



# Alternate Water Systems

Los Angeles County Department of Public Health  
ACONA Meeting, March 04, 2014

*Carlos Borja, R.E.H.S., M.P.H.*

*Chief Environmental Specialist*

*L.A. County Department of Public Health*

*Cross Connection & Water Pollution Control Program*

*Bureau of Environmental Protection*





# Presentation Agenda

- ❖ Defining Alternate Water Systems
- ❖ Why should Public Health care?
- ❖ Discussing the impacts of alternate water systems
- ❖ Alternate Water Systems and Los Angeles
- ❖ Permits: Yes\No?



# Defining Alternate Water Systems

- Rain Water Harvesting/Catchment
- Recycled Water (Title 22)
- Graywater
- Stormwater
- Urban run-off
- Industrial sources

# Rain Water Harvesting/ Catchment

- Regulations are just now being implemented, 2013 UPC
- Guidelines for developers/architects/City Building & Safety Departments are needed
- Comes from rain events
- Water quality fluctuations greatly
- Onsite catchment and reuse primarily
- Water Treatment strategies for above grade irrigation needed
- Possible future use within buildings for flushing toilets and urinals
- No connection to sewer
- Subsurface irrigation only – quick turnaround
- Rain Barrels vs. Larger systems.



# Recycled Water

- Regulated, Title 22 of California Code of Regulations and California Plumbing Code
- Origins: Municipal waste water treatment plants operated under permit from the State Regional Water Quality Control Board.
- Origins: Municipal waste/sewage treatment plants. No direct connection to sewer.
- Distribution pipelines throughout cities
- Water quality is consistent due to set standards.
- Consistent availability
- Currently used in all types of irrigation, urinal and toilet flushing as well as industrial applications



# Graywater

- Also called grey water, gray water, etc.
- Distinguished from black water
- Comes from on-site usages such as lavatories, showers, laundries.
- Graywater is Regulated, Uniform Plumbing Code
- Collected and reused on-site only, no distribution to other parcels.
- Subsurface irrigation only.
- Has a direct connection to the sewer system
- Daily use only; must be discharged within 24 hours.



# Why Should Public Health Care?

- It is our job to protect the public's health
  - Use of graywater can be a source of bacteria exposure
  - Cross-connections to the drinking water supply
- Making better use of alternate water supplies is aligned with protecting and promoting health
  - Many of the proposed solutions for water resource management are healthy for everyone
- We have the appropriate skills
  - Public Health has the skills to evaluate hazards
  - Cooperative partnerships with Cities, Building & Safety, Public Works, Water Purveyors and Communities establishes the fundamental structure for safe projects.



# Resource Management

- Since graywater consists of at least 50% of residential water, an opportunity exists for converting this 'wastewater' and its nutrients into landscape use. Conserving water in this manner leads to considerable financial savings and to a more ecologically sustainable community.





# Conservation

- Environmentally, water conservation has become an important concern due to drought and limited availability of fresh water. Use of graywater will:
  - Reduce demand on water supplies,
  - Enhance groundwater recharge,
  - Reduce energy use and chemical pollution due to less reliance on sewage treatment systems



## Other Benefits...

Financial benefits: according to the California Plumbing Code, a typical three-bedroom home generates 160 gallons of graywater per day or 58,000 gallons per year. A family of four could potentially reuse 22,000 gallons of water per year from its laundry system alone, which is equal to the size of a large residential swimming pool!  
([hcd.ca.gov/news/release/Graywater7.31.09.pdf](http://hcd.ca.gov/news/release/Graywater7.31.09.pdf))



# Variance

- Graywater systems range from putting a hose from the bathtub through the window to the garden, to a branched drain system. Some systems can be generally installed by the homeowner, others may require a plumber.



# Permits?

- One- and two-family dwellings - permits are NOT required for a clothes washer system. Under January 20, 2010 regulations, you can install a clothes washer graywater system without a construction permit in your one- or two-family dwelling. However, you must follow certain rules.



# Exemptions

A system exempted from a construction permit must be comply with the following requirements:

- It must be a CLOTHES WASHER system — uses only a single domestic clothes washing machine in a one- or two-family dwelling.
- You must be able to direct the graywater to the sewer via an easily accessible mechanism.



# Exemptions

- The installation of the system does not include a potable water connection.
- The graywater shall be contained within an irrigation or disposal field on the site where it is generated. Ponding or runoff is prohibited.



# Exemptions

- Graywater may be released in a mulch bed provided at least two (2) inches of solid shield covers the release point. Contact between humans and pets shall be minimized.
- Water used to wash soiled or infectious garments (e.g., diapers) or containing hazardous chemicals (e.g., from washing car) shall not be used and shall be diverted to the sewer.



# Permits?

- Other systems that exceed the clothes washer system DO require a permit, even for a one- or two- family dwelling.
- Reference 2013 Title 28, LA County Code, Chapter 16, Part I





# Will Graywater Harm My Plants?

Graywater is highly alkaline due to the basic nature of soaps and cleaning chemicals. Neutral water has a pH of 7.0, yet graywater can have pH over 9.0. Therefore, it is best used on established plants that can handle alkaline conditions. Fortunately, this includes many of our coastal California natives as well as desert plants.

## What Should or Shouldn't I Use It On?

You **MAY** irrigate fruit trees, ornamental trees, groundcover and lawns. You **MAY NOT** irrigate root or leafy vegetables or other food crops that touch the soil, for health and safety reasons. Furthermore, you **MAY NOT** use graywater for spray irrigation, or allow it to 'pond' or run-off on the ground. The discharge point of the graywater must be covered by at least 2 inches of mulch, rock, or other cover material to minimize human contact.



# Nuisance

Can it become a nuisance?

- Surfacing of graywater attracts pests
- Discharging to city streets
- Unhealthy conditions if stored – turns septic



# Summary

- Reduces the amount of potable, fresh water used by households for landscape irrigation
- Reduces the amount of wastewater entering sewer or septic systems
- Typically reduces the amount of chemicals used by homeowners
- Recharges groundwater when applied outdoors
- Supports plant growth without using potable water
- Raises awareness of natural cycles



# Resources

- ❖ Los Angeles County Environmental Health  
[http://ph.lacounty.gov/eh/EP/lu/lu\\_main.htm](http://ph.lacounty.gov/eh/EP/lu/lu_main.htm)
- ❖ Los Angeles City Building & Safety  
[http://ladbs.org/LADBSWeb/LADBS\\_Forms/InformationBulletins/IB-P-PC2011-012Graywater.pdf/](http://ladbs.org/LADBSWeb/LADBS_Forms/InformationBulletins/IB-P-PC2011-012Graywater.pdf/)
- ❖ KCET River Notes  
<http://www.kcet.org/socal/departures/lariver/confluence/river-notes/simplified-greywater-permits-debut-in-the-city.html>
- ❖ Greywater Corps  
<http://greywatercorps.com/>



# Resources

- ❖ Geosyntec – a partner

<http://www.geosyntec.com/UI/Default.aspx>

- ❖ The River Project

<http://www.theriverproject.org>

- ❖ The American Rainwater Catchment Systems Assoc.

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

- ❖ City of Santa Monica

<http://www.smgov.net/departments/ose/categories/water/greywater.aspx>



LOS ANGELES COUNTY  
**PUBLIC HEALTH**

# LA County Public Health – Healthy People Build Healthy Communities

