Texas Farm and Ranch Lands
Conservation Program

2020 EVALUATION REPORT

Highlighting the ecological and
economic value of conserved lands

An independent report prepared by

TEXAS A&M NRI
NATURAL RESOURCES INSTITUTE

TEXAS LAND TRUST COUNCIL

Texas Water Resources Institute
make every drop count

CONTENTS

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SUMMARY

The vast expanse of Texas lends itself to encompass some of the most diverse and ecologically rich landscapes in the United States. Much of the land is characterized as open-space and falls under the designation of privately-owned working lands, or farms, ranches, and forestlands that support agricultural systems, foster healthy environments, and support recreational and other intrinsic needs. Despite their importance, working lands in Texas are under threat of increasing land conversion and fragmentation pressure, due in large part to rapid population growth and rising land market values.

To help safeguard the public benefits derived from working lands, the Texas Legislature created the Texas Farm and Ranch Lands Conservation Program (TFRLCP, or hereafter, the Program) in 2005, with the purpose of funding agricultural conservation easements on private lands. Conservation easements are a voluntary tool that support the permanent conservation of private lands—through perpetually restricting development rights on contracted properties while enabling the continuation of agricultural practices. The goal of this report was to examine the conservation easements executed under the TFRLCP. Specifically, we evaluate ecological and economic values secured through the protection of these properties as well as the fiscal efficiency of state funds to protect working lands with high agricultural value at a relatively low cost for state residents. Key findings and recommendations are outlined below:

Annual Estimated Conservation Value

- $2.9M in agricultural commodities
- $7.3M in water replacement costs
- $170,400 in wildlife consumptive uses

Financial Efficiency

- 27:1 return on investment
- 10:1 leveraging ratio
- $148 avg. per acre state investment
- 86% of projects leveraged funding

RECOMMENDATIONS

The Program has proven successful in providing ecological and economic benefits to Texas residents. Due to increasing landowner interests, we recommend the continuation of funding every biennium, and suggest increasing funding when possible. Establishing communication protocols to voice accomplishments and new funding cycles would benefit program visibility as well as encourage program use by local/municipal governments. Other changes, such as program management updates based on lessons learned, and promotion of complementary programs are also suggested.

Texas Farm and Ranch Lands Conservation Program

Historically, Texas' landscape largely consisted of wide-open spaces that supported rural communities, distinct ecosystems, diverse fish and wildlife populations, and robust agricultural industries. Over time, the state population has grown considerably, shifting the majority of residents from rural to urban areas; yet open spaces remain a defining characteristic of the state. Today, Texas is 95% privately-owned, and approximately 82% of the land is classified as working lands, or privately-owned farms, ranches, and forests that provide numerous ecological, economic, and intrinsic benefits. Conservation of privately-owned working lands is pivotal in protecting public interests in natural resources and local food and fiber sources, especially in light of the state's rapidly growing population and associated land fragmentation and development concerns. Traditional land management and resource protection practices by state agencies often focus on public lands, leaving the majority of land stewardship responsibility in the hands of landowners.

The state Legislature recognized the need to bridge this gap, and in 2005, created the Texas Farms and Ranch Lands Conservation Program (TFRLCP, or hereafter, the Program) for protecting working lands with significant agricultural value, which benefits the state's rural economy as well as availability of local food and fiber products among numerous other benefits. The Program provides state funds for purchasing development rights from a a willing and interested landowner, allowing the land to remain in its current state, thus safeguarding critical natural resources in perpetuity. Qualified Non-Governmental Organizations (NGOs), which are non-profit, citizen-based groups, and land trusts, which are organizations that take legal ownership, stewardship, or partial control over property at the behest of the landowner, are the primary entities that acquire agricultural conservation easements from willing sellers; however, the Program does allow governmental agencies to act as the primary holder of the easement, as seen with the Texas Forest Service with the Longleaf Ridge property. The majority of Program easements to-date have been acquired through the partnership of private landowners, federal and state, local, and NGO entities, who leverage the purchase of the conservation easement. The goal of this report is to describe the return on Texas' direct investment in working lands conservation, and to highlight the perpetual ecological and economic benefits the Program properties provide to the public at a low cost.

TPWD Land Stewards Program
Chase Fountain

INVESTMENT IN **CONSERVATION**

Originally administered under the Texas General Land Office, the Program initially used federal funding to support conservation easements within coastal areas. In 2015, program oversight shifted to the Texas Parks and Wildlife Department (TPWD), and the first state funding appropriation was granted in the 2016-2017 biennium. To date, TFRLCP under TPWD has fully executed 14 grant projects and another seven are currently being transacted, representing a wide variety of working land acres across the state (Table 1). The following sections assess the characteristics and conservation value of those TFRLCP projects to demonstrate the prolific ecological and economic values secured through state investment and leveraging of external funds. Descriptions of methods and data used to perform assessments are listed in the *Appendices*. This report serves to update a previous Program assessment, which only captured the value of the first biennium projects.

Inspiring Oaks Ranch
Chase Fountain

Grant Process

The Program ranks and selects applicants to receive funding based on weighted criteria in various categories—threat of development or other conversion of productive working lands, value (cost effectiveness), watershed value, fish and wildlife value, contribution to a conservation landscape, and terms of the conservation easement. Program funds can be combined with external support, such as contributions from federal programs, counties and municipalities, land trusts, and willing landowners to cover the easement acquisition, closing costs, and long-term monitoring fees. Once a conservation easement is in place, the landowner still owns the land and remains in charge of its day-to-day management, while the land trust or public entity that holds the easement monitors the property to ensure terms of the easement are upheld in perpetuity.

Grant recipients have demonstrated a deep commitment to protecting the important and unique characteristics of their lands. By implementing best management practices, landowners are ensuring the future ecological health of the land and continued prosperity of agricultural operations. Outreach and education have been another common thread of these properties, as many of the landowners engage with local communities to share the land's values and beauty.

Table 1. Projects executed under the Texas Parks and Wildlife Department for the Texas Farm and Ranch Lands Conservation Program, 2016 to 2021. Does not include projects executed under the Texas General Land Office (pre-2016).

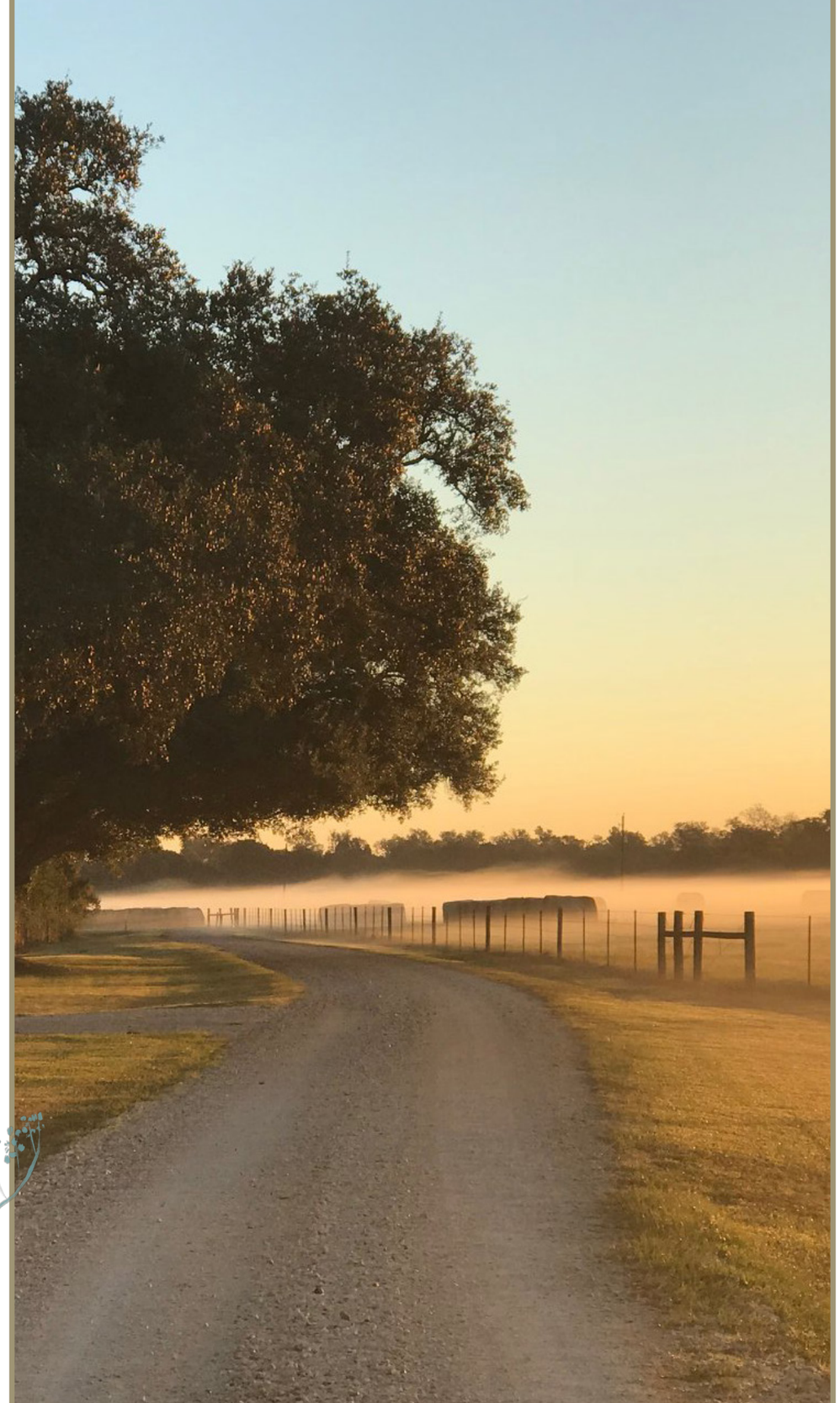
	Project Name	County	Acreage	Easement Holder
2016–2017	Albritton Ranch	Bandera	716	The Nature Conservancy
	Dreamcatcher Ranch	Hays	210	Guadalupe Blanco River Trust
	Javelina Ranch	Hidalgo	280	The Valley Land Fund
	Lazy Bend Ranch	Hays	145	Hill Country Conservancy
	Pietila Ranch	Culberson	6,469	The Nature Conservancy
	Puryear Ranch	Travis	425	Hill Country Conservancy
	Santa Anna Ranch	Coleman	950	Texas Agricultural Land Trust
2018–2019	Bartush Ranch	Cooke	1,498	The Nature Conservancy
	Collins Ranch	Williamson	531	The Nature Conservancy
	Inspiring Oaks Ranch	Hays	1,014	Hill Country Conservancy
	Krause Ranch	Real	1,640	The Nature Conservancy
	Longleaf Ridge	Jasper	5,438	Texas A&M Forest Service
	Spread Oaks Ranch	Matagorda	5,332	Katy Prairie Conservancy
2020–2021	5H Ranch*	Bexar	249	Green Spaces Alliance
	Donop Llano River Ranch	Mason	423	Texas Agriculture Land Trust
	Honey Creek Spring Ranch*	Comal	639	The Nature Conservancy
	JTW Ranch*	Dimmit	433	Texas Agriculture Land Trust
	Montell Creek Ranch*	Uvalde	396	Hill Country Land Trust
	Open V Ranch*	Uvalde	205	Texas Agriculture Land Trust
	Oyster Bayou*	Chambers	460	Galveston Bay Foundation
	Spicewood Ranch *Phase I**	Burnet	561	Hill Country Conservancy

* Currently being transacted, as of September 2020

> "The Program benefits so many aspects of the Texas way of life. By protecting working lands and their associated resources, we're protecting our ability to help feed the nation while conserving the natural landscape that Texas was built on."
>
> -Chris Abernathy,
> TFRLCP Coordinator

SUPPORTING **RURAL ECONOMIES**

Working lands are significant contributors to our state's economy. Texas depends on healthy and abundant natural resources to enhance quality of life for its residents as well as support the state's job market, revenue, and ability to meet consumer demand for natural products. In this section, we assess the potential value that TFRLCP lands contribute to our state's rural economy.



Long Acres Ranch
Scott Lightle

Agriculture & Forestry

Texas has a long and robust history of agricultural production, and currently supports the most farm and ranch operations of any state in the country—representing over 248,000 individual operations that account for 141M acres.[1] In 2018, the United States Department of Agriculture (USDA) reported that Texas operations generated approximately $23B in cash receipts and an estimated $135.5B annually to the food and fiber sector.[2,3] One in every seven working Texans are employed through agriculture-related jobs, accounting for 14 percent of the state's workforce.[4]

Studies by Texas Land Trends and American Farmland Trust show that Texas is losing high quality agricultural land at an unprecedented rate, and over 2.2M acres of working lands have been converted to non-agricultural uses (e.g., residential development) since 1997.[5,6] Conserving working lands through easements help to relieve development pressures and provide tax incentives to operators, thus helping support the future of the agricultural sector in Texas.

Using the Texas Comptroller of Public Account's annual land productivity data, we determined the 21 properties conserved under the TFRLCP have the potential to provide approximately $2.9M in agricultural commodities, such as food and fiber, annually.[7]

Agritourism

Finding diverse and innovative revenue streams on farms and ranches has become increasingly popular, especially on small to mid-size operations that are commonly less profitable in traditional agricultural practices. Agritourism, as the name implies, is the convergence of agriculture and tourism, and can include a range of recreational and educational activities, from "you-pick" fruit and vegetable operations, to living history farms. According to the USDA Census of Agriculture data, farm agritourism in Texas nearly doubled to $162.6M in cash receipts from 2002 to 2017.

Santa Anna Ranch

Nestled in the rolling hills of Coleman County, the Santa Anna Ranch consists of approximately 420 acres of rangeland and about 530 acres of cropland. Agricultural production is the main use of this property, home to a base herd of mother cows year round, occasionally wintering stocker calves and late calving cows from the family's Wyoming livestock operation. The rangeland is actively managed to improve ecological condition and soil health, providing increased quality livestock forage as well as creating ideal wildlife habitat. The brushy breaks and mesquite savannah flats provide high-quality habitat for white-tailed deer (*Odocoileus virginianus*) while the relatively open grasslands offer valuable northern bobwhite (*Colinus virginianus*) habitat. The healthy presence of these species, in particular, allow the ranch to offer hunting opportunities through property leases.

Santa Anna Ranch
Wyman Meinzer

Spread Oaks Ranch

With over 5,300 acres in northern Matagorda County of southeast Texas, Spread Oaks Ranch is nothing short of a diverse property—including a mosaic of natural and manmade wetlands, native prairie grasslands, mature Columbia Bottomland forests and riparian woodland, pastureland and fertile farmland. The ranch boasts six miles of frontage on the west bank of the Colorado River and nearly five miles of frontage on both sides of Blue Creek, a major tributary of the Colorado River. The ranch also includes numerous constructed and natural wetlands totaling approximately 1,300 acres. The pristine coastal prairie lands on the property serve to not only benefit resident and migratory wildlife, but also provide valuable water filtration and flood mitigation for nearby communities. Ranch activities integrate agriculture, recreation, and wildlife conservation, with portions of the property supporting cattle ranching, hunting, and conventional and organic farming, in addition to wildlife habitat. The convergence of management for each are easily noted, as the fields of organic corn, soybean, and rice are flooded after harvest to create managed wetlands for birds and waterfowl passing through on the Central Flyway bird migration route.

Wetland on Spread Oaks Ranch
Bill Stransky

Recreation

Texas' unique array of habitats, fish and wildlife, and climates provide recreation opportunities for residents and attract tourists year round. It is estimated that over 6.3M residents and non-residents participate in some form of wildlife-related recreation (e.g., hunting, fishing and wildlife-watching) in Texas annually, with expenditures for these activities reaching over $6.2B a year.[8] Public parks, forests, and refuges provide access to natural spaces; however, these areas only represent about three percent of the state's entire land area. The latest National Survey of Fishing, Hunting, and Wildlife-Associated Recreation noted that 85 percent of hunters in the U.S. utilize private lands for hunting activities, further highlighting the pivotal role private lands play in providing outdoor recreational opportunities.[9] Recent sales in hunting and fishing licenses in Texas indicate a steady interest in consumptive wildlife recreation, averaging $3.2M in individual licenses sold with revenues totaling $103M annually from 2015 to 2019.[10] Landowners across Texas recognize that outdoor recreation, such as hunting access, can provide opportunities to generate income while continuing to manage their land in its natural state. Texas Land Trends data describes increasing trends in wildlife management, as land enrolled in this 1-D-1 open space appraisal designation has increased by 5.3M acres from 1997 to 2017.[5]

Using hunting lease data from the Texas Comptroller of Public Accounts, we determined the 21 properties conserved under the TFRLCP have the potential to provide approximately $170,400 in total wildlife value annually for consumptive uses (i.e., wildlife hunting lease values).

Bartush Ranch: (left) Crosstimbers woodland; (right) Red River
Mary Del Olmo

Bartush Ranch

Located where the northernmost reach of the Fort Worth Prairie (or the Grand Prairie) connects with the Cross Timbers, the Bartush Ranch is made up of old-growth woodlands and native grasslands—featuring scenic hilltop vistas, ravines and creeks that flow down into a two-mile corridor of bottomland hardwoods, wetlands, and sand flats on the bank of the Red River. Hilltop native tallgrass prairies, cedar brakes, and limestone escarpments harbor a multitude of rare plants found only in undisturbed conditions, while the mature mixed oak forest contains historic Witness Trees. The property is home to healthy wildlife populations of northern bobwhite, wild turkey (*Meleagris gallopavo*), black-capped vireo (*Vireo atricapilla*), and white-tailed deer, along with federally listed species such as the interior least tern (*Sterna antillarum athalassos*). One of the first Lone Star Land Steward award winners (1997) from Texas Parks and Wildlife Department (TPWD), the ranch has pioneered wildlife management programs, integrating land stewardship practices such as no-till agriculture, prescribed burning, antlerless deer harvest, and managed grazing. The property currently supports livestock grazing and an active hunting program, to include TPWD public and youth hunts.

Cattle grazing on Bartush Ranch
Mary Del Olmo

NATURAL
GOODS & SERVICES

Public benefits of working lands come in many forms such as natural goods and services, commonly referred to as ecosystem services. These occur naturally in open space and can include soil formation, storm water management and flood mitigation, fish and wildlife habitat, air purification, and water quality enhancement, among many other vital functions. In this section, we illustrate the value of select natural goods and services the TFRLCP properties provide to Texans.

Water

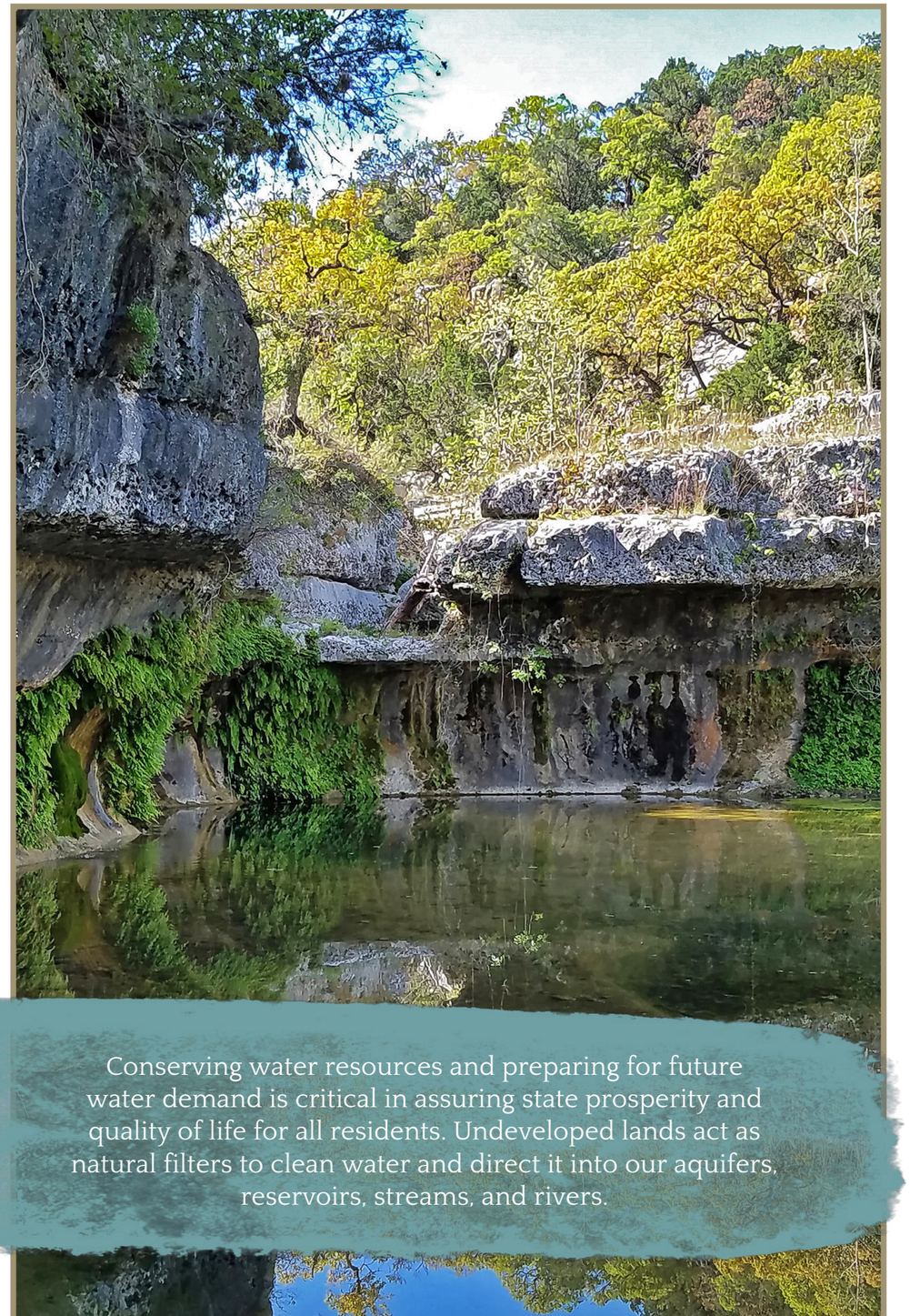
Water is perhaps the most precious and vital resource of Texas. Geographically, each region of the state encompasses unique terrain and climates that support varying industries and population densities—all of which influence the availability and consumption of water. To ensure Texans have adequate, clean water supplies, the Texas Water Development Board (TWDB) is tasked with addressing both the short- and long-term water needs of the state through an in-depth planning process that culminates in the State Water Plan. Every five years, the TWDB works with regional water planning groups to determine potential water shortages on a moving fifty-year horizon, using the drought of record as a benchmark. Planning groups develop a variety of water management strategies to address potential shortcomings. According to the 2017 State Water Plan,

Stream on Inspiring Oaks Ranch
Chase Fountain

by 2070 Texas will be in a nearly 9M acre-feet water deficit, and will potentially spend $62.6B in water management strategies to meet water demand.[11]

Using the capital costs needed to implement identified regional strategies, our analysis determined the 21 properties conserved under the TFRLCP have the potential to capture over 40,600 acre-feet of water annually, representing a water replacement cost of approximately $7.3M annually for the state.

Cove on Krause Ranch
Adrian Van Dellen

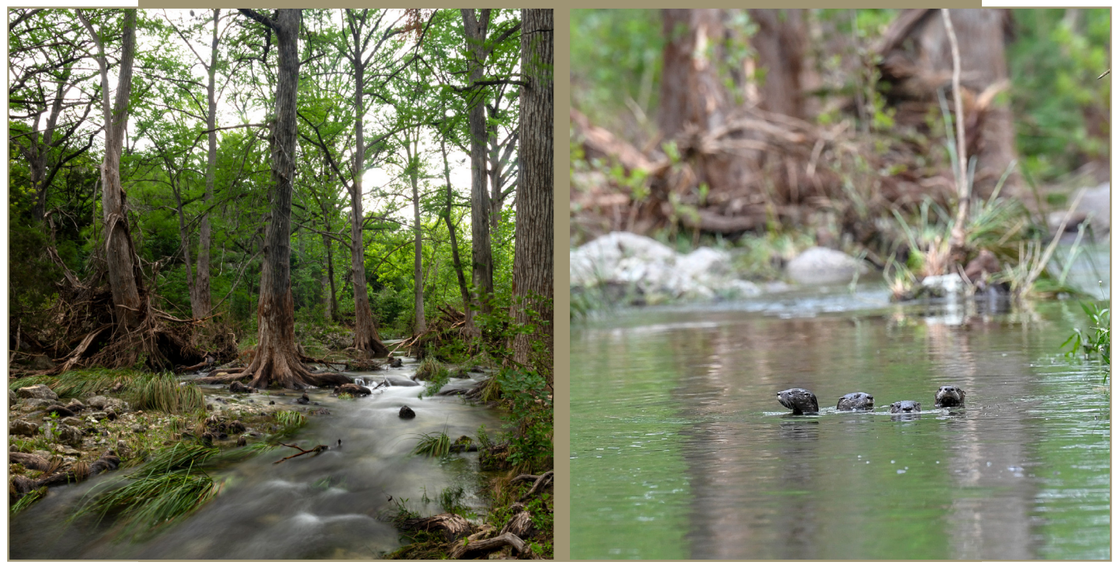


Conserving water resources and preparing for future water demand is critical in assuring state prosperity and quality of life for all residents. Undeveloped lands act as natural filters to clean water and direct it into our aquifers, reservoirs, streams, and rivers.

Inspiring Oaks Ranch

Comprising over 1,000 acres, the ranch features landscapes that range from gently tilting fields to dramatic canyons and ravines. The wildlife and water quality values conserved on this property are prolific, proven by the abundant water sources and mixture of woodlands and savannah grasslands that provide food, water, and necessary habitat for a variety of wildlife, including several imperiled species such as the Barton Springs salamander (*Eurycea sosorum*) and golden-cheeked warbler (*Setophaga chrysoparia*). Thick stands of native grasses, woody shrubs, and mast and shade producing trees, including bald cypress (*Taxodium distichum*), preserve bank stability and stream ecology. Other property features like the sinks, caves, and karst areas allow the nearly five miles of creeks and streams found on the property, such as Wanslow Creek, to recharge the nearby Greater Edwards and Middle Trinity Aquifers. These aquifers are critical to the drinking water supply for the City of San Antonio as well as other surrounding areas. The immense water value of this property is far-reaching, and contributes to the health of popular swimming springs and holes frequented by Texans and visitors alike—Blanco River, Pleasant Valley Spring, Jacob's Well, and Wimberley's Blue Hole.

The property's series of springs create an oasis of fish, salamander, fern, cypress, and beaver habitat.



Inspiring Oaks Ranch: (left) perennial stream; (right) river otters
Chase Fountain

WATER
Property Highlight

Black Hole on Krause Ranch
Adrian Van Dellen

Krause Ranch

The Krause Ranch is a picturesque example of Texas Hill Country with rugged hills and incised canyons, featuring hundreds of natural springs that create a five-mile-long aquatic network feeding the West Frio River, which flows through the ranch. This area once famed as Pearl Beer's "land of eleven hundred springs," acts as a sieve, funneling rainfall and runoff deep into the ground where it is stored in limestone caverns that feed the Edwards-Trinity Aquifer. The largest of the springs, Church Springs, is presently under long-term study by TPWD and the Nueces River Authority and has been reported to supply over a billion gallons of water a year to the Frio River. On the opposite side of the mountain, a sister spring flows from honeycombed rock into a sinkhole, a cavernous body of underground water known as Englishmen's Well, which contains petrified coral and prehistoric clam beds. The ranch also features other historical markers such as dinosaur footprints, fossils, segments of wagon trails from the 1800's, signs of Native American habitation, and innumerable species of flora and fauna unique to Texas. The working ranch aims to limit human impact while enhancing and preserving natural features through implementing management strategies that balance conservation of native species and grazing management. In recent years, extensive clearing of Ashe juniper (*Juniperus ashei*), along with careful wildlife management, have returned tall grasses and clustered oak mottes to their native state of abundance.

Land

Texas is a land of contrast and beauty, with geographically distinct natural communities and species. Ranked as one of the most biologically diverse states, Texas features unique aquatic and terrestrial environments spread across ten ecoregions that support a rich variety of plants and animals, many of which are endemic to the state.[12] Maintaining high biodiversity is key to boosting ecosystem productivity yet is constantly under threat due to habitat loss and degradation, as well as land fragmentation. Over the past two decades, Texas has experienced extensive loss in working lands, totaling nearly 2.2M acres in land conversion (e.g., farm to urban and residential development), and a rise in ownership fragmentation with an increase of approximately 40,000 small-sized ownerships (<100 acres).[1] Simply put, conserving land in Texas helps to keep open space intact to the greatest extent possible, and thus promotes biodiversity and ecosystem functions. Through the TFRLCP, over 28,000 acres of working lands have been conserved across the state, encompassing various land cover types (Figure 1).

Using the 2016 National Land Cover Database to calculate the land cover type of the 21 properties conserved under the TFRLCP, we found the properties primarily protect shrub/scrub, evergreen forest, and pasture/hay, which are among the land cover classes that experienced the greatest statewide loss from 2001 to 2016 (Table 2).

Table 2. Texas Farm and Ranch Lands Conservation Program (TFRLCP) properties breakdown by land cover type and comparison to statewide change from 2001 to 2016.

Land Cover Type	TFRLCP Lands (%)	TFRLCP Lands (acres)	Statewide Change (acres)
Shrub/Scrub	42	11,826	- 1,680,300
Evergreen forest	18	5,171	- 82,700
Pasture/Hay	11	3,108	- 869,600
Grassland/Herbaceous	9	2,627	525,600
Cultivated crops	7	2,059	1,243,800
Deciduous forest	6	1,557	- 349,800
Woody wetlands	2	579	- 27,000
Developed, Open space	2	447	294,400
Mixed forest	1	362	- 73,100
Open water	<1	85	276,200
Emergent herbaceous wetlands	<1	63	- 66,900

Expanding Footprint

The Program's application process prioritizes ecologically diverse and productive working lands that are under threat of near-term development as well as lands that maximize conservation impact. Some of the TFRLCP properties border other conserved lands, such as state and federal parks, Wildlife Management Areas, National Wildlife Refuges, and other privately-owned properties under conservation easement. This practice effectively expands the conservation footprint by forming a network of protected habitat areas, leading to landscape-level conservation.

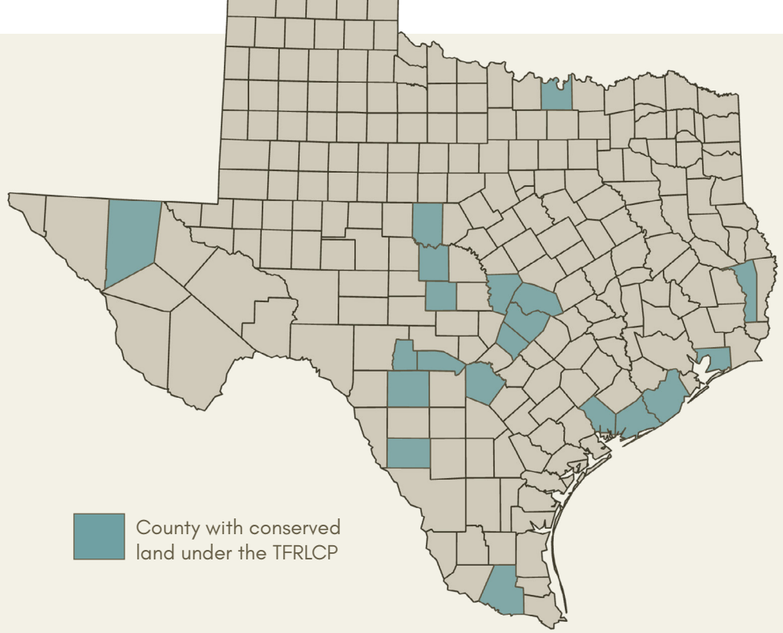


Figure 1. Counties with land conserved under the Texas Farm and Ranch Lands Conservation Program (TFRLCP), as of September 2020.

Habitat Needs

It is well documented that private lands hold a disproportionate number of rare or at-risk species and unique ecosystems compared to public lands.[13,14] Private land conservation is crucial for providing suitable habitat for sensitive species, for maintaining migratory corridors for songbirds and waterfowl, and for preserving vast open spaces needed for animals with large home ranges.

Four of the Program properties share a boundary, and another four are within two miles of other conserved lands

Program properties contain over 35 miles of rivers and streams

Longleaf Ridge

Longleaf Ridge is one of the most unique properties in the Program, both in part to the historic longleaf pine ecosystem and the collaborative efforts used to place the land under easement. Funding from multiple sources, including the U.S. Forest Service Forest Legacy Program, the National Fish and Wildlife Foundation Acres for America Program, and The Nature Conservancy, helped conserve the large 5,400 acre property, which is held under easement by state agency Texas A&M Forest Service. The land is scenic and biologically diverse, located on Longleaf Ridge, an upland ridge unusual for the East Texas Pineywoods. It contains approximately 20 miles of unaltered creeks, numerous waterfalls created by Catahoula rock outcrops, some of the last remaining natural longleaf pine forest in Texas, pitcher plant bogs and other rare communities such as Catahoula Barrens. This property acts as a stepping-stone in a growing conservation corridor between Sabine and Angelina National Forests and Big Thicket National Preserve. Many species of conservation concern take up residence in the longleaf pine forest, such as the Louisiana pine snake (*Pituophis ruthveni*) and Bachman's sparrow (*Peucaea aestivalis*). Active property management supports recreational hunting and fishing as well as restoration of longleaf pine, with timber harvest occurring under direction of a forest stewardship plan.

Longleaf Ridge: (top) longleaf pine forest; (bottom) pitcher plants
David Bezanson, The Nature Conservancy

LAND
Property Highlight

Pietila Ranch

The Pietila Ranch adjoins the boundary of Guadalupe Mountains National Park for six miles and borders the entire length of the park road that accesses McKittrick Canyon, one of Texas' most famous scenic attractions. Its direct connection to other conserved lands effectively expands contiguous habitat by nearly 6,500 acres for migrating and native wildlife, such as wild elk (*Cervus canadensis*). The foothills and canyons of the property form a rich desert landscape with habitat consisting of high desert grasslands that contain relic stands of alligator juniper (*Juniperus deppeana*) and Texas madrone (*Arbutus xalapensis*). Water features include perennial springs and seasonal creeks, which drain out of the base of the Guadalupe Mountains, a prehistoric limestone barrier reef. These are among the few permanent surface water features for wildlife within the vast, arid environments of northern Culberson County and adjacent New Mexico.

Pietila Ranch
David Bezanson, The Nature Conservancy

FINANCIAL EFFICIENCY

In recent years, there has been growing recognition of the importance of land conservation programs to help protect resources otherwise not accessible to the public. Maximizing the state's investment is a key objective of the TFRLCP. While not required, the Program can use state funds as leverage to gain funding support from other sources, such as federal conservation programs that require a cost-share or match. Other funding sources, whether local, private, or nonprofit, also take advantage of the Program to pool money and supplement one another to provide greater and more diversified funds for securing conservation easements.

It is important to recognize the financial contributions made by Program landowners make the conservation easement possible in many cases, representing a significant gain in financial value for the state. Landowners often take a considerable reduction in property value (bargain sale reduction) while some fully donate the conservation easement, and many contribute funds that cover long-term stewardship monitoring of the land. Here, we assess Program spending to determine its fiscal efficiency. This economic analysis only includes TPWD projects that have been fully executed as of September 2020.

White-tailed deer on Krause Ranch
Florian Schulz

BY THE NUMBERS

2016-2020

TOTAL INVESTMENT*
$36.2M

Land Market Value
$98.8M

TFRLCP Award
$3.7M

Federal Award
$13M

Other Contributions
$3.3M

Landowner Contributions
$16.1M

Rate of Return

TFRLCP's investment of about $3.7M protected land valued at approximately $98.8M.

27:1 RETURN ON STATE INVESTMENT

Leveraging Power

Garnering support from external sources, the state maximized its investment to aquire 14 conservation easements.

$10 FOR EVERY $1
OF STATE FUNDS

State Investment

The state has conserved approximately 25,000 acres of working lands at an average price of $1,443/acre, considering all funders.

AVERAGE PRICE OF $148/ACRE
FOR STATE FUNDS

*Financial contributions are further defined in the *Methods and Data* appendix.

Dreamcatcher Ranch

The Dreamcatcher Ranch is located just half a mile from San Marcos city limits; situated in Hays County, one of the fastest growing areas in Texas. Proximity to the IH-35 corridor, an increasing number of students at Texas State University, and job opportunities from nearby Austin and San Antonio metropolises have no doubt contributed to the urban and developmental pressures occurring in the region. Geographically, the ranch also falls within the Balcones Escarpment, an environmentally sensitive area that influences the water quality and quantity of the San Marcos Springs and the Edwards Aquifer Recharge Zone, feeding into many important waterbodies on which local populations depend (Figure 2). The waterways fed via this ranch provide critical habitat for multiple endangered aquatic species, such as the Texas blind salamander (*Eurycea rathbuni*).

Dreamcatcher Ranch
Guadalupe Blanco River Trust

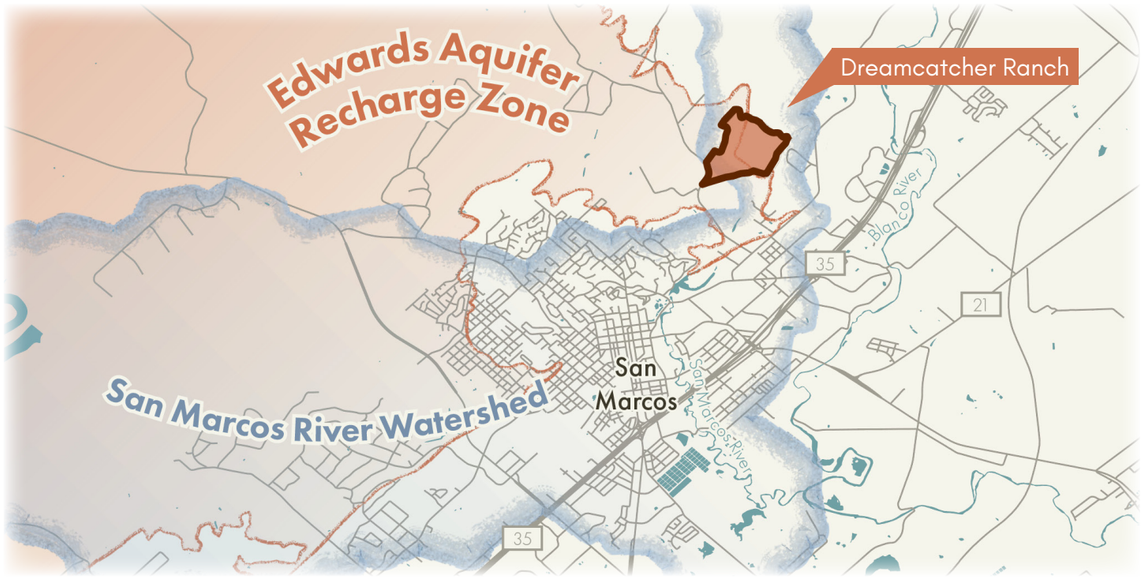


Figure 2. Dreamcatcher Ranch contributes to important water systems for the city of San Marcos.

FINAL THOUGHTS & **RECOMMENDATIONS**

Working lands remain central to the economic prosperity of the state, the quality of life for Texans, and the health of local environments. State-led efforts to finance working lands conservation are timely, as investments made today will yield exponentially greater economic benefits than a similar investment would yield years from now due to the ever-increasing value of rural lands in the state. Population growth is expected to increase by more than 70 percent (from 29.5 million to 51 million residents) between 2020 and 2070, with areas around urban centers (e.g., suburbs, urban fringe, etc.) and major highways likely to experience the bulk of associated residential and commercial development.[11] The demand for land in these areas will greatly influence the market value of rural real estate, making it increasingly more difficult for first-time landowners to start new working land operations, or for existing ones to expand. This issue is amplified by an aging landowner population, as the majority (68 percent) are nearing or at retirement age (55+ years old), and will soon be transferring or selling their property to new owners.[1] The culmination of these external pressures—increasing population demands, rising land market values, and large ownership transfers—create an uncertain future for the state's rural working landscape.

For these reasons, the TFRLCP's mission to conserve natural resources by protecting working lands from fragmentation and development is imperative. This program provides Texans a proactive tool to protect public benefits derived from private lands, while receiving lasting, high-impact value through relatively minor costs. To further program success, we suggest the recommendations on the next page be considered.

RECOMMENDATIONS

Continue and Increase Program Funding

- A goal should be to match working land loss rate with conservation rate. Currently, working lands are being lost at a 240,000 acres/year rate while the program is conserving about 4,700 acres/year.
- Allow unspent funds to roll over to next biennium funding cycle. Current constraints make it difficult to execute previous biennium funds once the next funding cycle has begun.

Seek and Promote Partnerships

- Actively seek new funding partners through avenues such as local and municipal governments.
- Collaborate with NGOs to identify potential property owners who may become interested in obtaining a conservation easement in years to come.

Update Program Management

- Increase the number of funding cycles per year to allow for a better flow of applications.
- Set application review boards on a schedule to confirm availability of board members and allow for a more timely decision process.

Increase Program Communication

- Bolster Program communications through news releases, social media, and partner promotion to describe accomplishments, new funding cycles, and garner new funding partnerships.

Promote Complementary Programs

- Encourage programs targeting beginning farmers and those that support landowners through loans, technical assistance, conservation leases, and mitigation funds.

Pietila Ranch
David Bezanson, The Nature Conservancy

"The TFRLCP has helped private landowners conserve farm and ranch properties, which have a broad spectrum of benefits—working lands production, protection of wildlife habitat and native plant communities, and preservation of unique water resources."

-David Bezanson,
The Nature Conservancy

METHODS & DATA

The goal of the 2020 Evaluation Report is to describe the state's financial contribution to the purchase of agricultural conservation easements through the Texas Farm and Ranch Lands Conservation Program (TFRLCP), and to describe the conservation value of these lands. We developed a framework for evaluating select ecological and economic values of these properties, incorporating a variety of datasets.

Agricultural Commodities Value

The Texas Comptroller of Public Accounts provided total acres and total value ($) by land use for each independent school district (ISD) for 2017. Each ISD was aggregated to a county level according to the county in which their centroid lies (ISDs summed to determine county value). The average production value was calculated by dividing the total production value ($) by the total acres. This $/acre value (representing the overall production value for each county) was then multiplied by the total number of TFRLCP acres in that county to get the final agricultural value.

Consumptive Wildlife Value

The Texas Comptroller of Public Accounts provided average wildlife lease price by county for years 2015 to 2017. This $/acre value was multiplied by the total acreage of TFRLCP properties in that county to get the wildlife value for each property. All properties were summed to get an annual total wildlife value for the TFRLCP as a whole. In some cases, no data was reported for lease prices in the year 2017. In these few instances, prices were replaced by first 2016 and then 2015 data, depending on most current reporting data available.

Water Values

Average annual rainfall, infiltration rates, and relative costs of water capture, derived from the Texas Water Development Board's State Water Plan 2017, were collectively analyzed to determine an overall annual water value of TFRLCP properties. Two components of water were analyzed to determine the water cost savings provided by TFRLCP properties: (1) annual potential water infiltration rate of the property to a watershed or groundwater supply, and (2) the relative replacement cost of those water resources if the properties were to be developed.

Average annual rainfall data (PRISM Climate Group 2018) by county was used to estimate rainfall for each property. An estimated 50% infiltration rate was applied to these rainfall rates based on a study by Arnold and Gibbons (1996), which states that natural ground cover infiltrates at approximately 50%, with 25% shallow infiltration and 25% deep infiltration. This provided an annual estimate of potential captured water for each property (acre-feet).

The costs of implementing a region's water management strategy were derived from the Texas Water Development Board's (TWDB) 2017 Texas State Water Plan (TWDB 2016). To determine the dollar per acre-foot values associated with each TWDB region, regional water management costs from the 2017 Texas State Water Plan were divided by the projected regional water yield (in acre-feet). This provided a water management cost for each property ($/acre-feet).

The 50% infiltration rate (acre-feet) was multiplied by the cost of implementing water management strategies by region ($/acre-foot) to determine the final water replacement cost for each TFRLCP property, and summarized to determine the value of the Program as a whole.

APPENDICES

Land Cover

The National Land Cover Database (NLCD) was used to determine the current characteristics of the land surface (i.e., land cover) of Program properties. Statewide land cover changes were also examined using NLCD data from 2001 and 2016. This data was converted from its reported pixel size (i.e., 30-meter resolution) into acres. Statewide numbers were rounded to the nearest 100 acre. NLCD data only serves as a reference point in time and may not reflect a permanent change in land cover (e.g., a wildfire may temporarily depict an area typically described as shrub/scrub as grassland/herbaceous). Land cover types are described below.

Land Cover Type	Description
Cultivated crops	areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.
Deciduous forest	areas dominated by trees generally greater than five meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.
Developed, Open space	areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
Emergent herbaceous wetlands	areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
Evergreen forest	areas dominated by trees generally greater than five meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.
Grassland/Herbaceous	areas dominated by gramanoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.
Mixed forest	areas dominated by trees generally greater than five meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.
Open water	areas of open water, generally with less than 25% cover of vegetation or soil.
Pasture/Hay	areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.
Shrub/Scrub	areas dominated by shrubs; less than five meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.
Woody wetlands	areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

Financial Values

The Texas Parks and Wildlife Department (TPWD), which runs the TFRLCP, and the participating easement holders provided the financial datasets including property land market values, grant award amounts, and other financial contributions. Using this data, we calculated the financial leverage and return on investment for the Program as a whole. The rate of return on investment ratio utilizes land market values before the easement was in place compared to the TFRLCP grant award, and the leveraging power ratio utilizes the total investment by all contributors compared to the TFRLCP grant award. Various other percentages were calculated to determine the financial efficiency of the Program as a whole. *Federal Award* includes funding from the Natural Resources Conservation Service - Agricultural Conservation Easement Program and the U.S. Forest Service - Forest Legacy Program. *Other Contributions* includes funding from local/municipal governments and NGOs. *Landowner Contributions* includes fully donated easements, bargain sale reductions, and money towards stewardship monitoring. This financial analysis only includes properties contracted under the TPWD and that have been fully executed as of September 2020.

TERMS & DEFINITIONS

1-D-1 open space appraisal–open space status (Taxation of Certain Open Space Land) for lands based solely on the primary use of the land with no consideration for the landowner's income or occupation.

Agricultural conservation easement–a deed restriction landowners voluntarily place on their property to protect resources such as productive agricultural land, ground and surface water, wildlife habitat, historic sites or scenic views.

Agritourism–tourism in which tourists take part in farm or village activities, as animal and crop care, cooking and cleaning, handicrafts, and entertainments.

At-risk or **imperiled species**–biological term for a plant or animal species once it is proposed for listing as threatened or endangered under the Endangered Species Act (ESA), is a candidate species for listing, or has been petitioned by a third party for listing. Those terms can include species that are at low populations and near extinction but still not legally protected under the ESA.

Bargain sale–in cases where the amount available to purchase a conservation easement is less than the full value, the transaction may qualify for a "bargain sale" that may result in a potential tax benefit to the landowner. The amount of the benefit (tax deduction) generally will be the full, appraised value of the conservation easement, less the amount paid to the landowner.

Biodiversity–the variety of life in the world or in a particular habitat or ecosystem.

Cost-share–the portion of total project costs related to sponsored programs that is not provided by the sponsor.

Ecosystem services or **natural goods and services**–the direct and indirect contributions of ecosystems to human well-being to include provisioning services, regulating services, habitat services and cultural services.

Ecoregion–a major ecosystem defined by distinctive geography and receiving uniform solar radiation and moisture.

Endangered species–a species is in danger of extinction throughout all or a significant portion of its range.

Land fragmentation–the spatial discontinuity of habitat patches or land cover.

Land trust–a legal entity that takes ownership of, or authority over, a piece of property at the behest of the property owner.

Match funds–the funds that are set to be paid in proportion to funds available from other sources.

Non-governmental organization–a nonprofit organization that operates independently of any government, typically one whose purpose is to address a social or political issue.

APPENDICES

Open space–land that is valued for natural processes and wildlife, agricultural and forest production, aesthetic beauty, active and passive recreation, and other public benefits. Open space may be protected or unprotected, public, or private lands.

Ownership fragmentation–the break-up of large farms, ranches, and forests into smaller ownership sizes.

Rare species–a group of organisms that are very uncommon, scarce, or infrequently encountered. This designation may be applied to either a plant or animal taxon, and is distinct from the term endangered or threatened.

Working lands–privately owned farms, ranches, and forests that produce food and fiber, support rural economies, and provide wildlife habitat, clean air and water, and recreational opportunities.

END NOTES

1 Texas A&M Natural Resources Institute. 2020. Texas Land Trends: A database of compiled and analyzed values for working lands in Texas. College Station, TX. USA. URL: http://txlandtrends.org

2 United States Department of Agriculture, Economic Research Service. 2020. Cash receipts by state. Washington, D.C., USA.

3 Texas A&M AgriLife Extension Service and Texas A&M AgriLife Research. 2016. The food and fiber system and production agriculture's contributions to the Texas economy. MKT 3579-E. College Station, TX, USA.

4 Texas Department of Agriculture. 2020. Texas ag stats. Austin, TX, USA.

5 Smith, L.A., R.R. Lopez, A.A. Lund, B.N. Wegner, J.C. Cathey, A. Lopez, R.E. Anderson, G.W. Powers, K.L. Skow, M.A. Crawford. 2019. Status update and trends of Texas working lands. Texas A&M Natural Resources Institute. College Station, TX, USA.

6 Freedgood, J., M. Hunter, J. Dempsey, A. Sorensen.2020. Farms under threat: The state of the states. American Farmland Trust. Washington, DC, USA.

7 United States Department of Agriculture National Agricultural Statistics Service. 2019. 2017 Census of agriculture. AC-17-A-51. Washington, D.C., USA.

8 United States Department of the Interior, United States Fish and Wildlife Service, United States Department of Commerce, and United States Census Bureau. 2014. 2011 National survey of fishing, hunting, and wildlife-associated recreation. FHW/11-TX (RV). Washington, DC, USA.

9 United States Department of the Interior, United States Fish and Wildlife Service, United States Department of Commerce, and United States Census Bureau. 2018. 2016 National survey of fishing, hunting, and wildlife-associated recreation. FHW/16-NAT. Washington, D.C., USA.

10 Hobson, Michael. Personal communication, July 14, 2020. Explained the results of the Texas Parks and Wildlife Department hunting and fishing license sales for past five years. Texas Parks and Wildlife Department. Austin, Texas, USA.

11 Texas Water Development Board. 2016. Water for Texas: 2017 State water plan. Austin, TX, USA.

12 Gould, F. W., Hoffman, G. O., and Rechenthin, C. A. 1960. Vegetational areas of Texas. Texas Agricultural Experiment Station, Leaflet No. 492. College Station, Texas, USA.

13 Fahrig, L. 2003. Effects of habitat fragmentation on biodiversity. Annual review of ecology, evolution, and systematics. Carleton University. Ottawa, Ontario, Canada.

14 Wilson, C. R. 2011. Documenting and protecting biodiversity on land trust projects. Land Trust Alliance. Washington, DC, USA.

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