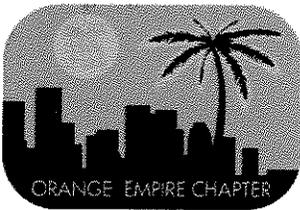


*Hadi Walls*



92 CORPORATE PARK, SUITE C #85  
IRVINE, CALIFORNIA 92606-5106  
www.iccsafe.org

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CALIFORNIA BUILDING STANDARDS COMMISSION

October 15, 2009

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Mr. David Walls  
State of California  
Building Standards Commission  
2525 Natomas Park Drive, Suite 130  
Sacramento, California 95833-2936

Dear Mr. Walls:

The ICC Orange Empire Chapter represents 35 jurisdictions in the Southern California region. Established back in 1958, our membership has been active and is very familiar with the code adoption process.

On October 15, 2009 during its scheduled monthly business meeting, the ICC Orange Empire Chapter unanimously voted to support the Emergency Regulations of Chapter 16A titled "NONPOTABLE WATER REUSE SYSTEMS" (Graywater Systems) and the adoption of the 2010 Codes proposed by HCD; but, recommends the attached amendments be included as part of the proposed language. The motion that was passed stated the following:

"ICC Orange Empire Chapter strongly recommends amending the Emergency Regulations titled "NONPOTABLE WATER REUSE SYSTEMS" (Graywater Systems) and the adoption of the 2010 codes proposed by HCD and fully supports the inclusion of the attached amendments."

While expressing our concern about the Emergency Regulations, the ICC Orange Empire Chapter would like to affirm it's commitment to enforcing the code as mandated by State law.

Sincerely,  
*Hadi Tabatabaee*

Hadi Tabatabaee, P.E., C.B.O.  
Board President  
ICC Orange Empire Chapter





# COMMENTS AND SUGGESTED AMENDMENTS TO HCD'S CHAPTER 16A ENTITLED NONPOTABLE WATER REUSE SYSTEMS

## Part I

Suggested amendments are shown as ~~double strike through~~ or **bold and double underlined**

### Section 1601A.0(A)

Comment: Graywater should not surface, pond or runoff. Suggested amendment: add the word "surfacing."

The section should read as follows:

#### 1601A.0 Graywater Systems – General.

**(A)** *The provisions of this part shall apply to the construction, alteration, discharge, use, and repair of graywater systems. The graywater system shall not be connected to any potable water system without an air gap or other physical device which prevents backflow and shall not cause the surfacing, ponding or runoff of graywater. A city, county, or city and county or other local government may, after a public hearing and enactment of an ordinance or resolution, further restrict or prohibit the use of graywater systems. For additional information, see Health and Safety Code Section 18941.7.*

### Section 1601A.0(B)

Comment: The tank function is to hold graywater until it is needed for irrigation. For example, if the soil is saturated when the clothes washer is operating, release of the graywater could cause surfacing and even ponding above ground. Suggested amendment: Keep the requirement for tanks and provide avenue for alternate design without tanks.

The section should read as follows:

**(B)** *The type of system shall be determined by the location, discharge capacity, soil type, and ground water level. The system shall be designed to completely absorb all the ~~handle~~ graywater discharged from the building and ~~shall may~~ include tank(s) and other appurtenances necessary to ensure proper function of the system. A tank may not be provided if an approved alternate design is submitted to ensure that the system would not release the graywater when there is a possibility that the discharge could surface, pond or run off.*

### Section 1601A.0(D)

Comment: Graywater should not surface, pond or runoff.

The section should read as follows:

**(D)** *No construction permit for any graywater system shall be issued until a plot plan with appropriate data satisfactory to the *Enforcing Agency* has been submitted and approved. When there is insufficient lot area or inappropriate soil conditions to prevent the surfacing, ponding or runoff of the graywater, as determined by the *Enforcing Agency*, no graywater system shall be allowed.*

### Section 1601A.0(D)-Exception

Comment: How would a building department determine compliance? If the reasoning that the permit process is expensive and "burdensome" applies in this case, this same reasoning could also be applied to numerous areas of construction that are typically governed by permits. The permit will ensure that the system will be installed so as not to cause health/safety problems or concerns. Suggested amendment: delete exception.

**OR:**

If there is a desire to facilitate the permitting process and make it less expensive, a short list of the major requirements could be issued by the Enforcing Agency to the contractor and the inspector to shorten the inspection time, thus reducing the cost and, in turn, reducing the permit fee. This exemption should only apply to a very small system (clothes washer) and not to an entire house (see definition of single fixture system) as in larger systems there is a need to review the soils conditions to ensure that the discharge would not surface, pond or runoff.

The Exception should read as follows:

**Exception:** A Streamlined construction permit ~~may shall not be issued~~ ~~required~~ for a graywater system supplied by a clothes washer system ~~and/or a single fixture system~~ in compliance with the requirements of Section 1603A.1.1. A "streamlined" permit is an "over-the-counter permit" where a short list of the major requirements for such installation would be issued by the Enforcing Agency to the contractor and inspector to shorten the inspection time, thus reducing the permit fee.

**Section 1601A.0(G)**

Comment: Graywater should not surface, pond or runoff.

The section should read as follows:

*(G) Graywater shall not be used in spray irrigation, allowed to surface, pond or runoff and shall not be discharged directly into or reach any storm sewer system or any surface body of water.*

**Section 1601A.0(H)**

Comment: To allow the discharge of a graywater systems to have only 2" cover (instead of model code 10") could represent a public health, nuisance and safety problems to occupants and surrounding property owners, as effluent could surface, especially when piping could be constructed above ground and covered with mulch (see subsection 7 of Section 1603A1.1). Suggested amendment: Change 2" to 9" (as provided for in Appendix G-A of the 2001 California Plumbing Code)

The section should read as follows:

*(H) Human contact with graywater or the soil irrigated by graywater shall be minimized and avoided, except as required to maintain the graywater system. The discharge point of any graywater irrigation or disposal field shall be covered by at least ~~(2 9)~~ inches (~~51 229~~ mm) of mulch, rock, or soil, ~~or a solid shield~~ to minimize the possibility of human contact.*

**Section 1603A.0-Exception**

Comment: How would a building department determine compliance? If the permit process is expensive and "burdensome", this concept could apply to numerous areas of construction that are typically governed by permits. The permit will ensure that the system will be installed so as not to cause health/safety problems or concerns. Suggested amendment: maintain model code language for the section and delete exception.

The section should read as follows:

**1603A.0 Permit.**  
It shall be unlawful for any person to construct, install, or alter, or cause to be constructed, installed, or altered any gray water system in a building or on a premises without first obtaining a permit to do such work from the Enforcing Agency. A written construction permit shall be obtained from the Enforcing Agency prior to the erection, construction, reconstruction, installation, relocation or alteration of any graywater system that requires a permit

~~**Exception:** A construction permit shall not be required for a graywater system supplied only by a clothes washer system and/or a single fixture system in compliance with the requirements of Section 1603A.1.1.~~

## Section 1603A.1.1

Comment: An Enforcement Agency could not enforce any of the code requirements unless a permit is issued. Some may argue that a code enforcement program could correct violations. Several obstacles exist: funds are not usually available for such proactive code enforcement program, right-of-entry issues would not allow inspectors to enter backyards to inspect unless invited by the owner or tenant, etc. Suggested amendment: amend to require a "streamlined" or "over-the-counter" permit for smaller installations. Provide a checklist to the contractor at the time of issuance of the permit requiring simplified compliance without the need to submit plans or calculations. Provide the same checklist to the inspector to facilitate inspection and reduce inspection time. This would allow the Enforcing Agency to reduce the cost of inspection, thus possibly reducing the permit fee. A single fixture system was deleted as the definition indicates that it could be a single drain line serving the entire house. Without checking the capability of the soil to absorb the discharge from the house, graywater could surface, pond or runoff.

The section should read as follows:

**~~1603A.1.1 Clothes Washer System and/or Single Fixture System.~~ A clothes washer system ~~and/or a single fixture system~~ in compliance with all of the following is ~~exempt~~ **allowed to obtain a "streamlined" or "over-the-counter" permit from the construction permit specified in Section 1.9.4.1 and may be installed or altered without a construction permit.****

- ~~1. If required, notification has been provided to the Enforcing Agency regarding the proposed location and installation of a graywater irrigation or disposal system.~~

~~**Note:** A city, county, or city and county or other local government may, after a public hearing and enactment of an ordinance or resolution, further restrict or prohibit the use of graywater systems. For additional information, see Health and Safety Code Section 18041.7.~~

**Plans are not required for permit issuance.**

- The design shall allow the user to direct the flow to the irrigation or disposal field or the building sewer. The direction control of the graywater shall be clearly labeled and readily accessible to the user.
- The installation, change, alteration or repair of the system does not include a potable water connection or a pump and does not affect other building, plumbing, electrical or mechanical components including structural features, egress, fire-life safety, sanitation, potable water supply piping or accessibility.
- The graywater shall be contained on the site where it is generated.
- Graywater shall be directed to and contained within ~~an irrigation or a~~ disposal field.
  - Calculate number of occupants (Section 1606A.0(A)1).**
  - Assume "Clay with considerable sand"-type soil (Table 16-A-2).**
  - A minimum 12" wide and 17" deep irrigation field shall be constructed with 3" diameter perforated pipe with 9" minimum cover. The minimum length of the irrigation field shall be 13.5 feet/occupant. (Alternate irrigation field length based on a different type of soil may be submitted for approval at the time of permit issuance.)**
- Surfacing**, ponding or runoff is prohibited and shall be considered a nuisance.
- ~~Graywater may be released above the ground surface provided at least two (2) inches (51 mm) of mulch, rock, or soil, or a solid shield covers the release point. Other methods which provide equivalent separation are also acceptable.~~
- Graywater systems shall be designed to minimize contact with humans and domestic pets.
- Water used to wash diapers or similarly soiled or infectious garments shall not be used and shall be diverted to the building sewer.
- Graywater shall not contain hazardous chemicals derived from activities such as cleaning car parts, washing greasy or oily rags, or disposing of waste solutions from home photo labs or similar hobbyist or home occupational activities.
- ~~Exemption from construction permit requirements of this code shall not be deemed to grant authorization for any graywater system to be installed in a manner that violates other provisions of this code or any other laws or ordinances of the Enforcing Agency.~~
- An operation and maintenance manual shall be provided. Directions shall indicate the manual is to remain with the building throughout the life of the system and indicate that upon change of ownership or occupancy, the new owner or tenant shall be notified the structure contains a graywater system.

Renumber the section as appropriate.

**Section 1603A.1.2 & .3**

Comment: An Enforcement Agency could not enforce any of the code requirements unless a permit is issued.

The sections should read as follows:

**1603A.1.2 Simple System.** Simple systems exceed a clothes washer system ~~and/or a single fixture system~~ and shall comply with the following:

1. The discharge capacity of a graywater system shall be determined by Section 1606A.0. Simple systems have a discharge capacity of 250 gallons (947 L) per day or less.
2. Simple systems shall require a construction permit, ~~unless exempted from a construction permit by the Enforcing Agency. The Enforcing Agency shall consult with any public water system (as defined in Health and Safety Code, Section 116275) providing drinking water to the dwelling before allowing and exemption from a construction permit.~~
3. The design of simple systems shall be acceptable to the Enforcing Agency and shall meet generally accepted graywater system design criteria.

**1603A.1.3 Complex System.** Any graywater system that is not a clothes washer system, ~~single fixture system~~ or simple system shall comply with the following:

1. The discharge capacity of a graywater system shall be determined by Section 1606A.0. Complex systems have a discharge capacity over 250 gallons (947 L) per day.
2. Complex systems shall require a construction permit, ~~unless exempted from a construction permit by the Enforcing Agency. The Enforcing Agency shall consult with any public water system (as defined in Health and Safety Code, Section 116275) providing drinking water to the dwelling before allowing and exemption from a construction permit.~~
3. A complex system shall be designed by a person who can demonstrate competence to the satisfaction of the Enforcing Agency.

**Table 1603A.1.4**

Comment: An Enforcement Agency could not enforce any of the code requirements unless a permit is issued.

The table should read as follows:

**Table 1603A.1.4 – Construction Permit Requirements**

<b>Type of System</b>	<b>Permit Requirements</b>
Clothes Washer System and/or a Single Fixture System	<b><u>A Streamlined</u></b> <del>No</del> construction permit <b><u>is allowed</u></b> <del>required</del> if conditions in Section 1603A.1.1 are met.
Simple System	Permit and plans required <del>unless exempted by Enforcing Agency.</del>
Complex System	Permit and plans required <del>unless exempted by Enforcing Agency.</del>
Treated Graywater	Permit and plans required <del>unless exempted by Enforcing Agency.</del>

**Section 1604A.1**

Comment: The reasoning used to reduce clearance to ground water is: "The California State Water Resources Control Board (CSWRCB) is now in the process of developing regulations for on-site wastewater disposal systems (septic system). At this time, the proposed regulations call for three (3) feet separation to

high ground water. This requirement is less stringent than the model code graywater standard that requires five (5) feet separation to high ground water. This change was necessary to remove the conflict between the graywater standards and the CSWRCB's programs.<sup>7</sup>

Before such change is implemented, we should ensure that CSWRC would go through with the change. The distance to groundwater is important to ensure that the effluent will be filtered before entering the ground water stream that could be used for drinking. If the soil is of a type that allows the effluent to pass through quickly (sandy soil) the effluent will not have sufficient time/filtration to rid it from contaminants. Therefore, it is possible for CSWRCB to maintain the 5' requirement. Suggested Amendments: Change 3' to 5'.

The section should read as follows:

**1604A.1 Groundwater Depth.** Verification of ground water levels which exceed ~~five~~ **three (3 5)** vertical feet (~~915~~ **1524** mm) from the deepest irrigation or disposal point of the proposed graywater system shall not be required.

**Note:** The absence of groundwater in a test hole ~~three~~ **five (3 5)** vertical feet (~~915~~ **1524** mm) below the deepest irrigation or disposal point shall be sufficient to satisfy this section unless seasonal high groundwater levels have been documented to rise to within this area.

### Section 1607A.0

Comment: Graywater should not be discharged within 5' of ground water. See previous comment.

The section should read as follows:

**1607A.0 Required Area of Subsurface Irrigation or Disposal Fields** Irrigation or disposal fields may have one or more valved zones. Each zone must be of adequate size to receive the graywater anticipated in that zone. No irrigation or disposal field shall extend within ~~three~~ **five (3 5)** vertical feet (~~915~~ **1524** mm) of the highest known seasonal groundwater, or to a depth where graywater contaminates the groundwater, ocean water or surface water. The applicant shall supply evidence of groundwater depth to the satisfaction of the Enforcing Agency.

**Note:** The absence of groundwater in a test hole ~~three~~ **five (3 5)** vertical feet (~~915~~ **1524** mm) below the deepest irrigation or disposal point shall be sufficient to satisfy this section unless seasonal high groundwater levels have been documented to rise to within this area.

### Section 1608A.0 (C)

Comment: The amendment has very general language and does not provide for specific limitations on soil absorption levels. The stricken model code language not only specifies the minimum absorption levels of a soil so as effluent will not surface, but also specifies the maximum absorption levels (sandy soil) to ensure that effluent will have sufficient time and is filtered to an adequate level before it reaches ground water. Suggested amendment: keep model code language.

The section should read as follows:

(C) When a percolation test is required, no graywater system shall be permitted if the test shows the absorption capacity of the soil is less than eighty-three hundredths (0.83) of a gallon per square foot (33.8 L/m<sup>2</sup>) or more than five and twelve-hundredths (5.12) of a gallon per square foot (208.5 L/m<sup>2</sup>) of leaching area per twenty-four (24) hours ~~unable to accommodate the intended discharge of the proposed graywater system.~~

**Exception:** The Enforcing Agency may waive the requirement for percolation tests based on knowledge of local conditions or accept other testing methods.

### Section 1611A.1

Comment: Graywater should not surface, pond or runoff.

The section should read as follows:

**1611A.1 Mulch Basin** A mulch basin may be used as an irrigation or disposal field. Mulch basins shall be sized in accordance with Table 16A-2 and of sufficient depth, length and width to prevent surfacing, ponding or runoff during the graywater surge of a clothes washer, bathtub or shower. Mulch must be replenished as required due to decomposition of organic matter. Mulch basins will require periodic maintenance, reshaping or removal of dirt to maintain surge capacity and to accommodate plant growth and prevent surfacing, ponding or runoff,

## Section 1611A.2

Comment: The word "approved" should be inserted in this section to ensure that the Enforcement Agency will be allowed to review and approve the alternate. Also, subsection (5) is to be changed to require 9 inches of cover.

The section should read as follows:

**1611A.2 Irrigation Field.** The provisions of this section are not intended to prevent the use of any appropriate material, appliance, installation, device, design or method of construction. If an approved alternate design is not available, the following provisions may be used as guidance in the design of a graywater irrigation field:

The remainder of the section should remain the same except for subsection (5) to read as follows:

(5) All drip irrigation supply lines shall be polyethylene tubing or PVC Class 200 pipe or better and Schedule 40 fittings. All joints shall be properly solvent-cemented, inspected and pressure tested at 40 psi (276 kPa), and shown to be drip tight for five minutes, before burial. All supply piping shall be covered to a minimum depth of two (~~2~~ 9) inches (~~51~~ 229 mm) of mulch or soil. Drip feeder lines can be poly or flexible PVC tubing and shall be covered to a minimum depth of two (~~2~~ 9) inches (~~51~~ 229 mm) of mulch or soil.

## Section 1611A.3

Comment: The word "approved" should be inserted in this section to ensure that the Enforcement Agency will be allowed to review and approve the alternate.

The section should read as follows:

**1611A.3 Disposal Field.** The provisions of this section are not intended to prevent the use of any appropriate material, appliance, installation, device, design or method of construction. If an approved alternate design is not available the following provisions may be used as guidance in the design of a graywater disposal field: (The remainder of the section to remain the same)

## Section 1611A.3 (C)

Comment: Depth of earth cover of lines should be maintained at 9". See comment for Section 1601A.0 (H) above.

The section should read as follows:

(C) Disposal fields shall be constructed as follows:

(See chart below)

	Minimum	Maximum
Number of drain lines per valved zone <sup>1</sup>	1	—
Length of each perforated line <sup>1</sup>	—	100 ft. (30,840 mm)
Bottom width of trench <sup>1</sup>	12 in. (305 mm)	24 in. (610 mm)
Spacing of lines, center to center <sup>1</sup>	4 ft. (1219 mm)	—
Depth of earth cover of lines	<del>2 in. (51 mm)</del> <b>9" (230 mm)</b>	—
Depth of filter material cover of lines	2 in. (51 mm)	—
Depth of filter material beneath lines <sup>1</sup>	3 in. (76 mm)	—
Grade of perforated lines	level	3 in./100 ft. (2 mm/m)

<sup>1</sup> *Manufactured leaching chambers shall be installed in compliance with the manufacturer's installation instructions.*

### Table 16A-1

Comment: Justification should be provided for reducing the distance between irrigation fields and private property lines from 5' to 1.5'.

Also, justification should be provided for reducing distance between irrigation and disposal fields to onsite domestic water lines from 5' to 0'.

Otherwise, model code distances should be maintained.

In addition, the proposed amendment reverses the model code language defining building structures as that including porches, steps... etc. The proposal indicates that building structures does not include any of these mentioned under note #1. Justification should be provided or model code language should be maintained.

The Table should read as follows:

**Table 16A -1 Location of Graywater System**

<b>Minimum Horizontal Distance Required From:</b>	<b>Tank</b>	<b>Irrigation Field</b>	<b>Disposal Field</b>
	<b>Feet/mm</b>	<b>Feet/mm</b>	<b>Feet/mm</b>
Building structures <sup>1</sup>	5 (1,524 mm) <sup>2</sup>	2 (610 mm)	5 (1,524 mm)
Property line adjoining private property	5 (1,524 mm)	<del>1.5 feet (458 mm)</del> <b>5 (1,524 mm)</b>	5 (1,524 mm)
Water supply wells <sup>3</sup>	50 (15,240 mm)	100 (30,480 mm)	100 (30,480 mm)
Streams and lakes <sup>3</sup>	50 (15,240 mm)	100 (30,480 mm) <sup>4,5</sup>	100 (30,480 mm) <sup>4</sup>
Sewage pits or cesspools	5 (1,524 mm)	5 (1,524 mm)	5 (1,524 mm)
Sewage disposal field	5 (1,524 mm)	4 (1,219 mm) <sup>6</sup>	4 (1,219 mm) <sup>6</sup>
Septic tank	0 (0)	5 (1,524 mm)	5 (1,524 mm)
Onsite domestic water service line	5 (1,524 mm)	<del>0 (0 mm)</del> <b>5 (1,524 mm)</b>	<del>0 (0 mm)</del> <b>5 (1,524 mm)</b>
Pressurized public water main	10 (3,048 mm)	10 (3,048 mm) <sup>7</sup>	10 (3,048 mm) <sup>7</sup>

~~Building structures does not~~ include porches and steps, whether covered or uncovered, breezeways, roofed porte cocheres, roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.

<sup>2</sup> Underground tanks shall not be located within a 45 degree angle from the bottom of the foundation, or they shall be designed to address the surcharge imposed by the structure. The distance may be reduced to six (6) inches (153 mm) for aboveground tanks when first approved by the Enforcing Agency.

<sup>3</sup>Where special hazards are involved, the distance required shall be increased as directed by the Enforcing Agency.

<sup>4</sup>These minimum clear horizontal distances shall also apply between the irrigation or disposal field and the ocean mean higher high tide line.

<sup>5</sup>The minimum horizontal distances may be reduced to 50 feet (15,240 mm) for irrigation fields utilizing graywater which has been filtered prior to entering distribution piping.

<sup>6</sup> Plus two (2) feet (610 mm) for each additional foot of depth in excess of one (1) foot (305 mm) below the bottom of the drain line.

<sup>7</sup> For parallel construction or crossings, approval by the Enforcing Agency shall be required.

**Section 1612A.1**

This comment and suggested change would also apply to Part II (Recycled Water) of Chapter 16A proposed by the California Department of Water Resources:

Background:

When Appendix “J” (Reclaimed Water) was first incorporated in the California Code, the definition of reclaimed water was that which is produced by a public agency. The quality of water was specified to meet tertiary treated standards in California at the time. The requirement for a public agency to produce the reclaimed water was to ensure the continued quality of water, upon which the allowance for indoor use is dependent.

This section allows the use of Graywater if treated to a disinfected tertiary state, but allows on-site water treatment systems. To ensure the continued discharge quality that would meet the California standards for tertiary water, it is proposed that an annual test be performed on the discharge of the on-site plant by a certified laboratory with the results submitted to the Enforcement Agency to certify the quality of the discharge.

For clarification purposes, an item is added to require that the installation must comply with all the provisions of Part II of the chapter.

The section should read as follows:

**1612A.1 Indoor Use of Graywater. [HCD 1]**

Graywater shall not be allowed for indoor use, such as flushing toilets and urinals, unless treated by an on-site water treatment system approved by the Enforcing Agency. For the purposes of this section, graywater treated by an on-site water treatment system shall be considered "Treated Graywater" and shall comply with Part II of this chapter and all of the following:

(1) The treated graywater shall have a separate tank sized to minimize the length of time it is retained.

(2) A maintenance and operation manual for the treatment system shall be kept at the location of the system.

**(3) The owner of the premise shall be responsible to submit an annual report to the Enforcement Agency prepared by an approved certified laboratory showing that testing has been performed on the on-site water treatment system and that the quality of the discharge is within the parameters of the State's disinfected tertiary recycled water quality.**

**(4) The installation shall comply fully with all the requirements of Part II of this chapter, including testing, inspection and signage requirements, when applicable.**

Fady Mattar, PE, CBO  
8/15/2009  
(714) 788-0593 (C)

