

**CROSS-CONNECTION
CONTROL AND BACKFLOW
PREVENTION PROGRAM**



**THE ISLAND WATER ASSOCIATION, INC.
SANIBEL, FLORIDA**

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CROSS CONNECTION CONTROL & BACKFLOW PREVENTION PROGRAM **THE ISLAND WATER ASSOCIATION, INC., SANIBEL ISLAND, FLORIDA**

INTRODUCTION

The cross-connection control program of The Island Water Association, Inc. (IWA) was established in 1982 and is an ongoing program. All IWA supervisory and operating personnel who work in relevant areas are aware of the need to prevent cross-connections and to prevent backflow into our potable water system. We do maintain an up-to-date literature base on the subject, including American Water Works Association (AWWA) manual M14 (Second Edition), "Recommended Practice for Backflow Prevention and Cross-Connection Control." We are in continuing contact with suppliers of backflow prevention equipment to ensure that we are aware of the latest developments in the field. IWA personnel have attended training courses on the subject at the University of Florida, sponsored by AWWA. All Distribution Department personnel have received this training.

SECTION 1 -- CROSS-CONNECTION CONTROL - GENERAL POLICY

1.1 Purpose

The purpose of this policy is:

- 1.1.1 To protect the public potable water supply of The Island Water Association from the possibility of contamination or pollution by isolating within the customer's internal distribution system(s) or the customer's private water system(s) such contaminants or pollutants that could backflow into the public water system; and
- 1.1.2 To promote the elimination or control of existing cross-connections, actual or potential, between the customer's in-plant potable water system(s) and non-potable water systems, plumbing fixtures and industrial piping systems; and
- 1.1.3 To provide for the maintenance of a continuing program of cross-connection control that will systematically and effectively prevent the contamination or pollution of all potable water systems.

1.2 Responsibility

The Island Water Association, Inc. shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow of contaminants or pollutants through the water service connection. If an approved backflow-prevention assembly is required (at the customer's water service connection or within the customer's private water system) for the safety of the water system, the customer shall be given notice in writing to install such an approved backflow prevention assembly(s) at specific location(s) on his/her premises. The customer shall immediately install such approved assembly(s) at his/her own expense, and failure, refusal or inability on the part of the customer to install, have tested and maintain said assembly(s) shall constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met. The customer shall at the same time be notified of the possible hazards due to thermal expansion.

SECTION 2 – DEFINITIONS

2.1 Water Commissioner or Health Official

The Island Water Association, the sole purveyor of water to Sanibel and Captiva, has the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this ordinance.

2.2 Approved

Accepted by the authority responsible as meeting an applicable specification stated or cited in his ordinance or as suitable for the proposed use.

2.3 Auxiliary Water Supply

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

2.4 Backflow

The undesirable reversal of flow in a potable water distribution system as a result of a cross-connection.

2.5 Backflow Preventer

An assembly or means designed to prevent backflow.

- 2.7.1 **Air gap (AG).** The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor or other assembly and the flood level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet and never less than 1 inch.
- 2.7.2 **Reduced-Pressure Backflow-Prevention Assembly (RP):** The approved reduced-pressure principle backflow-prevention assembly consists of two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between two tightly closing resilient-seated shutoff valves as an assembly and equipped with properly located resilient-seated test cocks.
- 2.7.3 **Double Check Valve Assembly (DC):** The approved double check valve assembly consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shutoff valves and fittings with properly located resilient-seated test cocks. This assembly shall only be used to protect against a non-health hazard (that is, a pollutant).
- 2.7.4 **Double Check-Detector Backflow Prevention Assembly (DCDA):** The term double-check detector backflow prevention assembly shall mean a specially designed assembly composed of a line-size approved double check valve assembly with a bypass containing a water meter and an approved double check valve assembly. The meter shall register accurately for only very low rates of flow up to 3 gpm (gallons per minute). (See Specifications, Section 10, for additional details.) This assembly shall only be used to protect against a non-health hazard (i.e. pollutant). The DCDA is primarily used on fire sprinkler systems.

2.6 Backpressure

A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler or any other means that may cause backflow.

2.7 Backsiphonage

Backflow caused by negative or reduced pressure in the supply piping.

2.8 Contamination

An impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a health hazard.

2.9 Cross-Connection

A connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that under any circumstances, would allow such substances to enter the potable water system. Other substances may be gasses, liquids or solids such as chemicals, waste products, steam, water from other sources (potable or

nonpotable), or any matter that may change the color or add odor to the water.

2.10 Cross-Connections -- Controlled

A connection between a potable water system and a nonpotable water system with an approved backflow prevention assembly properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

2.11 Cross-Connection Control by Containment

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

2.12 Hazard, Degree of

The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

- 2.12.1 **Hazard – Health:** A cross-connection or potential cross-connection involving any substance that could, if introduced in the potable water supply, cause death, illness, spread disease or have a high probability of causing such effects.
- 2.12.2 **Hazard – Plumbing:** A plumbing-type cross-connection in a consumer's potable water system that has not been properly protected by an approved air gap or an approved backflow prevention assembly.
- 2.12.3 **Hazard -- Non-health:** A cross-connection or potential cross-connection involving any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable if introduced into the potable water supply.
- 2.12.4 **Hazard – System:** An actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system or of a pollution or contamination that would have a protracted effect on the quality of the potable water in the system.

2.13 Industrial Fluids System

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

2.14 Multi-Family

Any dwelling or series of dwellings, consisting of more than one unit, served by a single meter. Multi-Family dwellings withan individual meter serving each unit are considered single family.

2.15 New Meter

All new buildings, including existing structures, which are demolished and rebuilt or completely remodeled. Any meter which is exchanged for a larger size meter will be considered "new construction" and will require a BFPD. When a new water main tap is made, water quality will be tested before connecting the new meter to the main, to ensure that it contains potable water.

2.16 Pollution

The presence of any foreign substance in water that tends to degrade its quality so as to constitute a nonhealth hazard or impair the usefulness of the water.

2.19 Service Connection

The terminal end of a service connection from the public potable water system, that is, where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or backflow-prevention assembly located at the point of delivery to the customer's water system. Service connection shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system.

2.17 Water -- Nonpotable

Water that is not safe for human consumption or that is of questionable quality.

2.18 Water -- Potable

Water that is safe for human consumption as described by the public health authority having jurisdiction.

2.20 Water -- Used

Any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.

SECTION 3 - REQUIREMENTS

3.1 Water System

- 3.1.1 The water system shall be considered as made up of two parts: the utility system and the customer system.
- 3.1.2 Utility system shall consist of the source facilities and the distribution system and shall include all those facilities of the water system under the complete control of the utility, up to the point where the customer's system begins.
- 3.1.3 The source shall include all components of the facilities utilized in the production, treatment, storage and delivery of water to the distribution system.
- 3.1.4 The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system.
- 3.1.5 The customer's system shall include those parts of the facilities beyond the termination of the utility distribution system that are utilized in conveying utility-delivered domestic water to points of use.

3.2 Policy

- 3.2.1 No water service connection to any premises, except those as indicated in section 3.3, shall be installed or maintained by the water purveyor unless the water supply is protected as required by state/provincial laws and regulations and this Cross Connection Control & Backflow Prevention Program. Service of water to any premises shall be discontinued by the water purveyor if a backflow-prevention assembly required by this Cross Connection Control & Backflow Prevention Program is not installed, tested and maintained, or if it is found that a backflow-prevention assembly has been removed, bypassed or if an unprotected cross-connection exists on the premises. Service will not be restored until such conditions or defects are corrected.
- 3.2.2 The customer's system should be open for inspection at all reasonable times to authorized representatives of The Island Water Association to determine whether cross-connections or other structural or sanitary hazards, including violations of

these regulations, exist. When such a condition becomes known, the Association shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the condition(s) in conformance with state/provincial and city statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto.

- 3.2.3 An approved backflow-prevention assembly shall be installed on each service line to a customer's water system at or near the property line being served; but in all cases, before the first branch line leading off the service line wherever the following conditions exist:
 - 3.2.3a. In the case of premises having an auxiliary water supply or sewer lift station that is not or may not be of safe bacteriological or chemical quality, the public water system shall be protected against backflow from the premises by installing an approved backflow-prevention assembly in the service line, appropriate to the degree of hazard.
 - 3.2.3b In the case of premises on which 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 system shall be protected against backflow from the premises by installing an approved backflow-prevention assembly in the service line, appropriate to the degree of hazard. This shall include the handling of process waters and waters originating from the utility system that have been subject to deterioration in quality.
 - 3.2.3c In the case of premises having (1) internal cross-connections that cannot be permanently corrected and controlled or (2) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-connections exist, the public water system shall be protected against backflow from the premises by installing an approved backflow-prevention assembly in the service line.
- 3.2.4 The type of protective assembly required under subsections 3.2.3a, 3.2.3b and 3.2.3c shall depend upon the degree of hazard that exists as follows:
 - 3.2.4a In the case of any premises where there is an auxiliary water supply as stated in subsection 3.2.3a of this section and it is not subject to any of the following rules, the public water system shall be protected by an approved air-gap separation or an approved reduced-pressure principle backflow-prevention assembly.
 - 3.2.4b In the case of any premises where there is water or substance that would be objectionable but not hazardous to health, if introduced into the public water system, the public water system shall be protected by an approved double check valve assembly.
 - 3.2.4c In case of any premises where there is any material dangerous to health that is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected by an approved air-gap separation or an approved reduced-pressure principle backflow-prevention assembly. Examples of premises where these conditions will exist are listed in Section 3.6.
 - 3.2.4d In the case of any premises where there are "uncontrolled" cross-connections, either actual or potential, the public water system shall be protected by an approved air-gap separation or an approved reduced-pressure principle backflow-prevention assembly on each service to the premises.
 - 3.2.4e In the case of any premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete in-plant cross-connection survey, the public water system shall be protected against backflow from the premises by either an approved air-gap separation or an approved reduced-pressure principle backflow prevention assembly on each service to the premises.
 - 3.2.4f In the case of any premises where, in the opinion of the Association's

representatives, an undue health threat is posed because of the presence of extremely toxic substances, an approved backflow prevention assembly may be required at the service connection to protect the public water system. This requirement is dependent on the degree of hazard.

- 3.2.5 Any backflow-prevention assembly required herein shall be a model and size approved by the General Manager. The term approved backflow-prevention assembly shall mean an assembly that has been manufactured in full conformance with the standards established by the American Water Works Association titled:

*AWWA C510-97 Standard for Double Check Valve Backflow Prevention Assembly, and
AWWA C511-97 Standard for Reduced-Pressure Principle Backflow-Prevention Assembly,*

and have met completely the laboratory and field performance specifications of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California established by "Specification of Backflow-Prevention Assemblies" -- Sec. 10 of the most current issue of the *Manual of Cross-Connection Control*.

- 3.2.6 The member will be responsible for the installation of all devices.
 3.2.7 All backflow devices shall be installed by a licensed plumber in accordance with manufacturer's instructions and any additional instructions approved by The Island Water Association, Inc. **The member is also responsible for notifying IWA when the device is installed.**
 3.2.8 All new backflow prevention devices shall be tested and certified by IWA initially. Single family residences without known hazards will be tested every 3 years, all others will be tested every 2 years. IWA will be responsible for all record keeping.
 3.2.9 All maintenance and repairs shall be done by a licensed plumber and are the responsibility of the member. Re-testing and certification will be done by IWA.

3.3 Requirements and Testing Frequency

	Type Required	Testing Frequency
New Construction (post 1997)	RP	3 years for new residential 2 years for all others
Meter Upgrade	RP	3 years
Multi-Family	RP	2 years
Non-Residential	RP	2 Years
Residential with Hazard	RP	2 Years
Residential – Pre 1997 - No Hazard*	Not Required	Not Required
Residential - Post 1997 – No Hazard	RP	3 Years
Separately Metered Fire Sprinkler**	DCDA	2 Years

* Existing single family residences, without hazard, do not require a backflow device, however, they will be surveyed periodically and they will require a device if a hazard is found. In such instances, the member will be given 90 days to install the device.

** Existing fire sprinkler systems do not require a backflow prevention device.

3.4 Thermal Expansion

All customers who have a backflow prevention device installed on their system shall be notified of the possible hazards due to thermal expansion. An example of this notification is:

WARNING

BACKFLOW ASSEMBLIES INSTALLED ON MEMBER'S SERVICE LINES WITH WATER HEATERS MAY CAUSE EXCESSIVE PRESSURE INCREASES IN YOUR WATER HEATER AND PLUMBING SYSTEM DUE TO THERMAL EXPANSION. THIS PROBLEM HAS BEEN ADDRESSED BY THE SOUTHERN STANDARD PLUMBING CODE TABLE (613.2 THERMAL EXPANSION CONTROL) AND SHOULD BE NOTED BY YOUR PLUMBER:

SECTION 4 - EXEMPTIONS

4.1 Private Wells

The following procedure shall be used if a member requests an exemption for a well as an auxiliary source of water:

- 4.1.1 The member must completely remove the pump (submersible or above ground) and all associated above ground piping and wiring.
- 4.1.2 The member must schedule an inspection of the well by IWA.
- 4.1.3 If the inspector determines that the well is shallow, the member will not be required to install a backflow device, provided that the pump is removed and the well remains capped and not used.
- 4.1.4 If the inspector determines that the well is deep, the member will not be required to install a backflow device, provided the member signs an agreement allowing IWA to plug the well. IWA may at some time in the future plug these deep wells, however, there is no commitment to do so at this time. The member must also remove the pump and cap the well.

4.2 Other Auxiliary Water Sources

The following procedure shall be used if a member requests an exemption for a lake or river as an auxiliary source of water:

- 4.2.1 The member must completely remove the pump and all associated above ground piping and wiring.
- 4.2.2 The member must schedule an inspection of the property by an IWA inspector.
- 4.2.3 If the inspector confirms that the pump and all associated above ground piping and wiring are removed, the member will not be required to install a backflow device.