

A Proposal for Rainwater Harvesting Gains Momentum in New Mexico

Photo courtesy of Fred Jerina, Land of Enchantment photographer

Consider, if you will, a humble ash tree growing on the side of a green suburban boulevard in any city of the American Midwest, perhaps St. Louis, MO. It's a medium-sized tree that towers over the power lines, but not much else. The tree is beautiful, with bright, oval-shaped leaves and very hard wood. Because the wood is very hard, it is also valuable. Most wooden baseball bats come from the ash family of trees, as do many wooden handles for tools. That ash tree on the boulevard is blessed with abundant water. Its roots are probably in striking distance of the water table, and if that's not enough, the tree can count on 50 inches of rain every year, as well as a humid climate that discourages evaporation. Basically, this ash lives in a full bathtub with the shower running, all in the middle of a sauna, and it likes that just fine.

Now consider a similar boulevard in Albuquerque, NM. This is an arid, high-desert city where, if it rains 15 inches in a year, residents rave about their good fortune in the front-page headlines. Threatening rainclouds do pass over the city, but sometimes the moisture evaporates before it reaches the ground. Here, dripping wet laundry on a clothesline will be dry in a matter of hours. What tree is planted on this desert boulevard? The very same water-hungry ash. Michael Meléndrez, a native New Mexican with deep family roots up and down the Rio Grande Valley as well as a plant scientist and a soil ecologist known worldwide for his work in helping farmers and home owners get on the journey to better soil health, knew 30 years ago that there was something wrong with that picture. "I could see even back then that we were going to reach a point of water crisis," he says.

By Lindsay Wood

And reach that point, New Mexico has. While local water supplies could easily support a marginal frontier-era population and a few water-guzzling ash trees, New Mexico has grown too big for those britches. With a population that cracked two million a few years ago, a robust agricultural sector, thriving industry and big plans, the state will need to conserve as much as it can while also looking for new sources of water. For Meléndrez, part of the solution lies with those trees. In the mid 1980s, he put his company, a professional nursery, on a new track. The company is a New Mexico gem and a rarity among retail nurseries since it produces and sells its own trees. "We can offer many native oaks and other arid-zone hardwoods that are appropriate for New Mexico's urban clients. In our mixture of very arid, hilly environments, you have a wide variety of hardwood trees. You'd be surprised how big they can get on a very minimal amount of water." Instead of supplying contractors and landscapers with the traditional, midwestern varieties, he switched gears, trekking to the foothills of area mountain ranges. There he collected seeds from the native (and impressively drought-tolerant) trees, and began to grow and sell them. Since launching his company, Meléndrez has expanded elsewhere in the world of agricultural water conservation.

His other business sells products that fortify the soil and get the right enzymes, fertilizers and conditioners into the earth to work on behalf of the plant. By enhancing the biology and chemistry of the soil, the products can make it hold on to more water, longer. Take two identical crops planted in adjacent fields, one of which uses those enhancement products. Now stop

watering them. The crops in the treated field, Meléndrez says, will survive two months longer than the others.

On the demand side of the New Mexico water equation, Meléndrez and countless others push for conservation and more efficient water use and delivery. On the supply side, the race is on to find new sources of water for the growing population centers of the state. Part of the answer could be pumping water out of brackish aquifers. The water is saline, but not so much as the ocean, and treating it for human consumption is technologically doable, if logistically challenging. With some of the issues, the technology isn't quite as hard to tackle as the politics. Take, for example, the idea of reducing evaporation from the state's exposed reservoirs. Evaporation takes more water out of reservoirs along the Rio Grande River than all of Albuquerque's 500,000-plus residents combined, and in theory, there's nothing to stop New Mexico from covering up the water to prevent it. But rendering state landmarks useless to boaters and other outdoor recreators is probably not a banner under which any politician would like to campaign. Ditto for the transfer of water rights from the agricultural sector to financially powerful cities. But despite the state's aridity, there are still a few viable possibilities for developing new sources of water in New Mexico.

Local ranch engages new project

One of them is a new proposal offered by the owners of a sprawling ranch located about a two-hour drive to the southwest of Albuquerque. Their project idea allows for an innovative approach to the water conundrum that avoids the more daunting pitfalls: just store the rain before it evaporates and then use it. Make that two-hour drive to the Augustin Plains Ranch and you quickly discover that western New Mexico is indeed a rugged desert, but also a surprisingly nuanced one. From Socorro, a town of about 10,000 on Interstate 25, you head west, gaining elevation fast. After a while, you empty out onto a plain that is best known as the home of a series of mammoth, bright-white radio telescopes that scientists carefully tow around on train tracks and point at the stars: the Very Large Array. Around the town of Datil, the landscape starts to change: less flat, more rolling hills, more trees and critically important, more rain. Back in the Pleistocene, this area was covered by a big lake. Today, the underground aquifer holds a goldmine: an estimated 50 million acre feet of water.

But ranch owners don't want to draw down that principal. They want to live off the interest. The Augustin Plains Ranch water pipeline project proposes to transport trapped rainwater from the Plains of San Augustin in western New Mexico to the Rio Grande Valley. The project (still in the planning and research stage) could provide up to 54,000 acre feet (almost 18 billion gallons per year) of water for cities, industry, agriculture and the environment. Plans for this project call for collection and isolation of rainwater from the hills that abut the ranch. Instead of evaporating, the water would be collected, diverted and sunk into the ground, recharging the aquifer like a battery. Because demand is constant and rainfall is not, the actual water for this project would come from the aquifer, in quantities that come very close to the average annual rainfall caught in the dragnet.

All told, it would add up to about 54,000 acre feet per year. (And conveniently enough, that water already meets federal drinking water standards, unlike other closed basins in the region.) That's enough to meet about half of Albuquerque's demand, and it comes with a bonus. Cities along the Rio Grande routinely return a good fraction of their supply back to the river

as treated wastewater, so some of that original amount could potentially be used to improve river habitat and bolster efforts to protect endangered species, like the silvery minnow. From the plains, the water would travel via pipeline, downhill toward the valley. After a thousand-foot elevation drop (give or take) project plans call for putting the water through a hydro plant, which will take a cut of the energy that gravity creates as the water makes its way to the valley floor. That energy will then be sent right back up to the ranch where it will be used to power the pump. And if they need a little bit more juice? The project will be augmented with solar, making the entire effort after construction a carbon-neutral endeavor. Once the water reaches the valley, options abound, and it will be up to New Mexico to decide what to do with it. Cities are growing and new industries are scouting around, kicking the state's tires. The agriculture sector faces perennial shortages, as drought and climate change take their toll. And the endangered silvery minnow depends on water actually being in the river, something that New Mexicans can no longer take for granted.

But that aquatic road trip, from the high plains to a thirsty population on the valley floor, is just theory at this point. It could, however, be a reality in as little as five years, lightning quick when you consider the state's other major water importation project (the San Juan-Chama Project diversion) took nearly 90 years to get going. To get the Augustin Plains Ranch project moving forward, it will take a decision by the State Engineer. If he gives the go-ahead, ranch owners will be freed up to take the next step and spend a king's ransom (in private funding) researching the project. Their goal is to find out for sure whether the hypothesis of rainwater collection from afar will survive a scientific crossfire.

If their proposal proves to be sound, the ranch could become the all-important, second half of an arranged marriage between supply and demand that New Mexico's water managers are desperately seeking. Meléndrez and the Augustin Plains Ranch could become perfect partners in solving the state's water crisis. He believes the ranch should be allowed to research the aquifer and prove its theories, if they can be proven. "If there's no ability for that basin to recharge itself, then the hydrologists will discover that," he says. "And if it can, the hydrologists will discover that, too. I don't think it should be ignored."

About the author

◆ *Lindsay Wood is a freelance writer based in Albuquerque, NM. She writes periodically about water issues in the Rio Grande Valley, including the challenges related to the irrigation of crops in desert environments, conservation efforts for area flora and fauna, and the politics of water allocation between cities and rural areas.*

About the companies

◆ *Soil Secrets, owned by plant scientist and soil ecologist Michael Meléndrez, supplies farmers across North America with biologic soil conditioners that turn dirt back into healthy soil. For more information, visit soilsecrets.com and treesthatpleasenursery.com*

About the project

◆ *The Augustin Plains Ranch water pipeline project proposes to transport trapped rainwater from the Plains of San Augustin in western New Mexico to the Rio Grande Valley. The project (still in the planning and research stage) could provide up to 54,000 acre feet of water for cities, industry, agriculture and the environment. For more information, visit sanaugustinwater.com*