

ORDINANCE NO. 86-35

AN ORDINANCE regulating the construction and maintenance of cross-connections, auxiliary intakes, by-passes, and inter-connections affecting the city water system and any other water system; the use of water from private sources; the filing of statements concerning the use of and method of handling water from private sources; requiring the correction of unapproved or unauthorized installations; to provide a penalty for the violation of the provisions of this ordinance; and to repeal all ordinances in conflict with the provisions of this ordinance.

BE IT ORDAINED by the Board of Mayor and Aldermen of the Town of Spring Hill, Tennessee as follows:

SECTION 1. That the following definitions and terms shall apply in the interpretation and enforcement of this ordinance.

Public Water System. The waterworks system which furnishes water to Town of Spring Hill for general use and which is recognized as a public water system by the Tennessee Department of Health and Environment.

Cross-Connection. Any physical arrangement whereby a public water system is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains, or may contain, contaminated water, sewage, or other waste or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water system as a result of backflow. By-pass arrangements, jumper connections, removable sections, swivel or change-over devices through which, or because of which backflow could occur are considered to be cross-connections.

Auxiliary intake. Any piping connection or other device whereby water may be secured from a source other than that normally used.

By-Pass. Any system of piping or other arrangement whereby the water may be diverted around any part or portion of a water purification plant.

Inter-Connection. Any system of piping or other arrangement whereby the public water system is connected directly with a sewer, drain, conduit, pool, storage reservoir, or other device which does or may contain sewage or other waste or

liquid which would be capable of imparting contamination to the public water system.

Person. Any individual, corporation, company, association, partnership, State, municipality, utility district, water cooperative, or Federal Agency.

SECTION 2. That the Town of Spring Hill Public Water System is to comply with Sections 68-13-701 through 68-13-719 of the Tennessee Code Annotated, as well as the Rules and Regulations for Public Water Systems, legally adopted in accordance with this Code, which pertain to cross-connections, auxiliary intakes, by-passes, and inter-connections, and establish an effective on-going program to control these undesirable water uses.

SECTION 3. That it shall be unlawful for any person to cause a cross-connection to be made; or allow one to exist for any purpose whatsoever unless the construction and operation of same have been approved by the Tennessee Department of Health and Environment, and the operation of such cross-connection, auxiliary intake, by-pass or inter-connection is at all time under the direct supervision of the Waterworks Superintendent of the Town of Spring Hill Public Water System.

SECTION 4. That any person whose premises are supplied with water from the public supply, and who also has on the same premises a separate source of water supply or stores water in an uncovered or unsanitary storage reservoir from which the water stored therein is circulated through a piping system, shall file with the Waterwork Superintendent a statement of the non-existence of unapproved or unauthorized cross-connections, auxiliary intakes, by-passes, or inter-connections. Such statement shall also contain an agreement that no cross-connection, auxiliary intake, by-pass, or inter-connection will be permitted upon the premises.

SECTION 5. That it shall be the duty of the Waterworks Superintendent Town of Spring Hill of the Public Water System to cause inspections to be made of all properties served by the public water supply where cross-connections with the public water supply are deemed possible. The frequency of inspections and re-inspections based on potential health hazards involved, shall be established by the Waterworks Superintendent of the Town of Spring Hill Public Water System and as approved by the Tennessee Department of Health and Environ-

ment.

SECTION 6. That the Waterworks Superintendent or authorized representative shall have the right to enter at any reasonable time, any property served by a connection to the Town of Spring Hill Public Water System for the purpose of inspecting the piping system or systems therein for cross-connections, auxiliary intakes, by-passes, or inter-connections. On request, the owner, lessee, or occupant or any property so served shall furnish to the inspection agency any pertinent information regarding the piping system or systems on such property. The refusal of such information or refusal of access, when requested, shall be deemed evidence of the presence of cross-connections.

SECTION 7. That any person who now has cross-connections, auxiliary intakes, by-passes, or inter-connections in violation of the provisions of this ordinance shall be allowed a reasonable time within which to comply with provisions of this ordinance. After a thorough investigation of existing conditions and an appraisal of time required to complete the work, the amount of time shall be designated by the Waterworks Superintendent of the Town of Spring Hill Public Water System.

The failure to correct conditions threatening the safety of the public water system as prohibited by this ordinance and the Tennessee Code Annotated, Section 68-13-711, within a reasonable time and within the time limits set by the Town of Spring Hill Public Water System, shall be grounds for denial of water service. If proper protection has not been provided after a reasonable time, the utility shall give the customer legal notification that water service is to be discontinued, and physically separate the public water system from the customers on-site piping system in such a manner that the two systems cannot again be connected by an unauthorized person.

Where cross-connections, inter-connections, auxiliary intakes, or by-passes are found that constitutes an extreme hazard of immediate concern of contaminating the public water system, the management of the water system shall require that immediate corrective action be taken to eliminate the threat to the public water system. Immediate steps shall be taken to disconnect the public water system from the on-site piping system unless the imminent hazard(s) is corrected immediately.

SECTION 8.

That where the nature of use of the water supplied a premises by the water system is such that it is deemed:

- a. Impractical to provide an effective air-gap separation;
- b. That the owner and/or occupant of the premises cannot, or is not willing, to demonstrate to the official in charge or the water system, or his designated representative, that the water use and protective features of the plumbing are such as to propose no threat to the safety or potability of the water system;
- c. That the nature and mode of operation within a premises are such that frequent alterations are made to the plumbing;
- d. There is a likelihood that protective measures may be subverted, altered, or disconnected.

The Waterworks Superintendent of the Town of Spring Hill Public Water System, or his designated representative, shall require the use of an approved protective device on the service line serving the premises to assure that any contamination that may originate in the customer's premises is contained therein. The protective devices shall be reduced pressure zone type backflow preventer approved by the Tennessee Department of Health of Environment as to manufacture, model, and size. The method of installation of backflow protective devices shall be approved by the Waterwork Superintendent Public Water System prior to installation and shall comply with the criteria set forth by the Tennessee Department of Health and Environment. The installation shall be at the expense of the owner or occupant of the premises.

Personnel of the Town of Spring Hill Public Water System shall have the right to inspect and test the device or devices on an annual basis or whenever deemed necessary by the Waterwork Superintendent, or his designated representative. Water service shall not be disrupted to test the device without the knowledge of the occupant of the premises.

Where the use of water is critical to the continuance of normal operations or protection of life,

property, or equipment, duplicate units shall be provided to avoid the necessity of discontinuing water service to test or repair the protective device or devices. Where it is found that only one units has been installed and the continuance of service is critical, the Waterworks Superintendent shall notify, in writing, the occupant of the premises of plans to discontinue water service and arrange for a mutually acceptable time to test and/or repair the device. The water system shall require the occupant of the premises to make all repairs indicated promptly, to keep the units(s) working properly, and the expense of such repairs shall be borne by the owner or occupant of the premises. Repairs shall be made by qualified personnel, acceptable to the Waterworks Superintendent of the Town of Spring Hill Public Water System.

The failure to maintain backflow prevention device(s) in proper working order shall be grounds for discontinuing water service to a premises. Likewise the removal, by-passing, or altering the protective device(s) or the installation thereof so as to render the device(s) ineffective shall constitute grounds for discontinuance of water service. Water service to such premises shall not be restored until the customer has corrected or eliminated such conditions or defects to the satisfaction of the Town of Spring Hill Public Water System.

SECTION 9.

That the potable water system made available to premises served by the public water system be protected from possible contamination as specified herein. Any water outlet which could be used for potable or domestic purposes and which is not supplied by the potable system must be labeled in a conspicuous manner as:

WATER UNSAFE  
FOR DRINKING

Minimum acceptable sign shall have black letters at least one-inch high located on a red background.

SECTION 10.

The requirements continued herein shall apply to all premises served by the Town of Spring Hill Public Water System whether located inside or outside the Corporate Limits and are hereby made a part of the conditions required to be met for the City to provide water services to any premises. Such action, being essential for the protection of



Cross-Connection Control Plan

Spring Hill<sup>for</sup> Water System

I. INTRODUCTION

A. Goal

The goal of the Spring Hill Water System 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 threatens the health and safety of our customers and threatens our 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 disease organisms, toxic materials or other hazardous substances which 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 devices.

B. Plan of Action

The \_\_\_\_\_ Water System is determined to take every reasonable precaution to see that cross-connections are not allowed to contaminate the water being distributed to its customers. This cross-connection plan outlines a program of action designed to control cross-connections within the area served by the \_\_\_\_\_ Water System. This plan is intended to be a practical guide for safeguarding the quality of water distributed from becoming contaminated or polluted through backflow.

II. AUTHORITY FOR CONTROLLING CROSS CONNECTIONS

A copy of (ordinance) (policy) No. 86-35 adopted, September 19 86, by the (City Council) (Board of Commissioners) (etc.) is attached to this plan as Appendix 1. This (ordinance) (policy) prohibits cross-connections within the water system, authorizes the water system to make inspections of the customers premises, requires that cross-connection hazards be corrected and provides for enforcement. This (ordinance) (policy) expresses a clear determination on the part of the (City Council) (Board of Commissioners) (etc.) 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 (ordinance) (policy) is considered to be a sound basis for the control of cross-connection hazards by the operating staff and management of the \_\_\_\_\_ Water System. The provisions contained within this (ordinance) (policy) are in keeping with the

requirements set forth in Section 68-13-711 of The Tennessee Code Annotated and Section 1200-5-1-.17(6) of the Tennessee Department of Health and Environment Rules governing Public Water Systems.

### **III. PROGRAM TO BE PURSUED**

The \_\_\_\_\_ Water System (will establish) (has established) an active on-going cross-connections 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 System.

#### **A. Staffing**

The \_\_\_\_\_ Water System (will) (has) designated an individual to see that the program to control cross-connections is pursued in an aggressive and effective manner. It is proposed that a minimum of \_\_\_\_\_ man-days per week be allotted to the cross-connection program initially. The effectiveness of the program will be evaluated periodically. An effort will be made to provide additional staffing, if necessary, to effectively control cross-connections. Personnel who work on the cross-connection control program on a part-time basis will be expected to give priority to cross-connection control in keeping with the needs that arise.

#### **B. Cross-Connection Surveys**

The \_\_\_\_\_ Water System will visit the premises of all customers considered likely to have cross-connections. The various water uses within the premises will be investigated to determine if backflow can occur. Follow-up visits will continue until the threat of backflow has been corrected. In addition, routine visits will be made periodically to determine if backflow prevention measures are maintained, and are functioning properly and that new cross-connections have not been created.

#### **C. Public Awareness Efforts**

The \_\_\_\_\_ Water System 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 use every practical means available to acquaint the customers with the health hazards associated with cross-connections in an effort to get their cooperation. It is anticipated that the local radio and newspaper can be utilized in informing the customers concerning this program. An effort will be made to have an employee, or employees, of the water system to appear before the civic clubs, PTA's, school groups, etc. to discuss the problem of cross-connections and the program which is being pursued for their control.

The following measures will also be used to inform our customers about the need to control cross-connections:

1. Reminders with water bills at least once a year.
2. Posters at the (utility district) (water company) office displayed one month out of each quarter.
3. Furnish the local newspaper an example of a cross-connection contamination or pollution incident once each year.
4.
  - a. Personal visits to commercial, industrial, institutional, and agricultural customers to explain the need for controlling cross-connections.
  - b. Whenever possible, any such potential customer will be informed of needed cross-connection measures in the design or construction stage.
5. Invite school groups to tour treatment facilities (office and/or shops) and discuss the systems efforts to provide high quality water service and to control cross-connections. Occasionally open houses for the public may be utilized to improve the water system's public image and to inform the customers about cross-connection control.
6. Give talks, show slides, movies, etc. at local elementary and high schools.

**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 cross-connections are found to exist, the water system will require the problem to be eliminated or isolated by a properly installed, approved backflow prevention device to prevent the possibility of backflow into the distribution system. Such protective measures will include, where internal corrections do not fully protect the water system, a backflow protection device 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 corrective action can not be obtained within a reasonable period of time, water service will be discontinued, for the protection of the health and safety of the other customers.

#### IV. SCHEDULING INSPECTIONS

The selection of existing premises for cross-connection surveys will be made on the basis of suspected hazard. In general, those customers suspected of having the most hazardous cross-connections will be investigated first. Investigations shall continue until all premises considered likely to have cross-connection problems have been investigated.

##### A. First Priority

After reviewing a listing of the industrial, commercial and institutional customers served by the \_\_\_\_\_ Water System, the following types of establishments were selected as the ones to receive top priority for early investigation.

<u>ITEM NO.</u>	<u>TYPE OF PREMISES</u>	<u>APPROXIMATE NUMBER OF PREMISES</u>
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It is proposed to survey the above types of premises in approximately the order listed. Since the above establishments are considered likely to have some of the most hazardous cross-connections, investigations of these establishments will be completed as soon as possible. A time table of \_\_\_\_\_ months has been allotted to make the initial investigation of the above listed premises. Follow-up visits will be made as necessary to these premises until all cross-connections found have been corrected. A goal of obtaining corrective action, as needed, for the above establishments within 6 months or less from the date of the initial survey has been established.

##### B. Second Priority Establishments

The following list of establishments are suspected of likely having cross-connection problems of somewhat lower degree hazard than those listed earlier.

<u>ITEM NO.</u>	<u>TYPE OF PREMISES</u>	<u>NUMBER OF PREMISES</u>
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The \_\_\_\_\_ Water System has set a goal of visiting these establishments within the first \_\_\_\_\_ months after the adoption of this cross-connection program. It is anticipated that backflow protection will be completed within six months or less from the date of the initial survey.

C. Other Inspections

As other establishments are found which should logically be included in one of the above priority listings, they will be included and attention will be given to making a cross-connection inspection promptly.

Cross-connection surveys will continue beyond those listed in the above two priority categories with the aim being to visit any remaining industrial, commercial or institutional type customers as well as agricultural operations that may pose a high hazard. In addition, prompt attention will be given to identifying any residential type customers that may have serious cross-connection problems and these will be surveyed promptly.

D. Follow-up Visits and Enforcement Action

Follow-up visits will be made as needed to obtain appropriate backflow protection voluntarily. If voluntary cooperation cannot be obtained, the water system will not hesitate to take appropriate enforcement action to obtain adequate backflow protection. If the customer refuses to make corrective action needed for the protection of the water system, the \_\_\_\_\_ Water System will, after appropriate written notification, discontinue water service. In such cases water service will not be restored until appropriate protection has been provided and assurances received that the facilities will be properly maintained.

V. PROCEDURES FOR INSPECTIONS

The \_\_\_\_\_ Water System hopes that its efforts to acquaint our customers 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 customers entire internal water delivery system including the various outlets, water using equipment, etc. 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 Surveys

The \_\_\_\_\_ Water System recognizes that it may be advantageous to give officials of certain establishments advanced notice of the water system's intentions of making a detailed cross-connection survey. This will usually be done by sending a letter to the official in charge of the establishment, informing him that a survey is being scheduled and asking him to designate an employee, who is knowledgeable of the internal plumbing of the system and water usage,

to assist in making the survey. Details as to the date, time of survey and who is to assist with the survey will then be pre-arranged before conducting the survey. When such appointments are made, the water system will exercise care to see that the appointments are kept with promptness. The water system's representative will be as courteous and helpful as possible when making the surveys.

**B. Unannounced Visits**

The \_\_\_\_\_ Water System intends to make unannounced visits to some premises when conducting cross-connection surveys. Such will usually be the case where (1) the establishment is small and no difficulty is expected in locating the occupant or a knowledgeable representative, (2) where unannounced visits will not be disruptive or (3) particularly, where it is felt that advance notice of the visit would likely result in an unrealistic picture of typical water use practices.

**C. Field Visits Procedures**

During the investigation, a field sheet will be completed showing details of significant findings. The hazards which cross-connections pose will be explained fully to the persons assisting in the survey. The customer will be informed that the information gathered during the survey will be reviewed by the Water System's management and/or engineering staff and that a written report containing any recommendations will be mailed to them shortly.

**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, and/or the ranking management official of the establishment. Cross-connections found will be described briefly along with the recommended 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 customer in working out any details with which he may have questions. The customer will be given a time limit for making the needed corrections in the correspondence. Time for making corrections may vary from thirty to sixty days and in some few cases ninety days, depending upon the seriousness of the cross-connections involved and upon the complexity and difficulty of correcting the problems.

**E. Follow-up Visit and Re-inspections**

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.

F. Installation of Backflow Prevention Devices

Where the customer is asked to install a reduced pressure or double check valve assembly the customer will be supplied a list of acceptable units. In addition, minimum acceptable installation criteria will be supplied. It will be pointed out that the unit(s) 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 unit(s) is meeting accepted performance standards. Such backflow prevention units must be of a make and model currently listed as acceptable by both the Water System and the Tennessee Department of Health and Environment.

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 device. The \_\_\_\_\_ Water System's cross-connection representative will visit the site to detail how the units must be installed to achieve the desired protection and to minimize maintenance and testing problems.

VI. PROTECTIVE MEASURES REQUIRED

A. Internal Protection

The \_\_\_\_\_ Water System will evaluate the customer's entire internal water delivery system and the various water uses before determining the best way to protect the public water system. Where the cross-connection survey reveals that a limited number of internal approved air-gap separation or vacuum breakers might be used to protect against backflow, the water system will consider this approach. Since the water system's primary concern and responsibility is to safeguard the quality of water within the public water supply lines, while the customer is primarily concerned for his internal water lines, such internal protective measures will only be accepted by the water system if:

1. Plumbing changes that might nullify the protective measures are highly unlikely.
2. Customer is considered likely to maintain protection.
3. It is agreeable to both the customer and water system that a thorough cross-connection survey be made of the entire internal potable water supply system at least annually (or more often as the need arises).
4. The customer can be expected to cooperate fully on such inspections.

5. The water system considers internal protective measures within the customer's plumbing system fully adequate to not compromise the integrity of the public water system.

**B. Main-line Protection**

Main-line protection, or protective devices on the customer's service line, will be required on all premises where the water system has reservations that anything less could compromise the goal of the water system to deliver safe water under all foreseeable circumstances to all of its customers.

**C. Acceptable Protective Devices**

All backflow prevention devices used for the protection of the water system must be of a make and model acceptable to the \_\_\_\_\_ Water System and approved by the Division of Water Supply, Tennessee Department of Health and Environment. All such devices will be installed at a location and in a manner approved by the \_\_\_\_\_ Water System and shall meet the minimum standards established by the Water System and the Tennessee Department of Health and Environment.

**VII. INSPECTION AND TESTING OF PROTECTIVE MEASURES**

**A. Approval of New Installations**

The \_\_\_\_\_ Water System will not consider the installation of protective measures to be complete until (1) the installation has been inspected and approved by the water system, and (2) where applicable\* tested to determine that the protective devices meets acceptable performance standards.

**B. Routine Inspection and Testing of Protective Measures**

To assure that all protective devices are functioning properly, representatives of the \_\_\_\_\_ Water System will inspect and test protective devices\* at least annually.

**C. Routine Re-visits**

In conjunction with the visit for testing backflow prevention devices, the water system's representatives will investigate to determine (1) that cross-connections, actual or potential, have not been added ahead of the protective device(s), (2) that the protection has not been by-passed or altered in some other way that would compromise the desired protection.

\*All continuous pressure type devices such as the reduced pressure, double check valve, double check-detector check, and pressure vacuum breakers must be tested routinely.

Where service line protection is not in place, the system's cross-connection control representative will make a complete inspection of the internal plumbing system and all water uses. Where only internal reduced pressure backflow prevention devices are utilized for the protection of both the public water system and the occupants, a thorough investigation will be made of all water uses from the supply side of the protective devices. It is the \_\_\_\_\_ Water System's goal to make such inspections at least annually.

**D. Reinspection of Other Premises**

Premises where (1) cross-connections were not found previously but are likely to be created, (2) cross-connections have been eliminated to the water system's satisfaction by either piping changes, or the installation of vacuum breakers or approved air-gap separations and, (3) plumbing and equipment modifications have been made or are likely to be made, will be scheduled for reinspection within a year from the previous visit (or more often) to assure that the water system is still properly protected. During such repeat inspections, the water system's representative will make a thorough evaluation of each water use within the premises to detect any cross-connections that may have been created between visits.

**VIII. PREMISES REQUIRING MAXIMUM PROTECTION MEASURES**

**A. Extreme Hazards Requiring Immediate Correction**

Where cross-connections are found which pose an extreme hazard of immediate concern, the cross-connection inspector shall require immediate corrective action to be taken. In the case of non-compliance, immediate steps will be taken to discontinue water service. In such cases, water service will not be re-established until the necessary corrections have been made.

**B. Premises of Less Immediate Concern**

In cases where there is less hazard, or less likelihood of cross-connections contaminating the system, a reasonable time period will be allowed for corrections.

Reduced pressure backflow prevention or approved air-gap separation devices will be required on the service line serving the customer's premises under the following circumstances:

1. To isolate auxiliary water sources, including:
  - a. Private wells
  - b. Surface water sources
  - c. Recirculated waters, process fluids, gases, etc.

- d. Stored water, from public water system, in other than acceptable facilities or which receive chemical or other treatment
2. To protect against submerged outlets or connections to tanks or piping systems, including:
    - a. Vessels containing, or possibly containing, contaminated substances (chemical, bacteriological, radiological, etc.)
    - b. Heating or cooling coils submerged in containers
    - c. Treated water for boilers, fire systems, chilled water systems, etc.
    - d. Commercial boilers, with or without treatment
    - e. Sewage treatment plants, pumping stations where backflow potential exists
    - f. Facilities for direct flushing of waste hoppers, sewers, etc.
    - g. Industrial or other piping systems.

Because of the high degree of hazards involved in the following types of establishments, it is deemed essential that maximum protection, consisting of an air-gap separation or a reduced pressure type backflow preventer, be provided on the water service line leading to these establishments:

1. Premises with auxiliary water supplies
2. Premises wherein inspection is restricted
3. Hospitals, mortuaries, clinics, and professional buildings where similar degree of hazard exists
4. Sewage treatment plants and pumping stations
5. Chemical plants
6. Metal plating plants
7. Processing plants (food, beverage, petroleum, or other) where processed or used water may be cross-connected to the water system
8. Manufacturing plants or shops with water using equipment or other uses than can degrade water quality
9. Radioactive material processing plants or nuclear reactors
10. Laboratories

#### IX. TESTING OF PROTECTIVE DEVICES

The \_\_\_\_\_ Water System recognizes that it is essential that continuous pressure type backflow prevention devices be tested on a regular basis by competent testers, if the devices are to be relied upon. It is recognized that the devices can fail to meet the performance standards for which they were designed due to fouling, wear, or mechanical problems. Routine testing and proper maintenance is considered essential for proper operation.

A. Routine Testing of Backflow Prevention Devices

All reduced pressure backflow prevention devices utilized for the protection of the \_\_\_\_\_ Water System will be tested routinely by a trained certified tester in keeping with the following criteria:

1. Immediately following installation
2. At least annually and more frequently where high hazards are involved
3. Any time protective devices have been partially disassembled for cleaning and/or repairs
4. 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).

Double check valves or double check-detector check valve assemblies and pressure type vacuum breakers will be tested in keeping with the following criteria:

1. Immediately following installation
2. At least every six (6) months
3. Any time devices have been disassembled for cleaning or repairs
4. Any time a leaking pressure type vacuum breaker is found, it will be repaired or replaced and then tested promptly.

B. Accepted Test Procedures

Tests of these units will be made using test equipment and test procedures conforming to those outlined in the 7th Edition of the "Cross-Connection Control Manual" published by the Foundation for Cross-Connection Control and Hydraulic Research - University of Southern California.

C. Repairs

Should a protective device be found defective (not meeting above referenced performance standards), the water system will require the device to be repaired promptly and placed in proper operating condition. Following repairs, the device is to be tested again to verify that it is meeting performance standards. The owner will be held responsible for maintaining protective measures in a good state of repairs. The owner of a device needing repairs or maintenance will be permitted to do the work, if he can handle it, or may elect to secure the services of someone else experienced in the repair of the devices.

D. Official Tests

Since the \_\_\_\_\_ Water System is vitally interested in the proper performance of backflow prevention devices, its

representative will test the devices as needed without cost to the customer. Only tests performed by the water system's cross-connection control personnel or other experienced certified testers engaged by the water system, will be considered official tests by the water system. The water system will normally use its personnel who have completed special training and who hold a valid certificate issued by Tennessee Department of Health and Environment to test backflow prevention devices. In the event that the water system finds itself without a certified individual, the services of a certified individual from another water system or service organization specializing in backflow prevention work, will be secured to test protective devices as needed to comply with the above criteria.

**E. Prior Arrangements for Testing**

Prior arrangement will be made for a mutually agreeable time for testing the devices prior to actually making the test. In all cases, the time which water service is 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 protective devices within 14 days.

**F. Parallel Units**

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

**Records**

Good records are invaluable in the water system's efforts to safeguard the quality of water being distributed against degradation from backflow through cross-connections. Adequate records will be maintained as a part of the \_\_\_\_\_ Water System's permanent files to:

1. 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.
2. Give a complete picture as to the current status and history of individual premises regarding the potential for backflow, corrections made, etc.
3. To support enforcement action, whenever necessary, to obtain backflow protection.
4. Document that protective measures have been properly installed, maintained, and tested routinely.

Records to be maintained by the \_\_\_\_\_ Water System will include, but not necessarily be limited to the following:

1. Records on initial surveys, recommendations, follow-up, corrective action, routine reinspections, test results, etc. for individual premises.
2. Correspondence between water system and its customers, health department, plumbing inspection agency, etc.
3. A master listing of all protective devices, showing the location, kind of protective device, make, model, size, etc.
4. Test reports on each protective device.
5. A file system designed to call to the attention of the cross-connection control personnel when testing and reinspections of premises are needed.
6. A special form will be added to the meter books to remind the meter reader to visually inspect protective device(s) located on the service line. Any signs of malfunction of the unit(s) or of their being rendered ineffective will be noted and reported to the cross-connection control personnel, who will follow-up with a detailed inspection.

Approved: \_\_\_\_\_ 198\_\_\_\_\_.

By: \_\_\_\_\_  
(City Council, Commissioners, etc.)

Signed: \_\_\_\_\_ Date \_\_\_\_\_  
(Mayor, President, etc.)

\_\_\_\_\_ Date \_\_\_\_\_  
(Superintendent, Manager, etc.)

RL/djv DWS #1