

## *Draft Recommendations for the 2020 WCAC Report*

### **Continue funding for the Texas Alliance for Water Conservation.**

*The Council recommends that, subject to available state revenue for the 2022–2023 biennium, the Texas Legislature fund this agricultural demonstration and education project promoting water conservation through best management practices and new technologies at \$475,000 per year, through general revenue appropriations deposited to the Agricultural Water Conservation Fund and distributed through the TWDB’s Agricultural Water Conservation Grants Program, and establish this level of annual funding through baseline general revenue appropriations to the TWDB in future years.*

#### **Background:**

The Texas Alliance for Water Conservation (TAWC) is a state-supported, agricultural producer demonstration and education project promoting water conservation through best management practices and technologies to improve sustainability and profitability in the Texas Southern High Plains.

This project began in 2004, following the passage of Senate Bill 1053, which provided the Texas Water Development Board with the ability to provide grant funding to state agencies and political subdivisions, including the state university systems, for conservation projects and programs. The project initially received \$6.2 million in grant funding for an 8-year period (2005-2012, extended to 2013). In 2014, the Texas Legislature appropriated an additional \$3.6 million out of the Agricultural Water Conservation Fund for a 5-year period (2014-2019). Current funding has been extended to December 31, 2020 with a contract expiration date of August 31, 2021.

The TAWC Project sites represent an array of monoculture, multi-crop, and forage-livestock systems using conventional, pastureland, and various conservation tillage systems. Irrigation systems include furrow, center pivot, precision mobile drip irrigation, and subsurface drip technologies. Crops include cotton, sorghum, corn, grass seed and various specialty crops as well as perennial grass, livestock, and alfalfa. Production information and economic analyses have been used to educate producers on technologies and management strategies through demonstrations, field days, education, and outreach events across the Texas High Plains. Much of TAWC’s education and demonstration efforts have focused on conservation of the Ogallala Aquifer and the technologies that supply only what the crop needs at specific stages of development, thus creating significant water savings to real farm scenarios.

Over the last 15 years, TAWC has established its identity and facilitated relationships between producers, industry, government agencies, commodities, retailers, and academia. Partnerships have been created with the Texas Tech West Texas Mesonet and Plains Cotton Growers to

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develop free web-based water management tools and a Heat Unit iOS phone app for tracking cotton heat units. Relationships with cotton, corn, and sorghum commodity groups, as well as Texas and Southwestern Cattle Raisers Association have been built and strengthened.

TAWC has received over \$3.2 million in supplementary grants and participated in over 500 multi-state presentations and 7 international presentations. Receiving the 2012 Blue Legacy Award, 2013 AWRA Integrated Water Resources Management Award, 2014 Texas Environmental Excellence Award in Agriculture, 2016 National Water & Energy Conservation Award, among others. Field days, field walks, the annual Water College, radio spots, e-newsletters, and social media reach at least 10,000 people per year. TAWC directs its messaging at water-use decision-makers among producers, ag consultants, and policymakers. TAWC contributes to the formal education of university students via an undergraduate ag water certificate and graduate studies in the areas of agronomy, soil management, irrigation technology, economics, and communications.

Renewed funding will allow TAWC to continue promoting water conservation and launch new thrusts to include 1) field-scale demonstrations of minimum tillage and multi-species cover crops to enhance soil water retention, and 2) options and guidelines for conversion from irrigated to rainfed cropping systems. TAWC will also communicate options in contract cattle grazing of cover crops and rainfed forages to enhance the value of land retired from irrigation. TAWC will employ its key strength in economics by analyzing the profitability and ease of management of cover crops, crop rotation, value-added crops, reduced irrigation, and rainfed systems.

New investment in TAWC will expand the impact of technology transfer for water savings through tighter linkage with soil health and value-added land management. TAWC is requesting \$475,000 per year to support the core operations and personnel to carry on administration, producer relations, education, event programming, and demonstrations. Supplementary grants will be obtained to support specific outreach objectives.

**Restore funding for the Texas Ag Water Efficiency Education and Demonstration Project facility.**

*The Council recommends that, subject to available state revenue for the 2022–2023 biennium, the Texas Legislature fund this project for the education, research and development of agricultural water conservation initiatives at \$200,000 per year, through general revenue appropriations deposited and distributed through the TWDB’s Agricultural Water Conservation Grants Program, and establish this level of annual funding through baseline general revenue appropriations to the TWDB in future years.*

**Background:**

From 2004 to 2015 the Texas Water Development Board’s Agricultural Water Conservation Grants Program funded a project known as the Texas Project for Ag Water Efficiency (AWE). This project demonstrated the various types of irrigation on farms in the Lower Rio Grande Valley. The project assisted farmers in implementing conservation measures that would conserve water and maintain the economic viability of their farming practices. Out of these demonstrations, a number of operations were converted to more efficient irrigation practices both by the farmers and the districts.

A component of the project was the construction of a meter calibration and educational center named the Texas Center for Ag Water Efficiency. Its purpose is the demonstration, education and research of agricultural water conservation measures, tools and technologies. This million-dollar facility is the only one of its kind in Texas and one of only a handful nationwide. Water managers and employees from across the state utilized these facilities to educate personnel on the refinement of agricultural water measurement and delivery.

Multiple developments resulted from the work at the facility and have been adopted by several Rio Grande Valley irrigation districts as well as El Paso County Water Improvement District #1 and the Lower Colorado River Authority. An overview of these developments are as follows:

**Gate development:** Efficient low-cost canal gates for controlling water delivery were developed. These gates were designed to operate in open canal systems using solar or wind generated power, a necessity as many sites were without a power source.

**Automation:** Prototypes of these gates were designed and perfected to be utilized with a Supervisory Control and Data Acquisition (SCADA) system also developed at the facility. The SCADA development allowed for the automation of multiple gates throughout the district’s delivery system to maximize the efficient delivery of water to farmers and cities served by the district. The facility being equipped with these auto-gates provides a vehicle for the demonstration of a fully automated and efficient district delivery system.

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**Telemetry:** This system was developed to meet the unique needs of monitoring and operation of delivery systems that are common for the surface water irrigation systems of Texas. New telemetry hardware and software is constantly being developed but not necessarily targeting irrigation needs. The AWE facility is ideal for demonstrating and testing the viability of these systems for utilization in the agricultural irrigation industry.

**Meter calibration:** The AWE facility was designed to enable meter calibration for various types of metering devices used in irrigation. One of the major benefits that developed out of this facility was the ability to demonstrate each of the many devices in typical raw water conditions. Many meters simply will not function properly in raw water conditions as trash and hydrophilic vegetation fouls the mechanical components of standard meters. This facility allows for the demonstration of new devices to determine if in fact they will withstand the harsh raw water conditions typical to water diverters across the state.

**Irrigation practices:** Educational programs are a must to develop and encourage the use of improved irrigation practices. This facility is ideal for not only demonstration of different practices but in the education and presentation of new developments in surface water irrigation. We have partnered with the Texas A&M AgriLife Extension Service, Texas State Soil and Water Conservation Districts and the United States Department of Agriculture Natural Resource Conservation Service to present programs important to the promotion of water conservation and practical methods of best management practices.

**Additional educational programs:** New telemetry hardware and software is constantly being developed but not necessarily targeting irrigation needs. The AWE facility is ideal for demonstrating and testing the viability of these systems for utilization in the agricultural irrigation industry. The facility is setup to educate the users on the best options for their needs but also could be used to demonstrate and educate the engineering community. This would better enable them to keep up to speed on the ever-changing systems available and to incorporate the new systems into their designs.

The facility is ideal and necessary for the development, research and education in new conservation and water management systems that will apply to the vast amount of unique conditions in Texas irrigation. The use of off-the-shelf products and programs are expensive and many times not economically feasible. They often fail to meet the needs of Texas irrigators and are subsequently rejected by them. This facility can help to build confidence and demonstrate the feasibility of new water conservation technologies. An additional plus for the developments from this project is the availability of the data. The gate programming and construction plans, and all demonstration data is available at no cost to entities across the state as they were all developed with public funds.

During the active project period, the Harlingen Irrigation District hosted more than 20 workshops, seminars, and other such training events at the Rio Grande Center for Ag Water

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Efficiency. These educational opportunities allowed for water providers and agricultural producers to not only gain knowledge on developing technology and conservation strategies but also established a dialogue between the producers and water providers to further innovations. Four of the Council's Blue Legacy Awards for agriculture have been awarded to recipients related to this project.

As surface water is still the largest user of water in several areas of the state, this facility has the potential to play a significant role in the education, research and development of water conservation initiatives for irrigated agriculture. Despite initial investment, this facility is no longer being used to its full potential.

Restored funding will enable the maintenance, improvement and expansion of the mechanical and technological components of the facility; which in turn, will allow for the growth of educational and research opportunities. As innovative water conservation technologies continue to evolve, the vision for the Rio Grande Center for Ag Water Efficiency is to use the facility as a hub to demonstrate the relationship between effective on-farm and district delivery systems and educate both agricultural producers, water providers and project developers on proven water conservation technologies that are available to modernize their operations.

**Maintain level of funding for TWDB’s Agricultural Water Conservation Grant program.**

*The Council recommends that, subject to available state revenue for the 2022–2023 biennium, the Texas Legislature maintain the current level of \$1,200,000 per year for Texas Water Development Board’s Agricultural Water Conservation Grant Program, in addition to any funds appropriated specifically for the Texas Alliance for Water Conservation and the Texas Project for Ag Water Efficiency.*

**Background:**

During the 86th Legislative Session, the appropriations act increased authorized dispersals through the Agricultural Water Conservation Grant Program from \$600,000 to \$1,200,000 per fiscal year.

The Agricultural Water Conservation Program promotes water conservation programs and projects throughout the state by supporting the implementation of water conservation water management strategies identified in the state and regional water plans. Previously funded activities include demonstrations of conservation practices, educational outreach, purchase and installation of water use monitoring equipment, and irrigation-efficiency improvements. Funding recipients must report improvements in water use efficiency or water savings. Over the past five years, grant and loan recipients have reported approximately 350,000 acre-feet of water savings through the program.

The grant program offers funding through a competitive process at least once a year to state agencies and political subdivisions for agricultural water conservation programs and projects. Grant topics vary from year to year to address current issues in agricultural water conservation. Projects awarded funding must further water conservation in the state and support the implementation of water conservation management strategies in the state water plan. Specific evaluation criteria are listed in the request for applications.

The success of the program is quantified through annual water savings estimates reported by grant and loan recipients for five years after equipment installation and/or construction completion.

The program has collectively saved:

- 496,000-acre feet of water reported through 74 grant projects over the past 10 years.
- 79,000-acre feet of water reported through 10 loan projects over the past 10 years.

Examples of successful projects that implement irrigation conservation strategies include:

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- Irrigation scheduling via the use of real-time soil moisture monitoring, remote system shutoff devices and other conservation tools in Regions A and O.
- Irrigation conservation demonstrations and outreach through the Texas Alliance for Water Conservation project, identified as a strategy in the Region O plan.
- Irrigation system improvements such as canal lining, canal-to-pipeline projects, SCADA systems, and automated canal gates in Region E, Region K, and Region M.
- Irrigation water use measurement throughout the state.

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**Agricultural Water Conservation Fund Projected Balance<sup>1</sup>**

Fiscal Year	Fund Balance	Investment Projections	Loan Origination	Total Loan Repayments	Grants Payable	Annual Grants	Fund Balance
2020	\$7,826,581	\$117,399	\$2,000,000	\$1,284,262	\$3,670,885	\$1,200,000	\$2,357,357
2021	\$2,357,357	\$35,360	\$-	\$1,181,117	\$-	\$1,200,000	\$2,373,834
2022	\$2,373,834	\$35,608	\$1,000,000	\$1,319,863	\$-	\$1,200,000	\$1,529,305
2023	\$1,529,305	\$22,940	\$-	\$1,067,348	\$-	\$1,200,000	\$1,419,592
2024	\$1,419,592	\$21,294	\$1,000,000	\$1,211,904	\$-	\$1,200,000	\$452,791
2025	\$452,791	\$6,792	\$-	\$973,034	\$-	\$1,200,000	\$232,616
2026	\$232,616	\$3,489	\$-	\$833,375	\$-	\$1,069,481	\$-
2027	\$-	\$-	\$-	\$305,576	\$-	\$305,576	\$-
2028	\$-	\$-	\$-	\$305,472	\$-	\$305,472	\$-
2029	\$-	\$-	\$-	\$155,280	\$-	\$155,280	\$-
2030	\$-	\$-	\$-	\$152,640	\$-	\$152,640	\$-
2031	\$-	\$-	\$-	\$-	\$-	\$-	\$-

<sup>1</sup> Data as of 8/31/2019; Assumptions: offer up to \$1,200,000 in annual grants; annual administrative costs associated with the program continue to be covered by general revenue; outstanding balance of \$3,670,885 committed through existing grant project encumbrances; assumed demand for the agricultural loan program is \$1,000,000 every other year after fiscal year 2020; and, 1.50 percent invest earnings rate.

**Reinstate TSSWCB's Water Supply Enhancement Program.**

*The Council recommends that, subject to available state revenue for the 2022–2023 biennium, The Texas Legislature should restore funding to the TSSWCB, in an amount of \$2.6 million per fiscal year, for brush control projects that help to control the spread of invasive species, reduce the risk of wildfire, reestablish native grasses, reduce runoff and sedimentation, improve water quality, and enhance the infiltration of rainfall and soil moisture retention.*

**Background:**

The Water Supply Enhancement Program incentivizes landowner participation in brush control efforts and can, in certain situations, also enhance water availability during times of average rainfall. The program was refocused from brush control to water supply enhancement in 2013, following a Sunset Review, to require the TSSWCB to align projects with regional water plans and water user groups with identified conservation needs. This presents a challenge, as the water management strategies in the state water plan are developed based on a repeat of drought of record, yet water supply enhancement from brush control is largely a result of enhanced infiltration or runoff from rain events. Brush control is a best management practice for land stewardship, however, as it not only provides potential water supply enhancements, but also improves soil health, reduces the spread of invasive species, and reduces sedimentation due to runoff when implemented in conjunction with reseeding of native grasses. With a renewed focus on brush control as a generally accepted best management practice for good land stewardship, the state could better recognize a wider range of benefits beyond the potential for water supply enhancement. Water quality improvements through the reduction in sedimentation via runoff is perhaps the greatest downstream water-related benefit from brush control, although the participating landowners experience other benefits on their property including soil health, reestablishment of native grasses, improved forage for grazing, and wildlife habitat.