

**CITY OF CLERMONT  
UTILITIES  
DEPARTMENT**



**MANUAL  
OF  
CROSS-CONNECTION CONTROL**

**March 25, 2009**

## Preface

This manual of policies and specifications has been prepared by the City of Clermont Utilities Department to establish an effective Cross-Connection Control Program in the City's water service area in accordance with directives issued at the Federal and State level. This manual had been adopted by the City Commission through City ordinance. Responsibilities for the control of cross-connections are shared by the consumer, this department, and the Florida Department of Environmental Protection. This manual of policies and specifications serves as a guide to insure that the safety of the potable water system is maintained.

The City of Clermont Utilities Department:

1. Urges the review of this manual of policies and specifications before designing or installing a backflow prevention device.
2. Believes the material in this manual will provide the consumer with the understanding of cross-connection and backflow prevention devices.
3. Will ensure that the policies, standards and specifications as set forth in this manual will be uniformly enforced.
4. Reserves the right to update this manual as necessary due to changes in Florida Department of Environmental Protection policies and regulations and/or American Water Works Association standards.

If there are any questions regarding this manual or policies, please call the City of Clermont Utilities Department at (352) 241-0178.

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## **SECTION 1 – PURPOSE AND INTENT**

### **1.1 Protection**

To protect the public potable water supply from the possibility of contamination or pollution by isolating actual and/or potential cross-connections in the water distribution system that could create backflow by back-pressure or backsiphonage into the public potable water supply (Ref.: F.A.C. Chapter 62-555.360 or latest edition).

### **1.2 Elimination of Cross-Connections**

To promote the elimination and control of cross-connections (actual or potential) between the potable water system(s), and any other system(s) or plumbing fixture(s).

### **1.3 Cross-Connection Control Program**

To provide for the maintenance and operation of a continuing program of cross-connection control which will systematically and effectively prevent the contamination or pollution of the City's water distribution system, as required by the Florida Department of Environmental Protection (Ref.: F.A.C. Chapter 62-555.360 or latest edition).

### **1.4 Causes of Backflow**

Where cross-connections or the potential for cross-connections exist, protection against backflow is needed to reduce the possibility of contamination. The two major causes of backflow are backsiphonage and backpressure.

#### ***1.4.1 Backsiphonage***

Backsiphonage is caused by a reduced or negative pressure being created in the supply piping. This reduction of pressure in the water supply system can result in the flow of water or other liquids, mixtures or other substances into the distribution pipes of a potable water supply system from a source other than its intended source. The most common causes of backsiphonage are: a line repair or break which occurs at a lower elevation than the service point; undersized piping; lowered pressure in a water main due to a high water withdrawal rate such as fire-fighting, water main flushing, or water main breaks; and reduced supply main pressure on the suction side of a booster pump.

#### ***1.4.2 Backpressure***

Backpressure is caused by an elevation or pressure in the downstream piping system that is greater than the supply pressure. Typically, the result of this difference in pressure is a reversal of the normal direction of flow. The reversal of flow can, in turn, lead to contamination of the potable water supply. The high downstream pressures can be caused by pumps, boilers, elevation of piping, air pressure, etc.

## **SECTION 2 – Authority**

The following authorities are justification for establishing a cross-connection control program.

### **2.1 Florida Regulations**

The Safe Drinking Water Act, signed by President Ford on December 16, 1974, created new authority through a chain of laws and regulations that resulted in the State requirement (Florida Safe Drinking Water Act, Sections 403.850-403.864, Florida Statutes) for all potable public water systems to have a cross-connection control program.

Rule 62-555.200, Florida Administrative Codes, states “CROSS-CONNECTION means 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.

Contained within the Rules of the Florida Department of Environmental Protection (DEP), Chapter 62-555, the State of Florida adopted the following policy:

Cross-connection, as defined in Rule 62-550.200, F.A.C., is prohibited. However, a person who owns or manages a public water system may interconnect to another public water system if that system is operated and maintained in accordance with this chapter.

Community water systems, and all public water systems that have service areas also served by reclaimed water systems regulated under Part III of Chapter 62-610, F.A.C., shall establish and implement a routine cross-connection control program to detect and control cross-connections and prevent backflow of contaminants into the water system. This program shall include a written plan that is developed using recommended practices of the American Water Works Association set forth in *Recommended Practice for Backflow Prevention and Cross-Connection Control*, AWWA Manual M14, as incorporated into Rule 62-555.330, F.A.C.

Upon discovery of a prohibited cross-connection, public water systems shall either eliminate the cross-connection by installation of an appropriate backflow prevention device acceptable to the Department or shall discontinue service until the contaminant source is eliminated.

(Rules of the Florida Department of Environmental Protection (DEP), Chapter 62-555.360 (1), (2), and (3).)

## **2.2 Code of Ordinances**

City of Clermont, Florida, Code of Ordinances, Chapter 114, Section 4 requires the use of backflow preventors on all commercial, industrial and multi-family projects. Chapter 66, Section 108 of the Clermont Code requires compliance with this manual and the cross connection program contained herein.

## **SECTION 3 – Definitions**

### **3.1 Air-gap Separation**

The term air-gap separation shall mean a physical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An approved air-gap separation shall be a distance of at least two (2) times the diameter of the supply pipe measured vertically above the top rim of the vessel, an in not case less than one (1) inch.

### **3.2 Approved**

The term approved shall mean accepted by the Utility Director as meeting an applicable specification or meeting specifications of state and city codes.

### **3.3 Atmospheric Vacuum Breaker (AVB)**

The term atmospheric vacuum breaker shall mean a backflow prevention device which is operated by atmospheric pressure in combination with the force of gravity. The unit is designed to work on a vertical plane only. The one moving part consists of a poppet valve which must be carefully sized to slide in a guided chamber and effectively shut off the reverse flow of water when a negative pressure exists.

### **3.4 Auxiliary Water Supply**

The term auxiliary water supply shall mean any water supply on or available to the premises other than the water purveyor's approved public potable water supply. These auxiliary waters may include other potable water supply or any natural source, such as a well, lake, spring, river stream, etc., or used water 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.

### **3.5 Backflow**

The term backflow shall mean the flow of water or other liquids, mixtures or substances into the city's potable water supply system from sources other than the city water system.

### **3.6 Backflow Prevention Device –Approved**

The term approved backflow prevention device shall mean a device that has been manufactured and tested in full conformance with applicable standards and specifications and is approved by the Utility Director. (Refer to Section 8.1 for a list of applicable standards and specifications that must be met.) An approved backflow prevention device is used to prohibit the backflow or backsiphonage of water into the potable public water system.

### **3.7 Backpressure**

The term backpressure shall mean any elevation or pressure in the downstream piping system (by pump, elevation of piping, or stream and/or air pressure) above the supply pressure at the point of consideration which would cause or tend to cause, a reversal of the normal direction of flow.

### **3.8 Backsiphonage**

The term backsiphonage shall mean a form of backflow due to a reduction in system pressure which causes a negative or sub-atmospheric pressure to exist at a site in the water system. This reduction of pressure in the water supply system can result in the flow of water or other liquids, mixtures or other substances into the distribution pipes of a potable water supply system from a source other than its intended source.

### **3.9 Certified Backflow Prevention Device Tester**

The term certified backflow prevention device tester shall mean a person who can prove competency in testing backflow prevention devices to the satisfaction of the Utility Director and the City of Clermont Utilities Department. The tester shall have attended and successfully completed an AWWA approved course for Backflow Prevention Device Testers, or a course endorsed by the AWWA, or other programs or training acceptable to the Utility Director and the Florida Department of Environmental Protection.

### **3.10 Certified Backflow Prevention Device Repairer**

The term certified backflow prevention device repairer shall mean a person who can prove competency in testing backflow prevention devices to the satisfaction of the Utility Director and the City of Clermont Utilities Department. The repairer shall have attended and successfully completed an AWWA approved course for Backflow Prevention Device Repairers, or a course endorsed by the AWWA, or other programs or training acceptable to the Utility Director and the Florida Department of Environmental Protection.

### **3.11 Certified Test Gauges**

The term certified test gauges shall mean gauges that are calibrated and certified annually to USC Standards by a testing lab approved by the Utility Director.

### **3.12 Consumer**

The term consumer shall mean any person, business or any other entity residing in or doing business within the city limits or who by contract is bound to this article and who is or was connected to the city water system or who is or was receiving water service from the city.

### **3.13 Contamination**

The term contamination shall mean an impairment of the quality of the potable water supply by compounds or other materials to a degree which creates an actual hazard to the public health.

### **3.14 Cross Connection**

The term cross connection shall mean any physical connection or arrangement of piping or fixtures between two otherwise separate systems, one of which contains potable water and the other, unapproved water, fluids, gases or other materials through which backflow may occur.

### **3.15 Double Check Valve Assembly**

The term double check valve assembly shall mean an assembly consisting of two independently operating approved check valves that are internally loaded, either spring loaded or internally weighted, and installed as a unit between two tightly closing resilient-seated shutoff valves. Properly located resilient-seated test cocks shall be provided for the testing of each check valve.

### **3.16 Double Detector Check Valve Assembly**

The term double detector check valve assembly shall mean a specifically designed assembly composed of an approved double check valve assembly with a specific bypass water meter and an approved double check valve assembly all properly sized. The meter shall register accurately for low flow rates and shall total all flows.

### **3.17 Dual Check Assembly**

The term dual check assembly shall mean a device consisting of two independent check valves which have been approved by the utilities department for use to protect the public water system at a single family customer's service(s) where there is also a reclaimed water system service and no other backflow hazards exist. Such valves must meet the requirements of A.S.S.E. 1024.

### **3.18 Hazard**

The term hazard shall mean any liquid or contaminant in the water other than the city's potable water supply which is considered a health or pollution hazard.

### **3.19 Hazard – Degree of**

The term degree of hazard shall mean an evaluation of the potential risk to public health and the adverse effect on health from the public potable water system.

### **3.20 Industrial Fluid**

The term industrial fluid shall mean any fluid or solution which may physically, chemically, biologically or otherwise contaminate or pollute potable water if introduced into the public potable water system or consumer plumbing system or potable water system. Industrial fluids may include, but not be limited to polluted or contaminated water; all types of process waters and “used waters” originating from the public potable water system which may deteriorate in sanitary quality; chemicals in fluid form; plating acids and alkalies; circulated cooling water connected to an open cooling tower and/or cooling waters that are chemically or biologically treated or stabilized with toxic substances; contaminated natural water such as from wells, lakes, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, etc., oil, gases, glycerin, paraffins, caustic and acid solutions; and other liquid and gaseous fluids used in commercial/industrial type processes or for fire fighting purposes.

### **3.21 Laboratory – Approved for Testing**

The term approved testing laboratory shall mean the foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California or any other testing laboratory approved by the Utility Director.

### **3.22 Non-Potable Water**

The term non-potable water shall mean any water which is not safe for human consumption or which is of questionable quality.

### **3.23 Pollution**

The term pollution shall mean the presence of any foreign substance (organic, inorganic, or biological) in water, which tends to degrade its quality so as to constitute a health hazard.

### **3.24 Potable Water**

The term potable water shall mean any water which, according to recognized standards, is safe for human consumption.

### **3.25 Pressure Vacuum Breaker (PVB)**

The term pressure vacuum breaker shall mean an assembly similar to an atmospheric vacuum breaker except that the checking unit “poppet valve” is activated by a spring. This type of vacuum breaker does not require a negative pressure to react and can be used on the pressure side of a valve. The assembly shall include tightly-closing resilient-seated shutoff valves located at each end of the assembly and each assembly shall be fitted with properly located resilient-seated test cocks.

### **3.26 Reclaimed Water (Reuse)**

The term reclaimed water (reuse) shall mean treated and disinfected effluent from a wastewater treatment plant used for irrigation, dust control, fire protection, and all other purposes permitted by Florida Administrative Code.

### **3.27 Reduced Pressure Detector Assembly**

The term reduced pressure detector assembly shall mean a specifically designed assembly composed of an approved reduced pressure zone backflow preventor with a specific bypass water meter and an approved reduced pressure zone backflow preventor all properly sized. The meter shall register accurately for low flow rates and shall total all flows.

### **3.28 Reduced Pressure Zone Backflow Preventor (RPZ)**

The term reduced pressure zone backflow preventor shall mean an assembly containing within its structure a minimum of two independently acting, approved check valves, together with an automatically operating pressure differential relief valve located between the two check valves. The first check valve reduces the supply pressure a predetermined amount, so that during normal flow and at cessation of normal flow, the pressure between the checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the checks less than the supply pressure. The assembly shall include tightly-closing resilient seated shutoff valves located at each end of the assembly and each assembly shall be fitted with properly located resilient seated test cocks.

### **3.29 Water Purveyor**

The term water purveyor shall mean the utility owner or operator of the public potable water system supplying an approved potable water supply to the public.

### **3.30 Water Service Connection**

The term water service connection shall mean the terminal end of a service connection from the public potable water system (i.e., where the city loses jurisdiction and sanitary control over water at its point of delivery to the consumers' 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. Service connection shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public water system. There shall be no unprotected takeoffs from the service line ahead of any meter or backflow prevention device.

### **3.31 Water Supply – Approved**

The term approved water supply shall mean any public water supply that has been

investigated and approved by the State of Florida Department of Environmental Protection. The system must be operating under a valid permit.

### **3.32 Water Supply – Unapproved**

The term unapproved water supply shall mean a water supply that has not been approved for human consumption by the State of Florida Department of Environmental Protection and/or is not operating under a valid permit.

### **3.33 Water System – Consumer’s**

The term consumer’s water system shall include any plumbing and/or water system located on the consumer’s premises, whether supplied by a public potable water system or an auxiliary water supply. The system or systems may be either a potable water system or an industrial piping system.

### **3.34 Water System – Consumer’s Potable**

The term consumer’s potable water system shall mean that portion of the privately owned potable water system lying between the water service connection and the consumer’s point of use. This system will include all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, store or use potable water.

### **3.35 Water System – Public Potable**

The term public potable water system shall mean the City of Clermont Utilities water system or any publicly or privately owned water system operated as a public utility, under a valid permit from the State of Florida Department of Environmental Protection and other applicable regulatory agencies to supply potable water for domestic purposes. This system will include all sources, facilities and appurtenances between the source and water service connection such as valves, pumps, pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, treat or store potable water for public consumption or use.

### **3.36 Water – Used**

The term used water shall mean 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 water service connection and is no longer under the control of the water purveyor.

## **SECTION 4 – Records and Enforcement**

### **4.1 Responsibility**

#### ***4.1.1 Water Purveyor***

Under the Safe Drinking Water Act of 1974 and Rules of the Florida Department of Environmental Protection (DEP) Chapter 62-555.360, relating to cross-connection, the water purveyor has the primary responsibility of maintaining a cross-connection control program to prevent water from unapproved sources, or any other substances, from entering the public potable water system. Upon detection of a prohibited cross-connection, the Utility Director shall either eliminate the cross-connection by requiring the installation of an appropriate approved backflow-prevention assembly or device, or immediately discontinue service until the contaminate source is eliminated.

#### ***4.1.2 Consumer***

The consumer's responsibility starts at the point of delivery from the public potable water system and includes all of the consumer's water systems. The consumer is required to install, operate, test and maintain approved backflow-prevention assemblies as directed by the Utility Director in accordance with City Codes and Ordinances, this manual, and other applicable regulations. The consumer shall maintain records of all testing and repairs in accordance with the City Codes and Ordinances.

In the event of accidental pollution or contamination of the public or consumer's potable water system due to backflow on or from the consumer's premises, the consumer shall promptly take steps to confine further spread of pollution or contamination within the consumer's premises, and is required to immediately notify the Utilities Department of the hazardous condition.

Nothing herein shall relieve the consumer of the responsibility for conducting, or causing to be conducted, periodic surveys of water use practices on their premises to determine where there are actual or potential cross connections in the public potable water system or consumer's potable water system.

### **4.2 Enforcement Policy**

No water service connection to any premises shall be installed or maintained by the City of Clermont Utilities Department unless the water supply is protected as required by Federal, State and Local Laws and Ordinances and this adopted manual.

Service of water to any premises shall be discontinued by the Utility Director if a backflow prevention device required by this policy is not installed, tested, and maintained, or if it is found that a backflow prevention device has been removed, bypassed, or an unprotected cross-connection exists on the premises. In the event of a

hazardous situation where contaminants are actually in the process or suspected of entering the distribution system of the public potable water supply, the Utility Director is authorized to take immediate steps deemed necessary to correct a hazardous condition. This shall include the right to immediately discontinue potable water service to premises where a hazardous condition may be occurring. Such emergency steps, including discontinuance of potable water service, may be taken without advance notice to the consumer. In any case of discontinuance, service shall not be restored until such conditions or defects that led to the discontinuation of service are corrected at the consumer's expense.

### **4.3 Violations**

Submission by any person of any false statement or misrepresentation in any application, record, report, plan or other document filled or required by this policy shall constitute a violation. Any person who has not complied with Federal, State and Local Laws or Ordinances regarding cross-connection control shall be considered in violation of the conditions for water service. Any person not complying with the policies and guidelines within the City of Clermont's Manual of Cross-Connection Control shall be in violation.

### **4.4 Written Notice**

Upon receipt of written notice that an approved backflow prevention device is required at a consumer's water connection, the consumer shall immediately install such a device at the sole expense of the customer.

### **4.5 Auxiliary Water Supply**

The public water system shall be protected against backflow and backsiphonage by the installation of an approved backflow prevention device if an auxiliary water supply is found which may or may not be safe in bacteriological or chemical quality. The type of backflow prevention device installed shall be appropriate for the potential degree of hazard.

### **4.6 Industrial Fluids**

If any industrial fluids or any other objectionable substances are 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 against backflow and backsiphonage. This protection shall include the installation of an approved backflow prevention device in the service line appropriate for the potential degree of hazard. Protection shall also apply to the handling of process water and waters originating from the utility system, which have been subject to deterioration in quality.

### **4.7 Internal Cross-Connections**

If an internal cross-connection(s) cannot be permanently corrected and controlled, or

undefined plumbing and piping arrangements exist or where entry to all portions of the premises is not readily assessable for inspection purposes, the public water system shall be protected against backflow and backsiphonage from the premises by the installation of an approved backflow prevention device in the service line.

#### **4.8 Installation**

Backflow prevention devices shall be installed at the direction of the Utility Director or their designated representative at the consumer's meter, property line of a consumer, or at a designated location. Refer to the Installation Requirements section of this manual for more details.

#### **4.9 Records**

Records concerning installation and testing shall be kept on-site and accessible for a period not less than ten (10) years. The Utility Director or their designated representative shall be permitted reasonable access to these records as required for the purpose of monitoring compliance with City Codes and Ordinances.

## **SECTION 5 – Inspections**

### **5.1 Frequency**

Due to changes in models or components of equipment, methods of manufacturing and additions to plants, buildings, etc., water use requirements undergo continual change. As a result, new cross-connections may be installed and existing protection may be bypassed, removed or made otherwise ineffective; therefore, an annual, biannual, or more frequent detailed inspection of all water usage is required. In addition, all new building construction shall also be plan-checked and inspected during installation by the City of Clermont Engineering Department to insure conformance with the City's cross-connection control (containment and isolation) requirements.

### **5.2 Proposed Construction**

All construction plans and specifications for proposed new facilities shall be made available to City of Clermont Engineering and Utilities Departments to review for conformance with the cross-connection control requirements. Evaluation shall include a determination of the degree of possible cross-connection hazards and what approved backflow prevention devices are required and coordination on the proper location for the device. Plans will not be approved until they meet backflow prevention requirements found in this manual. During construction, field inspections will be made to confirm proper installation of backflow prevention devices. These inspections will also serve to identify hazards that may not have been apparent during plans review or that were introduced during construction.

### **5.3 Existing Development**

In order to determine the degree of hazard to the public potable water system, a survey will be made of the customer's presently installed water system. This survey is intended to establish the water uses on premises, check for the existence of cross-connections, and determine the availability of auxiliary or non-potable water supplies. Should any assembly or plumbing changes be required, a follow-up inspection will be made of the same site at a later date.

## **SECTION 6 – Degree of Hazard and Type of Protection**

### **6.1 Degree of Hazard**

Hazard definitions are as follows:

#### ***6.1.1 Non-Potable Water Supply***

Non-potable water supply is an auxiliary water supply as defined in Section 4.5. The public water supply system shall be protected by an approved reduced pressure zone backflow preventor.

#### ***6.1.2 Objectionable, but Not Hazardous***

Water or substance(s) present that would be objectionable if introduced into the potable water system but not hazardous to public health. The public water supply system shall be protected by an approved double check valve assembly unless it is a condition specifically listed under Section 6.2.

#### ***6.1.3 Actual or Potential Hazard***

An actual or potential hazard is defined as any material dangerous to health that is handled in such a fashion as to create an actual or potential hazard to the potable water system. The public water supply system shall be protected by an approved reduced pressure zone backflow preventor.

### **6.2 Type of Protection Required**

The following are the facilities and/or conditions under which backflow prevention devices will be required and the type of protection required for each.

An air-gap separation offers the highest level of protection and is the preferred method of backflow protection. When air-gap separation is not possible, backflow prevention devices shall be installed according to the following requirements:

#### ***6.2.1 Commercial, Industrial, and Multi-family***

Reduced pressure zone backflow preventors shall be required on all commercial, industrial, and multi-family developments.

#### ***6.2.2 Private Potable Water System***

Double detector check assembly backflow preventors shall be required at the point of entry to private potable water systems.

#### ***6.2.3 Fire Lines***

Reduced pressure zone detector assemblies shall be required on all fire lines using

chemical injection. Double detector check assemblies will be allowed, in place of reduced pressure zone detector assemblies, on fire lines that do not use chemical injection. Fire lines shall be isolate from the potable system at the property line.

#### ***6.2.4 Residential Irrigation Lines***

The potable water supply to lawn irrigation systems shall be protected against backflow by a pressure-type vacuum breaker or a reduced pressure principle backflow preventer. Where chemicals are introduced into the system, the potable water supply shall be protected against backflow by a reduced pressure principle backflow preventer.

#### ***6.2.5 Hazardous Material On-site***

Reduced pressure zone backflow preventors shall be required at the connection point to the public water supply system for all facilities which use or store hazardous materials on-site.

#### ***6.2.6 Reclaimed Water System***

Unless a greater level of backflow prevention is required, dual check assemblies shall be installed at all potable water and reclaimed water meters for single family residential sites with reclaimed water service.

### **6.3 Actual or Potential Cross-Connection**

Any uncontrolled cross-connections, either actual or potential, to the potable water system shall be protected by an approved reduced pressure zone backflow preventor at the service line connection.

### **6.4 Restricted Premises (Security)**

Any premises where security requirements or other prohibitions or restrictions exist and it is impossible or impractical to make a complete in-plant cross-connection survey, the potable water system shall be protected against backflow or backsiphonage by an approved backflow prevention device at the service line connection. In this case, maximum protection will be required. An approved reduced pressure zone backflow preventor shall be installed in each service to these premises.

### **6.5 Internal Protection**

This manual does not include specific provisions to provide internal protection for private water systems. Consumers should take additional steps to evaluate plumbing and check for internal cross-connections in order to further protect themselves. Refer to applicable standards for guidelines on the assessment of hazards and selection of assemblies for internal protection.

## **SECTION 7 – Reclaimed Water Installation Program**

### **Design Requirements**

The City of Clermont reclaimed water system is regulated by the FDEP Chapter 62-610 of the Florida Administrative Code (F.A.C.). Specific requirements affecting the design and construction of the reclaimed water system are as follows:

#### ***Cross-Connection Control***

Cross-connections between reclaimed water and potable water are specifically prohibited. (ref. 62-610.419 F.A.C.)

An approved backflow prevention device shall be installed on any potable water line serving property also served by reclaimed water.

#### ***Pipeline Separation Distances***

Maximum obtainable separation of reclaimed water lines and domestic water lines shall be practiced. A minimum horizontal separation of three feet (outside to outside) shall be maintained between reclaimed water lines and either potable water mains or sewage collection lines. (ref. 62-610.469 (7) F.A.C.)

Minimum vertical separations between reclaimed water lines, potable water lines and sewage lines shall be maintained in accordance with Chapter 62-604.400 F.A.C. and Chapter 62-555.314 F.A.C. At utility crossings between such pipes, the pipes shall be arranged in accordance with Chapter 62-604.400 F.A.C. and Chapter 62-555.314 F.A.C.

#### ***Setback Requirements***

All reclaimed water irrigation sites and transmission facilities must be a minimum of 75 feet from potable water supply wells that are existing or have been approved by the Department of Environmental Protection. No setback distances are required to any non-potable water supply wells. (ref. 62-610.471 F.A.C.)

#### ***Signage and Coding***

The public shall be notified of the use of reclaimed water. This shall be accomplished by the posting of advisory signs, notes on scorecards, or by other methods. Advisory signs shall include the text “Do not drink” in English and Spanish along with the equivalent standard international symbol. (ref. 62-610.468 F.A.C.)

All reclaimed water transmission lines shall be color coded and/or labeled to specifically identify said piping as reclaimed water lines. The color purple pantone shall be used in the color coding of reclaimed water piping.

### ***Use of Reclaimed Water***

The use of reclaimed water is regulated by Chapter 62-610 F.A.C. Reclaimed water to be used for purpose other than irrigation requires specific authorization by the Utility Director.

### ***Prohibited Uses of Reclaimed Water***

The regulations in Chapter 62-610 F.A.C. specifically prohibit the use of reclaimed water for filling swimming pools, hot tubs, or wading pools. In addition, reclaimed water lines are specifically prohibited from entering a dwelling unit or a building which contains a dwelling unit except for a specifically approved use. The use of reclaimed water for any purpose other than those allowed by Chapter 62-610 F.A.C. is prohibited.

There shall be no above ground hose bib connections to the reclaimed water system. All hose bib connections must be located in below grade, locked vaults that are clearly labeled as being non-potable.

Failure to comply with the regulations governing the use of reclaimed water shall be cause for the discontinuation of reclaimed water service, and other penalties as appropriate.

### **Testing and Inspection**

All applications for reclaimed water service must receive a site inspection prior to activation. All sites receiving reclaimed water must have an approved backflow prevention device on the incoming potable water supply line as reference in this manual. No reclaimed water service shall be activated without an approved backflow prevention device properly installed. All backflow prevention devices shall have certified inspections and operational tests as described in Section 8 of this manual.

## **SECTION 8 – Approval, Testing, and Repairs of Backflow Prevention Devices**

### **Approved Backflow Prevention Devices**

Any backflow prevention device required herein shall be of a manufacturer, model, and size approved by the Utility Director. The term, approved backflow prevention device, shall mean a device that has been manufactured in full conformance with the standards established by the American Water Works Association entitled: AWWA C511 Standards for Reduced Pressure Principle and AWWA C510 Double Check Valve Backflow Prevention Devices, or later adopted version.

Backflow prevention devices must have the laboratory and field performance specifications of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California, or other approved testing laboratory.

The listed backflow prevention devices that are recognized by the utility shall be in compliance with the standards set forth by the following agencies:

State of Florida Department of Environmental Protection – Rule Nos. 62-555.330 & 62-555.335

City of Clermont Code of Ordinances – Chapter 66 and 114

AWWA (American Water Works Association) – #C510 and C511

ASSE (American Society of Sanitary Engineers) – #1001, 1011, 1012, 1013, 1015, 1020, 1024, 1047 and 1048

University of Southern California, USC Foundation for Cross-Connection Control and Hydraulic Research Manual

SBCC/IPC (Southern Building Code Congress/International Plumbing Code)

ANSI (American National Standards Institute) – #DIN EN 1717 and DIN EN 12729

All devices will be tested for compliance with these standards as described below.

Sample standard drawings of some of the approved backflow prevention devices are included in Appendix A.

### **Testing of Backflow Prevention Devices**

It shall be the duty of the consumer at any premise where backflow prevention devices are installed to have certified inspections and operational tests made at least once per year. In those instances where the Utility Director deems the hazard to be exceptional, additional certified inspections may be required at more frequent intervals. Additionally, all new backflow prevention devices are to be tested directly upon installation. These inspections and tests shall be at the expense of the consumer and shall be performed by a certified tester, approved by the utilities department, using certified test gauges. A list of certified testers will be provided by the utilities department upon request.

It shall be the duty of the consumer to conform to scheduled testing. The customer shall notify the utilities department in writing at least 48 hours prior to the occurrence of tests of protective devices in order that the city may have a representative witness tests, if desired.

### **Repair of Backflow Prevention Devices**

If deficiencies are noted during the test, such devices shall be repaired, overhauled, or replaced at the expense of the consumer by a certified repairer approved by the Utility Director. Upon completion of any repairs, overhauls, or replacement of a device, an operational test shall be made before the system is put back into service. Record of such tests, repairs, and overhauls shall be maintained by the utilities department.

### **Records, Test and Repair Reports**

Copies of any written reports, summaries, or other communications relating to this cross-connection control program or sanitary surveys of the system conducted by the system itself, by a private consultant, or by any local, State or Federal agency, shall be maintained by the utilities department for a period of not less than ten (10) years. (Ref: F.A.C. Chapter 62-550.720 (3))

## **SECTION 9 – Installation Requirements for Backflow Prevention Devices**

All backflow prevention devices will be installed in strict accordance with the manufacturer's installation instructions and the following guidelines. In addition, all installations shall conform to the following minimum requirements:

### **Location and Access**

Backflow prevention devices shall be installed on the discharge side of the meter or as close as possible to the point of connection with the public potable water system. For the purpose of testing, repair and maintenance, access to all backflow prevention devices shall be unobstructed.

### **Support**

The device shall be adequately supported to prevent the assembly from sagging.

### **Flushing**

Pipe lines shall be thoroughly flushed to remove foreign material and debris before installing the device.

### **Parallel Backflow Device**

If continuous flow is required during backflow device servicing or testing, then two backflow devices connected in parallel will be required.

### **Reduced Pressure Zone Backflow Preventor**

All reduced pressure zone backflow preventor installations shall meet the following requirements:

- Device shall be installed a minimum of 1 foot above the ground or the maximum flood level, whichever is highest. Device may not be buried.

- Device shall be installed in the horizontal position unless otherwise recommended by the manufacturer and approved by the Utility Director.

- No galvanized pipe or fittings are allowed.

### **Reduced Pressure Zone Detector Assembly**

All reduced pressure zone detector assembly installations shall meet the following requirements:

- Device shall be installed a minimum of 1 foot above the ground or the maximum flood level, whichever is highest. Device may not be buried.

Device shall be installed in the horizontal position unless otherwise recommended by the manufacturer and approved by the Utility Director.

No galvanized pipe or fittings are allowed.

### **Double Detector Check Assembly**

All double detector check assembly installations shall meet the following requirements:

Device shall be installed a minimum of 1 foot above the ground or the maximum flood level, whichever is highest.

Device shall be installed in the horizontal position unless otherwise recommended by the manufacturer and approved by the Utility Director.

No galvanized pipe or fittings are allowed.

### **Pressure Vacuum Breaker Assembly**

All pressure vacuum breaker assembly installations shall meet the following requirements:

Assembly shall be install a minimum of 1 foot and a maximum of 5 feet above the highest piping outlet.

Assembly shall not be subjected to backpressure.

No galvanized pipe or fittings are allowed.

### **Double Check Assembly**

All double check assembly installations shall meet the following requirements:

Standard Installation:

Device shall be installed a minimum of 1 foot above the ground or the maximum flood level, whichever is highest.

Device must not be locked up or behind a fence.

Device shall be installed in the horizontal position unless otherwise recommended by the manufacturer and approved by the Utility Director.

No galvanized pipe or fittings are allowed.

Meter Box Installation (Residential only):

Test cocks must face up.

Information shall be readable (size, type, model #, serial #)

Shut off valves shall be in a workable position.

Device shall be testable and accessible in meter box.

Device shall be installed in the horizontal position unless otherwise recommended by the manufacturer and approved by the Utility Director.

## **Dual Check Assembly**

All dual check assembly installations shall meet the following requirements:

This device is applicable only on low hazard, domestic installations.

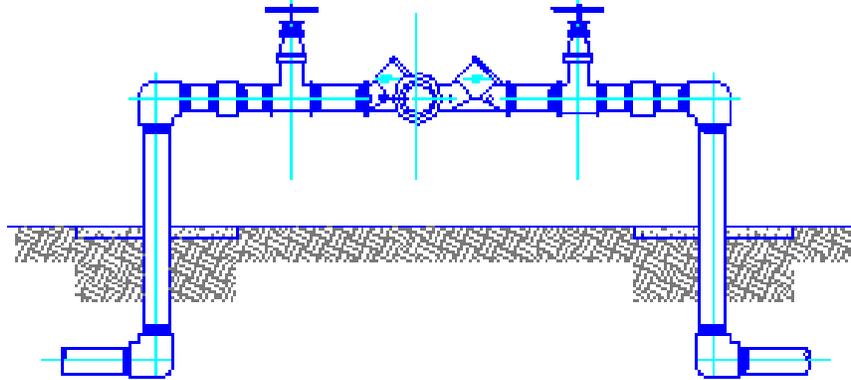
Device must be installed at least 2-inches above grade in meter box.

Device must have union type fitting on discharge side of meter.

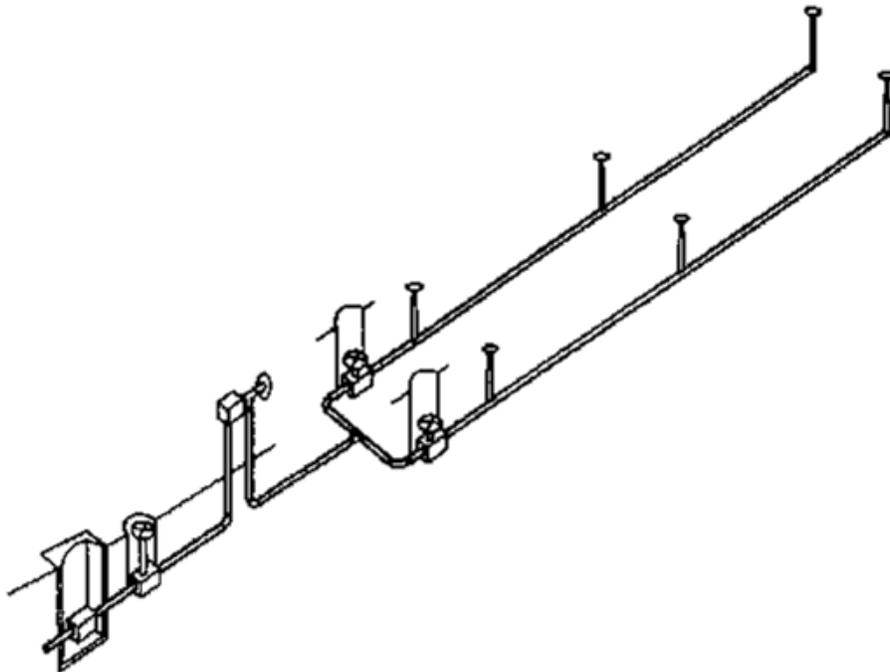
## Appendix A

### Backflow Prevention Device Standard Drawings

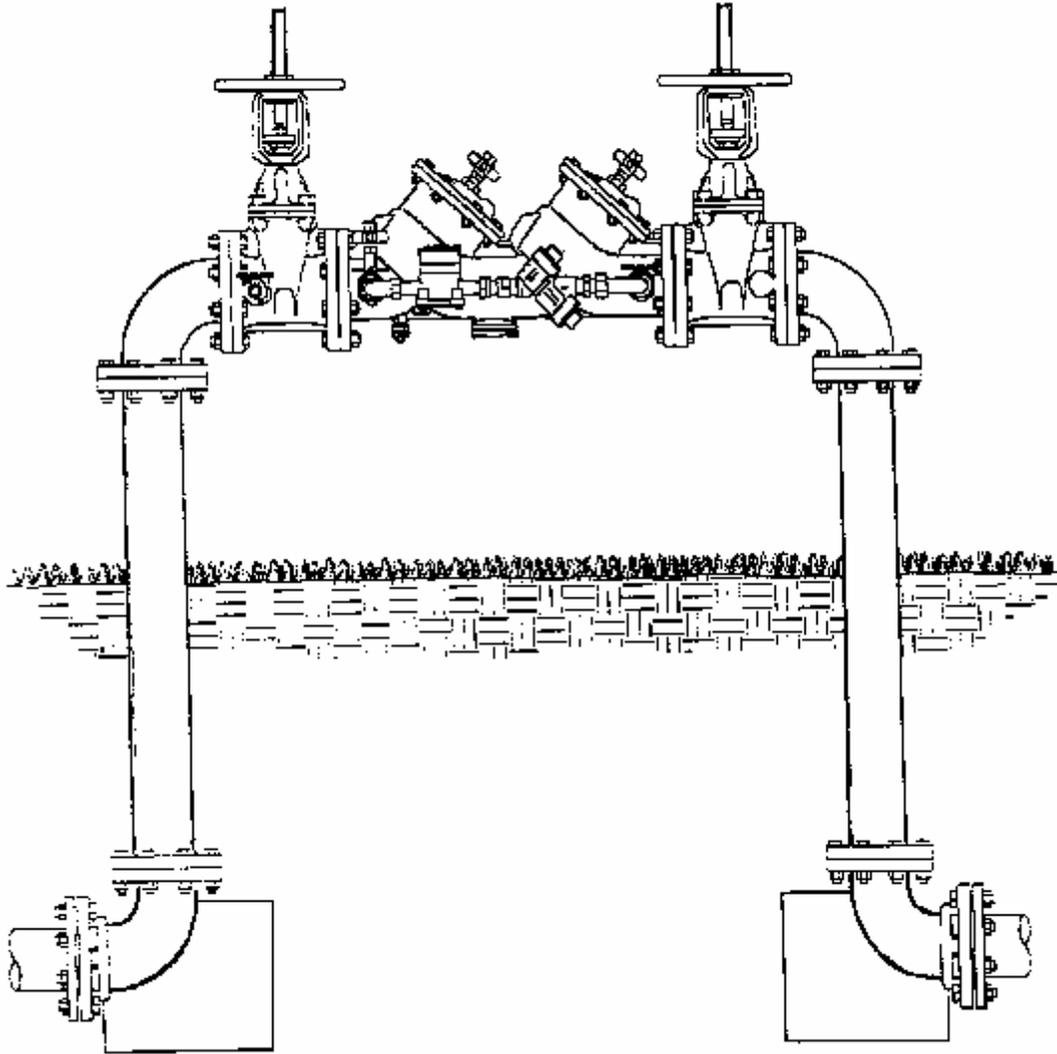
## Reduced Pressure Zone Backflow Preventor



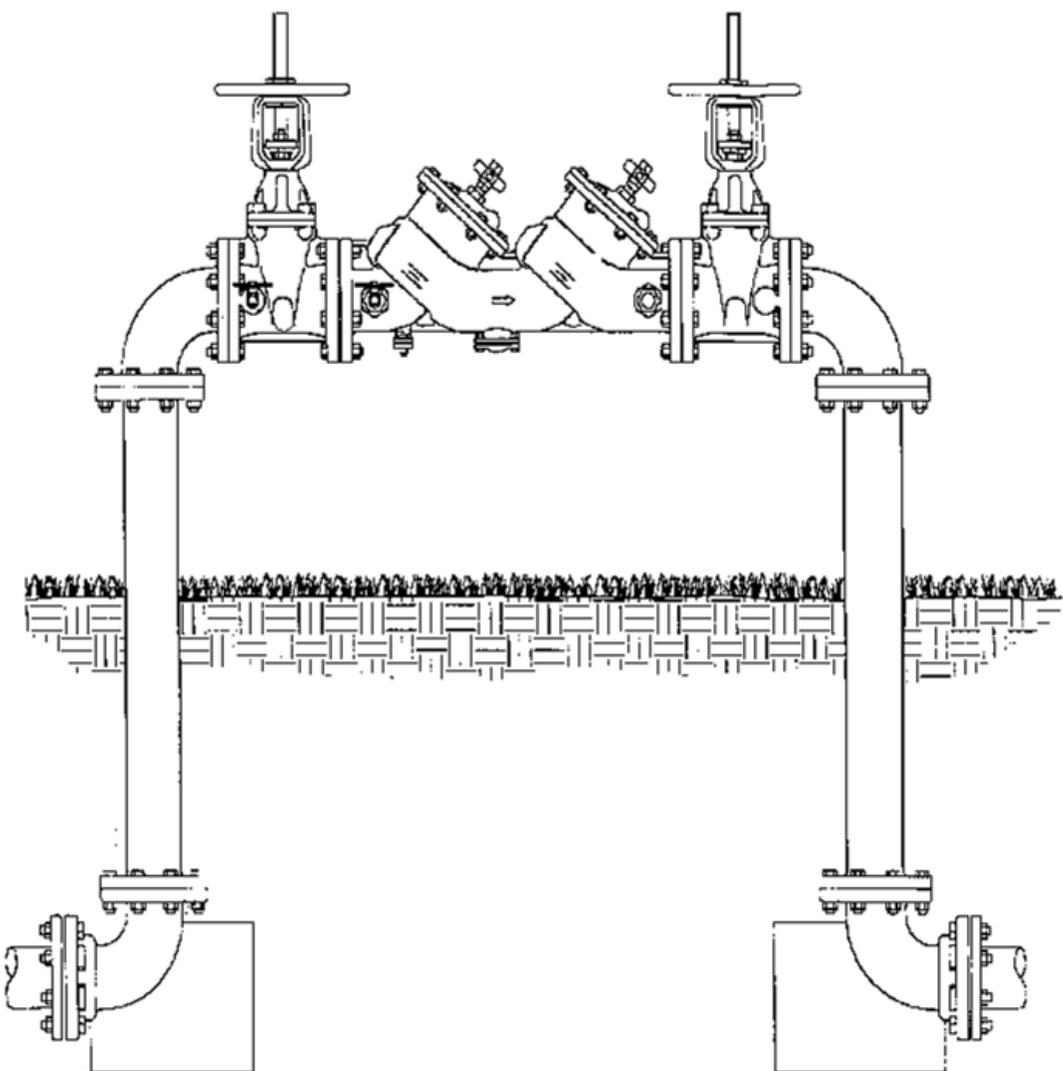
## Pressure Vacuum Breaker Assembly



# Double Detector Check Assembly



# Double Check Assembly



# Appendix B

## Forms

**CITY OF CLERMONT    DATE \_\_\_\_\_**  
**TEST AND MAINTENANCE REPORT**

Customer \_\_\_\_\_

Street Address \_\_\_\_\_

Location of Assembly \_\_\_\_\_

Type of Assembly:    R.P.Z     D.C.     P.V.B.

Size: \_\_\_\_\_    Manufacturer: \_\_\_\_\_

MODEL \_\_\_\_\_    SER.# \_\_\_\_\_    TEST GAUGE: \_\_\_\_\_

GAUGE SER.# \_\_\_\_\_

<b>CHECK VALVE # 1</b>	<b>CHECK VALVE # 2</b>	<b>PRESSURE DIFFERENTIAL PRESSURE RELIEF</b>	<b>PRESSURE VACUUM BREAKER</b>
LEAKED <input type="checkbox"/> CLOSED TIGHT <input type="checkbox"/> DIFFERENTIAL ACROSS ZONE _____	LEAKED <input type="checkbox"/> CLOSED TIGHT <input type="checkbox"/> DIFFERENTIAL ACROSS ZONE _____	OPENED AT _____ P.S.I. DID NOT OPEN <input type="checkbox"/>	AIR INLET OPENED _____ DID NOT OPEN <input type="checkbox"/>
CLEANED ONLY <input type="checkbox"/> COMPLETE REBUILD <input type="checkbox"/> REPLACED : DISK <input type="checkbox"/> SPRING <input type="checkbox"/> SEAT <input type="checkbox"/> STEM GUIDE <input type="checkbox"/> O-RING <input type="checkbox"/> OTHER: _____ _____ _____ _____ _____	CLEANED ONLY <input type="checkbox"/> COMPLETE REBUILD <input type="checkbox"/> REPLACED : DISK <input type="checkbox"/> SPRING <input type="checkbox"/> SEAT <input type="checkbox"/> STEM GUIDE <input type="checkbox"/> O-RING <input type="checkbox"/> OTHER: _____ _____ _____ _____ _____	CLEANED ONLY <input type="checkbox"/> COMPLETE REBUILD <input type="checkbox"/> REPLACED : DISK <input type="checkbox"/> SPRING <input type="checkbox"/> SEAT <input type="checkbox"/> STEM GUIDE <input type="checkbox"/> O-RING <input type="checkbox"/> OTHER: _____ _____ _____ _____ _____	CHECK VALVE HELD AT _____ p.s.i. CLEANED ONLY <input type="checkbox"/> REPLACED: INLET DISC <input type="checkbox"/> C.V. ASSEMBLY <input type="checkbox"/> C.V. DISC <input type="checkbox"/> O-RINGS <input type="checkbox"/> SPRING <input type="checkbox"/> GUIDE <input type="checkbox"/> OTHER: _____ _____ _____
FINAL DIFFERENTIAL READING ACROSS FIRST CHECK _____	FINAL DIFFERENTIAL READING ACROSS SECOND CHECK _____	FINAL DIFFERENTIAL READING AT RELIEF OPENING _____	OPENED <input type="checkbox"/> CHECK HELD AT _____ P.S.I

Notes:

I HEREBY CERTIFY THAT THIS DATA IS ACCURATE AND REFLECTS THE PROPER OPERATION AND MAINTENANCE OF THIS ASSEMBLY.

**TESTER** \_\_\_\_\_ **CERTIFICATION#** \_\_\_\_\_

# City of Clermont

## Irrigation Permit

Florida Statutes (FAC 62-555.360) and City of Clermont Code (Article IV, Sec. 106) require that an approved backflow prevention device be installed on the irrigation system service line. This backflow device provides reasonable protection of the public drinking water supply from possible contamination due to backpressure or backsiphonage.

Attached are the City approved backflow devices. These devices shall be installed according to the attached installation requirements and manufacturer's specifications.

Florida Statutes (FAC 7-373.62) also requires installation of a rain sensor device for automatic lawn sprinkler systems installed after May 1, 1991. Attached is an informational sheet detailing rain sensor requirements.

Site Address: \_\_\_\_\_

Owner's Name & Address: \_\_\_\_\_

Builder's Name & Address: \_\_\_\_\_

Date of Inspection: \_\_\_\_\_ Approved \_\_\_\_\_ Not Approved \_\_\_\_\_

Device Type : \_\_\_\_\_ Size: \_\_\_\_\_

Model: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Remarks: \_\_\_\_\_

Permit Issued By: \_\_\_\_\_

Inspection Approved By: \_\_\_\_\_

No. \_\_\_\_\_

Date \_\_\_\_\_

# Rain Sensors

Section 7. Section 373.62, Florida Statutes, cites:

Water conservation; automatic sprinkler systems. - - Any person who purchases and installs an automatic lawn sprinkler system after the effective date of this act (May 1, 1991) shall install a rain sensor device or switch which will override the irrigation cycle of the sprinkler system when adequate rainfall has occurred.

Key words or phrases:

Automatic lawn sprinkler system – This rule applies to automatic sprinkler systems for homes, schools, government buildings and commercial/industrial sites that are irrigating turf grass. It does not apply to golf courses or sod farms or nurseries.

Rain sensor device or switch – A low voltage electrical component placed in the circuitry which is designed to turn off a sprinkler controller when it rains enough to meet the needs of the landscape. There are two types:

Soil moisture sensor – Senses the moisture content of the soil via probes inserted in the root zone.

Rain switch – Measures the rainfall via a cup similar to a small evaporative pan or via a wick, which expands and in turn switches off the sprinkler system.

When adequate rainfall has occurred – The amount of supplemental irrigation required beyond rainfall will vary depending on the type of turf grown, the type of soil, and the climatic condition specific to the area. Professional irrigation suppliers, Agricultural extension offices, IFAS, and the District Water Use staff in Resource Management can help individuals determine how much supplemental irrigation their turf grass and shrubs need and how to set their rain sensor or switch accordingly.

**Contact St. Johns River Water Management District at 1-800-451-7106 with any questions.**