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# CROSS-CONNECTION CONTROL PROGRAM MANUAL

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CENTRAL ARKANSAS WATER  
CROSS-CONNECTION PROGRAM  
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# Central Arkansas Water

## Cross-Connection Control Program

### SECTION 1

#### GENERAL PROVISIONS

##### 1.0 GENERAL

This document sets forth “Central Arkansas Water's Cross-Connection Control Program” (the “Program”), and is adopted for the purpose of regulating cross connection hazards by the operating staff and management of Central Arkansas Water (“CAW”).

##### 1.1 INTRODUCTION

This program prohibits uncontrolled and **potential** Cross-Connections within the water distribution system of CAW (the “Water System”) and authorizes Central Arkansas Water to make inspections of the consumers’ property, requires that Cross-Connection hazards be corrected or controlled, and provides for enforcement.

##### 1.1.1 PROVISIONS

The provisions contained within this program are in keeping with the following:

- A. Arkansas Department of Health's Minimum Standards for a Cross-Connection Control Program.
- B. Arkansas State Plumbing Law, Act 200 of 1951; as amended.
- C. Rules and Regulations Pertaining to Public Water Systems.
- D. Arkansas Act 96 of 1913; as amended.
- E. Arkansas Statutes 1947, Sec 82-110 as amended.
- F. Policies and Procedures for Backflow Prevention Devices, Location, and Installation; Arkansas Department of Health Division of Protective Health Codes.

## 1.2 PURPOSE

### THE PURPOSE OF THIS PROGRAM IS TO:

- A. Protect the public potable water system from the possibility of contamination or pollution from backflow into the Water System.
- B. Promote the elimination or control of existing Cross-Connections, actual or potential, between the customer's potable water system(s) and non-potable water systems, plumbing fixtures, and industrial piping systems.
- C. Provide for a continuing program of Cross-Connection Control that will systematically and effectively prevent the contamination or pollution of potable water systems.

## 1.3 DEFINITIONS

The following terms shall have the stated meanings.

- A. **Air Gap** means a physical separation between the free flowing discharge end of a potable water supply piping and an open or non-pressurized receiving vessel. An "**Approved Air Gap**" shall be at least double the diameter of the supply piping vertically above the rim of the vessel and in no case less than 1 inch (***No part of the piping may be submerged***).
- B. **Air Vacuum Breaker (AVB)** (also known as the "**Non-Pressure Type Vacuum Breaker**") means a device containing an air inlet valve, a check seat and an air inlet port(s). Atmospheric Vacuum Breakers are designed to protect against non-health hazards under backsiphonage condition only and shall not have a valve down stream of the device.
- C. **Approving Authority** means the Chief Executive Officer of CAW or his designated agent(s).
- D. **Auxiliary Water Supply** means any water supply, is on or available to the property other than Central Arkansas Water's system.
- E. **Backflow** means flow of water or other liquids, mixtures or substances, under positive or reduced pressure in the distribution pipes of a potable water supply from any source other than its intended source.
- F. **Backflow Prevention Assembly ("Backflow Prevention Assembly" or "Assembly")** means a mechanical backflow preventer assembly constructed with shut-off valves, and provided as a complete assembly by a single manufacturer, used to prevent the flow of contaminants or pollutants into the water system. The Assembly must have the approval of

the Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR) at the University of Southern California, Arkansas Department of Health (ADH), and Central Arkansas Water.

- G. **Backflow Prevention Device** means a mechanical back-flow preventer without shut-off valves on any side of the backflow prevention mechanism.
- H. **Bypass** means any arrangement of pipes, plumbing, or hoses designed to divert the flow around an installed device or assembly through which the flow normally passes.
- I. **Certified Testing Technician** means a person certified to test Backflow Assemblies/Devices by the Arkansas Department of Health as an Assembly Testing Technician (ATT).
- J. **Certified Repair Technician** means a person certified to repair Backflow Assemblies/Devices by the Arkansas Department of Health as an Assembly Repair Technician ( RT ).
- K. **Commercial Facilities** means a business where things are sold, rented or stored, or where a service is preformed.
  - 1. Residential Buildings (apartments/condominiums) where Units are Sold, Leased or Rented to others (with more than one unit per water meter).
  - 2. Charitable Organizations such as Group Homes, Red Cross, American Heart Association, Churches, Private or Parochial Schools and Colleges, Goodwill Industries, Habitat for Humanity.
  - 3. Hospitals except UAMS and Arkansas Children's Hospital and other Government Organizations.
  - 4. Privately Owned Recreation Facilities.
- L. **Consumer** means a “person” or facility receiving service from a potable water system.
- M. **Containment** means to protect the public water system by installing a backflow prevention assembly between the water meter and the first point of use.
- N. **Contaminant** means a biological agent or chemical compound which can cause disease or threat to health.

- O. **Cross-Connection** means any actual or potential connection between the Water System and a source of contamination or pollution.
- P. **Cross-Connection Control** means the use of backflow prevention assemblies, methods and procedures to prevent contamination or pollution of a potable water supply through Cross-Connections.
- Q. **Degree of Hazard** means the danger posed by a particular substance or set of circumstances.
- R. **Direct Cross-Connection** means a cross-connection, which is subject to both backsiphonage and backpressure
- S. **Domestic Facility** means Single Family Residential Home or Single Apartment served by one water meter.
- T. **Domestic Water Service** refers to plumbing as defined by the State of Arkansas Plumbing Code that is not associated with designated fire protection water service lines and systems.
- U. **Double Check Valve Assembly (DCVA)** means a backflow prevention assembly consisting of two independently operating check valves, 4 test cocks, and 2 shut-off valves. DCVA's are only appropriate for use against Non-Health Hazards. DCVA can be subjected to backpressure.
- V. **Double Check Valve Detector Assembly (DCVDA)** means a DCVA with an additional smaller DCVA with a flow detector meter in parallel, used to detect system leaks and unauthorized use.
- W. **Reduced Pressure Zone Detector Assembly (RPZDA)** means a RPZA with an additional smaller RPZA with a flow detector meter in parallel, used to detect system leaks and unauthorized use.
- X. **Fire Protection System** means a fire protection system consisting of one or more of the following: pipes, sprinklers, valves, fixtures, fittings, ponds, tanks, water storage vessels and fire hydrants that are intended and used exclusively for fire protection.
- Y. **High Hazard(High Health Hazard)** means an impairment of the quality of water which creates an actual hazard to public health.
- Z. **Indirect Cross-Connection** means a cross-connection, which is subject to backsiphonage only.
- AA. **Industrial** means a Business where goods are produced, processed, or manufactured.

- BB. **Isolation** means to protect each Cross-Connection at the point of connection within the customer's property with a backflow prevention assembly.
- CC. **Inspector** means a person authorized by the Approving Authority to perform inspections of consumer's facilities to determine compliance with the Program.
- DD. **Low Hazard (Non Health Hazard)** means an impairment of the quality of the water to a degree which does not create a hazard to public health but may adversely affect the aesthetic qualities of water.
- EE. **Multiple Services** means where two or more water service connections are present. When two or more water suppliers are involved, the multiple service connections constitute an "Auxiliary Source" of water on the property.
- FF. **New Construction** means construction of a new facility, alteration of or addition to an existing facility, or modification of or addition to existing plumbing and fire protection systems.
- GG. **Permit** means a document issued by CAW that allows the use of a backflow prevention assembly.
- HH. **Person** means any individual, partnership, company, public or private corporation, political subdivision or agency of the United States or any other legal entity.
- II. **Pollutant** means a biological or chemical substance which does not pose a Health Hazard, but adversely affects the aesthetic quality of water.
- JJ. **Potential** means if there is the **POSSIBILITY** that a Direct or Indirect Cross-Connection **COULD** occur.
- KK. **Pressure Vacuum Breaker (PVB)** means an assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. This assembly is designed to protect against Non-Health Hazards under backsiphonage conditions only.
- LL. **Program (The Program)** means Central Arkansas Water's Cross-Connection Control Program (this document).
- MM. **Registered Certified Assembly Testing Technician** means a person certified to test Backflow Assemblies/Devices by the Arkansas Department of Health as an Assembly Testing Technician (ATT) and is **Currently**

registered with Central Arkansas Water Cross-Connection Control Program.

- MM. **Responsible Managing Employee (RME)** means an individual or individuals who shall be designated by each company that plans, sells, installs, maintains, or services a fire protection sprinkler system on a full time basis to assure that each fire protection sprinkler system as installed, maintained, or serviced meets the standards as provided by state law.
- NN. **Responsible Party** means an individual or individuals who have contracted with Central Arkansas Water for water service.
- OO. **Reduced Pressure Zone Assembly (RPZA)** means a backflow prevention assembly consisting of four test cocks, two shutoff valves, and two independently operating, spring loaded check valves with a reduced pressure zone between the checks valves. The zone contains a relief port which will open to atmosphere if the pressure in the zone falls within 2 psi of the supply pressure. The assembly provides protection against both Non-Health and High Health Hazards under backpressure and backsiphonage conditions.
- PP. **Retrofit** means replacement of an existing device or backflow prevention assembly when the specifications or condition of the device or assembly are not adequate for the degree of hazard found on the property as defined by this program.
- QQ. **Service Connection** means a piping connection between the water main of Central Arkansas Water and a consumer's system.

## SECTION 2

### ADMINISTRATION

#### 2.0 AUTHORITY OF APPROVING AUTHORITY

The Approving Authority shall administer "The Program", and may designate an individual(s) to conduct the Program.

#### **The Approving Authority is hereby authorized to:**

- A. Protect the Public Potable Water Distribution System from contamination or pollution due to the Backflow or Backsiphonage through the water service connection.

- B. Conduct a Cross-Connection Control Program which includes routine surveys of Commercial, institutional and Industrial domestic, fire and Lawn Irrigation accounts for the potential contamination of the public water system from Backflow or Backsiphonage.
- C. Require the installation of backflow prevention assemblies, depending on the degree of hazard. Whether a direct or indirect connection to the Public Water Distribution System may or may not exist.
- D. Review construction plans and determine requirements for backflow prevention assemblies. This shall apply to new construction, alteration or additions, as well as modification of existing fire protection systems.
- E. Provide installation criteria for backflow prevention assemblies and issuance of permits prior to construction.
- F. Conduct inspection of backflow prevention assembly installations to verify conformance with approved installation plans.
- G. Ensure that RPZA's used for temporary fire hydrant meters are performance tested and have a backflow prevention assembly permit.
- H. Maintain RPZA's and meters for issue to water users needing temporary water service from fire hydrants.
- I. Ensure RPZA's used by customers are tested annually and before issue.
- J. Verify collection of fees for permits and for the use of RPZA's owned by CAW.
- K. Verify fire hydrant RPZA's and meters are set and removed by CAW Personnel.
- L. Submit all required reports, maintain a database, coordinate with other agencies to accomplish the goals of the Program and maintain the following records:
  - 1. Master files on customer Cross-Connection Tests.
  - 2. Master files on Cross-Connection Permits.
  - 3. Copies of permits and permit applications.
  - 4. Copies of lists and summaries supplied to the Arkansas Department of Health.
  - 5. Number of annual tests conducted on backflow prevention assemblies.



6. Number of Cross-Connection Control surveys performed.
  7. Total number of each type of backflow prevention assemblies installed.
  8. The following information is required per assembly. DDCVA and DRPZA are made up of two assemblies, each requiring record data.
  9. Organization or Customer's name, mailing address, phone number, contact name, assembly address, permit number and account number.
  10. Type installation, location on property, installed by, phone number and type of service.
  11. Name of the manufacturer, model number and serial number of assembly.
  12. Type of assembly, date of installation and installation specifications.
  13. Number of CAW's meter, if any.
  14. Date of initial Cross-Connection survey, survey results and type of actual or potential hazard.
  15. Date of initial permit and current permit number.
  16. Test results and date of latest retest.
  17. Information on backflow through the assembly.
- M. Maintain an inventory of all Commercial, Industrial and Lawn Irrigation locations with complete information on Cross-Connection devices or assemblies installed.
- N. Ensure meters on fire protection assemblies are read and consumer advised of water usage.
- O. Coordinate repairs on any damage resulting from vandalism or flooding of backflow prevention assemblies.
- P. Ensure that only Journeyman or Master Plumber's install backflow prevention assemblies.
- Q. Ensure that only Certified Assembly Repair Technicians repair backflow assemblies.

- R. Verify that only Certified Assembly Testing Technicians perform tests on backflow prevention assemblies.
  - 1. Assembly Testing Technicians testing within the CAW service area must be registered and maintain the following information on file with CAW:
    - a. Assembly Tester Technician Information Sheet.
    - b. Copy of Current Arkansas Department of Health Assembly Tester Technician Certification Card.
    - c. Copy of their Current Assembly Tester Technician School Certificate.
    - d. Copy of their Current Instruments Annual Calibration Report.

## **2.1 POWERS AND AUTHORITIES OF INSPECTORS**

- A. The Approving Authority or duly authorized employees of Central Arkansas Water bearing proper credentials and identification shall be permitted to enter all properties for the purposes of inspection, observation and testing to verify adherence to the provisions of this program. The Approving Authority or their designated representative shall have no authority to inquire into any processes including metallurgical, chemical, oil refining, ceramic, paper or other industries beyond that point having a direct bearing on the determination of the degree of hazard. Authorized personnel shall have authority to inspect and copy records pertaining to the threat of a hazard to the Water System, and to make final determinations to the Degree of Hazard and need for protection to the Public Water Supply.
- B. The consumer's property shall be available for inspection at all reasonable times to authorized representatives of the Approving Authority to determine whether cross connections or other structural or sanitary hazards, including violations of the Program, exist.
- C. On request by the Approving Authority, the consumer shall furnish information on water use practices within the consumer's premises.

## **2.2 VARIANCE**

- A. Request for deviation or relief from any of the provisions of this Program shall be submitted in writing to the Approving Authority. The Approving Authority may grant a variance if not in conflict with the spirit and intent of the Program.

- B. If request for deviation has been submitted, the consumer shall not proceed with any construction or installation of assemblies without the written permission of the Approving Authority.

### **2.3 CROSS-CONNECTION SURVEYS**

All commercial properties shall be surveyed to determine if there is POTENTIAL for a Backflow Occurrence.

Routine surveys will be made periodically to determine if backflow prevention measures are maintained, are functioning properly and new cross-connections have not been created.

An On Site Inspection by an Authorized Representative of Central Arkansas Water will result for consumers not returning Survey Questionnaires.

If an On-Site Inspection is performed, the consumer will be assessed an inspection fee based on rates established by the Commission. Additional fees may be assessed if the service is interrupted.

### **2.4 SCHEDULING SURVEYS, PRIORITIES**

The selection of existing property for Cross-Connection surveys will be made on the basis of suspected hazard. Those customers suspected of having the most hazardous cross-connections will be surveyed first. Surveys shall continue until all property considered likely to have Cross-Connection problems have been surveyed. Information for the review process will be obtained from questionnaires sent to industrial, commercial and institutional establishments.

#### **A. FIRST PRIORITY - HIGH HEALTH HAZARD**

A First Priority survey list of possible sources of Biological or Chemical Contamination shall be developed. Type of corrective action and follow up surveys will be according to severity.

#### **B. SECOND PRIORITY - LOW HEALTH HAZARD**

Establishments suspected of Lesser Degree Hazards or Biological or Chemical pollution will receive second priority inspection by the Approving Authority.

### **2.5 OTHER SURVEYS**

As other establishments are found which should be included in one of the priority listings, they will be included and a survey conducted as workload permits. Cross-Connection Surveys will continue with the aim being to survey all industrial, commercial or institutional type customers and agricultural operations

that may pose a hazard. Prompt attention will be given to identifying residential type customers that may have significant Cross-Connection problems.

## **2.6 FOLLOW-UP SURVEYS**

Follow-up surveys shall be made as determined by the Approving Authority.

## **2.7 ENFORCEMENT ACTION**

Where Backflow Prevention is required, the Approving Authority shall require the problem to be eliminated or controlled by a properly installed, approved backflow prevention assembly. Such protective measures may include but not limited to a backflow prevention assembly on the consumer's water service line. Every effort will be made to secure the voluntary cooperation in correcting Cross-Connection hazards. If voluntary corrective action can not be obtained within a reasonable period of time, the water service shall be terminated.

# **SECTION 3**

## **PUBLIC WATER SYSTEMS**

### **3.0 AUXILIARY PUBLIC WATER SYSTEMS**

The Water System shall be protected as outlined in the Arkansas Department of Health publication, "Policies and Procedures for Backflow Prevention Devices Location and Installation" by an approved method of backflow prevention at the point of connection to the Water System if a public water supply other than the Water System is available to the premises. Backflow prevention is required regardless of actual development or Cross-Connection between Central Arkansas' Water System and the other public water system.

- A. RPZA Containment is required if the auxiliary water supply could be subjected to a high hazard, or is not operated under the authority of the Arkansas Department of Health.
- B. DCVA Containment is required if the auxiliary water supply is being operated under the authority of the Arkansas Department of Health, and the owner of the supply can document that there are no potential high hazards on the premises.

# SECTION 4

## DOMESTIC WATER SERVICE LINES

### 4.0 GENERAL

The information on backflow preventers described in this section is extracted from the Arkansas Department of Health publication, "Policies and Procedures for Backflow Prevention Devices Location and Installation".

### 4.1 COSTS

The consumer of a property shall bear the expense and burden of protecting the Central Arkansas' Water System from the potential hazard through approved backflow prevention methods and procedures.

### 4.2 RPZA CONTAINMENT

The Public Water System shall be protected from Cross-Connection backflow by an approved RPZA or air gap in water service lines of any:

- A. **Building:** Any multi-story building, hotel, apartment house, public or private structure where the top floor is greater than 33 feet above the elevation of the water main or when a booster pump is used that furnishes water to all or part of the property, or there is the potential for a Cross-Connection to a High Hazard, or there is a sewage pumping facility on the premises or it is expected that a piping or equipment change might be made that could result in a Cross-Connection to a High Hazard.
- B. **Establishment:** First Priority types such as, but not limited to the following that may contain a High Hazards to the Public Water System:

- Agriculture/ Farming Operations
- Air Conditioning Cooling Towers (without Proper Air Gap)
- Aircraft Modification and Storage Facilities
- Apartment Complexes
- Asphalt Plants
- Automotive Dealers
- Automotive Radiator Shops
- Automotive Paint, Body Repair Facilities
- Automotive Repair Facilities
- Autopsy Facilities
- Baking Facility
- Battery Manufacturer, Processor, Sales or Warehouse Facility

Beverage Bottling Plants  
Blood/Plasma Collection Facilities  
Boilers (producing steam and pressure)  
Booster/Circulating Pumps on Domestic/Fire Systems  
Bottled Water Manufacturing Facilities  
Buildings with water Booster Pumps, Traps or Sewer Ejectors  
Canneries  
Car and Truck Wash Facilities including Detail Services  
Cemetery (Excluding Office Facilities)  
Chemical Processing and or Storage Facilities  
Chemical Injection Equipment  
Church/Religious Facilities (Baptisteries and Kitchens)  
Cold Storage Facilities  
Colleges  
Compressed Gas Handling and Storage Facilities  
Concrete Mixing Plants  
Concrete Products Manufacturer and Storage Facilities  
Condominium Complexes with Master Meter  
Convenience Stores (with Gasoline and Food Facilities)  
Crime Laboratories  
Dairies and Milk Distributors  
Day Care Facilities ( with Food Processing)  
Dental Facilities  
Doctors Offices  
Dry Cleaners (Commercial, Excluding Drop off Facilities)  
Equipment using Water Producing Pressure  
Facilities using Water in Manufacturing/Processing  
Film Processing Facilities (including One Hour Processing)  
Food Processing Facilities  
Frost Proof Drain Down type Hydrants (including Stop & Waste Valves)  
Fuel/Oil Handling or Processing Facilities  
Funeral Homes Morgues and Mortuaries  
Gas Stations  
Golf Courses/Driving Ranges  
Governmental Facilities  
Grease Traps/Sewage Ejectors  
Grocery Stores (Raw Meats and Vegetables)  
Hazardous Waste Processing or Storage Facilities  
Health Clubs, Fitness Centers and Spas  
Home Improvement Stores  
Hospitals  
Ice Processing and or Manufacturing Facilities  
Incineration Facilities  
Industrial Plants  
Irrigation Systems  
Kennels and Pet Facilities

Laboratories  
Landfills  
Laundries/Laundromats (Commercial, Excluding Drop off Facilities)  
Livestock and Animal Holding Facilities  
Lumber Yards/Processing Facilities  
Manufacturing Plants  
Marina Equipment Repair Facilities  
Meat Markets and or Meat Processing Facilities  
Medical Facilities  
Metal Plating, Etching, Passivation or Pickling Plants  
Mines and Quarries  
Mobile Home/RV Parks  
Motion Picture Productions  
Multi Storied Buildings (33 feet or more above Water Main)  
Multi Family Apartments with Master Meter  
Natural Gas Handling Facilities  
Nursery, Shrubbery or Garden Centers  
Nursing Homes or Convalescent Homes  
Oil or Gas (Production, Storage or Transmission) Facilities  
Packing Houses  
Paper and Paper Product Plants  
Parks and Ball Fields  
Pesticide Processors or Applicators  
Poultry Operations  
Power Plants  
Power Cleaning Equipment (High Pressure or Steam)  
Pressure Vessel (Tanks) Repair, Testing and Maintenance Facilities  
Printing Facilities (Excluding Copy Centers)  
Propane, Butane Gas Handling Facility  
Radioactive Material Plants and Handling Facilities  
Railroad Yards  
Recycling Facility  
Restaurants (All types)  
Retirement/Assisted Living Centers  
Restricted, Classified or Other Closed Facilities  
Rubber Manufacturing Plants  
Sand and or Gravel Processing Plants  
Sanitariums  
Schools  
Service Stations  
Sewage Pump Stations/Treatment Plants  
Slaughter Houses and or Meat Processing Facilities  
Steel Processing Facilities  
Storage Facilities  
Swimming Pools (Commercial Including Multi-Tenant Facilities)  
Tank Repair, Cleaning, Testing and Maintenance Facilities

Tanneries  
Tattoo/Piercing Parlors  
Taxidermist  
Warehouse Facilities  
Wastewater Plants and Pump Stations  
Water Front Facilities  
Water Treatment Plants and Pump Stations  
Veterinary Clinics  
Zoos

- C. **Interconnected Water Services:** If there is a POTENTIAL for two or more water service lines being interconnected, and all water is used domestically, and only water from the Water System is available to the premises.
- D. **Multiple Water Services:** Where there is a POTENTIAL for two or more water service lines being interconnected, or there is water used for other than domestic purposes including Fire Services.
- E. **Private Water System:** If there is an auxiliary water supply on or available to the premises that is a POTENTIAL high hazard, including a fire protection system.
- F. **Used (Gray) Waters and Industrial Fluids:** If there is a used water or industrial fluid system on the premises that is a POTENTIAL high hazard.
- G. **Solar Heating Systems:** If there is a solar heating system on the premises, and chemicals are added to the solar heating system or the solar heating system is not used exclusively for once through heating (i.e. domestic hot water).
- H. **Chemically Contaminated Water Systems:** If chemicals are used as an additive, to the water, or the water is subjected to additional treatment, or water is used on the premises to transport chemicals or chemicals are used with water on the premises in compounding or processing.
- I. **Sewers and Storm Drains:** Any premises used for handling sewage or storm water (e.g. treatment and processing facilities, pumping plants, gauging stations, lift stations, ejector plants.)
- J. **Public Fire Hydrants as Temporary Water Services:** The Water System shall be protected by an approved RPZA on the outlet of the fire hydrant when it is used as a water supply, except when used to extinguish a fire.
- K. **Water Trucks with Air Gaps:** Contractors wishing to use trucks with attached meters that have a permanent Air Gap may have to provide make, model, size, color and license plate number of each truck. Hoses



shall be removed after each use and kept on the truck to prevent unauthorized use by others.

Those found in violation of this regulation will not be allowed to maintain meters on their trucks but will be required to have meters and RPZA assemblies installed on fire hydrants.

- L. **Irrigation System:** If there is a lawn irrigation system on the premises.
- M. **Residential Fire Protection System:** Where a Fire Protection System is installed to protect a residential structure.
- N. **Barber, Beauty/Nail and Styling Salons:** Where the only hazards present are Shampoo Basins, (Watts) N9 type Backflow Preventers or equal may be installed on each basin. Once installed, the property owner shall furnish Central Arkansas Water's Cross-Connection Control Program an original invoice for each device installed along with a letter indicating that the device(s) will remain connected. If during follow up inspection it is discovered that the device(s) have been removed, altered or bypassed, the owner will then be required to install and maintain an RPZA.

#### **4.3 CONTAINMENT NOT REQUIRED**

Backflow prevention shall not be required on the domestic water service line if the owner can document that there are no POTENTIAL hazards on the premises, and the Water System complies with all applicable requirements of the City and State of Arkansas, and the Water System conforms to **Residential Systems:** Used exclusively for domestic purposes.

#### **4.4 RETROFIT**

All presently installed backflow prevention assemblies and devices that do not meet the requirements of this program but were approved assemblies for the purposes described herein at the time of installation and have been properly maintained, shall, except for the inspection, testing and maintenance requirements, be excluded from the requirements of these rules so long as the Approving Authority is assured that they will satisfactorily protect the Water System. If the existing assembly is moved, or requires more than the minimum maintenance or, the Approving Authority determines that the operation or maintenance of this assembly constitutes a hazard, the Assembly **SHALL BE REPLACED** by an approved RPZA Backflow Prevention Assembly.

# SECTION 5

## LAWN IRRIGATION SYSTEMS

**5.0** Lawn Irrigation Systems utilized in part or whole for watering lawn, turf, landscaping, or plants, where part or all of the piping is permanently installed and where part or all of the piping is below ground is classified as a High (Health Hazard) and shall be required to have an approved AIR GAP or an approved Reduced Pressure Zone Assembly (RPZA).

**5.1** **Residential Lawn Irrigation Systems:**

A. Annual testing is recommended but not required **AT THIS TIME** by Central Arkansas Water.

**5.2** **Commercial Lawn Irrigation Systems:**

All new RPZA installations shall be tested within 10 days of Installation.

Presently installed Backflow Prevention Assemblies which do not meet the current requirements of this section **SHALL BE REPLACED** by an approved RPZA meeting the requirements of this program.

Removal, re-installation or replacement of the Backflow Prevention Assembly in the same location is considered minimum maintenance and does not require the service of a licensed plumber.

# SECTION 6

## FIRE PROTECTION SERVICE LINES

**6.0** **CLASSES OF FIRE PROTECTION SYSTEMS**

**Class 1** - A fire protection system directly connected to the Water System as the only water supply - no pumps, tanks or reservoirs; no physical connection to auxiliary water supplies; no antifreeze or other additives of any kind; all fire protection system drains discharging to atmosphere, dry wells or other safe outlets.

**Class 2** - A fire protection system that is the same as a Class 1 system; except that a booster pump is installed in the fire protection system and no outlet is located between the booster pump and the Water System. (Note - Booster pumps alone do not affect the potability of the system. In Class 2 fire protection

system, it is necessary to avoid low or negative pressures that can occur by excessive flow through the booster pump. A minimum pressure of 20 psig on the inlet side of the booster pump shall be maintained through proper design, construction, operation and maintenance in addition to the use of a low pressure cutoff switch, pump modulating valve, or other automatic device.)

**Class 3** - A fire protection system that is the same as a Class 1 system; except that a storage tank, fire pump that pumps from a covered reservoir or tank, or pressure tank is connected to the fire protection system. (Note - All storage facilities must be filled only from and connected exclusively to the Fire Protection System. Furthermore, water in the storage facilities must be maintained in a potable condition.)

**Class 4** - A fire protection system that is the same as a Class 1 or Class 2 system; except that an auxiliary water supply is on or available to the properties, or there is an auxiliary water supply designated by the Utility Department within a radius of 1,700 feet from a pumper connection to the fire protection system. (Note - Connection to an auxiliary water supply cannot exist in a Class 4 fire protection system.)

**Class 5** - A fire protection system that is connected to an auxiliary water supply which could be exposed to a high hazard (e.g. non-potable reservoirs, rivers, ponds, wells, industrial water), or that uses additives (e.g. antifreeze, wetting agents, "Foamite"), or that does not maintain a minimum pressure of 20 psig on the inlet side of a booster pump as defined for a Class 2 fire protection system.

**Class 6** - A fire protection system that is connected to a water service line from the Water System if the water service line is not used exclusively for fire protection.

## **6.1 BACKFLOW PREVENTION ON FIRE PROTECTION SYSTEMS**

The Water System shall be protected by an approved method of backflow prevention in water service lines to fire protection systems, regardless of backflow prevention requirements in other water services on the premises.

- A. **Classes 1 & 2:** An approved DDCVA is required as the minimum backflow prevention in the water service line to a Class 1 or Class 2 fire protection system, if the owner can document that there are no potential First Priority hazards on the premises, and all fire protection system water storage vessels are maintained in a potable condition.

An approved DDCVA shall be required on any system with hose drops or standpipe outlet.

- B. **Class 3:** An approved DDCVA is required as the minimum backflow prevention in the water service line to a Class 3 fire protection system if the owner can document that there are no potential First Priority hazards on the premises, and all fire protection system water storage vessels are maintained in a potable condition.
- C. **Classes 4, 5 & 6:** An approved DRPZA is required in the water service line to a Class 4, 5 or 6 fire protection systems.
- D. Strainers are not required to be installed on fire protection systems.
- E. An approved DRPZA is required in the fire service line to a Class 3 fire protection system if the industrial or domestic water system could potentially be subjected to a First Priority hazard. A DRPZA shall be required on any system with hose drops or outlets.

## 6.2 RETROFIT OF EXISTING SYSTEMS

This applies to an existing fire protection system which is modified, extended, or enlarged. Such systems include a modification or extension to an existing network (distribution piping, sprinkler heads control valves, etc. are added to or replaced in an existing system), or where an additional fire protection system (new feed line, riser, control valve, distribution piping, sprinkler heads, etc.) will connect to a fire main which has an existing Cross-Connection control device.

If the existing Assembly or Device is moved, or requires more than the minimum maintenance or the Approving Authority determines that the operation or maintenance of this assembly or Device constitutes a hazard, the assembly shall be replaced by an approved backflow prevention assembly (Refer to Section 4.4 herein).

The minimum protection for Cross-Connection control for existing systems is the same as listed for new systems, except as noted for Class 1 and 2 systems only. The installation of a properly sized assembly may cause an excessive pressure loss in some altered Class 1 and 2 systems. Such loss could make the system noncompliance with NFPA Pamphlets 13 and 14 as adopted.

The Responsible Managing Employee shall document to the approving authority that reasonable modifications will not compensate for the additional loss.

The documentation shall contain a listing of the minimum flow and pressure, head loss summary, desired and calculated sprinkler head output and a summary of the options examined to reduce head loss.

For these installations, if not already installed, the existing Cross-Connection control device will be replaced with two check valves in series (one of which can be the alarm valve), each valve meeting AWWA C508-82, UL 312-88, or UL 193-

88, or the latest versions thereof, and equipped with a resilient seating surface. The valves or adjacent piping shall be equipped with a sufficient number of resilient seated test cocks (minimum diameter of one quarter to one-half inch) to determine the effectiveness of each valve (there shall be no leakage past any check valve). Sufficient isolation valves-one valve upstream of the valves and one valve downstream of the valves - shall be present or added to the system to permit this testing.

Existing fire protection systems which are not being modified, enlarged, or expanded are not required to upgrade to comply with this policy unless a hazard is found within the fire protection system.

## SECTION 7

### CONSUMER RESPONSIBILITIES

#### 7.0 GENERAL

##### THE CONSUMER SHALL:

- A. Eliminate all Cross-Connections or install an approved backflow prevention assembly on the water service line if in the opinion of the Approving Authority there is a potential hazard to the Public Water System.
- B. Immediately correct any malfunction of the backflow prevention assembly.
- C. Inform the Approving Authority of any proposed or modified Cross-Connections and of any existing Cross-Connections of which the consumer is aware.
- D. Prior to start of construction have plans approved and permit obtained for any domestic plumbing or fire service installation requiring an approved backflow prevention assembly. Failure, refusal, or inability on the part of the customer to install, maintain, and have tested, any backflow prevention assembly on the consumer's property shall constitute grounds for discontinuing water service until such requirements have been satisfactorily met.
- E. Have the type of backflow prevention assembly and manner of installation approved by the Approving Authority.
- F. Install a backflow prevention assembly if a private water source is operational even if it is not Cross-Connected to the Water System.

- G. Install (2) two backflow prevention assemblies in parallel if uninterrupted water service is desired or required during testing or repair.
- H. Not install a by-pass around any backflow prevention assembly unless there is a backflow prevention assembly of the same type in the bypass.
- I. Have a certified operational test within 10 days of installation and at intervals not to exceed one year thereafter. In those instances where the Approving Authority deems the degree of hazard to be great, an operational test may be required at more frequent intervals.
- J. Have only personnel authorized by the Arkansas Department of Health perform repairs, installation, maintenance and testing of domestic and irrigation backflow prevention assemblies.
- K. Have only personnel authorized by the Arkansas Department of Health and are licensed by the Arkansas Fire Protection Licensing Board perform repairs, maintenance, and testing of designated Fire Protection Service line backflow prevention assemblies.
- L. Make repairs immediately upon notification by the tester that repairs are needed.

## SECTION 8

### ASSEMBLY SPECIFICATIONS

#### 8.0 GENERAL

Specifications for backflow prevention assemblies are essential, since no two assemblies are always reliable under every condition.

#### 8.1 BACKFLOW PREVENTION ASSEMBLIES

**Only those assemblies that are approved by CAW shall be used for backflow prevention in water service lines:**

- A. **Approved Assembly:** Assemblies that have been tested and approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California are approved by CAW.
- B. The following information shall be distinctly marked on every RPZA, DCVA, DDCVA and DRPZA by cast in the metal, stamped in the metal, or

stamped on a brass or stainless-steel name plate permanently affixed to the assembly:

- (1) name or trademark,
- (2) type of assembly (RPZA, DCVA)
- (3) size of assembly
- (4) model number,
- (5) direction of flow (indicated by an arrow),
- (6) serial number,
- (7) maximum working water pressure,
- (8) maximum water temperature for which designed
- (9) effective January 4<sup>th</sup>, 2014, all backflow prevention assemblies for potable water applications must be lead-free.

- C. Every RPZA, DCVA, DDCVA and DRPZA shall be shipped completely assembled and ready for installation

## SECTION 9

### ASSEMBLY INSTALLATION, RECORDS AND REPORTS

#### 9.0 GENERAL

The proper installation of backflow prevention assemblies is necessary to adequately protect the Water System from backflow.

#### 9.1 AUTHORIZED INSTALLERS & TESTERS

Installation of backflow prevention assemblies on domestic water service lines and irrigation systems shall be provided by personnel licensed or certified by the Arkansas Department of Health.

Installation and testing of backflow prevention assemblies on fire protection services shall be provided by personnel licensed or certified by the Arkansas Fire Protection Licensing Board.

Testing of backflow prevention assemblies on domestic and fire protection services shall be provided by personnel licensed or certified by the Arkansas Department of Health.

## 9.2 PERMITS

- A. Consumers shall possess a permit from the Approving Authority prior to beginning installation of an assembly.
- B. A permit authorizes the use of the backflow prevention assembly and is necessary for continuing water service. Permits are non-transferable and may be revoked if the consumer increases the degree of hazard or fails to adhere to the conditions of the permit. Adequate records and documentation are required for continued permit usage.

## 9.3 INSTALLATION

### A. Assembly Installation

All Backflow Prevention Assemblies shall be installed in accordance with the manufacturer's recommendations.

- 1. Assemblies shall be installed on the owner's side of the water meter prior to first outlet.
- 2. Piping connected to the assembly shall not be used for electrical grounding.
- 3. Piping connected to the assembly shall be thoroughly flushed before installing the assembly.
- 4. An adequate and permanent method of test water disposal (drain) shall be provided.
- 5. A pressure relief valve shall be properly installed and maintained on all water heating apparatus served by the assembly.
- 6. Adequate support, excluding water lines, shall be provided for assemblies that are 3" or larger.
- 7. If not part of the approved assembly, an approved strainer shall be installed on the inlet side of the assembly prior to the assembly isolation valve, so that all water must pass through the strainer immediately before entering the assembly. Strainers are not required on Fire Protection Systems.
- 8. An approved blow-off shall be installed in the water line immediately after the assembly, to allow for flushing the assembly. Two-inch through ten-inch assemblies shall have a blow-off not less than 2-inches in diameter. Assemblies larger than 10-inch shall have a



minimum 4-inch blow-off. Blow-offs installed in vaults shall have piping into the existing vault drain to prevent splashing.

Blow-offs in vaults may also be routed above grade and away from the vault; however, a self draining feature must be incorporated to prevent freezing damage to the blow-off piping.

9. If the assembly cannot be installed in the prescribed manner for any reason, the proposed deviations shall be submitted to CAW for review and approval before installation.

#### **B. RPZA & DRPZA Installation**

1. The assembly shall not be buried or shall not be installed in a vertical position.
2. An adequate and permanent method of handling relief vent discharge and test water discharge shall be provided.
3. Clear unobstructed space for the relief vent shall be provided to prevent the vent from becoming blocked or flooded.
4. Minimum installation clearance dimensions shall be 30 inches between the assembly and corresponding wall and 12 inches on the opposite side, 8 inches on each end, 6 inches above the highest point and 12 inches under the assembly. Top of assembly shall not exceed 30 inches above finished grade.

#### **C. DDCVA & DCVA INSTALLATION**

1. The assembly shall not be installed below grade, unless the following criteria can be met and accepted by the Approving Authority:
  - a. The vault and its installation shall be approved by CAW before the start of construction.
  - b. The vault shall not be subject to flooding.
  - c. The walls of the vault shall extend above the finished grade a minimum of 3" to prevent intrusion of water or dirt.
  - d. The vault shall be water-tight to prevent intrusion of water or dirt.
  - e. The vault shall drain to daylight through an adequate and permanent gravity drain with a slope of at least 1 degree.

Installation plans shall show the elevation of the vault floor and the area the water will drain to. Plans shall show drainage pipe depth and location. Drainage pipe size shall be two inches larger than the blow-off. Protection on the drainage outlet shall be provided to prevent undesirable creatures from entering.

- f. The vault cover shall be removable to allow full access to the vault. A minimum of two lifting points shall be provided.
  - g. An access door will be installed in the vault cover on the testable side of the assembly. Approved doors shall be similar or equal to Bilco or Halladay and shall be a minimum of 24" x 24".
  - h. Directly below the access door, steps shall be provided in the vault wall similar or equal to ICM Plastic Manhole Steps. Steps are 1/2 inch steel reinforced rod encapsulated in special polypropylene plastic.
2. Minimum installation clearance dimensions shall be 30 inches between the assembly and corresponding wall and 12 inches on the opposite side, 8 inches on each end, 6 inches above the highest point and 12 inches under the assembly. Top of assembly shall not exceed 72 inches above finished grade.

#### **9.4 TEMPORARY USE ASSEMBLIES**

A public fire hydrant used as a temporary water source shall be protected by an RPZA or Air Gap and metered by a flow meter, which shall be obtained from and installed by the Approving Authority. The consumer shall be charged a deposit and rental for the RPZA and meter and shall pay for water usage. The consumer shall notify the Approving Authority to disconnect the RPZA and meter and return it when no longer needed or at the end of one year, whichever is sooner. Otherwise the deposit shall be forfeited if the RPZA or flow meter is not returned. RPZA's and meters shall only be used at the site for which initially intended. Consumer shall be responsible for any damage to the RPZA or meter.

#### **9.5 REPORTING REQUIREMENTS**

The consumer shall be responsible for properly filing reports with the Approving Authority for each required backflow prevention assembly. AIR GAP's, AVB's, PVB's, RPZAs DDCVA's and DRPZA's are composed of two unique assemblies, each requiring report submission. In addition to the administrative reports, any failure, modification or suspected backflow shall be reported immediately to the Approving Authority. Performance tests, replacement, repair and maintenance reports shall be filed within 14 calendar days.

## **9.6 RECORDS**

**9.6.1** The consumer shall keep records for each assembly. Installation drawings, installer, test reports, manufacturer, model, serial number, date installed, copy of current permit, schedule of preventive maintenance, test reports and technical data are the minimum record requirements. These records shall be maintained for a period not less than five years and shall be available for inspection upon request of the Approving Authority.

**9.6.2** The Utility shall keep the following information on each backflow prevention assembly/device.

**9.6.2.1** For each Commercial and Industrial Establishment:

1. Name and address of establishment.
2. Date establishment was inspected (surveyed).
3. Hazard level determination.
4. Backflow prevention method used (Air Gaps, RP's, DC's or other).
5. Date RP's or DC's was initially tested and test results for the initial test and subsequent annual tests.
6. Identification data on each RP or DC including, make, model, serial number and installation location.

**9.6.2.2.** For each Lawn Sprinkler System:

1. Name and address of customer.
2. Date of last inspection or survey.
3. Backflow prevention used (Air Gap, AVB's, PVB's, DC's, RP's, or other)
4. Date PVB's, DC or RP initially tested and test results for the initial test and subsequent annual tests.
5. Identification data on AVB's, PVB's, DC's or RP's including make, model, serial # and installation location.

## **9.7 PROTECTION OF ASSEMBLIES**

No person shall maliciously, willfully, or negligently break, damage, destroy, deface or tamper with any structure, appurtenance or equipment which is a part of the backflow prevention assembly.

No person shall cover a backflow prevention assembly vault with earth or pavement, or otherwise render it inaccessible.

## **9.8 PENALTIES**

- A. Any consumer found in violation of the provisions of the Cross-Connection Control Program, shall be notified by First Class and Certified Mail that they are not in compliance, and must contact the Approving Authority.
- B. Any notice issued following this sub-section may provide one or more of the following penalties:
  - 1. A compliance directive mandating procedures to bring the consumer into compliance with the Program within the designated time; failure to comply with the compliance directive shall result in termination of water service.
  - 2. A withdrawal of the Consumers backflow prevention assembly permit and termination of water service to the consumer.
- C. No action to withdraw a consumer's permit shall be final until the Approving Authority has given notice.
- D. However, if the Approving Authority determines that to continue to provide water service will endanger the public health, due to possible contamination of the Water System, water service to the property shall be immediately terminated.
- E. Any person violating the provisions of this Program shall become liable to the CAW for any expense, loss or damage occasioned the CAW by reason of such violation.
- F. The listing of penalties in this Section shall not preclude other appropriate judicial remedies available to CAW for any violation of the Program. The CAW may petition any Court of competent jurisdiction to grant injunctive or other legal or equitable relief by reason of a violation.

# SECTION 10

## CONTACT NAMES AND NUMBERS

For more information about the Central Arkansas Water's Cross-Connection Control Program please log onto **carkw.com** or contact us directly at: the following:

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email **robbie.billingsley@carkw.com**

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