CROSS-CONNECTION, BACKFLOW AND BACK-SIPHONAGE CONTROL POLICY

CITY OF LEXINGTON, NORTH CAROLINA

(I) Intent, Purpose and Control

(a) It is the intent of this section to recognize that there are varying degrees of hazard to potable water within the water supply and distribution systems.
(b) The purpose of this section is:
    (1) to protect the public potable water supply of the City of Lexington against actual or potential cross-connections, backflow and back-siphonage by isolating within the premises or private property contamination or pollution that has occurred or may occur because of some undiscovered or unauthorized cross connection on the premises or private property;
    (2) to eliminate cross-connections, backflow, and back-siphonage or any other source of water or process water used for any purpose whatsoever which may jeopardize the safety of the public potable water supply of the City of Lexington.
    (3) to establish and administer an effective cross-connection, backflow and back-siphonage control program.
(c) Cross-connections, backflow and back-siphonage control require cooperation between the City of Lexington and the consumer. The responsibilities and duties of each shall be as set forth in this section and other applicable regulations.

(II) Responsibilities and Enforcement

(a) The City of Lexington Water Resources Department is primarily responsible for the prevention of contamination and pollution of the public water system. Such responsibility begins at the point of origin of the public water supply, which includes all of the public water supply and all of the public water distribution system and ends at the service connection to the consumer's water system. In addition, the Department shall exercise reasonable vigilance to ensure that the consumer has taken the proper steps to protect the public potable water system. When it is determined that a backflow prevention device is required for the protection of the public system of the City of Lexington, the Department shall require the consumer, at the consumer's expense, to install an approved backflow prevention device on each service connection. A backflow prevention device is required on all new non-residential service connections and any existing service connections where impending improvements are proposed , a change of use occurs, or as specified by the City of Lexington Water Resources Operator in Responsible Charge. All irrigation systems (including those used for residential property) require backflow protection.
(b) The consumer has the prime responsibility of preventing contaminants and pollutants from entering the potable water system or the public water system at the service connection. The consumer, at his/her own expense, shall install, operate, and maintain an approved backflow prevention device on the service

connection as directed by the City of Lexington. Testing, maintenance, and repairs of backflow prevention devices shall be made by a City- approved certified tester. Upon determination that a cross-connection, backflow or back-siphonage hazard exists, appropriate corrections shall be made as directed by the City of Lexington, or devices shall be installed in accordance with Section (V) below to correct the deficiency, regardless of State or Local regulations in place at the time of construction.

(c) Enforcement of this section shall be administered by the Water Resources Director utilizing the staff of the Water Resources Department.

(d) Any property found to be out of compliance with these policies will be issued a notice of violation containing a due date and details of the required corrective action. Water service may be disconnected and a cut-off fee may be charged in accordance with the City of Lexington Schedule of Fees .

(III) Definitions

Unless the context specifically indicates otherwise, the following terms and phrases, as used in this Policy shall have the following meanings:

(a) Air-gap Separation: the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the receptacle. An “approved air-gap separation” shall be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel. In no case shall the gap be less than four (4) inches.

(b) Approved: in reference to a water supply system or backflow prevention device (or method) shall mean one that has been approved by the department.

(c) Auxiliary water supply: any water supply on or available to the premises other than the City of Lexington approved public potable water supply. These auxiliary waters may include water from another purveyor’s public potable water supply or any natural source such as a well, spring, river, stream, or any used waters or industrial fluids. They may be polluted or contaminated or they may be objectionable and constitute an unacceptable water source over which the City of Lexington does not have sanitary control.

(d) Approved Check Valve: a check valve that is drip tight in the normal direction of flow when the inlet pressure is one psi and the outlet pressure is zero. The check valve shall permit no leakage in a direction reversed to the normal flow. The closure element (e.g. clapper) shall be internally weighted or otherwise internally loaded to promote rapid and positive closure.

(e) Backflow Prevention Device: any effective device, method or construction used to prevent backflow into a potable water system.

(f) Back-pressure Backflow: backflow caused by a pump, elevated tank, boiler, or other means that could create pressure within the system greater than the supply pressure.

(g) Back-siphonage Backflow: a reversal of the normal direction of flow in the pipeline due to a negative pressure (vacuum) being created in the supply line with the backflow source subject to atmospheric pressure.
(h) Consumer: any person, firm, or corporation using or receiving water from the City of Lexington water supply.
(i) Consumer's Industrial Piping System: any system used by the consumer for transmission of or to confine or store any fluid, solid or gaseous substance other than an approved water supply. Such a system would include all pipes, conduits, tanks, receptacles, fixtures, equipment, and appurtenances used to produce, convey, or store substances, which are or may be polluted or contaminated.
(j) Consumer's Potable Water System: the portion of the privately owned potable water system lying between the service connection and the point of use. This system will include all pipes, conduits, tanks, receptacles, fixtures, equipment, and appurtenances used to produce, convey, store, or use potable water.
(k) Consumer's Water System: any water system located on the consumer's premises whether supplied by a public potable water system or an auxiliary water supply. The system or systems may be either a potable water system or an industrial piping system.
(l) Contamination: impairment of the quality of water by sewage or industrial fluids or waste to a degree which creates an actual hazard to public health through poisoning or through the spread of disease.
(m) Cross-connection: any actual or potential connection or structural arrangement between a public or a consumer's potable water system and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel, or changeover devices and other temporary or permanent devices through which or because of which backflow can or may occur are considered cross-connections.
(n) Degree of Hazard: is derived from the evaluation of a health, system, plumbing or pollution hazard.
(o) Director: Water Resources Director or his/her authorized representative.
(p) Double-check Valve Assembly (DCVA): an assembly composed of two (2) single, independently acting, approved check valves, including tightly closing shutoff valves as they are located at each end of the assembly and suitable connections for testing the water-tightness of each check valve.
(q) Health hazard: an actual or potential threat or contamination or pollution of physical or toxic nature to the public potable water system or the consumer's potable water system to such a degree or intensity that there would be a danger to health.
(r) Industrial fluids: any fluid or solution which may be chemically, biologically, or otherwise contaminated or polluted in a form or concentration such as would constitute a health system, pollution or plumbing hazard if introduced into an approved water supply.

(s) ORC: Operator in Responsible Charge- Designated city staff overseeing the installation, control, and enforcement of all water distribution systems including but not limited to: water distribution mains and services, cross connection, and backflow prevention. As of May 2024, acting ORC is Brandon Hall.

(t) Plumbing hazard: a plumbing-type cross connection in a consumer's potable water system that has not been properly protected by a vacuum breaker, air-gap separation, or other device. Unprotected plumbing-type cross-connections are considered a health hazard. They include but are not limited to cross-connections to toilets, sinks, lavatories, wash trays, domestic washing machines and lawn sprinkling systems. Plumbing-type cross-connections can be located in many types of structures including homes, apartment houses, hotels and commercial and industrial establishments.

(u) Point of Cross-connection: the specific point or location in a public or a consumer's potable water system where a cross-connection exists.

(v) Pollution: an impairment of the quality of the water to a degree which does not create an actual hazard to the public health, but which does adversely and unreasonably affect such waters for domestic use.

(w) Pollution hazard: an actual or potential threat to the physical properties of the water system or the potability of the public or consumer's potable water system but which would not constitute a health or system hazard, as defined. The maximum degree or intensity or pollution to which the potable water system could be degraded under this definition would cause a nuisance or be aesthetically objectionable or could cause minor damage to the system or its appurtenances.

(x) Potable water: water from any source which has been investigated by the health agency having jurisdiction, and which has been approved for human consumption.

(y) Public Potable Water System: any publicly or privately owned water system operated as a public utility under a valid health permit to supply water for domestic purposes. This system will include all sources, facilities, and appurtenances, between the source and the service connection such as valves, pumps, pipes, conduits, tanks, receptacles, fixtures, equipment, and appurtenances used to produce, convey, treat or store potable water for public consumption or use.

(z) Reduced-Pressure Zone Backflow Preventer (RPZ or RP): a device containing within its structure a minimum of two (2) independently acting, approved 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 and 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 atmosphere, shall operate to maintain the pressure between the checks less than the supply pressure. The unit shall include tightly closing shutoff valves located at each end of the device and each device shall be fitted with properly located test cocks.

(aa) Service connection: the terminal end of the public potable water system. There should be no unprotected takeoffs from the service connection ahead of any meter or backflow prevention device located at the point of delivery to the consumer's water system.

(bb) System hazard: an actual or potential threat or severe danger to the physical properties of the public or the consumer's potable water system or of a pollution or contamination, which would have a protracted effect on the quality of the potable water in the system.

(cc) Used water: any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the service connection and is no longer under the control of the water purveyor.

(IV) Policies

(a) No water service connections other than single family residences shall be installed or maintained unless a City-approved backflow prevention device is installed and passes inspection by the City of Lexington ORC. Where a residential connection to a city waterline is made, and the property owner installs or has previously installed a swimming pool, the City may require the property owner or consumer to install a backflow prevention device as deemed necessary by the City of Lexington ORC. It shall also be unlawful to have plumbing cross-connected or installed in a manner that water from the city water system or private water system may in any way become intermingled.

(b) In the event of contamination or pollution of a potable water system, the consumer shall notify the department immediately in order that appropriate measures are taken to overcome the contamination or pollution.

(c) The City of Lexington ORC shall have the right to enter any building, structure, or premises to perform any duty imposed upon him by this section where cross connection, backflow and back-siphonage are deemed possible.

(d) Nothing herein shall relieve the consumer of the responsibility for conducting or causing to be conducted periodic surveys of water use practices on the premises to determine whether there are actual or potential cross-connections in the consumer's waste system through which contaminants or pollutants could be allowed back into the public water system.

(e) On request, the consumer shall furnish to the department any pertinent information regarding the water supply system on such property where cross-connection, backflow and back-siphonage are deemed possible.

(f) Water service may be discontinued after reasonable notice to the consumer if a violation of this section exists on the premises, and such other precautionary measures may be taken as are deemed necessary to eliminate any danger to the potable water system. Water service shall not be restored until the danger has been eliminated in compliance with the provisions of these policies.

(g) Installation of all cross-connection, backflow and back-siphonage control devices shall inspected and approved by the City of Lexington ORC to verify that the device or devices meet the requirements of the policies herein and the current City

standards and specifications. Refer to City of Lexington Standard Details and Sewer and Water Design Manual.

(h) All cross-connection, backflow, and back-siphonage control devices shall meet the testing requirements of the Foundation for Cross-Connection Control and Hydraulic Research and the American Water Works Association.

(i) All cross-connection, backflow and back-siphonage control devices, both existing and new and all parts thereof shall be maintained in a safe condition and in good working order. The consumer shall be responsible for the maintenance of all backflow prevention devices downstream from the service connection on the private water system. All backflow prevention devices located at the service connection shall be tested at least once a year, or more often in those instances where inspections indicate a need, by a City of Lexington approved certified tester. The cost of all testing, maintenance, and repairs shall be borne by the consumer.

(j) Test information as required by the City shall be submitted on forms approved by the City of Lexington ORC.

(k) If multiple consumers are served by one service connection or the service connection cannot be interrupted for testing and/or repairs; a tandem backflow assembly or a bypass with equal backflow protection will be required.

(l) All backflow preventers must be installed in a horizontal position, except those vertical fire line double check backflow preventers approved for installation by the City of Lexington.

(m) An approved backflow prevention device shall be installed, maintained, and tested at a location to protect the City's potable water system from the consumer's water system, whenever any of the conditions specified in these rules are present. In all cases, this location shall be between the City's potable water system and the first branch connection or use of the consumer's water system. Unless an exception is granted in writing by the Water Resources Director or authorized representative concerning severe limitations of a specific site, the backflow prevention device shall be located within 5 feet of the consumer's property line.

(V) Facilities Requiring and Type of Protection Required

(1) All non-residential service connections with the exception of fire systems RPZ

(2) Fire Systems (case dependent approval)

(a) Health hazard exists (chemical, fire pump, etc.)	RPZ
(b) No health hazard	DCVA
(c) Building over 3 stories	RPZ

(3) All irrigation systems RPZ

(4) All leased commercial properties RPZ