Interpreting the two technical studies about the flooding reduction impact resulting

from the SJRA Seasonal Lake Lowering Program (SLLP)

The conclusions are clear and but the words and numbers behind those conclusions are not simple.

As we recently obtained the results from a second technical study, we face the same dilemma as before – how do we explain a technically worded report with many acronyms and numbers that is typically only read by "experts"? The Freese and Nichols study, cited as the "science" behind the SLLP has been around since April 2018 but few people had read it until about six months ago.

Why not? Because it is highly technical, and deals with terminology and concepts outside our daily lives.

Second, we naively trusted the SJRA's statements that there was a basis for the SLLP to be implemented and it must have had some material benefit to reduce flooding. Actually, it was produced in response to a question from Texas Representative Lyle Larsen about the benefits and negative impacts of lowering the lake. A close read of the SJRA letter does not indicate lowering has material benefits to flooding downstream, instead only on Lake Conroe itself. It also correctly states that adding capacity by lowering the Lake Conroe 2ft does not necessarily decrease flooding potential as many other factors are involved.

Response to Larsen completed, the SJRA Board proceeded to discuss SLLP as an option in April 2018. In a span of minutes the Board members not only doubled the recommended lake level reduction from 6" in May and 1' in August / September to 1' and 2', they proceeded to approve it without a technical study that said it was effective and no study about the negative impacts. (please listen to the Board meeting audio recording found on https://www.stopdraininglakeconroe.com/ . **This why we have publicly criticized that SJRA Board vote as arbitrary, poorly informed, and lacking adequate public comment.**

We now have a completed second technical study that addresses not only the first study conclusions but takes the analysis all the way to the Lake Houston area. **Guess what? SLLP still cannot be shown have any material impact in reducing downstream flooding.**

Taken from the latest technical study referred to as the Bleyl study -"The purpose of the study was to provide a second, objective professional engineering opinion to the effectiveness of the lake lowering flood mitigation strategy by checking the validity of the Freese and Nichols (F&N) analysis and its conclusions and by evaluating any immediately available hydrologic and hydraulic data for the West Fork watershed."

"The F&N study was limited to the section of the West Fork between the Lake Conroe Dam and IH-45. Therefore, flood reduction benefits for the region south of IH-45 cannot be determined based solely on the F&N study. **So, the conclusions found in the F&N study are only applicable to the region between the Lake Conroe Dam and IH-45."**

"We agree with the conclusion of the F&N study that the lowering of the Lake Conroe normal pool elevation to 199 ft-msl is "generally not enough to be considered wholesale improvements to the flood hazard" in the region of the West Fork between Lake Conroe and IH-45. Based solely on the F&N study, there is no information provided to fully understand the effects that the seasonal lake lowering will have on flood levels downstream of IH-45."

Regarding the Bleyl study analysis **about the Lake Houston Area impacts the study said:** "While there is a positive impact to the water surface elevations of the West Fork from US-59 to Lake Houston, **it is our professional opinion that these reductions, under the given storm characteristics, are still generally not enough to be considered wholesale improvements to the flood hazards along the West Fork."**

One word that you will find throughout the conclusions of both the Freese and Nichols and Bleyl studies is the word **"wholesale"** as it pertains to the impacts on reducing flooding. No consulting company can conclusively state something is a fact if it comes from a model and anyone relying on that model could claim liability if the model or interpretation of the model is incorrect. So, they must use words like "wholesale" to infer the results do not give any significant or material evidence that the program under review – in our case the SLLP – is effective.

They back up their statements with compelling numbers from the model used but that is where it gets difficult for the non-technical person to understand and be certain what the numbers mean. Most people only understand the concept of zero or in thinking about numbers that they face in daily life such as "Is 90mph fast?".

The key question from the F&N study was "Does a 9-10 inch reduction in flood levels at I-45 matter?" F&N looked at that 9-10 inch reduction from lowering on the 8-12 foot flood level and said, "it was not a wholesale improvement due to lowering." With starting flood water heights of 8-12 feet the water would travel beyond the banks 6000-14,000 feet laterally and decrease at the furthest edge to zero. If you reduce the 8-12 foot water level at the center of the river by 9-10 inches the math says it will spread laterally 5,990-13,985 feet – just slightly less due to the lake lowering. Is that 10-15 feet compared to 6,000-14,000 feet important? **Obviously not as the last several hundred feet out of thousands significantly spreads and thins the water levels. Flood water depth at that point will be only 1/4 of an inch or less in depth. This small 10-15 foot reduction in flood front (spatial extent) just doesn't matter.**

In the Bleyl study they were asked to model the water depths, flow rates and flooding extent at Lake Houston as a result of the lake lowering program at Lake Conroe. Their model said that the **Lake Houston surface water level was on average 3 inches lower** with the Lake Conroe 2 feet lowering program than without. Doesn't a 3 inch lower surface level at the center of Lake Houston reduce flooding? Bleyl says – "**it is our professional opinion that these reductions, under the given storm characteristics, are still generally not enough to be considered wholesale improvements to the flood hazards along the West Fork."**

But why doesn't 3 inches help? First this 3 inch improvement is compared to an average flood level height of 15-20 feet. It was estimated by Bleyl the lateral spread of the flood water would be 8000-17,000 feet from the center point. The reduction in that distance was only 33-145 feet due to lowering. This is what Bleyl meant when they said lowering Lake Conroe 2 feet provided **no wholesale improvement at Lake Houston.**

In simple words the SJRA seasonal lake lowering program has no real benefit to reducing flooding impacts near the Lake Conroe Dam or in the Lake Houston area.