



State of Oregon
Department of
Environmental
Quality

Graywater Reuse and Disposal Systems

Graywater Reuse and Disposal Systems for Architects, Plumbers, and Landscape Professionals

Ashland Community Graywater Informational Meeting

June 23, 2012

Ron Doughten, Water Reuse Program Coordination

Oregon Dept. of Environmental Quality

phone: 503.229.5472

email: doughten.ron@deq.state.or.us

Graywater Reuse and Disposal Systems

Overview

- General requirements
- Beneficial reuse of Type 1 graywater
 - Treatment
 - Access and exposure
 - Site management
 - Setbacks
- Design & construction
- Permitting
- Resources & questions



Graywater Reuse and Disposal Systems

General Requirements

- Connection to a wastewater disposal system is required (even for Living Building Challenge projects)
- All graywater system must have a diversion device so that graywater can be directed to reuse or disposal (i.e., sewer or septic system)
- Wastewater from dishwashers and garbage disposals are not allowed
- No discharges to surface water, groundwater, or stormwater management structures, including raingardens, bioswales, and stormdrains
- Graywater may be used on an adjacent property with the written approval of the property owner
- Graywater systems must be planned and documented





State of Oregon
Department of
Environmental
Quality

Graywater Reuse and Disposal Systems

Beneficial reuse of Type 1 graywater

Uses of graywater include:

- Subsurface irrigation of:
 - gardens, lawns, and landscape plants
 - food crops, except root crops or crops that have edible portions that contact graywater
 - green roofs
 - compost
- Subsurface = 2" cover of soil, mulch or compost
- Graywater must be used within 24 hours
- Graywater must not surface, pond, or runoff.



- Any Type 1 use
- Landscape ponds not intended for human contact
- Surface drip irrigation of gardens, lawns, living walls, greenhouses, and landscape plants.

- Any Type 2 use
- Sprinkler irrigation of gardens, lawns, living walls, greenhouses, and landscape plants
- Wash water for mechanical cleaning of equipment, cars, sidewalks, and streets
- Industrial, commercial, or construction uses limited to industrial cooling, rock crushing, aggregate washing, mixing concrete, and dust control

Type 1 graywater

Type 2 graywater

Type 3 graywater

Graywater Reuse and Disposal Systems

For Type 1 graywater used for subsurface irrigation

Treatment:

- All graywater originating from kitchen sinks must pass through a physical process to remove a portion of the grease, floatable and settleable solids.

Access & exposure controls:

- Contact with graywater by humans and pets must be avoided
- 2" cover of soil, mulch, compost, or other suitable material

Site management practices:

- Use graywater within 24 hours
- Edible portions of crops cannot touch graywater
- No ponding, surfacing, or runoff



Graywater Reuse and Disposal Systems

Setbacks to sensitive features:

Feature	Storage or surge tank	Graywater Discharge point
		Type 1 graywater
Groundwater supplies and wells	50'	100'
Springs	50'	100'
Surface waters (excl. springs)	50'	50'
Stormwater systems	10'	10'
UICs	10'	10'
Property boundaries	5'	2'
Buildings	0'	0'

Graywater Reuse and Disposal Systems

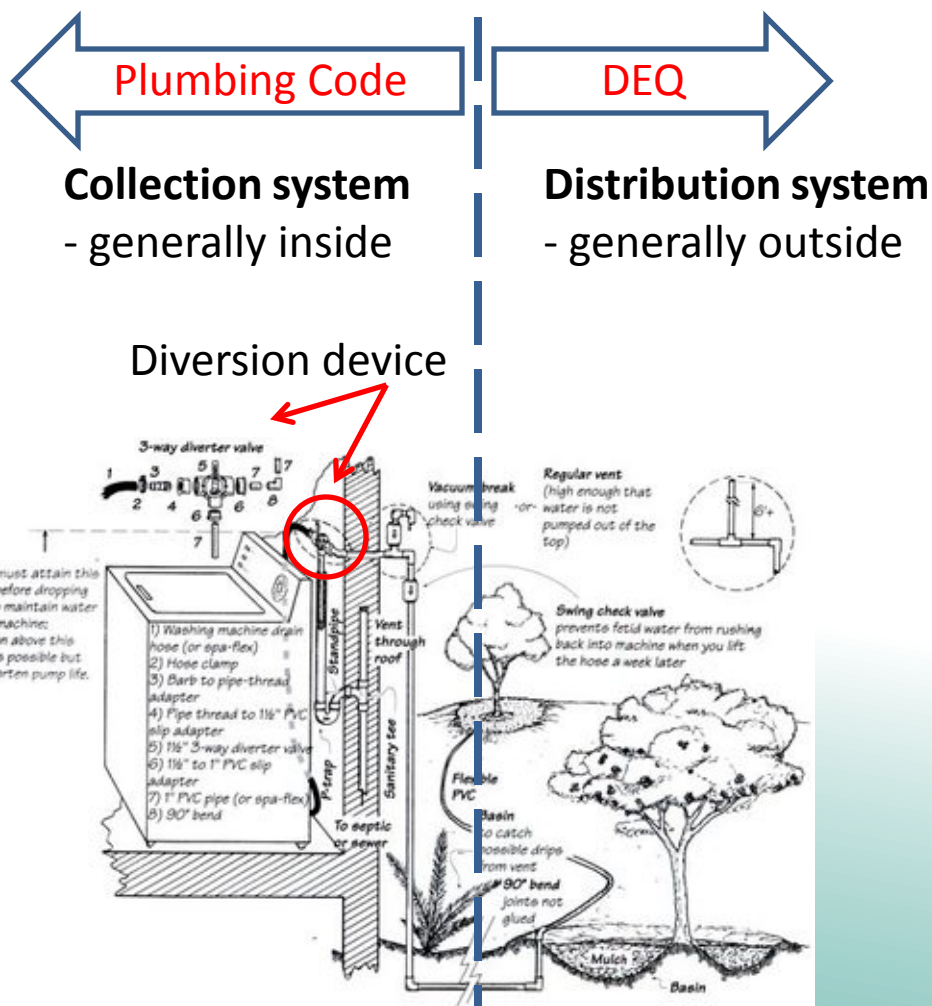
Design & construction

All pipes, valves, and other plumbing appurtenances of the graywater collection system, **up to and including the diversion device**, must comply with the requirements of the Oregon Plumbing Specialty Code.

Important Notes:

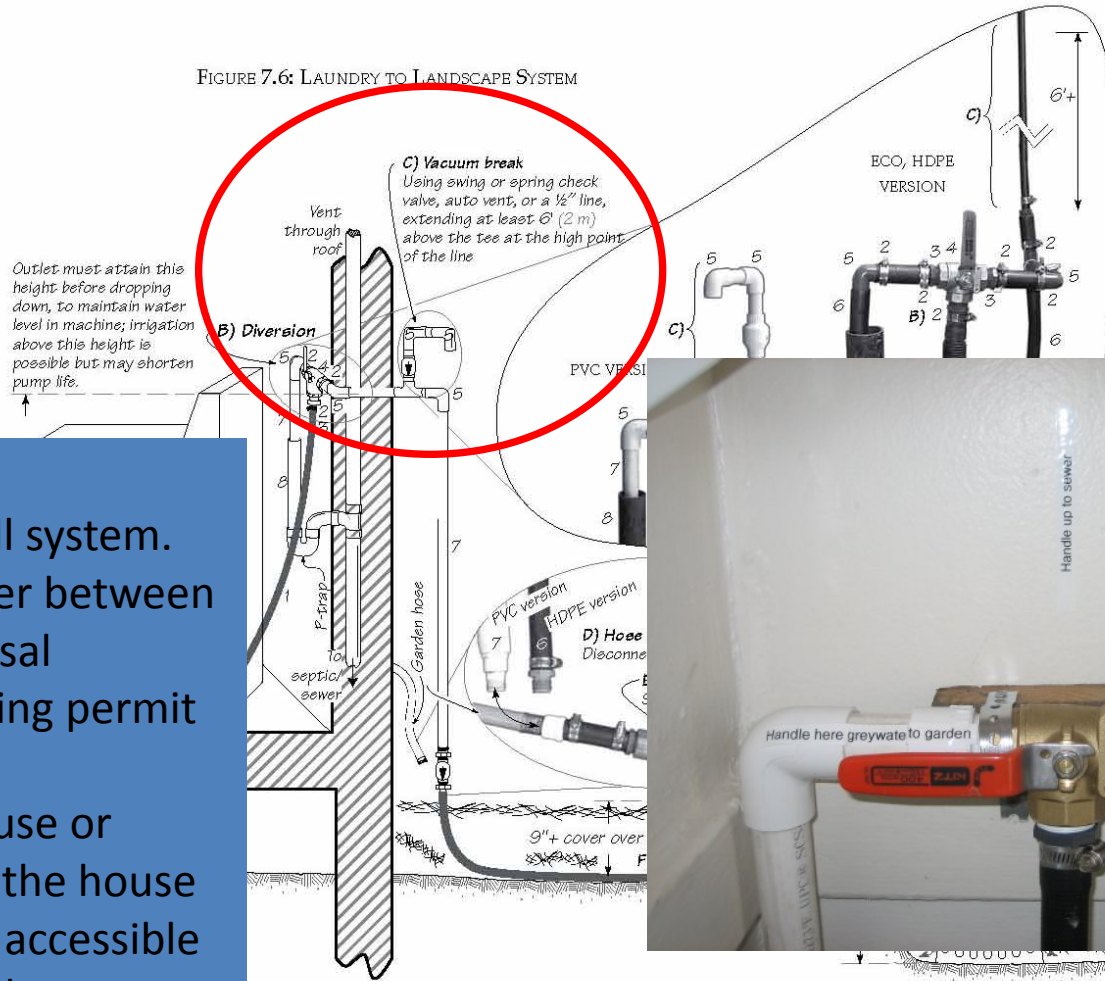
Graywater use for toilet and urinal flushing is allowed under Alternate Method Ruling No. OPSC 08-02.
No DEQ permit req'd.

Graywater is **not** the same as “reclaimed water” as used under the OPSC or “recycled water” as used under DEQ regulations.



Graywater Reuse and Disposal Systems

FIGURE 7.6: LAUNDRY TO LANDSCAPE SYSTEM



Diversion device

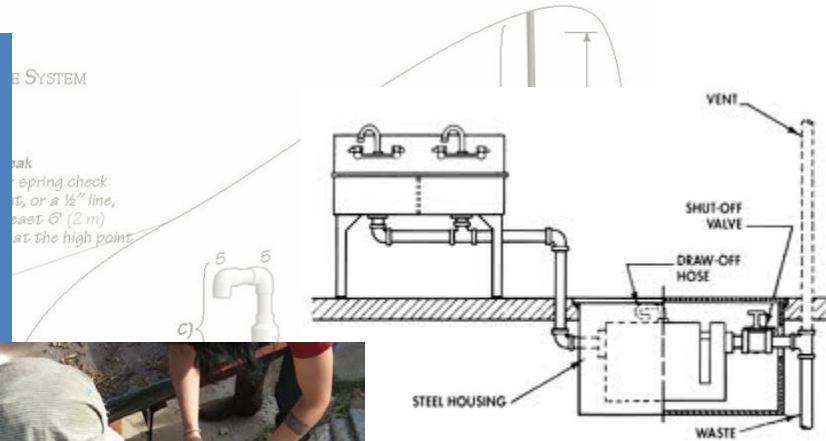
- **REQUIRED** for all system.
- Diverts graywater between reuse and disposal
- Requires plumbing permit and inspection
- Install in the house or within 2-feet of the house
- Must be readily accessible
- Must be labelled



Graywater Reuse and Disposal Systems

Graywater treatment (kitchen sinks)

- Must pass through a physical process to reduce settleable and floating solids
- DEQ has no design or construction requirements.
- Check with local building authorities for information on grease traps or grease interceptors

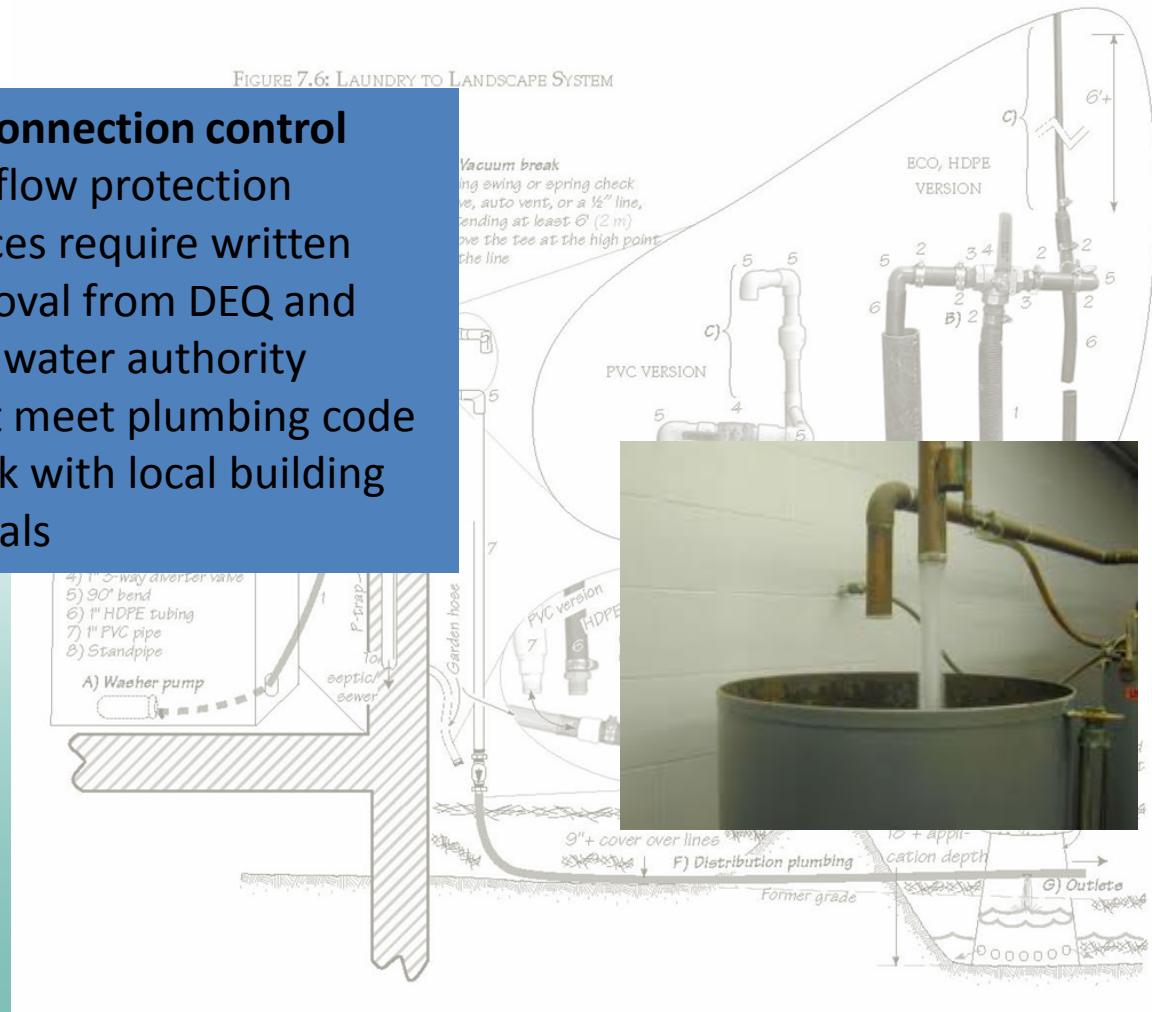


Graywater Reuse and Disposal Systems

FIGURE 7.6: LAUNDRY TO LANDSCAPE SYSTEM

Cross-connection control

- Backflow protection devices require written approval from DEQ and local water authority
- Must meet plumbing code
- Check with local building officials





State of Oregon
Department of
Environmental
Quality

Graywater Reuse and Disposal Systems

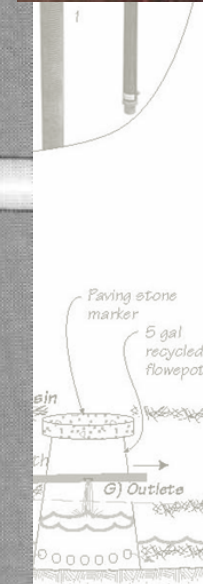
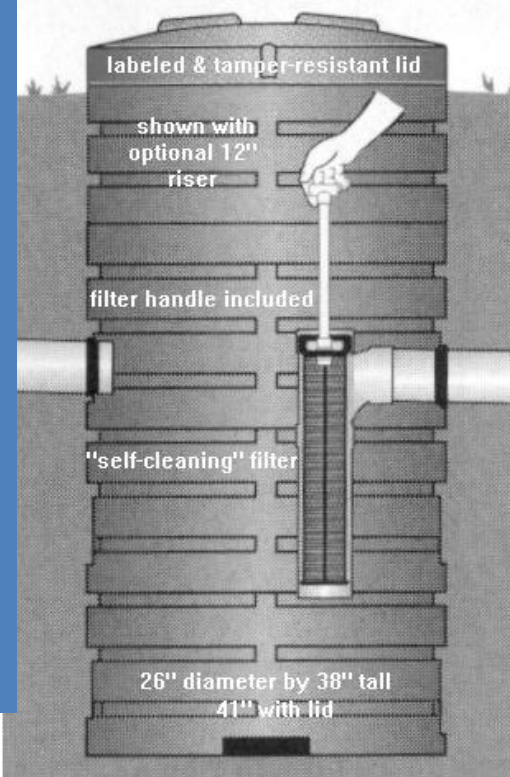
Storage or surge tank

- Type 1 graywater cannot be stored or held more than 24 hrs
- Optional part of design
- Size for peak graywater flow
- Fitted with controls to limit access
- Installed properly
- Labelled with "Caution – Nonpotable water – Not safe to drink"
- Must be fitted with overflow drain to wastewater disposal system
- Tanks have special setback requirements

LANDSCAPE SYSTEM

Vacuum break
ina ewina or eprina check

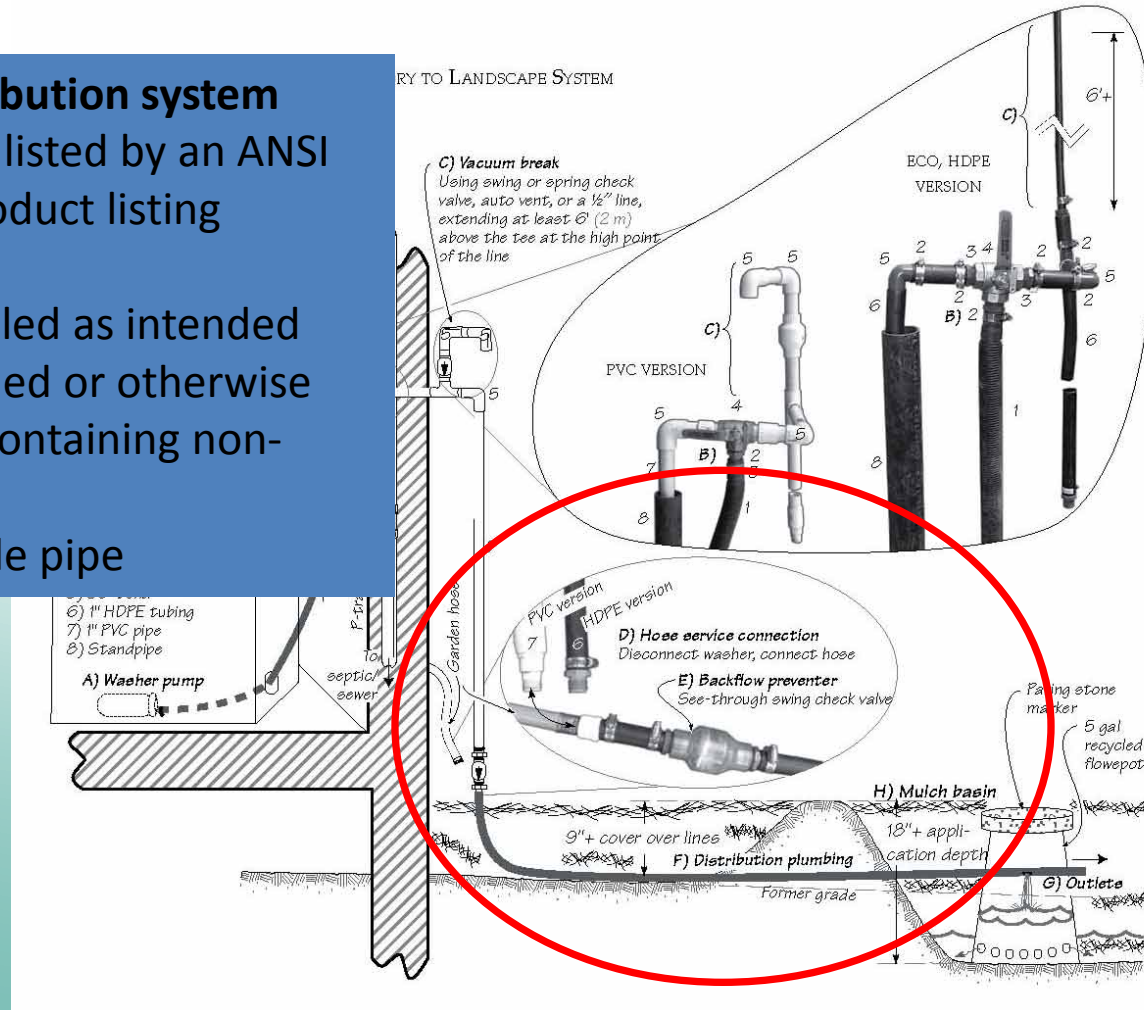
ECO, H
VEDS



Graywater Reuse and Disposal Systems

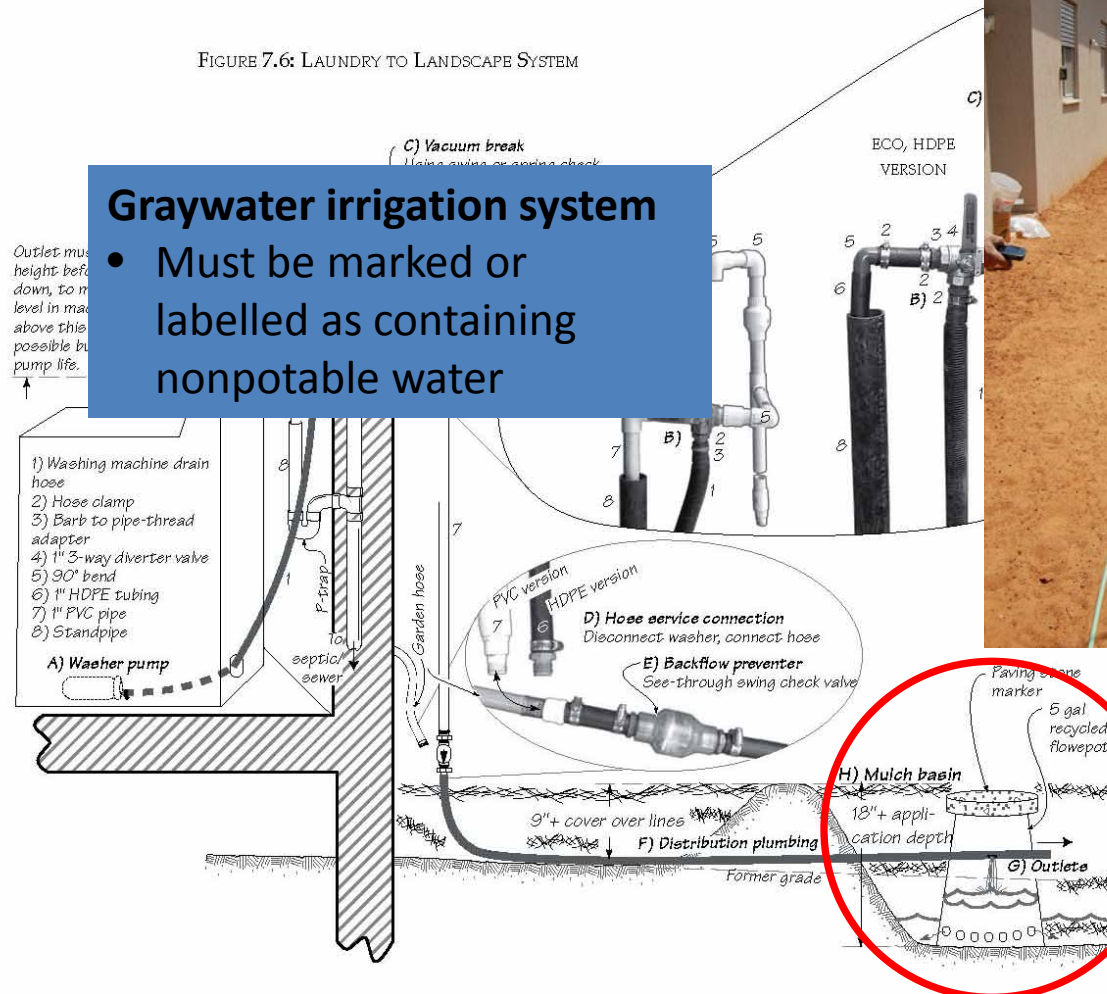
Graywater distribution system

- Parts must be listed by an ANSI accredited product listing program
- Must be installed as intended
- Must be labelled or otherwise identified as containing non-potable water
- May use purple pipe



Graywater Reuse and Disposal Systems

FIGURE 7.6: LAUNDRY TO LANDSCAPE SYSTEM



Graywater Reuse and Disposal Systems

Considerations on siting a graywater irrigation system:

- Stable sites not subject to flooding or runoff
- Slopes < 45%
- 4' separation to groundwater
- Evapotranspiration exceeds precipitation
- Soil and vegetation must be able to accommodate the volume and rate of graywater application
 - Design the system considering site soils (i.e., infiltration rate and area needed for clay are different than for sand)
 - Design the system to deliver water needs of the plants

Graywater Reuse and Disposal Systems

Plumbing permits and DEQ permits

- **Plumbing permits:** contact your local building department for plumbing requirements



- You need to list plumbing permits on your DEQ permit application

- **DEQ permit (Tier 1 2401 general permit):**
 - Pay the fees: \$90 (\$50 application fee; \$40 annual compliance fee)
 - Send in the application
 - Wait to receive notification (via email or postal mail) of coverage

The Tier 1 (2401) general permit is available **only** for single-family residences and duplexes with no more than 4 bedrooms that use graywater only for subsurface irrigation.



State of Oregon
Department of
Environmental
Quality

Graywater Reuse and Disposal Systems

Resources & Questions

DEQ website: <http://www.deq.state.or.us/wq/reuse/graywater.htm>

- Reusing Graywater in Your Landscape: A Guide for Oregon Homeowners
- Questions and Answers: Permits for graywater reuse and disposal systems
- Permit applications

Not all the following information can be used in Oregon

Regional Water Providers Consortium:

<http://www.conserveh2o.org/>

Agrimet (irrigation and water use):

<http://www.usbr.gov/pn/agrimet/h2ouse.html>

Washington Graywater program:

<http://www.doh.wa.gov/ehp/ts/ww/greywater/greywater.htm>

San Francisco Graywater Guide:

<http://sfwater.org/modules/showdocument.aspx?documentid=55>

Greywater Action: <http://greywateraction.org/>

Oasis Design: <http://oasisdesign.net/>

Graywater Gardening: <http://www.graywatergardening.com/>





State of Oregon
Department of
Environmental
Quality

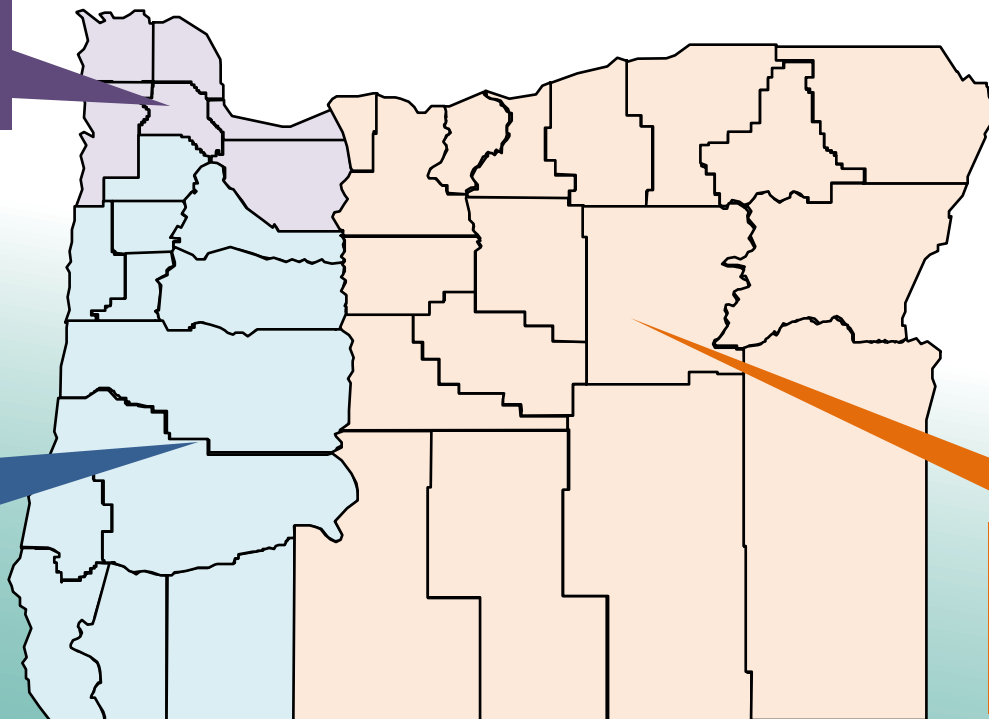
Graywater Reuse and Disposal Systems

DEQ Graywater Contacts

Statewide Program Coordinator
Ron Doughten
503-229-5472

Northwest Region
Connie Schrandt
503-229-5347

Western Region
Dan Wiltse
541-687-7436



Eastern Region
Diane Naglee
541-523-9097