

Let it RAIN

Rainwater collection is giving some Texas ranchers added peace of mind.

By Jennifer K. Hancock • Photos courtesy of All About Texas Rainwater Harvesting Systems



Circle Y Ranch installed a state-of-the-art rainwater collection system to combat Texas' drought and prepare for the future. There are four individual systems installed on two separate buildings on the ranch. These two 2,500-gallon tanks are located at the entrance to the arena, where they collect rainwater from three downspouts.

The simple formula of two hydrogen molecules combined with one molecule of oxygen is essential to life. Water can be taken for granted when it freely flows out of a tap, but drought and natural disasters highlight how vulnerable our water supplies can be. We often hear about saving money for a rainy day, but it turns out that saving water for dry times might be just as important.

The necessity of water for animal and plant survival is one of the earliest biology lessons taught in school. Humans use water for more than just basic survival. The United States Environmental Protection Agency (EPA) estimates that an average American family uses 400 gallons of water a day. While the EPA doesn't consider horses to be family members, each equine needs eight to 10 gallons of water to survive (not taking into account hot weather or exercise) and a lactating mare can consume 18-24 gallons per day. It's easy to see how quickly the gallons can

add up on a ranch.

This spring's large rainfall amounts are pushing Texas out of its drought, but California and other parts of the United States have not been as fortunate. Rainwater harvesting, which has been used for centuries, is regaining popularity as many people attempt to increase their conservation efforts, especially in drought areas that have implemented water restrictions. From installing rain barrels used for augmenting plant watering to whole-house systems, people are taking advantage of free water that falls from the sky.

David Cowart, who owns All About Texas Rainwater Harvesting Systems in Taylor, Texas, has been helping people collect water for the past eight years. Cowart advises anyone looking to begin harvesting rainwater to visit the American Rainwater Catchment Systems Association's (ARCSA) website at www.arcsa.org.

"At ARCSA, they'll get some very good ideas of what rainwater collection is all about," Cowart said. "If it's just a sizing matter if they elect to go with a rainwater collection system, what I like to do is meet with them and discuss what their end needs are. You can better determine what size tank or tanks are going to be needed and work with them on how much water they are going to be needing."

The ARCSA's mission is to promote sustainable rainwater harvesting practices to help solve potable, non-potable, storm water and energy challenges throughout the world. Its website includes a search engine to help find professionals in your area.

Homeowners and business owners are not the only ones taking advantage of rainwater harvesting; government agencies are also finding ways to utilize rainwater. Since 2014, all new federal buildings are incorporating rainwater harvesting systems, and a target of



Rainwater collection, which has been used for centuries, is regaining popularity. The largest, most involved system at Circle Y consists of 12 2,500-gallon tanks that can be drawn from at a single source. The PVC collection piping replaces the metal gutters approximately 15-feet above ground level, and carries the collected rainwater underground to the tanks.



Rainwater collection tanks were strategically placed around the arena and barns to utilize the available space while maintaining the ranch's functional layout and beautiful views.



Nine, 1,150-gallon tanks were installed on the south side of the Circle Y arena, where they were able to be tucked out of the way of the road.

15 percent of existing federal buildings are having systems installed each year.

An additional benefit to capturing and reusing rainwater is the reduction of erosion, which can damage creek beds, natural open spaces and hillsides from water runoff. As building construction is replacing open land, plants and land area that used to absorb rainwater runoff are being lost. Rainwater collection systems minimize the effects of hardening, and hard surfaces such as parking lots and roofs can be converted into rainwater collection sites.

Collected water can be used for landscape, livestock, wildlife, storm water management, fire protection and household needs.

One of Cowart's recent clients was

Circle Y Ranch in Millsap, Texas. Owners Penny Youngblood and Nancy Pearce turned to rainwater harvesting because their wells were struggling to keep up with the ranch's water demands and their local municipal water supply was facing issues, too.

"We operate on three water wells at the ranch," Pearce said. "We were getting eight gallons a minute – on a good day – from our wells, and more realistically, it was about five gallons a minute on average. At that rate, we could not keep our main supply water tank filled with all of our watering needs. We were faced with a very dire fact."

The cutting horse facility stands Im Countin Checks and is home to about 80 head of horses, and usually has about 150

head of cattle that are used for training at the ranch. Circle Y was utilizing a 10,000-gallon water tank on the wells to service all their troughs and waterers for the livestock, and supplementing any shortages with city water.

The added cost of buying city water wasn't the main issue – having city water to buy was. Millsap's municipal water is supplied from Lake Palo Pinto, which also services Mineral Wells, Texas. In February, Lake Palo Pinto was at just 7.9 percent of its capacity, according to www.waterdatafortexas.org.

"You can imagine if that water source dried up then we would have been in a world of hurt," Pearce explained. "Hence the decision to harvest rainwater."

Cowart said that most people are surprised at the amount of water that can be collected from a storm.

"The more roof area you have, the more water you can collect," Cowart said. "Circle Y's in a very good position with a 28,000-square-foot arena."

"You take the square footage of the roof area that you are collecting [from] and multiply that by .6, and that will tell you how many gallons of water you are going to collect per inch of rain," Cowart explained of the general formula used to determine collection amounts. "With Circle Y's arena at 28,000 square feet, they can expect to collect 16,800 gallons of water per one inch of rain. When you start doing the math, it really surprises people a lot of times."

Water-holding containers can range in size and construction. A rain barrel can be as simple as a plastic trashcan, and water holding tanks can be made out of various



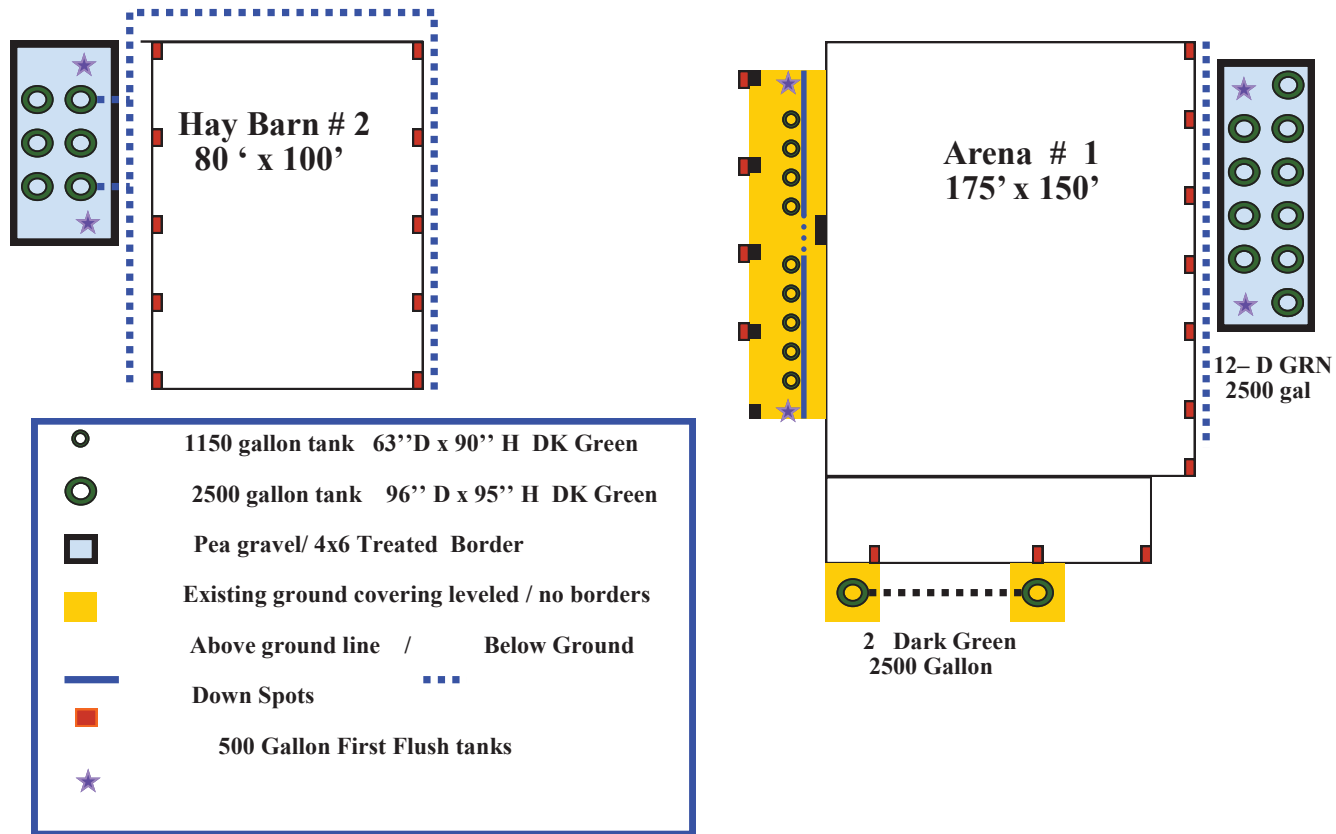
Circle Y's 28,000-square-foot arena roof allows for approximately 16,800 gallons of water collection per inch of rain.

**Circle Y Ranch—Rain Water Collection System—
Phase 1**

Presented By : All About Texas RWHS

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Circle Y Ranch's rainwater collection system has a total collection capacity of 60,350 gallons. Once that amount is reached, water flows from roof surfaces into a nearby pond.

materials, such as galvanized tin, plastic or concrete.

Circle Y installed a main array of 12 tanks, each with 2,500-gallon capacity, off of their large arena. On the other side of the arena, they installed an array with 13,500 gallons of capacity. They also installed tanks beside their hay barn to take advantage of rainwater runoff. Circle Y's new rainwater system has a total capacity of 60,000 gallons.

"We chose to use the 2,500-gallon tanks because we wanted a low profile," Pearce said. "They stand about 8-foot tall. We didn't want a huge galvanized water tank. Now

that we have seen one at an office building in Denton, Texas, and it's really cool looking, when we build our new 22-horse barn, we are going to put another 30,000 [-gallon] tank on that barn. At that point, we will be pretty well stocked."

Pouring rain

"The beautiful thing about it is our tanks are full and overflowing," Pearce said after spring rains drenched North Texas. "We did that intentionally in hopes that we would have the rainfall of the century this spring, which we have."

After enduring drought conditions in Texas the past several years, Circle Y isn't wasting any of the extra water.

"We hooked up an overflow system from the main tanks that goes through a 6-inch pipe and that drains into a main stock pond," Pearce explained. "We don't have animals that are using that pond, but we do keep it stocked with fish. It's about a two-acre pond. We're not wasting any water. If the collection tanks overflow, we're not just letting it flow into the ground. We are allowing it to go to places where it can be held. Lakes and ponds are nature's way of collecting rainwater."

Every Drop Counts



Collecting rainwater may not be new technology, but it is a technique that is regaining popularity today. There are many ways people on varying budgets can help conserve water.

Collecting rainwater is not new. There are several biblical references in the Old Testament to cisterns, and rainwater-harvesting systems were used in the Middle East more than 5,000 years ago. With drought conditions and increased demands on public water supplies, many people are returning to this time-tested method for their water needs.

From simple rain barrels attached to a house's gutters to more elaborate collection systems, rainwater can supplement your landscape water needs or be the sole source of water.

In addition to the obvious benefit of providing water, rainwater collection also diminishes the impact of storm water runoff such as erosion and decreases the water-energy footprint, as water is not pumped from a well but rather gravity fed in most cases. Plants thrive on the rainwater that is free of fluoride and chlorine found in some municipal water supplies. Unlike some groundwater that is considered hard because of mineral content, rainwater tends to be soft and purer than other sources.

Finding ways to conserve water will make every drop go further. From fixing leaky faucets to using drought-tolerant plants in landscaping, there are many small ways to conserve water. At wateruseitwisely.com, there are 100 tips to conserve water on a daily basis.

The Circle Y system is more sophisticated than your average rain barrel collection method. The first rain that falls is used to wash the roof of dirt and debris, but that water isn't discarded. Instead, it's collected in a flush tank.

"When the flush tank is full, it triggers a ball valve that then allows the clean water off the cleaned roof to go into the collec-



A rainwater collection system can be customized so as not to disrupt the aesthetic appeal of a facility. Circle Y's largest system was built on a pad site approximately 3 feet below ground level, with a retaining wall used to protect the unit.



left: Circle Y's sophisticated collection system has an on-demand pressure pump that allows water to be moved from the system into a 10,000-gallon well water storage tank for livestock and irrigation purposes.

tion tanks," Pearce said. "We use the dirty flush water to fill our fire wagon, which has a 2,500-gallon tank, and it also services our Kiser drag that we wet down the arena with every morning. We utilize the dirty water, too. It's an incredibly efficient system."

With droughts also comes the increased risk of fire. Cowart helps his clients prepare for emergencies and works with local fire departments.

"Many times we contact the local fire department and see what their requirements are for a fitting," Cowart said. "A lot of times,

the homeowners or landowners will elect to go ahead and install a valve so it's readily available, especially in rural areas. When the fire department shows up to fight a fire, they have what water they bring on the truck and it makes it nice to be able to tap into the rainwater collection system if they ever

have to come out and fight a fire.

"Rainwater collection is not new, but when we contact the local fire departments, they are usually just absolutely excited to hear about it and excited about the fact that they've got water there," Cowart added. "They encourage it. It works out really well for many reasons."

At Circle Y, the main array of tanks, which holds 30,000 gallons of water, is hooked up to the ranch's main water-holding tank, which is also serviced by the wells. With the simple flip of a valve, they can open that up



A “wet system” routes rainwater through underground pipes to collection tanks. Some systems that collect rainwater can even be used to make water drinkable; however, homeowners should check with local and state water boards to ensure laws do not prohibit rainwater collection.

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and fill it to service all the horse and cattle troughs.

“We can pump directly out – there are 2-inch valves on each of the large 2,500-gallon tanks, so we can attach 2-inch fire hoses with a water pump and pump water into a water truck, the Kiser drag or our fire wagon,” Pearce said. “There’s ample means of harvesting the water out of the holding tanks and utilizing it wherever we need it on the ranch.”

The main array of tanks has a recirculating pump to keep the water constantly moving so it stays fresher.

“In the future, if our city water becomes scarce again, we can add a reverse osmosis water purification system or a UV filter to purify the water enough for drinking,” Pearce said.

Cowart also has clients who are opting for rainwater harvest systems instead of wells at rural home sites.

“The water can not only be used for livestock and irrigation needs, but also be potable,” Cowart said. “We’ve installed many potable systems. We’ve got customers that elected for rainwater collection systems for

their homes because a well was going to be \$75,000 to drill with no guarantee of water. They went with a whole-house collection system, including their barns, for all purposes, including drinking.”

Many cities and states embrace and encourage collecting rainwater for its many benefits, and often offer information on rainwater harvesting, such as the city of San Diego’s online Rainwater Guide. But some states, such as Colorado, still have laws that prohibit collecting rainwater or restrict what the rainwater can be used for.

Before installing a system, Cowart suggests contacting the local or state water board to find out what laws govern your area. Many of the laws date back to the 1800s and were put in place to keep people from damming streams and restricting the flow of water, but some of these old laws have been applied to rainwater harvesting.

“There’s a lot being done legislatively to diminish those old laws,” Cowart said. “This is different than damming up a creek. You’re taking the impervious cover from roofs and collecting water.”

Silver lining

The El Niño weather pattern has brought much needed rain to Texas this spring, but you won’t hear Pearce complain about the gray skies.

“We’ve had incredible amounts of rain this spring,” Pearce said. “Our municipal lake is now at 100 percent of its capacity. We are in no danger of running out of water anytime soon, but it gave us a comfort factor compared to when we were in that bad drought position where our municipal lake was at less than 10 percent capacity and we were wondering what we were going to do. It would be a devastating thing if we had to haul in water in water tankers to fill our troughs – and you talk about *expensive*. Right after we got everything finished, here came the rain.”

Now that Circle Y is in the rainwater harvesting business, they are looking at other ways to be self-reliant.

“We like the idea that if we were forced to, we could be self-sufficient,” Pearce said. “The next step for us in being self-sufficient in case of an emergency is to install solar panels on our new barn.” ★

July 17-18, 2015

HORSE SALE: Saturday - 4:00 pm

FUTURITY: Friday - 2:00 pm

Saturday - 12:00 pm

Futurity Finals - Saturday After Youth

TEAM ROPING: Friday - 6:00 pm

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