

## **Water Authority of Dickson County Cross-Connection Control Plan**

### **I. Introduction**

#### **A. Goal**

The goal of the Water Authority of Dickson County is to supply safe water to each and every customer under all foreseeable circumstances. Each instance where water is used improperly so as to create the possibility of backflow due to cross connections threatens the health and safety of customers and chances of realizing this goal. The possibility of backflow due to improper use of water within the customer's premises is especially significant because such cross connections may easily result in the contamination of our water supply mains. Such situations may result in the public water system becoming a transmitter of diseased organisms, toxic materials, or other hazardous substances that may adversely affect large numbers of people. The only protection against such occurrences is the elimination of such cross connections or the isolation of such hazards from the water supply lines by properly installed approved backflow prevention assemblies. The Water Authority of Dickson County must continue maintenance of a continuing program of cross connection control to systematically and effectively prevent the contamination or pollution of all potable water systems.

#### **B. Plan of Action**

The Water Authority of Dickson County is determined to take every reasonable precaution to ensure that cross connections are not allowed to contaminate the water being distributed to its customers. This plan describes the Water Authority of Dickson County program of action designed to inform the public of the danger of cross-connections, to identify possible cross-connections, to ensure that cross-connection control assemblies are installed where needed, and to set forth a schedule of periodic testing of the installed control assemblies. This plan is intended to be a practical guide for safeguarding the quality of water distributed from becoming contaminated or polluted through backflow. By following the plan of action, the water provider will ensure that all aspects of the policy on Cross-Connection Control are being followed by customer.

### **II. Authority for Cross Connection Control**

A copy of the policy, adopted date, by Board or Governing Body is attached to this plan as Appendix 1. This policy prohibits cross-connections within water systems, authorizes the water system to make inspections of the customer's premises, requires that cross-connection hazards be corrected and provides for enforcement. This policy expresses clear determination on the part of the Board or Governing Body that the water system is to be operated free of cross-connections that endanger the health and safety of those depending upon the public water supply. This policy is considered to be a sound basis for the control of cross-connection hazards by the operating staff and

management of the Water Authority of Dickson County. The provisions, contained within this policy, are in keeping with the requirements set forth in Section 68-221-711 (6) of Tennessee Code Annotated and Section 1200-5-1-.17(6) of Tennessee Department of Environment and Conservation Rules governing Public Water Systems.

### **III. Program To Be Pursued**

The Water Authority of Dickson County will establish an active on-going cross connection control program. This program is to be a continuing effort to locate and correct all existing cross connection hazards and to discourage the creation of new problems. Safeguarding the quality of water being distributed to our customers is a high priority concern of the management of the Water Authority of Dickson County.

#### **A. Staffing**

Water provider has designated staffing to ensure that the program to control cross-connections is pursued in an aggressive and effective manner. It is proposed that a minimum of 5 hours per week will be devoted to the program to ensure its effectiveness. Additional personnel will be added as is deemed necessary.

#### **B. Cross-Connection Control Surveys/Inspections**

A representative of the water system will survey the distribution for all customers, both residential and nonresidential, for possible cross-connections. If it determined from the surveys that possible cross-connection may exist, the premise will be inspected. The need for backflow protection will be determined based on the results from the inspection. Notification of the type of backflow prevention assembly required and a date of compliance will be sent to the customer. The Water Authority of Dickson County has the discretion to require installation of a reduced pressure backflow assembly or a double check backflow assembly for customers that pose a possible or potential threat for contamination through backflow or backsiphonage. Where the nature of the use of water supplied to any premises by the Water Authority of Dickson County is such that it is deemed:

1. Impractical to provide an effective air gap separation;
2. The owner/occupant of the premises cannot or is not willing to demonstrate to the Superintendent that the water use and protective features of the plumbing are such as to pose no threat to the safety or potability of the water;
3. The nature and mode of operation within premises are such that frequent alterations are made to the plumbing;
4. There is likelihood that protective measures may be subverted, altered or disconnected;

5. The nature of the premises is such that the use of the structure may be changed to use wherein backflow prevention is required;
6. The plumbing from a private well enters the premises served by the public water system, then manager shall require the use of an approved protective assembly on the water service line serving the premises to assure the any contamination that may originate in the customer's premises is contained therein.

The Water Authority of Dickson County conducted an evaluation of the customers served by the water system and determined that the following will be performed for:

**Nonresidential Customers:**

Every new commercial account shall be equipped with a reduced pressure principle assembly. All fire sprinkler customers shall install a double check detector assembly. In addition, every irrigation account regardless of commercial or residential status will be equipped with a reduced pressure principle assembly. The Water Authority of Dickson County has the authority to provide for exceptions and variances to these requirements that will not compromise the health and safety of any customer. Any exceptions shall be made in writing stating the justification and conditions, and shall be maintained in the cross-connection control program files.

Existing commercial or non-residential establishment that were not required to have backflow prevention assemblies, will be inspected every 5 years for actual and potential cross-connections. The establishment will be required to install a backflow prevention assembly if:

- 1.) Actual or potential cross-connections exist as determined from inspection.
- 2.) Any changes made to piping will require notification to Water Authority, and inspection made of changes.

Those establishments required to install a DC or RPs and listed as High and Low Hazards will be given up to 90 days to comply with policy or water service is discontinued.

**Residential Customers:**

For new residential customers, a written questionnaire is given upon request for water service. If the survey reveals that a potential cross-connection may be present, an inspection is performed. The need for backflow protection will be determined based on the results from the inspection. Notification of the type of backflow prevention assembly required and a date of compliance will be sent to the customer. Each new residential customer will agree to not create cross-

connections and a brochure is given to each new customer describing cross-connections and the responsibility of the customer in not creating one.

If the written questionnaire reveals that the new customer may have any of the following, an inspection will be required:

1. Lawn irrigation systems
2. Residential fire protection systems (closed loop systems will require a double check valve minimum)
3. Pools, Saunas, Hot Tubs, Fountains
4. Reclaimed water taps
5. Auxiliary Intakes and Supplies-wells, cistern, ponds, streams, etc.
6. Home water treatment systems
7. Hobbies that require extensive amounts of toxic chemicals (taxidermy, metal plating, biodiesel, ethanol production, etc.)
8. Any other situations or conditions listed in the manual or conditions deemed a threat by the water system.

Written questionnaires will be sent to existing residential customers to determine if potential cross-connections exist. Questionnaires that reveal potential cross-connections based on the criteria above will be inspected and a determination if backflow prevention assemblies are needed.

The system will be surveyed for residential lawn irrigation systems through permits received and by the attainment of secondary meters. All residential lawn irrigation systems will require a reduced pressure principle assembly. Residential customers with pools, saunas, hot tubs not filled by a hard pipe directly or indirectly connected may be allowed to use an air gap (and may be requested to use an atmospheric vacuum breaker at the hose bibb). However, if the pool or vessels is connected directly or indirectly by a hard line, an RP required at minimum.

Wells that are drilled within the area of the distribution system within the last calendar year are inspected and a well user agreement is signed between the Water Authority of Dickson County and the customer. A list of existing wells within the distribution area will be generated and fifteen (15) wells per year will be inspected until the entire list has been completed. Any well system that is connected directly or indirectly to the water system is required to disconnect or install a reduced pressure principle assembly. The customer will be required to sign a well user agreement if no assembly is required.

Residential customers required to have backflow prevention assemblies will be informed of possible thermal expansion problems within the establishment and correction of the condition.

### **C. Public Education and Awareness Efforts**

The Water Authority of Dickson County recognizes that it is important to inform its customers of the health hazards associated with cross-connections and to acquaint them with the program being pursued to safeguard the quality of water being distributed. The water system will seek to acquaint the customers with the health hazards associated with cross-connections in an effort to get their cooperation by:

1. Publishing education material in the paper annually.
2. Make education material available in public areas of the utility office.

Depending on time and manpower, the Water Authority of Dickson County will make the best attempt possible to:

1. Provide information to commercial, irrigation, and fire sprinkler customers to explain the need for cross-connection control and;
2. Contact developers to explain cross-connection control requirements as early as possible in the planning and or construction stage.

The emphasis of all these measures will be that it is the customer's responsibility to eliminate or control cross-connections. Failure to do so may result in termination of water service.

#### **D. Customer's Responsibility**

Cross connections, created and maintained by the customer for his convenience endanger the health and safety of all who depend upon the public water supply. Therefore, the customer who creates a cross connection problem shall bear the expense of providing necessary backflow protection and for keeping the protective measures in good working order.

#### **E. Enforcement**

Where actual or potential cross-connections are found to exist, the Water Authority of Dickson County will require the problem to be eliminated or isolated by a properly installed, approved backflow prevention assembly to prevent the possibility of backflow into the distribution system. Such protective measures will include a backflow prevention assembly on the customer's water service line ahead of any water outlets. Every effort will be made to secure the voluntary cooperation of the customer in correcting cross connection hazards. If voluntary action cannot be obtained with time set forth by written notice to the customer, water service will be discontinued until conditions are in line with the water

provider's policy/policy for the protection of the health and safety of the water distribution system.

After inspections or assembly testing have been completed, the establishments will be contacted by written correspondence outlining any correction (adding or repairing backflow prevention assemblies) needed and the time schedule allowed for correction of conditions. Establishments deemed High Risk High Hazard will be given a maximum of 14 days for correction. High and Low Hazards establishments are given 90 days for correction. If the conditions have not been corrected by the time allotment the water service will be discontinued to the establishment, along with any fines or other penalties deemed necessary by the Water Authority of Dickson County. The time period allotment may be shortened depending on degree of hazard and risk involved.

#### **IV. Procedures for Inspections:**

The Water Authority of Dickson County hopes that its efforts to acquaint its customers with the hazards of cross-connections will be successful to the point that the customer will try to maintain their internal water delivery system free of cross-connections. It is recognized that many customers may not recognize that they have a situation that would permit backflow into the water supply lines. Therefore, a thorough investigation will be made of all premises considered likely to have cross-connections. Such inspections will involve the customer's entire water using equipment, and other system components in an effort to locate all actual and potential cross-connections. The findings will be reported to the owner or occupant in writing along with a request for needed corrective action necessary to properly protect the public water system.

##### **A. Pre-arranged Inspections**

Since some customers may need to make preparation for a visit, these customers will be notified that a survey is being scheduled. Arrangement will be made in advance for someone, who is knowledgeable about the facilities plumbing, to accompany the inspector during the survey.

##### **B. Unannounced Visits**

The Water Authority of Dickson County plans to make announced visits to some facilities. These visits will be made where (1) no difficulty is expected in locating the occupant or a knowledgeable representative, (2) Where announced visits will not be disruptive, (3) where advanced warning could result in an unrealistic picture of typical water usage.

##### **C. Field Visit Procedures:**

During the continued program of search for cross-connections, inspections shall be performed to identify potential risks. A survey form, presented in Appendix B, shall be used to document the findings.

When a potential or actual cross-connection is found, the following action will be taken:

1. The Water Authority of Dickson County has the authority to take immediate action to eliminate or reduce a cross-connection hazard including termination of service.
2. Inform the customer of findings, of required backflow control measures, and provide a schedule up to 90 calendar days, for completing the corrective action.
3. The customer will be provided with a list of acceptable backflow prevention assemblies for the specific application, and criteria for installation to be followed for corrective action.

When cross-connection is not found on the property, the property owner will be provided information regarding the cross-connection and criteria to be followed for corrective action.

#### **D. Reports to Customers:**

The findings of the investigation will be summarized and a written report will be sent to the person assisting in the investigation, or the ranking management official of the establishment. Cross-connections found will be described briefly along with required method of correction. An effort will be made to keep the description of the findings and recommendations clear, concise and as brief as possible. The correspondence will indicate a willingness to assist the questions. The customer will be given a time limit for making the needed corrections depending upon the seriousness of the cross-connections involved and upon the complexity and difficulty of correcting the problems.

#### **E. Follow-up Visits and Reinspections**

Follow-up visits will be made as needed to assist the customer and to assure that satisfactory progress has been made such visits will continue until all corrective action has been completed to the satisfaction of the water system. If the site has an assembly that is installed and functioning properly, the customer is given an "approved" tag.

Reinspection of sites at which a cross-connection has been identified will be conducted to determine if the corrective measures have been implemented properly and any backflow control assemblies are functioning properly. Backflow prevention assemblies will be tested by a qualified individual from the

Water Authority of Dickson County or representative, using approved test equipment and test procedures. The reinspection will be performed based on the corrective action schedule established above.

Reinspection of sites which a cross-connection was not identified will be performed if the Water Management Department has reason to believe that the site conditions (i.e. swimming pool, well installation) have changed in such a way as to pose a potential threat to the water system.

If the control assembly is not installed correctly or if it does not function properly the customer will be given up to 90 calendar days to complete installation or make required changes in installation or repairs. Failure to have a properly functioning cross-connection assembly installed or an assembly with a status of Passed will result in termination of service. Service will only be reinstated by having a function control assembly installed, inspected, a testing status of Passed, and by paying the reconnection fee.

**F. Installation of Backflow Prevention Devices:**

Where the customer is asked to install a backflow prevention assembly, the customer will be supplied with a list of acceptable and approved assemblies. In addition, minimum acceptable installation criteria will be supplied. It will be pointed out that a unit cannot be accepted until the water system has verified that the installation fully meets the installation criteria and has been tested to verify that the assembly has a status of Passed. Such backflow prevention assemblies must of a make, model, and orientation currently listed as acceptable by the both the water system and Tennessee Department of Environment and Conservation. A list of installation criteria for reduced pressure assembly and double check valve assembly can be found in Appendix X.

**G. Technical Assistance:**

The customer will be urged to notify the water system when they are ready to begin installing either a reduced pressure or double check valve type backflow preventer assembly. The Water system cross-connection representative will visit the site to detail how the assembly must be installed to achieve the desired protection and to minimize maintenance and testing problems.

**V. Premises Requiring Reduced Pressure Principle Assemblies or Air Gap Separation**

**A. High Risk High Hazards**

Where actual or potential cross-connections are found which pose an extreme hazard of immediate concern (high risk high hazard), the cross-connection control inspector shall require immediate or a short amount of time (14 days maximum)



depending on conditions for corrective action to be taken. In such cases, if corrections have not been made within the time limits set forth, water service will be discontinued.

High Risk High Hazards require a reduced pressure principle (or detector) assembly. The following list is (suggested) establishments deemed high risk high hazard:

**High Risk High Hazards:**

1. Mortuaries, morgues, autopsy facilities
2. Hospitals, medical buildings, animal hospitals and control centers, doctor and dental offices
3. Sewage treatment facilities, water treatment, sewage and water treatment pump stations
4. Premises with auxiliary water supplies or industrial piping systems
5. Chemical plants (manufacturing, processing, compounding, or treatment)
6. Laboratories (industrial, commercial, medical research, school)
7. Packing and rendering houses
8. Manufacturing plants
9. Food and beverage processing plants
10. Automated car wash facilities
11. Extermination companies
12. Airports, railroads, bus terminals, piers, boat docks
13. Bulk distributors and users of pesticides, herbicides, liquid fertilizer, etc.
14. Metal plating, pickling, and anodizing operations
15. Greenhouses and nurseries
16. Commercial laundries and dry cleaners
17. Film Laboratories
18. Petroleum processes and storage plants
19. Restricted establishments
20. Taxidermy facilities
21. Establishments which handle, process, or have toxic chemicals or use water of unknown or unsafe quality extensively.

**B. High Hazard**

In cases where the establishment is deemed a High Hazard, there is less risk of contamination, or less likelihood of cross-connections contaminating the system, a time period of 90 calendar days will be allowed for corrections. High Hazard is a cross-connection or potential cross connection involving any substance that could, if introduced in the public water supply, cause death, illness, and spread disease.

**VI. Premises Allowing Double Check Valve Assemblies**

**Low Hazard**

Low hazard is a cross-connection or potential cross-connection involving any substance that would not be a health hazard but would constitute a nuisance or be aesthetically objectionable if introduced into the public water supply. Low Hazards are protected by double check valve assemblies at minimum. Double check valve (and detector) assemblies used for main line protection are allowed only on Classes 1-3 fire protection systems. (A time period of 90 calendar days will be allowed for installation and corrections).

## **VII. Inspection and Testing of Backflow Prevention Assemblies**

### **A. Approval of New Installations**

The Water System will not consider the installation of assemblies to be complete until:

1. The installation has been inspected, and approved by the water system based installation criteria; and
2. Assembly is tested initially and has a status of Passed.

### **B. Routine Inspection and Testing of Assemblies**

Since all mechanical devices are subject to failure, periodic inspections are needed to ensure that they are functioning properly. All reduced pressure backflow prevention assemblies, double check valves, and double check detectors assemblies will be tested and a report completed (See appendix) by a person possessing a valid Certificate of Competency in Testing and Evaluating Backflow Prevention Assemblies in keeping with the following:

1. Immediately following installation;
2. At startup of lawn irrigation systems;
3. At least every 12 months;
4. Any time assemblies have been partially disassembled for cleaning and/or repair and;
5. Where there is indication that the unit may not be functioning properly (i.e. excessive or continuous discharges from relief valve, chatter, or vibration of internal parts).

To assure that all assemblies are functioning properly, assemblies will be tested within a 12 month period by backflow prevention assembly testers approved by the water system. If assembly is not tested within the 12 month period, enforcement action will be started. In conjunction with testing the assembly, the water system representative or approved tester will investigate to determine:

1. That cross-connections, actual or potential, have not been added ahead of the protective assemblies,
2. The assembly meets all installation criteria; and

3. The assembly has not been bypassed or altered in some other way to compromise the backflow protection.

All reduced pressure and double check valve backflow prevention assemblies, including detector assemblies, utilized for the protection of the water system will be tested by a person possessing a valid Certificate of Competency from the State and approved by the water system. A copy of this certification shall be on file with the Superintendent for any person installing, repairing, or testing backflow prevention assemblies. Records of all installations, repairs, and testing shall be submitted to the Cross-Connection Control Program Administrator upon completion. The Superintendent shall have the right to inspect and/or test an assembly whenever deemed necessary by the Superintendent. Water Service shall not be disrupted to test an assembly without the knowledge of the occupant of the premises. All testing and inspection services are to be at the expense of the owner or occupant of the premises. Backflow preventers on fire protection lines will be tested a registered fire sprinkler contractor with a valid Certificate of Competency in Testing and Evaluating Backflow Prevention Assemblies.

**C. Accepted Test Procedure**

Tests of assemblies will be made using a 3 or 5 valve test kit that has valid annual certification in accordance to the latest approved testing procedure from the Division of Water Supply.

**D. Official Tests**

Representatives of the Water Authority of Dickson County will perform routine tests of protective assemblies. These tests will be performed at no cost to the owner or occupant. Only tests performed by the water system's cross-connection control personnel or other persons possessing a valid Certificate of Competency will be considered official tests by the Water Authority of Dickson County. All test reports submitted must be of the type approved by the Division of Water Supply. All parts of testing procedure are recorded accurately on the test report with a determination of status (Passed or Failed). Certificates of Competency are not transferable.

**E. Prior Arrangements for Testing**

Prior arrangements will be made for a mutually agreeable time for testing the assemblies prior to performing the test. In all cases, the time which water services are interrupted will be held to a minimum in order to minimize the inconvenience to the customer. The customer, upon notification by the water system, has an obligation to work out a mutually agreeable time for testing assemblies within time allotted by the water system.

**F. Repairs or Corrections**

If the control assembly fails installation requirements described above or has a testing status of Failed, the customer will be given up to 90 calendar days for High and Low Hazard and 14 days to for High Risk High Hazard to complete installation or to make required changes in installation or repairs. The Water Authority of Dickson will require the assembly to be repaired promptly with manufacturer's specified parts, in accordance to manufacturer's suggested procedure, and placed in proper operating condition within the time limit set above. Following repairs, the assembly is to be tested again to verify that it is meeting performance standards and has a status of Passed. The owner will be held responsible for maintaining protective measures in a good state of repairs. The owner of an assembly needing repairs or maintenance will be permitted to do the work, if such owner is properly qualified or the owner may elect to secure the services of someone else experienced in the repair of the assemblies.

Failure to have a properly functioning cross-connection control assembly with a status of testing status of Passed installed within the time limits stated will result in termination of service. Service will only be reinstated by having a properly functioning backflow prevention assembly with a testing status of Passed and inspected, and by paying the reconnection fee.

#### **VIII. Parallel Units**

The water system may require the installation of parallel assemblies if the customer cannot readily accommodated interruptions of water service for periodic testing and repairs of the assemblies or is unwilling to cooperate in scheduling a shutdown promptly for testing during normal hours worked by water system personnel.

#### **IX. Non-Potable Supplies**

The potable water supply made available to a premises served by the public water system shall be protected from contamination as specified in the provisions of this policy. Any water pipe or outlet, in particular well, pond, or cistern, which could be used for potable or domestic purposes and which is not supplied by the potable water system should be labeled in a conspicuous manner such as:

#### **WATER UNSAFE FOR DRINKING**

The minimum acceptable sign shall have black letters at least one (1") inch high located on a red background. Color coding of pipelines, in accordance with Occupational Safety and Health Act guidelines, shall be required in locations where in the judgment of the Superintendent, such coding is necessary to identify and protect the potable water supply.

**X. Statement Required**

Any person whose premises is supplied with water from the public water system, and who also has on the same premises a well or other separate source of water supply, or who stores water in an uncovered or unsanitary storage reservoir from which the water is circulated through a piping system, shall file with the Superintendent a statement of the nonexistence of unapproved or unauthorized cross-connections, auxiliary intakes, bypasses or interconnections. Such statement shall contain an agreement that no cross-connections, auxiliary intakes, bypasses, or interconnections will be permitted upon the premises. Such statement shall also include the location of all additional water sources utilized on the premises and how they are used.

**XI. Penalty: Discontinuance of water supply**

- (1) Any person who neglects or refuses to comply with any of the provisions of this Policy may be deemed guilty of a misdemeanor and subject to a fine.
- (2) Independent of and in addition to any fines or penalties, the manager will for non-compliance of this policy and determination of a cross-connection within premises with public water system will discontinue the public water supply and service will not be restored until such non-compliance or cross-connection, auxiliary intake, bypass, or interconnection has been eliminated.

**XII. Records**

Records shall be maintained to document the Water Authority of Dickson County efforts to protect against backflows. A file will be maintained which will permit ready review of findings of on-site visits, corrections required, correspondence, tests records, etc., of the various premises visited. All cross-connections control records shall be maintained for a minimum of five (5) years. Adequate records will be maintained as a part of the Water System's permanent files to:

- A. Document the overall effort of the water system to properly discharge its responsibility to see that each customer receives a safe water under all foreseeable circumstances;
- B. Give a complete picture as to the current status and history of the individual premises regarding the potential for backflow, corrections made, etc.;
- C. To support enforcement action, whenever necessary, to obtain backflow protection; and
- D. Document that assemblies have been properly installed, maintained, and tested routinely.

Records to be maintained by Water Authority of Dickson County will include, but not necessarily be limited to the following;

- A. Master List of all Establishments with assemblies used for premise isolation, including location, assembly used, make, model, size, serial number etc.;
- B. Correspondence between water system and its customers
- C. Copy of Approved Plan
- D. Copy of Approved Policy
- E. Test reports for each assembly
- F. Copies of Certificates of Competency for each tester
- G. Copies of test kit certifications
- H. Site Inspection Reports
- I. Residential written surveys
- J. Backflow incident reports
- K. Records on initial surveys, recommendations, follow-up, corrective action, routine reinspections, etc.
- L. A file system designed to call to the attention of the cross-connection control personnel when testing and reinspections of premises are needed.
- M. Public education pamphlets and information.

**XIII. Backflow Contamination Procedures:**

If contamination is caused by backflow, the Water Authority of Dickson County will take the following actions to protect the health of the customer:

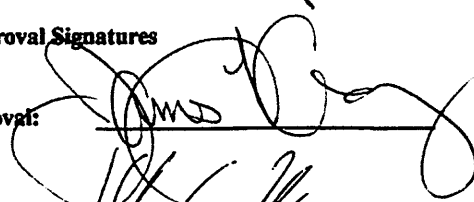
- A. Isolate the lines containing any contaminant from the distribution system;
- B. Inform customers with contaminated lines not to consume or use the water;
- C. Report contamination to the Nashville Field Office;
- D. Determine and separate the cross-connection allowing the backflow and contamination;
- E. Remove contamination from lines;
- F. Test and ensure that lines meet Division of Water Supply regulations for safe water;
- G. Return service to customers affected customers once water is safe;
- H. Document the details of the incident including cause, isolation, and correction, and send report to Nashville Field Office;
- I. Continue to survey and inspect system for similar situations that may allow backflow.

**XIV. Modifications to Plan**

This plan may be modified from time to time to meet the needs of the Water Authority of Dickson County and to meet the State of Tennessee recommendations and requirements. The plan and policy will be reviewed by the water system every five (5) years to determine if the existing plan meets requirements set forth by the Division of Water Supply and that it promotes an ongoing program. The manager shall be authorized to modify, as needed this plan without the approval of the water system's governing body. The manager shall report any modifications to this plan to the board for their information, in a timely manner. The manager shall also advise the Tennessee Department of Environment and Conservation Nashville Field Office of any changes to this plan for their review and comments.

**XV. Approval Signatures**

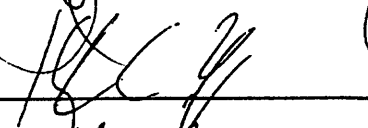
State Approval:



Date:

3/19/08

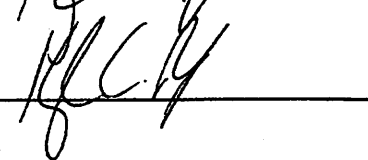
Board Approval:



Date:

3-12-2008

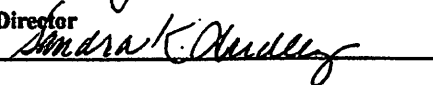
Board Chairman  
Signed:



Date:

3-12-2008

Executive Director  
Signed:



Date:

3/12/08

## *Installation Criteria for Enclosures*

*(A) Enclosures for outside installations shall meet the following criteria:*

- 1. All enclosures for backflow prevention devices shall be as manufactured by a reputable company or an approved equal.*
- 2. For backflow prevention devices up to and including two (2") inches, the enclosure shall be constructed of adequate material to protect the device from vandalism and freezing and shall be approved by the Water Authority of Dickson County. The complete assembly, including valve stems and hand wheels, shall be protected by being inside the enclosure.*
- 3. To provide access for backflow prevention devices up to and including two (2") inches, the enclosure shall be completely removable. Access for backflow prevention devices 2-1/2" and larger shall be provided through a minimum of two access panels. The access panels shall be of the same height as the enclosure and shall be completely removable. All access panels shall be provided with built-in locks.*
- 4. The enclosure shall be mounted to a concrete pad in no case less-than four (4") inches thick. The enclosure shall be constructed, assembled and/or mounted in such a manner that it will remain locked and secured to the pad even if any outside fasteners are removed. All hardware and fasteners shall be constructed of 300 series stainless steel.*
- 5. Heating equipment, if required, shall be designed and furnished by the manufacturer of the enclosure to maintain an interior temperature of +40°F with an outside temperature of -30°F and a wind velocity of 15 miles per hour.*

• is a portion of the cross connection policy. Any changes made to these criteria must be adopted and roved in your policy.



## *Installation Criteria*

*Installation Criteria The minimum acceptable criteria for the installation of reduced pressure backflow prevention assemblies, double check valve assemblies or other backflow prevention assemblies requiring inspection or testing shall include the following:*

- (a) All required assemblies shall be installed in accordance with the provisions of this policy, by a person approved by the Water Authority of Dickson County who is knowledgeable in the proper installation. Only licensed sprinkler contractors may install, repair or test backflow prevention devices on fire protection systems.*
- (b) All assemblies shall be installed in accordance with the manufacturer's instructions and shall possess appropriate test cocks, fittings and caps required for the testing of the device. All fittings shall be of brass construction, unless otherwise approved by the Water Authority of Dickson County, and shall permit direct connection to department test equipment.*
- (c) The entire assembly, including valves and test cocks, shall be easily accessible for testing and repair,*
- (d) All assemblies shall be placed in the upright position in a horizontal run of pipe.*
- (e) Assembly shall be protected from freezing, vandalism, mechanical abuse and from any corrosive, sticky, greasy, abrasive or other damaging environment.*
- (f) Reduced Pressure Backflow Prevention devices shall be located a minimum of twelve (12") inches plus nominal diameter of the device above either; 1) the floor, 2) the top of opening(s) in the enclosure or 3) Maximum flood level, whichever is higher. Maximum height above the floor surface shall not exceed sixty (60") inches.*
- (g) Clearance from wall surfaces or other obstructions shall be at least six (6") inches. Assemblies located in non-removable enclosures shall have at least twenty-four (24") inches of clearance on each side of the assembly for testing and repairs.*
- (h) Assemblies shall be positioned where a discharge from the relief port will not create undesirable conditions. The relief port must never be plugged, restricted or solidly piped to a drain. ) An approved air-gap shall separate the relief port from any drainage system. An approved air-gap shall j at least twice the inside diameter of the supply line, but never less than one (1") inch. An approved strainer shall be installed immediately upstream of the backflow prevention device, except the case of a fire protection system.*
- (i) Assemblies shall be located in an area free from submergence or flood potential, therefore never in a below grade pit or vault.*
- (j) Assemblies shall be adequately supported to prevent sagging.*

*(k) Adequate drainage shall be provided for all assemblies. Reduced Pressure Backflow Prevention devices shall be drained to the outside whenever possible.*

*(l) Fire hydrant drains shall not be connected to the sewer, nor shall fire hydrants be installed such that backpressure/backsiphonage through the drain may occur.*

Existing assemblies not meeting the minimum requirements above, with the exception of being installed in an area that may allow flooding of the assembly, may be allowed variances by the water system. However, no variance may be allowed that will compromise the protection of the assembly or that will allow contaminants in the distribution system. All variances should be documented and kept on file for the life of the assembly. Please review the document entitled: Approved Backflow Prevention Assemblies.