Cross-Connection Control Program

City of Saratoga Springs

Public Works Department

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Definitions

Air Gaps - The physical separation between the discharge end of a water supply, and the flood rim of an open or non-pressure receiving vessel

Backflow - the undesirable reversal of flow of water or mixtures of water and other liquids, gases, or other substances into the distribution pipes of the potable water supply from any source.

Backflow prevention assembly - A backflow preventer that is testable and repairable in line, and is approved by the State of Utah to prevent backflow.

Backflow prevention device - A backflow preventer that is not testable, and specific installation requirements in order to operate properly.

Backpressure - the phenomenon that occurs when the customer's pressure is higher than the supply pressure. This could be caused by an unprotected cross connection between a drinking water supply and a pressurized irrigation connection, a boiler, a pressurized industrial process, elevation differences, air or steam pressure, use of booster pumps or any other source of pressure.

Back-siphonage - a form of backflow due to a reduction in system pressure which causes a sub-atmospheric pressure to exist at a site in the water system.

Certified Backflow Technician - an individual that has successfully completed a Division of Drinking Water approved backflow certification course with a written and practical examination, and has maintained this certification in accordance with R309-305, Certification Rules for Backflow Technicians.

Consumer/Customer - the owner or operator of a non-City owned plumbing system(s) having a service connection from the City of Saratoga Springs pressurized irrigation and/or drinking water systems.

Containment (Meter or Point of Connection Protection) - the practice of installing approved backflow prevention assemblies/devices at the service connection of consumers in order to protect the public drinking water system from any backflow from the consumers plumbing system.

Contaminate - any substance introduced into the public drinking water system which creates a threat to the public health such as poisoning, pathogenic organisms or any other public health concern.

Cross Connection - any actual or potential connection between a potable water system and any other source or system through which it is possible to introduce into the public drinking water system any used water, industrial fluid, gas or substance other than the intended potable water.

Degree of Hazard - This is the degree of threat to public health through a cross connection. Health Hazard (contaminant) is something that will cause illness and possibly death. Non Health Hazard (pollutant) does not create a threat to public health, but does adversely affect the aesthetic qualities such as taste, smell and odor.

Flood Rim - The top edge or the highest point of a receptacle to which the water will rise before overflowing.

Isolation (Plumbing Code Compliance) - the practice of installing approved backflow prevention assemblies/devices at each point of cross connection or system outlet as required by Plumbing Code as adopted by the State and its amendments.

Pollutant - any substance introduced into the public drinking water system which does not create a threat to the public health but which does adversely and unreasonably affect the aesthetic quality of the water.

Service Connection - the terminal end of the City's drinking water system where the City transfers jurisdiction and sanitary control of the water. If a water meter is present then the service connection exists at the downstream end of the meter.

Purpose of the Program

The City of Saratoga Springs is committed to providing our customers with a clean, safe supply of drinking water. Our goal is to help protect our valuable drinking water resources through the implementation and enforcement of a cross connection control program and to protect the quality and integrity of the City's drinking water system.

A cross connection is defined as, "Any actual or potential connection between a potable water system and any other source or system through which it is possible to introduce into the drinking water system any used water, industrial fluid, gas, or substance other than the intended potable water."[1]

The City invests significant time and resources to protect the sources, storage, and distribution facilities that make up the drinking water system but, even the greatest infrastructure can be compromised by a single cross connection. Cross-connections and backflow incidents can result in dangerous, highly contaminated water unexpectedly entering public drinking water systems. The installation of approved backflow prevention devices can help prevent the undesirable reversal of flow of non-potable liquids and gasses into the City's drinking water system.

Cross connections are allowed in certain circumstances provided they have proper protection against backflow. All compliant assemblies will be inspected by the City prior to the issuing of the certificate of occupancy and it is the owner's responsibility to have the annual assembly tested and the results submitted to the City.

[1] Moss, Michael S. *Cross Connection Control Program.* Salt Lake City: Division of Drinking Water, 2016.

Authority

Federal, state, and local laws, codes, and ordinances establish the City's responsibility for the establishment and enforcement of an on-going cross-connection program and for the customer's responsibility to install and maintain on-site plumbing systems in compliance with applicable codes and regulations.

Applicable Federal Laws:

Federal Public Law 104-182 outlines public water departments' "responsibility of public water system[s] to protect quality of water to consumers." This complies with the US EPA Cross Connection Control Manual, which states the importance of the water purveyor providing water that complies with all EPA standards at the source, and deliver it to the customer without the quality being compromised as a result of its delivery to the customer.

State Regulations/Codes:

Utah Code Section 19-4-112 (2d) states that there will exist "no cross connection between potable and non-potable water systems." In addition, cross connection control procedures are given in the Utah Administrative Code R309-105-12, stating the importance of implementing cross control prevention practices, and following standard procedures that will protect against a compromise to the potable water supply. The State has prepared and adopted its own Cross Connection Control Program dated April 2016 incorporated herein by reference.[2]

Local Ordinances:

The City of Saratoga Springs enforces potable water protection outlined in the Water Utilities Ordinance 8.01.39 (See Appendix A: City Ordinance for Cross Connection Control Procedures). This document also provides a substantial basis wherein to enforce the protection of potable water throughout the City. This includes allowing Public Works department personnel to enter the premises of facilities to test backflow prevention devices and to conduct random inspections as determined necessary.

[2] https://documents.deq.utah.gov/drinking-water/field-services/DDW-2017-010179.pdf

Responsibility

City

Under the Utah Public Drinking Water Rules (Section R309-105-12) the City (as the Water Purveyor) has the primary responsibility for the prevention of any substance including water from any unapproved source, from entering the public drinking water system. This may require discontinuance of water service for a customer who refuses to comply. The City is also prohibited from installing or maintaining a water service connection to a consumer where a pollutant, plumbing or contamination hazard exist, unless the public drinking water system is protected against backflow by an approved backflow prevention assembly/device properly installed and maintained, as required by the adopted Plumbing Code.

Building Department

The Building Department has the responsibility to not only review building plans and inspect plumbing as it is installed, but, it has the explicit responsibility of preventing cross connections from being designed and built into the structures within its jurisdiction. Where the review of building plans suggests or detects the potential for a cross connection being made an integral part of the plumbing system the Building Department has the responsibility to require such cross connections be eliminated.

The Building Department's responsibility begins at the point of service (the downstream side of the meter) and carries throughout the entire length of the customer's water system. The Building Inspector should inquire about the intended use of water at a point where one is actually called for by the plans. When and if such a cross connection is discovered, the Building Inspector shall require removal of said cross connection.

Public Works

Within the City of Saratoga Springs, the Public Works Department has the responsibility of implementing and enforcing the cross-connection program. This includes informing residents and commercial owners of the need for an approved backflow prevention device, performing the inspections required before issuing a business or property their Certificate of Occupancy (C of O) form, and for tracking the subsequent inspections that will be performed thereafter.

Backflow Administrator

Within the Public Works Department, a Backflow Administrator shall be identified. The Coordinator is in charge of implementation of an effective cross connection control program and ensuring that all aspects of the plan and ordinance are followed.

Backflow Technician

All known reduced pressure backflow prevention assemblies and double check valve assemblies shall be tested by a Certified Backflow Technician. The responsibility of a Certified Backflow Technician is to:

1. Ensure that acceptable procedures are used for testing, repairing, and maintaining any backflow prevention assembly*.
2. Make reports of such testing and/or repair to the customer and the public drinking water systems on forms approved by the City of Saratoga Springs and the Division of Drinking Water.
3. Include on the report a list of any materials or replacement parts used to effect a repair or perform maintenance of that assembly.
4. Ensure that any replacement parts are equal in quality to parts originally supplied within the assembly and that they are supplied only by the manufacturer of their agent.
5. Avoid changing the design, material, or operational characteristics of the assembly during any repair or maintenance.
6. Perform, test, and be responsible for the competency and accuracy of all testing and reports thereof.
7. Ensure that the status of the technician's certification is current.
8. Be equipped with, and competent in the use of all tools, gauges, and equipment necessary to properly test, repair, and/or maintain a backflow prevention assembly.

*Notification of changes to Backflow Assembly should be reported to the City of Saratoga Springs Public Works water department at least (14) days prior to change.

As part of a backflow technician's responsibility, failure to report a failing backflow assembly to the public drinking water supplier within five (5) days may be grounds to revoke a backflow technician's certification.

Procedures

Cross Connection Control Surveys:

The Backflow Administrator or designee shall survey the City's distribution system on an annual basis for possible illegal cross connections and for approved backflow devices that may be tampered with or inoperable. If it is determined from the survey that an illegal cross connection exists or that a back flow device is not operating correctly, the City will send notification to the customer along with a date to bring the property into compliance. The City has the discretion to require either the removal of the cross connection, the installation of an approved backflow prevention device, or that the existing device be repaired by a certified technician.

During compliance inspections, the owner or representative will be required to accompany the City while on premises and appropriate documentation will be conducted during the inspection. The customer is responsible for all expenses resulting from an illegal or faulty cross connection, or modifications made to an existing backflow prevention device.

Approval of New Backflow Prevention Assemblies:

Prior to signing the Certificate of Occupancy, the Public Works Department will not consider the installation of assemblies to be complete until:

1. The installation has been inspected by the Backflow Administrator and deemed acceptable based the manufacturer's installation criteria.
2. Assembly is tested by a Certified Backflow Technician and has a status of Passed.

Annual Inspection and Testing of Assemblies:

Testing shall be performed as follows:

1. By a Certified Backflow Technician.
2. At least once every 12 months. In those instances where the City deems the hazard to be great, the City may require certified inspections and tests at a more frequent interval
3. Within ten working days of initial installation.
4. Any time assemblies have been partially disassembled for cleaning and/or repair.
5. Where there is indication that the unit may not be functioning properly (i.e. excessive or continuous discharges from relief valve, chatter, or vibration of internal parts).
6. Using a 3 or 5 valve test kit that has valid annual certification in accordance to the latest approved testing procedure from the Division of Drinking Water.

7. All test reports submitted must be of the type approved by the City and the Division of Drinking Water.
8. All parts of testing procedure must be recorded accurately on the test report with a determination of status (Passed or Failed). Test Certificates are not transferable.

In conjunction with testing the assembly, the Certified Backflow Technician shall investigate to determine:

1. That cross-connections, actual or potential, have not been added ahead of the protective assemblies,
2. The assembly meets all installation criteria; and
3. The assembly has not been bypassed or altered in some other way to compromise the backflow protection.

If the control assembly fails installation requirements described above or has a testing status of Failed, the customer will be given 15 days for High or Health Hazard locations or up to 30 calendar days for Low or Non- Health Hazard Locations to complete installation or to make required changes in installation or repairs. The City will require the assembly to be repaired promptly with manufacturer's specified parts, in accordance to manufacturer's suggested procedure, and placed in proper operating condition within the time limit set above. Following repairs, the assembly is to be tested again to verify that it is meeting performance standards and has a status of Passed.

Failure to have a properly functioning cross-connection control assembly with a testing status of Passed installed within the time limits stated may result in termination of service. Service will only be reinstated by having a properly functioning backflow prevention assembly with a testing status of Passed and inspected. In extenuating circumstances, the Backflow Administrator has the authority to grant an extension of time for compliance.

Degree of Hazard

Listed below are the degrees of hazard associate with backflow prevention.

1. Low or non-health hazard: Pollutants, aesthetic (odor, color, taste, appearance). No health effects if consumed.
2. High or health hazard: Contaminants, any toxic substances or pathogens that may cause illness or death if consumed.

Locations of potential high hazard (such as fire protection systems, irrigation systems, carbonated beverage machines, chemical detergent dispensers, or water loading stations) should be documented to ensure that those locations receive "high priority" in inspections that will be performed.

Methods of protection

The table below lists the degree of hazard, types of backflow, and approved methods of protection for backflow prevention devices as outlined in the Cross Connection Control Program of Utah:

Degree of Hazard	Type of Backflow	Approved Method of Protection
High or Low	Backsiphonage & Backpressure	Air Gap
High or Low	Backsiphonage & Backpressure	Reduced Pressure Zone Backflow Prevention Assembly (RP)
High or Low	Backsiphonage **ONLY**	Pressure Vacuum Breaker (PVB)
High or Low	Backsiphonage **ONLY**	Spill-Resistant Vacuum Breaker (SVB)
High or Low	Backsiphonage **ONLY**	Atmospheric Vacuum Breaker (AVB)
Low	Backsiphonage & Backpressure	Double Check Valve Assembly (DC)
Low	Backsiphonage **ONLY**	Hose Bibb Vacuum Breaker (HBVB)
**Low	Backsiphonage **ONLY**	Dual Check Device

Record Keeping:

Documentation of all activities should be kept to ensure thorough application of the cross connection control program including, but not limited to:

1. Inspection and Testing Results*
2. Records of surveys or inspections
3. Inventories and locations of assemblies and high hazard air gaps should be entered into the City of Saratoga Springs City Map GIS portal
4. Test histories and inspection records of inventoried sites,
5. Any backflow incidents, and any corrective actions taken
6. All compliance and enforcement actions.
7. Any backflow prevention device locations to provide adequate information about backflow prevention device locations.

*When a test or inspection is performed, one copy of the report shall be immediately distributed to the owner or resident of the facility or building and within 30 days one copy shall be delivered to the Public Works Department.

Keeping proper records will secure the responsibility, proper maintenance, and/or repair of all backflow prevention device in the event that a backflow occurs.

Training

At least one member of the Public Works department shall be designed as the Backflow Administrator and be to be trained and certified as a backflow technician. The Backflow Administrator should be familiar with cross connection hazards, be familiar with locations where potential hazards exist within the City, and be familiar with the approved methods for preventing the occurrence of a backflow.

Enforcement

If in the judgment of the City an approved backflow prevention assembly is required at the customer's water service connection or within the customer's private water system for the safety of the water system or, if violations of the City's Cross-Connection Control program exist, the designated agent of the City shall:

1. Give notice in writing to said customer to immediately install or repair such approved backflow prevention assembly(s) at specific locations(s) on his premises. Upon receiving such notice, the customer shall immediately install or repair such approved assembly(s) at the customer's own expense
2. Discontinue service of water to any premises if an unapproved cross connection is found or if a City-approved backflow prevention assembly is not installed, tested, and maintained, or if it is found that a backflow prevention assembly has been removed, by-passed, or if any unprotected cross connection exists on the premises.
3. Failure, refusal, or inability on the part of the customer to install, have tested, or maintain said assembly(s) shall constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met.
4. Once discontinued, the City shall not restore water service until such conditions or defects are corrected in conformance with the state and city statutes relating to plumbing, safe drinking water supplies and the regulations adopted pursuant thereto.

Public Education

The City recognizes that it is beneficial to have owner or residents educated on what cross connections are, how they can be prevented, what types of protection are available, and the concerns associated with thermal expansion*. Some educational strategies are:

- Hold public meetings and send notices to customers to educate the community about the need for the program and how it may affect them.
- Inform water customers with newsletters, brochures, press releases, and the use of web sites.
- Encourage the installers of the backflow assembly devices to educate their customers of the hazards associated with cross connections.
- Make educational materials available to the public at public facilities and on the City Website.
- During site and building inspections explain cross connection control to the owner or resident of the inspected facility or building.
- Provide notices to owners of a scheduled inspection dates and any required corrective action.

*An event that occurs when expanding water, such as in a water heater, has nowhere to go because the backflow device creates a "closed system," and may result in rupture or, in worst cases, explosion of the water container.

Appendix A: City Ordinance for Cross Connection Control Procedures

8.01.39. Potable Water Supply.

1. **Purposes:**
    a. To protect the public potable water supply of the City of Saratoga Springs from the possibility of contamination or pollution by isolation within the customer's internal distribution system(s) such contaminants or pollutants which could backflow into the public water systems;
    b. To promote the elimination or control of existing cross-connections, actual or potential, between the customer's in-plant potable water system(s) and non-potable water systems(s), plumbing fixtures, and industrial piping system(s); and
    c. To provide for the maintenance of a continuing program of Cross Connection Control, which will systematically and effectively prevent the contamination or pollution of all potable water systems.
2. **Responsibility.** The City shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow of contaminants or pollutants through the water service connection.
3. **Unlawful connection**. It shall be unlawful for any person to connect any part of the City's pressurized irrigation system to any part of a culinary water system so as to create a potential cross-connection whereby irrigation water could be introduced into any system that provides culinary water.
    a. An exception may be made if the City determines that a particular water connection cannot connect to any part of the City's pressurized irrigation system.
    b. If in the judgment of the City an approved backflow prevention assembly is required at the customer's water service connection or within the customer's private water system for the safety of the water system, the designated agent of the City shall give notice in writing to said customer to install such approved backflow prevention assembly(s) at specific locations(s) on his premises. The customer shall immediately install such approved assembly(s) at the customer's own expense, and failure, refusal, or inability on the part of the customer to install, have tested, and maintain said assembly(s) shall constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met.
4. **Building Department.**
    a. The Building Department has the responsibility to not only review building plans and inspect plumbing as it is installed, but, it has the explicit responsibility of preventing cross connections from being designed and built into the structures within its jurisdiction. Where the review of building plans suggests or detects the potential for a cross connection being made an integral part of the plumbing system the

Building Department has the responsibility to require such cross connections be eliminated.

b. The Building Department's responsibility begins at the point of service (the downstream side of the meter) and carries throughout the entire length of the customer's water system. The Building Inspector should inquire about the intended use of water at a point where one is actually called for by the plans. When and if such a cross connection is discovered, the Building Inspector shall require removal of said cross connection.

5. Certified Backflow Assembly Technician.

a. Only certified Backflow Assembly Technicians shall do the testing, maintenance, and repair of City-approved backflow prevention assemblies. The Certified Technician must tag each double check valve, pressure vacuum breaker, reduced pressure backflow assembly, and air gap, showing the serial number of the assembly, date tested, and by whom. The technician's license number must also be on this tag.

b. In the case of a customer requiring a commercially-available technician, any certified technician is authorized to make the test and report the results of that test to the customer, City, and the Utah Department of Environmental Quality Division of Drinking Water. If such a commercially tested assembly is in need of repair, a licensed plumber must make the actual repair.

6. Definitions.

a. **"Approved Backflow Assembly"** means a backflow assembly accepted by the Utah Department of Health as meeting an applicable specification or as suitable for the proposed use.

b. **"Auxiliary Water Supply":**

i. Means any water supply on or available to the premises other than the City's public water supply; and

ii. May include water from another municipality's public potable water supply or any natural source(s) such as a well, spring, river, stream, harbor, etc., or "used waters" or "industrial fluids." These waters may be contaminated or polluted or they may be objectionable and constitute an unacceptable water source over which the City does not have authority for sanitary control.

c. **"Back Pressure"** means the flow of water or other liquids, mixtures, or substances under pressure into the distribution pipes of potable water supply system from any source(s) other than the intended source.

d. **"Back-Siphonage"** means the flow of water or other liquids, mixtures, or substances into the distribution pipes of a potable water supply system from any source(s) other than the intended source caused by the reduction of pressure in the potable water supply system.

e. **"Backflow"** means the reversal of the normal flow of water caused by either back-pressure or back-siphonage.

f. **"Backflow Prevention Assembly**" means an assembly or means designed to prevent backflow.

   i. Specifications for backflow prevention assemblies are contained within the Utah Administrative Code and the Cross Connection Control Program for Utah.

   ii. All backflow prevention assemblies must be approved by the Utah Department of Health prior to installation.

   iii. A listing of these approved backflow prevention assemblies is available from the Utah Department of Health.

g. **"Designated Agent"** means the person designated to be in charge of the Water Treatment Department of the City of Saratoga Springs, is invested with the authority and responsibility for the implementation of an effective cross connection control program and for the enforcement of the provisions of this ordinance.

7. Requirements.

a. Policy:

   i. No water service connection to any premises shall be installed or maintained by the City unless the water supply is protected as required by State laws, regulations, codes, and City ordinances. Service of water to any premises shall be discontinued by the City if an unapproved cross connection is found or if a City-approved backflow prevention assembly is not installed, tested, and maintained, or if it is found that a backflow prevention assembly has been removed, by-passed, or if any unprotected cross connection exists on the premises. Service will not be restored until such conditions or defects are corrected.

   ii. An approved backflow prevention assembly shall be installed on each service line to a customer's water system, at or near the property line or immediately inside the building being served. In all cases, the assembly will be installed before the first branch line leading off the service line, whenever the City deems the protection of the water supply to be in the best interest of the water supply customers.

   iii. The type of prevention assembly required shall depend upon the degree of hazard which exists at the point of cross connection, whether direct or indirect, as stipulated in the International Plumbing Code.

iv. All presently installed backflow prevention assemblies which do not meet the requirements of this Section but were approved assemblies for the purposes described herein at the time of installation and which have been properly maintained, shall be removed and disconnected within one year of the passing of this ordinance.

b. It shall be the duty and responsibility of the customer at any premises where backflow prevention assemblies are installed to have certified inspections and operational tests made at least once per year at the customer's expense. In those instances where the City deems the hazard to be great, the City may require certified inspections and tests at a more frequent interval. These inspections and tests shall be performed by a Certified Backflow Assembly Technician. It shall be the duty of the City to see that these tests are made according to the regulations set forth by the Utah Department of Environmental Quality Division of Drinking Water.
c. Backflow prevention assemblies shall be installed in water supply lines to provide at least the degree of protection stipulated in the International Plumbing Code. All backflow prevention assemblies shall be exposed for easy observation and be readily accessible.
d. All backflow prevention assemblies installed in a potable water supply system for protection against backflow shall be maintained in good working condition by the person or persons having control of such assemblies. Upon inspection, any assembly found to be defective or inoperative shall be replaced or repaired. No assembly shall be removed from use, relocated, or substituted without written approval of the City.
e. All backflow prevention assemblies shall be tested within ten working days of initial installation.
f. No backflow prevention assembly shall be installed so as to create a safety hazard, such as installation over an electrical panel, steam pipes, boilers, pits, or above ceiling level.

(Ord. 11-9; Ord. 08-12, Ord. 98-0813-001, Ord. 98-0625-1942, Ord. 98-0112-1)

Appendix B: Test Report and Inspection Forms

BACKFLOW ASSEMBLY TEST REPORT

UTAH CHAPTER AMERICAN BACKFLOW PREVENTION ASSOCIATION

Water System Name: _____

Location of Assembly: _____

Owner of Assembly: _____

Address: _____ City: _____ Utah Zip: _____

Manufacturer: _____ Model #: _____

Size: _____ Serial #: _____

Style: RP ☐ DC ☐ PVB ☐ SVB ☐ DCDA ☐ RPDA ☐

	Reduced Pressure Princple Assembly / Double Check Valve Assembly			
	Check Valve #1	**Check Valve #2**	**Relief Valve**	**PVB/SVB**
INITIAL TEST	Held At _____ PSID Closed tight ☐ Leaked ☐	Held At _____ PSID Closed tight ☐ Leaked ☐	Held At _____ PSID Did not open ☐	AIR INLET Opened At _____ Did Not Open ☐
REPAIRS	Cleaned ☐ Replaced ☐	Cleaned ☐ Replaced ☐	Cleaned ☐ Replaced ☐	CHECK VALVE Held At _____ Cleaned ☐ Replaced ☐
FINAL TEST	Closed tight _____ Leaked ☐	Closed tight _____ Leaked ☐	Opened At _____ PSID Did Not Open ☐	Air Inlet _____ Check Valve _____

Comments: _____

Initial test performed by: _____ Date: _____

Certification #: _____ Pass ☐ Fail ☐

Repaired by: _____ Date: _____

Final test performed by: _____ Date: _____

Certification #: _____ Pass ☐ Fail ☐

Owner's or Authorized Representative's Signature: _____

Cross-Connection Inspection Form
(Print Clearly)

Date of CC Survey _____/_____/_____ PWS ID# ___/___/___/___/___/___/___

PWS Name _____ City/Town _____

Facility Information

1. Facility Name (Business, Co., Corp.):_____
2. Facility Address:_____, UT _____
3. Mailing Address:_____
4. Contact Person:_____ Phone # (____)_____-_____
5. Type of Facility: □ Industrial □ Commercial □ Institutional □ Municipal □ Residential □ Other_____
6. Describe the facility use (i.e. restaurant, school):_____
7. Size of service connection:_____ inch. Is service connection metered? □ YES □ NO
8. Is supplemental protection at the meter required (containment device)? □ YES □ NO
   If YES, what type of backflow device is in use? □ Reduced Pressure Backflow Preventer (RPBP) □ Double Check Valve Assembly (DCVA)
9. Does the boiler feed utilize chemical additives? □ YES □ NO
   If YES, is the boiler protected with a backflow device? □ YES □ NO
10. Is process water in use in this facility? □ YES □ NO
    If YES, is the process water "potable" water or "raw" water? □ POTABLE □ RAW
11. Is the process water line protected with a backflow device? □ YES □ NO
12. Does this facility have a fire protection system? □ YES □ NO
    If YES, is the fire protection system supplied by a dedicated water line? □ YES □ NO
13. What type of backflow device is being used on the fire protection system? □ YES □ NO
    □ Single Swing Check Valve (SSCV) □ Reduced Pressure Backflow Preventer (RPBP)
    □ Double Check Valve Assembly (DCVA) □ Other_____

Violation(s) Found

□ **No violation(s) was/were found at the time of this cross-connection survey was conducted.**

Exact Location of Cross-connection	Degree of Hazard	Comments
	□ High □ Moderate □ Low	
	□ High □ Moderate □ Low	
	□ High □ Moderate □ Low	
	□ High □ Moderate □ Low	

I certify that the above cross-connection survey findings are true *(Signatures required)*

- **Cross-connection Survey Conducted by:** (UT-DEQ Certified Backflow Technician)

_____	_____	___/___/___	_____
UTDEQ Cert. CC Surveyor Name (Print)	*UT DEQ Cert. ID#*	*Expiration Date*	*Signature*

Appendix C: Approved Backflow Prevention Devices

List of approved Backflow Prevention Devices, descriptions, applications, and the recommended inspection schedule.

Type of Backflow Device	Description	Application	Recommended Inspection Schedule
Air Gap	A "physical gap" between the potable water supply and the receiving tank. See Figure 1.	Any water system requiring the use of potable water to a plumbing fixture, tank, or other device.	Recommended (6) months
Reduced Pressure Principle (RP)	Consists of an automatic differential-pressure valve located between two or more independently acting, spring loaded, resilient seat-check valves. See Figure 2.	Since this device discharges to the atmosphere, it can be used where codes call for an air gap.	Recommended (6) months
Double Check Valve (DC)	Consists of two independently acting, resilient seat check valves located between two tightly closing shut-off valves, together with suitable test cocks, and stop valves arranged so that the main check valves can be tested for water tightness. See Figure 3.	The DCV protects against non-health hazards only under backpressure and backsiphonage conditions.	1 year
Pressure Vacuum Breaker (PVB)	Contains an internally loaded check valve and an internally loaded air inlet valve and two shut-off valves. The valves independently act with the air inlet valve located downstream of the check valve. The PVB has two test cocks while the SVB only has one. See Figure 4.	Protects against non-health hazards or health hazards under backsiphonage only. The pressure vacuum breaker and spill resistant vacuum breaker are not designed to protect against backpressure.	1 year
Spill-resistant Pressure Vacuum Breaker (SVB)	Like the PVB, an SVB contains an internally loaded check valve and an internally loaded air inlet valve and two shut-off valves. The valves independently act with the air inlet valve located downstream of the check valve. See Figure 4.	Protects against non-health hazards or health hazards under backsiphonage only. The pressure vacuum breaker and spill resistant vacuum breaker are not designed to protect against backpressure.	1 year
Atmospheric Vacuum Breaker (AVB)	Contains an air inlet valve, a check seat, and an air inlet port. Water flowing through the AVB causes the air inlet valve to close against the air inlet port. When normal water flow is stopped, the air inlet valve falls to form a block for backsiphonage. See Figure 5.	The AVB protects against non-health hazards or health hazards under backsiphonage only. The atmospheric vacuum breaker is not designed to protect against backpressure.	1 year
Hose Bib Vacuum Breaker	Consists of a spring-loaded check valve that seals against an atmospheric outlet when the water supply is turned on. See Figure 6.	When the supply is turned off, the device vents to atmosphere, thus protecting against backsiphonage conditions.	1 year

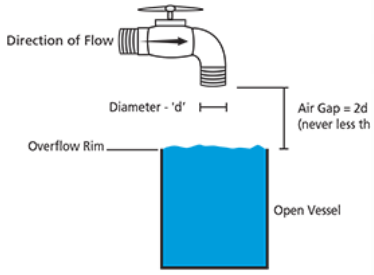

Figure 1: Air Gap.

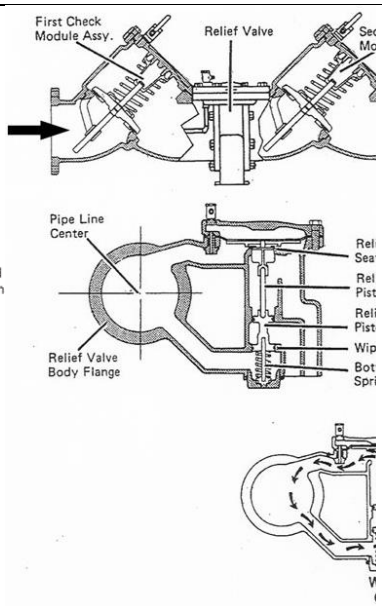

Figure 2: Reduced Pressure Principle Backflow Preventer.

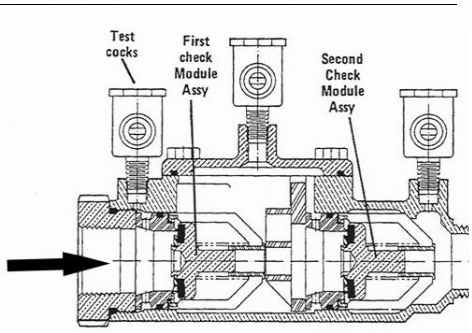

Figure 3: Reduced Pressure Principle Backflow Preventer.

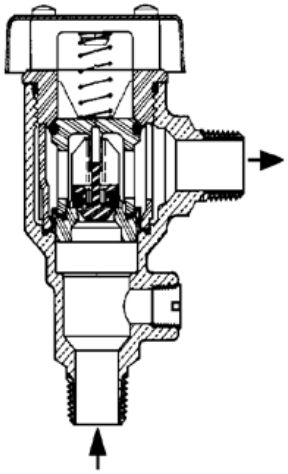

Figure 4: Atmospheric Vacuum Breaker.

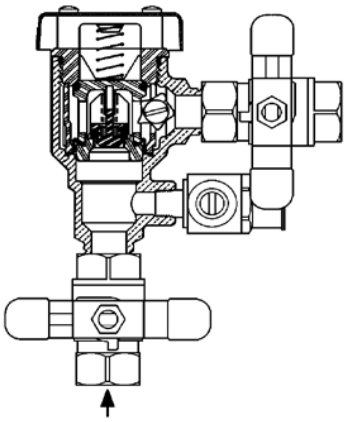

Figure 5: Pressure Vacuum Breaker and Spill Resistant Vacuum Breaker.

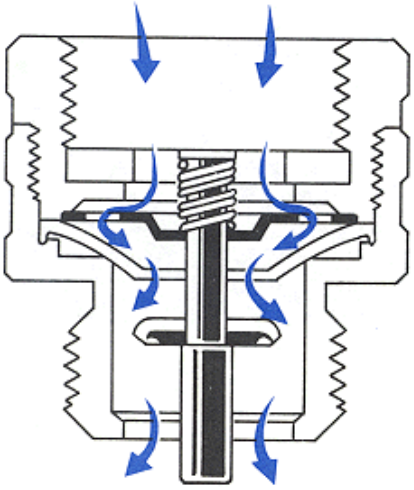

Figure 6: Hose Bib Vacuum Breaker.

Appendix D: Notice Letters

<<DATE>>

«Owner»
«ADDRESS»
Saratoga Springs, UT 84045

Re: Periodic Field Test and Maintenance Report, Backflow Prevention Assembly – Water Service

To Whom It May Concern:

The backflow prevention assemblies listed in the enclosed document are due for their periodic field test, as required under The City of Saratoga Springs Code Title 8 Public Utilities and Services, Section 8.1.390, Potable Water Supply. You will need to have the field test(s) performed by a Certified Backflow Prevention Assembly Tester possessing a valid Certification issued by the State of Utah, Department of Environmental Quality, Division of Drinking Water.

If the field test discloses that the assembly is not operating satisfactorily, you will need to have the necessary repairs made and the assembly retested by a Certified Backflow Prevention Assembly Tester. On completion of a field test showing that the assembly is operating satisfactorily, the Certified Backflow Prevention Assembly Tester shall complete a Field Test and Maintenance Report form and forward it to this office no later than <<DATE>>. If the report is not received by this date your account may be **shut-off** until compliance is reached.

If any of the information regarding the backflow prevention assemblies on the enclosed document is incorrect, please correct it and/or make notes in the appropriate column and return that sheet with the current field test reports that are due. Also, if there are any backflow prevention assemblies listed but their current field test reports are not included, please provide an explanation in the Notes column. For example, if an assembly was removed, please provide details. This will aid in making sure that our records are current.

Additional information relative to this matter may be obtained by writing to the City of Saratoga Springs Public Works Department or by calling 801-766-6506.

Sincerely,

Amber LeFors
Administrative Assistant Public Works and Engineering
on behalf of Jon Torrence
Backflow Administrator, DEQ Certificate #16154

NOTICE OF COMPLIANCE

Date

«Owner»
«ADDRESS»
Saratoga Springs, UT 84045

Dear «Owner»:

The City has inspected the above referenced property and has identified an illegal cross-connection between the City's culinary water system and the onsite pressurized irrigation system. This is prohibited by City Code Title 8.01.39 which is enclosed for your review. Cross-connections can cause contaminated water to enter the drinking water system and compromise its quality and integrity.

The City requires this be disconnected immediately and the property brought into compliance with Saratoga Springs Ordinances. This case has been placed on a tracking status and a follow up inspection will be completed by Month Day, 20XX to verify the cross-connection has been removed. Thank you for complying with City ordinances and helping to protect the health, safety, and welfare of all City Residents. To report when the disconnection is complete or if you have any questions, please contact the Saratoga Springs Public Works Department at 801-766-6506.

Sincerely,

Amber LeFors, Administrative Assistant Public Works and Engineering
On behalf of Jon Torrence,
Saratoga Springs Backflow Administrator, DEQ Certificate #16154

<<Date>>

Company
Attn: Maintenance Department
[Company Address]

Re: SHUT OFF NOTICE for Noncompliance Account No: xx.xxxxx.xx

To Whom it May Concern:

The backflow prevention assemblies listed in the enclosed document are overdue for their periodic field test, as required under The City of Saratoga Springs Code Title 8 Public Utilities and Services, Section 8.1.390, Potable Water Supply. A letter dated April 20, 2017, was sent certified mail from our office. Currently, our office has not received the test reports required.

You will need to have the field test(s) performed by a Certified Backflow Prevention Assembly Tester possessing a valid Certification issued by the State of Utah, Department of Environmental Quality, Division of Drinking Water. All tests need to show that the assembly is operating satisfactorily.

On completion of a field test showing that the assembly is operating satisfactorily, the Certified Backflow Prevention Assembly Tester shall complete a Field Test and Maintenance Report form and forward it to this office no later than 5:00 p.m. on <<DATE>>. If the report is not received by this date your account (and water service to all addresses listed on the enclosed document) will be **shut-off** until compliance is reached.

Should service be discontinued, a $25.00 Reconnect Fee will need to be paid for the first shut off, $50.00 for the second, and $100 for the third and each subsequent shut off.

NO FURTHER NOTICE WILL BE GIVEN
SHUT OFF DATE: <<DATE>>

Sent by Amber LeFors
Administrative Assistant Public Works and Engineering
on behalf of Jon Torrence
Backflow Administrator, DEQ Certificate #16154

Please Remit Reports to:
alefors@saratogaspringscity.com
fax: 801-766-9872

Questions? Call 801-766-6506
Enclosure
cc: File

References

Corriere, Paul. *Backflow Prevention by Containment & Cross-Connection Control Program.* Easton: Easton Suburban Water Authority, 2013.

Cross Connection Control Backflow Prevention, Customer Service Inspection Program Outsourcing Inspections. Texas: TCEQ Small Business and Local Government Assistance, 2004.

Cross Connection Control and Backflow Prevention Manual. Indiana: Indiana Department of Environmental Management, 2016.

Moss, Michael S. *Cross Connection Control Program.* Salt Lake City: Division of Drinking Water, 2016.

Portland Water Bureau

https://www.portlandoregon.gov/water/article/28141

Wikipedia: Dual Check Valve

https://en.wikipedia.org/wiki/Double_check_valve

Associated Organizations

Rural Water Association of Utah

Intermountain Section of the American Water Works Association

Rural Community Assistance Corporation

Chapter of the American Backflow Prevention Association

Division of Drinking Water

University of Southern California Foundation for Cross Connection Control and Hydraulic Research (FCCCHR)