

WORK GROUP REPORT
FUNDING RECOMMENDATIONS

1. Ecological Indicators/Habitat Characterization in Colorado and Lavaca River Basins

The Texas Water Development Board (TWDB) requests proposals to undertake ecological analyses and sampling to help verify environmental flow standards for key areas in the Colorado and Lavaca river basins. Proposals should be designed to sample at least five sites, with two located in the Colorado River Basin upstream of the Highland Lakes, two located in the Lavaca River Basin, and one located on a major tributary of the Colorado River downstream of the Highland Lakes. For those locations, the environmental flow standards generally were developed without the benefit of site-specific studies and with little sampling data. For each site, proposals should include:

- (a) the identification of appropriate ecological indicators, addressing both instream and riparian habitats, of a healthy flow regime;
- (b) sampling for each indicator at a range of flow levels; and
- (c) characterization of the extent of instream habitat types (riffle, run, pool) for a range of flows.

Proposals should be designed to provide information that will help to inform a review of the adequacy of adopted environmental flow standards to support a sound ecological environment and to monitor ecological health. Funding to be allocated to this activity is not expected to exceed \$_____ and all work and deliverables associated with TWDB administered funding shall be completed prior to August 31, 2017. Proposals incorporating additional funding or in-kind contributions to cover supplemental work may receive special consideration. Supplemental work that does not rely on TWDB funding may have a later completion date. Proposals should include provision of periodic updates to the BBASC, or, with the BBASC's concurrence, an appropriate group of technical experts, on progress, with opportunities for input.

Funding Range: \$160,000 to \$200,000 (depending on amount of overall funding available)

2. Evaluate Trend in Runoff/Rainfall Relationship in Upper Colorado River Basin

The Texas Water Development Board (TWDB) requests proposals to undertake a desktop analysis of changes in the relationship between rainfall and stream flow at key locations in the Colorado River Basin upstream of the Highland Lakes. Proposals should be designed to survey entities (such as state agencies, universities, river authorities, groundwater conservation districts, and other large water suppliers in the area) regarding past or ongoing efforts to assess the relationship between rainfall and stream flow in the upper Colorado River basin. In addition to providing for the assessment of those efforts, proposals should include the development or selection of an appropriate desktop methodology for assessing, and quantifying to the extent possible, changes in the relationship between rainfall and runoff that avoids duplication with other efforts. Proposals should include applying that methodology for specific locations to quantify the trend and identify possible causes. Funding to be allocated to this activity is not expected to exceed \$_____ and all work and deliverables associated with TWDB administered funding shall be

completed prior to August 31, 2017. Proposals incorporating additional funding or in-kind contributions to cover supplemental work may receive special consideration. Supplemental work that does not rely on TWDB funding may have a later completion date. Proposals should include provision of at least one update to the BBASC, or, with the BBASC's concurrence, an appropriate group of technical experts, on progress, with an opportunity for input.

Funding Range: \$20,000 to \$25,000 (depending on amount of overall funding available)

3. Evaluation of the variability of sediment and nutrient loading into Matagorda Bay

The Texas Water Development Board (TWDB) is requested to provide funding to continue analysis of the concentration of sediment and nutrients in freshwater inflows to Matagorda Bay from the Colorado River. The United States Geological Survey (USGS) has been working, with funding support from TWDB, to develop predictive relationships of sediment and nutrient loadings from the Colorado River 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 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 the installation of an index velocity meter at a fixed location in the lower reaches of the river and to fund additional sediment and nutrient data collection in order to quantify the relationship between data recorded by the velocity meter and sediment and nutrient loadings to the bay. TWDB funding would expect to garner a commitment of USGS cooperative funding and some in-kind support from the Lower Colorado River Authority. Recommendations for improving estimates of freshwater inflows and for quantifying sediment and nutrient loading to Matagorda Bay fit are included in several elements of the Colorado-Lavaca BBASC Adaptive Management Work Plan (Tasks 11, 12, and 16) and have been identified as a priority study by the Colorado-Lavaca BBASC.

Funding Range: \$60,000 to \$75,000 (depending on amount of overall funding available)

4. Improve Simulation of Groundwater/Surface Water Interaction in GMA-12 GAM

The Texas Water Development Board (TWDB) requests proposals to improve the capability of the groundwater availability model (GAM) for the central portion of the Carrizo-Wilcox, Queen City, and Sparta aquifers to simulate groundwater/surface water interaction along the Colorado River and the tributaries of the Colorado River within Groundwater Management Area 12. Proposals should be designed to:

- a. Add one or more additional model layer to the GAM to represent a shallow groundwater flow system such that each cell uniquely represents a specific hydrostratigraphic unit and its associated aquifer properties;
- b. Reduce the grid cell spacing in the GAM from 0.5-miles to 0.25-miles for the grid cells representing the Colorado River and the tributaries of the Colorado River;
- c. Perform a literature search on hydrogeological studies for the Colorado alluvium and estimate transmissive and storage properties of the Colorado alluvium;
- d. Represent the Colorado alluvium as a separate model layer in the GAM; and

- e. Develop a work plan for collecting, analyzing, and modeling water elevation data at paired groundwater wells and surface water gages at four locations on the Colorado River and tributaries.

Funding to be allocated to this activity is not expected to exceed \$_____ and all work and deliverables associated with TWDB administered funding shall be completed prior to August 31, 2017. Proposals incorporating additional funding or in-kind contributions to cover supplemental work may receive special consideration. Supplemental work that does not rely on TWDB funding may have a later completion date. Proposals should include provision for at least one update to the BBASC, or, with the BBASC's concurrence, an appropriate group of technical experts, on progress, with an opportunity for input.

Funding: \$60,000

5. Baseline Characterization of Marsh Habitats North of East Matagorda Bay

The Texas Water Development Board (TWDB) requests proposals to undertake baseline biological and habitat characterization of marsh habitats located north of the Gulf Intracoastal Waterway adjacent to East Matagorda Bay relative to salinity levels and freshwater inflow within the marsh. The marsh habitats of particular interest are the Little Boggy and the Big Boggy/Lake Austin marshes. Proposals should be designed to collect baseline data to characterize the marsh habitats, including measuring salinity levels and freshwater inputs to the marsh at key times. Funding to be allocated to this activity is not expected to exceed \$_____ and all work and deliverables associated with TWDB administered funding shall be completed prior to August 31, 2017. Proposals incorporating additional funding or in-kind contributions to cover supplemental work may receive special consideration. Supplemental work that does not rely on TWDB funding may have a later completion date. Proposals should include provision for at least one update to the BBASC, or, with the BBASC's concurrence, an appropriate group of technical experts, on progress, with an opportunity for input.

Cost: \$30,000 to 40,000 (to be undertaken only if amount available to BBASC exceeds \$340,000)

Determination of Funding Allocations

If BBASC has \$300,000 to \$340,000 available, only Tasks 1 through 4 would be funded. Funding for Tasks 1 through 3 would be at the lower end of the range if only \$300,000 is available, with each task budget increased on a pro-rata basis to account for funding above \$300,000 and up to \$340,000. Funding for Task 4 would be a flat \$60,000.

If BBASC has more than \$340,000 available, all five tasks would be funded. Other than Task 4, the funding level for each task would be increased from the lower end of the range on a pro-rata basis until the full amount has been allocated.

Previously recommended item that we anticipate TWDB can complete using in-house resources:

1. Evaluate Accuracy of Ungaged Runoff Predictions

The Texas Water Development Board (TWDB) requests proposals to undertake a desktop analysis of the accuracy of rainfall-runoff simulations provided by the Texas Rainfall-Runoff (TxRR) model at key locations within the coastal basins providing inflow to Matagorda and Lavaca bays. Proposals should be designed to assess, through a desktop approach, the accuracy of runoff predictions using existing datasets or, if the budget allows, newly collected data. Proposals also should include identification of specific priority locations where additional rainfall data collection is needed to inform modeling efforts and where future flow measurements are needed to inform model refinements. Funding to be allocated to this activity is not expected to exceed \$_____ and all work and deliverables associated with TWDB administered funding shall be completed prior to August 31, 2017. Proposals incorporating additional funding or in-kind contributions to cover supplemental work may receive special consideration. Supplemental work that does not rely on TWDB funding may have a later completion date. Proposals should include provision of periodic updates to the BBASC, or, with the BBASC's concurrence, an appropriate group of technical experts, on progress, with opportunities for input.

Cost: \$60,000 to \$75,000 (depending on amount of funding available)