Colorado-Lavaca BBASC
Prioritized Study Topic 3
October 2017

A work group convened by the BBASC chair undertook a prioritization exercise for seven study concepts, with the results circulated to the full BBASC. The top five study concepts, listed in priority order, resulting from that process are summarized below. Items 1 and 2 were actually accorded the same priority.

3. Initial Data Gathering To Implement Groundwater-Surface Water Interaction Field Work From Gam Improvements Study.

Study Description: This project initiates Phase 1 data collection and analysis activities recommended in Section 7.5 of in the 2017 TWDB report entitled "Field Studies and Updates to the Central Carrizo-Wilcox, Queen City, and Sparta GAM to Improve the Quantification of Surface Water-Groundwater Interactions in the Colorado River Basin".

Data collection focuses on characterizing the exchange of water between the Colorado River and the Colorado River alluvium/terrace. The data will provide information necessary for quantifying the importance of bank storage as a source of water that flows from the alluvium to the Colorado River in the segment of the Colorado River that runs through Bastrop County, TX. The data will also provide necessary information for computer models that can be used to help define:

- underflow (portion of groundwater system that is considered surface water),
- the hyporheic zone (region beneath and alongside a streambed with there is mixing of groundwater and surface water)
- baseflow (groundwater contribution to total river flow); and,
- the limitation and inaccuracies with using programs that perform hydrograph separation to estimate baseflow.

A. The field work will be to collect water level and water quality data in the Colorado River and in the Colorado alluvium during different river stages including high river level events (like releasing water for irrigation downstream or a flood event) on hourly intervals. Tasks include:

1) a. Identify locations for installation of geoprobes and secure landowner cooperation; b. Install 2-4 geoprobes in Colorado alluvium (4 geoprobes will be installed unless precluded by cost or logistical considerations).
2) Instrument the geoprobes with data probes and data loggers to collect water levels, temperature, and TDS at hourly increments.
3) Either upgrade the existing monitoring system at a river gage to include TDS concentrations in cooperation with LCRA/USGS, or install a separate datasonde near the river gage to monitor TDS at hourly intervals

Periodically perform routine data reviews and perform screening-level analysis to interpret data regarding surface water and groundwater interactions.

B. The project will include collecting and managing data from the river gauges and geoprobes for about two years. Data collection activities may involve working with interested parties such as LCRA, USGS, and/or GMA-12. Contractor will periodically present interested parties with data updates to guide future field work and to improve understanding of the Colorado River system. Data analysis will include investigation of different methods for assessing the direction and magnitude of water movement between the groundwater and surface water and for determining how best to collect and interpret data to quantify the water movement.

Project deliverables: Quarterly project updates; approximately 2 yrs of collection of TDS data at at least 1 river gage and of TDS, temperature, and water level data from at least 2 geoprobes; draft report; and final report including analysis of data collected, interpretation of direction and magnitude of water movement between groundwater and surface water, and data collected; plus presentation to BBASC on study results.

Project Cost: $75,000

Consistency with SB 3 Work Plan: The proposed study is consistent with Work Plan Task 3, including priority task sub 1 and would further efforts to refine environmental flow recommendations and identify potential strategies to help achieve desired environmental flows.