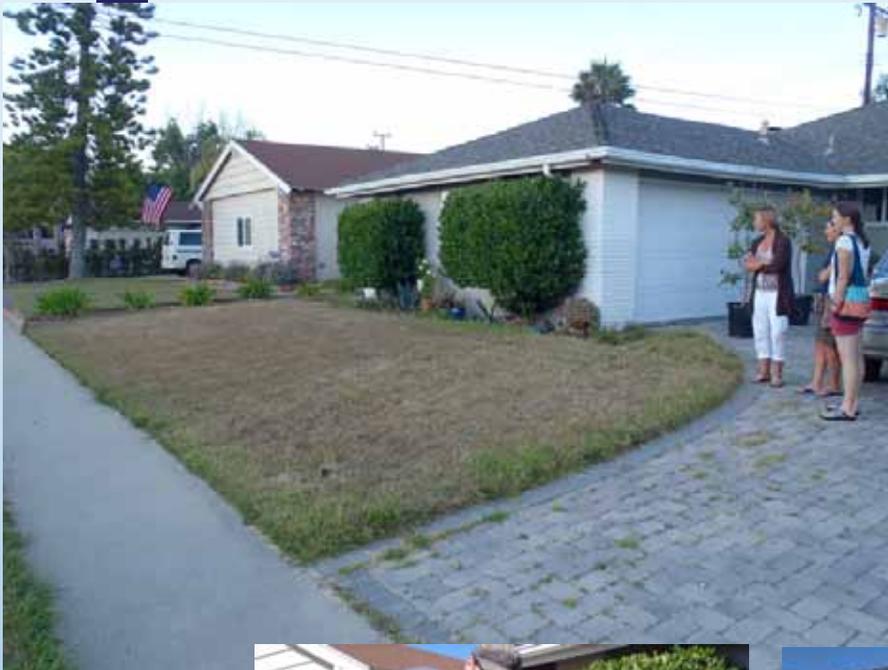


# A Watershed Moment

Fall 2011



## Reaping Roof Runoff

Keep Stormwater  
Off the Streets and  
Use It to Give Urban  
Landscapes New Life



- ◆ Where does your downspout flow? 2
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# Where does your downspout flow—and why should you care?



**James MacAdam**  
Green Streets Program Director

## **Consider, for a moment, the humble downspout.**

This ubiquitous device is used successfully across the world to guide rooftop rainfall runoff safely away from countless building foundations and areas prone to flooding and erosion. In many cases, downspouts are used to guide runoff not only away from buildings, but also off properties entirely and directly into storm sewers or onto streets.

However, once a downspout moves rainwater off-site—and “out of sight, out of mind”—that water often

contributes directly to familiar urban problems. Think flooded streets, polluted desert washes, and lakes and beaches closed after storms. That same rainwater also represents a missed opportunity: high-quality, soft, free water that could be used for irrigating healthy landscapes around our homes, businesses, and schools.

Let’s explore these two sides of the downspout: problem and opportunity.

*(Where does your downspout flow continued next page)*



**Downspout to Nowhere:** *This downspout is typical of lost opportunities to reap the benefits of stormwater, as it pours out into a parking lot and drains into a neighboring wash—without feeding into shade-providing, habitat-supporting desert landscapes along the way.*

## Dear Readers,

**At Watershed Management Group, our goal is to empower people to take action and promote solutions that all people can enact.** Directing rainwater roof runoff to landscape areas is one effective action you can take to improve both your own property and the larger watershed in which you live.

Take 10 minutes to step outside the building you’re in now—your home, apartment, school, or business—and see where the downspouts direct water. Is rainwater runoff directed to a landscape to become a resource? Or is it directed to a driveway, parking lot, or sidewalk to become a stormwater problem?

In this issue of *A Watershed Moment*, we explain the larger implications of rainwater roof runoff directed to streets and simple steps you can take to redirect that rainwater.

In October, we hosted our first Urban Stream Restoration technical training with two leading experts from New Mexico. One instructor made an astute observation: “You are not really a water-harvester until you observe your water harvesting work during rainstorms.”

It’s true: We can’t really understand what happens with our rainwater roof runoff until we observe where it flows during a storm. So whether rainfall is a frequent nuisance or a rare treat where you live, make it a habit to take a break from your day, step outside, and watch the rain and its pathways.

And WMG will continue to be a resource for you, helping you best direct and utilize rainwater to grow shade trees, fresh food, and wildflower havens for birds and insects.

**Lisa Shipek, Executive Director,**

*(Where does your downspout flow continued from p. 2)*

## Here's the problem . . .

Whenever rainfall runoff leaves your property, whether via a downspout, driveway, parking lot, or landscape, it picks up pollutants on the ground like dog poop and auto oil and carries them downstream. The farther this stormwater flows, the more pollutants it collects. This pollution-laden stormwater ends up in washes, rivers, lakes, and bays, or is cleaned up using cost- and energy-intensive water treatment methods.

Even in cities that treat stormwater, overflows of untreated stormwater into the environment are all too common. In addition, the flows of all our little downspouts and driveways add up; cities spend big bucks building and maintaining pipe and channel systems to route all that stormwater safely through their communities.

## . . . and here's the opportunity

Instead of sending stormwater downstream to become a liability for the community, you can usually keep that water on-site for beneficial use. Methods include directing water to rain gardens or water-harvesting landscapes, or capturing it for later use in barrels, tanks, and cisterns. Many residents, both urban and rural, have learned to use these methods to save money and water, while irrigating everything from food crops to pollinator gardens.

## Join the runoff revolution

As cities discover that they can save money on stormwater infrastructure and pollution clean-up by encouraging these methods, dozens of them have started to distribute rain barrels or install rain gardens for residents and businesses.



*Since Watershed Management Group worked with third graders on projects at this Tucson elementary school in 2009, a cistern and earthworks make the most of roof runoff to water landscape plants and keep stormwater from flooding off school grounds into a neighborhood street. Now, neighborhood leaders are bringing residents together to implement the same concepts along nearby streets.*

Watershed Management Group champions this common-sense cause in our own programs. For instance:

- We've led dozens of workshops from Nogales, Sonora, Mexico to Santa Barbara, Calif., that redirect rainwater from rooftops and driveways into landscapes that produce food, beauty, and wildlife habitat.
- This year, we're subsidizing 12 of these workshops in the front yards of residences in six Tucson neighborhoods. These neighborhoods are participating in WMG's Neighborhood Leaders program, where local leaders and residents are engaged in training and volunteer projects to increase local ownership over the development of each neighborhood's green infrastructure.
- Last year, we partnered with Tucson soda bottlers to repurpose hundreds of soda concentrate barrels into rain barrels, which were then sold at cost to local residents.

When you take action to harvest stormwater on-site, you not only improve your own property but also positively affect the watershed and the community you live in. In the end, disconnecting from costly, resource-intensive stormwater infrastructure can also mean reconnecting—to local, human-scale, natural systems of soil, rain, and plants, as well as a sense of stewardship for these precious natural resources wherever we live. ♦

# Workshop puts stormwater to work in desert landscape



***Saving water, inspiring neighbors, restoring washes***—all of these are the result of University of Arizona art professor Ellen McMahon’s WMG Green Living Co-op workshop in August. Like many Tucson streets, the roads in Ellen’s historic University-area neighborhood are designed to collect and rapidly convey stormwater runoff to rivers. This results in floods that cause hazardous road conditions and transport an array of urban pollutants to precious desert-stream habitat.

“I’ve been watching the water pour off my roof and into the street since I moved here in 1984,” Ellen lamented.

In McMahon’s front yard, WMG has demonstrated that it’s possible to transform this stormwater problem into a rainwater bonanza. A series of connected swales, basins, and berms installed at the Co-op workshop slows down roof runoff and keeps it on her property to benefit vegetation. The captured water will allow Ellen to switch off her drip irrigation system once the three native shade trees planted in conjunction with the workshop become established.

To Ellen’s delight, a huge late-monsoon storm soon after her project’s installation tested its effectiveness. It functioned perfectly. “Now I want to be home every time it rains so I can watch the water move through my system of basins,” she says. McMahon hopes her site will serve as a demonstration and inspiration to others in the community. Many neighbors were intrigued by the workshop activity and have since stopped by to talk about the project.

The environmental and economic benefits of this workshop go beyond Ellen’s yard and neighborhood. McMahon is enrolled in our [Conserve to Enhance \(C2E\) program](#), a collaborative water-conservation program run and developed by the Sonoran Institute, the University of Arizona Water Resources Research Center, and Watershed Management Group. That means the savings on her water bill go toward riparian habitat restoration in Tucson. Thanks to the grant she received through C2E, her out-of-pocket costs for the project were just \$18.

For now, Ellen celebrates the connection between keeping rainwater in her yard and enhancing habitats along the river. In the future, Ellen hopes WMG will help her expand her water-harvesting system with a cistern, and also cut the curb to let water flow in from the street.

As a teacher, one of Ellen’s passions is to raise students’ awareness of environmental issues and prepare them as future designers and artists to address the complex challenges ahead. Her most recent project, “Parallel Play: Interdisciplinary Responses to a Dry River Bed,” is being displayed in downtown Tucson this fall. An opening reception is slated for November 12. See [www.cfa.arizona.edu/paralleplay/](http://www.cfa.arizona.edu/paralleplay/) for details. 💧



*WMG co-op member Ellen McMahon stands among the swales, basins and berms that slow roof runoff during storms. The rainwater that once flooded into her street will now nurture native plants on her property.*

# Roof Runoff: Capture a free resource in your own yard



***Capturing roof runoff is one of the simplest methods of water harvesting to implement in your own yard.*** Each and every roof represents a source of rainwater, and the opportunities for harvesting water and putting it to work in the landscape are so abundant on many properties that it can be difficult to know where and how to get started. In this mini-workshop installment, we give you simple steps to start redirecting roof runoff to grow your landscape.

## Site Assessment

The first step in any design process is assessing a site's existing conditions in order to determine what kinds of features are most feasible—and beneficial.

In the case of capturing roof runoff, the clear place to start is, of course, with your roof. Here are some key steps for a quick and effective site assessment:



*A downspout that once emptied next to a residence's foundation now directs water to a young ironwood tree and other native plants, while a downspout-fed cistern provides water to other young native trees, plants and wildflowers.*

### 1. Determine sources of water—where does water come from when it rains? Sources include:

- Downspouts
- Flow from the roof of your house—does rainwater uniformly flow off certain sides of the house, or is it directed to particular outlets?

### 2. Determine where water currently flows, pools, infiltrates or runs off once it has left the roof. Is it currently being used beneficially as a resource, or is it creating a problem?

#### *Water used as a resource:*

- ...is directed to landscape areas.
- ...infiltrates near vegetation.
- ...is kept on-site as much as possible instead of flowing down driveways or streets.

#### *Water creating a problem:*

- ...flows over impervious surfaces, such as asphalt or concrete, picks up pollutants like oil, and drains off-site without infiltrating the soil.
- ...causes erosion of soil due to high volume or velocity.
- ...pools near structural foundations, such as buildings or walls.

### 3. Based on your observations, assess each potential site's opportunities for redirecting rainwater:

- Gutters and downspouts may be redirected to flow to landscape areas.

*(Mini-workshop continued next page)*

(Mini-workshop continued from p.3)

- Downspouts draining the largest portion of roofs can be prioritized in order to maximize water captured by earthen basins.
- Identify opportunities to put water to beneficial use by directing it to passive earthworks and vegetation or to a cistern that can store water for high-water-use plants, such as vegetables.
- Consider prioritizing areas on your property for rainwater harvesting features by asking what additional functions those features might serve in the landscape. For example, can plants nourished by harvested water also create a privacy screen? Can a cistern reduce a flooding problem in addition to storing water for plants? Effective landscape features generally serve more than one beneficial function.

## Earthworks Design

The many features you can create to keep water on-site are covered extensively by Brad Lancaster in *Rainwater Harvesting for Drylands and Beyond, Vol. 2*. Key principles to keep in mind when creating earthworks are:

- Start your water harvesting design at the top of the watershed, where the volume and velocity of water is lowest. For example, start implementing earthworks as soon as water reaches a landscape area.
- From the roof, track where water flows and think about how you can create features to slow, spread, and sink that water throughout the landscape.
- Use gutters, pipes and earthen features, such as rock-lined channels and swales, to direct water where you want it to go using the power of gravity.
- Plan for overflow. When one feature overflows, such as an earthen basin, where will that water go? Can you create another feature to capture the overflow? Plan for the final overflow to direct water away from the house and other buildings in the event of a very large storm.

## Observation and Reassessment: Completing the “Feedback Loop”

Once you have implemented your system for redirecting roof runoff, observe and reassess its functionality on a consistent basis. Like any managed landscape, water harvesting features require some routine maintenance. You may also realize after a few storms that some features need refining due to factors you may have missed or could not have anticipated without watching water move through the site. 💧

## Directing Water into Earthworks: Gutters, Pipes, Swales and More

- **Gutters** can be used to direct water from a roof to a desired downspout. Consult an expert for proper gutter sizing.
- If you want to move water underground or under a sidewalk, **pipes** can collect water from gutters or downspouts and direct it to earthworks across the yard.
- **Swales** are open, rock-lined earthen channels that can be dug with a gradual slope in order to infiltrate and convey water into open areas.
- **Basins** spread and sink water throughout a landscape; earthen **berms** can be built up perpendicular to the flow of water in order to slow, sink, and guide it.

# Get your garden out of the gutter: Surfrider Foundation's Ocean Friendly Gardens Program™



**Stormwater-capture Transformation:** A downspout at the corner of this Ventura, Calif. residence once flooded water downslope to the street. After a Ocean Friendly Gardens workshop, earthworks captured water in the yard—supporting a lush garden the following year.



**Paul Herzog**  
Ocean Friendly Gardens  
Program National Coordinator,  
Surfrider Foundation

**What does ocean health and clean surf have to do with a garden?** A lot. Water has been seen as a hazard by traditional city building codes, sending it off the property as quickly as possible. Rain gutter downspouts are typically directed onto hard surfaces like driveways, which slope to street gutters and storm drains and are piped to creeks, streams, and the ocean. Even on a dry day, millions of gallons of water flow down streets, from sprinklers that are broken or that overshoot grassy parkways, and from residents washing cars and hosing down driveways.

Meanwhile, between 40 and 70 percent of typical home water use is applied outdoors, in the landscape—often, with non-native plants or turf grass that no one uses. When you think about it, it's an insane idea: Let free rainwater flood away onto an impermeable, polluted surface like a street, then spend a bunch of money and energy to pipe in water from some other community to water our landscapes.

Not only does this practice waste money, water, and energy, it also introduces risks to human health and our waterways. For cities like Los Angeles with storm drains that are separate from sewer pipes (common throughout the country), urban runoff gets virtually no treatment to clean it up. Urban runoff is now the number-one source of ocean pollution. Everything from pesticides, herbicides, and fertilizers as well as sediment, exhaust, oil, brake-pad dust, and dog poop end up in that water as it flows toward our freshwater systems and oceans.

As a result, surfers and ocean users have become the canary in the coal mine in terms of water quality. We weigh getting intestinal infections or skin rashes against missing out on good surfing during a rainstorm, when waves are often best.

*(Ocean Friendly Gardens continued page 9)*

# Well recharge program works to meet future water needs



***The world has made significant progress toward meeting the Millennium Development Goal for access to drinking water:*** Nearly 1.8 billion people gained access to a safe drinking-water supply over the last 20 years. Yet much of this progress to meet the needs of millions has been achieved through the practice of groundwater mining, an unsustainable approach in which net extraction exceeds recharge.

India is the country most dependent on groundwater and also one of the largest consumers, at 230 cubic kilometers per year. In many parts of the country, this has led to overexploitation, dropping water tables, conflict, and increasing costs of pumping from great depth—with demand expected to double by 2050.

In communities where Watershed Management Group works, these impacts are evident: Hand pumps that used to provide year-round clean water have gone dry and springs that provided gravity-fed drinking water for 45 years now run perilously low during the hot, dry summer. WMG therefore works with communities to prevent the loss of groundwater through intensive well recharge.

Well recharge harvests water from rainfall, surface runoff or stream flow and either pipes it directly into a well or uses it to augment percolation near a well. The idea is to replace or even exceed the amount of water extracted by that well using the surrounding aquifer as water storage.

WMG and our local partner, Grampari, recently held a workshop on methods to filter rooftop rainwater for recharging a drinking-water well. For less than \$150, we built a system that collects rooftop rainwater, performs simple filtration via a solids separator and first flush device, and pipes the water directly to a well (see photo). With a capacity to harvest more than 130,000 liters per year, the 20 workshop participants were very excited about the possibilities.

However, not all wells are near buildings, and harvesting water from the surface during runoff or via streams is much more complicated; contamination from pathogens such as fecal coliform and clogging of aquifers by introduction of turbid water are two of the main concerns. These risks are reduced by using sand and gravel to trap sediment and remove pathogens prior to recharging the well.



*Tube well recharge pit: Water from a nearby rooftop is collected and fed by the PVC pipe into a concrete-lined sand well. The sand well extends for only the first few meters of the tube well and water that passes through the sand enters the pipe via perforations in the casing.*

In addition to demonstrating some of these techniques on Grampari's campus, this year we'll be expanding this program into several local communities with the highlight of building a large-scale system in an adjacent farming village. Our goal is to spread awareness of groundwater issues and to propagate these approaches of safe well recharge to promote healthy and sustainable communities. 💧

# Grant turns waste into soil-sustaining gold

**Watershed Management Group will launch a unique soils-focused educational program this fall**, piloting a compost-toilet project and a green-waste mulching project to turn common wastes into soil nutrients. Healthy, productive soils are literally at the root of a healthy watershed; and we look forward to connecting the dots between soil, water, and waste.

The project is possible through grant funds from the Environmental Protection Agency's Region 9 for their environmental education projects. WMG was one of just four organizations selected from more than 100 applicants this summer to receive those funds.

## It's a messy subject, but someone's gotta poo it

Already, WMG has been promoting composting toilets as a sanitation and resource-recycling practice through our work in Burkina Faso and India. We're excited to bring this program and knowledge home to urban Tucson, where we'll give our Green Living Co-op members the real poop about recycling one of the most renewable of resources. (We're also pumped to compete with our India staff for the best poop jokes.)

Potty humor aside, we'll be building 20 compost toilets through this program, with approval from the Arizona Department of Environmental Quality and monitoring from the University of Arizona's Bureau of Applied Research in Anthropology.

## Mulch what you prune

The second pilot program will work with three Tucson neighborhood associations to make tree trimmings a source of mulch instead of garbage. We'll be working with neighborhoods where residents have implemented green infrastructure—basins, berms, and swales where mulch can be added. WMG will help the neighborhood associations organize tree-trimming days, and then mulch the tree trimmings with a commercial chipper/shredder to be used in the basins instead of hauled away as trash through the city's brush and bulky program.

If you don't live in Tucson, don't despair: We'll also be offering a series of engaging webinars on the topic of soil nutrients and create a multi-media soils handbook to share the resources and action steps to carry out similar programs in your own community.

We're seeking participants for both pilot programs. If you're interested in participating, please contact Catlow Shipek at [catlow@watershedmg.org](mailto:catlow@watershedmg.org). 💧

## Join WMG for eco-sanitation technical training in December

**Want to learn cutting-edge principles in simple-living technology?** WMG's Watershed Technical Training in Eco-Sanitation provides an introduction to the overall concept, as well as an overview of various types of composting toilets, human and environmental health considerations, and social acceptability challenges.

In addition to participating in classroom lectures and a tour of local eco-sanitation sites, students will participate in site assessment, design, and hands-on construction of a residential composting toilet.

The training runs Dec. 5-7, 2011, and is open to professionals, educators, and activists from a wide variety of backgrounds who have the capacity to implement the eco-sanitation principles presented in the course, either professionally or personally. Download the full course announcement and application at [watershedmg.org/tech-trainings](http://watershedmg.org/tech-trainings). For more information, contact Rhiwena Slack at [rslack@watershedmg.org](mailto:rslack@watershedmg.org) or 520-396-3266. 💧

**Check out our empoo-ering video** on overcoming social barriers to using composting toilets [here](#).

## What's New

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### Water Harvesting Certification and Green Living Co-op launched in Santa Barbara



***In August, Watershed Management Group trained 15 professionals through our first Water Harvesting Certification in Santa Barbara, Calif.*** WMG worked with several guest instructors, including greywater guru and Santa Barbara resident Art Ludwig. We customized the course to meet California professionals' needs, including instruction in Laundry to Landscape greywater systems—the most straightforward greywater system to install in the state. Through a WMG apprenticeship, several course participants will become workshop instructors for our Santa Barbara Co-op program.

### Urban Stream Restoration joins WMG's technical trainings growing lineup



***2011 has been an exciting year for new technical trainings with WMG.*** We launched our fourth new Watershed Technical Training, Urban Stream Restoration, as a three-day course with leading experts from New Mexico, Van Clothier and Craig Sponholtz. Students learned about watershed restoration techniques that can be specifically applied to washes and streams in urban environments. These techniques help slow and infiltrate water flows, reduce erosion and enhance vegetation to cool urban areas, as well as provide much needed wildlife habitat.

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*(Ocean Friendly Gardens continued from page 6)*

That's why Surfrider Foundation started a program called KnowYourH2O.org (KYH2O) and created a fun film called "The Cycle of Insanity: The Real Story of Water," to help educate people and call them to action.

Ocean Friendly Gardens (OFG) is a key part of KYH2O, integrating water quality, water conservation and watershed restoration in its education, training, and hands-on assistance program. Appropriately, OFGs apply CPR to yards—that's Conservation, Permeability, and Retention ©—to revive watersheds and oceans:

- Conservation of water, energy, and habitat.
- Permeability of soil and surfaces lets water slow down and sink.
- Retention of rainwater.

Every property is a mini-watershed, with high points (roof or trees) and low points (curbs). To harvest rainwater between them, apply the three S's: slow it, spread it, sink it. (Vegetable and fruit gardens can do this, too.)

The OFG Program is hands-on oriented, with workshops and barn-raising-inspired workdays to train participants. Those trained agree to help others—similar to members of Watershed Management Group's Green Living Co-op. Surfrider volunteer-based chapters have partnered with professionals like G3/The Green Gardens Group to teach classes and lead workshops and workdays throughout Southern California, with new classes and workshops now launching along its Central Coast. Chapters have collaborated with local water quality and supply agencies, such as the cities of Santa Barbara, Ventura, and Encinitas, to co-fund the events.

The hope is that these events create good garden examples, build a cadre of capable professionals to help those who are not do-it-yourself types, and lead to changes in city codes and programming to support a wave of change. 💧

For more information about the Ocean Friendly Gardens program, visit [www.oceanfriendlygardens.org](http://www.oceanfriendlygardens.org).

# WMG welcomes wealth of new experience, enthusiasm



### Julie Frank, Administrative Associate

**Julie is new to Tucson, having moved here in July 2011 from New Hampshire,** bringing more than 20 years of nonprofit management experience with her. A Green Sanctuary program at the Unitarian Universalist

Church of Portsmouth, where she most recently worked as Administrator, ignited her strong interest in sustainability issues. Now, with WMG, Julie hopes to expand her knowledge in rainwater harvesting and stormwater management.

### Julie Miller, Development and Communications Director

*"It's rare to say a great group of people are making a meaningful difference in your own backyard, and mean it—literally! Working with WMG's Co-op program has enriched my life, and I'm excited to help bring that experience to many more people."*



**Julie joins us with more than 15 years' experience in outreach and education,** from teaching college writing and leading local environmental education programs to directing membership and communications campaigns for a national endangered species advocacy nonprofit. A Tucson native with a deep-rooted love for the Sonoran Desert region and its native plants, Julie first came to WMG as a member of our Green Living Co-op. Now she's thrilled to work full-time to bring Watershed's mission and all our programs to a growing community of supporters.

### Rhiwena Slack, Program Coordinator

**Rhiwena has worked with our Green Living Co-op program since early 2010,** becoming Co-op Coordinator in May of that year. She recently expanded her role within WMG to coordinate both our Water Harvesting Certification and Watershed Technical Trainings. Rhiwena has nearly 15 years'



*"It's vital for the well-being of all on this planet to create an educated workforce with the skills and motivation to restore our environment and protect our communities from the effects of climate change. WMG is making that transformation happen."*

experience working for environmental nonprofits. She completed a permaculture-design certification in Tucson and recently completed her master's degree in energy and environmental studies focusing on land use and soils.

### Karilyn Roach, Program Coordinator

**Karilyn comes to WMG with a passionate understanding of the power of individuals** to effect change in their communities and environment. Years of climbing, mountain biking and camping cemented Karilyn's love of the outdoors and passion for environmental conservation, which she'll soon combine with an M.S. in Urban Planning and a certificate in Heritage Conservation. Karilyn coordinates WMG's work with the Conserve to Enhance program and Tucson's new Community Water Coalition.



# Thank You, Watershed Management Group Donors!

## Donation Levels

**Dewdrop: \$25**

**Silver Raindrop: \$50**

**Flowing River: \$100**

**River Basin: \$500**

**International Watershed: \$1,000**

**Watershed Management Group would like to thank all of you who contributed to our summer match fundraising campaign.** A generous donor offered to match up to \$25,000 for individual donations given through the end of August, and we met and exceeded that goal—raising a total of \$31,750. Thanks to the match, we raised a total of \$56,750 to support a variety of WMG’s community-based conservation programs throughout the Southwest and abroad. Your generosity ensures WMG’s success!

## International Watershed

Anonymous  
John Matthew Carlton  
Danielle Charbonneau  
Palani Raman, M.D.

## River Basin

Julie H. Allison  
Anonymous  
Jared Buono  
Randy Accetta, Southern  
Arizona Roadrunners  
Marc Wishingrad

## Flowing River

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Kimberly True, True Nature  
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## Silver Raindrop

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## Conserve to Enhance Program

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Susan Gallegos  
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Molly Hunter  
Naomi McIsaac  
Robert McLane & Sarah  
Tarver-Wahlquist  
Ellen McMahan  
Troy Neiman  
Richard Roati  
Catlow & Lisa Shipek

For more information on how to give to WMG through the **Conserve to Enhance** program—while lowering your water bill and restoring local rivers in the process, please visit [watershedmg.org/c2e](http://watershedmg.org/c2e).

Your hard work and support creates a Ripple Effect . . .

Whenever you lend a hand at a Watershed Management Group workshop or make a gift to support our programs, your generosity goes farther than you know. Each participant in our workshops and trainings gains skills, knowledge, and shared accomplishments that they carry forth to benefit wider communities. Watch for our upcoming video messages featuring members of those communities, showing how your support spreads the *Ripple Effect*.

Please visit [watershedmg.org/contribute](http://watershedmg.org/contribute) to make your year-end gift today.

. . . now your year-end gift can send the *Ripple Effect* farther and wider.

### On the Cover:

Reaping roof runoff in a front yard in Santa Barbara, Calif. After removal of a water-consuming lawn that shed rainwater to the street, participants in our Santa Barbara Water Harvesting Certification course transformed the landscape by creating rainwater-harvesting earthworks. Now, downspouts feed meandering water-harvesting swales and basins, planted with thickly mulched fruit trees and native shrubs.

### Special Thanks To:

- ◆ The volunteers, board members and staff who helped lead our summer fundraising campaign: Kim Afinowich, Carl Case, Lindsay Ignatowski, Kati Falger, LeeAnn Morrero, Ryan Wood, Alley Yerger-Hendricks, Jeneiene Schaffer, Catlow Shipek and Joe Silins.
- ◆ Watershed Resource Center and Holy Cross Church for hosting our Santa Barbara Water Harvesting Certification classes.
- ◆ Pierre Bondoumbou and Ross Bryant for three years of dedicated service to WMG as board members.

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**Watershed Management Group's mission** is to develop 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.