

TO: Board Members

THROUGH: Kevin Patteson, Executive Administrator
Robert E. Mace, Ph.D., P.G., Deputy Executive Administrator, Water Science and Conservation
Les Trobman, General Counsel

FROM: Ruben S. Solis, Director, Surface Water Resources Division

DATE: December 1, 2015

SUBJECT: Funding for Studies of Environmental Flows in the Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays Basin and Bay Area

ACTION REQUESTED

Authorize the Executive Administrator to negotiate and execute contracts in a total amount not to exceed \$300,000 on or before August 31, 2016, for studies of environmental flows in the Guadalupe, San Antonio, Mission, and Aransas rivers and Mission, Copano, Aransas, and San Antonio bays basin and bay area.

BACKGROUND

Senate Bill 3 (80th Texas Legislature, 2007) created a stakeholder-driven process for identifying and quantifying flows needed to maintain sound rivers and estuaries in Texas. The process led to the adoption of flow standards between 2011 and 2014 by the Texas Commission on Environmental Quality (TCEQ) for seven major basin and bay areas in Texas. The Senate Bill 3 process contains an adaptive management component which calls for continued studies to validate and refine the environmental flow analyses, recommendations, and standards, and to identify strategies to achieve those standards. The Guadalupe, San Antonio Basin and Bay Area Stakeholder Committee submitted its work plan for adaptive management to the Environmental Flows Advisory Group in May 2012. This work plan contains recommended studies and activities that, if implemented, will provide additional information for future rulemaking by the Texas Commission on Environmental Quality.

In 2013, the 83rd Texas Legislature appropriated funds to the Texas Water Development Board (TWDB) for the continued study of environmental flows. In 2014, the Board approved the use of this funding to implement 15 priority work plan studies in five basin and bay areas, including

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	:	Kevin Patteson, Executive Administrator

five studies conducted in the Guadalupe, San Antonio basin that were completed this year (Attachment A). These studies provided the stakeholder committees with information to better define flow-ecology relationships and to identify and evaluate strategies to help meet environmental flow standards.

KEY ISSUES

The 84th Texas Legislature appropriated funds to the TWDB in its baseline budget for the Fiscal Year 2016-2017 biennium in support of Strategy A.1.1 Environmental Information for the purpose of the collection and analysis of environmental flow information to support a sound ecological environment in the state's streams, rivers, bays and estuaries. To support this strategy, TWDB staff sought input from Senate Bill 3 stakeholder committees by requesting that they submit for consideration a prioritized list of studies from work plans developed for their basins. These studies support Strategy A.1.1 by providing both monitoring and analyses of environmental flows information to address priority questions identified in their basins. The Guadalupe, San Antonio Basin and Bay Area Stakeholder Committee created a subcommittee to identify specific projects from their work plan to be recommended for funding. The full stakeholder committee approved the subcommittee's recommendations on October 28, 2015, and requested that the TWDB fund these projects. Staff is prepared to provide technical support and to administer the contracting of these funds for the priority projects identified by the Guadalupe, San Antonio Basin and Bay Area Stakeholder Committee.

In summary, the Guadalupe, San Antonio Basin and Bay Area Stakeholder Committee requests that three projects covering a range of topics are funded for a total amount not to exceed \$300,000. Funds are requested for the following studies:

- (a) Continued study of key estuarine faunal species (\$86,000);
- (b) Evaluate the variability of sediment and nutrient loading into San Antonio Bay (\$62,500);
and
- (c) Continuation of Texas Instream Flow Program type studies (\$151,500).

For more detailed descriptions of all requested studies, please see *Attachment B: Project Descriptions for Proposed Fiscal Year 2016-2017 Studies for the Guadalupe, San Antonio Bays Basin and Bay Area Stakeholder Committee*.

Contracting

The Executive Administrator requests authorization to negotiate and execute contracts with government agencies and universities with whom TWDB has the authority to directly contract through interagency contract, which have subject matter expertise, and in which contracts can be negotiated to represent a cost-savings to the State by eliminating reimbursement for overhead costs. This includes study (a) with The University of Texas Marine Science Institute, study (b) with the U.S. Geological Survey, and study (c) with the San Antonio River Authority. Following contract negotiations, if the contracted amount for any individual study is less than the amount indicated above, the Executive Administrator requests authorization to amend the remaining contract amounts such that the total of all contracts does not exceed \$300,000.

RECOMMENDATION

The Executive Administrator recommends approval of this item.

This recommendation has been reviewed by legal counsel and is in compliance with applicable statutes and Board rules.

Attachment A: Fiscal Year 2014-2015 Work Plan Studies

Attachment B: Project Descriptions for Proposed Fiscal Year 2016-2017 Studies for the
Guadalupe, San Antonio Bays Basin and Bay Area Stakeholder Committee

ATTACHMENT A

FISCAL YEAR 2014-2015 SENATE BILL 3 WORK PLAN STUDIES

Study Description	Contractor	Amount
Trinity, San Jacinto Basin and Bay Area		
Defining bioindicators for freshwater inflow needs studies	Texas A&M University at Galveston	\$105,500
Determination of freshwater inflow volume from the Trinity River into Trinity Bay	U.S. Geological Survey	\$95,000
Trinity River evaluation of adopted Senate Bill 3 environmental flow standards	Trinity River Authority	\$112,000
Brazos Basin and Bay Area		
Brazos basin environmental flow standard validation and integration of river flows and Brazos basin estuary response	BIO-WEST, Inc.	\$312,500
Colorado, Lavaca Basin and Bay Area		
Studies to evaluate achievement of freshwater inflow standards and ecological response	Anchor QEA	\$250,000
Evaluation of potential strategies to help provide needed instream flows or freshwater inflows to support an ecologically sound stream or estuary	Meadows Center for the Environment	\$62,500
Guadalupe, San Antonio Basin and Bay Area		
Texas instream flow program studies	San Antonio River Authority	\$200,000
Lower basin/estuarine inflow studies	University of Texas – Center for Research in Water Resources	\$200,000
<i>Rangia</i> clam investigations	San Antonio River Authority	\$150,000
Key estuarine faunal species studies	University of Texas Marine Science Institute	\$150,000
Strategy options for meeting attainment frequencies for the estuaries	San Antonio Bay Partnership	\$50,000
Nueces Basin and Bay Area		
Re-examination of the 2001 Agreed Order monthly targets and safe yield versus current demand evaluations	HDR, Inc.	\$45,000
Improve salinity modeling methods for determining environmental inflow regimes for Nueces Delta and Bay using a 3-D hydrodynamic model	University of Texas – Center for Research in Water Resources	\$80,000
Explore land modifications to Nueces Bay and Nueces Delta	Naismith Engineering	\$95,000
Nueces watershed pre- and post-reservoir nutrient budgets	HDR, Inc.	\$92,500

ATTACHMENT B

PROJECT DESCRIPTIONS FOR PROPOSED FISCAL YEAR 2016-2017 STUDIES FOR THE GUADALUPE, SAN ANTONIO BAYS BASIN AND BAY AREA STAKEHOLDER COMMITTEE

Continued Study of Key Estuarine Faunal Species – The Guadalupe, San Antonio Basin and Bay Area Stakeholder Committee requests The University of Texas Marine Science Institute or other qualified contractor to continue work begun in the previous biennium to assess the effects of freshwater inflows and other key drivers on the population dynamics of blue crab and white shrimp. Funding for the project is anticipated to be \$86,000. Results from the recently completed initial project confirm that effects of freshwater inflows must be assessed in conjunction with other drivers and at time lags of up to two years. The proposed work would update original datasets with additional data collected in 2014-2015 and rerun statistical models. In addition, data sets will be reformatted from the six-month seasons used in the original work to the seasonal divisions used in the TCEQ standards for the bays. Revised statistical models will then be used to identify whether conditions during particular seasons are more influential on overall focal species abundances. Species abundance trends over time will also be calculated. This project contributes to a Tier 1 recommendation to assess *life cycle, habitat, and salinity studies for key faunal species* from the Guadalupe, San Antonio basin and bay area work plan (GSA BBASC 2012).

Evaluate the Variability of Sediment and Nutrient Loading into San Antonio Bay – The Guadalupe, San Antonio Basin and Bay Area Stakeholder Committee requests the U.S. Geological Survey or other qualified contractor to continue analysis of the concentration of sediment and nutrients in freshwater inflows to San Antonio Bay from the San Antonio and Guadalupe River system. Funding for the project is anticipated to be \$62,500. The U.S. Geological Survey has been working, with funding support from TWDB, to develop predictive relationships of sediment and nutrient loadings from the Guadalupe River, as well as in other major Texas rivers, using surrogate models based on *in situ* field measurements. Additional funding is needed to continue moving toward the ultimate goal of obtaining a quantitative relationship that will allow for the continuous, real-time measurement of river discharge and sediment and nutrient loadings using an automated index velocity meter (an acoustic Doppler current profiler). Funding is requested to support additional sediment and nutrient data collection over a range of hydrologic conditions and the development of surrogate models to estimate sediment and nutrient loadings to the bay using data from the U.S. Geological Survey gage #08188810 located on the Guadalupe River at SH 35 near Tivoli, Texas. Funding also will support analysis of historic flow data from stations in the Guadalupe River and San Antonio River below Victoria, Texas in order to determine the magnitude of unaccounted flow that might be entering the estuary through canals and wetlands instead of the main channel. Funding of this project with the U.S. Geological Survey likely will allow additional federal matching funds to further extend the scope of work for this project. This project contributes to a Tier 1 recommendation to improve *streamflow gaging and water quality monitoring* as well as a Tier 3 recommendation to *evaluate sediment transport affecting the Guadalupe Estuary delta* from the Guadalupe, San Antonio basin and bay area work plan (GSA BBASC 2012).

Continuation of Texas Instream Flow Program Type Studies – The Guadalupe, San Antonio Basin and Bay Area Stakeholder Committee requests the San Antonio River Authority or other qualified contractor to continue a series of Texas Instream Flows type studies focused on refining the aquatic species sampling and analysis. Funding for the project is anticipated to be \$151,500. The Guadalupe, San Antonio Basin and Bay Area Stakeholder Committee believes that advancing the Texas Instream Flows Program by conducting studies in accordance with the Texas Instream Flows Technical Overview (TIFP 2008), focusing on the Guadalupe River, San Antonio River, San Marcos, Blanco, Medina, and/or Mission Rivers for which environmental flow standards have been adopted, will be beneficial for validation and /or refinement of these standards. Work on this task in the previous biennium was a first step toward addressing important questions and concerns raised during the Senate Bill 3 process to develop instream flow recommendations; however, each study component addressed in the previous work benefits from a combination of focused applied research and long-term monitoring. The proposed continuation of this work refines the aquatics component by reducing the number of sampling sites but increasing the frequency of data collection. Once methods to test hypothesis are better demonstrated, they can be extended to additional sites in the future. The proposed work also includes refined methods for data collection and long-term monitoring for other study components. Funding of this project with the San Antonio River Authority will allow access to \$60,000 in matching funds to further extend the scope of work for this project. This project contributes to a Tier 1 recommendation to conduct *Texas Instream Flows Program type studies*, as well as two Tier 2 recommendations to conduct *riparian assessment and monitoring and biological sampling and monitoring* from the work plan for this Basin and Bay Area (GSA BBASC 2012).

References

- GSA BBASC. 2012. *Work Plan for Adaptive Management: Preliminary Scopes of Work. Submission to the Environmental Flows Advisory Group and the Texas Commission on Environmental Quality*. Prepared by the Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays Basin and Bay Area Stakeholders Committee, May 2012, 50 p.
- TIFP. 2008. *Texas Instream Flow Studies: Technical Overview*. Prepared by Texas Commission on Environmental Quality, Texas Parks and Wildlife Department, and Texas Water Development Board. TWDB Report No. 369, Austin, Texas, 137 p.