**SPRING 2016** 

A WATERSHED MOMENT

A Newsletter of Watershed Management Group



watershedmg.org

### How365:

### **You Create the Wave of Change**

On Arizona Gives Day this past April, we unveiled the first steps in our plan to restore regular flow to Sabino and Tanque Verde Creeks in Tucson—we're calling it Flow 365. Since launching, we have rallied the support of hundreds of people who share our dream of free-flowing creeks and rivers in the desert. You can play a vital part in the work by getting involved to spread this wave of change.

Visit Watershedmg.org/Rivers today and take action.

- Watch our Flow 365 video and share it with your friends. Know someone who lives in the Sabino and Tanque Verde watershed? Tell them about our work!
- Sign up for our River Speaks bulletin and attend one of our restoration workshops.
- Reduce your water demand by 11%. This is the goal for Sabino Creek–area residents, but we can all have an impact that benefits the greater watershed.
- Make more rain gardens! The more water infiltrates into the ground, the more we will have flowing in our creeks and rivers.

Read on and learn more about how you can be part of Flow365!

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## Tanque Verde Flow and Feast!



### Dear Readers,

On April 2nd, we gathered with 200
Tucsonans at a beautiful property along the Tanque
Verde Creek for our Flow and Feast event. As we walked
down to the creek, a dry wash stretched before us. While the creek had flowed from bank
to bank just a few months before, there was not even a trickle of water in sight.

But once in the wash, a different story was revealed. With just a few shovels of dirt, we struck water. It was amazing to see this hidden abundance just a foot below the sandy surface. Here was the technical concept of "shallow groundwater" made real and tangible before our eyes! Though we were standing firmly on the dry creek bed, in a sense we were

also floating on a great body of water—an underground reservoir supporting the lush river ecosystem around us. With a feeling of hope, we raised our glasses and made a toast to restoring regular flow to Tanque Verde and Sabino Creeks.

Sometimes our bold visions can seem like an impossible dream. But when you dig below the surface, you reveal the bright future that is possible. I hope you'll join us in making this dream of free-flowing rivers in the desert a reality!





WMG donors gather for rainwater cocktails at WMG's Tanque Verde Flow and Feast event, at a private property right along Tanque Verde Creek.

Talk about an epic run! Over the past year (from July 2015 to April 2016), Lower Sabino Creek flowed non-stop for more than 270 days. According to local resident Michael Woodin, the creek hasn't seen this kind of constant flow in decades.

WMG is developing a Watershed Stewardship Plan to map out the path for increasing annual flows and prioritizing restoration strategies for Sabino and Tanque Verde Creeks. With the help of our University of Arizona interns, we are analyzing aerial photos, from the 1930s to the present day. When these historical images are geospatially aligned, a story begins to emerge about how the creek has changed. This information is essential to understanding historic flow patterns and setting goals for restoration.

One of the first steps of our Watershed Stewardship Plan was to create a flow budget for Sabino Creek to understand how much water is in the system and how much we need to conserve or infiltrate to create year-round flow. Building off of this "static" flow budget, we've created a "dynamic" flow budget for Sabino; this tool helps examine annual water needs against variations for climate and patterns of human use. As a next step, we are taking what we've learned to create a dynamic flow budget for Tanque Verde Creek.

Even with all our watershed planning work, we're not stuck behind a desk! Since February, WMG has led six arroyo restoration workshops along Sabino Creek. Participants have pitched in to install a variety of restoration features, from one-rock check dams in small washes to rain gardens and rock features that slow, spread, and sink rainwater in the uplands. Workshops have also focused on removing invasive species like buffel grass and giant reed cane.

# There's much work yet to be done to reach our goal of Flow365. Here are some of our next action steps and ways you can get involved:

- Organize house parties with Sabino and Tanque Verde area residents to share our Watershed Stewardship Plan and invite people to get involved. Contact Catlow Shipek at catlow@watershedmg.org if you want to be a host!
- Restore more land, conserve more water. We are looking to work with more homeowners located along Sabino or Tanque Verde Creeks (or a drainage that feeds them) to implement watershed restoration and water-harvesting projects. Grant funds are available to offset project costs. Please contact us if you're interested.
- Offer more educational events for the community—such as river restoration classes at WMG's Living Lab, invasive species removal workshops, and hands-on field trips in the creeks!

# Water-harvesting test case: The Woodins help protect Sabino Creek

The Woodin family has lived along the banks of Sabino Creek for more than half a century, through dry years and wet. They've seen epic floods and watched the character of the creek change drastically over the years.

In spring 2016, the Woodins worked with WMG to install water-harvesting stream restoration features on their property.

This project began with a WMG Erosion Control and Arroyo Restoration Technical Training in March and was completed with the help of volunteers through our Green Living Co-op. Forty tons of rock and more than 300 hours of labor were used to install approximately fifty features, including one-rock dams, Zuni bowls, and media lunas. These features will help arrest erosion in the arroyo on their property that feeds into Sabino Creek, while also increasing local infiltration to support regular flow in the creek.

Funded by the U.S. Fish and Wildlife Service, this project plays a key role in WMG's 50 Year Program to revive our heritage of free-flowing desert creeks and rivers.



Trainees worked with Trevor Hare to build a media luna (top) and a Zuni bowl (bottom right), rock structures to reduce erosion and infiltrate rainwater in this Sabino drainage. Bottom right: Catlow Shipek meets with Michael Woodin to assess restoration opportunities.

### **PLAN TUCSON:**

### The Basis for an Environmental Flows Policy

Restoring flow to Tucson's rivers is not just a question of conservation and better water management; it's also a policy issue. WMG is advocating for a specific policy framework, called "environmental flows," which means to ensure sufficient water is allocated to the river to sustain river ecosystems and the benefits they provide to people. In Tucson, we don't currently have this framework, and our ecosystem and community suffers for it, with impacts like loss of flow in rivers and creeks, dropping groundwater levels, and a lack of comprehensive management strategies to restore flow.

WMG is laying the groundwork to move toward a local environmental flows policy—to promote local groundwater security in the Tucson Basin and restore flow to creeks like Sabino, Tanque Verde, Pantano, Rillito, and the Santa Cruz River. Watershed-scale environmental flow policies like this have been successfully implemented in Australia and South Africa, and smaller-scale policies support sections of rivers in the western U.S.

The exciting news is that Tucson voters have already approved a policy to restore flow to our creeks and rivers when they ratified Plan Tucson, the city's General and Sustainability Plan, in November 2013. Goal #19 of the plan states that "the City strives for a secure, high quality, reliable, long-term supply of water for humans and the natural environment." And the policy in "The Natural Environment" section is to "ensure an adequate amount of water to meet the needs of riparian ecosystems." This is essentially the basis of an environmental flows policy.

So how do we move from a general plan to actionable policy with measurable outcomes? Plan Tucson is overseen by the City Manager's office, and Mayor and Council are responsible for setting shorter term priorities for the plan's implementation. Ultimately, effective partnerships between the City, County, water utilities, non-profit organizations, and local landowners are needed.

WMG started facilitating these partnerships through our Sabino and Tanque Verde Advisory Group and the Community Water Coalition (CWC) Restoration Committee in 2015. We are already working directly with Tucson Water and Metro Water, Pima County, Pima Association of Governments, other non-profit organizations, and area landowners. In April, CWC hosted a community dialogue with the new Tucson Water Director and City Manager, with a major focus on environmental flows, the number one issue for CWC members.

Here are some of the practical steps we are working towards:

- Work with Mayor and Council to craft a policy to establish environmental flows and set measurable outcomes, timelines, and a stakeholder taskforce.
- Work with Tucson Water and Metro Water to incorporate environmental flows policy into their long-term resource planning.
- Reduce policy obstacles to environmental flows, such as increasing recharge credits for effluent in rivers from 50% to 100%, to ensure water stays in our rivers.
- Utilize the Conservation Effluent Pool (CEP) to assist in maintaining in-stream flows. CEP is 10,000 acre feet of effluent set aside for restoration purposes annually, but has not yet been utilized.

Tucson has an opportunity to reverse the trend toward water scarcity and restore our cultural heritage of flowing creeks and rivers. An environmental flows policy will begin to shift our current management of water from a user-centric model—based on an unrealistic perception of unlimited resources—to a community-centric model that builds collaboration around our shared resources.

# Sabino Preek III is Worth Millions!

When we measure the value of Sabino Creek as we would other community assets, such as a bridge or building, we found Sabino Creek has a net value of \$146 million – \$230 million over a 100-year lifespan! This staggering number was determined by a recent economic analysis conducted by Seattle-based nonprofit Earth Economics in partnership with WMG.

The analysis showed that, by a conservative estimate, Sabino Creek provides \$1.4 million – \$2.1 million in "ecosystem service" benefits to the Tucson economy each year. This figure is based on the value of the goods and services Sabino Creek provides—clean water and air, urban heat island mitigation, outdoor recreation, and flood control. Amazingly, these services are provided to us free of charge if we properly care for the Sabino watershed.

The economic valuation of Sabino Creek is another tool in our toolbox to build a broad coalition of support for restoring flow to Tucson's rivers. Economics provides a common language to talk about the value of our natural places and help garner support for protecting these jewels.

Look for the full report on our website in Summer 2016.



### THE KERSHNER KIDS GREW UP PLAYING IN

Joe, Kyria, and Camille Kershner attended WMG's Tanque Verde Flow and Feast event in April. The siblings grew up on four acres along the bank of the Tanque Verde Creek. Joe shares how he and his family connected with the river.

Growing up near the Tanque Verde Creek was awesome. I spent countless hours down in the wash exploring, playing, and pondering life. The wash was a fantastic place to learn about nature. It represented wilderness and freedom from the mundane course of life.

The City supplies our family's water, but we have an old well on the property that hasn't been used since we moved here in 1991. The pipes are filled with dirt now, but I remember testing the water depth in the well from time to time and typically finding water at less than 30ft. The mesquite trees here are very robust and taller than most any I've seen in unirrigated areas.

Our family is keenly aware of our water usage. We understand water is a precious resource and in short supply here in the desert. We take simple steps in order to limit our daily usage: taking short showers (outdoors mainly), sending wash water out to the landscape, and capturing rainwater. Sadly we still poop into drinking water and flush it into a big cement tank.

We've been harvesting rain in barrels or buckets for many years, but last year we began more significant active harvesting with a new gutter on the guest house sending water into a 1600-gallon tank. Another tank sits waiting to be installed on the main house. Passive harvesting landscape features have been implemented for as long as I can remember. We lie very much at the margin of the floodplain and have seen lots of water

It was a ton of fun growing up by the creek! Every monsoon season we would stay out there for hours playing in the flowing water, the cottonwood trees, and the mud. We would challenge each other to swing off the trees into the water and see who could wade all the way to the other side and back. It felt like we were in a whole other world out there when there was water flowingsomething everyone should be able to enjoy while living in the desert. · Kyria Kershner

> inundating the property all around the house more than once. When the new house was built in 2006, we installed a large infiltration "moat" to divert excess water towards the creek during especially large rain events.

Water harvesting can play a big role to reduce water use in the Tanque Verde area. Here, as in most suburban areas, a significant percentage of water use sustains landscaping or gardening. This outdoor usage is especially easy to replace with harvested rainwater and greywater. This could potentially reduce groundwater pumping and CAP water usage by 50% or more in many cases.

I think WMG's program to improve flow in the Tanque Verde and Sabino Creeks is a great thing.

### THE TANQUE VERDE



Joe enjoys living and working near Tanque Verde Creek, his childhood stomping grounds.

These riparian areas offer so much to Tucson in terms of scenery, recreation, and biodiversity, all of which are increased by a healthier, wetter watershed. In addition, healthier surface flows mean healthier groundwater reserves. I am happy to be involved in this cause, and I spread the word to anyone I can.

By implementing greywater and rainwater harvesting at home, I hope to show how these simple, practical actions not only serve the community by improving the surface and groundwater supplies but also greatly enrich our own home with food and beauty.

As a new manager of the Verde Valley Flower (and produce) Farm in the Tanque Verde watershed, I am taking the opportunity to adapt and implement strategies for dry climate agriculture to serve the local community with fresh produce and floral arrangements. In time, I hope this can serve as an educational example and provide a forum of engagement with the local community.

The Ragels Love Water Harvesting for the Tanque Verde

Mark Ragel and his wife Leanne moved to the Tanque Verde Valley in 1985, when their kids were still school aged. Thirty-one years later, the unique beauty and diversity of this special place still hold magic for them. "We love living among the native mesquites and all they bring to the desert. And the trees and shrubs provide cover for bobcats, quail and doves, rabbits, javalina, and coyotes that frequent our property."

So what does he do at home to support the ecosystem he so highly values? "Over the years I have built many berms to slow the flow across my property and help native trees and plants thrive. We also have a whole-house greywater system, and I installed a ferro-cement cistern that we use to supplement young native trees planted on the property. Later this year, we'll install a 5,000-gallon tank to support my garden expansion!"



Mark, a native Tucsonan and owner of Water Harvesting International, not only walks the water-harvesting talk at work and home; he's passionate about spreading the word. "I talk about water harvesting with my neighbors and friends any chance I get." In addition, Mark has been a long-time partner of WMG—even volunteering his time to install some of our largest and most high-tech systems at the Living Lab! "The best part about working with WMG is meeting and working with bright, energetic people. I enjoy sharing my experience through the Water Harvesting Certification courses—but completing the drinking water system at the Living Lab was definitely a highlight."

WMG's newest concept of hydro-regionalism and the campaign to restore flow to Tanque Verde Creek are particularly inspiring for Mark. He sees our grassroots approach to "building consensus and working together towards a sustainable solution as a powerful way to restore the riparian habitat that once flourished in the Tanque Verde Valley."

### A CREEK TO CALL HOME:

## WMG's Design Build Team Gives Life to a Homeowner's Dream

The things we cherish most in life—our joys and passions—often find their best expression in the spaces where we choose to live. This is certainly the case for our Design Build clients like Suzanne Jacoby, a homeowner in Tucson's historic Fort Lowell District. Working with WMG's team, she transformed her backyard into a rain garden paradise in homage to one of her favorite places: Sabino Creek.

"I go walking in Sabino Canyon once or twice a week with friends," says Suzanne. "It's so soothing and beautiful. I knew I wanted to duplicate that environment as much as possible in my backyard."

Built in the late 1980s, Suzanne's house featured some design elements typical of the times (and ripe for water-harvesting improvements) such as a hardscape patio, grass lawn, and scuppers that pooled water during rainstorms. After attending WMG's rainwater harvesting rebate class, Suzanne's vision for her new yard began to take shape. She removed the grass and patio and put in a ramada for shade.

Then, Suzanne brought in WMG's Projects Director Rudy Poe and the Design Build team to take the project to the next level. Together, they worked up a design to recreate Sabino Creek on a backyard scale. A winding river channel carves through the property, flanked by elegant rockwork using Catalina granite repurposed from on site. Runoff from the roof is directed into the river feature through underground pipes to create naturalistic flows during rainstorms.

For their plant palette, the team focused on drought-tolerant species common to Sabino Canyon. Foothills Palo Verde trees will provide canopy shade for desert hackberry, creosote, and showy shrubs such as yellow bell and desert lavender. Sideoats Grama and other native grasses planted in the basins help to slow and sink the flowing water, recharging groundwater supplies that contribute to enhanced flow in the nearby Rillito River.

From conception to completion, the "Jacoby Creek" project took two and a half months. Suzanne and her husband George are enamored with their lush desert oasis and have been inviting friends and neighbors to explore the beautiful transformation.

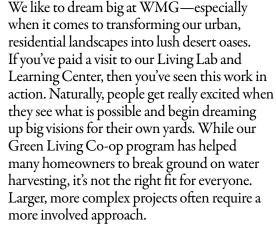
"We are looking ahead to retirement," she says. "When the day comes we can no longer hike around Sabino, my friends and I will be taking our creek walks in my backyard!"



### **YOUR OASIS AWAITS:**

## WMG's Design Build Services Can Create Your Dream Landscape





WMG's Design Build and Co-op team wants to work with you! From left to right: Nate Clark, Emma Stahl-Wert, Anna Tyler, Joaquin Murrieta, Rudy Poe, Joe Silins, and Catlow Shipek.



To answer the growing need for a full-service solution, we launched our Design Build program in the summer of 2015. Led by Projects Director Rudy Poe, a landscape architect with over a decade of experience, the new venture took months of groundwork to get up and running (including acquiring a contractor's license to professionalize our service). The unique service provides clients with a conceptual design plan and full installation of sustainable features such as rain gardens, greywater systems, rain tanks, Sonoran food forests, and more. All the hard work looks to be paying off: WMG's Design Build schedule is full, and our initial projects have been quite inspiring!

Beyond their naturalistic appeal, the native landscapes Rudy and his team are creating have a major plus for WMG's mission: the sheer volume of water being harvested. When added to our Co-op workshop calendar, our Design Build projects more than double our impact for harvesting rainwater and recharging our aquifers! We are also pleased to find that our clients are serving as educators and advocates for the cause. Many have agreed to participate in our annual Homescape Harvest Tour or to invite friends and neighbors to explore their landscapes as living demonstrations of the beauty—and benefits—that water harvesting has to bestow.

For full details on WMG's Design Build service, and to schedule an initial consultation, visit our website at www.watershedmg.org/oasis.



### KIERAN TAKES WMG'S GREEN INFRASTRUCTURE TRAINING ON THE ROAD!

WMG's Water Resources Engineer, Kieran Sikdar, is making green infrastructure popular with professionals across Arizona. Thanks to a grant from Arizona State Forestry, WMG will lead Green Infrastructure (GI) trainings in Flagstaff, Tucson, and Phoenix to train city staff and landscape professionals in these Tree Cities to use stormwater to grow urban forests with a low water footprint.

WMG kicked off the program in March with a green infrastructure training for municipal staff, engineers, planners, designers, and arborists in Phoenix. Participants gained hands-on experience to build practical skills by installing a GI demonstration site at the Flood Control District office in Central Phoenix.

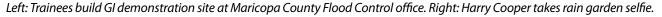
Harry Cooper from the Maricopa County Flood Control District office said, "I found Watershed Management Group to be a great resource for understanding the value of green infrastructure efforts in the arid Southwest. Our collaboration with WMG has reinforced our commitment to green infrastructure design techniques in meeting the District's water conservation goals."

This high-visibility location features two curb cuts to let stormwater into basins, where up to 10,000 gallons of rainwater and stormwater can be harvested each year. Participants planted 40 native trees and plants to shade and cool the landscape.

Kieran said, "What sets us apart is the hands-on component. We're an organization that has had over a decade of experience implementing projects. We have a very powerful knowledge base and skill set to make green infrastructure projects very successful." In the training, Kieran showed how every dollar invested in green infrastructure returns as much as six dollars into the community by reducing flooding, energy and water use, and urban heat island effect.

In total, 25 professionals attended the training and received two full days of field work, breakout groups, and classroom sessions. Renee Tilstra-Mann, Water Conservation Specialist at the City of Glendale, said, "This has been one of my favorite training events to date. The casual atmosphere and rapport that was established between attendees and instructors right off set the enjoyable camaraderie for both days."

Upcoming trainings include a two-day design charrette at the City of Flagstaff stormwater utility and a GI parking lot makeover in Tucson. For more information or to sign up for a training, email kieran@watershedmg.org.





# Hydrating the Phoenix Valley ONE YARD AT A TIME

Envision your dream landscape. Does it have a water-harvesting rain garden, rockwork and basins overflowing with flowering native plants? How about a greywater system feeding a fig tree or a humming pollinator garden? Once you've got the image—how do you bring it to life?

Join WMG for the coolest educational series in the Valley to learn how to design your personal desert oasis. We'll help you choose the best plants for your site and show you how and when to plant them. Then we'll help you plant the rain with rain tanks, greywater systems, and cost-effective basins and berms. Plus, attend a bonus class to learn how to use composting, organic mulch, and other strategies to transform your soil.

Sheri Schmeckpeper attended WMG's Hydrate Tempe this winter and learned that she can capture over 260,000 gallons of water per year on her 1.25 acre lot. Sherri said, "The classes gave us a lot of good ideas that we will be applying and using in our landscape."



Now, just in time for our summer monsoon rains, WMG is partnering with the Salt River Project to host Hydrate Mesa this August and September. Visit watershedmg.org/hydrate for more details and to reserve your spot.



It's inspiring to think that just three years ago, we launched the Living Lab and Learning Center as a concept to the community, and today we are well on our way to realizing our vision. Thanks to the help of hundreds of volunteers and donors, we've hit a home run with the first phase of our development plan: creating the Living Lab. Now we're turning back to the community to help us complete the second phase of our development plan: building the Learning Center.

The Living Lab is the more organic component of our educational center—featuring water harvesting, native habitat, food forests, passive solar, and monitoring systems... culminating in a campus entirely supported by rainwater!

Thousands of people visited WMG's Living Lab and Learning Center in Tucson last year and enjoyed diverse services from field classes and tours to a mesquite pancake breakfast and river restoration puppet show. Our profile in the community continues to grow, and the Living Lab has been the hub for our leadership work with policymakers and municipal staff.

However, the demand for our services has quickly out-paced our resources and infrastructure, and now it's more urgent than ever to complete the second phase of our development plan. Some of our most sought-after trainings, like our Water Harvesting Certification and Rainwater Harvesting Rebate Classes are limited by the size of our current classroom and have long waitlists. The Learning Center needs your financial

support so we can scale-up our impact and make the Center assessable to thousands more people annually. The Living Lab has grown into a model for the water-stretched West and the international community; just imagine what we can offer once the Learning Center is complete!

Our plans for building the Learning Center include everything else we need to provide top-notch educational services to a diverse public, reaching homeowners, professionals, and policy makers, while being inclusive of children, elderly, disabled, and Spanish-speaking visitors. With your help we'll build a large 50-person classroom; additional outdoor classroom space, brick paver pathways throughout the campus; watersaving public restrooms; permeable parking areas for cars and bikes; and comprehensive, bi-lingual educational signage and interactive kiosks throughout the campus.

We're asking you to invest in this vision and help us complete the Learning Center by the summer of 2017. To complete the plan, we need to raise \$250,000. The community has already invested over half a million dollars and in-kind services to make the Living Lab possible. Our summer fundraising campaign will focus on the needs of the Learning Center and all the educational programs, policy work, and watershed restoration services it supports. To make your gift, contact Executive Director Lisa Shipek at 520-270-4242, and visit watershedmg.org/LivingLab for more information.

### LIVING LAB & LEARNING CENTER MASTER PLAN





