



Qualified Water-Efficient Landscaper

Graywater Curriculum

Site Visit

Please complete the following worksheets for two (2) Laundry to Landscape installations **or** one permitted (1) Beyond Laundry to Landscape installation to fulfill your QWEL Graywater certification requirements. If extra space is needed attach paper as necessary.

Completed worksheets should be submitted within 6 months of completion of the QWEL-Graywater exam. Please email or mail form to:

Gregory Plumb
Sonoma County Water Agency
404 Aviation Blvd
Santa Rosa, CA 95401

gregory.plumb@scwa.ca.gov



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Site: 1

Installer name: _____

Client's name: _____

Client Address: _____

Installation Requirement:

Installer Initials:

Client Initials:

- | | | |
|---|-------|-------|
| 1. Site evaluation | _____ | _____ |
| 2. Calculate the Water Budget and Irrigation Field Size | _____ | _____ |
| 3. Design layout | _____ | _____ |
| 4. System Requirements and location | _____ | _____ |
| 5. Laundry to Landscape installation | _____ | _____ |
| 6. Is a permit required? <input type="checkbox"/> Yes <input type="checkbox"/> No | _____ | _____ |
| 7. This packet has been fully completed prior to installation | _____ | _____ |

By signing below, I agree to release the County of Sonoma and the Sonoma County Water Agency, their officers, employees and agents, and all volunteers and home-owners participating in the graywater installation, from all liability, claims, demands, damages, actions or causes of action arising out of any injury to or death of any person, or any damage to or destruction of property, occurring during or in connection with the graywater installation, whether or not such injury, death, damage or destruction is a caused, or alleged to be caused, by the active or passive negligence of the County of Sonoma or the Sonoma County Water Agency, their officers, employees, and agents, or any volunteers and home-owners participating in the graywater installation.

I understand that by signing this Liability Waiver and Release, I will be forever prevented from suing or otherwise making claims against the County of Sonoma and the Sonoma County Water Agency, their officers, employees and agents, and any volunteers and home-owners participating in the graywater installation for any property loss or personal injury that I may sustain while participating in or preparing for the graywater installation.

I hereby acknowledge and agree that I am over the age of 18 and have carefully read this Liability Waiver and Release, that I fully understand it, and that I am freely and voluntarily executing it.

Client Signature

Print Client Name

Date: _____



1. Site Evaluation

While conducting your site evaluation consider the following topics:

- Goals of creating the graywater system
- Laundry room location and material that will be drilled through
- Tools needed
- Plants: determine what plants will be irrigated, irrigation history, health of the plant, ect.
- Products: address product consideration and potential concerns
- Environmental Considerations: water table, flood history, storm water, nearby creeks
- Potential hazards
- Code requirements for non-permitted systems
- Applicable rebates
- Soil/percolation test
- Client's questions



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2. Calculate the Water Budget

Step 1: Determine the output of graywater fixtures (find code estimate and actual data)

Number of Bedrooms in House: _____

Actual Data	CPC estimates
Number of Occupants in Household: _____	Number of Occupants in Household: _____ (According to Ch. 16A, 1606A, first bedroom = 2 people, every additional bedroom = 1 person)
<input type="checkbox"/> Front loader (10-20 GPL) <input type="checkbox"/> Top Loader (30-50 GPL)	
Laundry _____ GPL	CPC estimates: 15 GPD
Loads per week _____	(# of occupants x 15 GPD) _____ total GPD
(GPL x loads per week) / 7 _____ GPD	(total GPD) x 31 _____ GPM
(GPL x loads per week) x 4 _____ GPM	

GPL = Gallons per load; GPD = Gallons per day; GPM = Gallons per month

For the following calculations use the actual data given above.

Total _____ total GPM used
 _____ total GPD used

Step 2: Determine Irrigation field size or minimum surge capacity

Soil Type: _____

Maximum absorption capacity of soil _____ gal/ft²/day
 (from Table 16A-2)

Minimum Irrigation Field Size = (_____ gal/day / _____ gallon/ ft²/day) = _____ ft²



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Step 3: Estimate water budget (gal/month and gal/day)

Monthly Peak ETo for CIMIS Zone: _____"/month

Hydrozone : Plant Type: Crop Coefficient or Plant factor (Pf)

Hydrozone 1: _____: _____

Hydrozone 2: _____: _____

Area of hydrozone canopy (Square Feet)

Hydrozone 1 = _____ ft²

Hydrozone 2 = _____ ft²

When Area of a circular hydrozone = $((3.14 \times r^2) \times \text{number of plants})$

Total Area of all hydrozone canopies: _____ ft²

Hydrozone 1 Water Budget = $(0.62 \times \text{_____} \times \text{_____} \times \text{_____}) = \text{_____ gal/month}$

Hydrozone 2 Water Budget = $(0.62 \times \text{_____} \times \text{_____} \times \text{_____}) = \text{_____ gal/month}$

When the Water Budget = $0.62 \times \text{Area} \times \text{ETo} \times \text{Pf}$

- 0.62 (constant that converts inches to gallons)
- Area = Hydrozone canopy area square footage
- ETo = Use Peak ETo (inches per month) from above
- Pf = Plant Factor

Total Water Budget: _____ gal/month

Step 4: Cross check and adjust

Total area of hydrozone canopies (step 3) _____ (=) or (>) _____ minimum irrigation field (step 2)?(If No, expand hydrozone canopy/irrigation field area to meet code requirement)

Is the total Water Budget for hydrozone canopies (step 3) _____ (<) (=) (>) _____ the actual graywater output (step 1)?

(If the Water Budget is more than 20% > graywater output, plants may experience drought stress)



3. Design layout

Sketch a design of the graywater distribution system. In your sketch, include slope, pathways (hard and soft) and the major trees/plants to be irrigated. Record the number of bends you'll need, types of fittings, etc. You may also want to take a picture of the landscape and laundry area inside. Use the space below or attach your sketch to this package.



4. System Requirements and location

Installer
Initials

Please initial that the installation will adhere to the following Ch. 16 Code Emergency Graywater Standards System Requirements:

- _____ 1. **If required, notification has been provided** to the Enforcing Agency regarding the proposed location and installation of a graywater irrigation or disposal system.
 - a. Note: A city, county, or a 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.
- _____ 2. The design shall allow the user to **direct the flow to the irrigation disposal** field or the building sewer. The direction control of the graywater shall be clearly labeled and readily accessible to the user.
- _____ 3. 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.
- _____ 4. The **graywater shall be contained** on the site where it is generated.
- _____ 5. Graywater shall be directed to and contained **within an irrigation disposal field**.
- _____ 6. **Ponding or runoff is prohibited** and shall be considered a nuisance.
- _____ 7. 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.
- _____ 8. Graywater systems shall be **designed to minimize contact with humans** and domestic pets.
- _____ 9. Water used to wash diapers or similarly soiled or infectious garments shall not be used and **shall be diverted to the building sewer**.
- _____ 10. **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.
- _____ 11. 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.
- _____ 12. **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.



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Minimum Horizontal Distance Required From:	Irrigation Field	Disposal Field
	Feet	Feet
Building Structures		
Property line adjoining private property		
Water supply wells		
Streams and lakes		
Sewage pits and cesspools		
Sewage disposal field		
Septic tank		
Onsite domestic water service line		
Pressurized public water main		



5. Laundry to Landscape Installation

Inside portion:

- a. Connect the 3-way Diverter Valve
- b. Drill hole for pipe to exit
- c. Anti-siphon component
- d. Plumb to hole
- e. Plumb to Sewer Connection
- f. Strap pipe/valve
- g. Label pipe and 3-way Diverter Valve

Outside portion:

- a. Prepare mulch basins or appropriate irrigation fields
- b. Build mulch shields
- c. Trench from PVC to irrigation field
- d. Lay tubing
- e. Document layout for the O&M manual
- f. Fill trenches and clean site
- g. Give client O&M manual

Your Manual should include the following topics:

1. How to turn the graywater system on and off
2. Product consideration guide
3. Maintenance tips
4. System requirements from the code
5. Other considerations
6. Your name and contact information

Important: please attach a copy of your Operations and Maintenance Manual to this package.



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Site: 2

Installer name: _____

Client's name: _____

Client Address: _____

Installation Requirement:

Installer Initials:

Client Initials:

- | | | |
|---|-------|-------|
| 1. Site evaluation | _____ | _____ |
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11. Other considerations
12. Your name and contact information

Important: please attach a copy of your Operations and Maintenance Manual to this package.



Optional: Beyond Laundry to Landscape

Your name: _____

Client's name: _____

Start date: _____

Please submit the approved permit packet from your local jurisdiction.

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Print Client Name

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