

ORDINANCE NO. 33**CROSS CONNECTION AND BACKFLOW PREVENTION ORDINANCE**

**NOW, THEREFORE, BE IT ORDAINED** by the Board of Commissioners of Caswell County

**SECTION 1. Definitions**

The following terms shall have the meanings provided unless the context clearly indicates otherwise.

Air-gap Separation - An unobstructed vertical distance through the atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the receptacle. An approved air-gap vertical separation shall be at least double the diameter of the supply pipe. In no case shall the air-gap be less than one inch.

Approved - Certified in writing by a Certified Testing Agency (as listed in Article 9 herein) as an acceptable device or methodology for the purpose of backflow prevention and approved by the County.

Auxiliary Intake - Any piping connection or other device whereby water may be secured from a source other than public water supply.

Auxiliary Water System - Any water system on or available to the premises other than the waterworks. These auxiliary waters may include as wells, lakes, or streams, or process fluids or used water. They may be polluted, contaminated, or objectionable, or constitute a water source or system over which the water purveyor does not have control.

Backflow - Any flow of water into the public water supply from any other source due to a cross-connection, auxiliary intake, interconnection, backpressure, backsiphonage, any combination thereof, or other cause.

Backpressure - Any pressure on any source of water other than the public water supply which may be greater than the pressure on the public water supply and may result in a backflow.

Backflow Prevention Device - An approved effective device or method used to prevent backflow from occurring in the potable water supply. The type of device required shall be based on degree of hazard, existing or potential.

Backsiphonage - Any circumstance in which the pressure on the public water supply may be reduced to the point that the elevation and atmospheric pressure on a source of water other than the public water supply may result in a pressure to be greater than the pressure on the public water supply and may result in a backflow.

Certified Tester - A person who has proven his/her competency to test, repair, overhaul and make reports on backflow prevention devices as evidenced by certification of successful completion of a training program approved by the County.

Confinement Device - A backflow prevention device, as approved and required, installed within a private plumbing or distribution system to isolate a localized hazard from the remainder of said system.

Consumer - Any person, firm, or corporation responsible for any property at which water from the County public water supply is received. In the absence of other parties or the failure of other parties to accept the responsibilities herein set forth, the owner of record shall be ultimately responsible.

Consumer's Water System - Any water system located on the consumer's premises, supplied by or in any manner connected to a waterworks.

Contaminant - Any physical, chemical, biological, or radiological substance or matter in water.

Contamination - Any introduction into pure water of microorganisms, wastes, wastewater, undesirable chemicals, or gases.

Containment Device - A backflow prevention device, as approved and required, installed at the point of separation between the public water supply and a private service or private distribution system or at the point of metering.

Cross-connection - Any physical connection whereby the public water supply is connected with any other water supply system, whether public or private, either inside or outside of any building or buildings, in such a manner that a flow of water into the public water supply is possible either through the manipulation of valves or because of ineffective check or back-pressure valves, or because of any other arrangement.

Cross-connection Control Coordinator - The official position established and authorized by the County to administer, interpret this section, and who shall be a certified tester.

Degree of Hazard - This is a term derived from an evaluation of the potential risk to health and the adverse effect upon the waterworks.

Double Check Valve Backflow Prevention Device - An approved assembly composed of two (2) single, spring-loaded independently operating check valves, including tightly closing shut-off valves located at each end of the assembly, and having suitable connections for testing the watertightness of each check valve.

Dual Check Valve Assembly - An approved device containing two (2) independently acting check valves in series within one assembled unit.

Fire Line - A system of pipes and equipment used to supply water in an emergency for extinguishing fire.

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

Interchangeable Connection - An arrangement or device that will allow alternate but not simultaneous use of two (2) sources of water.

Interconnection - Any system of piping or other arrangement whereby the public water supply is connected directly with a sewer, drain, conduit, pool, heat exchanger, storage reservoir, or other device which does or may contain sewage or other waste or substance which would be capable of imparting contamination to the public water supply.

Pollution - The presence of any foreign substance (chemical, physical, radiological, or biological) in water that tends to degrade its quality so as to constitute an unnecessary risk or impair the usefulness of the water.

Pollution Hazard - A condition through which an anesthesiologically objectionable or degrading material may enter the waterworks or a consumer's water system.

Pressure Vacuum Breaker - An approved assembly containing an independently operating spring loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly must be equipped with suitable connections for testing the proper operation of the device and tightly closing shut-off valves located at each end of the assembly.

Process Fluids - Any fluid or solution which may be chemically, biologically, or otherwise contaminated or polluted, which would constitute a health, pollutional, or system hazard, if introduced into the waterworks. This includes, not is not limited to:

- (1) Polluted or contaminated waters;
- (2) Process waters;
- (3) Used waters originating from the waterworks which may have deteriorated in sanitary quality;
- (4) Cooling waters;
- (5) Contaminated natural waters taken from wells, lakes, streams, or irrigation systems; and
- (6) Chemicals in solution or suspension; and
- (7) Oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for fire-fighting purposes.

Public Water Supply - The water and waterworks system of Caswell County, and its customers for general use and which supply is recognized as the public water supply by the North Carolina Department of Human Resources.

Pure Water or Potable Water - Water fit for human consumption and which is sanitary and free of minerals, organic substances, and toxic agents in excess of maximum allowable amounts for domestic usage in the area served and normally adequate in supply for the minimum health requirements of the persons served.

Reduced Pressure Zone Principle Backflow Prevention Device (RPZ) - An approved device containing within its structure two (2) spring loaded independently operating check valves, together with an automatically operating pressure differential relief valve located between the two (2) check valves. The first check valve reduces the supply pressure a predetermined amount so that during normal flow and at cessation of normal flow, the pressure between the checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the check valve less than the supply pressure. This device shall have suitable connections for testing the proper operation of the device, including tightly closing shut-off valves located at each end of the device.

Service Connection - The terminal end of a service line from the waterworks. If a meter is installed at the end of the service, then the service connection means the downstream end of the water.

System Hazard - A condition posing an actual, or threat of, damage to the physical properties of the waterworks or a consumer's water system.

Used Water - Any water supplied by a water purveyor from waterworks to a consumer's water system after it has passed through the service connection.

Water Purveyor - An individual, group of individuals, partnership, firm, association, institution, corporation, municipal corporation, or the federal government which supplies water to any person within the service area of Caswell County from or by means of any waterworks.

Waterworks - All structures and appliances used in connection with the collection, storage, purification, and treatment of water for drinking, domestic, or all other uses and the distribution thereof.

## SECTION 2. Compliance with Federal and State Law

Caswell County will comply with the Federal Safe Drinking Water Act, the North Carolina Drinking Water Act, and North Carolina State Building Code, which pertain to cross-connections, auxiliary intakes and interconnections, and establish an effective and on-going program to control potential sources of contamination of the public water supply.

## SECTION 3. Unlawful Connections

It shall be unlawful for any person to cause a cross-connection, auxiliary intake, or interconnection to be made; or allow one to exist for any purpose whatsoever.

**SECTION 4. Inspections for Detection of Cross-Connections**

- (a) It shall be the duty of the County to cause inspections to be made of properties served by the waterworks where cross-connections with waterworks are deemed possible. The frequency of inspections, based upon potential health hazards involved, shall be determined by the County.
- (b) The County, its representatives, and agents, shall have the right to enter, at any reasonable time, properties served by a connecting to the waterworks of the County for the purpose of inspecting the piping system or systems for cross-connections. Upon request, the owner or occupants of property served shall furnish to the County and inspectors pertinent information regarding the piping system or systems on such property. The refusal of such information or the refusal of such access, when requested, shall be deemed evidence of the presence of cross-connections and backflow.

**SECTION 5. New Construction**

All buildings proposing to connect to the public water system of Caswell County receiving building permits, on or after the effective date of this Ordinance, shall be equipped with an approved and tested as properly functioning backflow prevention device(s), as prescribed herein, prior to the issuance of a certificate of code compliance for that building. If a building permit was issued for the building prior to the effective date of the Ordinance, or a building permit was not required, the building shall be considered to be an existing building prior to the effective date of this Ordinance.

**SECTION 6. Existing Conditions**

All existing non-permitted buildings or buildings permitted prior to the effective date of this ordinance shall be required to correct any cross-connections, auxiliary intakes, interconnections or other hazard as defined by Section 11 of this Ordinance that are in violation of the provisions of this Ordinance and shall be equipped with an approved and tested as properly functioning backflow prevention device(s), as prescribed herein, prior to connection to the water system.

**SECTION 7. Examination of New Construction Plans and Specifications to Determine Possible Hazards; Approval Required Prior to Making Water Connections**

- (a) All construction plans and specifications for new or renovation construction shall be submitted to the County for review to determine the degree of possible cross-connection or backflow hazards.
- (b) Construction plans shall be reviewed by the County for potential cross-connections and approved backflow prevention devices shall be required where necessary to protect the waterworks.
- (c) Applications for new water connections, for enlargements or for any other plumbing modifications of existing connections shall be approved by the County before the connection is made by the County.
- (d) Certified plans for fire service connections and for extensive irrigation systems served by the waterworks and for other facilities requiring approved backflow prevention devices shall be submitted in duplicate prior to construction to the County for approval. If disapproved, the designer or the inspector shall consult with the County for a determination of what will be approved. The revised design shall be resubmitted for additional reviews. Only after final approval by the County will it be permissible to proceed with the construction. Copies of all such plans shall be forwarded to the County.

**SECTION 8. Location and Installation Requirements for Containment Devices**

- (a) The containment devices shall be located off street right-of-way on the water main side of any plumbing connections. When installed in a building, the device shall be located on the service line immediately after its entrance into the building. Each containment and confinement device shall be installed in a location which is physically accessible for inspection and testing as determined by the cross-connection control coordinator.
- (b) Backflow prevention devices shall be accessibly located, preferably in the same room with the fixture they serve. In all cases, installation will be in accordance with the manufacturer's recommendations.
- (c) Reduced pressure principle backflow prevention devices must be installed with a minimum of twelve (12) inches above floor level, with twenty-four (24) inch clearance on the service side for testing purposes and twelve (12) inch clearance on the non-service side. Reduced pressure principle backflow prevention devices shall not be installed more than four (4) feet above floor level or a safe walkway that provides clearance for service. Walkways or platforms under reduced pressure principle backflow devices must be accessible without the use of moveable ladders. Reduced pressure principle backflow prevention devices shall not be installed in pits and shall provide adequate drainage when installed in aboveground vaults.
- (d) Double-check valve assemblies may be installed in pits or underground vaults with side-to-side clearances as required for reduced pressure principle backflow devices. Double-check valve assemblies installed in pits shall not be subject to flooding and required drainage to grade or sump pump or pumps.
- (e) All reduced pressure principle backflow devices and double-check assemblies with service ports shall have one hundred (100) percent shut-off valves within two (2) feet of the device.
- (f) Where it is impractical to achieve exact compliance with the provisions of this section, the County, or its designee, may, upon application, permit a reasonable modification of the requirements contained herein.
- (g) The County shall maintain a list of approved manufacturers and models of hazard containment devices and drawings of standard installations, copies to be made available through the County Building Inspector's Office. All reduced pressure zone principle backflow prevention devices and double check valve backflow prevention devices shall be approved by the Foundation for Cross Connection Control and Hydraulic Research. All vacuum breaks and dual check valve devices shall be approved by the American Society for Sanitary Engineers. All installations and materials shall conform to County standards as set by the County Commissioners.
- (h) In those cases in which containment and/or confinement devices have been previously installed by prior owners, the County or other parties, the responsibility for maintenance, testing, and replacement as applicable shall be with the consumer.
- (i) The cost of said means of containment, and any other plumbing modifications necessary and convenient thereto, and the testing and maintenance thereof, is to be paid for by the consumer.

**SECTION 9. Standards for Backflow Prevention Devices**

Devices for the prevention of backflow shall be tested and certified to meet the standards of any one of the agencies listed below:

- (1) American Society of Sanitary Engineers (ASSE).
- (2) American Water Works Association (AWWA).
- (3) American National Standards Institute (ANSI).
- (4) University of Southern California Foundation for Cross-Connection Control.
- (5) Department of Health, Education and Welfare list of accepted equipment for interstate carriers.
- (6) National Science Foundation (NSF).

SECTION 10. Reference List

The following publications are hereby adopted by reference as an appendix to this Ordinance for the purpose only of providing information material and guidelines to assist in the technical and administrative aspects of this Ordinance and are not intended to be enforceable as provisions of this Ordinance:

- (1) Cross-Connections and Backflow Prevention, 2nd Edition, by Gustave J. Angele, Sr., American Water Works Association, 6666 West Quincey Avenue, Denver, Colorado 80235.
- (2) Cross-Connection Control Manual, Water Supply Division, Office of Water Programs, U.S. Environmental Protection Agency, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
- (3) Backflow Prevention and Cross-Connection Control AWWA Manual 14, American Water Works Association, 6666 West Quincey Avenue, Denver, Colorado 80235.
- (4) AWWA Standard for Backflow Prevention Devices - Reduced Pressure Principle and Double Check Valves Types, AWWA C506-69, American Water Works Association, 6666 West Quincey Avenue, Denver, Colorado 80235.
- (5) Manual of Cross-Connection Control, 8th Edition - University Park, Los Angeles, California: Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California.

SECTION 11. Hazardous Uses

(a) The following uses shall be classified as hazardous uses:

- (1) Hazardous uses include, but are not limited to: pumps and tanks handling sewage, radioactive, lethal, or toxic substances, boiler and steam connections, sewer waste lines, low inlets to receptacles containing toxic substances, coils or jackets used as heat exchangers, flush valve toilets without vacuum breaks, bacterial and viral materials, private wells or other private water supply, irrigation systems, water systems or hose connections, with booster pumps, carbonation equipment, or similar hazard potential as determined by the cross-connection control coordinator.
- (2) Any location at which the nature or mode of operation within a premises are such that frequent alterations are made to the plumbing or at which there is a likelihood in the determination of the cross-connection control coordinator that protective measures may be subverted, altered, or disconnected.
- (3) Any facility which contains, but is not limited to, a bottling plant, cannery, building having five (5) or more stories, batter manufacturer, exterminator, greenhouse, chemical processing plant, dairy, dye works, film laboratory, car wash, hospital, commercial laboratory, laundry, metal fabricating operation, mortuary, swimming pool morgue, x-ray equipment, medical washing equipment, packing house, plating plant, poultry house, power plant, nuclear reactor, pumped fire sprinkler or riser system or those equipped with facilities for introduction of freeze preventive chemicals or other substances other than water.
- (b) All installations described in Section 11 of this Ordinance shall be deemed hazardous uses, and must have a containment device in the form of a reduced pressure zone backflow prevention device provided that, if the consumer demonstrates to the satisfaction of the cross-connection control coordinator that sufficient internal confinement

devices have been installed and tested. The cross-connection coordinator may require that the consumer provide engineering drawings sealed by a professional engineer of installations within the premises, which provide complete internal protection against cross-connection as approved by the cross connection control coordinator. Any such connection shall be considered another connection for the purpose of determining the type of containment device required. Each internal confinement device shall be one of the following, as approved by the County or authorized representative: reduced pressure zone principle backflow prevention device, double check valve backflow prevention device, air gap, vacuum break-pressure type, or dual check valve. Each reduced pressure zone principle backflow prevention device serving as an internal confinement device shall have a mesh strainer immediately upstream of the inlet gate valve.

#### SECTION 12. Other Connections

- (a) Services to single-family residential units, not otherwise required by this Ordinance to have other containment devices, may have a containment device in the form of an approved dual check valve. On all such services for which meters are applied more than ninety (90) days following the date of adoption of this section, said dual check valves or other containment devices as required shall be installed by the owner's representative prior to the installation of the meter by the County. On all such services for which meters have been applied prior to that date, said dual check valve shall be installed by the County, provided that the County reserves the right to charge the owner or occupant of any residence for the cost of said device and its installation. Maintenance of dual check valve containment devices installed in accordance with this section shall be conducted by the County.

- (b) All other connections to the public water supply of the County shall have containment devices in the form of a double check valve backflow prevention device as set forth in Section 8 of this Ordinance. This shall include water mains installed to County standard, and with County supervision, but which are not maintained by the County, including but not limited to mobile home parks, apartments, group housing projects, and other private distribution systems, or similar hazard potential as determined by the County, or authorized representative.

#### SECTION 13. Protective Devices Generally

- (a) Each consumer, at his own expense, shall install, operate, test, and maintain approved cross-connection control and backflow prevention devices as directed and required by the County.
- (b) The County may deny or discontinue the water service to a consumer if the required backflow prevention device is not installed. If it is found that the device has been removed or bypassed or if a cross-connection exists on the premises or if the pressure in the waterworks is lowered below ten (10) pounds per square inch gauge, the County shall take action to ensure that the waterworks is adequately protected at all times. Immediate termination of water services shall result where a health hazard exists. Water service to such premises shall not be restored until the deficiencies have been corrected or eliminated in accordance with this Ordinance and to the satisfaction of the County.

#### SECTION 14. Inspection, Testing, and Repair of Protective Devices Generally

- (a) Inspections and operational tests shall be made annually of backflow prevention devices which are required and installed. Devices shall be repaired, overhauled, or replaced as required by the County at the expense of the consumer.
- (b) Testing procedures shall be in accordance with the manufacturer's instructions and as approved by the County.

- (c) The internal piping of commercial and industrial services shall be inspected annually.
- (d) Where dead storage fire protection facilities are provided and connected to the water system without an air gap separation, at least one sample per calendar quarter shall be tested by a state certified and approved testing laboratory to verify that the water remains of satisfactory bacteriological quality at the expense of the consumer.
- (e) All records or inspections made, hazards found, and corrections made shall be retained for the length of time specified and required by the County and shall be made available to the County when requested.
- (f) Failure of the consumer to perform the required testing and maintenance shall be cause for the premises to be deemed an immediate public health hazard. The County may immediately thereafter discontinue public water supply service to that premises and service shall not be restored until such devices have been rendered fully operational. Where the use of water is critical to the continuance of normal operations or protection of life, property, or equipment, duplicate containment or confinement devices shall be provided by the property owner to avoid the necessity of discontinuing water service to test or repair the device or devices.

**SECTION 15. Qualifications and Certification of Persons to Test or Repair Backflow Prevention Devices.**

- (a) No person shall be deemed qualified to test backflow prevention devices to determine whether any such device meets the standards referred to herein or repair such device unless his qualifications have been established to the satisfaction of the County. To determine the qualifications of any person to test and/or repair backflow prevention devices, the County shall have the authority to require examinations to determine such qualifications. Upon successful completion of such examination and such training as the County shall prescribe, the person so examined shall receive from the County a "Certificate of Competence". Any limitations or conditions imposed by the County upon the examinee in the testing or repair of backflow prevention devices shall be stated upon the face of such certificate issued to such examinee.
- (b) The County shall make available to owners of properties on which backflow prevention devices are maintained a list of persons qualified to test and/or repair such devices. Every person receiving a Certificate of Competence from the County shall be issued such identification as the County shall deem appropriate, and such person holding a Certificate of Competence while such person is testing and/or repairing any backflow prevention devices.
- (c) Every person desiring to qualify to test or repair backflow prevention devices shall make application therefore to the County. A fee in accordance with the requirements set forth by the County Commissioners for tradesmen certification, in such amount as is prescribed by the Commissioners, for the expense of the County in processing the application, certificate of competence, and any documents of identification required by the County, shall be paid with each such application, which fee shall not be refundable.
- (d) Every person receiving a Certificate of Competence under the provisions of this Section shall be responsible for the competence and accuracy of all tests and/or repairs performed on any backflow prevention device by such person or by any person under his direction, authority, and control.
- (f) The Certificate of Competence of any person who violates or fails to comply with any of the provisions of this Section or who willfully and knowingly falsifies reports of tests and/or repairs shall be immediately revoked and such person shall not be considered for recertification for a period of five (5) years thereafter.



- (g) The County may, at the request of a consumer and at the discretion of the County, make such tests, for which the consumer shall pay to the County the actual costs thereof plus an additional twenty-five (25) percent of such costs for administrative and overhead expenses.
- (h) Qualified manufacturer's service representatives shall be permitted to test and/or repair the backflow prevention devices supplied or produced by such manufacturer, without obtaining the certificate required by this Section.

**SECTION 16. Change in Nature of Use**

The County shall be notified by the consumer when the nature of use of the property changes so as to change the hazard classification of that property, as set forth in Sections 11 through 12 of of this Ordinance.

**SECTION 17. Notification of Consumer**

Upon identification of a hazard, or hazard potential, as defined in Sections 11 through 12 of this Ordinance, the cross-connection control coordinator shall notify the consumer of record of the property on which the hazard exists, of the following:

- (a) Location of hazard;
- (b) Nature of hazard observed;
- (c) Date hazard observed;
- (d) Section of Ordinance applicable;
- (e) Requirements of Ordinance.

Such notification to be made by certified mail, with return receipt requested.

**SECTION 18. Consumer Responsibilities**

- (a) The consumer shall, upon notification, as defined in Section 17 of this Ordinance, install the hazard containment device(s) as required within ninety (90) days from the date of notification.
- (b) If, after expiration of ninety (90) days, the containment device(s) has not been installed in conformance with standards set by the County, in a proper working condition, the County Manager may discontinue the public water supply service at that premises, and service shall not be restored until such devices have been installed. The County Manager may permit an extension of up to ninety (90) additional days if compliance efforts are underway and the existence of hardship can be demonstrated.
- (c) The County shall bear no liability for direct or consequential damages proximately caused by the discontinuance of service pursuant to this Section.

**SECTION 19. Enforcement by Civil Penalty**

- (a) Violation of any provision of this Section may subject the offender to a civil penalty to be recovered by the County in a civil action in the nature of debt if the offender does not pay the penalty within thirty (30) days after the assessment has become final by exhaustion of the appeal process established by this Section, or by failure to appeal the assessment.

The civil penalty for violation of any provision of this cross-connection control ordinance shall not exceed five hundred dollars (\$500.00) per day for each day of continuous violation, or a cumulative or single civil penalty of ten thousand dollars (\$10,000.00). The civil penalty for willful violation of any provision of this Section shall not exceed one thousand dollars (\$1,000.00) per day for each day of a continuous violation, or a cumulative or single civil penalty of twenty thousand dollars (\$20,000.00).

- (b) Any civil penalty shall be assessed by the County Manager, upon the recommendation of the County Commissioners, and shall be based upon the reasonable estimated cost of correcting the cited violation, the magnitude of the potential risk posed to the public health, safety and welfare by the violation, and the cost of the public safety or other emergency response caused by the violation. The County Manager shall serve written notice of the civil penalty assessment on the offender and set out with reasonable care the basis of the amount so assessed.
- (c) Equitable relief. The provisions of this Section may be endorsed by an appropriate equitable remedy, including a mandatory or prohibitory injunction, issuing from a court of competent jurisdiction.
- (d) Enforcement option. The penalties and enforcement provisions established by this Section may be applied in addition to or in lieu of the penalties established by other sections of the Ordinance.

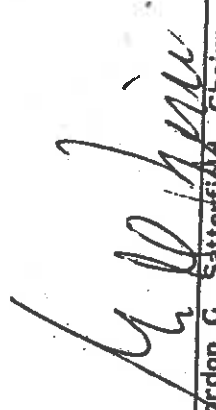
SECTION 20. Limitation of Liability

The County shall not be held liable, for any cause, for failure to detect any unit failing to operate adequately, or failure to identify any specific hazard, which may result in contamination of its public water supply, nor shall this Section diminish the responsibility of any property owner from whose property a contamination of the public water supply may originate.

SECTION 21. Effective Date

This Ordinance shall become and be effective on and as of the date of adoption of this Ordinance.

ADOPTED THIS THE 19<sup>th</sup> DAY OF November, 1991.

  
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 Gordon G. Satterfield, Chairman  
 Gaswell County Board of Commissioners

ATTEST:

  
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 Wanda P. Smith  
 Clerk to the Board

