



# Water Harvesting 101

Learn How to  
Conserve Scarce  
Water AND Put  
It to Work!

Photographed, Written, and Designed by Martha Retallick





**In arid climates, a rainstorm is cause for celebration.** When rainwater emerges from the green downspout (upper left), it continues on a downhill journey to this mulched harvesting basin, where it can spread out and sink into the ground. Once in the ground, it can nourish plant life and replenish the water table. Harvested rainwater can also be stored in cisterns like the one shown on the cover. In this book, you'll learn about both harvesting methods – and much more.



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*This trailing indigo shrub lives solely off of rainwater.*



# What Is Rainwater Harvesting?



**Even in the best of times, water is scarce in the desert.** But when it rains, oh, does it pour! This is especially true during the summer monsoons, when several inches can fall in just a few hours. That's good news if you're in a wilderness, where 50 percent of that rainwater soaks into the earth. What happens to the other half? Well, 40 percent of it evaporates and 10 percent becomes runoff. Now, let's experience the same heavy rainstorm in the city. Sorry to say, but 30 percent of that rain evaporates, 55 percent becomes runoff that floods our streets and washes, and only 15 percent gets absorbed by the soil.



# What's the solution? Rainwater harvesting!

What is rainwater harvesting? It's a conservation strategy that encourages rainwater to slow down, spread out, and sink into the ground.

The result? An urban oasis that encourages rainwater to stay around our built environment and do good things.

For example, rainwater can nourish desert trees and shrubs that cool neighborhoods – and it can feed our fruit and vegetable gardens. With proper filtration, rainwater can be used as drinking, cooking, and even bathing water.

Now, before we go any further, I owe you an explanation. How and why did I get into rainwater harvesting?

The simple answer: I had to! And here comes the scary prelude.

If floodwaters were polite little things that created lovely puddles and caused no further trouble, we wouldn't be concerned. The reality is that flooding can be quite destructive – and costly.

Flooding could be a major problem at your place – it sure has been at mine!



# Flood Control Begins at Home



**Here's an example of rainwater in its proper place.** Wet gravel pieces and a drenched brick near my back porch? I'm good with that! Even better, this rainwater is providing a wonderful photo op, and that's exactly what I'm looking for. Much preferable to flooding inside my house!



**November 2004: Martha Becomes a Homeowner in Tucson.** Shortly after I moved in, the ever-efficient neighborhood grapevine delivered bad news: During heavy storms, my house would flood.

I'd already been warned.

During the purchase process, the home inspector noted that the backyard sloped toward the house and needed to be regraded. Oh, goodie. Another big job to add to my already lengthy to-do list.

I didn't get serious about addressing the flood risk until the summer of 2005. When the seasonal monsoon storms struck with a vengeance, as they always do, I watched from inside my house while the Great Lakes formed in the backyard.

Would the water come gushing through the furnace room door and act like an unwelcome house guest? The good news is that the stormwater stayed outside – but just barely. I tried a variety of DIY solutions, but none of them worked. So, it was time to seek professional help.

During the summer of 2007, I started volunteering with the Watershed Management Group (WMG). Founded in 2003, WMG is in the business of improving desert ecosystems in Arizona, Mexico, and beyond.



My first WMG experience was of the hands-on sort. I was among the dozens of volunteers who installed the rainwater harvesting features at Tucson's Ward 3 City Council Office.

I went on to become a founding member of WMG's Green Living Co-op. The co-op offered learning-by-doing opportunities to members while they helped other members complete their water harvesting projects.

By the summer of 2008, I had earned enough co-op work hours to host a passive water harvesting workshop, with my home as the project. In a single morning, the Green Living Co-ops and WMG staff did a landscaping makeover – and the work included a backyard regrading.

That makeover all but solved my flooding problem. However, there was much more work to be done.

Over the course of four passive water harvesting workshops during 2008, 2009, 2010, and 2020, the WMG staff, their contractors, and co-op volunteers:

- Regraded my entire property, the front, back, and side yards and
- Built the drainage swales, basins, and berms that help nourish my Southwestern desert landscape plants without the need for an irrigation system tied to the municipal water supply.



During two more Green Living Co-op workshops, in 2017 and 2020, the focus shifted to active water harvesting. The results:

- A laundry-to-landscape greywater harvesting system that irrigates a fruit forest that consists of two pomegranates, a fig, and a Meyer lemon
- A 1,500-gallon rainwater harvesting cistern

The cistern project included the installation of three rain gutter runs. The backyard run drains water that used to cascade onto the ground and cause flooding. Nowadays, those would-be floodwaters flow into the cistern.

So, there you have it. Six Green Living Co-op workshops between 2008 and 2020. As a result, I can place my yard flooding problem into the “solved” column. The bonus is a lush Southwestern landscape and thriving fruit and vegetable gardens.

I'd like to conclude my water harvesting origin story by noting that the Watershed Management Group closed the Green Living Co-op in 2022, and the organization no longer does residential contracting. However, WMG offers on-site consultations in the Tucson area, sells a variety of DIY kits, and provides referrals to reputable contractors.



# Meet the Family

Start your water harvesting journey with a coffee table book that's chock-full of inspiration! *City Nature*, by award-winning documentary photographer Martha Retallick, reveals her secrets to water harvesting through her 20-year journey of transforming her Tucson home into an urban oasis.

Kirkus Reviews *calls City Nature "A beguiling ramble full of captivating DIY information and arresting visuals of flora and fauna."*



**Buy Now!**

Now that you're inspired, it's time to get to work! Meet *City Nature*'s very talkative cousin, the one with the dusty work boots. *Water Harvesting 101* is an audiobook and eBook combination that will teach you the nuts and bolts of water harvesting and show you how to put them to work at your place.



**Buy Now!**

**About the Author:** Although Martha Retallick writes from the perspective of an Arizona desert dweller, where droughts are a way of life, she was born and raised in Pennsylvania. Half of her childhood was spent in a house in the woods. That led to one of her first decisions as a first-time homeowner in Tucson. She didn't want the stereotypical desert landscape that emphasizes gravel, rocks, and cactus. Instead, she wanted trees – yes, *plural*. However, her slender budget couldn't support an irrigation system. So, she planted trees, shrubs, and, yes, some cactus. The goal? A landscape that can live off infrequent rainfall, and, for more than 20 years, it's done just that.