

*Provided as a community service
for Tucson Water Customers*

Greywater Turning Waste into a Resource

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Project Manager**



A 501(c)3 Non-profit organization

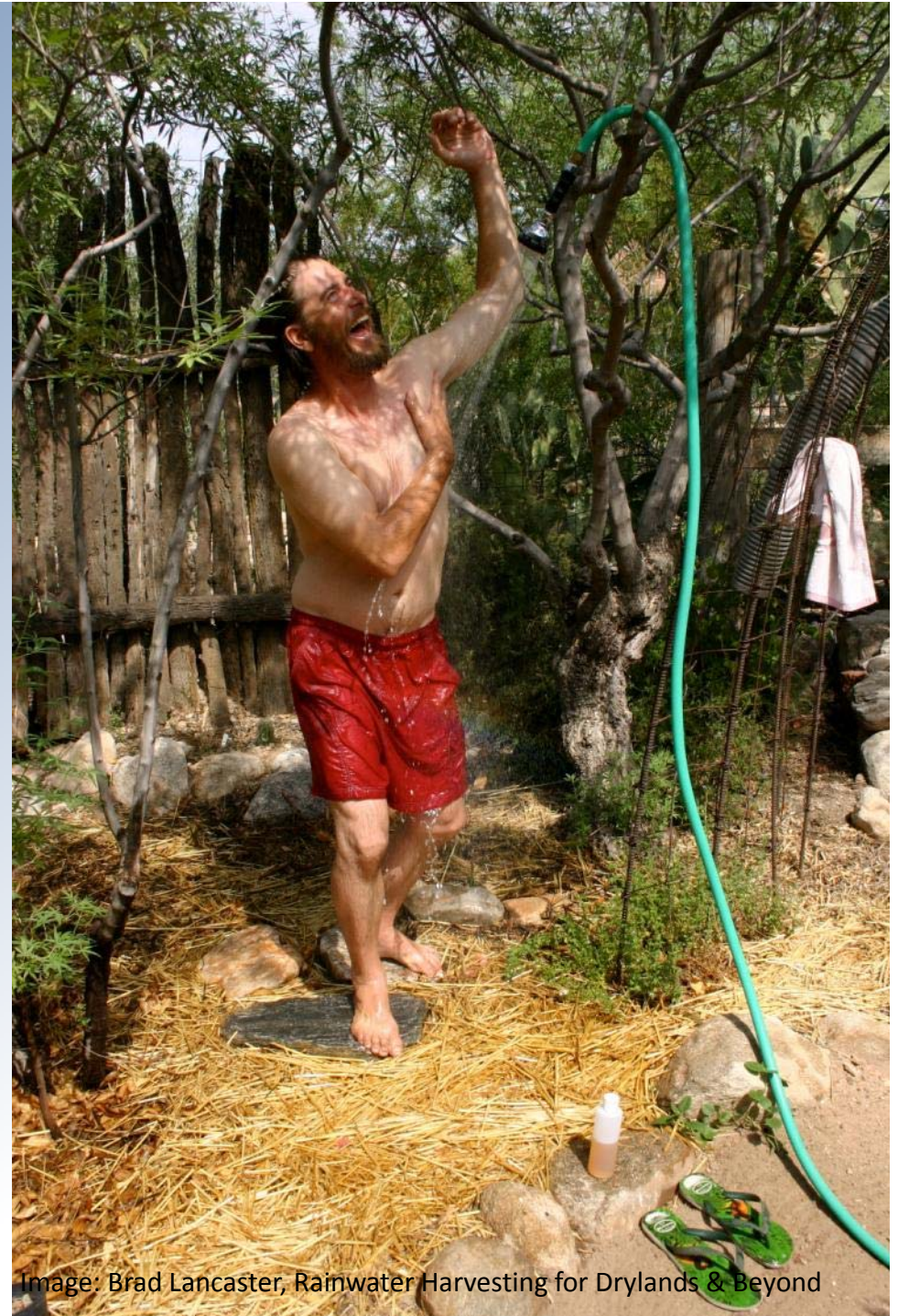
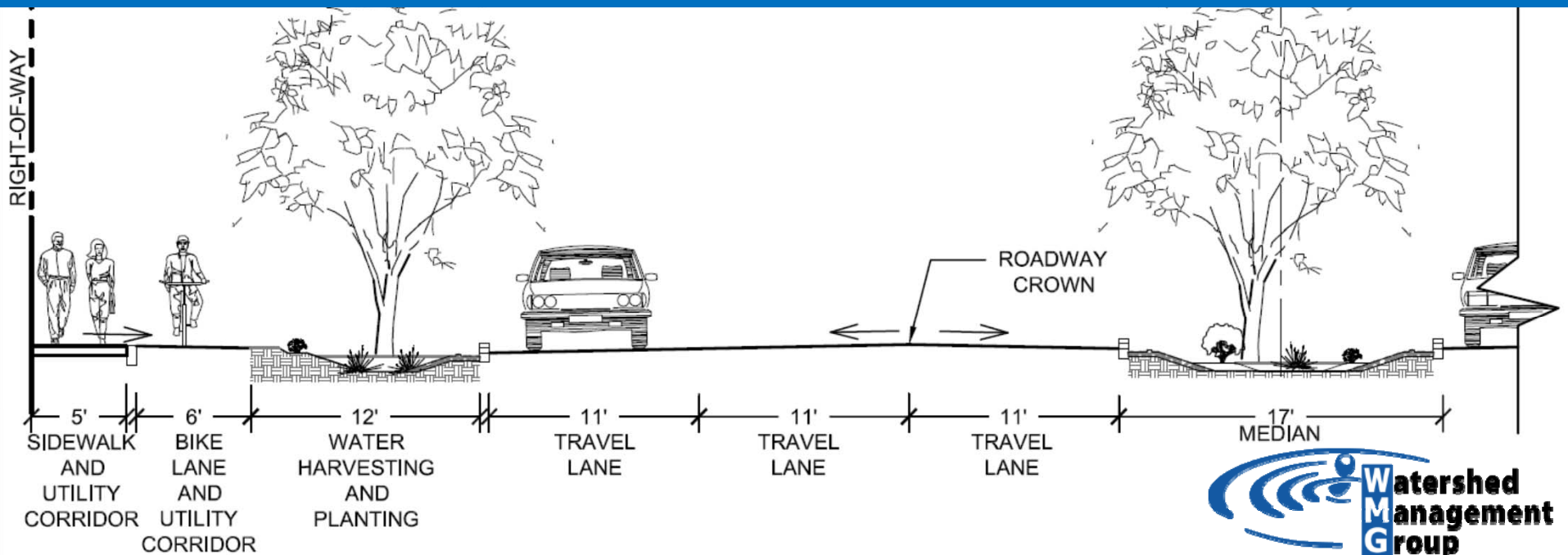


Image: Brad Lancaster, Rainwater Harvesting for Drylands & Beyond

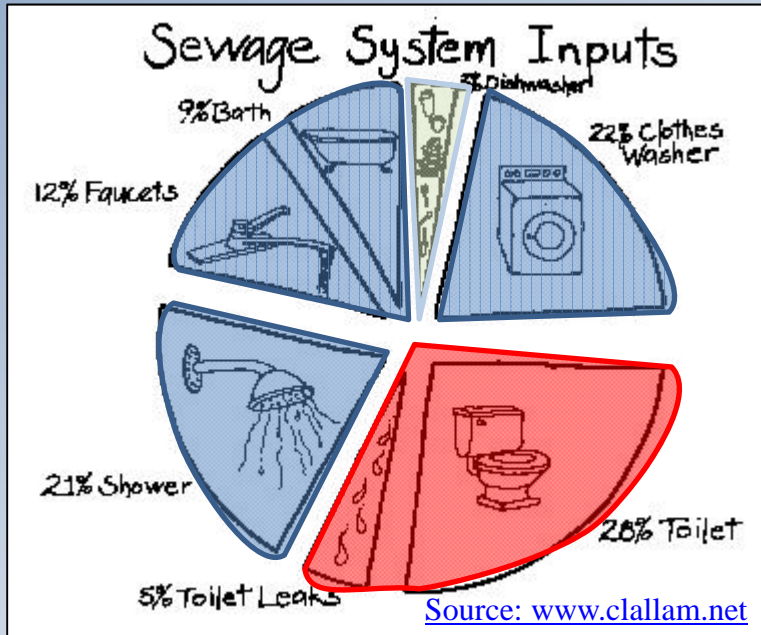


Watershed Management Group develops and implements community-based solutions to ensure the long-term **prosperity of people** and **health of the environment**. We provide people with the knowledge, skills, and resources for sustainable livelihoods.



What is Greywater?

- From the shower, hand sinks, and laundry
(and sometimes the kitchen sink).
- Reused for beneficial purposes.
- It does not include toilet water (blackwater) or dishwashing machine water.



Arizona Department of Environmental Quality (ADEQ) Guidelines

www.azdeq.gov/environ/water/permits/download/graybro.pdf

Self-permitting Process:

- Be used on-site only
- Residential use
- Irrigation use only
- Graywater flow < 400 gallons per day
- Follow 13 best management practices



General Precautions

- No bleach
- No soaps with salts
- No clothes soiled with bodily fluids
- Avoid over-saturating soil
 - You can drown plants
 - Promote anaerobic soil with unpleasant smells
- Avoid human or animal contact with graywater – due to higher bacterial content

Products/Items to **AVOID**

www.harvestingrainwater.com/greywater-harvesting/ecologycenter.org/factsheets/greywater-cleaning-products.html

- chlorine or bleach
- Peroxygen
- Salts (sodium)
- sodium perborate
- sodium tryochlorite
- Sodium lauryl sulfate
- boron
- borax
- petroleum distillate
- alkylbenzene
- "whiteners"
- "softeners"
- "enzymatic" components



Photo courtesy of Art Ludwig
www.OasisDesign.net

What can you NOT do with greywater?

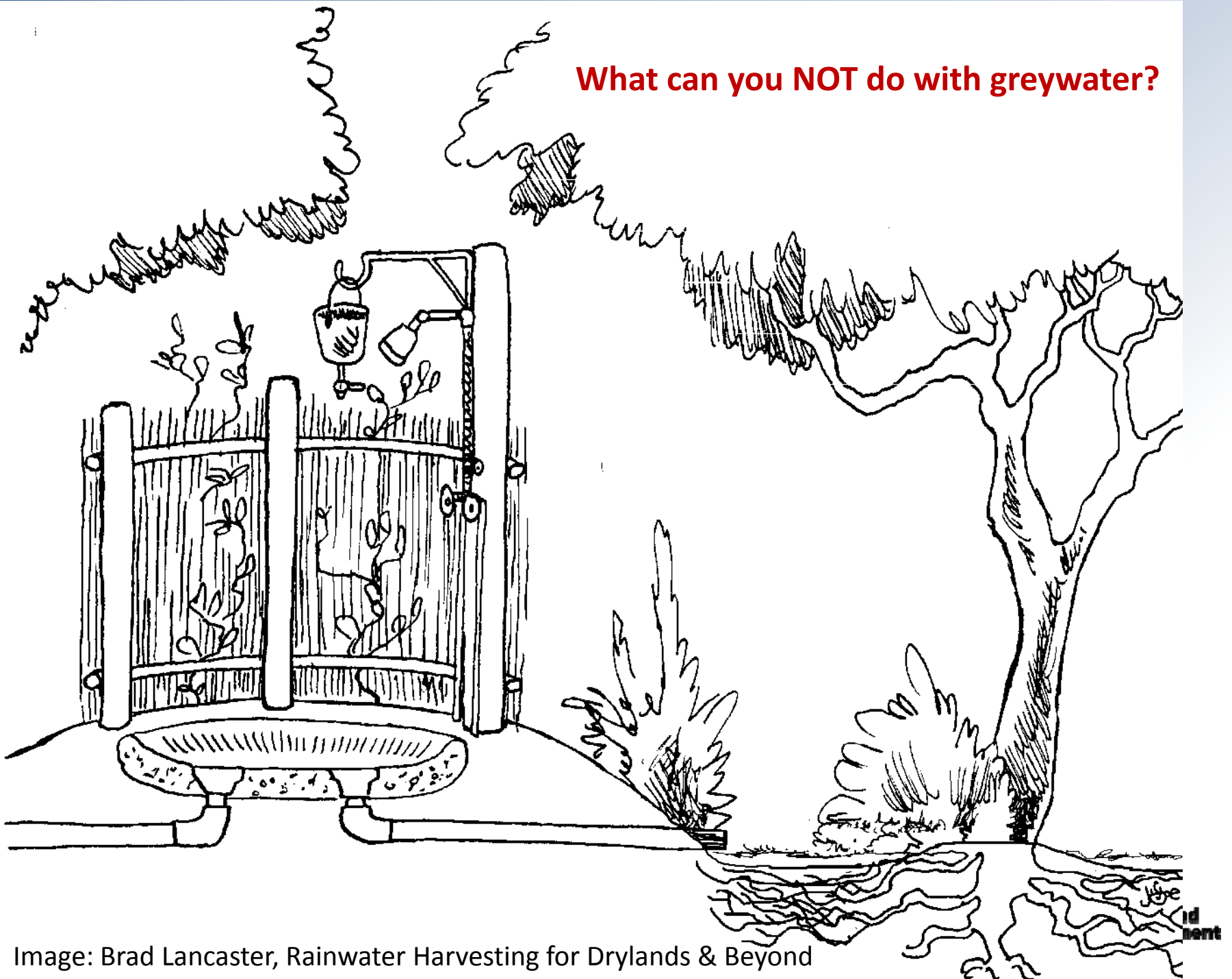


Image: Brad Lancaster, Rainwater Harvesting for Drylands & Beyond



Plant & Mulch!

Your typical Supply

- Top loading = ~30-40 gallons/load
- Front loading = ~15-20 gallons/load

- Front, 3loads/wk = ~2,800 gallons per year
 - Irrigate 1 mature dwarf citrus or 2 pomegranates or 2 figs
- Front, 5loads/wk = ~4,700 gallons per year
 - Irrigate Citrus + Pomegranate or ...

How much Greywater do you produce?

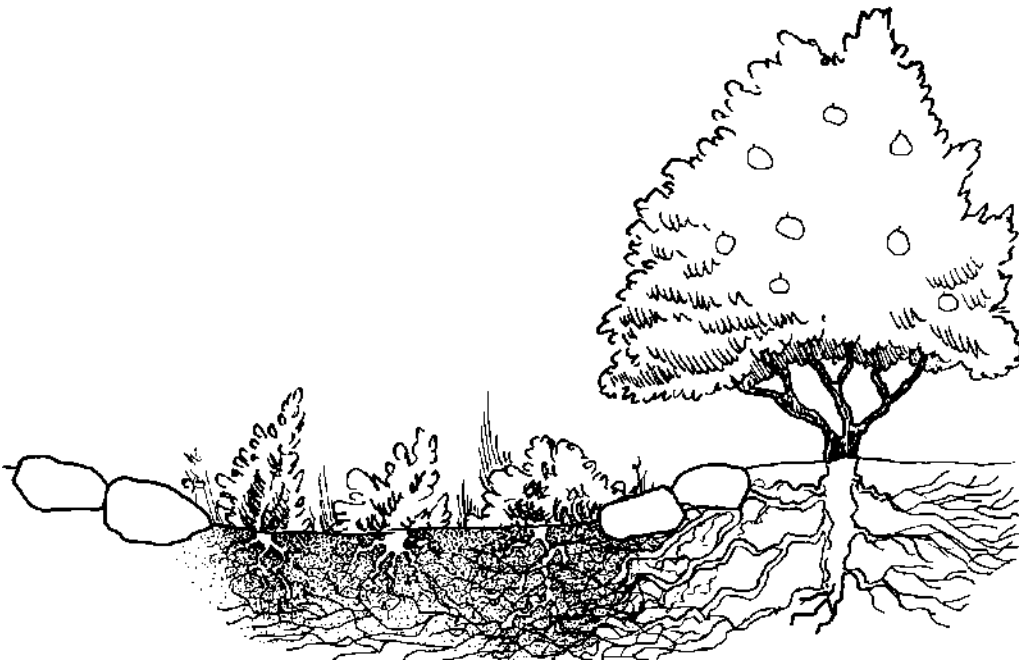
Average Annual Use:

Laundry: ___gal/use * ___ uses/week * 52 weeks

Shower: ___gal/min * ___ min * ___ persons * 350 days



Image: Brad Lancaster, Rainwater Harvesting for Drylands & Beyond



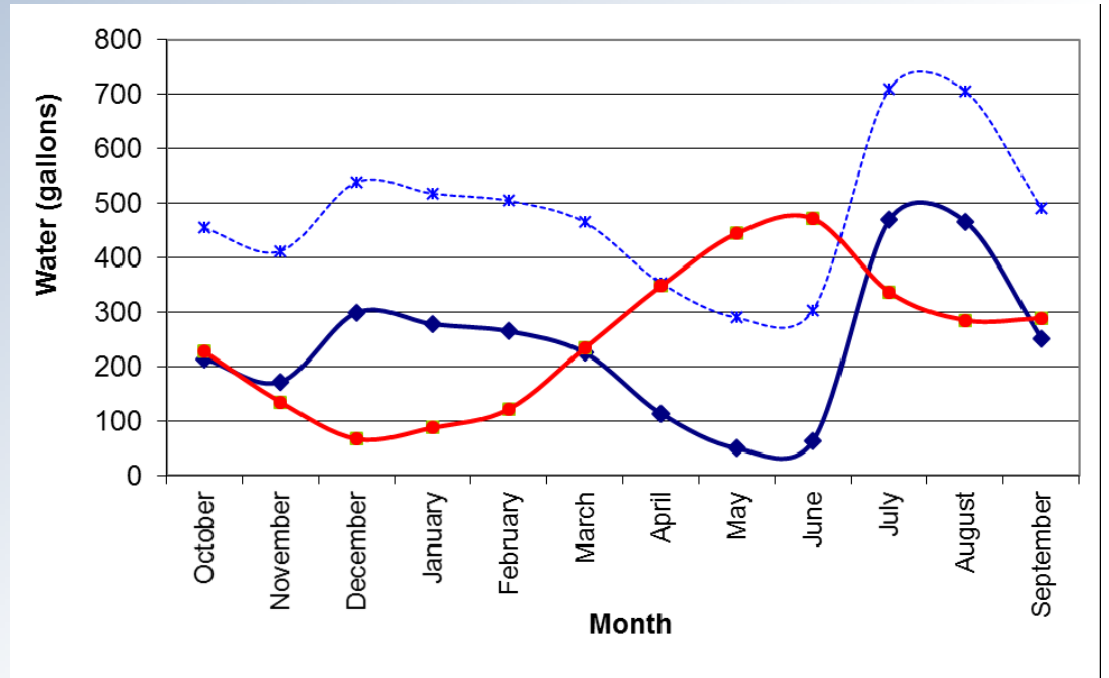
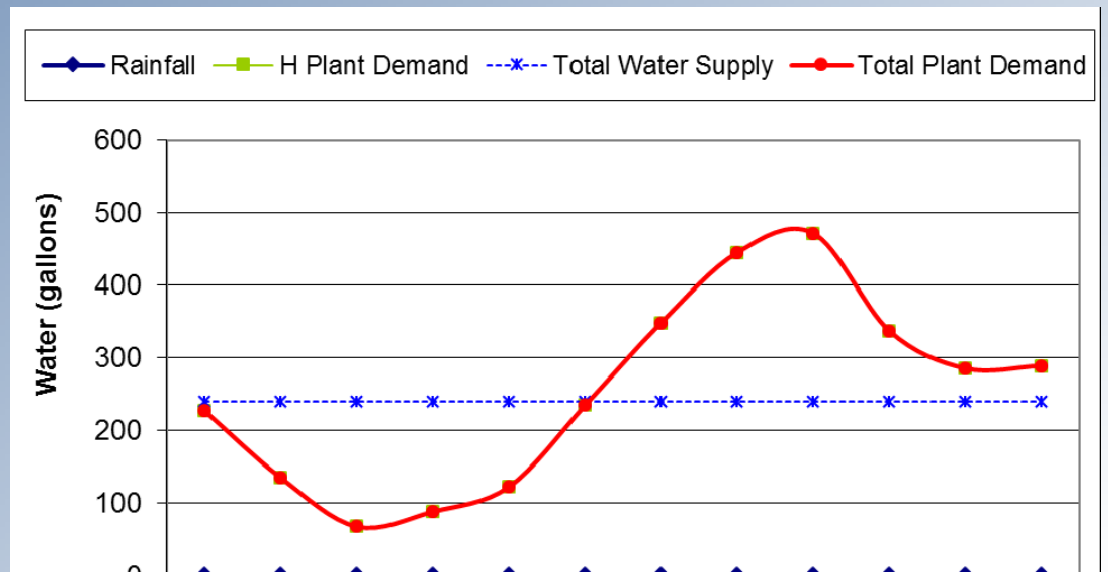
Create a Water Budget

Use as supplement irrigation demand for your tree

- Greywater: excess production in cool season; deficit in warm season
 - Make up remaining warm season demand with stored rainwater, AC condensate, Evaporative cooler bleed-off
-
- Citrus = 3000-5000gallons/yr (dwarf to standard)
 - Pomegranate = 3000 gallons/yr
 - Fig = 3000 – 4000 gallons/yr
 - Mesquite = 3000 – 5000 gallons/yr
 - Grape = 1500 – 3000 gallons/yr

Greywater = 3000gallons/yr
Citrus Demand = 3000gallons/yr

Greywater = 3000gallons/yr
Rainfall = 500 square feet roof
Citrus Demand = 3000gallons/yr



...and during the winter months



[Products](#) | [Ecological systems design](#) | [Water central](#) | [Grey water central](#) | [Shopping cart](#)



[Grey water central](#) | [Common grey water mistakes](#) | [Grey water Q&A](#) | [Indoor grey water reuse](#) | [Create an Oasis with Grey Water](#) | [Branched Drain Grey Water Systems](#) | [Builder's Grey Water Guide](#) | [Clean, Green and Wild](#) | [System selection chart \(PDF\)](#) | [Grey water policy center](#)

You are here: [Home](#) > Grey Water Central

Grey Water Central

Summary: All about all aspects of grey water systems. Why to use them, how to choose, build and use them, regulations, studies, and examples. Includes grey water irrigation, grey water treatment, grey water filters, and indoor grey water reuse.

Grey water information

- [Common mistakes & preferred practices](#)
- [Grey water Q&A](#)
- [Grey water links](#)
- [Grey water system design consulting](#)
- [Understanding Wild Water](#) (article)
- [Indoor grey water reuse](#)
- [Builder's action summary](#)
- [Gray water workshop](#)
- [Sistimas para g](#)

What is grey water?

Any water that has been used in the home, except water from toilets, is called grey water. Dish, shower, sink, and laundry water comprise 50-80% of residential "waste" water. This may be reused for other purposes, especially landscape irrigation.

Why use grey water?

It's a waste to irrigate with great quantities of drinking water when plants thrive on

Grey water books

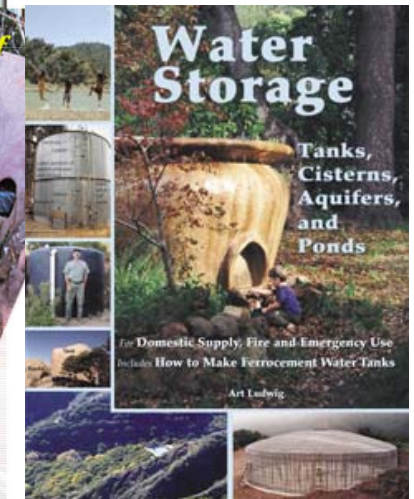
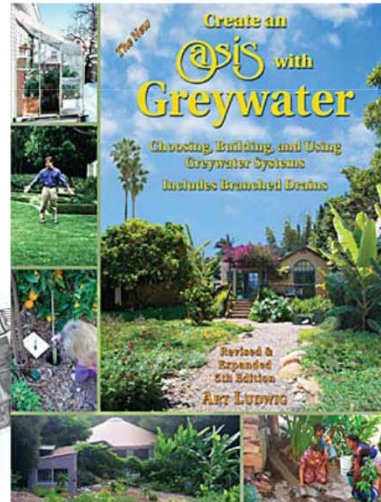
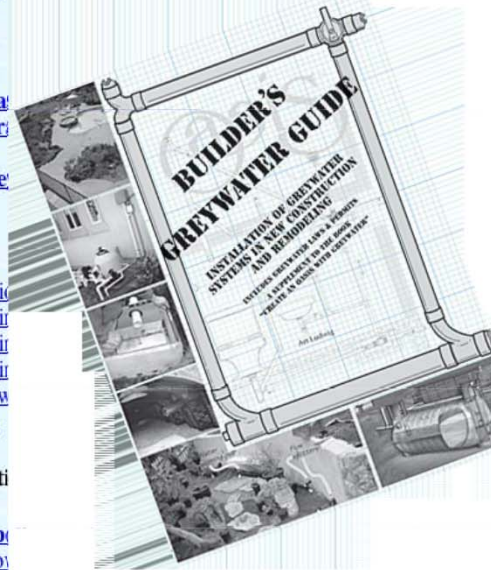
- [Create an Oasis with Grey Water](#) (book)
- [Builder's Grey Water Guide](#)

System examples

- [System selection](#)
- [Branched drain](#)
- [Branched drain](#)
- [Branched drain](#)
- [Manual grey water](#)
- [Gravity drum](#)

Grey water regulation

- [Grey water plumbing](#)
- [How to improve plumbing code \(UPC\) grey water laws](#)
- [How to improve International plumbing code](#)



www.OasisDesign.net

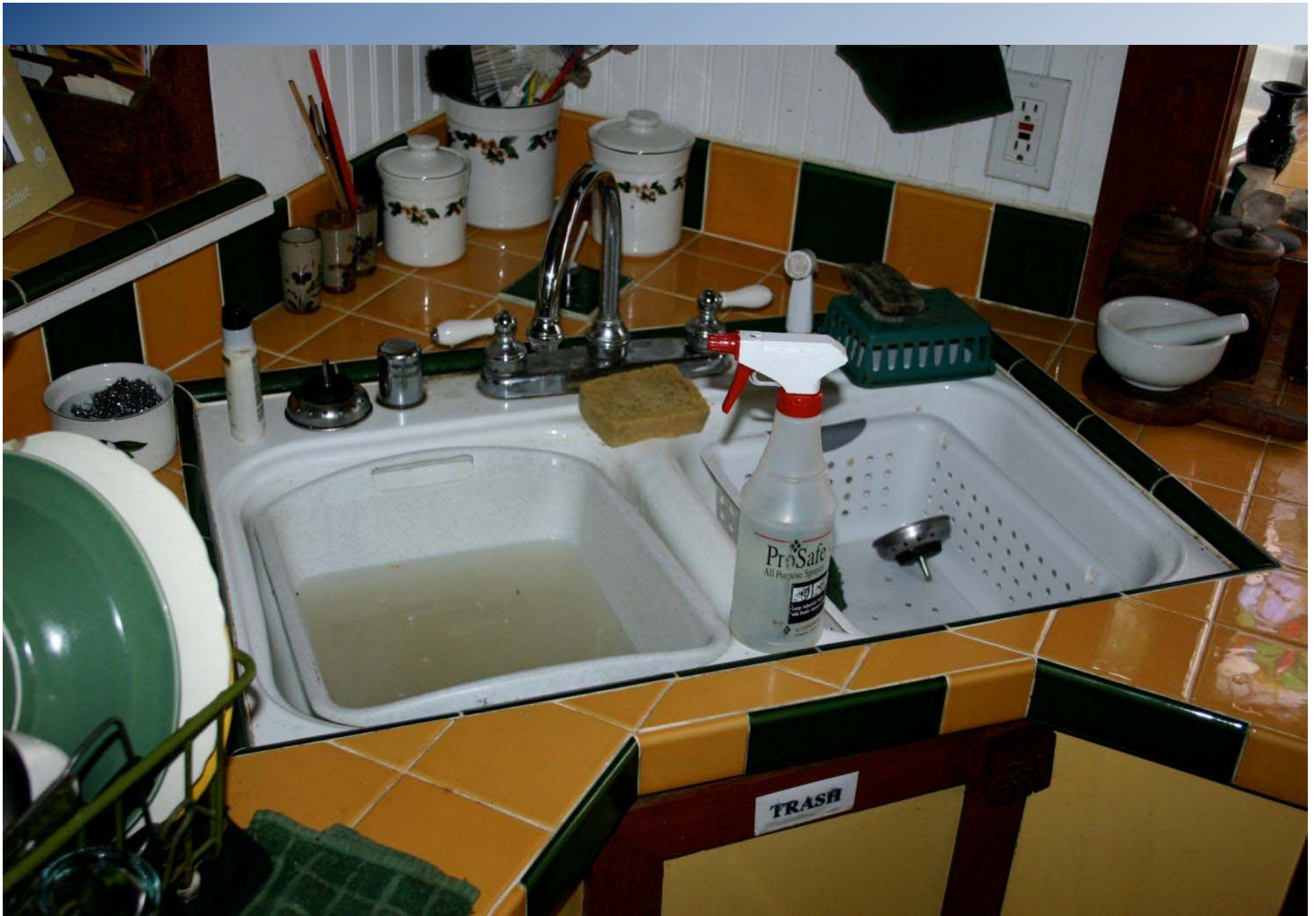
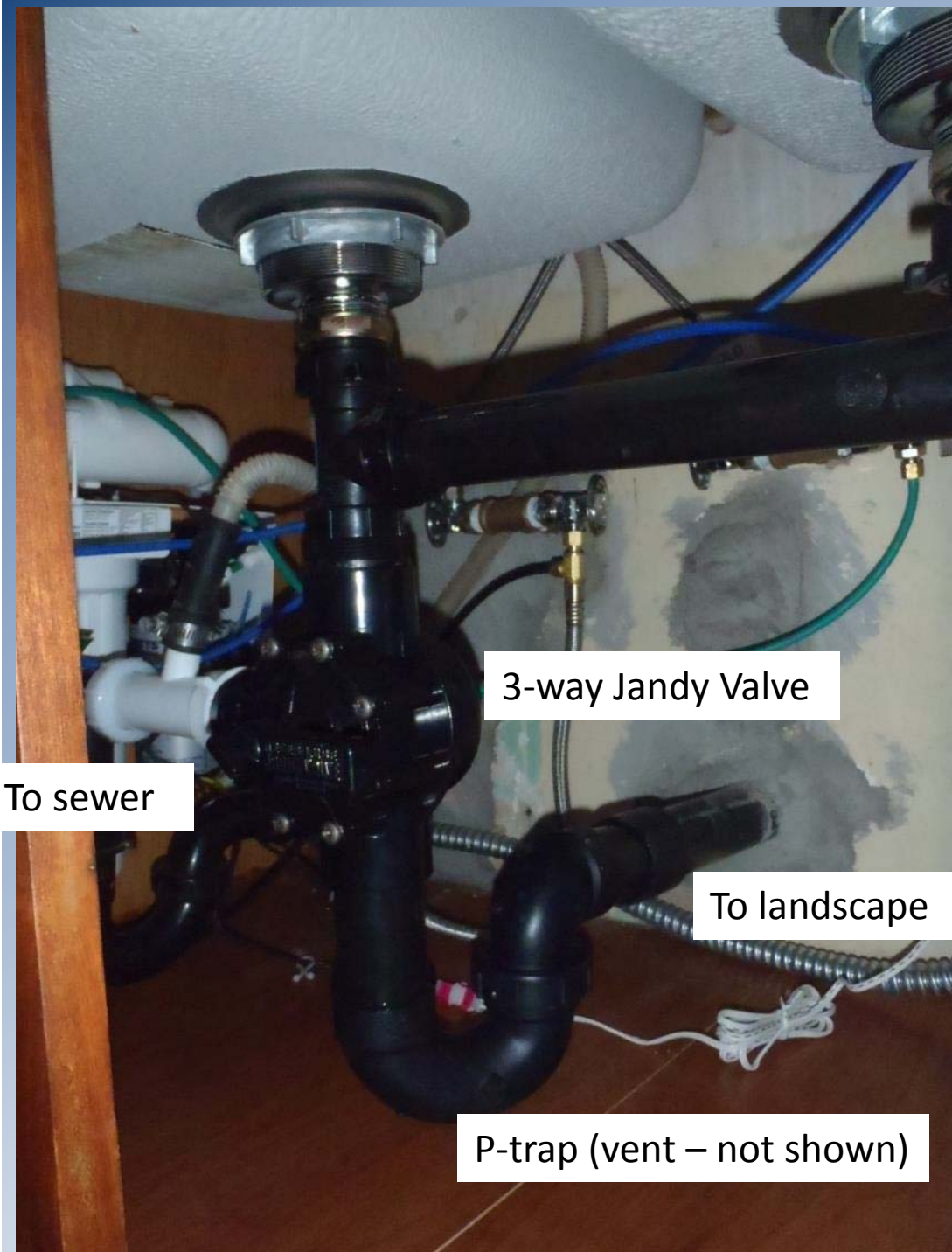


Image: Brad Lancaster, Rainwater Harvesting for Drylands & Beyond



3-way Jandy Valve

To sewer

To landscape

P-trap (vent – not shown)



Flow splitter

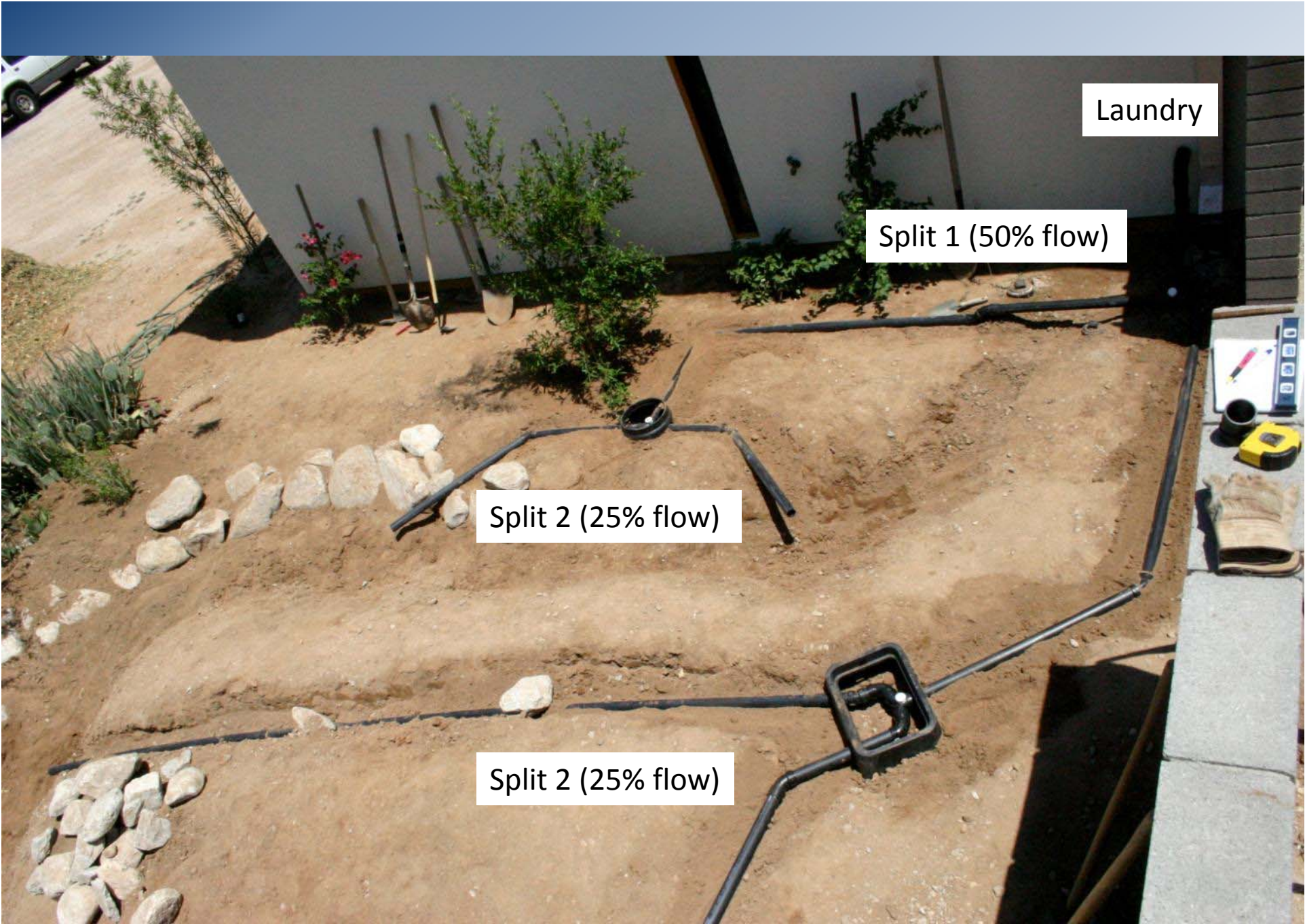


Infiltration chamber

Image: Brad Lancaster, Rainwater Harvesting for Drylands & Beyond







Laundry

Split 1 (50% flow)

Split 2 (25% flow)

Split 2 (25% flow)

A black pipe is shown discharging a stream of water into a bed of brown mulch. The water is splashing and creating white foam at the point of impact. The mulch consists of wood chips and twigs. In the background, there are several large, light-colored rocks and a small green plant on the left. On the right, the lower leg and foot of a person wearing blue jeans and brown work boots are visible, standing on a dirt path. The overall scene is outdoors in bright daylight.

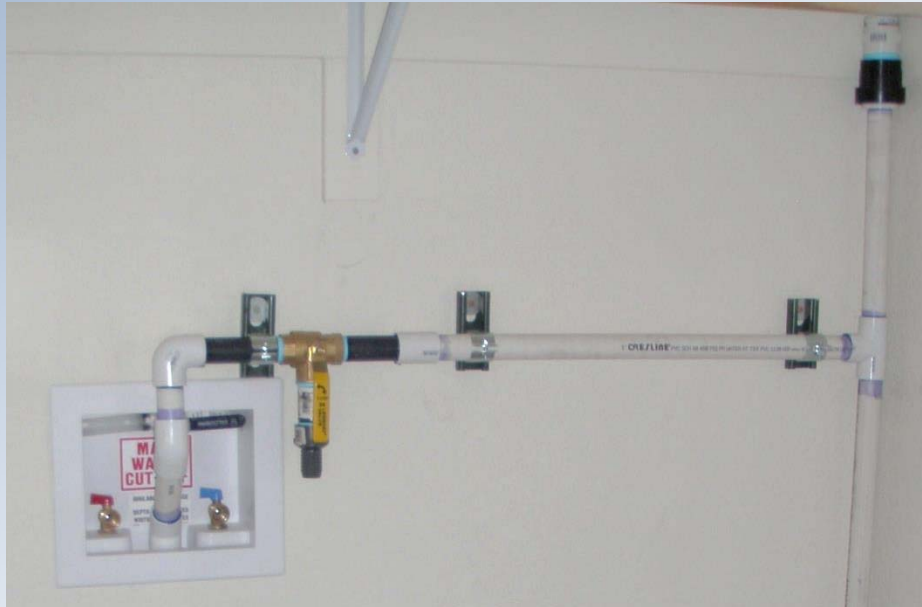
MULCH!!

Laundry to Landscape Greywater Systems

INSIDE

OUTSIDE











- Tucson Water
- Tucson Water home
- Customer Services & Billing
- Backflow Prevention
- Citizens' Water Advisory Committee
- Community Events
- Conservation
- Planning & New Development
- Publications
- Rates & Fees
- Reclaimed Water
- Students & Teachers
- Sweetwater Wetlands
- System Operations
- Water Quality
- Water Resources
- Tucson Water YouTube Channel

REBATE AND INCENTIVE PROGRAMS

Residential



Rainwater Harvesting Rebate



Gray Water Rebate



High Efficiency Toilet (HET) Rebate



Low Income Toilet Replacement

Business



WaterSmart Business Program



High Efficiency Urinal (HEU) Rebate



High Efficiency Toilet (HET) Rebate

The Commercial & Multi-Family Irrigation Upgrade Rebate Program will be re-introduced in 2013. If you are interested in participating in the program, call the Public Information / Conservation Office (PICO) at (520) 791-4331 or e-mail PICO.

Commercial and Multi-Family rebates are subject to fund availability and are offered on a first-come, first-served basis. Potential participants should contact Tucson Water at (520) 791-4331 before purchasing new fixtures.

Contact Us

EMERGENCY (24 hours)
(broken water main or similar emergency)
(520) 791-4133

CUSTOMER SERVICES
Online Bill Payment
Start Service (Residential)
Stop Service (Residential)
Set Up Automated Bill Payment

Pay My Bill (Online, by Phone, by Mail, in Person)
(520) 791-3242
(800) 598-9449 (Toll Free)
(Phone hours: Mon. - Fri., 8 a.m. - 5 p.m.)
E-mail Tucson Water

OTHER UTILITY SERVICES
Sewer Billing & Questions (Pima County)
(520) 724-6609
(Phone hours: Mon. - Fri., 7:30 a.m. - 4:30 p.m.)

Garbage/Recycling Billing & Questions (City Environmental Services)
(520) 791-3171
(Phone hours: Mon. - Fri., 7 a.m. - 5 p.m.)

How to Apply

- Complete the greywater rebate [application form](#).
- Attach the itemized receipt(s) for the qualifying materials and labor costs.
- Send your completed application to Tucson Water!

Get Involved & Learn More with WMG

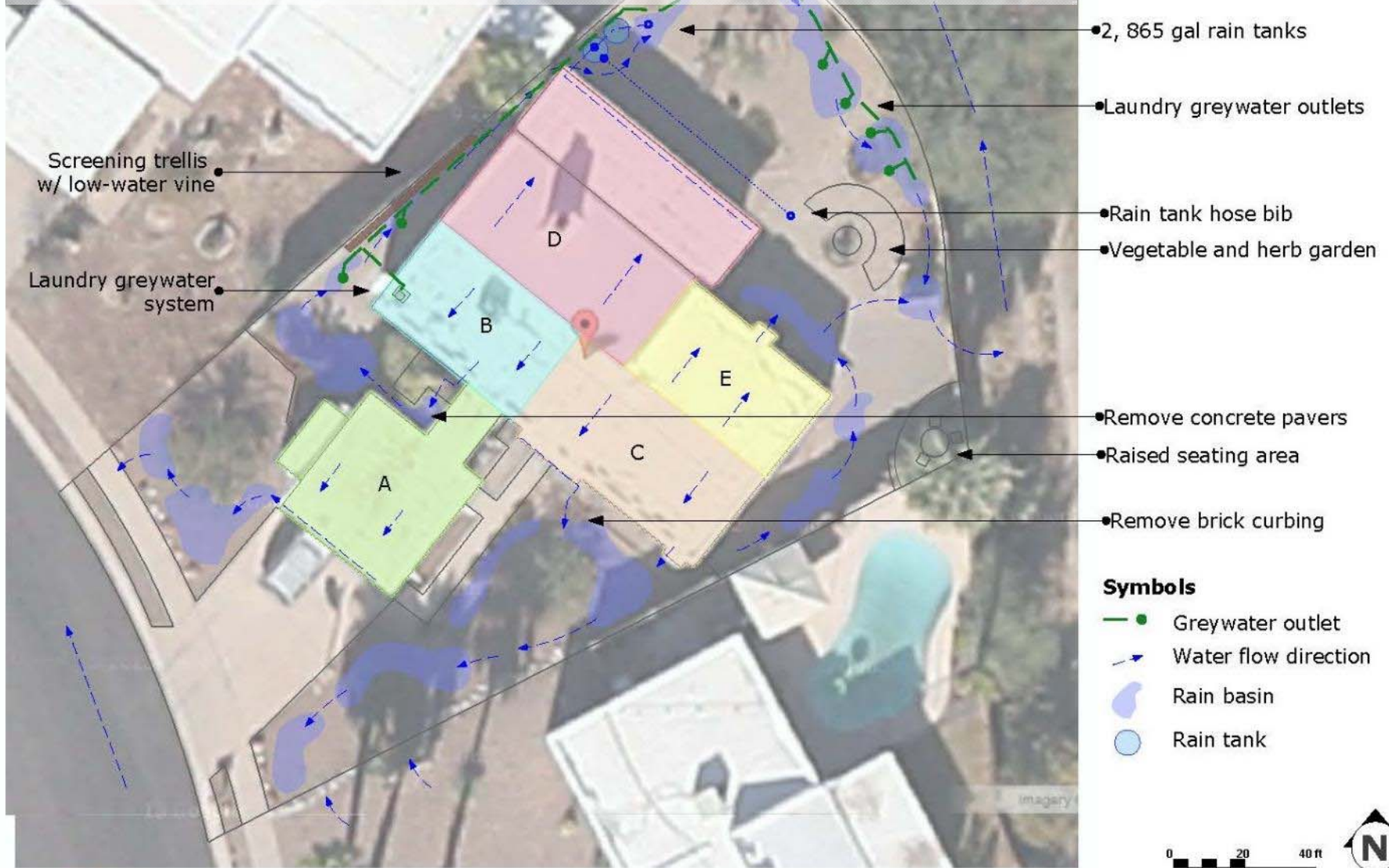
WMG Co-op - simply sign up: watershedmg.org/co-op/tucson

WMG's Tucson Events Calendar: watershedmg.org/calendar-tucson





Consultations tailored to identify opportunities and help you take that next step towards water sustainability!



Plan created with Trimble Sketchup Pro by Catlow Shipek

Lensink Residence | Conceptual Site Plan ::
Tucson, AZ scale: 1:240

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Do it yourself and save \$\$!

Composting Toilets



- Sat, Nov 14th, 9am – 3pm
- \$755 cost includes assembled kit and training



Laundry-to-Landscape (L2L) Greywater

- Sat, Dec 5th, 9am – 12pm
- \$150 cost includes assembled kit and training (\$25 discount for Co-op members)

Laundry to Landscape Greywater Kit Options

Select from the following Do-It-Yourself (DIY) system components to customize your system to your needs. Option categories are listed in order from laundry machine to end of line distribution.
 Day 1 - Plan your system then choose your options; Day 2 – Pick up your parts and receive special install advice

	Options	Parts Included	Include?
Base	Base Kit (Included in training fee) – A basic starter kit of parts common to all options. Made up mostly of parts needed to convey greywater through your landscape.	75ft, 1" poly tubing 5, 1" garden staples 1, 1" barbed T 1, 1" barbed coupling 1,1" PVC MIP:barb 2, 1" hose clamps	✓ Included
	<p>Master (Add \$116) – Greywater best practices includes a diversion valve to direct to either the landscape or sewer/septic. This option will allow you to set up your diversion next to your laundry machine, stub outside, and tie into the greywater conveyance tubing.</p> <p>Basic (Add \$42) – This DIY kit component simplifies the diversion by removing the 3-way valve. The laundry drain will be hose clamped to a barbed adapter and directly be conveyed to the landscape. Caution is needed to manually divert or not wash if A) doing laundry during wet and cool weather and/or B) using bleach, borax, or washing diapers</p> <p><i>*Note: if a professional plumber is needed to stub out WMG can provide referrals. Plumbers will provide all diversion parts required and you do <u>not</u> need to select a diversion option here. Not included: PVC glue and primer, color spray paint for PVC, mounts and anchors for attaching to walls.</i></p>	<p>1", 3-way brass valve 1-way anti-siphon/venting device 1" PVC fittings</p> <p>1-way anti-siphon/venting device 1" PVC fittings</p>	
Cleanout*	(Add \$18) A cleanout allows you to easily connect to a hose and flush out your distribution line and emitters. This component is not necessary but helps make future maintenance and fine tuning your distribution emitters a little easier.	¾" hose:pipe adapter 2, 1" PVC union 1" PVC fittings	
Distribution	Basic (No Cost) – Frugal but effective distribution systems can be arranged with no additional parts required. A) Utilize the single 1" outlet or connect the provided 1" barbed tee for 2, 1" outlets B) Drill 8-12, 3/8" holes or 15-16, ¼" holes into the 1" tube where you desire greywater to be outlet.	No additional parts included.	
	Master (Add \$45) – 6, ½" outlets with adjustment valves are included for easy control of the greywater distribution in your landscape.	6, ½" adjustment valves 6, barbed T adapters 25ft, ½" poly tubing ½" garden staple	

Basic Distribution Kit

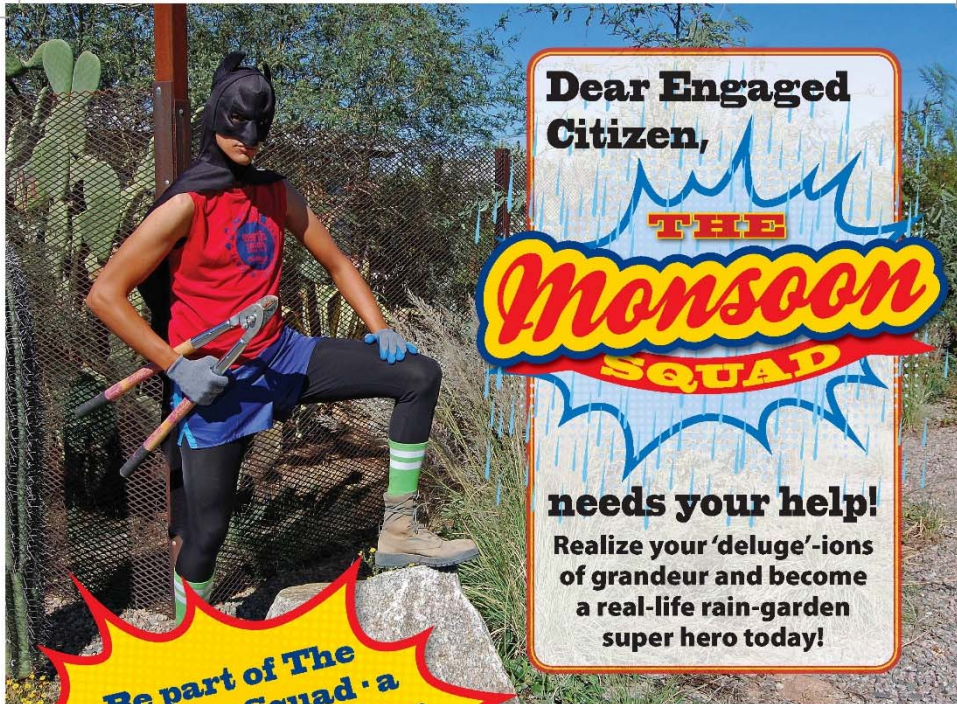


Master Distribution Kit



Diversion





**Dear Engaged
Citizen,**

**THE
Monsoon
SQUAD**

needs your help!

**Realize your 'deluge'-ions
of grandeur and become
a real-life rain-garden
super hero today!**

**Be part of The
Monsoon Squad - a
vital force caring for
WMG's community
rain gardens.**

**Super Hero
training in
progress**

Contact at 520-396-3266
or monsoon@watershedmg.org

**Visit us at
watershedmg.org/monsoon-squad**



Public rain gardens demonstrate the promise and potential of water harvesting systems in public spaces and have unique maintenance needs not met by traditional landscaping crews. Equipped with specialized training, tools, and staff support, Monsoon Squad members make regular visits to these sites to garden, monitor, and troubleshoot site needs.

