

Nelson County Service

Authority

Cross-Connection

Control Program



Contents

Introduction:	3
Purpose:	3
Applicability:.....	3
NCSA Administration:.....	3
Program Responsibilities:.....	4
Responsibilities of the NCSA:	4
Responsibilities of a Water Customer:.....	5
Responsibilities of a Certified Backflow Prevention Device Tester:.....	6
Cross Connections Prohibited:	6
Backflow Prevention Within the NCSA Water System:.....	7
Installation of Backflow Prevention Devices:.....	7
Required/Acceptable Backflow Prevention Devices	7
Maintenance and Testing of Backflow Prevention Devices	8
NCSA Certification of Backflow Prevention Device Testers	9
Backflow Prevention For Isolation	9
Yard Hydrants.....	10
Enforcement.....	10
Violation Charges	11
Appeal Process	12

Introduction:

Protection of the quality of drinking water that the Nelson County Service Authority (NCSA) provides is of paramount importance. Contamination of the water can potentially result from the physical connection that exists between the NCSA potable water supply and the private water supply system of each of its customers. This program will focus on the prevention of cross-connections and backflow to prevent contamination of NCSA's potable water supply and protect public health.

Purpose:

- To comply with the current requirements of the Commonwealth of Virginia, Department of Health (VDH) Waterworks Regulations
- To protect the NCSA potable water supply from the possibility of contamination or pollution by a.) preventing, eliminating, or controlling cross-connections, actual or potential that exist within the private water supply system(s) of each customer, and b.) isolating within each customer's private water supply systems(s) all such contaminants or pollutants that could potentially enter the public system by backflow.
- To provide for a systematic program of cross-connection and backflow prevention to safeguard the quality of the NCSA potable water distribution system.

Applicability:

With the understanding that the physical connection between the NCSA potable water distribution system and the private water supply system of each customer serves as a potential source of contamination or pollution, the provisions of this section are applicable to every NCSA water customer.

Mandatory installation and testing of an approved backflow prevention device on the domestic water supply are required of all customers in the billing classification of Industrial, Institutional, Commercial/Other, and Commercial/Office. Mandatory installation and testing of an approved backflow prevention device on the domestic water supply may be required of a residential customer if the NCSA has knowledge of certain activities, practices, or internal plumbing arrangements that could present a hazard to the NCSA potable water distribution system.

Mandatory installation and testing of an approved backflow prevention device on an irrigation system or fire suppression system are required of all customers in all billing categories that maintain such a system.

NCSA Administration:

In accordance with current Waterworks Regulations, at least one NCSA employee shall be designated as responsible for the inspection of the waterworks for cross-connection and backflow prevention. Ultimate responsibility shall be held, and certain decisions in the program shall be made, by the Executive Director.

Program Responsibilities:

An effective cross-connection and backflow prevention program requires the cooperation of the NCSA, its customers, certified backflow prevention device testers, and the VDH. Certain responsibilities are noted in the following sections.

Responsibilities of the NCSA:

- The NCSA is responsible for the construction, maintenance, and operation of the Wintergreen, Schuyler, Gladstone, and Lovington water treatment plants, and related appurtenances, and for the delivery of potable water from these plants to the NCSA distribution systems including the Piney River consecutive waterworks system.
- The NCSA shall provide continuing evaluation and identification of all cross-connection and backflow hazards having the potential to impair the quality of water delivered to its customers. This shall include assessments of each residential and non-residential customer's private water supply system and a determination of the degree of hazard, if any, to the waterworks.
- To facilitate the assessment of each residential and non-residential customer's private water supply system, the NCSA Cross-Connection and Backflow Prevention Program shall maintain an accurate and up-to-date inventory of the NCSA water customers.
- Assessments of residential and non-residential customer's private water supply systems may be accomplished through questionnaires, surveys, voluntary inspections by owners, telephone or electronic communications, discussions with certified backflow prevention testers knowledgeable of a residence or facility, or by on-site NCSA inspection and interviews.
- The NCSA shall require the installation, maintenance, and testing of an approved backflow prevention device on the domestic water supply system of a customer in the Residential classification if there is known to exist certain activities, practices, or internal plumbing arrangements that could present a hazard to the NCSA potable water distribution system.
- The NCSA shall require the installation, maintenance, and testing of an approved backflow prevention device on any irrigation system of a customer, regardless of classification, who maintains such a system where water is supplied by NCSA.
- The NCSA shall require the installation, maintenance, and testing of an approved backflow prevention device on a fire suppression system of any customer, regardless of classification, who maintains such a system.
- The NCSA shall have the right to request inspection of the private water supply system on the premises of a customer as frequently as may be necessary to ensure the safety of the NCSA potable water system.
- The NCSA shall have the right to request inspection of the private water supply system on the premises of a Residential customer with a required backflow prevention device on a domestic or fire suppression system, as frequently as may be necessary to ensure the safety of the NCSA potable water distribution system.
- The NCSA shall have the right to request the inspection of the private water supply system on the premises of a Residential customer with a required backflow prevention device on an irrigation system, as frequently as may be necessary to ensure the safety of the NCSA potable water distribution system. Entry to a residence, garage, or other building on the premises shall be necessary only if a portion of the irrigation system or the backflow prevention device is located in these structures. The NCSA shall have the right to request inspection of the private water supply system on the premises of a Residential customer if sufficient evidence exists that the safety of the NCSA potable water distribution system may be compromised.

- In accordance with current Waterworks Regulations, the NCSA shall maintain all records of facility inspections, questionnaires, locations of backflow prevention devices, and the testing and maintenance of each device for a period of 10 years.
- The NCSA shall maintain, and make available on request a list of certified backflow prevention device testers.
- The NCSA shall provide general and specific information to all water customers, especially those who have installed a backflow prevention device, or who have been asked to do so. Such consultation shall include the requirements for certain backflow prevention devices, options the customer may have, and may require a visit to the residence or facility in order to provide the most thorough and accurate information.
- In accordance with the recommendation of current waterworks regulations, the NCSA may discontinue water service for the following cases:
 - If the pressure in the distribution system drops below 20 psi for any reason.
 - If a water customer does not install, test, and maintain a required backflow prevention assembly in accordance with this program.
 - If a water customer allows a backflow prevention assembly to become inoperable or the water customer removes or bypasses it.
 - If the owner knows an unprotected cross-connection exists and determines that there is inadequate backflow prevention at the service connection.
- Should there occur a backflow event in which contamination or pollution is known to have been introduced into the potable water distribution system, the NCSA shall take prompt corrective action to confine or eliminate the contamination or pollution, and shall immediately notify the VDH.

Responsibilities of a Water Customer:

- No water supply customer shall knowingly establish a cross-connection between the NCSA potable water supply and a supplementary water supply.
- The owner or designated agent of a facility provided potable water by the NCSA in the classifications of Industrial, Institutional, Commercial/Other, and Commercial/Office shall be responsible for the installation of a backflow prevention device on the domestic water supply. Installation shall occur within one year of notification by the NCSA. However, if the NCSA determines that a high degree of hazard exists at the facility, installation shall occur within thirty days of notification.
- The owner of a facility or residence provided potable water by the NCSA and who maintains a fire suppression system, regardless of classification, shall be responsible for the installation of an approved backflow prevention device. Installation shall occur with the initial construction of the fire suppression system, or within thirty days of notification by the NCSA.
- The owner of a facility or residence with a backflow prevention device shall maintain the device in good working order, and shall make no arrangements or modifications for the purpose of bypassing or defeating such a device.
- The owner of a facility or residence with an approved backflow prevention device shall provide for an inspection of, and an operational test to be performed on such device. Inspection and testing shall occur at least annually and the expense shall be borne by the owner. Inspection and testing shall be performed by a backflow prevention device tester who maintains current certification with the NCSA.

- The owner of a facility or residence with a backflow prevention device on an irrigation system shall be required to provide an inspection of, and an operational test to be performed on, such device at system start-up in the spring, regardless of planned usage of the water.
- The annual inspection and testing of a backflow prevention device associated with an irrigation system shall also include inspection and testing of the system's rain sensor.
- The owner of the facility or residence with a backflow prevention device shall ultimately be responsible that all test results, inspection reports, maintenance records, and disconnection service documents be provided to the NCSA within 10 calendar days of the completion of such work.
- The owner of a facility or residences with a backflow prevention device shall ultimately be responsible for scheduling the on-going annual inspection and testing of any such device.
- The owner of a facility with a backflow prevention device shall notify the NCSA when the nature of the use of the property changes, so as to assess the acceptability of the existing device.
- Should a backflow event occur, the customer shall immediately notify the NCSA and take steps to confine the contamination or pollution.

Responsibilities of a Certified Backflow Prevention Device Tester:

- A certified backflow prevention device tester shall maintain their certification to the standards set herein in order to submit a backflow test report that is acceptable to the NCSA, and to remain on a list of certified testers.
- A certified backflow prevention device tester shall provide all records of inspection and testing to the NCSA within 10 calendar days of the completion of such work.
- In the event of the failure of a backflow prevention device, a certified backflow prevention device tester shall repair or replace the device in accordance with the degree of hazard associated with the facility.
- A certified backflow prevention device tester who services and tests irrigation systems, both residential and non-residential, shall perform the annual test on the backflow device at system start-up in the Spring. Additionally, this service shall also include inspection and testing of the system's rain sensor.
- A certified backflow prevention device tester shall tag all indoor devices upon testing. At a minimum, the tag shall provide the name of the tester, the company and its contact information, and the date the test was performed.
- A certified backflow prevention device tester, regardless of the system serviced, is strongly encouraged to establish a schedule with their customers, and to notify them in advance when the annual test is due.

Cross Connections Prohibited:

- The NCSA potable water distribution system shall be designed, installed, and maintained in such a manner as to prevent contamination or pollution, originating from non-potable liquids, solids, or gases from being introduced into the potable water distribution system through cross-connections or any other piping connections to the system.
- Cross-connections within the private water supply system of an NCSA customer, in which the NCSA potable water provided to the customer may potentially be contaminated or polluted by a connection to a supplementary water supply, or by process water, used water, or any other source of non-potable water or water of questionable quality, are strictly forbidden. Complete physical separation of the NCSA potable water from any other supply of water must be

accomplished with an approved air gap or by other appropriate means, as determined solely by the NCSA.

Backflow Prevention Within the NCSA Water System:

- The NCSA potable water distribution system shall be protected against backflow by installing and maintaining approved Reduced Pressure Zone backflow prevention devices (RPZs) at all locations where a backsiphon or backpressure within the system may occur. This includes, but is not limited to, all wells, pump stations, and maintenance facilities.

Installation of Backflow Prevention Devices:

- Backflow prevention devices shall be installed, maintained, and tested by the owner of the facility or residence at the owner's expense.
- All backflow prevention devices shall be approved by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research, or by the American Society of Sanitary Engineers.
- All backflow prevention devices shall be installed so that they are accessible for inspection, testing, and repair.
- Backflow prevention devices for containment shall be installed on the customer's premises as part of the customer's private water supply system. The location of the device shall be determined by the system(s) being protected. In all cases, the device shall be positioned upstream from any unprotected branch of the plumbing. Installation of a device at a location downstream from the service connection does not eliminate the customer's responsibility to protect the NCSA potable water distribution system from contamination or pollution between the service connection and device.
- All backflow prevention devices shall be protected from freezing.
- To the best of the owner's ability, all backflow prevention devices shall be protected from vandalism. RPZ's shall not be installed in underground vaults or pits, and shall be installed so as to be protected from flooding. Further, RPZs that are installed within a building shall be provided with the means to convey the discharge of water to a suitable drain.
- There shall be a provision for thermal expansion when a backflow prevention device is installed on a system that uses hot water.
- For an air gap installation, the physical separation must be accomplished with an approved air gap, and all piping between the customer's supply line and the receiving vessel shall be entirely visible.
- No customer shall modify, bypass, or remove a backflow prevention device without the notification and approval of the NCSA.

Required/Acceptable Backflow Prevention Devices

- The type of backflow prevention device that is required or acceptable is based on the existing or potential degree of hazard, and whether backflow can occur by back siphon or back pressure.
- All new service connections will require at minimum a check valve backflow prevention device after the meter and before the service line splits.
- For Domestic Residential low or moderate hazards, a reduced pressure zone assembly (RPZ) or Double Check Valve Assembly (DC) will be acceptable.
- For Domestic Residential high hazards, an RPZ will be required.

- For Domestic, Non-Residential low or moderate hazards, including buildings 4 or more stories in height per the VDH Waterworks Regulations, an RPZ or DC will be acceptable.
- Fire Suppression in all cases will require an RPZ if the system contains a booster pump, foam or fire retardant, anti-freeze, or chemical additive. For fire suppression without any of those listed components, an RPZ or DC will be acceptable.
- A yard hydrant with an approved air gap to prevent drain water from reaching the service line shall not require additional backflow protection.
- Irrigation in any system is considered a high hazard and will require an RPZ.

Maintenance and Testing of Backflow Prevention Devices

- Testing of backflow devices will be conducted by a technician certified by the NCSA.
- A backflow prevention device shall be tested upon installation. For a new service, this shall be prior to the delivery of water into the system.
- For a new facility with new water lines, a device on an irrigation system will need to be tested within 30 days because of the high hazard.
- All backflow devices shall be tested annually thereafter.
- For the testing of RPZs, the pressure drop across check valve #1 and check valve #2 shall be a minimum of 5.0 psi, the pressure relief valve shall open at a minimum of 2.0 psi, and there shall be a minimum differential of 3.0 psi between check valve #1 and the relief valve opening pressure.
- For the testing of double check valve assemblies, both check valve #1 and check valve #2 shall close at a minimum drop of 1.0 psi.
- All indoor devices shall be tagged upon testing. At a minimum, the tag shall provide the name of the certified tester, the company and its contact information, and the date the test was performed.
- The testing of backflow prevention devices shall be documented with all required information provided.
- Incomplete test forms or unsigned forms will be rejected.
- In all instances, the person that signs the test report will be responsible for the accuracy of the report.
- Test forms shall be submitted to the NCSA within 10 calendar days of testing.
- While forms may be submitted by the tester, the owner of the backflow prevention device is ultimately responsible for their delivery to NCSA.
- A certified backflow prevention device tester shall not modify the design, material, or operational characteristics of the device during maintenance and shall only use original manufacturer replacement parts.
- During the testing, maintenance, or replacement of backflow prevention devices on a domestic or irrigation system, a certified tester shall not bypass the device. Where a continuous water supply is critical to a customer, 2 backflow devices, each sized to handle the temporary water flow during the period of testing or repair shall be installed in parallel.
- In the event of a failure of a backflow prevention device, a certified tester shall repair or replace the device in accordance with the degree of hazard. Repairs on a system considered to be a high hazard shall be completed within 7 calendar days, and the NCSA shall be immediately notified upon failure. Repairs on a low or moderate hazard system shall occur within 30 calendar days.

- The backflow prevention devices on the domestic water supply of a high hazard facility that has been out of service for 3 months or more shall be tested before water service is resumed.
- If water service to a facility has been terminated for non-compliance of testing requirements, the backflow prevention device shall be repaired or replaced, and then tested prior to resumption of water service.
- Falsification of records by the owner of a backflow prevention device or by a certified backflow prevention device tester is a violation of this section. Further, falsification by a certified tester shall result in the loss of NCSA certification.
- The NCSA reserves the right, at its own expense, to verify the test results of a backflow prevention device at any time.
- Backflow prevention devices on irrigation systems shall be tested upon system start-up in the Spring.

NCSA Certification of Backflow Prevention Device Testers

- The tester shall either a.) hold current certification status for a Backflow Prevention Device Worker from the Commonwealth of Virginia, Department of Professional and Occupational Regulation (DPOR) or b.) have received a certificate of completion for a 40 hour cross-connection control course and have a minimum of 2 years of experience, or c.) have received a certificate of completion for the 16 hour cross-connection control course offered jointly by the Virginia Department of Health, Office of Drinking Water, and the Advanced Operator Short Schools, and have a minimum of 4 years experience.
- For items b.) and c.) a certificate course completion shall be obtained every 5 years.
- The tester shall submit to the NCSA a current copy of their DPOR certification or course certificate of completion.
- Test equipment shall be properly maintained and calibrated annually by an agency acceptable to the NCSA and the calibration reports shall be submitted annually to the NCSA
- The NCSA certification status of a tester or the company they represent may be suspended or revoked for improper testing, falsification of records, or other improper or unethical behavior.
- Starting January 1, 2023, backflow prevention device testers shall be certified by a Commonwealth of Virginia tradesman certification program (identified by DPOR as backflow prevention device workers).

Backflow Prevention For Isolation

- In its efforts to protect the quality of the potable water distribution system, the NCSA is primarily responsible for a policy and program that confines any potential contamination and pollution within the facility in which they may arise. This approach effectively prevents contamination and pollution from entering the NCSA potable water distribution system. The internal isolation of potential contamination and pollution within a facility is a secondary concern of the NCSA. However, since backflow prevention within a facility is an important safeguard to the health of its occupants, the NCSA shall assist in tracking internal devices, if requested by the owner of the facility. Records of the annual testing devices shall be maintained in the NCSA database.
- For a facility at which containment is provided with an RPZ, it shall be the responsibility of the facility owner to survey the internal plumbing and make the decision on backflow devices to provide isolation of the various water uses within the facility. The NCSA recommends that an

RPZ device be installed within each unit since the nature of the business activities may change over time.

Yard Hydrants

- Yard hydrants shall have a hose connection vacuum breaker if the hydrant has hose threads and is not already protected with an integral vacuum breaker.
- Yard hydrants that are installed on a customer's private water supply system are recognized as a potential source of contamination and, as such, shall require backflow protection. Consistent with underground irrigation systems, this shall be accomplished with an RPZ. However, yard hydrants that are constructed with an approved air gap to prevent drain water from reaching the service line shall not require additional backflow protection. A yard hydrant that is part of an existing irrigation system protected by an RPZ shall not require additional backflow protection.
- Commercial Water Haulers who draw from an approved NCSA water hydrant shall use vehicles with all of the following features:
 - The fill pipe shall be permanently affixed to the storage container, the vehicle, or the trailer
 - There is a flow control valve on the fill pipe that is accessible from ground level
 - There exists an approved air gap between the end of the fill line and the opening of the tank, which measures twice the diameter of the fill line. For instance, if the diameter of the fill line is 4 inches, the air gap must be a minimum of 8 inches.

Enforcement

- The NCSA shall issue a written notice of non-compliance to anyone who is determined to be in violation of any provision of this section. The notice shall state the specific violation(s), provide information on the required steps to be taken to be in compliance with the provision, and include a timetable for compliance. A notice of non-compliance for a particular incident shall be provided on one occasion. This includes notification of the need for a backflow prevention device test. If corrective action has not been provided to the satisfaction of the NCSA within the stated time frame, a notice of violation shall be issued.
- Reasons for non-compliance include but are not limited to failure to correct to the full satisfaction of the NCSA, a cross-connection identified on a customer water supply system, failure to install an approved backflow prevention device in a proper manner by the assigned date, the removal or by-pass of a required backflow prevention device without NCSA approval, failure to provide a passing test report for a backflow prevention device by the required date, failure of a certified backflow prevention device tester to properly install, repair, or test a device, falsification of a backflow prevention device test report, or falsification of certification documents of a backflow prevention device tester.
- If the NCSA determines that a violation occurring on a customer's private water supply system has created or contributed to the existence of an imminent hazard, a notice of non-compliance shall be by-passed and a Notice of Violation (NOV) shall be issued.
- The NCSA shall issue a written NOV for the failure to provide the corrective action required by a notice of non-compliance. The NOV shall be delivered by certified mail, shall repeat the specific violations, provide information on the required steps to be taken, and list the dates by which all

corrective action must be completed. The NOV shall also state the charges to be imposed if the violation is not satisfied.

- An NOV related to the failure of a customer to provide a passing test of a backflow prevention device shall allow the customer 10 business days to submit such a report.
- The NCSA shall consider suspension of water service, or denial of a new service, to a customer who fails to respond satisfactorily to an NOV. This shall include service to an irrigation system with a dedicated service connection. Service suspension shall be enacted if the Executive Director determines a potential health hazard exists, or there is no other recourse in resolving the matter.

Violation Charges

The failure to provide corrective action required by an NOV shall result in the issuance of the following charges:

- The failure of a customer to respond satisfactorily to an NOV when the issue is the need to correct a cross-connection that has been identified on the customer water supply system, and which is determined to be a high hazard situation, shall result in a charge of \$1000.00 dollars per month until the cross-connection is controlled or removed to the full satisfaction of the NCSA.
- The failure of a customer to respond satisfactorily to an NOV when the issue is the need to correct a cross-connection that has been identified on the customer water supply system, and which is determined to be a low to moderate hazard, shall result in a charge of \$500.00 dollars per month until the cross-connection is removed or controlled to the full satisfaction of the NCSA.
- The failure of a customer to respond satisfactorily to an NOV when the issue is the need to install an approved backflow prevention device in a high hazard situation shall result in a charge of \$1000.00 dollars per month until the device is installed and tested.
- The failure of a customer to respond satisfactorily to an NOV when the issue is the need to install an approved backflow prevention device in a low to moderate hazard situation shall result in a charge of \$500.00 dollars per month until the device is installed and tested.
- The failure of a customer to respond satisfactorily to an NOV when the issue is the removal or bypass of required backflow prevention device in a high hazard situation, shall result in a charge of \$1000.00 dollars per month until the device is reinstalled and tested or the bypass is removed.
- The failure of a customer to respond satisfactorily to an NOV when the issue is the removal or bypass of a required backflow prevention device in a low to moderate hazard situation, shall result in a charge of \$500.00 dollars per month until the device is reinstalled and tested or the bypass is removed.
- The failure of a customer to respond satisfactorily to an NOV when the issue is the need to provide a passing test report for a backflow prevention device in a high hazard situation, shall result in a charge of \$250.00 dollars per month until a report is delivered to the NCSA.
- The failure of a customer to respond satisfactorily to an NOV when the issue is the need to provide a passing test report for a backflow prevention device in a low to moderate hazard situation, shall result in a charge of \$100.00 dollars per month until a report is delivered to the NCSA.
- The failure of a certified backflow prevention device tester to respond satisfactorily to an NOV when the issue is proper installation, repair, or testing of a device shall result in a charge of \$500.00 dollars and the removal of the tester from the NCSA list of certified testers for one year.

No test reports shall be received from the tester during this time. For a second offense, the tester shall be permanently removed from the NCSA list.

- The failure of a certified backflow prevention device tester to respond satisfactorily to an NOV when the issue is falsification of a backflow prevention device test report, shall result in a charge of \$500.00 dollars. Falsification by a certified backflow prevention device tester shall result in the removal of the tester from the NCSA list of certified testers.

Appeal Process

- A customer or certified backflow device tester shall have the right to appeal any of the charges listed according to the following procedure.
- A notice to appeal shall be requested in writing and delivered to the office of the Executive Director no later than 5 business days following the receipt of notice of the charge to be levied.
- The failure to file such a notice to appeal within such time limit shall be deemed a waiver of the right to appeal.
- Upon receipt of the appeal request, the Executive Director shall render a decision within 30 calendar days.
- The charge shall be held in abeyance until a decision is rendered.
- The decision shall be sent by certified mail to the applicant.

COMMONWEALTH OF VIRGINIA
Department of Health
Office of Drinking Water
Lexington Field Office

Approved

Denied

9/1/2021

Date

Mark O. Feys

Engineering Field Director