

**HEFR Enhancements and Modifications**  
**Progress Report given to SB 3 Science Advisory Committee**  
**Prepared by TPWD**  
**April 7, 2009**

During and following the HEFR workshop held on February 24<sup>th</sup>, a number of suggested modifications and enhancements were submitted to TPWD staff. These were presented to the SAC on March 4<sup>th</sup> and the three highest priorities were identified. These priorities, and their current status, are as follows:

1. Hydrographic Separation. Dr. George Ward (SAC member) proposed an alternative hydrographic separation approach (i.e., other than IHA). Joe Trungale (Trinity-San Jacinto BBEST member) implemented the approach in Excel and Dan Opdyke (TPWD) prepared visual and statistical summaries of the results. The new version of HEFR will be able to use a new hydrographic separation option termed the Modified Base Flow Index with Threshold (MBFIT) method. This method will give the analyst additional tools to separate the hydrograph into ecologically meaningful components, but will also require additional decisions (the MBFIT method has five parameters that must be specified by the analyst). Dan added draft documentation describing this approach as (new) Section 5.6 of the Hydrologic Methods document. This new approach is expected to be released in beta form by Friday April 10<sup>th</sup> and will be tested by agency staff and interested stakeholders the week of April 13-17. Please let Dan or Joe know if you are interested in helping us test this. The finished product will be a new Excel spreadsheet that will facilitate the calculations and will be completed by April 17<sup>th</sup>.
2. High Flow Pulse and Overbank Calculations. Tony Smith and Tim Osting (both Espey Consultants; Tony also a Trinity-San Jacinto BBEST member) proposed an alternative "frequency-based" method for statistically analyzing the population of high flow pulses and overbank events that results from the hydrographic separation step. The new version of HEFR will include this alternative approach. Tony, Tim, and Dan have added text describing this approach as (new) Section 5.7 of the Hydrologic Methods document. Qingguang Lu (TWDB) is currently implementing this approach in HEFR and expects that it will be available for beta testing on Friday, April 10<sup>th</sup>. Please let Dan or Mark Wentzel (TWDB) know if you are interested in helping us test this. The finished product will be an option in the HEFR program to allow the user to run the original or the new high flow pulse calculations and will be completed by April 17<sup>th</sup>.
3. Seasonal Flexibility. Several users indicated an interest in additional flexibility in assigning months to seasons. Flexibility to allow an arbitrary number of seasons (from 2 to 12 seasons), each of an arbitrary length, has been coded into HEFR by Qingguang and is currently undergoing testing. This task will be finished by April 17<sup>th</sup> and consists of an option in the HEFR program.

There are a number of other, smaller, enhancements that are also planned at this time. These should also be completed by April 17<sup>th</sup>.