

California Native Plants for Low Water Landscapes -- 13-Sep-2010

Very Low Water-Use *

	<u>Botanical Name</u>	<u>Common Name</u>
T	<i>Aesculus californica</i>	Buckeye
T, S	<i>Arctostaphylos spp</i>	Manzanita
S	<i>Artemisia spp</i>	Sagebrush
S	<i>Atriplex</i>	Saltbush
S	<i>Baccharis 'Centennial'</i>	Centennial baccharis
B	<i>Brodiaea spp.</i>	Brodiaea
S	<i>Ceanothus spp.</i>	Wild lilacs
T	<i>Cercis occidentalis</i>	Western redbud
T	<i>Cercocarpus betuloides</i>	Western mountain mohagany
T	<i>Chilopsis linearis</i>	Desert willow
S	<i>Dendromecon rigida</i>	Bush poppy
G	<i>Festuca idahoensis</i>	Idaho fescue
S	<i>Fremontodendron spp</i>	Flannel bush
T	<i>Heteromeles arbutifolia</i>	Toyon
G	<i>Leymus spp</i>	Wild rye
S	<i>Lupinus albifrons</i>	Silver bush lupine
S	<i>Mahonia nevinii</i>	Nevin's mahonia
S	<i>Malacothamnus fasciculatus, M. fremontii</i>	Chaparral, Fremont's bush mallow
GC	<i>Monardella villosa</i>	Coyote mint
G	<i>Nassella cernua, N. lepida, N. pulchra</i>	Nodding, Foothill, Purple needle grasses
T	<i>Pinus sabiana</i>	Grey pine
T	<i>Quercus agrifolia, Q. berberidifolia</i>	Coast live, California scrub oaks
T	<i>Quercus wislizeni</i>	Interior live oak
B	<i>Ranunculus californicus</i>	California buttercup
S	<i>Ribes malvaceum</i>	Chaparral currant
S	<i>Romneya coulteri</i>	Matilija poppy
S	<i>Salvia apiana</i>	White sage
P	<i>Sisyrinchium bellum</i>	Blue-eyed grass
S	<i>Trichostema lanatum</i>	Woolly blue curls
B	<i>Tritelia laxa</i>	Ithuriel's spear

Low Water Use *

	<u>Botanical Name</u>	<u>Common Name</u>
GC	<i>Baccharis pilularis cultivars</i>	Dwarf coyote bush
S	<i>Carpenteria californica</i>	California bush anemone
V	<i>Clematis lasiantha</i>	Chaparral clematis
S	<i>Corylus cornuta</i>	Western hazelnut

GC	<i>Dudleya spp</i>	Liveforever
P	<i>Epilobium spp. (Zauschneria)</i>	California fuchsia
P	<i>Erigeron glaucus</i>	Beach aster
S, P	<i>Eriogonum spp.</i>	Buckwheats
GC	<i>Eriophyllum lanatum</i>	Dwarf woolly daisy
G	<i>Festuca californica</i>	California fescue
S	<i>Galvezia speciosa</i>	Island bush snapdragon
S	<i>Garrya elliptica, G. fremontii</i>	Coast, Fremont silktassels
GC	<i>Heterotheca villosa</i>	Hairy golden aster
P	<i>Iris douglasiana</i>	Douglas's iris
S	<i>Lavatera assurgentiflora</i>	Tree mallow
S	<i>Lonicera hispidula</i>	Hairy honeysuckle
S	<i>Lupinus arboreus</i>	Yellow bush lupine
T	<i>Lyonothamnus floribundus</i>	Catalina ironwood
S	<i>Mahonia pinnata, M. repens (Berberis)</i>	California holly grape, Creeping mahonia
P	<i>Mimulus spp. (shrubby)</i>	Monkeyflower
G	<i>Muhlenbergia rigens</i>	Deer grass
P	<i>Penstemon spp</i>	Penstemon
T	<i>Pinus coulteri, P. edulis</i>	Coulter, Pinyon pines
T	<i>Pinus jeffreyi, P. ponderosa</i>	Jeffrey, Ponderosa pines
P	<i>Polystichum californicum</i>	Sword fern
S, T	<i>Prunus ilicifolia, P. lyonii</i>	Hollyleaf, Catalina cherries
T	<i>Quercus kelloggii, Q. lobata</i>	California black, Valley oaks
S	<i>Rhamnus californicus, R. croceus</i>	Coffeeberry, Redberry
S	<i>Rhus integrifolia, R. ovata</i>	Lemonade berry, Sugar bush
S	<i>Ribes aureum, R. indecorum</i>	Golden, White-flowering currants
S	<i>Ribes sanguineum, R. speciosa</i>	Red-flowering, Fuchsia-flowering currants
S	<i>Ribes viburnifolium</i>	Evergreen currant
S	<i>Salvia clevelandii, leucophylla, mellifera</i>	Cleveland's, Purple, Black sages
GC	<i>Salvia sonomensis, S. 'Bees Bliss'</i>	Sonoma sage, Bee's bliss sage
T	<i>Sambucus spp</i>	Elderberry
GC	<i>Satureja douglasii</i>	Yerba Buena
GC	<i>Sedum spp</i>	Stone crop
S	<i>Sphaeralcea spp</i>	Globe mallow
S	<i>Styrax officinalis californicum</i>	California storax
S	<i>Symphoricarpus albus, S. mollis</i>	Snowberry bush, Creeping snowberry
P	<i>Verbena lilicina</i>	Lilac verbena
V	<i>Vitis californica</i>	California wild grape
T	<i>Washingtonia filifera, W. robusta</i>	California, Mexican fan palms
S	<i>Yucca whipplei</i>	Our Lord's candle

T-Tree, S-Shrub, P-Perennial, V-Vine, G-Grass, GC-Groundcover, B-Bulb; San Jose Reference evaporation-transpiration rate (ETo) = 37" of water April-Sept or 23 gallons/ square foot (sf). High water use plants = .7 - .9 ETo or 18 gallons of water / sf; Moderate water use plants = .4 - .6 ETo or 11.5 gallons of water /sf; Low water use plants = .1 - .3 ETo or 4.6 gallons of water/ sf Very low water use plants = < 0.1 ETo and do not require supplemental water once established. www.water.ca.gov/pubs/conservation/a_guide_to_estimating_irrigation_water_needs_of_landscape_plantings_in_california_wucols/wucols00.pdf *Water requirements from Water Use Classification of Landscape Species (WUCOLS) Rebate: www.Valleywater.org/programs

Graywater Fact Sheet -- 18-Sep-2010; BAWSCA

The California Building Standards Commission (BSC) on January 12, 2010 adopted new code language for residential graywater reuse. This rulemaking modifies the California Plumbing Code, Title 24, Part 5, Chapter 16A, Part I.

General Rules

- These changes affect residential buildings only.
- Kitchen sinks, dishwashers, and diaper soiled water are not included in the definition of graywater.
- No ponding, spray, runoff of graywater to the storm sewer system, or contamination of groundwater.
- All systems must have an air-gap or suitable backflow prevention to protect the potable water supply.
- Not for root crops or edible portions of food crops.

Basic, Non-Permitted Systems

One type of Graywater Systems does NOT require a local building permit and only if there is no connection to a potable water supply; (Applies to single and two-family dwellings only)

Clothes Washer Systems (Laundry to Landscape)

Good for slab or non slab foundations, flat sites, and washers near exterior walls

Twelve conditions apply to these non-permitted systems:

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 18941.7.
2. 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.
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 or 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. Other methods which provide equivalent separation are also acceptable.
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.

Permitted Graywater Systems:

1. Simple System. Up to 250 gpd of discharge, not including a clothes washer. Local authority can exempt these from permits. Design is acceptable to the local authority. All other aspects of the code apply.
2. Complex System. Over 250 gpd of discharge. Local authority can exempt these from permits too. Designer must be someone acceptable to the local authority. All other aspects of the code apply.

Requirements for all Graywater Systems:

Discharge of Graywater to Landscapes

- Mulch basins are an acceptable type of disposal field.
- Disposal through drip irrigation has to be under a minimum of 2" of soil or mulch (was 9").

Indoor Graywater Reuse

Treatment is required. Currently, treatment standards are left up to the local enforcing agency (Building Departments).

Adoption of Local Standards

Cities or counties can adopt more restrictive standards such as not allowing graywater, requiring a permit, and/or registering the location of a graywater system, but only after a public hearing and enactment of local ordinance.

Background

In 2008, the California Legislature passed AB 1258 (Lowenthal) which directed the Department of Housing and Community Development (HCD) to develop new graywater standards for residential properties for approval by the BSC and adoption on January 1, 2011 as part of the regular triennial code adoption cycle. All other properties would still be subject to the standards created by the Department of Water Resources in 1997 known as Appendix G.

In February, 2009 HCD proposed changes to Chapter 16 of the Uniform Plumbing Code. During the Spring of 2009 HCD held two stakeholder's meetings in Sacramento to discuss those changes and made alterations based on their findings. Interested parties from across the state attended.

In June, 2009 HCD finalized their submittal for the BSC, and proposed an additional emergency rulemaking that would modify the current plumbing code. The emergency rulemaking relied on the Governor's State of Emergency declaration. On July 30th both proposals went to the BSC. They passed overwhelmingly after strong testimony both for and against. The State Department of Public Health supported these changes to the code. Most resistance came from local building department and plumber industry representatives who wanted to retain mandatory permit requirements for all or most graywater systems. Overall, the new code is more "performance based" rather than prescriptive, and allows for much less expensive systems to be created by residents of the State.

On 12-Jan-2010, the code changes were approved and go into effect on January 1, 2011.

More Resources

* *Laundry to Landscape* DVD and *Create an Oasis with Greywater* by Art Ludwig,

www.oasisdesign.net

* Greywater Action, graywater classes and activism, authors of *Dam Nation*

www.greywateraction.org

* Berkeley's Ecology Center and EcoHouse, graywater tours/ classes: www.ecologycenter.org

* City of Malibu for clothes washer systems:

www.ci.malibu.ca.us/index.cfm?fuseaction=detailgroup&navid=274&cid=2949

* Permitted graywater systems: Rewater, Inc. www.rewater.com

Factsheet adapted from East Bay Municipal Utility District's Graywater Factsheet: www.ebmud.com



Blending artistry and ecology

Rainwater Harvesting Fact Sheet

BAWSCA Class, 18-Sep-2010

No permitting required for outdoor use in most cities.

Rebates available in San Francisco, Palo Alto, Morgan Hill, Scotts Valley, Monterey, Soquel

General Rules

Think about conservation first!

- Know how to read your water bill – 1 CCF = 748 gallons of water
- Hydrozone and add drought tolerant plants
- Add a “Smart” controller (some rebates available)
- Change your controller schedule at least 4 times per year: On in March at 50%, 100% in June, 50% in September, off in December

Next put water into the ground, using:

- Microbasins
- Dry wells
- French drains
- Swales
- Terraces
- Pervious paving

Then use tanks to hold water for irrigating later:

- Above ground systems - \$1-2 per gallon of water
- Below ground systems - \$3-6 per gallon of water

Components of a cistern:

- Roof (metal, slate, concrete/ clay tile, composition are best) Be careful of wood shake roofs with fire retardants (toxic)
- Leaf guards for gutters
- First flush diverter
- Screened tanks to prevent mosquitoes from breeding
- Pump or hose connection
- Filter for drip irrigation

Resources:

- *Rainwater Harvesting books by Brad Lancaster, Volumes 1 and 2, www.harvestingrainwater.com*
- *San Francisco Public Utility Commission: http://www.sfwater.org/mto_main.cfm/MC_ID/14/MSC_ID/361/MTO_ID/559*
- *City of Tucson: <http://dot.ci.tucson.az.us/stormwater/downloads/2006WaterHarvesting.pdf>*
- *Texas Manual on Rainwater Harvesting: www.twdb.state.tx.us/publications/reports/RainwaterHarvestingManual_3rdedition.pdf*
- *TreePeople: www.treepeople.org*
- *www.HarvestH2O.com – Information on rebates*
- *The Urban Farmer Store: www.urbanfarmer.com*
- *American Rainwater Catchment Systems Association: www.arcsa.org/ Certification available*
- *The Center for Rainwater Harvesting: www.thecenterforrainwaterharvesting.org*