

**2020 Integrated Report (IR) - TCEQ Guidance Advisory Workgroup (GAWG) Verbal Comments
May 20, 2019**

Topic	Comment	TCEQ Response
Implementation of Coastal Recreational Use Criteria	What is the difference between the exceedance rates in this method as compared to the previous single sample method for bacteria.	The previous method was based on a 25% exceedance rate of the single-sample criterion, whereas the draft method is based on a 20% exceedance rate.
	It would be useful to notify all GAWG members of approved water quality standards changes to be implemented in the Integrated Reports if they are not discussed at GAWG meetings.	The TCEQ assessment guidance includes a summary of method changes in Chapter 2. This Chapter also includes a summary of water quality standards revisions approved by EPA that were implemented in the 2020 Integrated Report. More detailed information regarding EPA’s approval of the water quality standards can be found on the TCEQ’s Texas Surface Water Quality Standards webpage. The water quality criteria and screening levels for parameters assessed are included in “Water Body Assessment by Basin” reports.
Update on the regionalization of the Index of Biotic Integrity (IBI) for Benthic Macroinvertebrates	Are the reference streams identified through the Index of Biotic Integrity (IBI) development or before this process?	The reference streams were identified prior to IBI development and used as the basis for the IBIs.
	Are some of these streams which were used as the basis for the IBIs now considered disturbed?	At the time these reference streams were used as the basis of the IBIs the TCEQ did not consider them disturbed. None of these streams have since been identified by TCEQ as being disturbed.
	When choosing the metrics, did each ecoregion have the same metrics?	Not all ecoregions have the same metrics. Thirty-two candidate metrics were evaluated for potential use in all ecoregions. Two metrics, total number of taxa, and the Hilsenhoff Biotic Index, are included for all

		<p>ecoregions and the other metrics vary by ecoregion.</p> <p>A subset of the 32 candidate metrics, which best characterized biological community response in specific ecoregions, were identified for use in those specific ecoregions. There are some metrics that better distinguish differences in disturbance for specific ecoregions.</p>
	<p>How did you choose which metrics to use for each ecoregion?</p>	<p>Reference and non-reference data sets were compared for each individual metric in each ecoregion. This comparison was made primarily by constructing boxplots which illustrated the distribution of results for each metric from all samples collected in each ecoregion. Those metrics with reference and non-reference boxplots that demonstrated a good visual distinction were chosen as candidates for the IBI. Two sample t-tests were also run for all metrics to evaluate whether there were statistically significant differences between reference and non-reference datasets. Metrics with clear distinctions observed in the boxplots or which otherwise showed statistically significant differences between reference and non-reference datasets were chosen.</p>
	<p>For some metrics the two conditions (reference vs. non-reference) do not appear very distinct.</p>	<p>For most of the selected individual metrics in each ecoregion, relatively good separation was observed between reference and non-reference data sets. In most cases, the non-reference 75th percentile was either less than or essentially equal to the median of the reference data set, indicating good separation. Boxplots of all scores for the new regionalized IBIs showed a similar degree of separation between reference and</p>

		<p>non-reference data sets. The least disturbed stream approach is an attempt to control for human disturbance as one source of potential variation. However, there are a large number of other environmental variables, such as biological interactions (predation, competition for resources, etc.) which are common to both reference and non-reference datasets.</p>
	<p>When will the Regional IBIs be implemented in the Procedures Manual?</p>	<p>The Regional IBIs will be incorporated into Volume 2 of the Surface Water Quality Monitoring Procedures Manual for the 2020 Integrated Report.</p>
	<p>Will the application of the regional method be affected by multiple collection methods?</p>	<p>Application of the regional method will not be affected by multiple collection methods, since ecoregion-specific collection methods are incorporated in the derivation of metric values and IBI scores.</p>
	<p>You looked at many organisms from many different places, did you evaluate pollution tolerance values in the different ecoregions for use in the Hilsenhoff Biotic Index?</p>	<p>Yes, regionalized tolerance values found in published peer-reviewed scientific literature were evaluated. These values are regionalized in the literature with suggested tolerance values for distinct regions of the US (e.g. South Central, Northwest, Southeast, etc.) and are used in many different regions of the US. Also, these tolerance values reflect inherent differences among taxa in physiological characteristics. For example, many beetles must go to the water surface to obtain oxygen and hence will not be affected by low dissolved oxygen levels in the water column. The tolerance values for these groups would not be expected to change across regions.</p>

	<p>Would you talk about typical vs atypical nonpoint source pollution?</p>	<p>Typical nonpoint source pollution tends to be more ubiquitous and dispersed whereas atypical nonpoint source pollution is more localized and tends to be associated with more intensive activities.</p>
<p>Application of Regionalized Benthic Indices of Biotic Integrity (IBI) in the Integrated Report</p>	<p>In ecoregion 24 you only have two samples to calculate the CV for the Exceptional Aquatic Life Use (ALU)? Can you aggregate CVs for those ALU combinations that have fewer than ~10 values when calculating the CV? How would you aggregate the CVs?</p>	<p>In order to address the issue of limited sample sets available for ecoregion 24, the TCEQ reviewed the data used to calculate the original CV values for fish and macroinvertebrates and recalculated CVs for each ecoregion and ALU category using a revised method. The TCEQ considered the suggestion to aggregate CV values and implemented a new method to increase the sample size for each ALU category. This new method involves the aggregation of all pairwise averages of IBI scores.</p>
	<p>A sample size of 7-10 would be better for coefficient of variation tests.</p>	<p>The new method resulted in a minimum sample size of 7 to calculate all CVs for benthic macroinvertebrates.</p>

	<p>If you use a low number of samples to calculate the CV, you may be inaccurately representing the amount of variability present in a particular ecoregion. It would be better to aggregate the samples within the Aquatic Life uses to avoid misleading results. The CVs will improve with additional sampling.</p>	<p>The TCEQ developed a method to aggregate pairwise averages of IBI scores as described above.</p>
	<p>There were a low number of samples in some Ecoregions for the exceptional ALU that contributed to the low numbers used for the CV. In Ecoregion 24, for instance, there were only two streams that rated as exceptional. In some Ecoregions it takes a tremendous effort to collect datasets to increase the sample sizes. In this instance, after conducting up to 100 sampling events only two were rated exceptional. The others fell into other categories.</p>	<p>The TCEQ acknowledges this comment. Both reference and non-reference streams in Ecoregion 24, Chihuahuan Deserts present a particularly harsh set of environmental conditions which makes attaining the exceptional score difficult. Also, note that because of the difficulty of finding reference streams in the arid environment of Ecoregion 24, the best available reference sites in Ecoregion 24 were located on “reference reaches” of the Rio Grande. Therefore, since these reaches meet the existing guidelines for Least Disturbed Stream sites but may reflect some minor water quality variations related to upstream activities, the IBI score threshold for the Exceptional ALU category in Ecoregion 24 is the 95th percentile. This sets the expectation that only about 5% of the benthic assemblages in the region are anticipated to attain the Exceptional ALU.</p>

	<p>A value of 2.22% is a small CV and not particularly valuable information standing alone. The fact that the CV is small does not necessarily render it not valuable, it is the low number of sample pairs that were available to calculate the CV that decreases the utility since it likely does not accurately describe the amount of variability in the ecoregion.</p>	<p>The TCEQ developed a method to aggregate pairwise averages of IBI scores as described above.</p>
	<p>Dissolved oxygen, toxics, etc. are included in the decision matrix table. When fish and macrobenthic biological data both indicate full support, are there instances where the outcomes for dissolved oxygen or toxics would change the attainment decision for ALU?</p>	<p>Yes. Based on Table 3.6 of the Assessment Guidance, when both fish and macrobenthic data attain the designated ALU, an impairment of the ALU would still be identified if dissolved oxygen or toxics in water testing indicated nonsupport.</p>
	<p>In the cases you don't have biological data, you can still impair biology based on toxics data?</p>	<p>The ALU can be impaired based on toxics data, but this is a toxics ALU impairment rather than a biological ALU impairment. Table 3.4 of the Assessment Guidance identifies the applicable toxic criteria for different types of water bodies.</p>
	<p>Many times, Water Quality Standards revisions get approved by EPA between IRs, but IRs have not been applied to a single waterbody before. How will decisions be made on when to do partial assessments?</p>	<p>The two separate submissions of the 2018 IR was an unusual case. Any decisions by TCEQ on if and when to conduct a partial assessment in the future would be decided on a case-by-case basis.</p>

	<p>The Guidance includes guidelines for using data outside of the period of record, and that includes using data prior to the standard, 7-year window. However, in the 2018 IR, to my knowledge, there were two waterbodies that had data pulled forward. Why have a data window when you go ahead of that window? What if there were other data providers that wanted more recent data used for their waterbody that had a new standard?</p>	<p>Any decisions by TCEQ to use data collected after the IR period would be determined on a case-by-case basis.</p>
General Discussion	<p>In the 2016 IR, copper was non-supporting, but the ALU was meeting criteria. Does this institute an agency action? How will this trigger a Water Quality Standards (WQS) change?</p>	<p>The 303(d) listings for copper are in Category 5c, additional data or information will be collected and/or evaluated for one or more parameters before a management strategy is selected. At this time the copper listings will not trigger a water quality standards change.</p>
	<p>Will WQS changes that are approved by EPA be automatically implemented in the Integrated Report?</p>	<p>The timing of incorporating EPA approved water quality standards revisions into the Integrated Report will be determined on a case-by-case basis. Chapter 2 of the assessment guidance will include a summary of EPA approved water quality standards revisions that are implemented into the Integrated Report for the first time.</p>
	<p>I think what is being proposed here, to regionalize the biology, looks good and I think it's the way to go.</p>	<p>The TCEQ acknowledges this comment.</p>
	<p>The process is getting better every time.</p>	<p>The TCEQ acknowledges this comment.</p>

