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Title 20

CROSS-CONNECTION CONTROL

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Chapter 20.01

PURPOSE

Sections:

20.01.010 Purpose.

Section 20.01.010 Purpose.

It is the purpose of this title to:

A. Protect the public water supply against the actual or potential cross-connection by isolating within the premises contamination that may occur because of some undiscovered or unauthorized cross-connection on the premises;

B. Eliminate existing connection between drinking water systems and other sources of water that are not approved as safe and potable for human consumption;

C. Eliminate cross-connections between drinking water systems and sources of contamination;

D. Prevent the making of cross-connections in the future. (Ord. 88-11 § 1 (part))

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Chapter 20.02

DEFINITIONS

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- 20.02.010 Air-gap separation.**
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- 20.02.140 Reduced pressure principle assembly.**

Section 20.02.010 Air-gap separation.

The term "air-gap separation" means a physical break between a supply pipe and a receiving vessel. The air gap shall be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel, in no case less than one inch. (Ord. 88-11 § 1 (part))

Section 20.02.020 Approved backflow prevention device.

The term "approved backflow prevention device" means devices which have passed laboratory and field evaluation tests performed by a recognized testing organization which has demonstrated its competency to perform such tests to the California Department of Health Services. (Ord. 88-11 § 1 (part))

Section 20.02.030 Approved water supply.

The term "approved water supply" means any water supply whose potability is regulated by a state or local health agency. (Ord. 88-11 § 1 (part))

Section 20.02.040 Auxiliary supply.

The term "auxiliary supply" means any water supply on or available to the premises other than the approved water supply. (Ord. 88-11 § 1 (part))

Section 20.02.050 AWWA standard.

The term "AWWA standard" means an official standard developed and approved by the American Water Works Association (AWWA). (Ord. 88-11 § 1 (part))

Section 20.02.060 Backflow.

The term "backflow" means a flow condition, caused by a differential in pressure, that causes the flow of water or other liquids, gases, mixtures or substances into the distributing pipes of a potable supply of water from any source or sources other than an approved water supply source. Back-siphonage is one cause of backflow. Back pressure is the other cause. (Ord. 88-11 § 1

(part))

Section 20.02.070 Contamination.

The term "contamination" means a degradation of the quality of the potable water by any foreign substance which creates a hazard to the public health or which may impair the usefulness or quality of the water. (Ord. 88-11 § 1 (part))

Section 20.02.080 Cross-connection.

The term "cross-connection," as used in this title, means any unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome and potable. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur, shall be considered to be cross-connections. (Ord. 88-11 § 1 (part))

Section 20.02.090 Double check valve assembly.

The term "double check valve assembly" means an assembly of at least two independently acting check valves including tightly closing shutoff valves on each side of the check valve assembly and test cocks available for testing the watertightness of each check valve. (Ord. 88-11 § 1 (part))

Section 20.02.100 Health agency.

The term "health agency" means the California Department of Health Services, or the local health agency with respect to a small water system. (Ord. 88-11 § 1 (part))

Section 20.02.110 Local health agency.

The term "local health agency" means the county or city health authority. (Ord. 88-11 § 1 (part))

Section 20.02.120 Person.

The term "person" means an individual, corporation, company, association, partnership, municipality, public utility, or other public body or institution. (Ord. 88-11 § 1 (part))

Section 20.02.130 Premises.

The term "premises" means any and all areas on a customer's property which are served or have the potential to be served by the public water system. (Ord. 88-11 § 1 (part))

Section 20.02.140 Reduced pressure principle assembly.

The term "reduced pressure principle assembly" means a backflow prevention device incorporating two independently acting check valves, a hydraulically operating, mechanically independent pressure relief valve, a shut-off valve at each end of the device and necessary appurtenances for testing as required by the department. (Ord. 93-05 § 1)

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Chapter 20.03

GENERAL PROVISIONS

Sections:

20.03.010 Basis for establishing cross-connection control.

20.03.020 Cross-connection unlawful.

20.03.030 Unprotected cross-connection prohibited.

20.03.040 Installation by water user.

20.03.050 Protection of water supply lines.

20.03.060 Administration under contract.

Section 20.03.010 Basis for establishing cross-connection control.

These regulations are adopted pursuant to the State of California Administrative Code, Title 17, Public Health, entitled "Regulations Relating to Cross-Connection." (Ord. 88-11 § 1 (part))

Section 20.03.020 Cross-connection unlawful.

It is unlawful for any person, firm, or corporation, at any time to make or maintain or cause to be made or maintained, temporarily or permanently, for any period of time whatsoever, any cross-connection between plumbing pipes or water fixtures being served with water by the city water department and any other source of water supply or to maintain any sanitary fixture or other appurtenances or fixtures which, by reason of their construction, may cause or allow backflow of water or other substances into the water supply system of the city and/or the service of water pipes or fixtures of any consumer of the city. (Ord. 88-11 § 1 (part))

Section 20.03.030 Unprotected cross-connection prohibited.

Unprotected cross-connections with the public water supply are prohibited. (Ord. 88-11 § 1 (part))

Section 20.03.040 Installation by water user.

Whenever backflow protection has been found necessary, the city will require the water user to install an approved backflow prevention device by and at his/her expense for continued services or before a new service will be granted. (Ord. 88-11 § 1 (part))

Section 20.03.050 Protection of water supply lines.

Wherever backflow protection has been found necessary on a water supply line entering a water user's premises, then any and all water supply lines from the city's mains entering such premises, buildings, or structures shall be protected by an approved backflow prevention device. The type of device to be installed will be in accordance with the requirements of this title. (Ord. 88-11 § 1 (part))

Section 20.03.060 Administration under contract.

The city may contract with, delegate, or assign other entities the administration of the provisions of this title. (Ord. 93-05 § 2)

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Chapter 20.04

REQUIRED PROTECTION

Sections:

20.04.010 Where protection is required.

20.04.020 Type of protection required.

Section 20.04.010 Where protection is required.

A. Each service connection from the city water system for supplying water to premises having an auxiliary water supply shall be protected against backflow of water from the premises into the public water system unless the auxiliary water supply is accepted as an additional source by the city, and is approved by the public health agency having jurisdiction.

B. Each service connection from the city water system for supplying water to any premises on which any substance is handled in such fashion as may allow its entry into the water system shall be protected against backflow from the premises into the public system. This shall include the handling of process waters and waters originating from the city water system which have been subjected to deterioration in sanitary quality.

C. Backflow prevention devices shall be installed on the service connection to any premises having (1) internal cross-connections that cannot be permanently corrected and controlled to the satisfaction of the state or local health department and the city, or (2) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not cross-connections exist. (Ord. 88-11 § 1 (part))

Section 20.04.020 Type of protection required.

The type of protection that shall be provided to prevent backflow into the approved water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The type of protective device that may be required (listing in an increasing level of protection) includes (1) double check valve assembly (DC), (2) reduced pressure principle backflow prevention device (RP), and (3) an air-gap separation (AG). The water user may choose a higher level of protection than required by the city. The minimum types of backflow protection required to protect the approved water supply, at the user's water connection to premises with varying degrees of hazard are given in Table 1. Situations which are not covered in Table 1 shall be evaluated on a case-by-case basis and the appropriate backflow protection shall be determined by the city engineer.

TABLE 1

**TYPE OF BACKFLOW PROTECTION
REQUIRED**

- A. Sewage and Hazardous Substances
1. Premises where the public water system is used to supplement the reclaimed water supply. (Minimum type of backflow - AG)
 2. Premises where there are wastewater pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. An RP may be provided in lieu of an AG if approved by the health agency and the city. (Minimum type of backflow - AG)
 3. Premises where reclaimed water is used and there is no interconnection with the potable

water system. An RP may be provided in lieu of an AG if approved by the health agency and the city. (Minimum type of backflow - AG)

4. Premises where hazardous substances are handled in any manner in which the substances may enter a potable water system. This does not include a single-family residence that has a sewage lift pump. An RP may be provided in lieu of an AG if approved by the health agency and the city. (Minimum type of backflow - AG)

B. Auxiliary Water Supplies.

1. Premises where there is an unapproved auxiliary water supply which is interconnected with the public water system. An RP may be provided in lieu of an AG if approved by the health agency and the city. (Minimum type of backflow - RP)

2. Premises where there is an unapproved auxiliary water supply and there are no interconnections with the public water system. A DC may be provided in lieu of an RP if approved by the health agency and city. (Minimum type of backflow - DC)

C. Fire Protection Systems.

1. Premises where the fire system is directly supplied from the public water system and there is an unapproved auxiliary water supply on or to the premises (not interconnected). (Minimum type of backflow - DC)

2. Premises where the fire system is supplied for the public water system and interconnected with an unapproved auxiliary water supply. An RP may be provided in lieu of an AG if approved by the health agency and city. (Minimum type of backflow - RP)

3. Premises where the fire system is supplied from the public water system and where either elevated storage tanks or fire pumps which take suction from the private reservoirs or tanks are used. (Minimum type of backflow - DC)

D. Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist. (Minimum type of backflow - RP)

E. Premises where there is a repeated history of cross-connections being established. (Minimum type of backflow - RP)

F. Business, facilities, or premises designated below shall require backflow protection as indicated as a minimum.

1. Aircraft and missile plants -- RP.

2. Automotive plants -- RP.

3. Autopsy facilities -- RP.

4. Beverage bottling plants -- RP.

5. Breweries -- RP.

6. Buildings.

a. Hotels, apartment houses, public and private buildings, or other structures, where sewage pumps and/or sewage ejectors have been installed -- RP;

b. Any commercial structure in which the specific business activity cannot be ascertained -- RP;

c. Multistoried buildings that use booster pumps or elevated storage tanks to distribute potable water within the premises --DC;

d. Any building that exceeds forty (40) feet in height as measured from the service connection to the highest water outlet --DC.

7. Canneries, packing houses and reduction plants -- RP.

8. Chemical Plants -- Any premises, served from a public water supply, where there is a facility requiring the use of water in the industrial process of manufacturing, storing, compounding or processing chemicals. This will also include facilities where chemicals are used as additives to the water supply or in the processing of products -- RP.

9. Chemically Contaminated Water System. Any premises, served from a public water supply, where chemicals are used as additives to the water supply, or where the water supply is

used for transmission or distribution of chemicals, or where chemicals are used with water in the compounding or processing of products --RP.

10. Cold storage plants -- RP.
11. Convalescent homes -- RP.
12. Dairy processing plants -- RP.
13. Dental clinics -- RP.
14. Dry cleaning facilities -- RP.
15. Dye works -- RP.
16. Film processing facilities or film manufacturing plants -- RP.
17. Hospitals -- RP.
18. Ice manufacturing plants -- RP.
19. Irrigation system.
 - (a) Premises or locations where facilities have been installed for pumping, injecting or spreading fertilizers, pesticides or other hazardous substances -- RP;
 - (b) Premises or location having a separate service connection for irrigation purposes -- RP.
20. Laboratories, including, but not limited to, teaching institutions, biological and analytical facilities -- RP.
21. Laundries (commercial) -- RP.
22. Medical buildings and clinics -- RP.
23. Metal manufacturing, cleaning, processing or fabricating plants -- RP.
24. Morgues -- RP.
25. Mortuaries -- RP.
26. Multi-Storied Buildings. See Buildings.
27. Multiple Services. Includes two or more interconnected services provided by one or more water purveyors to a single consumer complex. Minimum backflow protection required: DC, at each service connection.
28. Nursing homes -- RP.
29. Oil/gas production, storage or transmission premises --RP.
30. Paper and paper products manufacturing plants -- RP.
31. Plastic manufacturing, extruding and injection molding --RP. See Chemical Plants.
32. Plating plants -- RP.
33. Portable spray or cleaning equipment which can be connected to a public water system -- AG.
34. Radioactive materials or substances -- plants or facilities that process, handle or store radioactive materials or substances -- RP.
35. Reclaimed Water Distribution System.
 - a. Premises where the public water system is used to supplement the reclaimed water system -- AG;
 - b. Premises where reclaimed water system is used and there is no interconnection with the potable water system -- RP.
36. Restricted, classified, or other closed facilities -- RP.
37. Rubber manufacturing plants -- natural or synthetic --RP.
38. Sand and gravel plants -- RP.
39. Sanitariums -- RP.
40. Schools, colleges and universities -- RP, if actual or potential health hazard exists on the premises.
41. Solar Heating Systems.
 - a. Solar collector system which contains any hazardous substance and where there is a direct make-up connection to the public water system -- RP;
 - b. Services connection protection is not required for "once through" solar heating systems including, but not limited to, domestic hot water systems.

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42. Tank trucks -- AG. See portable spray and cleaning equipment.
43. Vehicle washing facilities -- RP.
44. Veterinary clinics -- RP.
45. Waterfront facilities and industries, including, not limited to, docks, fisheries, fish hatcheries and marinas -- RP. (Ord. 93-05 § 3: Ord. 88-11 § 1 (part))

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Chapter 20.05

BACKFLOW PREVENTION DEVICES

Sections:

20.05.010 Approved backflow prevention devices.

20.05.020 Backflow prevention device installation.

20.05.030 Backflow prevention device testing and maintenance.

20.05.040 Backflow prevention device removal.

Section 20.05.010 Approved backflow prevention devices.

A. Only backflow prevention devices which have been approved by the city engineer shall be acceptable for installation by a water user connected to the city's potable water system.

B. The city engineer will provide, upon request, to any affected customer a list of approved backflow prevention devices. (Ord. 93-05 § 4 (part); Ord. 88-11 § 1 (part))

Section 20.05.020 Backflow prevention device installation.

Backflow prevention devices shall be installed in a manner prescribed in Section 7603, Title 17 of the California Administrative Code. Location of the devices should be as close as practical to the user's connection. The city engineer shall have the final authority in determining the required location and installation specifications for a backflow prevention device.

A. Air-Gap Separation (AG). The air-gap separation shall be located on the user's side of and as close to the service connection as is practical. All piping from the service connection to the receiving tank shall be above grade and be entirely visible. No water use shall be provided from any point between the service connection and the air-gap separation. The water inlet piping shall terminate a distance of at least two pipe diameters of the supply inlet, but in no case less than one inch above the overflow rim of the receiving tank.

B. Reduced Pressure Principle Backflow Prevention Device (RP). The approved reduced pressure principle backflow prevention device shall be installed on the user's side of and as close to the service connection as is practical. The device shall be installed a minimum of twelve inches above grade and not more than thirty-six inches above grade measured from the bottom of the device and with a minimum of twelve inches side clearance. The device shall be installed so that it is readily accessible for maintenance and testing.

C. Double Check Valve Assembly (DC). The approved double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance. If a double check valve assembly is put below grade, it must be installed in a vault such that there is a minimum of six inches between the bottom of the vault and the bottom of the device, so that the top of the device is no more than a maximum of eight inches below grade, so there is a minimum of six inches of clearance between the side of the device with the test cocks and the side of the vault, and so there is a minimum of three inches clearance between the other side of the device and the side of the vault. Special consideration must be given to double check valve assemblies of the "Y" type. These devices must be installed on their side with the test cocks in a vertical position so that either check valve may be removed for service without removing the device. Vaults which do not have an integrated bottom must be placed on a three-inch layer of gravel. (Ord. 93-05 § 4 (part); Ord. 88-11 § 1 (part))

Section 20.05.030 Backflow prevention device testing and maintenance.

A. The owners of any premises on which, or on account of which, backflow prevention

devices are installed, shall have the devices tested by a person certified as a backflow prevention assembly testing by the county of Sacramento environmental health division or equivalent agency. Backflow prevention devices must be tested at least annually and immediately after installation, relocation or repair. The city may require a more frequent testing schedule if it is determined to be necessary. No device shall be placed back in service unless it is functioning as required. A report in a form acceptable to the city shall be filed with the city each time a device is tested, relocated or repaired. These devices shall be serviced, overhauled or replaced whenever they are found to be defective and all costs of testing, repair and maintenance shall be borne by the water user.

B. The city will supply affected water users with a list of persons acceptable to the city to test backflow prevention devices. The city will notify affected customers by mail when annual testing of a device is needed and also supply users with necessary forms which must be filled out each time a device is tested or repaired. (Ord. 93-05 § 4 (part); Ord. 88-11 § 1 (part))

Section 20.05.040 Backflow prevention device removal.

Approval must be obtained from the city before a backflow prevention device is removed, relocated, or replaced.

A. Removal. The use of a device may be discontinued and the device removed from service upon presentation of sufficient evidence to the city to verify that a hazard no longer exists or is not likely to be created in the future.

B. Relocation. A device may be relocated following confirmation by the city that the relocation will continue to provide the required protection and satisfy installation requirements. A retest will be required following the relocation of the device.

C. Repair. A device may be removed for repair, provided the water use is either discontinued until repair is completed and the device is returned to service, or the service connection is equipped with other backflow protection approved by the city engineer. A retest will be required following the repair of the device.

D. Replacement. A device may be removed and replaced provided the water use is discontinued until the replacement device is installed. All replacement devices must be approved by the city engineer and must be commensurate with the degree of hazard involved. (Ord. 93-05 § 4 (part); Ord. 88-11 § 1 (part))

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Chapter 20.06

USER SUPERVISOR

Sections:

20.06.010 User supervisor.

Section 20.06.010 User supervisor.

At each premises where it is necessary, in the opinion of the city, a user supervisor shall be designated by and at the expense of the water user. This user supervisor shall be responsible for the monitoring of the backflow prevention devices and for avoidance of cross-connections. In the event of contamination or pollution of the drinking water system due to a cross-connection on the premises, the city shall be promptly notified by the user supervisor so that appropriate measures may be taken to overcome the contamination. The water user shall inform the city of the user supervisor's identity on, as a minimum, an annual basis and whenever a change occurs. (Ord. 88-11 § 1 (part))

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Chapter 20.07

ADMINISTRATIVE PROCEDURES

Sections:

20.07.010 Water system survey.

20.07.020 Customer notification--Device installation.

20.07.030 Customer notification--Testing and maintenance.

Section 20.07.010 Water system survey.

A. The city shall review all requests for new services to determine if backflow protection is needed. Reviews shall also be conducted where plumbing, building permits, or new business licenses or similar approvals are applied for, or as may be necessary from time to time to protect the public health. Plans and specifications must be submitted to the city upon request for review of possible cross-connection hazards as a condition of service for new service connections. If it is determined that a backflow prevention device is necessary to protect the public water system, the required device must be installed before service will be granted.

B. The city may require an on-premises inspection to evaluate cross-connection hazards. The city will transmit a written notice requesting an inspection appointment to each affected water user, except that no notice shall need be given where an emergency exists or may exist due to a possible cross-connection or backflow condition: Any customer which cannot or will not allow an on-premises inspection of their piping system shall be required to install the backflow prevention device the city considers necessary.

C. The city may, at its discretion, require a reinspection of any premises using the city's water services for cross-connection hazards. The city will transmit a written notice requesting an inspection appointment of each affected water user. Any customer which cannot or will not allow an on premises inspection of their piping system shall be required to install a reduced pressure (RP) device. (Ord. 93-05 § 4 (part); Ord. 88-11 § 1 (part))

Section 20.07.020 Customer notification--Device installation.

A. The city will notify the water user of the survey findings, listing corrective action to be taken if required. A period of sixty days will be given to complete all corrective action required, including installation of backflow prevention devices.

B. A second notice will be sent to each water user which does not take the required corrective action prescribed in the first notice within the sixty-day period allowed. The second notice will give the water user a two- week period to take the required corrective action. If no action is taken within the two-week period, the city may terminate water service to the affected water user until the required corrective actions are taken. (Ord. 88-11 § 1 (part))

Section 20.07.030 Customer notification--Testing and maintenance.

A. The city will notify each affected water user when it is time for the backflow prevention device installed on their service connection to be tested. This written notice shall give the water user thirty days to have the device tested and supply the water user with the necessary form to be completed and resubmitted to the city.

B. A second notice shall be sent to each water user who does not have his/her backflow prevention device tested as prescribed in the first notice within the thirty-day period allowed. The second notice will give the water user a two-week period to have his/her backflow prevention device tested. If no action is taken within the two-week period, the city may terminate water service to the affected water user until the subject device is tested. (Ord. 88-11 § 1 (part))

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Chapter 20.08

WATER SERVICE TERMINATION

Sections:

20.08.010 General.

20.08.020 Basis for termination.

20.08.030 Water service termination procedures.

Section 20.08.010 General.

When the city encounters water uses that represent a clear and immediate hazard to the potable water supply that cannot be immediately abated, the city shall institute the procedure for discontinuing the city water service. (Ord. 88-11 § 1 (part))

Section 20.08.020 Basis for termination.

Conditions or water uses that create a basis for water service termination shall include, but are not limited to, the following items:

- A. Refusal to install a required backflow prevention device;
- B. Refusal to test a backflow prevention device;
- C. Refusal to repair a faulty backflow prevention device;
- D. Refusal to replace a faulty backflow prevention device;
- E. Direct or indirect connection between the public water system and a sewer line;
- F. Unprotected direct or indirect connection between the public water system and a system or equipment containing contaminants;
- G. Unprotected direct or indirect connection between the public water system and an auxiliary water system;
- H. A situation which presents an immediate health hazard to the public water system. (Ord. 88-11 § 1 (part))

Section 20.08.030 Water service termination procedures.

A. For conditions set out in subsections A, B, or C of Section 20.08.020, the city will terminate service to a customer's premises after two written notices have been sent specifying the corrective action needed and the time period in which it must be done, if no action is taken within the allowed time period.

B. For conditions set out in subsections D, E, F, G or H of Section 20.08.020, the city will take the following steps:

- 1. Make a reasonable effort to advise water user of intent to terminate water service;
- 2. Terminate water supply and lock service valve. The water service will remain inactive until correction of violation has been approved by the city/district. (Ord. 88-11 § 1 (part))