

**PROTECTION OF PUBLIC WATER SUPPLY
BACKFLOW PREVENTION GUIDELINES REQUIREMENTS
WATER SERVICE RULE 16-D**



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Los Angeles Department of Water and Power (Department)
Rule 16-D Protection of Public Water Supply

The regulations of the State Water Resources Control Board, Division of Drinking Water (State), Title 17 of the California Code of Regulations, Sections 7583 through 7605, require that each water purveyor develop and implement a comprehensive Backflow Prevention Program for protecting the public water supply from contamination or pollution. The administrative and operating elements of this program are to be set forth in the Department's working rules and regulations.

The Department has the responsibility to protect the public water system from contamination caused by the backflow of contaminants or pollutants through the water service connection. If, in the judgement of the Department or the City of Los Angeles Department of Building and Safety, acting as its authorized representative, an approved backflow prevention assembly is required, the Department or its authorized representative will give notice to the customer to install an approved assembly at the service connection to the premises. The consumer shall immediately install the approved assembly or assemblies at the consumer's own expense. Failure on the part of the consumer to install, test and maintain the approved assembly or assemblies shall constitute grounds for disconnecting water service to the premises. **Water service will not be restored until such conditions are corrected to the satisfaction of the Department.**

Additional information regarding the specific Backflow Prevention requirements of this water service rule may be obtained from the Los Angeles Department of Water and Power, Cross-Connection Control Program, Water Quality Division, Room 1213, 111 North Hope Street, Los Angeles, California 90012.

Los Angeles Department of Water and Power (Department)
Protection of the Public Water Supply Backflow Prevention

Guidelines for Water Service Rule 16-D

SECTION 1: GENERAL POLICY

1.1 **Purpose:** The purpose of this water service rule is:

- a) To protect the Department's water system by isolating the consumer's water system at the meter, thus preventing the backflow of contaminants or pollutants from the consumer's premises to the Department's water distribution system.
- b) To control and/or eliminate both potential and existing cross-connections between the potable water system and non-potable water system within the consumer's premises.
- c) To maintain the Backflow Prevention Program by administering a systematic inspection and testing program of all Backflow Prevention assemblies installed for meter protection.

1.2 **Application:** This rule shall apply to all premises served water by the Department.

1.3 **Policy:** The Department has the responsibility to protect the public water system from contamination caused by the backflow of contaminants or pollutants through the water service connection. If, in the judgement of the Department or the City of Los Angeles Department of Building and Safety, acting as its authorized representative, an approved backflow prevention assembly is required, the Department or its authorized representative will give notice to the consumer to install the approved assembly at the service connection to the premises. The consumer will immediately install the approved assembly or assemblies at the consumer's own expense. Failure on the part of the consumer to install, test, and maintain the approved assembly or assemblies shall constitute grounds for disconnecting water service to the premises. **Water service will not be restored until such conditions are corrected to the satisfaction of the Department.**

1.4 **Source:** Title 17 of the California Code of Regulations, Sections 7583 through 7605, requires that each water purveyor develop and implement a comprehensive Backflow Prevention Program for protecting the public water supply from contamination or pollution.

SECTION 2: DEFINITIONS

- 2.1 Air Gap Separation is a physical break between the supply line and a receiving vessel. An approved air gap will be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel and shall in no case be less than one inch. This method of backflow prevention will be accepted by the Department as long as it meets the approved criteria.
- 2.2 Auxiliary Water Supply is any water supply on or available to the premises other than the Department's potable water supply. These auxiliary waters may include water from another purveyor's potable water supply or any natural source such as a well, spring, river, stream, harbor, or used water grey water or industrial fluids, etc.
- 2.3 Backflow is the result of a pressure differential causing a reversal of the flow of water or mixtures of water, liquids, gases, or other substances from the consumer's premises into the Department's water system.
- 2.4 Backflow Prevention Assembly (Approved) is a device that has been accepted by the Department as suitable for preventing the backflow of water or liquids, as a result of backpressure or backsiphonage, from entering the Department's water system.
- 2.5 Civil Works includes federal, state, county, city and military buildings and facilities.
- 2.6 Consumer's Water System shall include all facilities downstream of the water meter. The system or systems may include both potable and non-potable water systems.
- 2.7 Contaminant is any foreign substance that impairs the quality of the water which creates an actual hazard to the public health through poisoning or by the spread of disease by sewage, industrial fluids, waste, etc.
- 2.8 Cross-Connection is an unprotected actual or potential connection between the public or consumer's potable water system and any other source or system through which it is possible to introduce any used water, industrial fluid, gas or other non potable substances into the potable water system.
- 2.9 Department's Water System is the source, facilities, and distribution system under the control of the Department up to and including the meter.
- 2.10 Double Check Valve Assembly is an assembly composed of two independently acting, approved check valves, including tightly closing seated shutoff valves attached at each end of the assembly, and fitted with properly located resilient seated test cocks.

- 2.11 Hazard is a condition, device, or practice that can cause an actual or potential threat of contamination or pollution of the Department's water system or the consumer's potable water system(s).
- 2.12 Pollutant is any foreign substance that impairs the quality of water to a degree which does not create a hazard to the public health but which does adversely and unreasonably affect the aesthetic qualities of such waters for domestic use.
- 2.13 Pressure Vacuum Breaker Assembly is an assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with properly located resilient seated test cocks and tightly closing resilient seated shutoff valves attached at each end of the assembly.
- 2.14 Recycled Water is a wastewater which as a result of treatment is suitable for uses other than human consumption.
- 2.15 Reduced Pressure Principle Backflow Assembly is an assembly containing two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The unit shall include properly located resilient seated test cocks and tightly closing resilient seated shutoff valves at each end of the assembly.
- 2.16 Service Connection is the terminal end of a service line from the Department's water system. If a meter is installed at the end of the service line, then the service connection means the downstream end of the meter.
- 2.17 Water Supervisor is a person designated by and at the expense of the water user for maintaining the consumer's water system to be free of cross-connections and other sanitary defects.

SECTION 3: WATER SYSTEM

- 3.1 The water system shall consist of two parts: the Department's water system and the consumer's water system
- 3.2 The Department's water system shall consist of the source, facilities, and distribution system and shall include all those facilities that are under the control of the Department up to and including the meter.
- 3.3 The consumer's water system shall include all facilities downstream of the water meter.

SECTION 4: CROSS-CONNECTIONS PROHIBITED

- 4.1 No water service connection shall be installed or maintained to any premises where actual or potential cross-connections are known to exist unless such cross-connections are abated or controlled to the satisfaction of the Department.

SECTION 5: SURVEYS AND INVESTIGATIONS

- 5.1 Existing Facilities: The consumer's premises shall be open at all reasonable times to the Department for the purpose of conducting surveys and investigations of the water use practices to determine whether there are actual or potential cross-connections within the consumer's premises through which contaminants or pollutants could backflow into the Department's water system. The Department retains the right to reevaluate existing facilities and to request backflow protection based on the potential degree of hazard found. (See rule 10.1 and 10.2).
- 5.2 New Buildings and Facilities: All applications and plans submitted for plumbing permits to be issued by the Los Angeles Department of Building and Safety shall be reviewed by the Department for conformance with this Water Service Rule. (See rule 10.1 and 10.2).
- 5.3 Plans approved by governmental agencies other than the City of Los Angeles: Any application for water service where plans are submitted to other governmental agencies and not to the City of Los Angeles Department of Building and Safety for plumbing permits must be reviewed by this Department for conformance with the provisions of this Water Service Rule. (See rule 10.1 and 10.2).

SECTION 6: APPROVED BACKFLOW PREVENTION ASSEMBLIES

- 6.1 Air Gap Separation (AG): An air gap separation shall be at least double the diameter of the supply pipe, measured vertically above the overflow rim of the receiving vessel and in no case shall this separation be less than one inch.
- 6.2 Double Check Valve Backflow Prevention Assembly (DC): A double check valve assembly shall be approved for use by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research and an approved listing agency recognized by the Department of Building and Safety.
- 6.3 Reduced Pressure Principle Backflow Prevention Assembly (RP): An approved reduced pressure assembly shall be approved for use by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research and an approved listing agency recognized by the Department of Building and Safety.

- 6.4 Pressure Vacuum Breaker (PVB): An approved pressure vacuum breaker shall be approved for use by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research and an approved listing agency recognized by the Department of Building and Safety.
- 6.5 All backflow assemblies must meet the above mentioned approvals prior to installation.

SECTION 7: TYPE OF PROTECTION REQUIRED

DOMESTIC SERVICE

7.1 An approved backflow prevention assembly shall be installed on the consumer’s premises at the domestic service connection whenever the following conditions exist:

<u>System Hazard</u>	<u>Meter Protection Required</u>
a) A system that is restricted, classified, or closed to on-site inspections. An RP assembly may be installed in place of an AG if approved by the State <u>and</u> by this Department.	AG/RP
b) A system where the Department’s water system is used to supplement a recycled water supply.	AG
c) A system where there is waste water pumping and/or treatment plants and there is no interconnection with the Department’s water system. Multi-family apartment buildings and single family dwellings are exempt. Rainwater sumps, drain sumps, or sub-soil drainage sumps are exempted from this requirement. An RP assembly may be installed in place of an AG if approved by the State <u>and</u> by this Department.	AG/RP
d) A system that serves a civil works facility (governmental)	RP
e) A system where recycled water is used and there is no interconnection with the public water supply.	RP

<u>System Hazard</u>	<u>Meter Protection Required</u>
f) Individual residences using recycled water for landscape irrigation as part of an approved dual plumbed use area.	DC
g) A system where a potential hazardous condition exists or where hazardous substances are used and may create an actual or potential hazard to the Department's water system. This shall include premises with auxiliary water supplies, reservoirs, tanks, or industrial piping systems containing process fluids or used waters originating from the Department's water system.	RP
h) A system where an alternate water source is utilized e.g., graywater, cisterns or on-premise recycled water . Simple graywater systems with no pumps or potable make up are excluded.	RP
i) A system that requires a booster pump on the service connection line.	RP
j) A system where there are complex plumbing arrangements which make it impractical to determine whether or not cross-connections exist.	RP
k) A system supplying water from the Department's water system to dockside watering points and marine facilities or vessels for any purpose.	RP
l) A system where there is a repeated history of cross-connections within the consumer's premises.	RP
m) A system that is interconnected (looped) with more than one service connection from the Department's water system.	RP
n) A system designed to serve multiple commercial or industrial tenants.	RP

<u>System Hazard</u>	<u>Meter Protection Required</u>
o) A system that serves a new structure where the highest point of the system is more than 46 vertical feet from the service connection. (based on a minimum distribution pressure of 20 p.s.i.) Existing structures requiring a mechanical plan check per Section 94.101.3.6 of the Los Angeles City Municipal Code shall be reviewed by the Department on a case by case basis.	RP
p) A system used for irrigation which may be equipped with pumps, injectors, pressurized tanks or vessels, or other facilities for injecting agricultural chemicals such as fungicides, pesticides, soil conditioning, and other similar noxious, toxic, objectionable substances, or with elevation concerns.	RP
q) A system used for irrigation where there is a dedicated service connection.. A PVB may be installed in place of an RP if approved by this Department.	RP/PVB
r) Any other systems which may be reviewed for potential degree of hazard by this Department from time to time.	TO BE DETERMINED

FIRE SERVICE

7.2 An approved backflow prevention assembly shall be installed on the consumer’s premises at each fire service connection where the following conditions exist:

<u>System Hazard</u>	<u>Meter Protection Required</u>
a) A fire system supplied by recycled water and the Department’s water system is used as a supplemental supply.	AG
b) A fire system that is supplied from the Department’s water system and there is a recycled water supply on the premises (not interconnected).	DC

<u>System Hazard</u>	<u>Meter Protection Required</u>
c) A fire system that is supplied by the Department's water system and is interconnected with an unapproved auxiliary water supply. An RP assembly may be installed in place of an AG if approved by the State <u>and</u> by this Department.	AG/RP
d) A fire system that is near or serves dockside watering points and marine facilities.	RP
e) A fire system where antifreeze or other additives are used.	RP
f) A fire system that serves a civil works facility (governmental).	DC
g) A fire system that is supplied by the Department's water system and there is an unapproved auxiliary water supply on the premises (not interconnected).	DC
h) A fire system that is supplied from the Department's water system and one or more of the following conditions exists: reservoirs, storage tanks or fire pumps taking suction from above ground covered reservoirs or tanks.	DC
i) A fire system that is interconnected with another service connection from the Department's water system (looped).	DC
j) A fire system that is combined with a domestic system to form one service (Fireline) and no other hazard exists. Multi-family apartment buildings and single family dwellings are exempt.	RP
k) A fire system that serves a structure where the highest point of the system is more than 46 vertical feet from the service connection. (based on a minimum distribution pressure of 20 p.s.i.) Existing structures requiring a mechanical plan check per Section 94.101.3.6 of the Los Angeles City Municipal Code shall be reviewed by the Department on a case by case basis.	DC
l) Any other fire systems which may be reviewed for potential degree of hazard by this Department from time to time.	TO BE DETERMINED

SECTION 8: INSTALLATION

- 8.1 Any person installing an approved backflow prevention assembly at the water service meter shall obtain a plumbing permit from the Department of Building and Safety in accordance with the most current City of Los Angeles Plumbing Code.
- 8.2 The approved backflow assembly shall be installed at the expense of the consumer.
- 8.3 Approved RP or DC backflow assemblies shall be located on the consumer's premises at the service connection and shall be installed a minimum of twelve inches (12") above ground or floor level and not more than forty-eight inches (48") above ground or floor level measured from the bottom of the assembly and with a minimum of twelve inches (12") side clearance on both sides of the assembly.
- 8.4 Approved PVB backflow assemblies shall be located on the consumer's premises at the service connection and shall be installed at least 12 inches above the highest point of water use.
- 8.5 There shall be no outlet, i.e., hose bib, tee, tap, or connection, between the water meter and the approved backflow assembly. "Y" Wye strainers and/or pressure reducing valves installed before the approved backflow assembly are the only exceptions.
- 8.6 Approved backflow assemblies shall have at least the same cross-sectional area as the water meter. If a continuous water supply is necessary, two sets of approved backflow assemblies shall be installed in parallel. Where parallel assemblies are installed, they must be of the same type (RP, DC) and the sum of the cross-sectional area of the assemblies shall be at least equivalent to the cross-sectional area of the meter.
- 8.7 Approved backflow assemblies shall not be bypassed, made inoperative, or removed without specific written authorization by this Department.
- 8.8 Approved backflow assemblies shall be protected, when necessary, from extreme weather or site conditions that could cause physical damage to or malfunction of the backflow assembly.

SECTION 9: INSPECTION AND MAINTENANCE

- 9.1 The inspection and testing of approved backflow assemblies shall be performed by a certified Backflow Prevention Assembly Tester licensed by the Los Angeles County Department of Public Health.
- 9.2 All approved backflow assemblies shall be inspected and tested annually or more frequently if determined to be necessary by this Department. Test records will be on file with this Department for a minimum period of three years after the test is performed.

Approved backflow assemblies shall be tested immediately upon receiving the Department's Periodic Test and Maintenance Report. If repairs are necessary, the approved backflow assembly or assemblies shall not be considered in compliance with this Water Service Rule by the Department until approved for operation by a certified Backflow Prevention Assembly Tester.

- 9.3 If replacement is necessary, the replacement assembly shall comply with the meter protection required based on existing hazard as specified by the most current Rule 16-D. The consumer must notify the Department before any action is taken. Upon notification, the Department will determine the type of meter protection required.

SECTION 10: VIOLATIONS

- 10.1 The Department shall deny or discontinue water service, after reasonable notice to the occupants, to any premises where an approved backflow prevention assembly is required by this Water Service Rule if any of the following conditions exist:
- a) The approved backflow assembly is not installed, tested, and maintained as required by this Department.
 - b) The approved backflow assembly has been removed or bypassed.
 - c) An unprotected cross-connection exists on the premises.
- 10.2 Water service to such premises shall not be initiated or restored until the consumer conforms with the provisions of this Water Service Rule to the satisfaction of the Department.