

**Nueces River and Corpus Christi and Baffin Bays
Basin and Bay Expert Science Team (BBEST)**

Friday, April 29, 2011 at 9:00 a.m.

MINUTES

Members Present: Chairman Sam Vaugh; Dave Buzan; Ryan Smith; Ken Dunton; Tom Arsuffi; Greg Stunz; Lance Williams; Jace Tunnell; Ben Hodges.

1) Call to Order, Introductions, and Public Comment

Chairman Sam Vaugh called the meeting to order. Cory Horan, TCEQ, announced the TCEQ formally adopted the Environmental Flow Standards for the Trinity, San Jacinto, Sabine and Neches River Basins. Chairman Vaugh announced the BBASC appointed Jace Tunnell to fill the recent vacancy on the BBEST.

2) Approval of Minutes from March 25, 1011 Meeting

Minutes for the March 25, 2011 meetings were approved by consensus.

3) Science Advisory Committee (SAC) Report (Montagna)

SAC liaison Dr. Paul Montagna reported the SAC is completing their reviews of the Colorado/Lavaca and Guadalupe/San Antonio BBEST reports. He mentioned there were concerns common to both reports: the lack of justification for choosing the default HEFR-based recommendations and lack of quantitative justification of adequate flow to support a sound ecological environment. He recommended this BBEST include in the final report a description of the system, photographs, discussion on the justification of why particular parameters were chosen, and a documented quantitative approach (flow vs response) to support the decisions made. Dr. Montagna added the final report could be shorter and more concise if guidance documents and existing studies of previous BBESTs were referenced rather than recreated in the document.

4) BBASC Report (Vaugh)

Chairman Vaugh presented an update on the activities of the BBEST at the April 20, 2011 meeting of the BBASC. He conveyed the BBEST set September 1, 2011 as the target delivery date for the final report and advised the BBASC of the loss of funding set aside for the BBEST to assist them in FY 2012. Cory Horan, TCEQ, stated it may be beneficial if the stakeholders learned more about how the recommendations are used by TCEQ in rulemaking. He added the BBASC could have a full year to complete their recommendations and work plan if the BBEST delivers the final report as anticipated.

5) BBEST Budget Status (TWDB, Vaugh)

Chairman Vaugh presented an update on the BBEST budget. He discussed the remaining available funding and present obligations of that funding including existing contracts and proposed studies based on “pass through” funding from SAC. He discussed the spreadsheet he will use for tracking individual assignments and hours charged toward the budget. He added that HDR will produce and cover the cost of the final report.

6) BBEST Recommendations Report & Timeline (Vaugh)

Chairman Vaugh distributed an outline of the draft report. Members discussed the proposed outline, finalized assignments and designated authors. Chairman Vaugh will email the table including the latest changes to the primary authors. Primary authors are asked to meet with supporting individuals and provide an estimate of the number of hours estimated for the necessary analyses and report writing by Wednesday, May 4, 2011.

7) Estuary Work Elements and Issues (Stunz)

BBEST member Greg Stunz presented an update on the estuary subcommittee. He said the subcommittee’s scope of work, timeline and tasks were finalized. He presented those tasks and deliverables in more detail. Dr. Stunz proposed an historical review of the Nueces estuary based on reconstructing the estuary through literature and pictures. Members approved by consensus the study and use of \$5,000 from the “pass through” SAC funding for the project which has a target completion date of July 1, 2011.

SAC liaison Dr. Montagna discussed several existing studies done in the bay areas based on quantitative comparisons of flow to various parameters. He concluded that ample work had been done and only a review of the existing studies is needed. Dr. Ken Dunton made a similar presentation relating flow and salinity to vegetative species.

Dr. Stunz summarized the subcommittee’s tentative conclusion that the indicator species are evident, the data to support these choices is available, and the data does not support the existence of a sound ecological environment. The BBEST granted approval to move forward on the seven tasks as presented.

Dr. Stunz proposed a study using TWDB data and a new statistical method (boosted regression trees coupled with GIS) that links freshwater inflow and fishery abundance for potential indicator species. The study will include the top 25 species based on frequency of occurrence, and data primarily from Nueces Bay. Members approved by consensus to proceed with the study and use of \$10,000 from the “pass through” SAC funding for the project.

Chairman Vaugh added that estimated hours submitted on Wednesday will be tabulated considering the existing funds, and forwarded via email to members for consideration and approval.

Future activities and deliverables

- Estimate of hours needed for analysis and report writing to be submitted by Wednesday May 4, 2011. Once tabulated, numbers will be emailed to members for review and subsequent approval;
- Historical Review Study to be completed by July 1, 2011. Status report at next meeting; and
- Presentation for Stakeholders on how recommendations are used by TCEQ in rulemaking.

8) Instream Work Elements and Issues (Buzan)

Vice-Chair David Buzan discussed the recent activities of the instream flow subcommittee. He discussed the responses to the proposed \$25,000 contract to analyze flow–habitat relationships at a subset of the selected sites. He presented the scope of work considering 6 sites for the cross sections. Chairman Vaugh suggested the contractor attend the initial site visit to ensure a coordinated effort. He recommended prioritization of the six sites to accommodate access and/or weather issues. Mr. Buzan stated that of the four sites proposed for geomorphology analysis, Frio River at Derby was replaced with the Frio River at Concan where perennial flow occurs more frequently.

Chairman Vaugh made a presentation on his preliminary review of the water quality parameters (DO, temperature, and nutrients) focusing on low flows at three sites; (Frio River at Concan, Nueces River at Cotulla (intermittent), and Nueces at Three Rivers). Members suggested a review of phosphorous, dissolved inorganic nitrogen (ammonium nitrate), chlorophyll, and total nitrogen at all the sites to answer questions about nutrient loading for the estuaries and understanding relationship of water quality and stream features such as pools.

Members agreed by consensus to consider a seasonal pulse flow recommendation if the number of seasonal pulses over the period of record is at least 90% of the number required to meet a frequency of a one or two per season pulse over the period of record. Chairman Vaugh added the results should be compared to the base flow tiers to ensure the magnitude is significantly greater than base flow to be protective of a segment of the ecology. Mr. Buzan said the subcommittee will discuss formatting of the biological overlay to include site specific information issues and present a recommendation to the BBEST for consideration.

Members agreed by consensus to approve moving forward with the \$25,000 contract to analyze flow – habitat relationships at a subset of the selected sites with a deliverable deadline of June 30, 2011

Future activities and deliverable:

- Geomorphology: Nolan Raphelt, TWDB, will perform analysis at four sites: Nueces at Uvalde, Nueces at Three Rivers, Nueces at Cotulla, and Frio at Concan;
- Dr. Raphelt will review aerial photographs of Nueces Bay taken in the 1940s for flow regime analysis.
- Water Quality: Chairman Vaugh and vice-chair Rocky Freund will re-evaluate water quality parameters (DO, temperature, and nutrients) at all sites with a focus on summer months, evaluate specific nutrients, and report back to the committee at the next meeting.
- Biological overlay formatting to be presented for approval by BBEST.
- Flow-Habitat Study contract results due June 30, 2011.

9) TCEQ Environmental flow Standards (Ellis)

Ron Ellis, TCEQ, presented an overview of the Environmental Flow Standards for the Trinity, San Jacinto, Sabine, and Neches River Basins that were formally adopted by the TCEQ on April 20, 2011. He discussed the rulemaking process and how the recommendations received from the BBESTs and stakeholders are used by TCEQ. He talked about the public comments received, which included an alternate proposal, and how these were considered in revisions to the proposed rules. Mr. Ellis noted that in developing future environmental flow standards the TCEQ is going to follow the instructions in the statute, and consider all the reports and comments received. Chairman Vaugh added that the rules were simplified from the BBEST recommendations and that should be kept in mind when making recommendations.

10) Hydrology Work Elements and Issues (Vaugh)

Dan Opdyke, TWDB, discussed the HEFR and IHA preliminary runs completed on the intermittent gages and the output of four gages where he looked at the statistics of the zero flow events. He discussed the zero and non-zero flow events found in large intermittent reaches, an issue not found in other basins. He noted that zero and non-zero flow statistics might be of use in selection of hydrologic conditions or influence the interpretation or implementation of the BBEST recommendations. Dr. Opdyke also discussed a frequency plot of base flows at Cotulla on the Nueces River to show the pattern of base flows coming from HEFR.

Chairman Vaugh explained how seasons were determined using an analysis of monthly median naturalized flows at various points throughout the river basin, grouping them in accordance with hydrology, and incorporating information from the instream flow

subcommittee for both the hill country and the rest of the basin using the Edwards outcrop as the dividing point.

Dr. Opdyke presented HEFR outputs for each gage using pre/early (pre 1970), post/late (post 1970), and full periods of record. Members discussed the results and how the standard terminology might not be adequate to describe flows in the basin.

Dr. Opdyke said he felt there was still a problem with the hydrographic separation for the intermittent gages due to problems with the upper threshold; and once the upper threshold is adjusted, the pulses will be better identified and the regressions can be revisited. He asked members to consider whether more than one flow recommendation is needed with the pulse frequency and duration of zero flow events seen at some of the gages. Chairman Vaugh added the need for criteria that is protective of the pools.

Chairman Vaugh discussed hydrologic conditions and how they relate to base and pulse flows. He used examples of the flow regime recommendations, flow frequency curves, and overlays used by the Guadalupe/San Antonio BBEST to show how the HEFR table evolves into an implementation scheme that can be used as the criteria for evaluating a permit application and operating under a new permit.

He discussed the freshwater inflows into the estuaries derived from gage flows and cautioned members of problems with some of the data due to inaccurate accounting of the diversions and returns from 2000 to 2009. He volunteered to help BBEST vice-chair Rocky Freund verify the data that will be used.

Future Activities and Deliverables:

- Hydrographs: Dan Opdyke will look at the daily hydrographs of selected gages as a means of better defining the flow regime;
- Rainfall: Chairman Vaugh will look at intermittent streams for possible trends in runoff per unit rainfall with time;
- Dan Opdyke will adjust the upper threshold for intermittent gages and revisit the regressions;

11) Future Meetings

The next BBEST meeting will be held on May 20, 2011 tentatively in Cotulla, TX. Future meetings are tentatively scheduled for: June 24th, July 8th, July 29th, and August 19th.

12) Public Comment and Adjourn

There was no public comment.

Adjourn