



TEXAS STATE SOIL AND WATER CONSERVATION BOARD WATER SUPPLY ENHANCEMENT PROGRAM

2015 ANNUAL REPORT JANUARY 1, 2015 – DECEMBER 31, 2015

Meeting Critical Water Conservation Needs and Enhancing Public Water Supplies Through Brush Control

BACKGROUND

Scarcity and competition for water have made sound water planning and management increasingly important. The demand for water in Texas is expected to increase by about 22%, to a demand of nearly 22M ac-ft in 2060; while existing water supplies are projected to decrease by about 10%, to just over 15M ac-ft (2012 State Water Plan, Texas Water Development Board).

Noxious brush, detrimental to water conservation, has invaded millions of acres of rangeland and riparian areas in Texas, reducing or eliminating stream flow and aquifer recharge through interception of rainfall and increased evapotranspiration.

In order to help meet the State’s critical water conservation needs and ensure availability of public water supplies, in 2011 the Texas Legislature established the Water Supply Enhancement Program (WSEP) administered by the Texas State Soil and Water Conservation Board (TSSWCB). The purpose of the WSEP is to increase available surface and ground water supplies through the targeted control of brush species that are detrimental to water conservation.

| <u>PROGRAM BUDGET</u> | |
|-----------------------|-----------------------------|
| FY2015 | \$2,135,413 General Revenue |
| FY2016 | \$2,638,413 General Revenue |

The TSSWCB collaborates with other entities to identify watersheds across the state where it is feasible to implement brush control in order to enhance public water supplies. WSEP grant funds may only be allocated to projects that have a completed feasibility study that includes a site-specific computer model. The TSSWCB uses a competitive grant process to rank feasible projects and allocate WSEP grant funds, giving priority to projects that balance the most critical water conservation need of municipal water user groups with the highest projected water yield from brush control.



In watersheds where WSEP grant funds have been allocated, the TSSWCB works through soil and water conservation districts (SWCDs) to deliver technical assistance to landowners. A 10-year resource management plan is developed for each property enrolled in the WSEP which describes the brush control activities to be implemented, follow-up treatment requirements, brush density to be maintained after treatment, and

supporting practices to be implemented including livestock grazing management, wildlife habitat management, and erosion control measures. Cost-share assistance is then provided through the WSEP to landowners implementing brush control activities on eligible acres consistent with their resource management plan.

In accordance with Texas Agriculture Code §203.056, the TSSWCB publishes this statutorily-required *WSEP Annual Report* which serves as a comprehensive analysis of the program’s effectiveness during the preceding calendar year. This *Annual Report* documents program results, assesses the program, reports on program participant compliance with resource management plans, and reports overall projected water yield enhanced. More information on the WSEP is available at <http://www.tsswcb.texas.gov/brushcontrol/>.

2015 ACTIVITIES AT A GLANCE

Legislature, Sunset, and Appropriations

Since the 82nd Texas Legislature enacted HB 1808 in 2011, the agency has been diligently taking steps to implement the statutorily-required program modifications.

In January 2015, the Sunset Advisory Commission published the *Compliance Report – Implementation of Sunset Legislation*. The *Report* highlights findings from the special purpose review conducted on TSSWCB programs, including the WSEP. The review was limited to the evaluation of the TSSWCB's implementation of HB1808. In the *Report*, the Sunset Commission concludes that all provisions of HB1808 related to the WSEP have been fully implemented.

The agency's Legislative Appropriations Request (LAR) for the 2016-2017 biennium was submitted in 2014. In addition to the base request for WSEP funding, the LAR included an exceptional item request for \$2M across the biennium for additional WSEP funding in order to partially meet unmet demand for cost-share to landowners and to conduct new feasibility studies. On June 20, 2015, the Governor signed HB1, the general appropriations bill for the 2016-2017 biennium. The 84th Texas Legislature continued funding for the WSEP by providing \$2,638,413 for each fiscal year of the new biennium. This is an increase of \$1M across the biennium for the WSEP, partially funding the exceptional item request.

State Water Supply Enhancement Plan



In accordance with Texas Agriculture Code §203.051, the TSSWCB must prepare and adopt the *State Water Supply Enhancement Plan*. The *State Water Supply Enhancement Plan* serves as the State's comprehensive strategy for managing brush in all areas of the state where brush is contributing to a substantial water conservation problem and also serves as the programmatic guidance for the agency's WSEP. The State Board adopted the *State Water Supply Enhancement Plan* on July 28, 2014. The *State Plan* documents the goals, processes, and results the agency has established for the WSEP. The *State Plan* is a "living" document and must be reviewed at least every two years.

When the State Board adopted the *State Water Supply Enhancement Plan* in July 2014, staff was directed to continue working with those interested in improving the *State Plan*, particularly those who provided comments during the public comment period. A series of public outreach meetings was held in January and May 2015 to discuss specific topics with the public and receive constructive input on refining the *State Plan*.

On January 8, 2015 and January 29, 2015, TSSWCB staff hosted two WSEP public outreach meetings in Temple; about 30 people attended each meeting. The first meeting focused on aspects of the WSEP related to conservation plans for landowners and soil erosion potential from brush control. The second meeting focused on aspects of the WSEP related to feasibility studies, computer modeling, geospatial analysis, and project prioritization criteria.

On May 12, 2015, TSSWCB hosted a WSEP field tour at the Stowers Ranch in Kerr County; over 20 people attended the tour. This public outreach event focused on aspects of the WSEP related to conservation plans for landowners and soil erosion potential from brush control.

Feasibility Studies

In accordance with Agriculture Code §203.053(b), for a watershed to be considered eligible for allocation of WSEP cost-share funds, a brush control feasibility study that includes a watershed-specific computer model must be completed and must demonstrate increases in projected post-treatment water yield.

Since 1998, the TSSWCB has collaborated with many partnering entities to conduct assessments of the feasibility of conducting brush control for water supply enhancement in watersheds across the state. Feasibility studies have been conducted and published for 23 watersheds; the reports have been accepted by the TSSWCB and the studied areas have been designated by the State Board as priority WSEP project watersheds.

Utilizing WSEP grant funds, the TSSWCB has contracted with several entities to perform computer modeling for feasibility studies to predict water yield increases from brush control in several watersheds. Work has continued in 2015 by partnering entities on these new, in-progress feasibility studies. The U.S. Geological Survey is developing a brush control feasibility study for the Lake Alan Henry watershed in Garza and Lynn Counties. Texas Tech University, in collaboration with the Texas A&M Water Resources Institute, is developing a brush control feasibility study for the North and South Llano Rivers in Kimble, Edwards, and Sutton Counties. And, Texas Tech University, in collaboration with the San Antonio River Authority, is developing a brush control feasibility study for watersheds in Goliad, Karnes, Refugio, Victoria, and Wilson Counties.

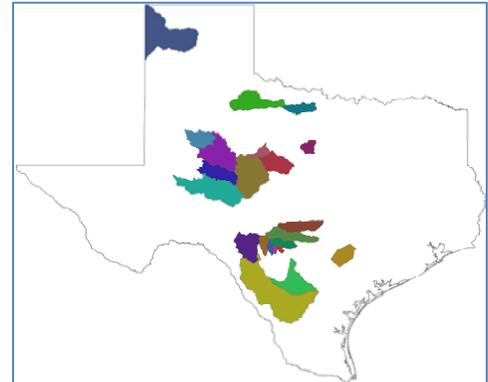


Figure 1. Approved WSEP Project Watersheds.

On November 19, 2015, the State Board accepted the *Brush Control Feasibility Study for the O.H. Ivie Reservoir Lake Basin* and established the studied watershed as a priority WSEP project watershed. At the end of FY2013, TSSWCB provided a WSEP grant to the Upper Colorado River Authority (UCRA) to perform a brush control feasibility study for the immediate basin of O.H. Ivie Reservoir. UCRA collaborated with the Texas Institute for Applied Environmental Research at Tarleton State University in performing the computer modeling. O.H. Ivie Reservoir supplies municipal drinking water to the cities of Abilene, Big Spring, Midland, Odessa, San Angelo, and Snyder. Due to low water levels over the last 15 years, much of the immediate lake basin has been exposed resulting in dense infestations of undesirable brush species. UCRA estimated that 60% of the brush infestation was comprised of saltcedar, 35% of willow baccharis, and 5% of mesquite. Depending on the water level condition of the reservoir and the amount of brush treated, the model projects that brush control in the immediate lake basin could yield either 722.13 or 818.48 ac-ft/yr of enhanced water supply in the reservoir.

Project Allocations and Request for Proposals

Throughout the year, WSEP staff worked with project sponsors to assess unobligated funds from the FY2015 project cost-share allocations (approved by the State Board on September 18, 2014) in order for the State Board to consider reallocation of those funds to other projects. On March 4, 2015; May 21, 2015; and July 16, 2015; the State Board reallocated FY2015 cost-share funds among projects to maximize expenditure of WSEP funds during the fiscal year. Ultimately, the State Board allocated \$2,022,041 in FY2015 cost-share funds to 16 WSEP projects, of which \$573,311 was unobligated FY2014 cost-share funds advanced to FY2015:

- Lake Arrowhead (3 subbasins)
- Lake Brownwood
- Canyon Lake (Upper Guadalupe River)
- Carrizo-Wilcox Aquifer / Guadalupe River
- Edwards Aquifer Recharge Zone – Frio River
- Edwards Aquifer Recharge Zone – Medina River
- Edwards Aquifer Recharge Zone – Nueces River
- Lake Kemp
- Nimitz Lake (Upper Guadalupe River)
- E.V. Spence Reservoir
- Lake Travis (Pedernales River)
- Twin Buttes Reservoir (3 subbasins)

On June 23, 2015, the TSSWCB issued a request for proposals (RFP) for water supply enhancement projects seeking funding in FY2016 to conduct brush control under the WSEP; the RFP closed on August 3, 2015. The TSSWCB received 31 eligible applications requesting a total of \$5,306,245 in cost-share funds. A competitive proposal review process (per 31 TAC §517.25 and the *State Water Supply Enhancement Plan*) was used so that the most appropriate and effective projects were identified for funding.

Based on appropriated funds, the TSSWCB was only able to meet 33% of the demand for cost-share as requested for the eligible projects in the FY2016 RFP, leaving an unmet demand for over \$3.5M in cost-share. On November 19, 2015, the State Board allocated \$1,777,000.00 in FY2016 cost-share funds to 11 WSEP projects:

- Lake Arrowhead
- Lake Brownwood
- Edwards Aquifer Recharge Zone – Frio River
- Edwards Aquifer Recharge Zone – Medina River
- Edwards Aquifer Recharge Zone – Nueces River
- Edwards Aquifer Recharge Zone – Sabinal River
- Lake Kemp
- Nimitz Lake (Upper Guadalupe River)
- Palo Pinto Reservoir
- Lake Travis (Pedernales River) (2 subbasins)

Conservation Planning and Program Outreach



Throughout the year, WSEP staff assisted SWCDs and conservation planners with implementation of the program in project watersheds, and worked with landowners to develop cost-share contracts and conduct performance certifications on completed brush control activities.

Throughout the year, WSEP staff participated in a variety of meetings in order to communicate and exchange ideas regarding the WSEP. Agency staff made presentations on the WSEP to the Texas Agriculture Council, the Upper Guadalupe River

Authority Board of Directors, the U.S. International Boundary and Water Commission Lower Rio Grande Citizen’s Forum, the Laredo and Valley Environmental Summits, the Texas Groundwater Protection Committee Public Outreach and Education Subcommittee, and the Texas Homeland Security Council.

Regional Water Planning Groups and the State Water Plan

WSEP staff has been actively working with many of the 16 Regional Water Planning Groups (RWPGs), and the Texas Water Development Board (TWDB), to ensure the RWPGs are aware of the changes to the WSEP as they develop their *2016 Regional Water Plans*. Throughout the year, agency staff attended meetings of Regions B, F, G, H, J, K, L, M, and O to discuss WSEP issues and made presentations on the WSEP to Regions B, H, and M. This presentation has now been given to 9 of the 16 RWPGs.

Throughout the year, WSEP staff worked with Region G to develop a template brush control water management strategy that could be used by any of the RWPGs in order to include the WSEP and brush control in their *2016 Regional Water Plans*. Additionally, WSEP staff worked with Regions G and L on specific potential water management strategies for brush control. For Region G, TSSWCB worked with the California Creek SWCD #245, the City of Abilene, and HDR Engineering, Inc. on a strategy for brush control in the Fort Phantom Hill Reservoir watershed. For Region L, TSSWCB worked with HDR Engineering, Inc., the San Antonio River Authority, and Texas Tech University on a strategy for brush control over the Carrizo-Wilcox Aquifer recharge zone in Gonzales, Caldwell, and Guadalupe Counties.

In August 2015, TSSWCB and HDR Engineering, Inc. finalized the project final report *Brush Management in Gonzales County as a Water Management Strategy*. This study was conducted by HDR, with funding from the TSSWCB WSEP, in order to link the Gonzales County brush control feasibility study (McLendon et al. 2012) to the Carrizo-Wilcox Aquifer groundwater availability model (TWDB) in Gonzales County in order to evaluate brush management as a water management strategy for potential inclusion in the *2016 South Central Texas Regional Water Plan* (Region L). The model scenarios show that implementing a brush management program in Gonzales, Caldwell, and Guadalupe Counties could potentially increase the groundwater levels and the subsequent modeled available groundwater in these counties by 1,370 to 13,910 ac-ft/yr depending on landowner participation levels.

On December 1, 2015, all 16 RWPGs submitted their final adopted *2016 Regional Water Plans* to the TWDB for incorporation into the *2017 State Water Plan*. WSEP staff is reviewing the *Regional Water Plans* to ascertain how each RWPG ultimately addressed brush control for water supply enhancement.

STATUS REVIEWS CONDUCTED IN FY2015

Cost-share agreements between the TSSWCB and landowners contain a commitment on the part of the landowner, at no cost to the State, to maintain areas for which cost-share funding for brush control was received for a period of ten years after the initial brush control is accomplished. Maintenance includes periodically re-treating the area with appropriate brush control methods to prevent brush reinfestation over the duration of the 10-year contract period.

The *State Water Supply Enhancement Plan* lays out the general schedule for follow-up brush treatment, which is detailed in each landowner's resource management plan:

- Mesquite, Mixed Brush, Saltcedar: Follow-up brush treatment scheduled three (3) years after initial treatment, if canopy (target species only) is above 5%.
- Juniper: Follow-up brush treatment scheduled eight (8) years after initial treatment, if canopy (target species only) is above 5%.

The TSSWCB is statutorily required to periodically perform status reviews of cost-share contracts to verify compliance with follow-up treatment requirements over the course of the 10-year contract period. The *State Water Supply Enhancement Plan* describes the general schedule for status reviews:

- First status review conducted within three to five (3-5) years after initial treatment of brush.
- Second status review performed eight to nine (8-9) years after initial treatment.



During FY2015, the agency conducted 73 status reviews on FY2012 (and some FY2011) cost-share contracts throughout various project watersheds. While brush density assessments on 1 contract (1%) did indicate the target species was above 5%, the contract was not deemed out-of-compliance. This 1 status review was conducted during the third year after initial treatment (FY2012 contract) which is when follow-up brush treatment should be scheduled. WSEP staff reminded all landowners of their follow-up brush treatment obligations in their cost-share contracts and the schedule of follow-up brush treatment detailed in their resource management plans.

ANNUAL ENHANCED WATER YIELD FOR FY2015

During FY2015, through the WSEP, 23,191 acres of brush management was incentivized by the State in 11 project areas. For these acres, landowners received cost-share assistance through the program (contracts from FY2013, FY2014, and FY2015) totaling \$1,279,326 in state funding (\$55.16 per treated acre of brush). Based on estimates provided by feasibility studies and computer models, and depending on the climatic conditions across the state that influence the sequence of drought and rainfall events, this work is projected to enhance water yield by 5,928.7 ac-ft per year (\$215.79 per ac-ft of water).



Little Wichita River Project

| | | |
|--------------|-------------------------------------|-----------------------------------|
| <u>Acres</u> | <u>Public Water Supply Target</u> | <u>Enhanced Water Yield (gal)</u> |
| 3,575 | Lake Arrowhead | 723,115,250 |
| | <u>Population Served</u> | |
| | Wichita Falls and surrounding areas | |

Lake Brownwood Project

| | | |
|--------------|-----------------------------------|-----------------------------------|
| <u>Acres</u> | <u>Public Water Supply Target</u> | <u>Enhanced Water Yield (gal)</u> |
| 1,210 | Lake Brownwood | 143,721,380 |
| | <u>Population Served</u> | |
| | Brownwood and surrounding areas | |

Upper Guadalupe River Project

| | | |
|--------------|---|-----------------------------------|
| <u>Acres</u> | <u>Public Water Supply Target</u> | <u>Enhanced Water Yield (gal)</u> |
| 587 | Canyon Lake and Nimitz Lake | 33,992,853 |
| | <u>Population Served</u> | |
| | New Braunfels, San Marcos, Kyle, Buda, Boerne, Kerrville, and surrounding areas | |

Carrizo-Wilcox Aquifer / Guadalupe River Project

| | | |
|--------------|-----------------------------------|-----------------------------------|
| <u>Acres</u> | <u>Public Water Supply Target</u> | <u>Enhanced Water Yield (gal)</u> |
| 170 | Guadalupe River | 16,366,912 |
| | <u>Population Served</u> | |
| | Victoria and surrounding areas | |

Edwards Aquifer – Frio River Project

| | | |
|--------------|---|-----------------------------------|
| <u>Acres</u> | <u>Public Water Supply Target</u> | <u>Enhanced Water Yield (gal)</u> |
| 683 | Edwards Aquifer Recharge Zone in Frio River Watershed | 239,064,268 |
| | <u>Population Served</u> | |
| | Concan, Knippa, and Leakey | |

Edwards Aquifer – Medina River Project

| | | |
|--------------|---|-----------------------------------|
| <u>Acres</u> | <u>Public Water Supply Target</u> | <u>Enhanced Water Yield (gal)</u> |
| 957 | Edwards Aquifer Recharge Zone in Medina River Watershed | 175,345,034 |
| | <u>Population Served</u> | |
| | Castroville, Bandera, and Medina | |

Edwards Aquifer – Nueces River Project

Acres Public Water Supply Target
 851 Edwards Aquifer Recharge Zone in Nueces River Watershed

Population Served
 Uvalde, Barksdale, and Camp Wood

Enhanced Water Yield (gal)
 53,551,054

Edwards Aquifer – Sabinal River Project

Acres Public Water Supply Target
 40 Edwards Aquifer Recharge Zone in Sabinal River Watershed

Population Served
 Sabinal, Utopia, and Vanderpool

Enhanced Water Yield (gal)
 6,178,360

Spence Reservoir Project

Acres Public Water Supply Target
 14,285 E.V. Spence Reservoir

Population Served
 Big Spring, Midland, Odessa, Snyder, and Robert Lee

Enhanced Water Yield (gal)
 374,338,425

Pedernales River Project

Acres Public Water Supply Target
 583 Lake Travis

Population Served
 Cedar Park, Leander, Pflugerville, and surrounding areas

Enhanced Water Yield (gal)
 152,609,732

Twin Buttes Reservoir Project

Acres Public Water Supply Target
 250 Twin Buttes Reservoir

Population Served
 San Angelo

Enhanced Water Yield (gal)
 13,600,000

FY2015 Grand Total

Brush Treated Enhanced Water Yield
23,191 acres **1,931,883,268** gallons
5,928.7 acre-feet

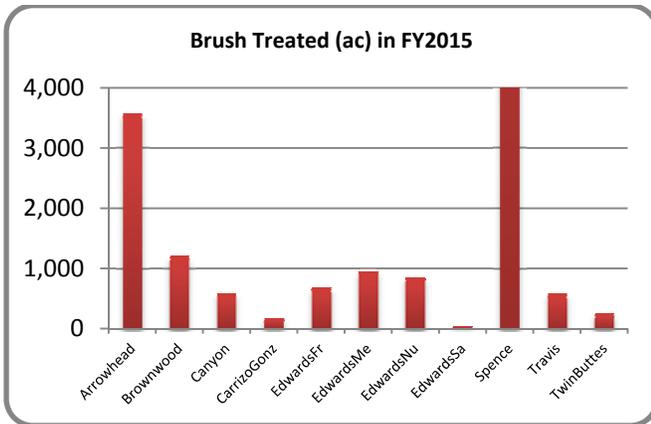


Figure 2. Acres of Brush Treated in FY2015.
 [Note: Spence exceeds scale of chart.]

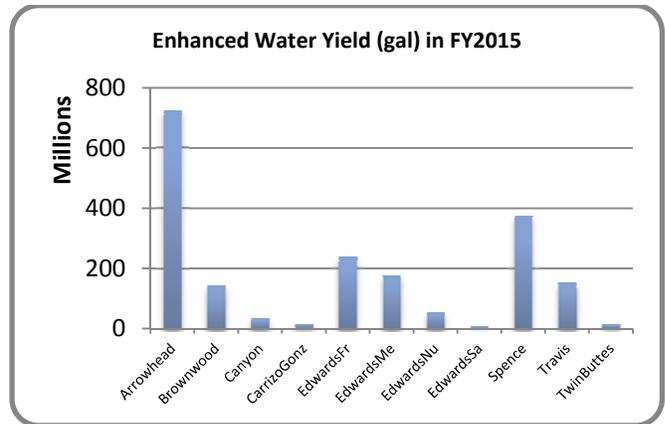


Figure 3. Gallons of Enhanced Water Yield from Brush Treated in FY2015.



TEXAS STATE SOIL AND WATER CONSERVATION BOARD

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