



WATER DEPARTMENT  
STANDARD SPECIFICATIONS

SECTION 301  
CROSS CONNECTION POLICY

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## **1.0 Introduction**

The Utilities Board of The City of Foley, hereinafter referred to as Riviera Utilities, the supplier of water in The City of Foley and other rural areas adjoining the city is required by The Alabama Department of Environmental Management (ADEM) to implement a Cross-Connection Policy. The objective of this policy is to protect Riviera's water supplies and water consumers against contamination resulting from back flow of objectionable fluids.

For this to occur, two conditions must be present:

- a. A link must exist between Riviera's potable and the non-potable system.
- b. The resultant flow produced must be directed toward Riviera's potable water system.

Riviera Utilities has the primary responsibility to prevent water from unapproved sources or any other contaminated water from entering its distribution system. This protection will be provided at the service connection by Riviera on all standard residential services and by the consumer on all others.

## **2.0 Authority**

Riviera's authority to implement this program is set forth under ADEM's Regulation

Governing Public Water Supplies, Chapter 335-7-9, all inclusive, which states in part that "A public water system shall be designed, installed, maintained, and operated in such a manner as to prevent contamination from being introduced through any connection to the system".

The responsibility of enforcing this cross-connection policy prior to construction, making inspections during construction, and approval of a device after installation belongs to Riviera Utilities. Implementation of this policy will be made using accepted practices of the American Water Works Association guidelines as set forth in the AWWA Manual M14 "Backflow Prevention and Cross-Connection Control", current edition.

## **3.0 Reviews**

To determine the degree of protection required in any new premises, excluding residences that will be served by a standard residential service, a preliminary blueprint review shall be made prior to construction. The purpose of this review is to eliminate any potential hazards which may be present. Any hazards found will require plan revisions and a final review prior to installation.

After the installation of the approved backflow prevention device(s) has been made, the consumer shall ensure that the device(s) is/are in proper working order. Initial operation after installation must be witnessed by Riviera personnel.

#### **4.0 Responsibilities**

The consumer's responsibility begins at the point of delivery from Riviera's potable water supply system and shall include all of the consumer's piping and related equipment. When required, the consumer shall at his expense install, operate, test, and maintain all approved backflow preventive devices, as directed by Riviera Utilities. This shall include, but is not limited to, maintaining accurate records of all tests and repairs made to the devices. The consumer shall also provide Riviera Utilities with copies of such records. These records must be approved by Riviera.

#### **5.0 Contamination**

In the event an accident occurs, or contamination is suspected in the consumer's or Riviera's water system, the consumer shall promptly take action to confine further spread of contamination on his property, and shall immediately notify Riviera of the contaminated condition.

#### **6.0 Definitions**

**ADEM** - The Alabama Department of Environmental Management.

**Riviera Utilities** - The Utilities Board of The City of Foley also doing business as Riviera Utilities.

**Air Gap Separation** - The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the receptacle. An "approved air gas separation" shall be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel - in no case shall the gap be less than 1 inch.

**Approved** - The term "approved" as herein used in reference to a water supply system or backflow prevention device (or method) shall mean one that has been approved by Riviera Utilities.

**Auxiliary Supply** - Any water source or system, other than the public water supply, that may be available in the building or premises.

**Backflow** - The flow of any foreign liquids, gases, or substances into the distributing pipe lines of a potable supply water. Backflow may occur under two conditions; pressure greater than atmospheric (see "Back Pressure", below), and pressure that is subatmospheric (see "Back Siphonage", below).

**Backflow Prevention Device, Approved** - A device that has been investigated and approved by Riviera Utilities.

**Backflow Prevention Device, Type** - Any effective device, methods, or type of construction used to prevent backflow into a potable-water system.

**Backflow Prevention Device Tester, Certified** - A person who is qualified to test backflow prevention devices and has proven his competency to the satisfaction of Riviera Utilities.

**Back Pressure** - Backflow caused by a pump, elevated tank, boiler, or other means that could create pressure within the system greater than the supply pressure.

**Back Siphonage** - A form of backflow due to a negative or subatmospheric pressure within a water system.

**Check Valve, Approved** - This term, as used in cross-connection control, means a check valve of substantial construction and suitable materials that is positive in closing and permits no leakage in a direction reverse to the normal flow.

**Consumer** - The owner or operator of a private potable-water system served by public potable-water system.

**Contamination** - (See "Pollution").

**Cross-Connection** - Any connection or structural arrangement between a public or a consumer's potable-water system and any non-potable source or system through which backflow can occur (see "Backflow", above). (Bypass arrangements, jumper connections, removable sections, swivel or change-over devices, and other temporary devices through which, or because of which, backflow can occur are considered to be cross connections).

**Cross-Connection, Point Of** - The specific point or location in a public or a consumer's potable-water system where a cross-connection exists.

**Double Check Valve Assembly, Approved** - An assembly composed of two single, independently acting, "approved check valves", including tightly closing shutoff valves located at each end of the assembly and suitable connection for testing the water tightness of each check valve.

**Hazard, Degree Of** - Expresses the results of an evaluation of a health, system, or plumbing hazard.

**Hazard, Health** - Any condition, device, or practice in a water supply system and its operation that creates, or may create a danger to the health and well-being of a consumer.

**Hazard, Plumbing** - A cross-connection in a consumer's potable-water system that may permit back siphonage in the supply line. (Unprotected plumbing-type cross-connections are considered to be health hazards. They include, but are not limited to, faulty connections to fixtures such as toilets, sinks, tubs, lavatories, wash trays, and domestic washing machines).

**Hazard, System** - A threat to the physical properties of the public or the consumer's potable-water system or of a material not dangerous to health but aesthetically objectionable that would have a degrading effect on the quality of the potable water in the system.

**Industrial Fluids** - Any fluid or solution that may chemically, biologically, or physically degrade the approved water supply.

**Industrial Line** - A separate water piping system serving water-using devices, with a backflow preventer or air gap separation on this line at the point of takeoff from the potable-water line.

**Industrial Piping System, Consumers** - A system used by a consumer for transmission or storage of anything (fluid, solid, or gas) other than the water supply intended or used for human consumption or food processing. (Such a system would include all pipes, conduits, tanks, receptacles, fixtures, equipment, and appurtenances used to produce, convey, or store substances that are or may be polluted).

**Laboratory, Approved Testing** - A laboratory that is approved by Riviera Utilities and is properly staffed and equipped with pumps, meters, measuring devices, and other equipment to test and evaluate fully a backflow prevention device for design, materials, construction, and operation. (Approval of the laboratory may be left to the water purveyor at the discretion of the health agency).

**Non-potable Water** - Water not safe for drinking, personal, or culinary use.

**Point of Delivery** - (See "Service Connections", below).

**Pollution** - The presence in water of any foreign substance (organic, inorganic, radiologic, or biologic) that tends to degrade its quality so as to constitute a hazard or to impair its potability or usefulness.

**Potable Water** - Water that is safe for drinking, personal, or culinary use.

**Reduced-Pressure-Principal Backflow Prevention Device** - A device containing a minimum of two independently acting, approved check valves, together with an automatically-operated pressure differential relief valve located between the two check valves. During normal flow and at the cessation of normal flow, the pressure between these two check valves shall be less than the upstream (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 check valves at less than the supply pressure. The unit must include tightly closing shut-off valves located at each end of the device, and each device shall be fitted with properly located test cocks.

**Service Connection** - The terminal end of a service 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 consumer's water system. If a meter is installed at the end of the service connection, then the service connection means the downstream end of the meter.

**Standard Service** - Any service which incorporates a water meter of size less than one (1) inch and having safe maximum operating capacity of 20 or less gallons per minute flow capacity as set forth in AWWA Standards, Section C-700-77 as approved on May 8, 1977 or subsequent revisions thereto.

**Water Delivered (Delivered Water)** - Any water supplied from Riviera's potable-water system to a consumer's water system after it has passed the point of delivery and is no longer under the sanitary control of the water purveyor.

**Water Supply, Approved** - Any public or consumer's potable-water supply that has been investigated and approved by Riviera Utilities, or other governmental, regulatory authority.

**Water System, Consumer's** - Any water system, potable or non-potable, located on the consumer's premises, whether supplied by a public potable-water system or an auxiliary water supply.

**Water Supervisor** - The consumer or his deputy charged with the responsibility of maintaining a consumer's water system free from cross-connections and other sanitary defects. (A certified backflow prevention device tester should not act as a water supervisor unless he is a full-time employee of the consumer, having the day-to-day responsibility for

the installation and use of pipelines and equipment on the premises and for the avoidance of cross-connections).

## **7.0 Prohibited Connections**

The following is a partial list of premises that are considered a potential contaminate source unless adequately protected by an approved device.

- Aircraft and missile plants
- Automotive plants
- Beverage bottling plants
- Breweries
- Buildings (multi-story)
- Canneries, packing houses, and reduction plants
- Chemical plants
- Dairies and cold storage plants
- Fertilizer manufacturing plants
- Film laboratories
- Hospitals, medical buildings, mortuaries, morgues, sanitariums, and nursing homes
- Laundries and dye works
- Metal manufacturing, cleaning, plating, processing, and fabricating plants
- Motion picture studios
- Oil and gas production facilities
- Paper and paper production plants
- Plating plants
- Power plants
- Rubber plants
- Schools and colleges with laboratories
- Sewage treatment plants, and sewage and storm water pumping stations
- Water front facilities and industries
- Water treatment plants

## **8.0 Cross-connection Procedure**

### **A. Location**

An area will be designated by Riviera Utilities for the consumer to install his approved backflow preventive device. This area will generally be located directly behind the meter on the consumer's side. If this is not a practical location, it may be approved to be located further downstream, provided the piping required to reach this alternate location is either exposed or readily accessible for inspection.



**B. Approved Methods of Protection**

Methods of correction vary according to the degree of hazard present. This degree shall be determined by Riviera and will control the choice of device for eliminating it. Basically, there are four classes of backflow preventive devices consisting of the following:

- Air Gap Separators
- Vacuum Breakers
- Atmospheric
- Hose
- Pressure
- Reduced Pressure Principle Backflow Preventer
- Dual Check Valve with Testing Cocks

**C. Protection Required for Designated Facilities**

The following facilities will require an approved backflow prevention device of the type specified below. This list is presented as a guideline and is not intended to cover all facilities.

Abbreviations used are as follows:

A.G.	Air Gap Separation
D.C.V.A.	Double Check Valve Assembly
R.P.	Reduced Pressure Principal Backflow Preventer

**TYPE OF FACILITY****MINIMUM TYPE OF PROTECTION**

Breweries, Distilleries, Bottling Plants	D.C.V.A. or A.G.
Car Wash with Recycling System and/or Wax Educator	R.P.
Chemical Plants	R.P.
Dairies	D.C.V.A.
Dentist Office	R.P.
Fertilizer Plants	R.P.
Film Laboratory or Processing Plant	R.P.
Food or Beverage Plant	D.C.V.A.
Hospitals, Clinics, Medical Buildings	R.P. (Parallel)
Irrigation Systems	D.C.V.A.
Laboratories	R.P.
Laundries & Dry Cleaning Plants	D.C.V.A.
Machine Tool Plants (Health or System Hazard)	R.P.
Machine Tool Plants (Pollution Hazard)	D.C.V.A.
Metal Processing Plant (Health or System Hazard)	R.P.
Metal Processing Plant (Pollution Hazard)	D.C.V.A.
Metal Plating Plant	R.P.
Morgues or Mortuaries	R.P.
Nursing Homes	R.P.
Packing Houses or Rendering Plants	R.P.
Paper Products Plant	R.P.
Pesticides (Exterminating Companies)	A.G. or R.P.
Petroleum Processing Plant	R.P.
Petroleum Storage Yard (Health or System Hazard)	R.P.
Petroleum Storage Yard (Pollution Hazard)	D.C.V.A.
Pharmaceutical or Cosmetic Plant	R.P.
Piers, Docks or Waterfront Facilities	R.P.
Power Plants	R.P.
Radioactive Material Plants	R.P.
Restaurants, with Soap Eductors and/or Industrial Type Disposal	R.P.
Sand and Gravel Plants	D.C.V.A.
Schools and Laboratories	D.C.V.A.
Swimming Pools with Piped Fill Line	A.G. at pool
Sewage Treatment Plants	R.P.
Sewage Pumping Stations	R.P.
Tall Buildings over three stories	R.P.
Veterinary Establishments	R.P.

**NOTES:**1. Exterminating Companies

All tanks and spraying apparatus used in the pesticide field are required to use only designated-protected potable water fill locations. Use of other locations and private residences are prohibited. If this cannot be used, a reduced pressure backflow preventer must be installed. All of these filling locations and devices must be approved by Riviera Utilities.

2. Fire System

An approved backflow prevention device, preceded by a buried inline isolation valve with valve box located on the "supply side" of the backflow prevention device, shall be installed at the customer's expense on each main providing water to a customer's fire protection system at or near the property line. Prior approval from Riviera Utilities is required to locate a backflow prevention device other than at or near the property line. If the backflow prevention device cannot be located near the property line, the water main pipe from the point of connection to the public water supply to the backflow prevention device shall be ductile iron pipe.

For fire mains 3" diameter or larger, inline isolation valves shall be a resilient-seated ductile iron gate valve with a diameter equal in size to the backflow prevention device and shall conform to AWWA Standard C509, latest edition, with a minimum 250 psi pressure rating. The valve box assembly shall be screw-type cast iron with a lid labeled "WATER" meeting the standard specifications of Riviera Utilities, latest edition. Backflow prevention devices installed above ground shall be insulated or installed within a prefabricated insulated enclosure to prevent freezing without obstructing test cocks or relief valve vent openings. Prefabricated insulated enclosures shall have removable access panels for servicing and testing the backflow prevention device.

It is the customer's responsibility to ensure that the fire department connection (F.D.C.) is installed no more than the maximum distance allowed by the responding fire authority from an existing fire hydrant. Within the jurisdiction of the City of Foley Fire Department, this maximum distance is typically 100-150 feet. Furthermore, it is the customer's responsibility to review with and obtain approval from both Riviera Utilities and the responding fire authority for the pipe size/material, location, components, and general layout of all mains required to serve fire protection systems.

An approved backflow prevention device will be required on any fire protection system containing any of the following components. The six general classes of fire systems and the minimum protection required are listed below.

**MINIMUM TYPE OF PROTECTION**

<b>CLASS 1</b>	A closed automatic fire system without a pumper connection, i.e., a system having 20 heads or less	NONE
<b>CLASS 2</b>	A closed automatic fire system with pumper connection	DCVA
<b>CLASS 3</b>	A closed automatic fire system with pumper connection and an auxiliary water supply on or available to the premises; or an auxiliary water supply which may be located within 1700 feet of the pumper connection	RP
<b>CLASS 4</b>	A closed automatic fire system with a closed pressure tank supply (this class may have a jockey pump interconnected with the domestic water supply and/or an air compressor connection)	RP
<b>CLASS 5</b>	A closed automatic sprinkler system interconnected with an auxiliary water supply	RP
<b>CLASS 6</b>	<p>Fire system used for the combined purposes of supplying the automatic sprinklers, hose lines, fire hydrants and standpipes, and of being used for industrial purposes</p> <p>(a) Self-draining Fire Hydrants on the premises presenting a health or system hazard (i.e. chemical plants, petroleum storage plants, bulk storage yards, stock yards, sewer plants, or similar facilities where ground seepage of toxic materials may occur.</p> <p>(b) Self-Draining Fire Hydrants on the premises presenting a pollution hazard (i.e. apartments, office complex, fabricating plants, or similar facilities where ground seepage of pollution (but not toxic material) may occur.</p>	RP

**D. Approved Backflow Prevention Devices**

This shall be a device which has met one or more of the following standards as subsequently supplemented, amended and/or revised:

AWWA-C-506	Standard for backflow prevention devices, reduced pressure principal and double check valve types.
ASSE-1001	Atmospheric type vacuum breakers.
ASSE-1011	Hose connection vacuum breakers.
ASSE-1020	Pressure type vacuum breakers.
ASSE-1024	Dual check type backflow preventer (Residential Use Only).
ASSE-1013	Reduced pressure principal back pressure backflow preventers.
ASSE-1015	Double check valve type back pressure backflow preventers.
USC-FCCC	University of Southern California Foundation for Cross-Connection control and Hydraulic Research.

**E. Protection for Continuous Service Installations**

Due to annual testing of all backflow prevention devices, the device must be shut down for a period of five to twenty minutes. This may require a consumer who requires a continuous flow of water to add a parallel device which can be used during testing, unless another protected metered service can be used. Riviera Utilities will not accept an unprotected bypass when the device is shut down for testing, repair, or replacement.

**NOTE:** Consumer premises which have multiple flushometer toilets should be equipped with parallel devices. If water is shut off to these, the flushometers may have to be manually reset.

**9.0 Inspections**

On any premises where double check valve assemblies (DCVA) or reduced pressure backflow prevention devices (RP) are installed, a thorough operational test and inspection shall be required at least once a year. Any device which is repeatedly found to leak shall be placed on a semi-annual or quarterly testing schedule. These inspections and tests shall be

at the expense of water consumer and performed by the device manufacturer's representative, by Riviera Utilities, or by a certified device technician.

Riviera will notify the consumer when tests are required and supply the necessary forms and instructions. These forms shall be completed and returned to Riviera Utilities by the date indicated.

**10. Violations**

A consumer's health hazard report listing any cross-connections found during an inspection of the premises will be sent to the consumer or authorized agent and to Riviera. This report shall state any hazard found, including its location, and will provide a reasonable period of time for compliance subject to concurrence by Riviera Utilities. Failure to remedy the cited cross-connection within the approved time period allotted shall constitute cause for Riviera to sever its connection to consumer's water system.