



TEXAS
WATER
TRADE



2019/21
STRATEGIC PLAN

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SNAPSHOT

Texas Water Trade will focus on two mechanisms for advancing our vision of sustained water abundance:

- Deploying a diverse suite of voluntary water market transactions—from dry year options to infrastructure projects—to secure healthy flows in Texas rivers while creating financial value and supply resilience for other water users; and,
- Supporting investment in net zero water buildings and subdivisions capable of capturing, treating and returning to the original water source as much water as they demand so that new growth increases Texas' reliable water supply.

To advance these objectives, TWT will work to:

- Demonstrate the efficacy of voluntary market transactions as a tool for sustaining or restoring Texas' water resources;
- Build and support the marketplace of entities capable of pursuing water transactions for healthy flows;
- Diversify funding sources for flows restoration, working with partners to steer existing eligible funds toward flows and to design new funding vehicles as needed;
- Become the go-to organization for flows restoration projects in Texas, providing trusted project evaluation for corporate, philanthropic, state and federal funders;
- Quarterback market development by setting flows restoration and protection targets in priority basins, enabling partners to make gains against those targets, and pursuing long-range market strategies ourselves when necessary;
- Advance awareness of the water supply potential of onsite water resources, especially those that can enable growth without increasing water diversions from the state's rivers or aquifers.





By the end of 2021, we aim to:

TRANSFORM

- Define 10-year flows restoration targets for four priority river basins or aquifers which we will enable through intelligent market design
- Design market-based solutions to restore or protect at least one significant spring, working in collaboration with a Groundwater Conservation District
- Support at least one water utility in integrating building-scale water capture and treatment into supply planning

ENABLE

- Launch Texas Water Market Makers, a program for qualified conservation entities who will compete for strategic support to pursue water transactions that advance water resilience in priority basins and aquifers
- Facilitate at least one flows restoration or protection project through an application for funding with the Clean Water State Revolving Fund
- Matchmake at least one corporate water offset commitment with water generation, restoration or protection projects on the ground
- Motivate at least 5 million gallons of additional onsite water capacity in the I-35 Corridor between Austin and San Antonio

INVEST

- Raise at least \$900,000 for the Texas Flows Fund, a competitive funding source to be administered by Texas Water Trade for flows restoration or protection projects
- Leverage the Texas Flows Fund to attract an additional \$1 million of new funding to flows restoration or protection projects in Texas
- Restore or protect at least 10,000 acre-feet¹ of water instream

¹ One acre-foot of water is equivalent to 325,851 gallons.

OUR MISSION

The mission of Texas Water Trade is to unleash the power of markets and technological innovation to build a future of clean, flowing water for all Texans.



OUR PURPOSE



TRANSFORM

Redefine the way that Texans see water resources through pathbreaking planning and market design.



ENABLE

Restore and protect water resources by facilitating market transactions with the mutual benefits of ecological resilience and economic vitality.



INVEST

Broker capital deployment among stakeholders into durable water solutions.



OUR PRINCIPLES

Texan values, Texas landscape

Working across the diverse cultures and landscapes of our vast state, we seek to leverage Texans' commitments to private property rights and market forces to achieve sustained water abundance for people and nature.

Global relevance

As the 10th largest economy in the world, we view Texas as holding all of the human and capital resources it needs to achieve its full potential, unimpeded by water insecurity. We believe that by investing in solutions to its own water challenges, Texas can become an exporter of these solutions to the world.

Science

We rely on science to inform our decisions and work to advance scientific understanding of how we can optimize outcomes for natural systems and human economies.

Equity

We view access to clean water as a fundamental benchmark of economic vitality, and will work to advance market and technological innovation in ways that can benefit all Texans—no matter their income or zip code.

Mutual gains

Durable solutions to water insecurity must advance the interests of multiple stakeholders. We facilitate the co-creation of lasting investments in water resilience among economic stakeholders to demonstrate that clean, flowing water is achievable for all Texans.

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© Houston Skyline- Tony Webster

THE TEXAS OPPORTUNITY

Over the next thirty years, Texas’s population is set to double, driving a projected 35% increase in municipal water demand.² While the leading economic powerhouses of Texas—its cities and industries—are positioned to capture the water they need to enable this growth, the state’s agricultural producers, its rural communities and its environment are predicted to be less water secure than ever before. Avoiding this looming water crisis will require investments that transcend sectors and deploy innovative tools that will work in Texas’ pro-property rights culture.

» We have five critical factors working in our favor:

1. Flexibility of water rights
2. Diversity of water resources
3. Advanced science
4. Substantial capital resources
5. State leaders committed to driving solutions

Despite these challenges, Texas is uniquely positioned to grow without depleting its water resources, if we invest in the right solutions. In fact, Texas is better positioned than most western states to deploy markets and technology to achieve long-term water security.

² Texas Water Development Board, 2017 State Water Plan, <https://2017.texasstatewaterplan.org/statewide>.

Flexibility of Water Permitting

Although most surface flows in the state have been allocated, Texas law allows for a relatively simple process for amending and transferring surface water rights, enabling changing water demands to be met through market-based trading of existing permits. In fact, SB-1 in 1997 – the genesis of today’s state water planning process – called for voluntary market based transactions to meet Texas’ future water needs. Administrative approval can be secured within a year for most non-contested permit amendments. State law allows water rights holders to amend their water rights to include multiple beneficial uses (such as agricultural irrigation, municipal or mining) and—so long as the place of use does not change—to decide without additional administrative approval how to allocate that water between approved beneficial uses in any given year. This unique framework is highly conducive to the flexible reallocation of water through market-based trades.

These favorable enabling conditions for market-based solutions extend across all economic uses of water, including environmental flows. In Texas, instream flows—water left in a stream or river for use by the environment—is a statutorily-recognized beneficial use that is entitled to protections comparable to those for municipal water, steam electric cooling, agricultural irrigation or other beneficial uses of water. Unlike some other western states, instream flows can be added alongside other beneficial uses like agricultural irrigation or municipal water use, allowing water to be protected from upstream diversion by more junior water right holders. This combination of regulatory frameworks creates a prime opportunity to use markets as a way to compensate water rights holders for the economic value of their water and to reallocate, permanently or temporarily, existing water rights to meet changing human and environmental needs.



© San Marcos River - Yakona



Diversity of Water Resources

Texas law recognizes four types of water: 1) groundwater, which is owned by the landowner and which—in the places where it is regulated—is allocated by the local Groundwater Conservation District; 2) surface water, which is owned by the State of Texas and allocated by permits through the Texas Commission on Environmental Quality (TCEQ)³; 3) diffused surface water, precipitation or condensation that has interacted with the real estate of a landowner but which has not entered into a “bed or bank” where it would become state property and is, as a result, owned by the landowner; and 4) seawater, which is owned by the State of Texas from high tide to nine miles offshore. These four types of water collectively present an extraordinary suite of resources available to support Texas’ continued growth.

Following the severe drought of 2011, the State of Texas has invested considerable resources into deployment of new water resources, including brackish groundwater, Aquifer Storage and Recovery, seawater desalination and Direct Potable Reuse. A handful of large-scale projects have been constructed around the state, and many more are in pilot phase. This new generation of water infrastructure investments creates an opportunity to design basin-scale strategies for meeting regional water needs, including environmental flows. In addition, as more fast-growing cities look to smaller-scale reuse and diffused surface water

³ TCEQ allocates all surface water with the exception of Domestic & Livestock (D&L) Use, which entitles landowners along a stream or river to divert up to a fixed quantity of water for use on their property. D&L use is superior in right to all other uses.



projects to meet demands, Texas stands in a position to source more water at the site of use, “netting out” the increase in water demand and leaving more water in our rivers and aquifers.

Advanced Science

Over the last decade, Texas state agencies have invested millions of dollars to understand the state’s water resources and the process for onboarding new treatment technologies without compromising public health. Thanks to the work of the TCEQ, Texas utilities constructed the first Direct Potable Reuse projects in the country, allowing communities grappling with extreme water scarcity to treat wastewater to drinking water quality. The Texas Water Development Board (TWDB) has mapped most of the state’s brackish groundwater resources, identifying previously untapped formations that are most ripe for development. Bipartisan leadership in the Texas Legislature directed TCEQ to adopt environmental flow standards “adequate to support a sound ecological environment ⁴,” which led to a decade of scientific investments to understand how the needs of our natural resources can be met through dedication of water rights, thoughtful infrastructure design and reoperation of existing infrastructure. These collective scientific investments position our state to craft durable, resilient investments in water solutions that can enable growth while ensuring lasting water security for future generations.

⁴Tex. Water Code §11.1471(a)(1).



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Substantial Capital Resources

Texas is fortunate to have one of the best-capitalized water banks in the world. The Texas Water Development Board, perhaps best known for the 50-year State Water Plan it produces with the input of regional water planning groups, manages more than half a dozen funds designed to help rural and urban communities meet their water needs. Its disciplined financial policies have allowed TWDB to maintain a AAA bond rating, affording it the lowest borrowing rates possible. TWDB leverages federal and state monies to subsidize its loans to irrigation districts and political subdivisions, making it first in the nation among all state water lenders in affordability and volume of funding available for water infrastructure. Since its inception in 1957, TWDB has committed over \$27 billion in loans and grants, as of November 2018, TWDB has over \$11 billion in obligations issued to provide financial assistance to entities throughout Texas.

Alongside this public water banking colossus, Texas' diverse and growing economy offers an extraordinary wealth of financial resources to meet our changing water needs. Texas is home to 29% of the country's petroleum refining capacity.⁵ Billions of dollars of petrochemical capital lie along our shorelines and offshore waters and in the heart of the Permian Basin, by some measures the largest oil and gas basin on the planet⁶, generating production and mitigation revenues that could be dedicated to environmental water projects. Oil may be king, but it is by no means the only economic titan in the state—Texas is a national leader in aeronautics, biotechnology and information technology, and is the country's largest exporter of manufactured goods.⁷ More than 100 of the 1,000 largest public and private companies in the U.S. are based in Texas,⁸ many of which have pledged to offset their corporate water footprints or to take other measurable steps to enhance their water resilience, including investments beyond their fenceline. Collectively, these public and private financial engines mean that funding should be no obstacle to future water security.

⁵ Texas Economic Development Corporation. <https://businessintexas.com/industries/petroleum-refining-chemical-products>

⁶ Forbes (December 21, 2018) "America's Oil and Gas Reserves Double With Massive New Permian Discovery," <https://www.forbes.com/sites/arielcohen/2018/12/21/americas-oil-and-gas-reserves-double-with-massive-new-permian-discovery/#28d128b02c91>

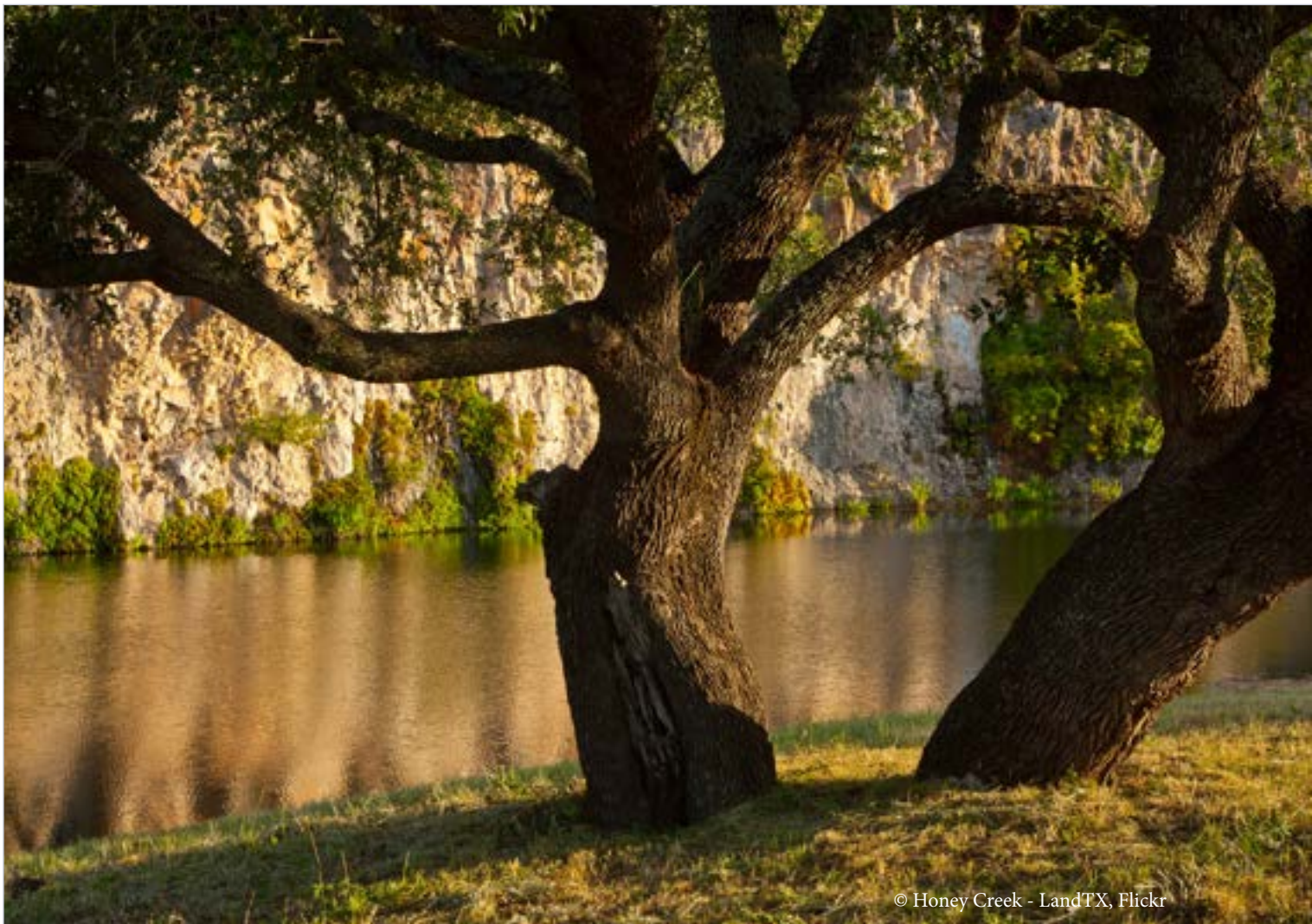
⁷ Texas Economic Development Corporation. <https://businessintexas.com/industries/advanced-tech-manufacturing>

⁸ Forbes, <https://www.forbes.com/places/tx/>

State Leaders Committed to Driving Solutions

For more than 20 years, leaders in the Texas Legislature and in our state agencies have invested considerable energy to meeting Texas' water needs through regulatory adaptation and funding. Some of the most important milestones in this journey have been Senate Bill 1 (1997), which, largely based on the premise that Texas' future water needs could be met in part via voluntary water transactions, established the current State Water Plan development process; Senate Bill 2 (2001), which enabled the creation of most of the state's Groundwater Conservation Districts; Senate Bill 3 (2007), which directed the TCEQ to determine how much water is needed to sustain ecologically sound rivers and bays and to shape new water permits to reflect the needs of the environment; and House Bill 4 (2013), which authorized the funding of the State Water Implementation Fund for Texas (SWIFT), a multibillion dollar fund to implement the State Water Plan.

A new generation of leaders at the Legislature and state agencies are driving changes to state regulation and funding approaches to meet the promise and vision contemplated in the aforementioned statutes. Their sustained commitment to innovative water management is a profound asset to the State, and an opportunity to shape multi-benefit solutions for Texans and nature in the years ahead.



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MORE TO BE DONE

Despite these unique and advantageous enabling conditions, Texas has significant gains to be made before markets can facilitate sustainable water management.

Cultivating Transactors

Voluntary water market transactions are a powerful but underused tool for sustaining the needs of the environment—itself a source of economic value—while creating financial value for water right holders and other economic stakeholders. In the states west of Texas, hundreds of millions of dollars have been paid to water rights holders to sustain or restore environmental flows. California leads the nation in total environmental water value traded, with more than \$139 million of transactions from 2006-2015. Nevada saw about half that value of transactions in the same period, and Oregon was close behind at \$55 million. With the exception of Wyoming, all states west of Texas saw a total traded value of more than \$1 million during that period; Texas had only \$20,150 in environmental flows trades as of 2015.⁹

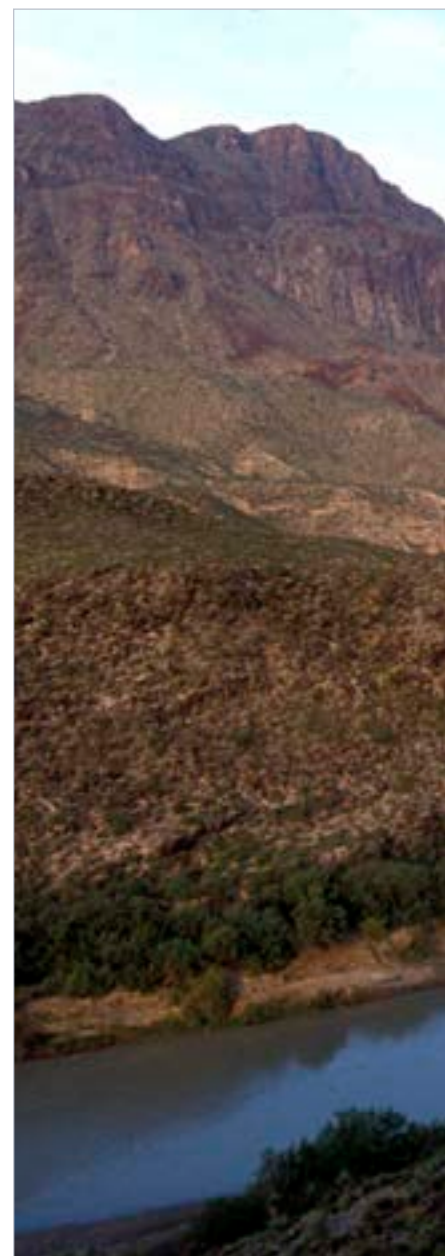
Market-based solutions to environmental flows have been recognized as viable by various state agencies and by the Texas Legislature for more than two decades. In 1997, the Texas Legislature created the Texas Water Trust to permanently or temporarily hold water rights dedicated to environmental needs, including instream flows and freshwater inflows to bays and estuaries. As of early 2019, the Texas Water Trust held only 2 water rights.

One significant reason for the underuse of the Texas Water Trust is the reality that the State of Texas (unlike many other western states) does not commonly pursue water right cancellations for underused water rights, as it is authorized to do in the Water Code. If water right owners viewed cancellation as a real threat, presumably many more would place their rights into the Trust or add instream flows as a beneficial use for their undiverted water, thereby protecting some or all of the right from cancellation by the State.

However, beyond this lack of regulatory threat, another reason for the paucity of environmental water trades and the minimal use of the Texas Water Trust is the lack of dedicated funding to pursue water leases or purchases—a stark contrast to some other western states, where public funds or other resources enable state water trusts to pursue water rights acquisitions.

Alongside this funding gap, the technical know-how to transact in water—for example, to identify potential conservation opportunities, to price water rights and to monitor compliance—is missing from most Texas conservation groups and state agencies. Gaining this knowledge is incredibly resource-intensive and is at least as substantial an impediment to the scaling-up of environmental water transactions as the lack of dedicated transaction funding.

⁹ WestWater Research (2016).



Groundwater Markets

Given the significant proportion of water demand that is met by groundwater resources in Texas (some 60% of total water used) and the strong connection between groundwater and surface water in some areas of the state (TWDB estimates that flows in the Rio Grande and Texas' Colorado River are 50% and 40% dependent upon groundwater inflows, respectively)¹⁰, tapping into markets as a means of flexibly and adaptively reallocating groundwater use should be a high priority statewide. Yet the trading of groundwater rights is substantially more complex than surface water, and, outside of the San Antonio portion of the Edwards Aquifer, there is no functioning market to adaptively manage the allocation of groundwater.

¹⁰ TWDB (2016) "Texas Aquifers Study: Groundwater Quantity, Quality, Flow, and Contributions to Surface Water" available at http://www.twdb.texas.gov/groundwater/docs/studies/TexasAquifersStudy_2016.pdf, accessed March 1, 2019.



© Rio Grande River - TPWD



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Reducing Market Friction

Despite the Legislature's sustained endorsement of markets as a means of meeting Texas' changing water demands—most notably in Senate Bill 1 (1997) and more recently in Senate Bill 3 (2007)—high transaction costs and low trade volumes conspire to make markets more of an aspirational concept than a functioning tool in most of the state.

Although SB3 created the Texas Water Bank (administered by the TWDB)—intended to function as a platform to connect sellers of water resources with potential buyers—visibility into the marketplace remains a persistent challenge to allowing market transactions to meet short- and long-term water needs. The opaqueness of the market includes a lack of information on which holders of water rights may be inclined to sell or lease their water to the price at which water has traded. Efforts to create greater transparency into water trading or to establish indices for specific basins could enable far greater water trading.

Similarly, while TCEQ has taken significant steps in recent years to resolve a backlog in permit amendment applications, the time-intensiveness of administrative review to add beneficial uses or change the place of use prohibits the practical use of markets for short-term trading. This means that water users who may be willing to pay for options on reliable water rights, to be called upon during times of shortage, may instead turn to more expensive infrastructure solutions to dry-year demands. At the same time, it means that water rights owners who may be willing to forgo use of their water in dry years may not be able to monetize the value of their property. The state can address these sources of market friction by smoothing the administrative process for uncontested permit amendments and expediting review for instream flow amendments, thereby enabling water users to allocate water flexibly using short-term market strategies like leasing and dry-year options.

Funding Market Development

Every year, municipalities and river authorities across the state receive sub-market rate loans from the Texas Water Development Board to develop infrastructure plans to fund the planning, acquisition, design and construction of water infrastructure. These no- and low-cost funds are instrumental to supporting communities' investment in engineered assets to meet present and future water needs. Yet no such funding exists for the planning and design of markets, which could provide lower-cost means of meeting changing water demand through the reallocation of existing water rights and new water created by new growth as an alternative to large, engineered solutions. More work needs to be done to illuminate how state agencies like TWDB can facilitate the development of markets as a tool for meeting water supply needs.

Making the Environment a Water User

While state law recognizes the environment as a user of water, and environmental flows are a beneficial use afforded the same protections as other water uses, the environment is not included in the State Water Plan that undergirds the billions of dollars managed by TWDB through the State Water Implementation Fund for Texas (SWIFT). This omission creates substantial challenges in ensuring future environmental flows and creates a disincentive for sponsors of water projects pursuing low-cost TWDB financing from designing their projects to provide environmental flow benefits. For the state's investments in water infrastructure to create true water security, the State Water Plan and the low-cost financing associated with it should be designed to meet the needs of all economic sectors, including the environment. Given the state's preferred "bottom-up" method of water planning, achieving this vision is both a matter of the sixteen regional planning groups advancing such multi-benefit projects and state agencies enabling them.

Creating Yield from Onsite Water Resources

Despite the remarkable flexibility afforded to Texas property owners to capture, hold, reuse and consume water of all varieties, onsite water resources remain a marginal water supply. Yet onsite capture coupled to onsite reuse has the potential to bolster the reliability of our state's strained surface and groundwater resources, in many places at a cost comparable to or better than centralized reuse. To realize this potential, we need to help growing municipalities realize the real supply and economic benefits of enabling onsite water resources in new development and ease the path to permitting and financing these projects so they can generate reliable yield.



© Pedernales River - Chris V. Sherman



Capturing Texas' Opportunity

Ensuring that water scarcity never impedes Texas' growth potential or the abundance of its natural resources demands persistence and focus. That is why Texas Water Trade was formed—to create an organization that will consistently and specifically focus on building paths to a sustainable water future in Texas for people and nature, using tools that mirror our state's values of market-based solutions and private property protections.

Our formation was catalyzed by the Harte Charitable Foundation, building upon the Foundation's prior work enabling pathbreaking market solutions to freshwater inflow depletion in the Gulf of Mexico. The Texas Gulf Coast provides nurseries for dozens of commercially important fish species and brooding and migratory habitat for many threatened and endangered migratory birds. Today, all but one Texas bay are considered to be ecologically sound. Yet future water storage and reuse projects in various stages of construction and planning have the potential to dramatically reduce freshwater inflows into these critical habitats. This creates an impetus to act now to prevent endangered species takings, further endangered species listings and degradation of the rich coastal habitats that are enjoyed by Texas anglers, hunters and birders—an important source of economic revenue for many coastal communities.

Recognizing the need for immediate action, and the success that market-based environmental flows programs had achieved in places like the Columbia River Basin and Nevada's Walker Lake, the Harte Charitable Foundation in 2015 committed seminal funding to the Texas Environmental Flows Initiative (TEFI), a three-year pilot to demonstrate environmental water transactions as an effective tool for achieving conservation outcomes in bays and estuaries. A collaborative effort between Ducks Unlimited, Harte Research Institute at Texas A&M Corpus Christi, The Meadows



© Matagorda Bay - Jerod Foster, The Nature Conservancy

Center for Water and the Environment, National Wildlife Federation, The Nature Conservancy and National Fish and Wildlife Foundation (NFWF), TEFI received support from numerous funders¹¹ and directed more than \$3 million to developing the legal and scientific framework necessary to implement water transactions for the benefit of Texas bays and estuaries.

The early goal of the project was to develop environmental flow transactions near the Texas Gulf Coast that could be funded through Deepwater Horizon Oil Spill funds projected to flow into Texas. As of early 2019, the TEFI project had advanced at least six potential transactions with a diversity of structures and counterparties reflecting the diversity of Texas' water user groups and hydrology. TEFI had also broadened its scope beyond Deepwater Horizon funds to renewable state funding resources and developed significant scientific advancements to support the design and monitoring of flows into marshlands, tidal rivers and open bays—a considerable advancement of the environmental flows field overall.

Yet a core realization from the TEFI pilot was that while market-based transactions and incentives have an important role to play in achieving sustainable water management and protecting the state's natural heritage, the use of market-based tools must be significantly scaled up and greater organizational capacity is needed to make a measurable difference. With this realization, and recognizing the absence of an existing organization dedicated to driving market activity to enhance the state's water resilience, the Harte Charitable Foundation committed seed funding for the launch of Texas Water Trade in late 2018.

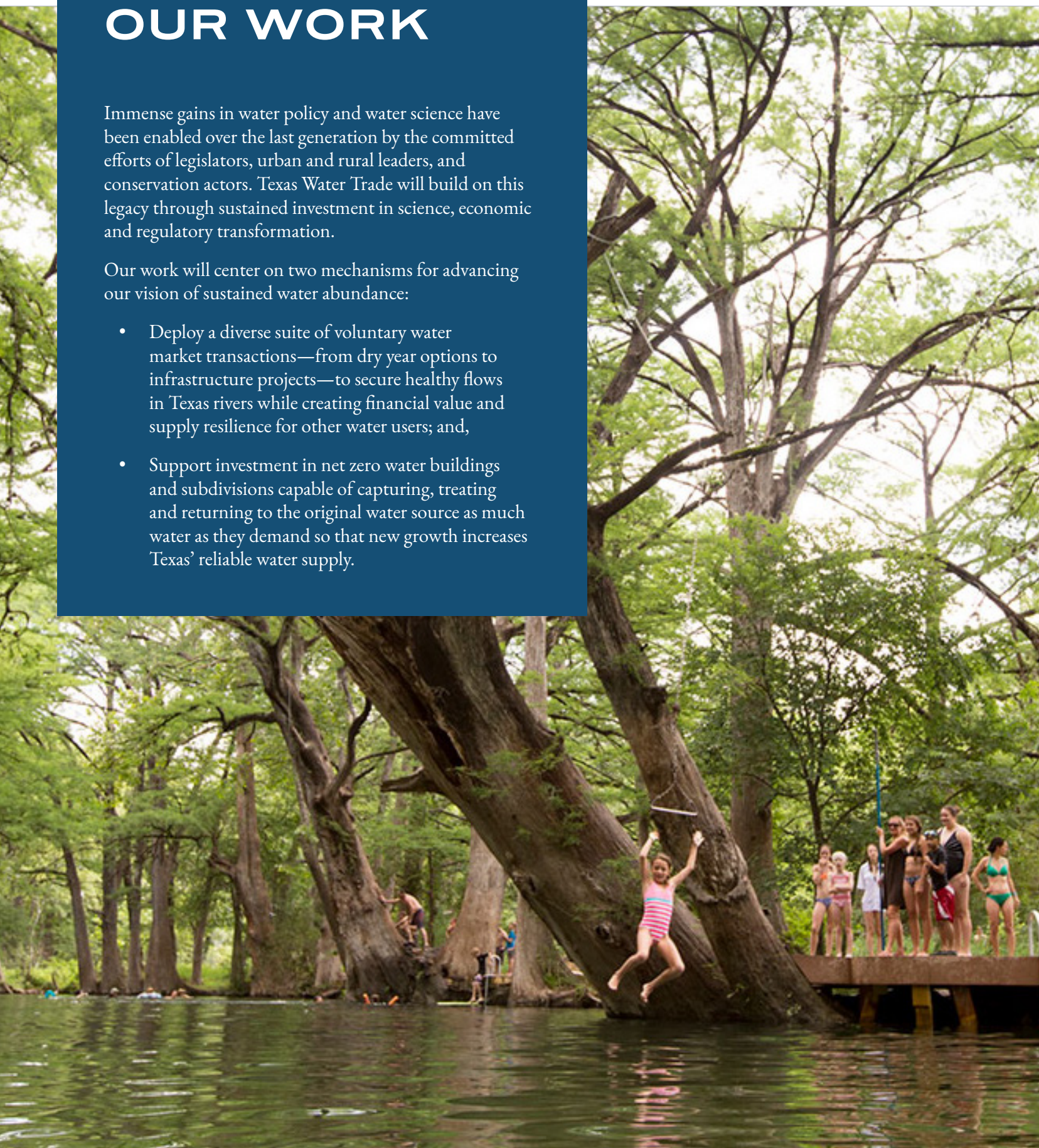
¹¹ The complete set of programmatic funders for the TEFI pilot includes Harte Charitable Foundation, the Cynthia and George Mitchell Foundation, The Meadows Foundation, Water Funders Initiative, Lyda Hill Holdings, The Houston Endowment and the National Fish and Wildlife Foundation. An additional pledge of transaction matching funds has been made by The Campbell Foundation.

OUR WORK

Immense gains in water policy and water science have been enabled over the last generation by the committed efforts of legislators, urban and rural leaders, and conservation actors. Texas Water Trade will build on this legacy through sustained investment in science, economic and regulatory transformation.

Our work will center on two mechanisms for advancing our vision of sustained water abundance:

- Deploy a diverse suite of voluntary water market transactions—from dry year options to infrastructure projects—to secure healthy flows in Texas rivers while creating financial value and supply resilience for other water users; and,
- Support investment in net zero water buildings and subdivisions capable of capturing, treating and returning to the original water source as much water as they demand so that new growth increases Texas' reliable water supply.





To advance these objectives, TWT will work to:

Build and support the marketplace of entities capable of pursuing water transactions for healthy flows

TWT will transfer technical knowledge and innovation related to the legal frameworks of surface water rights and groundwater rights, hydrological and ecological modeling to evaluate benefit of various contract structures to secure water, and opportunities to create financial value for water rights holders who voluntarily participate in flows transactions

Launch the Texas Water Market Makers Program

TWT will raise funds to create a program for qualified conservation entities who will compete to receive sustained technical support, programmatic funding grants and access to transaction funds

Diversify funding resources for flows restoration and protection projects

TWT will become the go-to organization for corporate, philanthropic, state and federal resources pursuing flows restoration projects in Texas, and will work with partners across those sectors to steer existing funds where eligible and to design new funding vehicles as needed

Quarterback market development

Where healthy flows will depend upon more complex arrangements than land trusts and conservancies can presently pursue (for example, municipal project participation, water swaps or banking), TWT will develop and execute long-range market strategies

Provide trusted project evaluation

TWT will develop the expertise and brand recognition to become the one-stop shop for evaluating the feasibility, viability and benefit of flows restoration and protection projects in Texas, thereby lowering transaction costs for project sponsors and funders

Set flows restoration and protection targets

With the assistance of our Advisory Council and using the best available science and market analysis, TWT will set targets for the amount of water we will work to protect or restore by 2030

Advance awareness of the water supply potential of onsite water resources

TWT will produce tools that capture and inspire the imagination of policymakers, developers and community leaders of the enormous potential for onsite water to be part of the supply solution set for a growing Texas

Accelerate commitments to net zero water

Working in partnership with developers, Texas-based corporations and communities, TWT will enable high-visibility development projects that tap into onsite water resources, thereby delivering proofs of concept of net zero water as a viable solution

Support financial innovations to enable net zero development

TWT will work with entities associated with diverse funding resources such as Property Assessed Clean Energy (PACE) loans and debt issued by Municipal Utility Districts (MUDs), Planned Unit Developments (PUDs), Tax Increment Financing (TIF) districts, and municipalities to scale capital available for new development to tap into onsite water resources



© Big Bend - TPWD

THREE YEAR GOALS

TRANSFORM

- Define 10-year flows restoration targets for four priority river basins or aquifers which we will enable through intelligent market design
- Design market-based solutions to restore or protect at least one significant spring, working in collaboration with a Groundwater Conservation District
- Support at least one water utility in integrating building-scale water capture and treatment into supply planning

ENABLE

- Launch Texas Water Market Makers, a program for qualified conservation entities who will compete for strategic support to pursue water transactions that advance water resilience in priority basins and aquifers
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- Matchmake at least one corporate water offset commitment with water generation, restoration or protection projects on the ground
- Motivate at least 5 million gallons of additional onsite water capacity in the I-35 Corridor between Austin and San Antonio

INVEST

- Raise at least \$900,000 for the Texas Flows Fund, a competitive funding source to be administered by Texas Water Trade for flows restoration or protection projects
- Leverage the Texas Flows Fund to attract an additional \$1 million of new funding to flows restoration or protection projects in Texas
- Restore or protect at least 10,000 acre-feet¹² of water instream

¹² One acre-foot of water is equivalent to 325,851 gallons.

FIRST MOVES

Comanche Springs

The story of Comanche Springs is known to every student of Texas water law. Once a 30 million gallon a day oasis on the edge of the Chihuahuan Desert, Comanche Springs supported native populations and early settlers through the 1940s, when it began to sputter. The great springs finally went dry in the 1950s, due to significant groundwater pumping upstream of the springs. The protests of down-spring farmers led to a seminal court case, Pecos County Water Control and Improvement District No. 1 v. Williams, which is still cited today as it relates to the Rule of Capture, a piece of Texas water law which shields groundwater owners in unregulated areas from liability if their usage depletes another water user's supply.

For more than 50 years, the story of Comanche Springs seemed to have reached its unfortunate conclusion. But over the last decade, the once-quiet springs have begun flowing again in the late winter months when the aquifer has rebounded from summer irrigation pumping—leading some people to ask the question, could Comanche Springs be permanently restored?

Intrigued by this question, The Meadows Center for Water and the Environment at Texas State University and Texas Water Trade are undertaking a feasibility assessment of a market-based restoration of Comanche Springs. Throughout 2019—and with the generous support of the City of Fort Stockton's Visitors Bureau and the National Fish and Wildlife Foundation—we will be evaluating what it would take to restore perennial flow at the springs through voluntary, market-based cooperation of groundwater owners in the Comanche Springs contributing and recharge zones. The study is a pilot for the market-based, non-legislative protection of the springs that create baseflow in all of Texas' rivers.

Texas Water Trade is privileged to be leading the economic and finance components of this feasibility study. By early 2020, we will recommend the most effective market design for permanently reducing groundwater pumping to achieve perennial springflow at Comanche Springs, and develop a financing plan to capitalize that market. Given the importance of agriculture to the City of Fort Stockton and Pecos County, our objective will be to identify the optimal solution for restoring the spring while maintaining agricultural productivity, and doing so with the voluntary cooperation of groundwater owners.

Fort Stockton was once known as the Spring City of Texas—could market forces help it to reclaim its title?



© Comanche Springs Pool and Bath House - WikiCommons



Texas Water Market Makers

In the Columbia River Basin of the Pacific Northwest, some 1,500 miles from Texas, there is a terrific success story. Over the past 17 years, more than 1.6 million acre-feet of water has been restored to thousands of miles of streams that were once impassable to the salmon and trout that are so vitally important to those local cultures and economies. This success story didn't happen by accident—it is thanks to the consistent investment of funds and technical resources by the Columbia Basin Water Transactions Program (CBWTP). Formed in 2002, CBWTP works by training conservation practitioners how to pursue and execute water deals to keep water instream—often in cooperation with farmers who continue to produce on their lands—and by offering grants to build conservation groups' capacity to undertake water transactions.¹³

Texas Water Trade aspires to replicate that success here in Texas, recognizing that returning water to depleted streams and protecting rivers from future degradation takes the consistent, dedicated work of conservation entities with relationships on the ground.

In 2020, Texas Water Trade will launch Texas Water Market Makers, a competitive program that will award funding and technical resources to eligible conservation actors in priority geographies across the state. The program will steer resources to organizations with a clear track record of success in land conservation and a commitment to integrating water conservation more intentionally into their work. For those entities selected to be Texas Water Market Makers, we will provide hands-on support in water right permitting and

¹³ Columbia Basin Water Transactions Program 2017 Annual Report, available at <https://www.nfwf.org/cbwtp/Documents/cbwtp-annual-report-2017.pdf>. Accessed March 3, 2019.



© San Marcos River - Arthur Thompson

valuation, hydrological modeling and ecological monitoring—skills that would otherwise be beyond most organizations’ ability to develop independently and that are critical to protecting environmental flows through market transactions.

Restoring and protecting the ecological integrity of freshwater resources also demands coordination, so that individual deals are focused in areas of ecological importance and collectively secure the timing and volume of flows that are needed to sustain ecological productivity. For this reason, Texas Water Trade will work throughout 2019 and 2020 to identify geographic priorities and quantitative targets for flows restoration and protection goals that are scientifically sound and achievable. As our partners and grantees secure water through successful transactions, we will also work with them to monitor the outcomes of those deals—ensuring that water committed to be kept instream is not illegally diverted and that the intended ecological outcomes (e.g. reconnected reaches for spawning fish, lowered salinity in critical migratory bird habitat) are achieved.

Finally, Texas Water Trade will pursue a diverse suite of funding resources to enable sustainable and scalable funding for flows. TWT will build on an initial commitment of \$250,000 from the National Fish and Wildlife Foundation to grow a Texas Flows Fund that can be recapitalized from corporate, philanthropic and governmental commitments, with the goal of securing at least \$900,000 by 2021 to leverage against another \$1 million of funding from other sources. We will work to normalize and enable the use of other renewable funds such as the State Revolving Funds for Clean Water and Drinking Water, administered by the Texas Water Development Board, and the many conservation funds provided through the Farm Bill that have been used to great success in the broader West for flows restoration. With these collective commitments, Texas Water Trade commits to enabling the restoration or protection of at least 10,000 acre-feet of water by 2021.



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Net Zero in the I-35 Corridor

The region of the Hill Country between Austin and San Antonio is home to springs that add millions of gallons of flow each day to two important Texas rivers, the Colorado and the Guadalupe-Blanco. This area—also known as the I-35 Corridor for the interstate that connects these booming cities—also attracts more than 280 new inhabitants each day.¹⁴

Satisfying the water demands of this growing population is driving increased groundwater pumping, at the risk of further depleting already-stretched water supplies. New regional supply options bringing water from further afield can meet near-term water demands, but with escalating costs and steady population gains, many question how we will find dependable and affordable sources of water for the long haul.

Using an approach known as Net Zero, we believe new growth can be part of the water supply solution in Central Texas.

The concept is taking hold in places like Austin, which recently adopted a 100-year water supply plan that envisions the water needs of a population four times larger than today's being met without importing non-native water resources—with a third of future additional supplies being sourced within the city itself from buildings that capture and treat their own water. What does this mean for flows? Modeling shows that the City of Austin, even after a century of growth, can achieve greater water reliability while consuming less water from the Colorado River than it does today.¹⁵

Southwest of Austin, the Independent School District of the fast-growing town of Wimberley—known to most Texans for the tranquil Blanco River and the iconic swimming hole known as Jacob's Well—in 2018 committed to building the first “One Water” school in Texas. The school will use 90% less groundwater than a typical school of its size by sourcing the majority of its water from rainwater, air conditioning condensate and treated wastewater.¹⁶

¹⁴ Travis County grew by 60 people a day in 2018, Williamson and Hays Counties by an additional 120 people a day, Comal County by 19 people a day in the period of July 2016 to July 2017 and Bexar County by 84 people a day over the same period. Sources: <https://cbsaustin.com/news/local/austin-growing-by-35-people-a-day-hays-and-wilco-growing-by-120>; <https://www.expressnews.com/news/local/article/Comal-ranks-second-among-nation-s-12772022.php>; <https://www.sacurrent.com/the-daily/archives/2018/04/19/bexar-had-the-7th-fastest-population-growth-in-the-nation>.

¹⁵ <http://austintexas.gov/page/water-forward-resources>

¹⁶ <https://www.kvue.com/article/news/local/wimberley-school-to-make-history-as-first-one-water-school-in-texas/269-620038580>

By doing so, the school will protect flows at nearby Jacob's Well (which ceased its flow for the first time in recorded history during the 2011 drought) and will protect water quality downstream in the Blanco River.

Each of these examples is a huge step toward what can be called “Net Zero”—growth that does not demand a net increase in water consumption. The concept of Net Zero is a powerful advancement in the field of water conservation, which has already enabled many Texas cities to grow without increasing the total water used. But while traditional water conservation makes greater use of existing water resources by reducing the amount of water needed for everyday activities—showering, irrigation, clothes washing—Net Zero has the potential to satisfy new water demands with new sources of water that are created by new development. The resulting gains in water conservation are staggering—buildings that treat wastewater onsite for non-potable reuse—such as toilet flushing, chilling operations and outdoor irrigation—can operate using just 10-25% of the water demanded of a typical building. To water conservation analysts, the tremendous savings associated with onsite water capture and reuse are known as “deep conservation.” To Texas Water Trade, we call it the way of the future.

Texas Water Trade believes that these recent wins for growth that does not deplete water resources are replicable if we can focus resources on building the economic case for Net Zero and proliferating proofs of concept. To do that, Texas Water Trade is committed to supporting the City of Austin in implementing Water Forward through development of the codes and ordinances, financial practices and regulatory structures that will be needed to scale up onsite water resources. Through our role as a conduit for water offset projects in Texas, we will enable corporations expanding their operations in Central Texas to achieve Net Zero through their own operations or through offsets that advance Net Zero in local schools or other public spaces. And we will work with at least one additional community in the I-35 Corridor to develop plans and/or permit processes for capturing onsite water resources in new growth.

Through these efforts, by the end of 2021, we will have supported the passage of fundamental codes and ordinances in the City of Austin that will usher in a new era of the water-generating city. And we will have achieved at least 5 million gallons of additional onsite water capture in the I-35 Corridor.



© Preliminary Design of Wimberley One Water School - Wimberley ISD

Leveraging the State Revolving Fund for Conservation

In the states west of Texas, hundreds of millions of dollars have been paid to water rights holders to sustain or restore environmental flows. California leads the nation in total environmental water value traded, with more than \$139 million of transactions from 2006-2015. Nevada saw about half that value of transactions in the same period, and Oregon was close behind at \$55 million. With the exception of Wyoming, all states west of Texas saw a total traded value of more than \$1 million during that period; Texas had only \$20,150 in environmental flows trades as of 2015.¹⁷

One of the reasons for the stark difference in trading volumes for environmental water between Texas and other western states is the lack of dedicated funding to pursue water leases or purchases. Therefore, as Texas Water Trade works to normalize water transactions as a mechanism for keeping rivers flowing while compensating water rights owners for the value of their property, we must ask the question of where sustainable funding for this conservation tool can be found.

One potential source is a substantial yet underrecognized funding program administered by the Texas Water Development Board called the State Revolving Fund. Since the 1970s, states have used grants from the Environmental Protection Agency to offer funding programs for critical drinking water and wastewater infrastructure. These funding programs are called the Drinking Water State Revolving Fund (DWSRF) and the Clean Water State Revolving Fund (CWSRF)—named after their respective federal enabling legislation, the Safe Drinking Water and Clean Water Acts. In Texas, these SRF programs offer more than half a billion dollars a year in low- or no-interest loans, including loans with principal forgiveness.

Although federal statute allows SRF funds to be used for land protection, riparian restoration and flows protection, these funds had never been used for these purposes until 2018, when the Texas Water Development Board made a roughly \$3.2 million financial commitment to the City of San Marcos for the purchase of land in the Edwards Aquifer recharge and contributing zones to protect the Upper San Marcos River from water quality degradation that would be caused by the land's development.

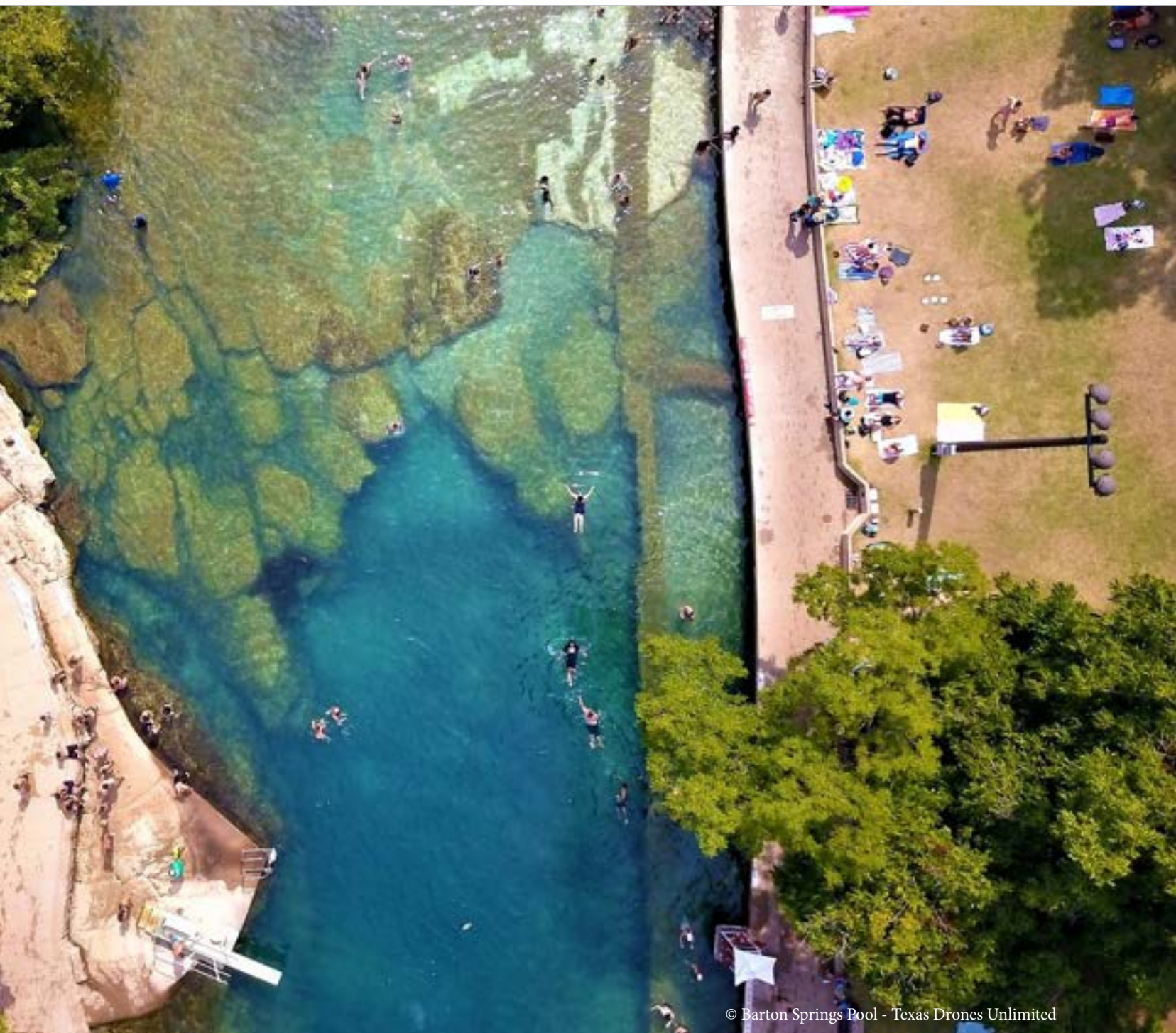
With an interest in the replicability of this first step toward state-enabled private land conservation, a number of Texas conservation nonprofits requested clarification from TWDB of the eligibility of other conservation activities for SRF funding—including water rights leasing and acquisition. Recognizing the widespread use of the SRF for conservation purposes in other states, the TWDB clarified in its 2018 Clean Water SRF Intended Use Plan that funds may be used for “acquisition of conservation easements or long-term acquisition of water rights by entities eligible under state law that will result in a substantial water quality benefit.”

As exciting as these first steps are to conservation practitioners, substantial work remains to realize the SRF's potential to advance significant



¹⁷ WestWater Research (2016).

investments in land and flows protection. Texas Water Trade is committed to supporting conservation practitioners throughout the state as they navigate the complex underwriting tests that TWDB applies to eligible projects. And we are committed to working with TWDB to identify a potential pipeline of conservation projects that could be financed through the SRF. By 2021, TWT aspires to have supported at least one land or flows protection or restoration project to financial close at the TWDB, and to use this process to gain confidence from the conservation community and state agencies that these renewable state funds can be used to create lasting value for people and nature.



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OUR COMMITMENT

BUILD PARTNERSHIPS

No organization can create change alone. Texas Water Trade is committed to advancing our vision of secure, resilient water through partnership with other nonprofit, governmental and for-profit entities to make our collective work bigger than the sum of its parts.

GROW RESOURCES

The future of Texas is the future of the world. Texas Water Trade will harness philanthropic, economic development and governmental funds from within Texas—and even more importantly, from beyond our borders—to pursue bold new water solutions in our state.

POSITION TEXAS AS A GLOBAL LEADER

The solutions Texans cultivate here at home deserve to be recognized on the global stage. Texas Water Trade will commit itself to sharing Texas' story of water innovation through our global network, and to import bold water innovations from across the globe that can help to sustain the Texas Miracle.



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**Texas Water Trade has the
skills and the experience to point
Texas towards a more sustainable
water future.**

- CARLOS RUBINSTEIN,
FORMER CHAIRMAN OF THE TEXAS WATER DEVELOPMENT BOARD



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