CROSS – CONNECTION CONTROL PROGRAM
APRIL 1981

I. Purpose

Cross-connections between water supplies and non-potable sources of contamination represent one of the most significant threats to health in the water supply industry. This program is therefore designed to maintain the safety and potability of the water in the District's system by preventing the introduction of any foreign liquids, gases or other substances, other than water from the intended source.

II. Authority

This program derives its enforceability from Title 22, MRSA, C 601, sub-chapter 2, Sec. 2612(5) Maine Department of Human Services, Cross-Connection Rules 10-144A CMR226. In addition, authority rises from the Rules and Regulations as published by the Bath Water District and as approved by the Public Utilities Commission of the State of Maine and from provisions of the Occupational Safety and Health Act, and from provisions of the State Plumbing Code Part 1, 10-144ACMR238.

III. Definitions

Backflow - The flow of water or other foreign liquids, gases or other substances into the distribution system of a public water supply from any source other than the intended.

Backflow Preventor - A device to prevent backflow

Air Gap - A physical separation sufficient to prevent backflow between the free-flowing discharge end of the potable water system and any other system.

Atmospheric Vacuum Breaker - A device which prevents back-siphonage by creating an atmospheric vent where there is either a negative pressure or sub-atmospheric pressure in a water system.

Backflow Preventor with Intermediate Atmospheric Vent - A device having two check valves separated by an atmospheric vent.

Double Check Valve - A device having two, weight or spring loaded, bronze faced with soft rubber disc check valves, with shutoff valves and test cocks for periodic testing.

Hose Bib Vacuum Breaker - A device which is permanently attached to a hose bib and which acts as an atmospheric vacuum breaker

Pressure Vacuum Breaker - A device containing a spring loaded check valve and a spring loaded atmospheric. It contains valves and fittings which allow the devise to be tested.

Reduced Pressure Principle Backflow Preventor - An assembly of check valves and a reduced pressure zone which spills water to the atmospheric in event of the failure of the check valves. It has valves and fittings which allow the device to be tested.

Back-siphonage - Backflow resulting from negative or less than atmospheric pressure in the water system.

Back-pressure - A condition in which the owner's system pressure is greater than the District's system pressure.

Containment - A method of backflow prevention which requires a backflow preventor at the water service entrance.

Cross-connection - Any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other water or other substances of unknown or

questionable safety, whereby water or other substances may flow from one system to the other, the direction of the flow depending on the pressure differential between the two systems.

Department - State of Maine Department of Human Services

Fixture Isolation - A method of backflow prevention in which a back-flow preventor is located to correct a cross-connection at an in-plant unit rather than at the water service entrance.

Owner - Any person who has legal title to, or license to operate or habitate in, a property upon which a cross-connection inspection is to be made or upon which a cross-connection is present.

Permit - A document issued by the Department with the approval of the District which allows the use of a backflow preventor.

Person - Any individual, partnership, company, public or private corporation, political subdivision or agency of the State, department, agency or instrumentality of the United States or any other legal entity.

District - The Bath Water District

Water Service Entrance - That point in the owner's water system beyond the sanitary control of the District. This will ordinarily be the outlet end of the meter and will always be before any unprotected branch.

IV. Administration

A. The District shall develop and operate a cross connection control program, including keeping necessary records, which fulfills the requirements of the Department's Cross-Connection Rules and is approved by the Department.

B. The owner shall allow his property to be inspected for possible cross-connections and shall follow the provisions of the District's program or the Department's Cross-Connection Rules if a cross-connection is permitted.

C. If the District requires that the public supply be protected by containment, the Owner shall be responsible for water quality beyond the outlet end of the containment device.

D. Both the District and the Owner shall attempt to eliminate all cross-connections.

V. Responsibility

A. District's Responsibility

1. The District's inspections for cross-connections or potential cross-connections shall be made during normal working hours unless otherwise arranged with the owner.

2. The District will, after the initial inspection of plans or premises, inform the owner by letter of any correction deemed necessary, the method of making the correction, and the time allowed before correction is required.

3. The District will not allow any cross-connection to remain unless it is protected by an approved backflow preventor, for which a permit has been issued and which is regularly tested and operates satisfactorily. Certain fixtures are exempted from this provision and are listed in Section VIII.

4. The District shall inform the Owner by letter of any failure to comply by the time of the first re-inspection. The District will allow additional sufficient time for the correction. If there is a failure to comply by the time of the second re-inspection, the District shall inform the Owner by letter that water service to the Owner's premises will be terminated.

5. If the District determines at any time that a serious threat to the public health exists, service shall be terminated immediately.

6. Re-establishment of service before the installation of a backflow preventor may be allowed by the District after an agreement has been made between the District, the Department and the Owner indicating the intention of the Owner to comply with the provisions of the agreement.

7. The District shall maintain an inspection program which covers all industrial customers every three years and all commercial customers every five years at a minimum. It is suggested that these times be shortened depending upon the number of industrial or commercial customers served by the District.

8. The District shall make sure that the new water service areas and all new construction, including residential, complies with the Cross-Connection Program and with the Maine State Plumbing Code. A Copy of the Plumbing Inspector's Certificate of Completion should be obtained by the District.

9. The District shall inspect dwellings with more than four apartments and require that they comply with the Cross-Connection Program.

10. The District should encourage Owners of dwellings with four or less apartments to install backflow preventors on hose bibs and shall warn them of the possible hazards of devices such as siphon type pesticide or fertilizer sprayers, water operated sump pumps, etc. The Owner may be required to install a backflow preventor at the service entrance, if deemed necessary. (Note: This section does not exclude the use of a single check valve at the service entrance.)

B. Owner's Responsibilities

1. The Owner, after being informed by a letter from the District, shall at his expense install, maintain and test or have tested, any backflow preventor on his premises.

2. The Owner shall correct any malfunction of the backflow preventor which is revealed by periodic testing. This shall include the replacement of parts or the replacement of the backflow preventor if deemed necessary by the District.

3. The Owner shall inform the District of any new, proposed or modified cross-connection and also any existing cross-connection which the Owner is aware of, but has not been found by the District.

4. Any Owner having a private well or other private water source must have a permit if the well or source is cross-connected to the District's system. Permission to cross-connect may be denied by the District. The Owner may be required to have a backflow preventor at the service entrance if a private water source is maintained, even if it is not cross-connected to the District's system.

5. The Owner shall not install a by-pass around any backflow preventor unless there is a backflow preventor on the by-pass. Owners who cannot shut down operation for testing must supply the additional devices necessary to allow testing to take place.

6. The Owner shall only install backflow preventors listed or approved by the District and the Department.

7. The Owner shall install the backflow preventor in a manner approved by the District. Pit installations are strongly discouraged and must have Department approval before a permit will be issued.

8. If the Owner installs plumbing to provide potable water for domestic purposes which is on the District's side of the backflow preventor, such plumbing must have its own backflow preventor.

VI. Degree of Hazard

The District recognizes the differences in the threat to the public water system arising from different types of connection. These can be classified as follows:

A. **Class 1 - Low Degree of Hazard**

If backflow were to occur, the resulting health significance would be limited to minor changes in the esthetic quality such as taste, odor or color. The foreign substance must be non-toxic and non-bacterial in nature and have no significant health effect.

B. **Class II - Moderate Degree of Hazard**

If backflow were to occur, the resulting effect on the water supply would be significant changes in esthetic qualities. The foreign substance must be nontoxic to humans and non-bacterial in nature.

C. **Class III - High Degree of Hazard**

If backflow were to occur, the resulting effect on the water supply could cause illness or death if consumed by humans. The foreign substance may be toxic to humans either chemically, bacteriologically or radiologically. Toxicity may result from either short or long term exposure.

1. Class III hazards can be protected against by containment or fixture isolation. Examples of establishments which will be controlled by containment are:

    a. Wastewater installations

        i. Treatment plants

        ii. Pump stations including storm water pump stations

        iii. Industrial waste treatment plants.

    b. Industries where a health hazard exists.

    c. Hospitals, schools, nursing homes, clinics. etc.

    d. Vessel watering points or fixtures

    e. Tank trucks, street sweepers, and other similar units which receive water at the District's shop or any of its hydrants.

Examples of establishments which the District may cause to be controlled by either containment or fixture isolation are:

a. Laboratories

b. Mortuaries or Funeral Homes

c. High pressure boilers

d. Chemically treated low pressure boilers

e. Lawn irrigation systems

f. Swimming pools

g. Car wash facilities

h. Farms where water is used for other than domestic purposes.

i. Commercial installation with very small industrial functions.

VII. Permits

A. Permits will be issued by the Department upon recommendation of the District for any backflow situation except those listed as exceptions in Section VIII, Part C.

B. Permits will be issued if the cross-connection is deemed necessary and cannot be eliminated.

C. The degree of hazard will be stated on the permit.

D. The frequency of testing of the backflow preventor will be stated on the permit.

E. The type, model and make of the backflow preventor will be listed on the permit. If more than one device is used to protect a single cross-connection, it shall be listed on the permit.

F. Any exception will be listed on the permit.

G. Permits shall be non-transferable.

H. Permits shall be renewed every five years.

VIII. Exemptions

A. Any cross-connection protected against backflow, at the time this program goes into effect, may continue with that same protection unless:

1. The existing protection is grossly inadequate.

2. The Department notifies the District, in writing, that a change must be made.

B. The exemption will be expired at any time the backflow preventor must be replaced and the replacement backflow preventor must be required by the degree of hazard involved.

C. Certain fixtures which constitute cross-connections may be controlled by non-testable backflow preventors and will not require a permit. Examples of these fixtures are as follows:

1. Hose bibs which are only potential cross-connections.

2. Below the rim outlets which can be replaced by a gooseneck device.

3. Toilets with anti-siphon ball-cocks.

4. Any fixture with a built-in atmospheric vacuum breaker which can not be bypassed.

5. Others listed in Appendix A of the State regulations.

IX. Periodic Testing

It is recognized that any backflow preventor can fail and any method of protection can be subverted; thus, periodic testing and inspection is necessary. This includes air gap protection.

A. Periodic testing shall be performed by the Owner or the District or the District's agent.

B. The time interval for testing a backflow preventor shall be stated on the permit and shall be determined by the District.

C. Any backflow preventor which fails during test will be immediately repaired. The District shall require that repair parts be ordered within 24 hours and that shipment be by the fastest means possible. Any extended delay (more than seven days) shall require discontinuance of service or other means to insure protection of the public water system.

D. Certain Class III degree of hazard situations will not be allowed to continue unprotected if the backflow preventor fails the test and cannot be immediately repaired. The Owner will be the person responsible for the provision of spare parts and should have a supply on hand.