



COUNTY OF LOS ANGELES ♦ DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH

Cross Connection & Water Pollution Control Program
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**REQUIREMENTS FOR THE INSTALLATION AND PIPELINE CONSTRUCTION FOR
SAFE REUSE OF RAINFALL / RUN-OFF, NON-POTABLE CISTERN
WATER AND URBAN RUN-OFF WATER
(Rev. 09.21.09)**

Rain barrels and cisterns are methods of storing rainfall and run-off on-site for landscape irrigation purposes. In semi-arid Los Angeles County, rainfall, run-off and the reuse of captured rainfall could greatly reduce the amount of water that must be imported. For this reason, there should be no reasonable impediment to storing and reusing rainfall and run-off, provided it can be done safely while protecting the health of the public.

As a result of increased interest and initiative to use untreated rainfall/non-potable cistern water and urban run-off water for onsite landscape irrigation purposes, the Department of Public Health (the Department) has found it necessary to develop the following requirements for water pipeline construction, installation and safe re-use of “non-potable” water supplies. The purpose of these requirements is to provide the necessary procedures for obtaining approval for the installation of pipeline which will convey untreated rainfall, non-potable cistern water and /or urban run-off water for irrigation purposes. Moreover, it is intended to establish requirements for the protection of the potable domestic water supply as well as public health.

PLEASE NOTE:

Presently within the County of Los Angeles there are no regulatory definitions of rainfall, non-potable cistern water or urban run-off that would categorize them as either recycled / reclaimed water or other regulated water source. These types of non-potable water sources are categorized within the scope of “alternate non-potable water supply”. Therefore rainfall/run-off, non-potable cistern and urban run-off water, for the purposes of these requirements shall be recognized by the Department (pending adoption of proposed regulation) as “alternate non-potable water supply sources” and regulations pertaining to the protection of the domestic water supply in relation to an “alternate non-potable water supply sources” shall apply.

The following requirements are intended to focus on projects which integrate below grade pipelines, pumps and large capacity holding tanks. They are not intended for application to rain barrels that collect rainfall / run-off water from residential rooftops, gravity fed or hand-held hoses. For the residential types of projects which do not incorporate below grade plumbing, pumps and large capacity tanks, please contact your local City Building & Safety Department.

Treatment systems for rain, gray and urban run-off water for reuse in toilet flushing have been proposed but are not covered within these requirements. Please contact the Department at (626) 430-5270 for information regarding treatment strategies and reuse.

These requirements apply to collection and reuse for **on-site purposes only**. Distribution of collected rainfall/non-potable cistern and urban run-off to off-site properties shall be evaluated by State Department of Public Health (CADPH) in conjunction with State Regional Water Control Board (RWQCB).

DEFINITIONS:

Alternate non-potable water supply is a non-potable source of water which includes gray water, rainfall/run-off non-potable cistern water, urban run-off, on site treated water and recycled/reclaimed water.

Cistern (non-potable) refers to a receptacle or rainwater catchment system for storing water, usually underground, which captures non-potable water run-off for the purposes of reusing the water for irrigation purposes. Non-potable cisterns are distinct from potable cisterns that are installed and managed as potable water reservoirs/storage.

Gray water refers to untreated waste water which has not come into contact with toilet waste. Gray water includes used water from bathtubs, showers, bathroom wash basins, clothes washing machines and laundry. It does not include waste water from kitchen sinks, photo lab sinks, dishwashers or laundry water from soiled diapers.

Non-Potable Water refers to water which is not intended for human consumption. Two distinct variations are inclusive in this definition: Non-potable water from a potable source, via a dedicated backflow prevention device vs. untreated non-potable water from collection methods that never originated from a potable source. The term non-potable water is all-inclusive with respect to the various non-potable water supplies mentioned within these requirements.

Onsite Water Supervisor refers to that person appointed, as provided for under Title 17, Section 7586, California Code of Regulations who is responsible for the protection of the potable water system from cross connections. This person is responsible for installation, operation, maintenance of the rain-fall / non-potable cistern water and potable water systems, prevention of potential hazards, implementation of these requirements, and coordination the Department.

Potable Water refers to water which is fit for consumption by humans and other animals. The U.S. Environmental Protection Agency (EPA) identifies contaminants that may adversely affect public health that occur in drinking water with a frequency and at levels that pose a threat to public health. The EPA establishes maximum contaminant levels (MCLs) (both biological and chemical) permissible in drinking water. These MCLs become enforceable standards.

Rainfall/ Non-potable Cistern Water refers to the harvested rainwater/storm water collected within a cistern from a rain event and/or urban run-off. Cisterns in Los Angeles County may serve as a secondary source of water for applications that do not require potable water, such as landscape irrigation, which can dramatically lower the potable water demand and reducing off-site rainfall run-off.

Recycled / Reclaimed Water refers to tertiary-treated water produced from the three-stage treatment of municipal wastewater. Recycled / reclaimed water is allowable for full-body human contact but not for direct human consumption. Purple pipe is the designated pipeline material specifically allowed to convey tertiary treated recycled / reclaimed water. Other non-potable water sources as mentioned in these requirements shall **not** use purple pipe. Untreated stored rainfall/run-off should not be confused with tertiary treated wastewater, defined in Title 22 of the California Code of Regulations.

Urban run-off – refers to non-potable water from a dry weather run-off catchment system used for the collection of water run-off which does not necessarily come from a rain event.

PROCEDURES:

PLAN REVIEW AND SUBMISSION

1. Plans and specifications for the rainfall/non-potable cistern water capture, distribution, use and operational practices shall be submitted for review and approval to the Department prior to implementation. The applicable Building & Safety Departments having jurisdiction shall also be notified for approval.
2. County of Los Angeles will review and approve the plans to ensure safe re-use practices, correct labeling of pipelines and appropriate separation from potable water supplies and sanitary sewer lines.
3. Prior to commencing new or retrofit construction the contractor or installer shall contact the Department to arrange for inspection of all on-site rainfall/non-potable cistern water and potable water work. No excavation or open trench may be backfilled without first securing the Department approval. If any piping, rainfall/non-potable cistern water or potable water is installed prior to plan check approval and/or inspection, all or any portion of the system may be required to be exposed and corrected as necessary.
4. The rainfall/cistern water system shall be constructed in conformance with potable water system construction standards and in accordance with all other governing codes, rules and regulations.
5. Unused or abandoned potable water lines are to be severed as close to water mains as practical, capped and a four-foot section of abandoned line removed and the cap cemented under the Department's supervision.

REQUIRED SEPARATION OF LINES

In order to minimize construction accidents resulting in pipeline breaks, which may pollute the domestic water supply or accidental cross-connections between rainfall/non-potable cistern water and potable water systems, maximum attainable separation of non-potable cistern water lines and potable water lines is required.

- **Parallel Construction:** There shall be at least a four foot (4') separation for all pressure mains, all distances measured from pipeline outside diameter. In restricted areas where 4 foot separations cannot be met, the use of sleeved pipe is required.
- **Cross-Over Construction:** Perpendicular pipeline installation is set at a one foot (1') separation, with potable above rainfall/non-potable cistern water, and one full pipe length centered over crossing.
- **Alternative Cross-Over construction** (distance not maintained): Either the rainfall/non-potable cistern water may be sleeved with the same class piping (usually schedule 40 PVC) for one full pipe length (minimum four feet) centered over the cross-over.

Existing On-site piping – To the extent feasible, maximum separation of rainfall/non-potable cistern water and potable water lines shall be practiced upon system addition or modification.

IDENTIFICATION OF LINES

All rainfall/non-potable cistern water main lines, valve boxes and appurtenances shall be identified to clearly distinguish between non-potable cistern water and potable water systems. Specific wording on identification tape shall be required. Evaluation shall be on a case-by-case basis, but with the understanding that the minimum requirement for pipeline identification is per the Uniform Plumbing Code. The following identification tape will be accompanied with respective tags of the same colors and wording for all valve boxes, vaults, control valves, quick couplers, outlets and related appurtenances, if applicable.

- a. **POTABLE WATER** – All potable water lines shall be installed in accordance with the Uniform Plumbing Code and all other governing codes, rules and regulations. Buried potable water lines shall be identified by continuous tape with lettering on three inch (3”) minimum width green or blue tape with one inch black lettering bearing the continuous wording “**Potable Water**”. Identification tape shall be permanently affixed to the pipeline at five foot intervals atop all horizontal piping, laterals and mains. Identification tape shall extend to all valve boxes and/or vaults, exposed piping and hydrants. Identification tape is not necessary for extruded colored PVC with continuous wording “**Potable Water**” printed in contrasting lettering on opposite sides of the pipe.
- b. **RAINFALL/NON-POTABLE CISTERN WATER** – All rainfall/non-potable cistern water lines (pressure/non-pressure) shall be identified by continuous lettering on three inch (3”) minimum width YELLOW tape with one inch black lettering bearing the continuous wording “**Caution – Non-potable Cistern Water, Subsurface Irrigation Only**” permanently affixed at five foot intervals atop all horizontal piping, laterals and mains. Identification tape shall extend to all valve boxes and/or vaults and exposed piping.
- c. **NON-POTABLE WATER** – All non-potable irrigation/industrial water lines (pressure/non-pressure) shall be identified by continuous lettering on three inch (3”) minimum width yellow tape with one inch black lettering bearing the continuous wording “**Non-Potable Water**” permanently affixed at five foot intervals atop all piping. Identification tape shall extend to all valve boxes and/or vaults, exposed piping, hydrants and quick couplers.
- d. Tags, respective of each water supply, shall be identified with the appropriate wording on both sides with the inclusion of a universal symbol.

OPERATIONAL GUIDELINES AND SPECIFICATIONS

1. Irrigation systems utilizing untreated rain-fall/non-potable cistern water shall only be by means of *subsurface irrigation. Misting or spraying into the air is prohibited. Irrigation practices shall be controlled to prevent surface runoff from lands owned or controlled by the user. (***For above grade spray irrigation, the level of treatment would necessitate Title 22 Standards to ensure the removal of pathogens. Please contact the Department for more information**).

2. Any pipeline other than potable water that is installed within a structure shall conform to all building code standards and shall be “barber shop” wrapped with the respective continuous identification tape and without any interconnections with the potable water system.
3. Gray water systems, rain-fall/runoff non-potable cistern systems and recycled water systems are not to be interconnected. Each shall be installed as stand alone systems completely separate from one another. Gray water systems are directly connected to the sewage system. Rain-fall/non-potable cisterns are not to be directly connected to a sewer system. For gray water installation requirements refer to California Plumbing Code 2007, Chapter 16/Appendix G (DWR).
4. Cisterns/storage vessels shall be adequately covered to prevent mosquito breeding.
5. Contact with untreated rainfall/non-potable cistern should be kept to a minimum.
6. Deteriorated or inadequately protected water well casings shall be protected against contamination by untreated rainfall/non-potable cistern water by correcting these physical deficiencies. Surface infiltration of untreated rainfall/run-off is allowed provided it occurs at least 10 feet from an unprotected foundation structure, there is a least 10 feet of clearance to the seasonal high ground water table, and it occurs at least 100 feet from a water supply well.
7. An **On-Site Water Supervisor** shall be appointed as provided for under Title 17, Section 7586, California Code of Regulations. Authorizations for any piping changes or additions to either the potable or recycled wastewater systems shall be subject to review and approval by the water supervisor. The name and position of this individual shall be reported to the water purveyor and to the Department.
8. As-built plans shall be prepared and updated as necessary by the user showing the location of rainfall /non-potable cistern water and potable water system piping.
9. To prevent secondary exposure to rainfall/non-potable cistern water, hose bibbs and quick couplers shall not be permitted in order to prevent both the unauthorized use of said water supply and secondary exposure of untreated non-potable water supply. Quick-couplers are presently not allowed on non-potable cistern systems.
10. A potable water source may be connected via an approved backflow prevention device to provide a back up water source to a non-potable water cistern. A non-potable water backup supply line from a potable source via an approved backflow prevention device **can** be directly connected to the rain-fall/non-potable cistern discharge line to the irrigation system. Gray water systems **cannot** be directly connected to a potable supply with or without a backflow prevention device, (air gaps are excluded) (2007 California Plumbing Code, Section 603.3.5). Air gaps are the only method as a potable water make-up to a gray water system.
11. A pressure test/cross-connection test shall be performed to confirm the physical separation of the storm water/cistern water and potable water systems. Said testing shall be performed in conjunction with the Water Purveyor and this Department and conducted before the introduction of rainfall/non-potable cistern water.

12. The Department shall refer all plans proposing to install a cistern to the following agencies prior to construction:
- Los Angeles County Cross-Connection & Water Pollution Control Program to: initiate the plan proposal; conditional approval; interim construction inspections and final approval.
 - The City or County Building & Safety Department for construction permits and inspections (Building Codes).
 - The local water purveyor regarding required backflow protection at the potable/city water service connection(s).
 - The Mosquito Abatement District for conditions of approval and to register the cistern tank.
 - The City or County Public Works Department for cistern tank overflow discharge requirements.

CROSS

REFERENCE:

California Health & Safety Code 116800-116820
California Code of Regulations, Title 22, Div. 4, Chapter 3
Los Angeles County Code – Title 11 and Title 28
2007 California Plumbing Code, Chapter 6, Appendix G & J.