

AGENDA ITEM MEMO

BOARD MEETING DATE: May 11, 2022

TO: Board Members

THROUGH: Jeff Walker, Executive Administrator
John T. Dupnik, P.G., Deputy Executive Administrator, Water Science & Conservation
Ashley Harden, General Counsel
Rebecca Trevino, Chief Financial Officer

FROM: Kyla Peterson, Team Lead, Agricultural Water Conservation
John Sutton, Manager, Water Conservation

SUBJECT: Fiscal Year 2022 Agricultural Water Conservation Grants

ACTION REQUESTED

Consider authorizing the Executive Administrator to negotiate and execute contracts for Fiscal Year 2022 Agricultural Water Conservation Grants.

BACKGROUND

The Texas Water Development Board's (TWDB) Agricultural Water Conservation Grants Program annually offers grant funding to state agencies and political subdivisions for activities that promote water conservation in the state. Grant topics vary from year to year to address current issues in agricultural water conservation and to support water management strategies in the 2022 State Water Plan.

On November 19, 2021, the Board authorized the Executive Administrator to publish a Request for Applications for Fiscal Year 2022 Agricultural Water Conservation Grants, with up to \$1.2 million in funding available for projects that achieve one or more of the following goals:

- A. Improve irrigation efficiency through irrigation system improvements, such as the adoption of irrigation scheduling practices and irrigation district interconnections
- B. Enhance resilience to weather extremes and climate variability
- C. Promote innovation in agriculture by incorporating the latest water conservation technological advancements

Our Mission

Leading the state's efforts in ensuring a secure water future for Texas and its citizens

Board Members

Brooke T. Paup, Chairwoman | Kathleen Jackson, Board Member

Jeff Walker, Executive Administrator

To achieve these goals, projects should incorporate the following actions and objectives:

1. Quantify actualized water savings with proven methodology and provide baseline water usage prior to project implementation
2. Engage agricultural producers and water managers through educational outreach in the form of field days, workshops, seminars, and demonstrations in classroom settings and on farms involved in the projects
3. Promote the adoption of innovative water conservation practices and technologies that result in improvements to irrigation efficiency and soil health
4. Identify methods to measure and report water conservation performance metrics such as water savings, soil water holding capacity, and infiltration
5. Determine the long-term sustainability, feasibility, and profitability of the conservation practice(s) by quantifying the return on investment
6. Build upon the success of existing water conservation efforts
7. Leverage funding support from local, state, federal, and private industry partners

KEY ISSUES

The Request for Applications was published in the *Texas Register* and on the TWDB website. Procurement & Contract Services received 12 applications in response to the solicitation, with applicants requesting a total of \$1,963,146 in grant funding assistance. A technical review panel reviewed and ranked the applications according to the rules contained in 31 Texas Administrative Code Chapter 367. Table 1 includes the eight top-ranked applicants, amounts requested, and grant funding recommendations. Additional information on the applications received may be found in Attachment A, along with a summary of the recommended projects in Attachment B.

Table 1. Top-ranked applications and funding recommendations.

| Rank | Entity | Amount requested | Funding recommendation |
|--------------|---|-------------------------|-------------------------------|
| 1 | Edwards Aquifer Authority | \$100,000 | \$100,000 |
| 2 | Evergreen Underground Water Conservation District | \$50,000 | \$50,000 |
| 3 | Panhandle Ground Water Conservation District | \$75,000 | \$75,000 |
| 4 | El Paso Water Improvement District No. 1 | \$150,000 | \$150,000 |
| 5 | United Irrigation | \$200,000 | \$200,000 |
| 6 | North Plains Groundwater Conservation District | \$450,000 | \$300,000 |
| 7 | Texas Tech University | \$264,664 | \$264,664 |
| 8 | Texas A&M University-Kingsville | \$55,865 | \$55,865 |
| Total | | \$1,345,529 | \$1,195,529 |

RECOMMENDATION

The Executive Administrator recommends approval of this item, as the projects will further water conservation in the state by supporting the implementation of irrigation conservation water management strategies in the 2022 State Water Plan.

Attachments:

- A. List of applications
- B. Summaries of recommended projects

Attachment A: List of applications

| Entity | Project | Local match | Grant request | Total cost |
|-----------------------------|---|--------------------|----------------------|--------------------|
| Cibolo Creek MA | Irrigation Pump Replacement | \$16,838 | \$12,000 | \$28,838 |
| Edwards Aquifer Authority | Irrigation Efficiency Improvement Grant Program | \$200,000 | \$100,000 | \$300,000 |
| El Paso County WID No. 1 | Riverside Canal Lining & Filtration System | \$257,260 | \$150,000 | \$407,260 |
| Evergreen UWCD | Flow Meters Installation Project | \$82,000 | \$50,000 | \$132,000 |
| Hidalgo County ID No. 6 | Education/Research Center | \$50,000 | \$250,000 | \$300,000 |
| North Plains GCD | Irrigation Metering Equipment | \$450,000 | \$450,000 | \$900,000 |
| Panhandle GCD | Remote Monitoring | \$85,000 | \$75,000 | \$160,000 |
| Texas A&M – Kingsville | Biochar in Citrus | \$4,000 | \$55,865 | \$59,865 |
| Texas A&M – Kingsville | Soil Moisture Sensors in Citrus | \$5,000 | \$134,005 | \$139,005 |
| Texas A&M AgriLife Research | Data Driven Smart Irrigation | \$0 | \$221,621 | \$221,621 |
| Texas Tech University | Soil Health & Irrigation technology | \$60,978 | \$264,664 | \$325,642 |
| United ID | Pump Station Project | \$550,000 | \$200,000 | \$750,000 |
| Total | | \$1,679,076 | \$1,963,155 | \$3,724,231 |

Notes: MA – municipal authority; GCD – groundwater conservation district; ID – irrigation district; WID – water improvement district; UWCD – underground water conservation district;

Edwards Aquifer Authority

Irrigation Efficiency Improvements Grant Project

| | |
|-------------------------|---------------|
| TWDB amount requested | \$100,000 |
| Local cash or in-kind | \$200,000 |
| Total project cost | \$300,000 |
| Estimated water savings | 99 acre/ft/yr |

This project is recommended for TWDB grant funding, in an amount not to exceed \$100,000. The actual local match and total project amount will be determined during contract negotiations.

Participants:

The Edwards Aquifer Authority (EAA) and agricultural producers.

Project area:

The project would occur within the boundaries of EAA in the South Central Texas Regional Water Planning Area (Region L).

Project summary:

The EAA Irrigation Efficiency Improvement Grant Program improves water efficiency by implementing water conservation strategies among permitted Edwards Aquifer users. Since 2016, the EAA's grant program has solicited applications from irrigation permit holders for the purchase and installation of more efficient irrigation systems and technologies. The EAA will match \$200,000 to the funds requested from the TWDB to provide a cost incentive for local producers to adopt irrigation water conservation practices. These water conservation grants have helped implement the sprinkler and micro irrigation system best management practices for irrigation users through the installation of linear sprinklers, center pivot sprinklers, and subsurface drip irrigation sprinklers.

This project supports the implementation of irrigation conservation water management strategies in the 2022 State Water Plan and the 2021 South Central Texas Regional Water Plan (Region L). If funded, the project would serve the public interest and further water conservation in the state. The TWDB grant funding would supplement rather than replace the funding of the applicant.

Project duration (to be determined during contract negotiations, if funded):

This project would involve a one-year installation period, followed by five years of reporting irrigation water use data and water savings information.

Evergreen Underground Water Conservation District

Flow Meters Installation Project

| | |
|-------------------------|------------------|
| TWDB amount requested | \$50,000 |
| Local cash or in-kind | \$82,000 |
| Total project cost | \$132,000 |
| Estimated water savings | 164 acre/ft/year |

This project is recommended for TWDB grant funding, in an amount not to exceed \$50,000. The actual local match and total project amount will be determined during contract negotiations.

Participants:

The Evergreen Underground Water Conservation District (District) and agricultural producers.

Project area:

The project would occur within the boundaries of the District in the South Central Regional Water Planning Area (Region L).

Project summary:

The District will install flow meters on irrigation wells to accurately measure water use, allow for more efficient use of groundwater resources, and facilitate implementation of water conservation strategies. Education programs regarding groundwater production will help producers make better management decisions and help them understand that meters are a useful tool. Education specifically focused on groundwater production versus water level declines and how those factors relate to higher pumping costs will drive home the fact that water conservation is in the producers' best interests. The District believes that the area can realize 10 percent water savings on agricultural production on metered wells with these tools. If approximately 8 percent of metered wells conserve 10 percent of their water based on the TWDB 2019 Irrigation Water Use Estimates, that equates to 164 acre-feet of water conserved the first year. More importantly, that number should grow every year as producers realize how useful and financially beneficial meters are to their operations.

This project supports the implementation of irrigation conservation water management strategies in the 2022 State Water Plan and the 2021 South Central Texas Regional Water Plan (Region L). If funded, the project would serve the public interest and further water conservation in the state. The TWDB grant funding would supplement rather than replace the funding of the applicant.

Project duration (to be determined during contract negotiations, if funded):

The project would involve an estimated two-year installation period, followed by five years of reporting irrigation water use data and water savings information.

Panhandle Groundwater Conservation District

Remote Monitoring

| | |
|-------------------------|------------------|
| TWDB amount requested | \$75,000 |
| Local cash or in-kind | \$85,000 |
| Total project cost | \$160,000 |
| Estimated water savings | 2,678 acre/ft/yr |

This project is recommended for TWDB grant funding, in an amount not to exceed \$75,000. The actual local match and total project amount will be determined during contract negotiations.

Participants:

The Panhandle Groundwater Conservation District (District) and agricultural producers.

Project area:

The project would occur within the boundaries of the District in the Panhandle Regional Water Planning Area (Region A).

Project summary:

The District will cost-share the initial expense of remote monitoring systems (i.e. AgSense, PivoTrac, FieldNET, FlowConnect™ etc.) to facilitate replacement of traditional flow meters that are potentially approaching the end of their lifespan. Many of the wells within the District have been metered since the late 90s and early 2000s. This grant would provide an opportunity to use the latest technologies in metering that give operators real-time water usage data. The District will also sponsor educational workshops that cover implementation of remote monitoring systems for irrigation management and other water conservation practices such as cover crops and minimum tillage for improved soil health for the cooperators in the program. The District estimates that 5 to 10 percent water savings will be realized through the project.

This project supports the implementation of irrigation conservation water management strategies in the 2022 State Water Plan and the 2021 Panhandle Regional Water Plan (Region A). If funded, the project would serve the public interest and further water conservation in the state. The TWDB grant funding would supplement rather than replace the funding of the applicant.

Project duration (to be determined during contract negotiations, if funded):

The project would involve an estimated two-year installation period, followed by five years of reporting irrigation water use data and water savings information.

El Paso County Water Improvement District No. 1

Riverside Canal

| | |
|-------------------------|------------------|
| TWDB amount requested | \$150,000 |
| Local cash or in-kind | \$257,260 |
| Total project cost | \$407,260 |
| Estimated water savings | 211 acre/ft/year |

This project is recommended for TWDB grant funding, in an amount not to exceed \$150,000. The actual local match and total project amount will be determined during contract negotiations.

Participants:

The El Paso County Water Improvement District No. 1 (District) and agricultural producers.

Project area:

The project would occur within the boundaries of the District in the Far West Texas Regional Water Planning Area (Region E).

Project summary:

The District will design and construct the Riverside Canal Sediment Control Structure Project and concrete line 1,320 feet of the Riverside Canal. This structure is the first planned sediment removal facility designed to increase water conveyance efficiency in the Riverside Canal System and will implement engineering and environmental work previously funded by the TWDB. Water savings of approximately 211 acre-feet of water per year will be achieved via seepage reduction and efficiency gains in irrigation water conveyance and deliveries. The District will also hold water stakeholder education sessions on sediment control best practices.

This project supports the implementation of irrigation conservation water management strategies in the 2022 State Water Plan and the 2021 Far West Texas Regional Water Plan (Region E). If funded, the project would serve the public interest and further water conservation in the state. The TWDB grant funding would supplement rather than replace the funding of the applicant.

Project duration (to be determined during contract negotiations, if funded):

The project would involve an estimated three-year construction period, followed by five years of reporting irrigation water use data and water savings information.

The full project duration is 36 months. Construction is expected to begin in October of 2023 and end in February of 2025, with construction work occurring from October to March each year (outside of irrigation seasons). With a project life expectancy of 50 years, the return on investment of the project is \$35.54 per acre-foot.

United Irrigation District

Pump Station Project

| | |
|-------------------------|------------------|
| TWDB amount requested | \$200,000 |
| Local cash or in-kind | \$550,000 |
| Total project cost | \$750,000 |
| Estimated water savings | 2,512 acre/ft/yr |

This project is recommended for TWDB grant funding, in an amount not to exceed \$200,000. The actual local match and total project amount will be determined during contract negotiations.

Participants:

The United Irrigation District (District).

Project area:

The project would occur within the boundaries of the District in the Rio Grande Regional Water Planning Area (Region M).

Project summary:

The project consists of the design and construction of a pump station to replace three existing outdated pump stations, feeding the Lateral 7-N 24" 100 psi PVC pipeline that connects the east and west half of the District for increased reliability. The proposed pump station will provide farms along the pipeline with the ability to utilize drip/micro irrigation for their crops to improve irrigation efficiency and soil health. An informational seminar about the opportunity and drip/micro irrigation will be held for farmers in the area upon completion of the pump station. In addition, the pump station will enable an alternate water supply route to the City of McAllen and two Sharyland Water Supply Corporation Water Treatment Plants via the Lateral 7N pipeline, increasing water supply reliability. The proposed pump station is also designed to divert water to Santa Cruz Irrigation District No. 15, facilitating an interconnection between districts to increase water supply reliability and drought resiliency. The proposed project will expand the drip-irrigation feasible area from 500 acres to 2,000 acres, with an estimated 750 acre-feet per year (0.5 acre-feet of water per converted acre) of water potentially conserved upon conversion to drip irrigation.

This project supports the implementation of irrigation conservation water management strategies in the 2022 State Water Plan and the 2021 Rio Grande Regional Water Plan (Region M). If funded, the project would serve the public interest and further water conservation in the state. The TWDB grant funding would supplement rather than replace the funding of the applicant.

Project duration (to be determined during contract negotiations, if funded):

The project would involve an estimated two-year construction period, followed by five years of reporting irrigation water use data and water savings information.

North Plains Groundwater Conservation District

Irrigation Metering

| | Requested | Recommended |
|-------------------------|-------------------|-------------|
| TWDB grant funding | \$450,000 | \$300,000 |
| Local cash or in-kind | \$450,000 | \$450,000 |
| Total project cost | \$900,000 | \$750,000 |
| Estimated water savings | 80,000 acre/ft/yr | N/A |

This project is recommended for TWDB grant funding, in an amount not to exceed \$300,000, which is \$150,000 lower than the amount requested. The actual local match and total project amount will be determined during contract negotiations.

Participants:

The North Plains Groundwater Conservation District (District) and agricultural producers.

Project area:

The project would occur within the boundaries of the District in the Panhandle Regional Water Planning Area (Region A).

Project summary:

The District will cost-share metering equipment through their metering program, with a goal of installing roughly 600 meters as part of this grant. The District has incorporated NPGCD Rule 3.5E, effective January 2013, which requires meters to be placed on all wells on a property if a change is made to the property, regardless of when the wells were drilled. This change, along with Rule 3.2A requiring all new wells to be metered, will ensure a steady stream of meter installation into the future in the District. As the District's demonstrations and others have proven metering to be an effective conservation tool, the District wants to encourage even more installations by partnering with the TWDB to make cost share funding available to producers.

This project supports the implementation of irrigation conservation water management strategies in the 2022 State Water Plan and the 2021 Panhandle Regional Water Plan (Region A). If funded, the project would serve the public interest and further water conservation in the state. The TWDB grant funding would supplement rather than replace the funding of the applicant.

Project duration (to be determined during contract negotiations, if funded):

The project would involve an estimated two-year installation period, followed by five years of reporting irrigation water use data and water savings information.

Texas Tech University—Texas Alliance for Water Conservation

Soil Health & Irrigation Technology

| | |
|-------------------------|------------------|
| TWDB amount requested | \$264,664 |
| Local cash or in-kind | \$60,978 |
| Total study cost | \$325,642 |
| Estimated water savings | Research project |

This project is recommended for TWDB grant funding, in an amount not to exceed \$264,664. The actual local match and total project amount will be determined during contract negotiations.

Participants:

Texas Tech University, Texas Alliance for Water Conservation (TAWC) and producers.

Project area:

The project would occur within the Panhandle Regional Water Planning Area (Region A).

Project summary:

The project includes conducting research on economically viable methods of soil and crop management that conserve irrigation water. Evaluating the water use and economics of multiple crop species, reduced tillage, and method of termination of cover crops will enable producers to make better-informed decisions. The practices would conserve an estimated 300,000 acre-inches per year of irrigation water. Specific objectives are to:

- A. continue to monitor soil water balance on selected producers' fields where minimum tillage, crop rotation, and multi-species cover crops are compared with conventional tillage and no cover crops;
- B. compare benefits related to water conservation and soil health in cotton/sorghum rotation versus multi-species cover crops;
- C. demonstrate new irrigation technologies, including an autonomous pivot with cameras and sensors to measure soil moisture and nitrogen absorption;
- D. analyze the economic returns of such practices; and
- E. demonstrate and disseminate results to crop producers through field visits and online presentations, and information guides.

This project supports the implementation of irrigation conservation water management strategies in the 2022 State Water Plan and the 2021 Panhandle Regional Water Plan (Region A). If funded, the project would serve the public interest and further water conservation in the state. The TWDB grant funding would supplement rather than replace the funding of the applicant.

Project duration (to be determined during contract negotiations, if funded):

The project would involve an estimated two-year research and demonstration period, followed by three years of reporting and educational outreach.

Texas A&M University—Kingsville

Biochar in Citrus

| | |
|-------------------------|------------------|
| TWDB amount requested | \$55,865 |
| Local cash or in-kind | \$4,000 |
| Total study cost | \$59,865 |
| Estimated water savings | Research project |

This project is recommended for TWDB grant funding, in an amount not to exceed \$55,865. The actual local match and total project amount will be determined during contract negotiations.

Participants:

The Texas A&M University at Kingsville and agricultural producers.

Project area:

The project would occur within the Rio Grande Regional Water Planning Area (Region M).

Project summary:

Texas A&M University at Kingsville will conduct a research and demonstration project on the water conservation benefits of utilizing biochar. Biochar is a carbon-rich material that has tremendous agronomic potential to increase water retention in the root zone when it is properly returned to the soil. The goal of this study is to quantify the benefits and risks of using biochar as a soil amendment to citrus groves. The objectives are to evaluate soil moisture storage, root responses, and plant productivity affected by different biochar rates and grapefruit tree age. Project actions are to broadcast one source of biochar at three different rates to five tree groups representative of different ages in commercial settings of Rio Red Grapefruit. Estimated irrigation water savings of 5 to 10 percent are expected based on the available literature.

This project supports the implementation of irrigation conservation water management strategies in the 2022 State Water Plan and the 2021 Rio Grande Regional Water Plan (Region M). If funded, the project would serve the public interest and further water conservation in the state. The TWDB grant funding would supplement rather than replace the funding of the applicant.

Project duration (to be determined during contract negotiations, if funded):

The project would involve an estimated two-year research and demonstration period, followed by three years of reporting and educational outreach.