated or cited in this manual or as suitable for the proposed use.

Auxiliary Water Supply means any water supply on or available to the premises other than the City of Tega Cay approved water supply. Auxiliary water supplies may include water from other water purveyor's public potable water systems or any natural source such as a well, spring, river, stream, etc., or used waters, or industrial fluids. They may be polluted or contaminated or they may be objectionable and constitute an unacceptable water source over which City of Tega Cay does not have sanitary control.

Backflow means the undesirable reversal of the intended direction of flow in a potable water distribution system as a result of cross connection.

Backpressure means any elevation of pressure in the downstream piping system (caused by a pump, elevated tank or piping, steam and/or air pressure) above the water supply pressure at the point which would cause, or influence, a reversal of the normal direction of flow.

Back-siphonage means the flow of water or other liquid, mixtures, or substances into the potable water system from any source other than its intended source. Back-siphonage is caused by the reduction of pressure in the potable water system.

Backflow Prevention Assembly or Device means an assembly designed and approved to prevent backflow. Types of backflow prevention assemblies include:

(1) Air gap: The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water to a tank, plumbing fixture, receptor, and/or the flood rim of the receptacle. The air gap shall be at least twice the diameter of the water supply outlet above the flood rim of the receptacle, and never less than one inch.

(2) Reduced Pressure Principle Assembly (RP): An assembly consisting of two independently acting spring assisted check valves with a hydraulically operating differential relief valve between the check valves and beneath the first check valve. The unit shall have properly located resilient seated test cocks, and resilient seated or ball type shut off valves at each end of the assembly. The assembly shall be readily accessible for in-line testing and maintenance in a location that is never subject to possible flooding. RP devices are approved for high hazard category cross connections. The assembly shall require approval of SCDHEC and City of Tega Cay.

(3) Double Check Valve Assembly (DCVA): An assembly of two independently operating spring assisted check valves with properly located resilient seated test cocks and resilient seated or ball type shut off valves at each end of the assembly. This device shall be readily accessible for in-line testing and maintenance. This assembly is approved for low hazard category cross connections and shall require approval of SCDHEC and the City of Tega Cay Utility Department.

(4) Double Detector Check Assembly: A specially designed and approved main line double check valve assembly with a small by-pass line that includes a double check valve assembly and a meter to detect leakage or unauthorized use of water on fire lines.

(5) Pressure Vacuum Breaker (PVB): An assembly of one spring loaded check valve, air inlet valve, ball type shut off valves at each end and two test cocks. This assembly is approved only for back-siphonage. The assembly must be installed 12" above any downstream piping or outlets, or flood level rim. PVB devices are approved for high hazard category cross connections.

(6) Residential Dual Check: An assembly of two independently operating spring assisted check valves. This assembly is not equipped with shut off valves or test cocks. This assembly is used for selectively approved low hazard category cross connections. (Residential only)

Certified Tester means any person possessing a current SCDHEC tester certification and approved testing equipment.

City of Tega Cay consists of the Mayor and City Council for the City of Tega Cay, South Carolina, employees of the City of Tega Cay, and designated representatives of the City of Tega Cay.

Contamination means an impairment of the potable water quality by physical, chemical, biological, or radiological substance or matter which creates an actual hazard to public health through poisoning or through the spread of disease.

Cross Connection means any actual or potential connection or physical arrangement between a public water supply and any other source or system through which it is possible to introduce into the potable water system any waste or liquid substance of unknown or unsafe quality other than the intended potable water with which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, and other temporary or permanent devices through which or because of which backflow can or may occur are considered to be cross connections.

Customer means any person or premise that receives potable water from the City of Tega Cay.

Hazard or Degree of Hazard means the determination of the potential risk to public health, and adverse effects upon the potable water system. This risk is defined below in two categories:

(1) High Hazard/Health Hazard: An existing or potential threat to the public water supply of a physical or toxic nature that result in a danger to public health.

(2) Low Hazard/Non-Health Hazard: A hazard that does not constitute a threat to health, but may cause an actual or potential threat to the physical properties of the water and cause a nuisance or be aesthetically objectionable.

Flood Level Rim means the level from which liquid in plumbing fixtures, appliances, or vats could overflow to the floor, when all drain and overflow openings built into the equipment are obstructed.

Health Official means the South Carolina Department of Health and Environmental Control (SCDHEC)

Industrial Fluids means all types of process and used waters that may be chemically, biologically or otherwise contaminated that would be a health hazard if introduced into the potable water supply.

Potable Water means water from any source which meets the state and federal drinking water standards and which has been approved for human consumption.

Remote High Hazard Fire System means a fire system that has an isolated section with an antifreeze system or other chemical injection system.

Residential Lawn Irrigation (Low Hazard) means any irrigation system on a piece of property that has no commercial activity associated with the property and no chemical injection system.

Used Water means any water supplied by the Water Purveyor that has passed the water service connection.

Water Purveyor means the owner or operator of a public or private potable water supply.

Water Service Connection means the point where the public potable water system and the customer's water distribution system connect.

City of Tega Cay, Utility Department Back flow & Cross Connection Policy Manual

SECTION 5 – RESPONSIBILITIES

1. The responsibilities of the City of Tega Cay Utility Department cross-connection control program are:
   A. To prevent contamination to the public water system from the introduction of contaminants or pollutants through a service connection. This responsibility begins at the source and includes the entire water supply distribution system and ends at the user water service connections. If, in the judgment of City of Tega Cay Utility Department an approved backflow prevention assembly is required for the safety of the water system, the City of Tega Cay will give notice in writing to the customer to have installed such approved backflow prevention assembly(s) at specific location(s) on their premises. The customer will be required to install such approved assembly(s) at their expense; and, failure, refusal, or inability on the part of the customer to install, have tested (as required), and maintained said assembly(s) may constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met.

   B. To promulgate and enforce policies, regulations, and rules necessary to carry out designated responsibilities.

   C. To make inspections and determinations of the degree of hazard customers present to the City of Tega Cay Utility Department.

   D. To make and maintain all necessary records in accordance with this policy.

   E. To maintain a list of approved cross-connection prevention assemblies for use in the City of Tega Cay.

2. The responsibilities of water consumers to the cross-connection program are as follows:
   A. The water user has the primary responsibility to keep contaminants out of the potable water system. This responsibility begins at the user water service connection and includes any and all water distribution piping on the premises. If a cross-connection or a potential for a cross-connection exists, the water user, at the water user's expense, will be required to install, test (as required), and maintain approved backflow prevention device as required by the City of Tega Cay Utility Department policy.

   B. The customer should contact the City of Tega Cay prior to purchasing or installing a backflow prevention assembly.

   C. In the event of accidental cross-connection to the City of Tega Cay supply system, the user shall immediately notify the Utility Department and must confine further spread of pollution or contamination within the user's premises.

3. The responsibility of the installer of cross-connection prevention assemblies:
   A. To make sure that each assembly is working properly. The assembly must be tested by a certified tester (as required) when installed prior to the system being placed into service.

SECTION 6 - REQUIREMENTS

1. No water service connection to any premises shall be installed or maintained by the City of Tega Cay unless the water supply is protected as required by state law and regulations and the cross- connection control policy. Service of water to any premise may be discontinued by the City of Tega Cay if a backflow prevention assembly required by this cross connection control manual is not installed, tested, and maintained according to requirements, or if it is found that a backflow prevention assembly has been removed, by-passed, or if an unprotected cross-connection exists on the premises.

2. The customer's system should be open for inspection at all reasonable times to authorized representatives of SCDHEC and the City of Tega Cay to determine where cross-connection or other structural or sanitary hazards, including violations of the regulation, exist. When such a condition becomes known, the City of Tega Cay may deny or immediately discontinue water service to the premises.

3. When required, an approved backflow prevention assembly will be installed on each service line to a customer's water system at or near the property line or immediately inside the building being served.

4. In the case of premises having (1) internal cross-connections that cannot be permanently corrected and controlled, (2) intricate plumbing and piping arrangements, or (3) where entry to all portions of the premises is not readily accessible for inspection purposes, making it impractical or impossible to ascertain whether or not hazardous cross-connections exist, the City of Tega Cay distribution system shall be protected against backflow from the premises by installing an approved backflow prevention assembly in the service line.

5. Any backflow prevention assembly required herein will be a model and size approved by the City of Tega Cay. See appendix (A) in the back of the manual.

SECTION 7 - DEGREE OF HAZARD

The type of protective assembly required will depend upon the degree of the hazard that exists as follows:

A. In the case of any premises where there is any material hazardous to health that is handled in such fashion as to create an actual or potential hazard to the city of Tega Cay, the City of Tega Cay will be protected by an approved air-gap separation or an approved reduced-pressure principle backflow prevention assembly. Examples of premises where these conditions will exist include sewage treatment plants, sewage pumping stations, chemical manufacturing plants, hospitals, mortuaries, and plating plants.
B. the case of any premises where there is water or a substance that would be objectionable but not hazardous to health if introduced into the City of Tega Cay water system, the City of Tega Cay will be protected by an approved double-check valve assembly.

SECTION 8 - INSTALLATION

New Connections

1. When the application and purchase is made for the water service connection, the customer will provide information regarding the use of the water at the new connection. The City of Tega Cay will evaluate the new service to determine the type of backflow prevention assembly required (if any).
2. The customer will be notified of the backflow prevention assembly requirements.
3. The applicant will have the backflow prevention assembly and its enclosure installed according to all the City of Tega Cay requirements found in this Cross Connection Control Policy Manual (see Appendix (A) in the back of the manual.
4. The City of Tega Cay will make a site inspection and if the installation is found to be satisfactory the meter or service will be unlocked and turned on. If installation deficiencies are found during the inspection, the customer will be notified to correct all such deficiencies and a follow up inspection will be completed before the water service is turned on.

Existing Service Connections

1. Existing service connections will be evaluated by the City of Tega Cay to determine the type of backflow prevention assembly required (if any).
2. The City of Tega Cay will make an appointment with the water customer for a site survey. In selected cases a site survey may not be necessary.
3. The customer will be notified of the backflow prevention assembly requirements, including an installation deadline.
4. The customer will have the backflow prevention assembly completely installed according to all City of Tega Cay requirements found in the manual of cross connection control (See Appendix (A)) All City of Tega Cay and SCDHEC and manufacturers' installation requirements will be met.
5. The customer will notify the City of Tega Cay two days prior to the required inspection.

Right of Entry

Whenever it shall be necessary for the purpose of compliance or enforcement of this policy, the City of Tega Cay representative and/or SCDHEC may enter upon any property or premises at reasonable times for the purpose of:

A. Inspection of any equipment or water lines
B. Sampling of any water suspected of any cross-connection.

The City of Tega Cay and/or SCDHEC may enter upon the property at any hour under emergency circumstances to perform any investigation required to enforce this Policy.

SECTION 9 - INSTALLATION REQUIREMENTS

Hazard Applications

1. **High Hazard/Health Hazard** connections require reduced pressure principle assemblies, pressure vacuum breakers (for back-siphonage hazards only), or an air gap for prevention of backflow.

2. **Low Hazard/Non-health Hazard** connections require double check valve assemblies or double detector valve assemblies for prevention of backflow.

Location

Installation of the assemblies will usually be in a structure near the water meter or inside a building in a mechanical area, and prior to the first connection off the service line. The City of Tega Cay will review each site and make a recommendation for the location of the assembly.

RP and DCVA Installation Requirements

1. The assembly must appear on the City of Tega Cay list of approved backflow prevention assemblies. See Appendix (A.)
2. No by-pass is permitted around the assembly unless there is an equal backflow prevention assembly in the by-pass. Customers with situations that prohibit shutting off the water service to test or repair the assembly should install a backflow prevention assembly in parallel or install a separate parallel duplicate service line with proper backflow protection.
3. All manufacturers' installation requirements will be consulted and followed including hot water and high pressure applications.
4. Requirements for height and side clearance must comply with Appendix (A)
5. All backflow prevention assemblies will be installed in an enclosure or building on the customer's property to prevent damage from freezing, traffic or vandalism, and will be readily accessible for testing and maintenance.

6. The customer will design and install adequate thrust restraints. Upon inspection, the City of Tega Cay may require additional thrust restraints where deemed necessary.
7. The customer will design and install adequate pipe supports. Upon inspection, the City of Tega Cay may require additional pipe supports where deemed necessary.
8. A strainer may be needed as recommended by the manufacturer to prevent particles from fouling the check assemblies.
9. No black iron/black steel piping will be installed on the supply side of any backflow prevention assembly.

Additional Requirements for RPs

1. Conditions may exist where periodic pressure fluctuations cause the relief valve of the assembly to discharge to the point of becoming a nuisance. In this event, the customer should install an additional check valve prior to the assembly.
2. Relief valve drain piping must meet approved air gap requirements. The air gap distance requirement is equal to two (2) times the relief valve diameter or 1-inch, whichever is greater. The piping will be sized to exceed the discharge rate of the relief valve.
3. The relief valve will never become submerged.
4. Underground installations of reduced pressure principle backflow assemblies are discouraged. Underground installations are only permitted in exceptional circumstances on a case by case basis and only where an adequately sized gravity drain can be installed.

Fire Suppression/Fire Sprinkler Systems

Each private fire protection system will be evaluated by site and/or plan survey for degree of hazard. Backflow prevention assemblies commensurate with the degree of hazard will be required on all connections to the City of Tega Cay.

High Hazard/Health Hazard Category: Systems that are considered to be in the High Hazard/Health Hazard Category include, but are not limited to: antifreeze systems, foam injection systems and systems supplied from or connected to lakes, ponds, streams, or any other source other than the City of Tega Cay system. High hazard category fire protection systems will require a Reduced Pressure assembly or Air Gap on any connection to the City of Tega Cay as close as possible to the service connection and the property line.

A remote high hazard fire system is a fire system that has an isolated section with an antifreeze system or other chemical injection system. It is acceptable to protect this type of fire system with a Reduced Pressure assembly at the site of the chemical addition or at the water connection.

Low Hazard/Health Hazard Category: Systems that are considered to be in the Low Hazard/Health Hazard Category of fire protection systems will include simple wet or dry fire sprinkler systems. These systems may also include covered storage tanks or pumps supplied by the City of Tega Cay. A Double Detector Check Assembly is required on any connection to the City of Tega Cay as close as possible to the service connection and the property line.

In isolated cases the backflow prevention assembly must be installed inside the building. A Double Check Valve assembly will be installed on the riser piping immediately above the floor. This must be included on the building drawings and approved in writing.

Removal of Assembly

No backflow prevention assembly will be removed, by-passed, or downgraded without prior written approval of the City of Tega Cay Utility Department.

SECTION 10 - TESTING REQUIREMENTS

1. **Residential Lawn Irrigation Systems**

Low Hazard/Health Hazard: The City of Tega Cay requires all customers who operate low hazard residential lawn irrigation systems to install as a minimum a dual check valve assembly for backflow prevention. This assembly is the customer's responsibility and must be installed immediately behind the service connection (water meter) to the City of Tega Cay.

High Hazard/Health Hazard: Regulations require that high hazard residential lawn irrigation systems must comply with the requirements of a high hazard cross connection. This includes the installation and maintenance of a reduced pressure assembly. Annual testing of this device is required by the City of Tega Cay.

Testing of Assemblies

All existing approved backflow assemblies, excluding low hazard residential lawn irrigation systems, are required to be tested annually or as deemed necessary to comply with City of Tega Cay or Department of Health and Environmental Control (DHEC) requirements.

Customers with backflow assemblies will be sent a notification letter by the City of Tega Cay prior to the testing is due to be completed. The due date for the test is by the 1st of June annually. Upon notification the customer is responsible for getting the device(s) tested utilizing a certified tester. The certified tester is required to test the device by the due date and mail the City of Tega Cay approved test report indicating compliance within 7 days of the actual date the device is tested.

After the end of June, if City of Tega Cay has not received the completed test report indicating compliance a final notification letter will be sent to the customer requiring the device(s) be tested within 15 calendar days or the device(s) will be considered non-compliant.

Test Failures

If tested device(s) fail, the required tests indicating compliance and cannot be repaired immediately the tester will return a copy of the failed test report to City of Tega Cay the same day of the failed test with an explanation of the test failure and the repair(s) needed. Failing assemblies must be satisfactorily repaired and completely retested within 10 business days of the date of the test failure. If during this time the City of Tega Cay determines the potable water supply is in danger of a potential backflow or cross connection as the result of the failed backflow assembly the water service will be disconnected immediately.

After the assembly is repaired, the assembly will be retested and the completed test report indicating compliance will be returned to the City of Tega Cay.

Testing Non-Compliance

Customers with backflow assemblies will be considered non-compliant when:

- Completed test reports indicating compliance are not received by 15th calendar day
- Failing assemblies not satisfactorily repaired, retested, and in compliance within 10 business days of the original date of the test failure.

Failure to comply with the testing, repairing, and/or retesting, requirements as stipulated within this section may result in the following options:

1. Assemblies located at the property line or meter:

   The City of Tega Cay will test the device(s), and if necessary make proper repairs to the device(s).

OR

   The City of Tega Cay will utilize the services of a SCDHEC certified contract backflow tester to test the device(s), and if necessary make proper repairs to the device(s).

The non-compliant customer(s) will assume all the City of Tega Cay's cost associated with the testing, repairing, and/or retesting of the device(s) along with a fifty dollar ($50.00) administrative fee to recover the costs involved in the handling, administration, and billing of the test. These costs will be added to the customer's bill.

2. Assemblies not located at the property line or meter:

   - The City of Tega Cay will consider the customer in non-compliance and may opt to suspend service.

SECTION 11 - NON-COMPLIANCE/ENFORCEMENT

1. **Enforcement Procedure**

Non-compliance may result in enforcement procedures under the following three categories:

a. Existing water customers who do not have a cross-connection control device in their system at present, but will be required to install such a device under this policy. Customers in this category where contaminants on their property have been determined by the City of Tega Cay to represent a health hazard to the public water system will be required to take immediate corrective action upon notification. Customers will be required to install an approved backflow prevention assembly within thirty (30) days of notification from the City of Tega Cay.

b. Failure of any new water customer to install an approved backflow prevention device prior to connection to the City of Tega Cay distribution system whenever the City of Tega Cay has determined that contaminants or pollution on the customer's property represents a hazard to the public water system.

c. Those existing water customers who have required backflow prevention devices in their system which do not meet the City of Tega Cay standards or have been found to be malfunctioning. These customers will be required to replace backflow prevention devices with assemblies that meet the City of Tega Cay standards. Malfunctioning backflow prevention devices for low hazard conditions must be repaired or replaced by the customers with an approved backflow prevention device with thirty (30) days after notification by the City of Tega Cay. For high hazard sources, the malfunctioning backflow prevention device must be replaced or repaired immediately.

2. Termination of water service/Reconnect fees

    a. Service of water to any premises may be discontinued by the City of Tega Cay for the following reasons: (1) if a backflow prevention assembly that is required by law, rules, or regulations is not installed, tested, and maintained, (2) if it is found that a backflow prevention device has been removed or by-passed, or (3) if unprotected cross-connection exists on the premises and there is inadequate backflow protection at the service connections. Water service will not be restored until such conditions and defects are corrected.
    b. Water services may be terminated for water customers who do not comply with the City of Tega Cay cross connection control policy. A written notice will be provided to the customer that water service will be terminated within ten (10) days if the requirements of this policy are not met.
    c. The customer will be responsible for all applicable reconnection fees and charges. The City of Tega Cay will not be liable for damages, losses, or claims arising from discontinuance of water service.

3. Legal Action

    After the evidence has been reviewed and a decision rendered with a copy to the customer, the City of Tega Cay may terminate water service and/or pursue any available legal remedy.

The City of Tega Cay reserves the right to perform any action or combination of action(s) it deems necessary as remedies of compliance with this manual, any other local, state, and federal requirement(s) involving cross-connection control within its system.

SECTION 12 – APPEALS

Customers, contractors, or other individuals that disagree with any requirement of the City of Tega Cay's Cross Connection Control Policy or requirements imposed by the City of Tega Cay may appeal any requirement to the Mayor or City Council for Tega Cay, South Carolina. Any appeal must be submitted in writing to the City of Tega Cay, City Manager or his/her designee in a minimum of two weeks in advance of any regularly scheduled Commission Meeting. The individual making the appeal will be given the opportunity to appear before the Commission to present their appeal.

After review and any investigation necessary, the Commission will notify the individual of a decision, which will be final.

SECTION 13 – THERMAL EXPANSION

There are several regulatory agencies that require the City of Tega Cay to maintain a viable Cross Connection Control Program. Backflow can occur from all industrial, commercial, or residential water service connections. Since 1971, backflow prevention assemblies have been installed on many service connections. In 2000, the City of Tega Cay began installing residential dual check valves on ¾" services. These practices continue today in an effort to prevent backflow from all size services from entering the public potable water supply.

Practically all customers utilize heated water in their plumbing system. When water is heated, its physical character changes and it expands. This expanded water needs to occupy more space. Before backflow preventers or dual check valves were installed on service lines, this expanded water expanded back into the City of Tega Cay's distribution system. This was known as an open system. This is no longer possible where a backflow preventer or a dual check is present. This is known as a closed system. The condition of heated water expanding in a closed system is known as Thermal Expansion. Often, thermal expansion will cause water heater Temperature and pressure Relief Valves to discharge excessive water pressures, usually at above 150 psi.

The three most popular methods of dealing with the effects of thermal expansion are: installing a bladder type expansion tank, a special ball cock and relief valve in the water closet, or a remote thermal expansion relief valve. The City of Tega Cay suggests you discuss these alternatives with a licensed plumber. These three methods can be “do it yourself” projects.

The City of Tega Cay will make its best effort to continue to provide safe potable water to all customers. Backflow prevention assemblies are a necessary means to protect the City of Tega Cay’s water distribution system. If you have any questions concerning thermal expansion as it relates to cross connection control, call 803-548-3514.

Appendix A-2.0

City of Tega Cay Utility Department
Approved Backflow Prevention Assemblies

List of Double Check Valve Assemblies

The following is a partial list of **Double Check Valve Assemblies (DCVA)** approved for use to protect a potable water supply. These assemblies are limited to only **Low Hazard or Non-Health Hazard** category backflow protection. Low Hazard or Non-Health Hazard shall mean an actual or potential threat to the physical properties of the public or consumers' water system but not a danger to health. The greatest degradation of the public water supply would be a nuisance or aesthetically objectionable nature.

Company	Model	Sizes
AMES	2000B	½" – 2"
AMES	200 B	¾" – 2"
AMES	C200 and C200N	2 ½" – 10"
AMES	M200 and M200N	2 ½" – 8"
CONBRACO	40-100 Series	½" – 10"
CONBRACO	40-100/99 Series	¾" – 2"
CONBRACO	4S, DC Series	2 ½" – 6"
FEBCO	805 YD	¾" – 10"
FEBCO	850	½" – 8"
FEBCO	870 and 870V	2 ½" – 10"
FEBCO	830	4" – 8"
WATTS	007	½" – 3"
WATTS	007M1 and 007M2	¾" – 2"
WATTS	007M3	¾"
WATTS	719QT and 719AQT	½" – 2"
WATTS	757 and 757N	2 ½" – 10"
WILKINS	350, 450	¾"-1" & 2 ½" – 12"
WILKINS	950XLT	¾" – 2"

NOTE: This is a partial list of DCVA assemblies. Some models are also available in "N" or "Z" configurations. Other models may have previous approvals and may still be available from suppliers. Other models may have gained recent approval. Please call to check on approval of a specific model not listed.

Appendix A 2.1

City of Tega Cay Utility Department
Approved Backflow Prevention Assemblies

List of Double Check Detector Assemblies

The following is a list of **Double Check Detector Assemblies (DCDA)** approved for use to protect the potable water system. The DCDA shall be used on **Low Hazard, Non-Health Hazard** fire suppression systems. Low Hazard, Non-Health Hazard fire suppression systems shall consist of air or water only systems with no chemical or anti-freeze additives or no connections to an unapproved water source such as a pond, stream or well.
DCDA assemblies are to be installed when there is underground piping between the location of the backflow assembly and the building. If the alarm valve is installed immediately downstream of the backflow assembly as may be done on the fire riser in a building then a DCVA listed on Appendix A shall be used. The City of Tega Cay should be consulted for approval for the location of the assembly.

If the fire suppression system is of the High Hazard, Health Hazard category then **Reduced Pressure Principle (RP)** assemblies found on Appendix A-3

Company	Model	Size
AMES	C300 and C300N	2 ½"- 10"
AMES	M300 and M300N	2 ½" - 8"
CONBRACO	40-600 Series	3" - 10"
CONBRACO	4S-600 Series	2 ½"-10"
FEBCO	856	2 ½"-10"
FEBCO	876V	2 ½"-10"
WILKINS	350DA, 450	2 ½"-10"
WILKINS	450DA	4"-10"
WATTS	757DCDA and 757NDCDA	2 ½"-10"

NOTE: This is a partial list of approved DCDA assemblies. Some models are also available in "N" or "Z" configurations. Other models may have previous approvals and may still be available from suppliers. Other models may have gained recent approval. Please call to check on approval of a specific model not listed.

Appendix A 3

City of Tega Cay Utility Department
Approved Backflow Prevention Assemblies

LIST OF REDUCED PRESSURE PRINCIPLE ASSEMBLIES

The following is a list of **Reduced Pressure Principle Assemblies (RP)** for use to protect the potable water supply. These assemblies shall be used for **High Hazard or Health Hazard** category cross connection control. High Hazard or Health Hazard category shall mean an actual or potential danger to a potable water system of a toxic nature or danger to health.

Company	Model	Size
AMES	4000B	½" – 2"
AMES	400B	¾" – 2"
AMES	C400 and C400N	2 ½" – 10"
AMES	M400 and M400N	2 ½" – 8"
CONBRACO	40-200 Series	¼" – 10"
FEBCO	825Y and 825YD	¾" – 2"
FEBCO	860	¾" – 8"
FEBCO	880 and 880V	2 ½" – 10"
WATTS	009	¼" – 3"
WATTS	909	¾" – 10"
WATTS	919	¾" – 2"
WATTS	957 and 957N	2 ½" – 10"
WILKINS	975XL	½" – 2"
WILKINS	375, 475, 475V	¾"-1" & 2 ½" – 10"

NOTE: This is a partial list of approved RP assemblies. Other models may have previous approvals and may still be available from suppliers. Other models may have gained recent approval. Please call to check on approval of a specific model not listed.

RP assemblies are not approved for vertical installations. Some models come in "N" or "Z" configurations that allow vertical piping.

RP assemblies can not be installed where the relief valve may become submerged.