

Gary's Grey(t)Water Systems: Laundry to Landscape

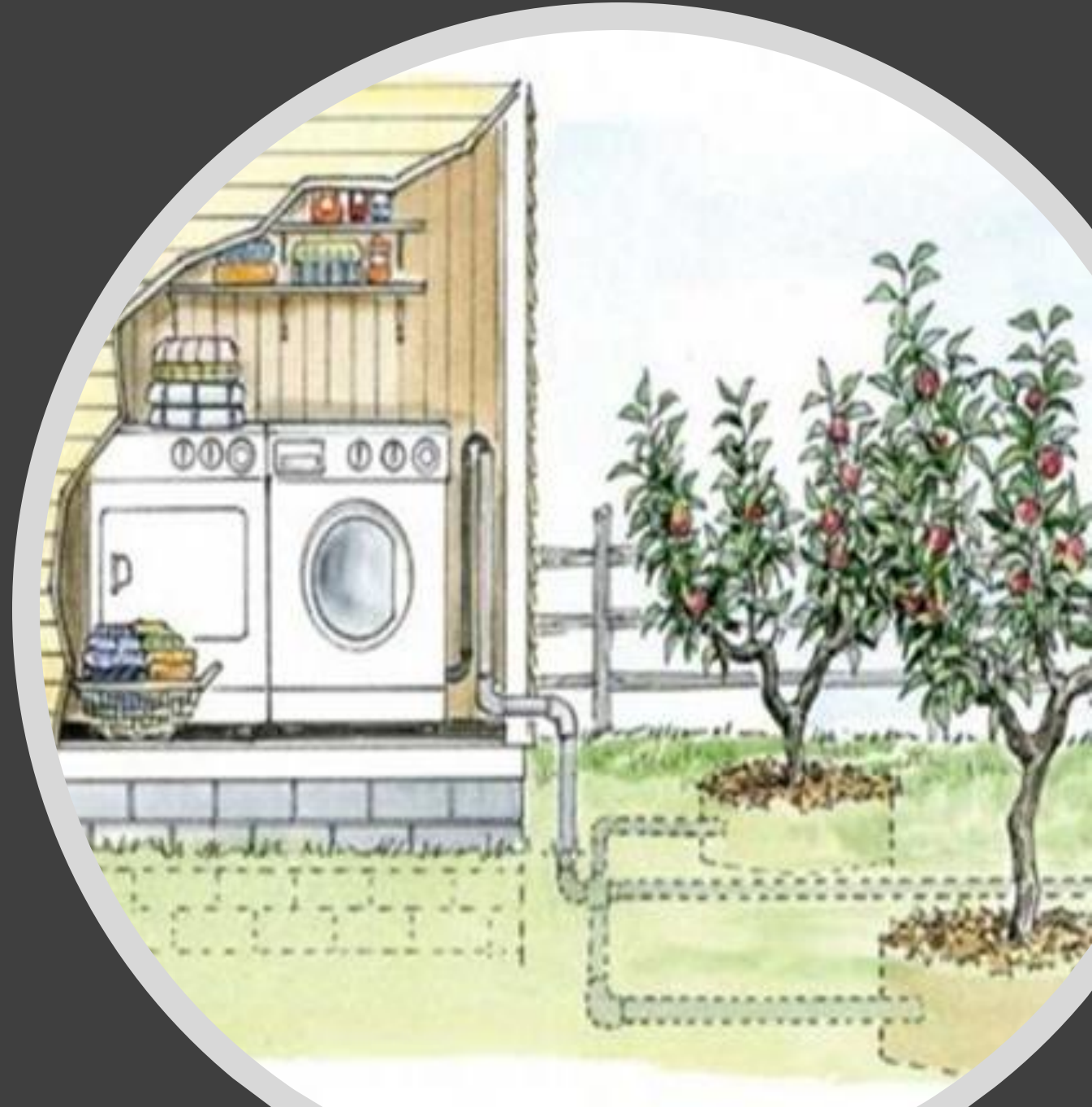
Simple conversions for permanent benefits

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With Maggie's Farm &
Founder of G-Force Gaia Services, LLC



G-Force
gaia Services,
LLC



Greywater

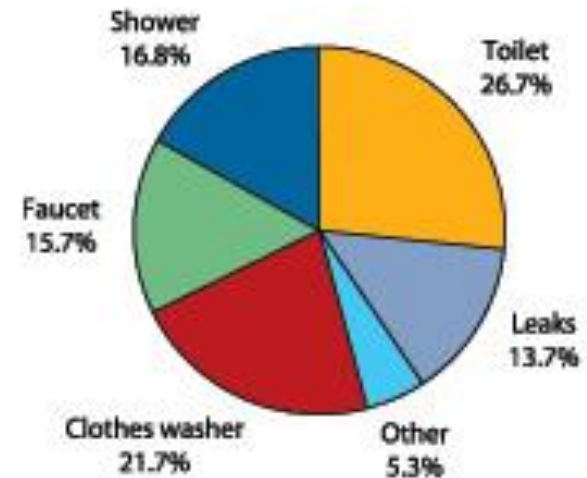
Greywater is most household water that has been used once & does not contain dangerous chemicals for reuse.

Therefore, any water from your laundry machine, bath/shower, and bathroom sink “throw away” greywater that is in great quality to be diverted towards your landscape.

Household Water Use

- “The average American family uses more than 300 gallons of water per day at home. Roughly 70 percent of this use occurs indoors.” – EPA
- “Estimates vary, but each person uses about 80-100 gallons of water per day.” – USGS
- Homes are not designed to optimize this water use

How Much Water Do We Use?



Source: American Water Works Association Research Foundation, "Residential End Uses of Water," 1999

What is greywater?



Clean Water

*Springs, wells,
purified water,
city water, rain water*



Greywater

*Used water without
toxic chemicals
and/or excrement*



Blackwater

*Contaminated water
with toxic chemicals
and/or excrement*



Why Laundry to Landscape?

25-50 gallons per load

- ✓ Easy Installation
- ✓ Affordable
- ✓ Already Pumped

- Plumbing is accessible
- Tools and parts for an install cost only \$150-300
- Laundry pumps can push water up to 6' up & 100' out and gravity fed even further
- Most laundry machines are close to an outside wall

Arizona Laws

Type 1 General Permit



- Under 400 gallons per day
- Non-spray irrigation, keep it on-site and avoid direct human contact
- Do not surface irrigate any plants that produce food, except for citrus and nut trees and avoid surface accumulation.
- Avoid hazardous materials, grease, oil, & diaper/fecal matter.
- If you have a septic or other on-site wastewater disposal system, your gray water use does not change that system's design requirements for capacity and reserve areas.

Arizona Laws

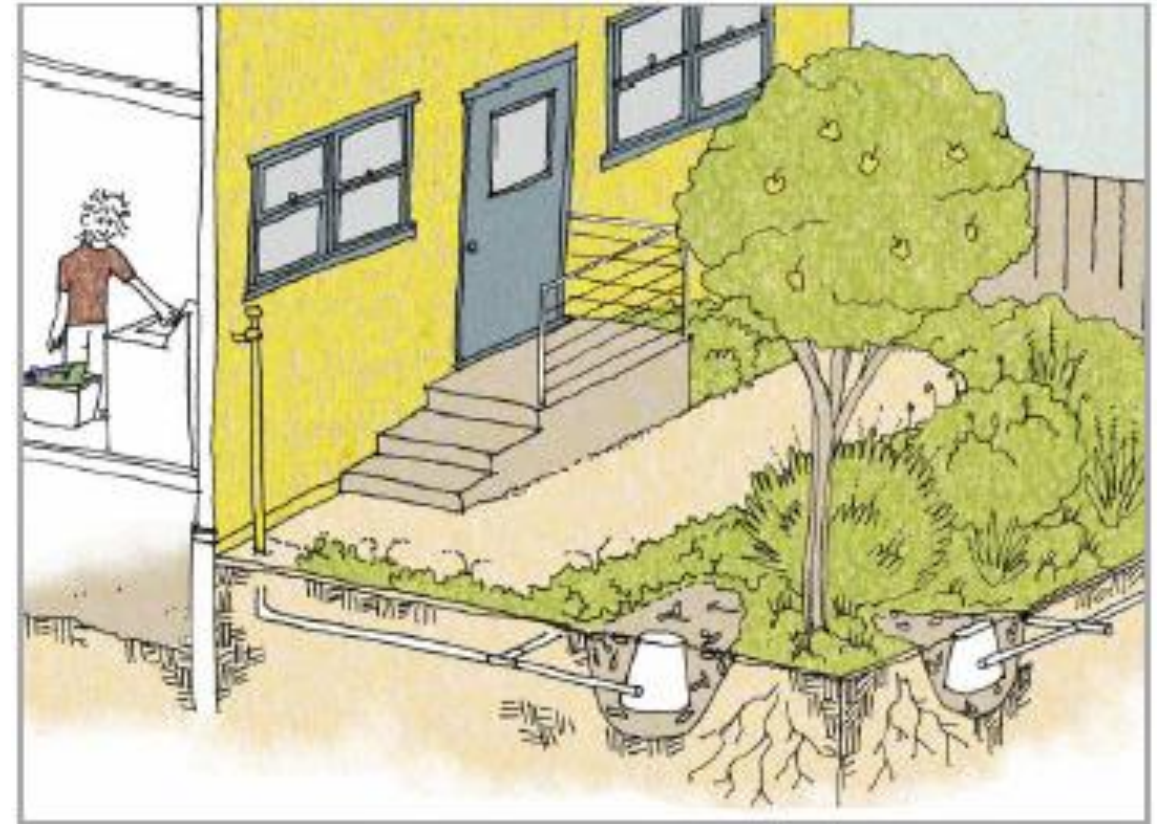
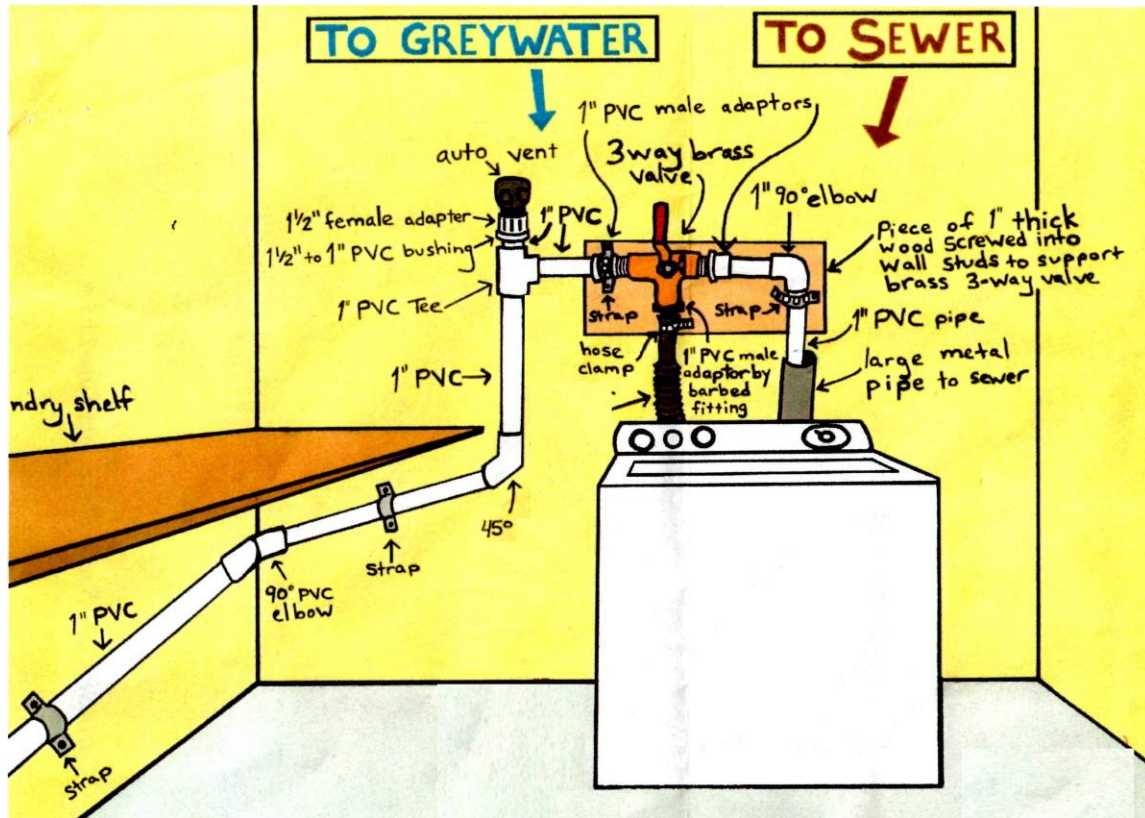
Type 1 General Permit

(Continued)



- The general permit is meant for private residential use only.
- The area of use cannot be accessible by the public.
- Only drip or flood irrigation with graywater is allowed.
- Groundwater must be at least 5' below grade
- Label pipes carrying gray water under pressure to eliminate confusion between gray water and drinking water pipes.

In general, no city, town or county may limit the use of gray water if the use is allowed by this general permit (ARS §49-204).



Illustrations from The Urban Farmer Store

Laundry to Landscape Tools & Components

Tools for an Install

- 1-1/2" PVC Cutter
- Drill
- 1-3/8" hole drill bit & diamond hole bit
- Caulking gun
- Torpedo Level
- 1' to 4' Level
- Tape Measure
- Shovel

Good to Have:

- Wire cutters
- Stud Finder
- Pickaxe
- Wrench or Adjustable Pliers

- Longer hole bits help make it through thicker walls

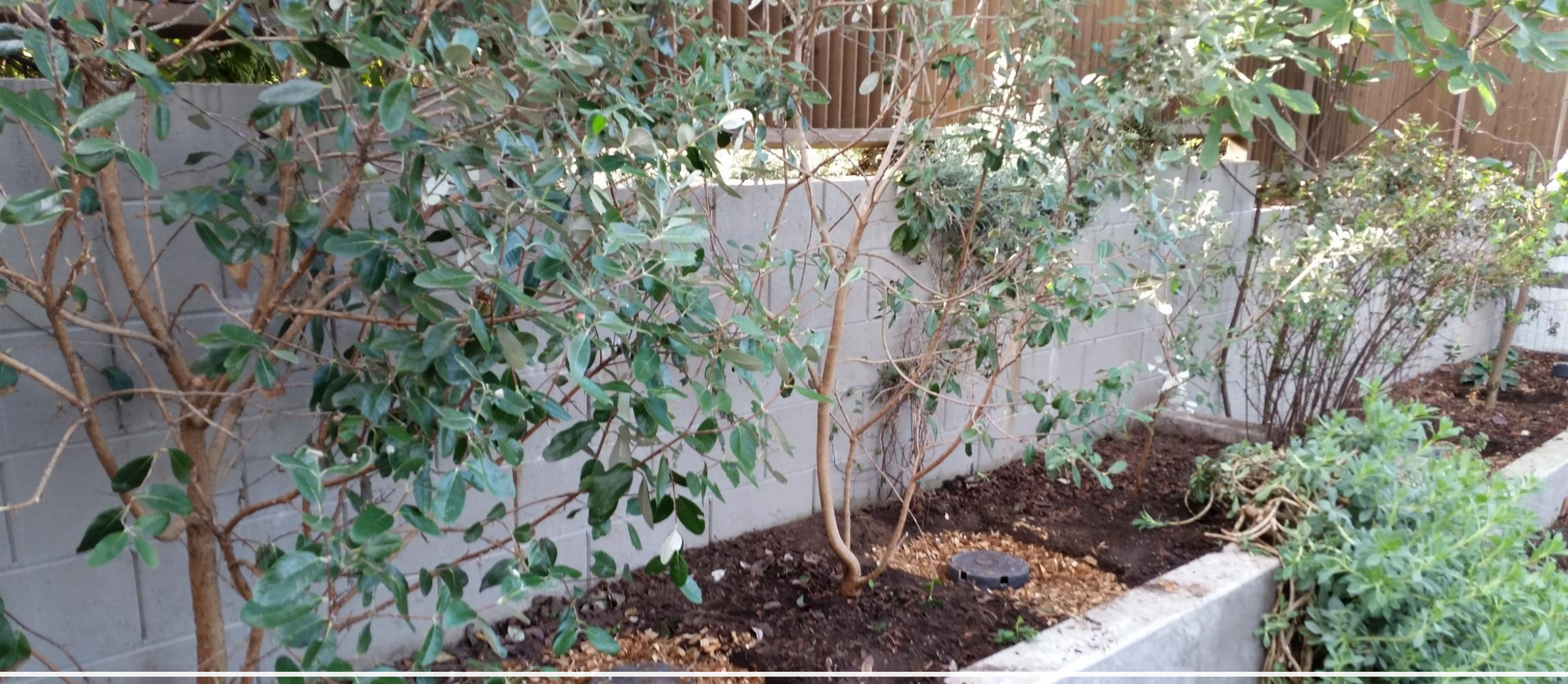


Components of an Install

- 3-Way Diverter
- Air Vent
- 1" PVC pipe, parts, & glue
- 1" Barbed adapters
- Check Valve (if necessary)
- Thread Tape
- Pipe Straps
- Hose Clamps
- Screws
- Caulking
- Pots
- Mulch

- **Three-Way Diverter:** Easy switch between diverting towards sewer/septic or garden
- **Air Vent:** Prevents vacuum to allow drainage
- **Barbed Adapters:** Connects to washer tubing
This is one of the most variable parts of installation.
- **Mulch & Pots:** Greywater ends in a mulch basin with an air gap around the outflow to prevent clogging





Mulch basins for existing trees





Installation



Couple months later



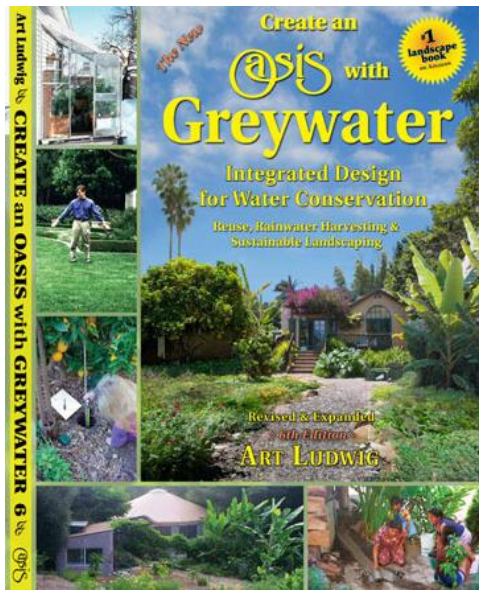


Perennial & Annual Veggies - Gardens love it!



Mulch Basin for a
climbing rose
~~~  
Gardens love it!





# Tips

- Use Biodegradable/Greywater Friendly Laundry Detergent with no Boron, Salt/sodium, nor Chlorine  
Use the [Ecology Center reference sheet](#)
- **Rarely** use storage for greywater
- Send piping down-slope at least 2% (1/4" per foot)
- Refill mulch basins annually
- Clear PVC glue looks better
- Paint exposed PVC
- Plants!



# Detergent Options

## Laundry Greywater Systems

Look for products that list their ingredients. You're more apt to find greywater-compatible products at natural foods grocery stores and ecologically-minded stores. Choose liquid soaps over powder as they tend to contain less sodium.

| Best                     | Limit                                            | Avoid                                          |
|--------------------------|--------------------------------------------------|------------------------------------------------|
| Oasis Laundry Liquid     | Citra Suds (sodium chloride)                     | Tide (enzymes +?)                              |
| Bio Pac Laundry Liquid   | Biokleen Laundry Liquid                          | All (perfume, brightening agent, colorant, +?) |
| ECOS liquid detergents   | Planet (salt, sodium carbonate/washing soda)     | Arm & Hammer (water softener, brightener, +?)  |
| Hydrogen Peroxide bleach | Ecover Laundry Wash (some salt)                  | Woolite (?)                                    |
| Vaska Herbatergent       | Mountain Green Laundry Detergent                 | Ivory Snow (enzymes +?)                        |
|                          | LifeTree Laundry Liquid                          | Clorox (chlorine bleach)                       |
|                          | Lullwater Soap Nuts Seventh Generation (enzymes) | Borax                                          |
|                          | Biokleen Bac Out (sodium percarbonate, enzymes)  |                                                |
|                          | Biokleen Oxygen Bleach Plus (sodium sulfata)     |                                                |

**?** The question marks in the table above indicate that these products do not list all of their ingredients on their labels. This is a common practice with many conventional brands. It is safe to assume that many of these products contain artificial colors and scents among their ingredients.





*G-Force  
Gaia  
Services,  
LLC*

### **Vision Statement**

To empower the community with locally-focused, ecologically regenerative, and economically accessible renovations to our community, homes, & land.




# For More Information

[G-Force Gaia Services, LLC Website](http://G-ForceGaiaServices.com)

[GForceGaiaServices.weebly.com](http://GForceGaiaServices.weebly.com)  
under Services/Greywater

Articles, Videos, Book Suggestions,  
Forums, Brochures, and more!



Our trees, our land, and we love water.

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It's that simple.

When we put our thoughts towards how we  
worship our resources,  
we can become healers and worship ourselves;  
and all of those around us.