Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays Basin and Bay Expert Science Team (BBEST)

Thursday, January 20, 2011 at 9:00 a.m.

Guadalupe-Blanco River Authority, Seguin, Texas

MINUTES

Members Present: Tim Bonner, Ed Buskey, Mike Gonzales, Thom Hardy, Scott Holt, Norman Johns, Warren Pulich, Liz Smith, Sam Vaugh, Debbie Magin, Gregg Eckhardt

Call to Order and Introductions

BBEST Chairman Sam Vaugh called the meeting to order.

Public Comment

There was no public comment at this time.

Approval of Minutes from December 20-21, 2010 Meeting

The draft minutes from the December meetings had not yet been completed, so this item was deferred to the next meeting in February.

Science Advisory Committee (SAC) Report (Ward)

SAC member George Ward mentioned that a SAC discussion paper had been finalized and is now available. The paper deals with the topic of attainment frequencies in flow recommendations and the issues involved with translating those into flow standards and water right permits.

BBASC Report (Raabe)

Steve Raabe with San Antonio River Authority (SARA) updated the group on BBASC activities. Notable items from the January 12th BBASC meeting in Boerne were the replacement of BBASC member Brad Groves, a BBEST update, a review of factors to consider in developing recommendations and what constitutes success, steps toward solicitation of proposals for technical support and facilitation services and of funding for those services, and the instream field trips conducted on Cibolo Creek and the Guadalupe River. Steve mentioned that a bay field trip would be offered with the next BBASC meeting in Rockport on February 2nd, the day before the next BBEST meeting. Sam reminded the BBEST that their report will be expected by the BBASC on time, and that the BBEST is also expected to provide technical support to the BBASC as they come up with their recommendations and a work plan.

6) BBEST Budget Update (TWDB, Vaugh)

Carla Guthrie (TWDB) explained that approximately 50% of the BBEST budget funds have been expended, leaving about $120,000 in the budget to be spent. Sam said that he would prepare an updated "cost to complete" document for remaining tasks for members to review. He will also be requesting an additional $22,000 from the SAC to support the time series analysis and to provide assistance to the BBASC. Sam encouraged members to stick to the allotted hours for assigned tasks.

7) Discussion of GSA BBEST Recommendations Report & Schedule (Vaugh)

Sam instructed members to submit their assigned report sections, in as complete a form as possible, by the next meeting. Steve Raabe said to e-mail sections to Sam or to him. If anyone chooses to place their sections on the SARA FTP site, he asked that they notify

him when they have done so. Steve explained that staff at SARA would be compiling the sections and formatting them in report form.

8) Discussion of Hydrology Work Elements and Issues

a) Hydrologic Time Series Analyses (Kennedy, Vaugh)

Sam Vaugh reminded the group that Kirk Kennedy was tasked with looking at implementation of two draft flow regimes: San Antonio River at Goliad (on-channel reservoir) and Guadalupe River at Cuero (run-of-river diversion). Sam showed PowerPoint slides of the San Antonio River at Goliad HEFR matrix (early and full periods of record) and an example recommendation matrix using the full period of record. Dan Opdyke (TPWD) mentioned that all HEFR matrices for all sites would be posted to the project FTP site. Sam then explained the derivation of pulse volumes and durations and that pulses are triggered when the appropriate flow magnitude is reached within a given season. Sam then presented slides showing flow regime implementation examples under wet, average, and dry hydrologic conditions. He noted that the 12-month cumulative flow volumes define the seasonal hydrologic condition instead of reservoir storage volume. Hydrologic condition as well as pulse flow frequency accounting are determined independently for each season.

Kirk Kennedy next presented his work on the time series analysis. For eight locations (seven instream, one estuary), Kirk ran WAM models using six different scenarios (natural, present, Region L baseline, TCEQ baseline, Region L baseline with Cuero project, and then with the Goliad project) using a WAM period of record of 1934-1989. The monthly WAM flows were distributed to daily flows using gaged daily flows. These daily flows were input into FRAT (Flow Regime Analysis Tool), which along with the input of HEFR matrices, hydrologic condition, and project configurations, resulted in daily flows for all the instream sites under all scenarios and monthly flows for the Guadalupe estuary for all scenarios. Kirk next reviewed the results of the analyses, showing example charts of the flows at each of the sites and annual and seasonal flow frequency plots. Kirk displayed a table of compliance statistics, which Dan Opdyke explained as information similar to the flow frequency charts, but in tabular format. Since the historical inflows to the estuary were not used in Kirk's analysis, Norman Johns volunteered to provide that information to him for incorporation.

b) Future Activities and Deliverables

Dan will be posting all of the HEFR matrices to the FTP site. Kirk will be writing up a final report of the time series analyses, and the report will be included as an appendix to the BBEST report. Sam will be writing up the geographic scope, gage selection, and HEFR analyses for the BBEST report.

[After a lunch break, Tommy Hill with GBRA handed out copies of "Guadalupe Basin Rainfall Analysis – Selected Gauges", which demonstrates a trend of increased rainfall in the basin in the recent past.]

9) Discussion of Instream Work Elements and Issues

a) Biological Overlay - Cross-Section & Habitat Suitability Analyses (Hardy, Bonner)

Thom Hardy described the habitat guild approach to be used where detailed site information is available. For sites with insufficient data, he described his cross-section analog method and demonstrated the software used to run the analysis, using the Sandies Creek and Guadalupe River at Spring Branch sites as examples. He said that the overall goal is to maintain habitat variability. Thom and Tim Bonner still have to go through site by site and overlay indicator species information. He mentioned that he

got a good comparison between the rapid approach and the LSWP study numbers in the lower Colorado River.

b) Water Quality Overlay (Eckhardt)
Gregg Eckhardt said that water quality data from 30+ sites has been extracted from the SWQMIS database (TCEQ) and evaluated for potential relationships to flow. Overall, the subcommittee didn't find many water quality problems, and as such could not identify any problematic flow rates. Following up on suggestions at the December 20, 2010 BBEST meeting, they had divided the data into flow categories (summer season, low flows), ran the analyses, and reached a similar conclusion.

c) Geomorphology Overlay (Raphelt, Vaugh)
Nolan Rahpelt (TWDB) gave a presentation describing the principles of geomorphology and using SAM to calculate effective discharge. It was mentioned that flow frequency plots could be used as input to SAM. He showed examples of SAM output such as sediment rating curves and how they're used to arrive at effective discharge for a given site. Sam mentioned that TWDB has offered to help the BBEST in running SAM with the time series results. He suggested that the Cuero and Goliad sites and associated times series be evaluated by TWDB for effective discharge and volume of sediment moved under five flow scenarios: gaged, natural, Region L baseline, example project, and the minimum flow protected by recommendation. Potential modifications that may be needed at these sites could be translated to unanalyzed sites. The possibility of recommending a maximum diversion rate was discussed. It was clarified that this type of analysis would not give a sediment load to the bay. All members agreed to have TWDB do the analysis. The Goliad site would be done first. Nolan said that, at the least, most of work could be done by February 3rd.

d) Riparian Vegetation Overlay (Smith)
Liz Smith expressed interest in Nolan's work to potentially evaluate short-term changes in the riparian zone. She is currently looking at the range of species succession and the water inundation needs of each species, and will submit this work to the riparian team members on Monday. She acknowledged that this analysis will be primarily qualitative in nature, but there is some literature on average flood recurrence intervals necessary for riparian maturation. Reduced flooding could cause a shift in community status from facultative to facultative-dry.

e) Structure of Instream Flow Regime Recommendations & Verification (Vaugh)
Sam presented a proposed path for moving from a HEFR matrix, through the overlays, to a recommendation. He demonstrated his proposal using the Goliad site as an example. First, the water quality overlay would be applied, looking for possible problems with subsistence or base flow levels. Next, weighted usable areas (WUAs) of habitat types are evaluated at different flow levels as a biological overlay. Sam proposed the development of a composite WUA curve, which is derived by averaging WUA percentages of all habitat types at each flow level. Subsistence and base flow ranges would be evaluated against the composite curve to determine appropriateness (e.g., wouldn't expect WUA to be maximized at subsistence flows). The geomorphic overlay could result in changes to pulse recommendations. The riparian overlay would address the suitability of overbank flow recommendations. Sam then discussed an approach to verification of subsistence and base flow recommendations through the time series analysis information that ties back to WUA. A hypothetical change in the regime recommendation at the Goliad site might be to shift to a HEFR matrix based on an earlier (lower flow) period of record. Members engaged in discussion of the approach.

A subcommittee consisting of Sam Vaugh, Liz Smith, Gregg Eckhardt, Thom Hardy, and Tim Bonner was formed to further refine the approach and apply it to all gage sites.

f) Future Activities and Deliverables
The aforementioned subcommittee agreed to meet for four hours on January 26 at 8:00 am to refine and apply the recommendation formulation approach for the gage sites. Liz Smith can't attend, but will supply the first cut of riparian data prior to the 26th.

10) Discussion of Estuary Work Elements and Issues
a) Fixed Habitats Results (Oysters, Rangia) and Criteria Development (Johns)
Norman Johns gave a PowerPoint presentation entitled "Salinity-Zone Approach with Oysters & Rangia: moving to criteria and a regime." Rangia clams were added to the fixed habitat areas along with oysters. Areas were determined by catch rates from TPWD data. Additional salinity information from TWDB has been incorporated. Three additional areas in Copano (2) and Aransas (1) Bays have been added based on professional judgment and sampling data. Norman reviewed the salinity preferences of oysters and Rangia (larvae) and the derived weighted usable areas compared to historical inflows. The resulting 2-D matrix turned out to be sparsely populated due to short period of record and varying salinity ranges. Instead of using TxBlend, he has explored using regression equations that relate inflow (historic and synthetic) and salinity. He showed preliminary results of this approach, noting that it doesn't work real well in the low flow/high salinity periods. Using inflow ranges that maintain different levels of WUA and various ranges of antecedent month inflows, he described several approaches to develop tiered criteria based on oysters. Norman mentioned that he is struggling with the level of detail to have in the criteria. Thom Hardy suggested that Norman talk with Bryan Cook on the Colorado/Lavaca BBEST about how he did his oyster analysis. Norman then showed results of his analyses with Rangia using the same approach used with oysters. He talked about adding an additional tier or two of WUA ranges and vetting it with the estuarine subcommittee, with the objective of trying to nail down an approach that can be applied to other areas. After the subcommittee has a chance to look at his work, a conference call will be set up next week to discuss it.

b) Motile Species Analyses (White Shrimp, Blue Crabs) (Pulich)
Warren said that the subcommittee had hoped to use motile species in the salinity analysis, but has run into obstacles. A January 5th meeting took place with TPWD regarding a method relating inflows and blue crab abundance, but the results may lack substance insofar as aiding in the development of a recommendation. TPWD has done some additional exploration of the technique, and it could be used as a cross-check for the Rangia work. Ed announced a January 26 blue crab symposium at UTMSI, with a focus on understanding crab dynamics in the Aransas NWR area. Warren said there may be potential for finding a salinity range that affects parasitism in blue crab. At the least, these kinds of information will be incorporated into the report, but overall, blue crab need more study.

Warren then showed a few PowerPoint slides regarding white shrimp. He said that in the TPWD coastal fisheries data, there is a strong correlation between shrimp catch-per-unit-effort (CPUE) and certain salinity categories. However, after researching literature, this may not be a causal relationship, suggesting that this shouldn't be pursued because of the uncertainty. He showed distribution maps based on catch during example high and low flow years, saying that a better approach may be to look at relationships with white shrimp CPUE and inflows. This analysis is ongoing. He expects to see a distinct separation between when shrimp are concentrated in the upper bay (low inflow) versus

when they're more spread out during higher inflow years, which could lead to the identification of a flow threshold that helps maintain the population in the upper bay (i.e., maintenance inflow). This should help support the recommendation that comes out of the oyster analysis.
There was a discussion of the months of coverage of the estuarine recommendations. The oysters would cover June – September and Rangia would be February – May. Shrimp would be harder to pin down; an antecedent condition may need to be incorporated into the analysis. Norman Boyd (TPWD) confirmed that antecedent conditions are important in his experience. No good focal species have been identified for October – January. The estuarine subcommittee will consider whether to have any recommendation for this period.

c) Drought Criteria Development (Johns)
This was deferred to another time.

d) Future Activities and Deliverables
The subcommittee will continue work on their analyses, and report writing will continue as well.

11) Future Meetings
a) February 3, 2011 @ Rockport
Ed will send directions to the meeting location, the Bay Education Center in Rockport. Start time will be 9:00 am.

b) February 17, 2011 @ San Antonio (SARA)
No additional information was given.

12) Public Comment and Adjourn
There was no public comment at this time. The meeting was adjourned at 5:20 pm.