Texas Water Development Board

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TO: Board Members

THROUGH: Jeff Walker, Executive Administrator
John T. Dupnik, P.G., Deputy Executive Administrator, Water Science and Conservation
Ashley Harden, General Counsel

FROM: Shae Luther, Municipal Water Conservation

DATE: August 17, 2020

SUBJECT: 2020 Texas Rain Catcher Awards

ACTION REQUESTED

Consider approving and presenting the 2020 Texas Rain Catcher Awards.

BACKGROUND

The Texas Water Development Board (TWDB) provides information and education to the public on all aspects of rainwater harvesting through our website and with printed materials. The Texas Manual on Rainwater Harvesting (3rd edition), a popular guide published by the TWDB, introduces rainwater harvesting and the design of residential and small-scale commercial systems. The TWDB also makes an online rainwater harvesting training available, which is required for permitting staff of certain cities and counties.

The TWDB launched the Texas Rain Catcher Award competition and recognition program in 2007 and is now celebrating the thirteenth award cycle. This award program promotes rainwater harvesting, educates the public about the benefits of rainwater harvesting, and recognizes those dedicated to conserving our precious water resources. The competition is open to all individuals, companies, organizations, municipalities, and other local and state governmental entities in Texas, except current TWDB employees and Board members. Winners are chosen by a panel of judges consisting of TWDB staff. Since the creation of the Texas Rain Catcher Award program in 2007, the TWDB has bestowed 52 awards and recognized 3 honorable mentions.

Thirteen rainwater harvesting projects were submitted for the 2020 Rain Catcher awards. Submitted applications were scored by judges based on five criteria:

1. Demonstration of how the rainwater harvesting system has helped conserve surface water and/or groundwater through reduced dependency on conventional water supply systems
2. Demonstration of how the rainwater harvesting system has saved money for the owner
3. Originality and innovation as evidenced by the application of new knowledge, new application of existing knowledge, or an innovative mix of existing and new knowledge
4. Demonstration of how the system has benefited the environment (for example, reduced erosion or the threat of flooding) without itself adversely impacting the environment
5. Uniqueness of the system

Each judge scored the projects based on these criteria and then ranked the projects. The rankings were then combined, and the judges recommended presenting the 2020 Texas Rain Catcher Awards to the six highest-ranked projects in four categories, along with one honorable mention.

The following awardees are proposed for the 2020 Texas Rain Catcher Awards.

Agricultural
- The Upper Trinity Groundwater Conservation District and the Parker County Livestock Improvement Association

Commercial/Industrial
- Anodamine, Inc.

Educational/Government
- Austin Central Library
- Texas Tech University – Home Utility Management System: An Interactive and Sustainable Water Management System
- Wimberley Independent School District's One Water School – Blue Hole Primary

Residential
- Duke Residence

Honorable Mention
- Creosote Collaborative (Playa Drain Trail)

RECOMMENDATION

Based on the scores submitted by the panel of judges, the Executive Administrator recommends presenting the six identified applicants with 2020 Texas Rain Catcher Awards, as well as presenting one honorable mention.

Attachment: Recommended 2020 Rain Catcher Award Project Descriptions

Recommended 2020 Rain Catcher Award Project Descriptions

Agricultural: The Upper Trinity Groundwater Conservation District and the Parker County Livestock Improvement Association
Weatherford, Texas (Parker County)

The Parker County Livestock Improvement Association (PCLIA) fairgrounds host over 60 events annually with an estimated 35,000 visitors. However, in recent years, the fairgrounds have faced a water supply challenge. In 2019, the existing well struggled to keep up with the water demand during the PCLIA's largest event, the Parker County Youth Livestock Show. Rather than drilling a second well, the PCLIA applied for and received a $50,000 grant from the Upper Trinity Groundwater Conservation District (District) to construct a rainwater harvesting system on the newly constructed 30,000 square foot livestock arena.

The system, which features a 65,000-gallon tank, offsets the demand on the Trinity Aquifer and serves several functions. The collected rainwater primarily provides water for livestock consumption and washing during stock shows and rodeos. In addition, rainwater collection provides a summertime water source for fire trucks, minimizes runoff and erosion, and serves as an educational tool for the District.

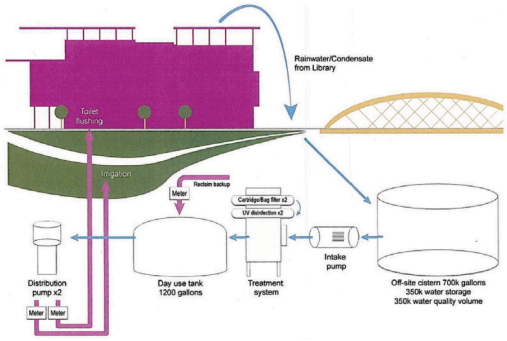
Commercial/Industrial: Anodamine, Inc.
Lago Vista, Texas (Travis County)
Anodamine, Inc. specializes in the custom chemical synthesis of water treatment products. The company's rainwater harvesting system allows rainwater to be used in their industrial processes rather than using municipally treated water.

Rainwater is collected from the roof and stored in six cisterns that are interconnected so that all share volume and fill equally. The roof's design allows the opportunity to harvest from nearly the entire roof surface of the building. A pump and filter system pulls the rainwater from the cisterns into the factory to supply water for the industrial processes. The system stores a total of 55,200 gallons and has the potential to collect an estimated 230,000 gallons of rainwater during an average rainfall year. The collection of rainwater reduces demand on the municipal water supply and provides local stormwater management benefits.

Educational/Government: Austin Central Library
Austin, Texas (Travis County)
The Austin Central Library was opened in 2017 and has received multiple awards for design and construction, in addition to being Platinum Leadership in Energy and Environmental Design (LEED) certified. The design of the library focused on the use of alternative water supplies to meet the needs of visitors, staff, and the landscape. The alternative water supplies include rainwater harvesting, air conditioner condensate collection, and the city's centralized reclaimed water system.

Approximately 43,000 square-feet of roof surface collects the rainwater. A key to the collection of rainwater is the use of a repurposed underground cistern that was previously used by the decommissioned Seaholm Power Plant. The cistern can hold approximately 700,000 gallons. Half of that storage is dedicated to collected rainwater and condensate, while the other half is utilized for runoff control.

The combination of rainwater, condensate, and reclaimed water is used for toilet flushing and irrigation of three garden areas, including a rooftop butterfly garden. These sources of water provided a potable water offset of approximately 94 percent when the library was first brought online, though the offset has since leveled out to about 85 percent since the café opened in June of 2018.



Source Intake

Distribution

Educational/Government: Texas Tech University – Home Utility Management System: An Interactive and Sustainable Water Management System
Junction, Texas (Kimble County)

A multidisciplinary team of Texas Tech University (TTU) researchers designed the Home Utility Management System, or HUMS, in an attempt to solve potentially serious water supply issues associated with the current centralized utility model used throughout the country. HUMS is a residential utility management system that relies on a decentralized utility concept with an interactive component that employs machine learning to deliver water usage suggestions to residents. Rainwater is harvested from the home's roof, stored in a 10,000-gallon storage tank, then filtered, disinfected, and pressurized to serve as the home's sole potable water source. The rainwater collection system's capital costs over a multiyear period are expected to be comparable to utility costs.

HUMS combines detailed water use data from all fixtures and appliances, metered storage tank level data, and weather forecasts to create usage scenarios for the residents that will help them maximize the harvested rainwater and conserve their local water resources. The HUMS test home sits at the TTU Llano River Field Station in Junction, Texas, where it will be used for testing and development of HUMS technology. One of the goals is that HUMS will be able to transform the utility infrastructure model into a more reliable, decentralized framework that sustains a high quality of life at an affordable cost.

Educational/Government: Wimberley Independent School District's One Water School – Blue Hole Primary
Wimberley, Texas (Hays County)
Wimberley Independent School District designed and constructed Blue Hole Primary using the One Water concept to minimize water use and optimize onsite reuse by promoting an integrated approach to water management. This approach looks at drinking water, wastewater, stormwater, and greywater as a single resource.

The campus can collect and store 200,000 gallons of rainwater and 600-1,300 gallons of air conditioning condensate per day to be distributed through an advanced reuse system for flushing toilets and landscape irrigation. Estimates show that the system reduces the campus water consumption footprint by approximately 90 percent, conserving an estimated 237 acre-feet of groundwater over 30 years and minimizing reliance on the Trinity Aquifer.

Residential: Duke Residence
Mart, Texas (Limestone County)
The residence of Dennis and Lorna Duke is situated on 60 acres and has never had a successfully drilled productive water well, nor has it been served by a public water system. A hand-dug cistern near the house caught rainwater historically and served the household's water needs. Connecting to the local water utility would be prohibitive due to both the associated cost and the fact that the residence is just outside of the utility's service area boundary. In the context of these constraints, Mr. Duke came up with a better idea and built his own rainwater collection system.

The system gathers rainwater from two 40-foot by 60-foot buildings, the garage and the house, as well as an additional 600 square feet of collection surface from the patio roof. The collected rainwater is stored in a concrete water tank that holds approximately 33,662 gallons. The top of the storage tank is a slab of concrete that serves as the Duke's back porch. Water from the first-flush diverter is stored in 55-gallon drums for garden irrigation.

Honorable Mention: Creosote Collaborative (Playa Drain Trail)
El Paso, Texas (El Paso County)
Creosote Collaborative is honorably mentioned for assisting the City of El Paso with addressing flooding issues along the Playa Drain Trail by constructing two bioswales to control urban runoff and increase awareness about passive rainwater harvesting in the desert, wildlife habitats, watershed management, and water quality. The project was funded by a grant from the National Recreation and Park Association.

The judges decided this project merited recognition due to its innovative approach to controlling flooding while highlighting rainwater capture. The project provides increased stormwater storage capacity through additional wider basins that now yield up to 30,000 gallons of total stormwater storage capacity and provide a variety of positive environmental effects.