PROTECTION OF PUBLIC WATER SUPPLY

BACKFLOW PREVENTION REQUIREMENTS

WATER SERVICE RULE 16-D

REVISED July 1, 2025

WATER QUALITY DIVISION
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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 Water Board), contained in the Cross-Connection Control Policy Handbook (CCCPH) effective July 1, 2024 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 1214, 111 North Hope Street, Los Angeles, California 90012.

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

Requirements 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 protect the service connection from existing or potential 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 initial and periodic inspection of a customer's water use and administer an annual 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: The State Water Resources Control Board (State Water Board), 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 vertical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressurized receiving vessel.

2.2 Approved water supply is a water source that has been approved by the State Water Board for domestic use in a public water system and designates as such in a domestic water supply permit issued pursuant to Section 116525 of the California Health and Safety Code.

2.3 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, used water or industrial fluids, rainwater harvesting or greywater systems etc.

2.4 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.

2.5 Backflow Prevention Assembly 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.

2.6 Civil Works include federal, state, county, city and military buildings and facilities.

2.7 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 (Also known as user).

2.8 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.

2.9 Cross-Connection is an unprotected actual or potential connection between the Department's 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.

2.10 Cross-Connection Control Specialist is a person who is certified as a cross-connection specialist.

2.11 Department's Water System is the source, facilities, and distribution system under the control of the Department up to and including the meter.

2.12 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.

2.13 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).

2.14 Hazard Assessment is a detailed evaluation of a customer's premises designed to evaluate the types and degree of hazard at a user's premises.

2.15 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.

2.16 Public Water System is a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily
at least 60 days out of the year.

2.17 Recycled Water is wastewater which as a result of treatment is suitable for uses other than human consumption.

2.18 Reduced Pressure Principal 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.

2.19 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.

2.20 "Swivel-Ell" is an assembly consisting of a reduced pressure principal backflow prevention assembly combined with a changeover piping configuration (swivel-ell connection).

2.21 Water Supervisor is a person designated by and at the expense of the water user to oversee a water use site and responsible for the avoidance of cross-connections.

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.

5.2 New Buildings and Facilities: All new service applications shall be reviewed by the Department for conformance with this Water Service Rule.

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.

SECTION 6: APPROVED BACKFLOW PREVENTION ASSEMBLIES

6.1 Air Gap Separation (AG): An air gap separation shall be at least two times the effective opening 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. New air gap installations at a user's service connection must be reviewed and approved by the State Water Board prior to installation.

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 Principal 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 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:

	System Hazard	Meter Protection Required
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 Water Board and 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 that is supplied by the Department's water system and is inter- connected with an unapproved auxiliary water supply. **An RP assembly may be installed in place of an AG if approved by the State Water Board and by this Department.**	AG/RP
d)	A system where there is wastewater pumping and/or treatment plants and there is no interconnection with the Department's water system. 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 Water Board and by this Department.**	AG/RP
e)	A system that serves a civil works facility (governmental)	RP
f)	A system where recycled water is used and there is no interconnection with the public water supply.	RP
g)	A system where an alternate water source is utilized e.g., greywater, rainwater harvesting or on-premises recycled water. Simple greywater systems with no pumps or potable make up are excluded.	RP

	System Hazard	Meter Protection Required
h)	A system which serves a high hazard premise or where a potentially 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. (See Appendix A)	RP
i)	A system that requires a booster pump on the service.	RP
j)	A system where there are complex plumbing arrangements which make it impractical to determine if 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 which serves multiple commercial or industrial tenants.	RP
o)	A system which serves multiple individual single family residences e.g tract homes. (not intended for single family residences with or without additional dwelling units)	RP
p)	A system which serves a 13R fire sprinkler system with an FDC and no other hazard exists.	DC

	System Hazard	Meter Protection Required
q)	A system which serves fire sprinklers on a residential user with no FDC unless all the following criteria are satisfied: (A) the user premises has only one service connection to the PWS; (B) a single service line onto the user premises exists that subsequently splits on the property for domestic flow and fire protection system flow, such that the fire protection system may be isolated from the rest of the user premises; (C) a single, water industry standard, water meter is provided to measure combined domestic flow and fire protection system flow; (D) the fire protection system is constructed of piping materials certified as meeting NSF/ANSI Standard 61; (E) the fire protection system's piping is looped within the structure and is connected to one or more routinely used fixtures (such as a water closet) to prevent stagnant water. **The State Water Board requires that existing systems not meeting all the above criteria (A-E) be retrofitted with a DC at the service connection within ten (10) years of the effective date of the CCCPH**.	DC
r)	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
s)	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
t)	A system used for irrigation where there is a dedicated service connection**.**	RP
u)	Any other domestic system connections not listed above will be reviewed by this Department to assess their potential degree of hazard.	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:

	System Hazard	Meter Protection Required
a)	All dedicated fire service connections except as noted in sections b through g.	DC
b)	A fire system that is supplied by the Department's water system and is inter-connected with an unapproved auxiliary water supply. **An RP assembly may be installed in place of an AG if approved by the State Water Board and by this Department.**	AG/RP
c)	A fire system that is near or serves dockside watering points and marine facilities.	RP
d)	A fire system where antifreeze or other additives are used.	RP
e)	A fire system that is combined with a domestic system to form one service (Fireline) and no other hazard exists.	RP
f)	Any other fire system connections not listed above will be reviewed by this Department to assess their potential degree of hazard.	TO BE DETERMINED

The State Water Board requires that all dedicated fire services without an existing DC be retrofitted within ten (10) years of the effective date of the CCCPH. The ten-year timeframe does not apply to the following conditions, which will require retrofit upon notification by this Department.

(A) The fire system is supplied by the Department's water system and a recycled water supply exists on the premises (not interconnected).
(B) The fire system is supplied by the Department's water system and there is an unapproved auxiliary water supply on the premises (not interconnected).
(C) The fire system is supplied by the Department's water system and includes one or more of the following: reservoirs, storage tanks, or fire pumps drawing from above-ground covered reservoirs or tanks.
(D) The fire system is interconnected with another service connection from the Department's water system (looped system).
(E) Existing systems requiring a fire protection plan check may require clearance from this Department.

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 and not more than forty-eight inches (48") above ground or floor or pedestal level measured from the bottom of the assembly and with a minimum of twelve inches (12") side clearance except for the side of the assembly which contains the test cocks, a minimum of 24 inches (24") must be provided.

8.4 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.

8.5 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.

8.6 Approved backflow assemblies shall not be bypassed, made inoperative, or removed without specific written authorization by this Department. Any alterations including rotating the assembly will void approval.

8.7 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 prevention assemblies must be conducted by a backflow tester who holds a valid certification from a certifying organization recognized by the State Water Board.

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 altered, 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.

APPENDIX A

HIGH HAZARD CROSS-CONNECTION CONTROL PREMISES

The list below identifies premises that require backflow protection provided by a minimum of a reduced pressure principal backflow prevention assembly. The list below is not intended to be all-inclusive. The Department may reduce or increase the minimum protection required following a hazard reassessment.

1. Sewage handling facilities
2. Wastewater lift stations and pumping stations
3. Petroleum processing or storage plants
4. Radioactive material storage, processing plants or nuclear reactors
5. Mortuaries
6. Cemeteries
7. Sites with an auxiliary water supply not interconnected with PWS
8. Premises with more than one connection to the PWS
9. Premises with recycled water
10. Graywater systems. Simple graywater systems are exempted
11. Cistern rainwater capture systems
12. Medical facilities
13. Kidney dialysis facilities
14. Dental office with water-connected equipment
15. Veterinarian facilities
16. Chemical plants
17. Laboratories
18. Biotech facilities
19. Electronics manufacture
20. Dry cleaner facilities
21. Industrial or commercial laundry facilities
22. Metal-plating facilities

23. Business Park with a single meter serving multiple businesses
24. Marine-port facilities
25. Car wash facilities
26. Mobile home park, RV park, or campgrounds with RV hookups
27. Hotels/motels
28. Gas stations
29. Fire stations
30. Solid waste disposal facilities
31. Pet groomers
32. Agricultural premises
33. Hazard assessment access denied or restricted
34. Railroad maintenance facilities
35. Incarceration facilities (e.g. prisons)
36. Temporary connections to fire hydrants for miscellaneous uses, including construction
37. Private water distribution mains
38. Drinking water storage tank overflow connected to a sump or storm drain
39. Airports