

Outcome of Discussion at the September 13 SWQMGAWG Meeting
September 18, 2007

This document serves as minutes from the September 13 advisory group meeting.

If you have further comment on these issues; send an email or you can type into this document and send it back to Michele Blair (mblair@tceq.state.tx.us).

	Proposed Change	Reason
New Statistical Approach		
Stat 1	Discuss the use of a Confidence Interval around a Percentile (CIP) as a statistical method for some parameters.	The CIP method considers both the frequency and magnitude of exceedances. Assessment outcomes for example datasets will be discussed.
	<i>The CIP method evaluates confidence intervals around a specific percentile of the dataset. When applied to environmental data which may be highly variable, as discussed by the workgroup, this may result in a wider range of values than is appropriate for determining concern or support status. The CIP method is complex and would be difficult for stakeholders to reproduce or explain to the public.</i>	
	<i>Staff recommends that the adoption of new statistical methods be delayed, and that the current binomial method be employed for the 2008 assessment.</i>	
	<i>A Statistics subgroup has been formed for the 2010 assessment guidance. This group will continue to explore statistical methods that consider both the frequency and magnitude of exceedances.</i>	
Stat 2	Don't delist an impairment unless the criteria is met 90% of the time. Note that the CIP method provides a condition for delisting that may be appropriate for some parameters.	Granted, we should require a higher level of certainty for delisting (because the parameter is already known to have been impaired) than for assigning fully supporting to water bodies that are recently supporting or unassessed. The current rationale for delisting is not very satisfactory because it seems arbitrary – two fewer exceedances than what it would take to list. This new approach is straightforward and as protective - delist when 10% or less of the samples exceed.
	<i>The stated requirement for attainment is that approximately 90% of the samples meet the criteria for conventional parameters. The current method for delisting, two less exceedances than required to list, occasionally allows delisting when more than 10% of the samples exceed. The existing requirements for delisting could be modified to also allow no more than 10% of the samples to exceed the criteria.</i>	

	<p><i>Staff recommends that because the protection accomplished by the requirement for delisting (with two less exceedances than result in listing) is also accomplished with a percentage, that the percentage simply be applied. Percentages as protective as the requirement for delisting (with two less exceedances than result in listing) for bacteria and toxics are 25% and 8% respectively. Some judgment may be used by the assessor if the percentage and magnitude of the exceedances are marginal.</i></p>	
Stat 5	<p>Assess all data available collected in the last 7 years and if needed to obtain the minimum sample number of 10, extend the period for consideration back in time as far as ten years. BPJ affords some latitude in decisions, especially if more recent data shows water quality improvement.</p>	<p>This change to seven years from the current five years of data for assessment will increase sample sizes and make the dataset less influenced by one or two years of atypical climatic conditions. Data are comparable because methods and QA have been consistent for the last 7 years.</p>
	<p><i>Staff recommends that the period of record be extended to seven years (from five), and back to ten years if needed to attain a minimum data set of ten samples (as we did for 2006).</i></p> <p><i>The assessor must use judgment in the use of older data if it is apparent that water quality has improved or deteriorated recently and that this change is likely permanent (e.g., rather than a short-term drought condition).</i></p>	
<p>Attainment of Dissolved Oxygen Criteria</p>		
Standards 8	<p>Review DO carryforward listings. Reassess (using the 2008 methods) the original DO grab data that listed the parameter and establish use support or concern. Delist if indicated.</p>	<p>The original listing may have been the result of comparing grab samples to the average criterion, rather than the minima. This was not consistent with the Texas Surface Water Quality Standards (TSWQS). That assessment method is consistent with the TSWQS.</p>
	<p><i>Some of the older DO carryforward listings are solely from evaluating grab DO data with the 24-hr DO average criterion. This is not consistent with the TSWQS because this criterion is to be evaluated with the average of a 24-hr dataset. DO grab data are, however, evaluated with the DO minimum criterion. The appropriate method of evaluating DO data was adopted in 2002 assessment guidance, but some of the older listings may have been made by incorrectly, comparing grab DO data to the average criterion.</i></p> <p><i>In order to resolve this issue, staff recommends a step-wise procedure for evaluating the 37 older DO carryforward listings:</i></p> <p><i>1) If there are enough 24-hour data to assess for DO, then evaluate the current data. Many of these water bodies will have an adequate 24-hour dataset in 2008 since DO listings have been targeted for this type of monitoring for several years.</i></p>	

	<p><i>2) If there is not enough 24-hour data to assess for DO, then re-evaluate the original dataset that listed the water body using the current binomial assessment method for grab DO data. If the water body was not impaired at that time (note that subsequent data is not available to evaluate for these listings), then the assessor will delist.</i></p> <p><i>The assessor will use judgment in delisting. The impairment may be retained If recent data do not include an adequate 24-hr dataset that will allow full assessment, yet existing grab and 24-hr data indicate a likely environmental problem.</i></p>	
Standards 6	<p>For DO, evaluate data collected in all seasons (rather than only the warm index period) but require at least one half of the samples be from the index period and from one fourth to one third (up to one-third provides a margin of safety by considering a few more samples from the critical period) from the hot, low-flow critical period. However, when 24-hour DO measurements are available only from the index period (sampling scheduled with biological data) they can be used as the assessment dataset.</p>	<p>This is consistent with requirements for other criteria, and considers the use of DO to characterize critical conditions for aquatic life.</p>
	<p><i>Staff recommends evaluation of 24-hr DO data collected year-round. DO conditions are important to aquatic life in all seasons. To ensure unbiased seasonal representation, the requirements will be changed to require that no less than one-third and no more than one-half of the samples be in the index period, and no less than one fourth and no less than one-third be in critical period (months within the index period that are characterized by low flow and high temperatures).</i></p> <p><i>These new requirements will require several years to phase in. The objective in making this change is to allow the assessment of data collected throughout the year. Because most existing data sets are from the index period, in 2008 we can require only that at least half of the samples be from index period, which will allow the use of existing samples outside the index period.</i></p>	
Standards 1	<p>Defer 303(d) Listing for Nonsupport of Presumed DO Criteria and Aquatic Life Use. Report attainment status based on presumed use and criteria for biological, habitat and dissolved oxygen methods, but assign no category for the integrated report. In effect, new listings that would have been included on the 303(d)</p>	<p>The TSWQS specify presumed Aquatic Life Uses and dissolved oxygen criteria, based on flow-type, for intermittent and perennial streams as the applicable water quality standards. The assessment, publication of the 303(d) list, and scheduling of TMDLs is part of a long-term planning process.</p>

	<p>List will be deferred until an accurate aquatic life use and criteria have been developed from site-specific biological and physicochemical data and an assessment can be made.</p> <p>These deferred listings will be identified in a separate list, distributed with the assessment, showing additional data needed to establish the ALU and criterion.</p> <p>Should impairments based on presumed standards that are currently listed remain on the list or be delisted until site specific standards are developed?</p>	<p>Because we know that site-specific conditions, uses and criteria often differ from these presumptions, TCEQ should defer listing water bodies for nonsupport of presumed standards until the standard has been established through existing agency processes. Decisions related to permitting for unclassified water bodies are established in the Implementation Procedures.</p>
<p><i>Approximately 52 of the biological and dissolved oxygen listings on the current 303(d) list are based on presumed standards determined by the flow-type. The flow-type is determined from field observations and instantaneous flow measurements.</i></p> <p><i>Although the standard, presumed from the known flow-type, is the applicable water quality standard as adopted in the Texas Surface Water Quality Standards, other regulatory programs at TCEQ, such as permitting, require site-specific criteria to be assigned before taking regulatory action.</i></p> <p><i>An option that the Agency is exploring is to remove water bodies listed with presumed uses from the 303(d) List and put them on a Deferred List. The flow-type and basis for the presumption will be reconfirmed and a Use Attainability Analysis will be conducted within perhaps eight years of the assessment that identified the impairment. If a UAA is not conducted within this timeframe, the water body will be put on the 303(d) List, which will allow enough time for a TMDL to be developed and adopted within 13 years of the original listing. While on the Deferred List, the water body is afforded similar protections related to permitting; new or expanded permits must meet the presumed use, or the Agency must identify a lower use with site-specific data.</i></p> <p><i>Beginning in 2008, for water bodies that have not been previously listed, the minimum data requirement for evaluating support of criteria that depend on presumed standards will be changed to require the same information needed to determine the ALU.</i></p>		
<p>Evaluating Water Toxicity</p>		
<p>WaterTox 2</p>	<p>For TOXNET protocol samples, consider sublethal effects evidence of a Concern (rather than nonsupport as we did in past assessments). This screening will lead to more</p>	<p>TOXNET sublethal effects are not adequate evidence of impairment because a significant number of listings based on sublethal effects in Texas have not been reproducible, and have not resulted in</p>

	sampling to see if lethal conditions occur.	actions taken to reduce toxicity.
<p><i>An occasional sublethal observation is expected. Lethal effects will continue to be considered for use attainment (listing).</i></p> <p><i>Staff recommends that consistent sublethal effects be identified as a concern based on the judgment of the assessor. And where such concerns for sublethal effects are identified, testing using conventional water toxicity testing methods will be initiated to confirm sublethal effects. The water body may be listed based on conventional water toxicity testing methods exhibiting lethal or sublethal effects.</i></p>		
Evaluating Sediment Toxicity		
Sed 1	Change the assignment of points to allow zero points to be assigned to the BPJ Line of Evidence (LOE) when judgment does not indicate either toxic or not toxic conditions.	In some instances available information may not be strong enough to indicate if conditions are either toxic or not toxic.
<p><i>Staff recommends making no change to the “point system” which now requires that the assessor make a judgment and assign either +10 or -10 points for BPJ.</i></p>		
Sed 3	<p>Consider all data and information for the AU for each line of evidence, rather than evaluating LOEs for each individual station.</p> <p>Determine points for each LOE for the AU. Sum the points to determine use support for the AU. For example the AU can be an arm of a lake. This LOE approach would not require consideration of a percentage for exceedances or the use of a statistical method.</p>	<p>Considering each site individually and requiring several coincidental or simultaneous lines of evidence is more restrictive than necessary for sediment and available data may not meet this requirement.</p>
<p><i>Staff recommends considering all available lines of evidence and their weight, within hydrologically similar (in terms of sediment conditions) assessment areas.</i></p> <p><i>Although sample data from the entire assessment area are considered together, assessors must be aware of hot spots that pose significant environmental risks which may be of smaller scale than the assessment area.</i></p>		

Additional discussion items... Not all items were reviewed at the September 13 advisory group meeting.

	Proposed Change	Reason
Process 1	For 2008 a targeted assessment will be done, similar to the assessment in 2004. Updated attainment status will be reported for only those water bodies where there is a regulatory need for reassessment in 2008; and updated status will be reported for all of the classified segments (in Appendix A of the TSWQS).	Water quality changes occur gradually. A statewide assessment of all water bodies was just performed in 2006. That assessment will be used for water quality planning purposes, including monitoring of Concerns, until support status changes for classified water bodies to be assessed in the targeted 2008 assessment are available, and all water bodies are reassessed in 2010.
	<p><i>Staff recommend the following “rules” for determining which water bodies will be reassessed in the targeted 2008 assessment:</i></p> <ul style="list-style-type: none"> • <i>All classified segments (TSWQS Appendix A)</i> • <i>Water bodies with a regulatory reason for reevaluation, such as those with pending permit decisions, or those where likely support changes will direct project initiation or activities as determined by the TCEQ, and which may be suggested by an assessment of available data by a contributing entity.</i> • <i>Carry forward DO listings will be reviewed as described above in Standards 8, on page 2.</i> 	
Sed 5	Where the Agency determines methods proposed for a sediment toxicity evaluation project are acceptable, allow for the use of univariate and multivariate assessment methods for evaluating the health of biological communities as a sediment LOE.	Scientifically valid methods to evaluate the health of biological communities should be considered, for example those using least-impacted reference conditions.
	<i>Staff recommends this change.</i>	
Bact 4	<p>Note, when only fecal coliform data are available, fecal coliform will be used to determine use support and list.</p> <p>Bacteria impairments based on fecal coliform will be delisted with either fecal coliform or the new indicators.</p> <p>Bacteria listed with the new indicators will only be delisted with the new indicators.</p>	New indicators are preferred for assessment of Recreation Use. TMDLs will not be initiated until use support has been established with the new indicators.
	<i>This is just a clarification of current procedures. Impairments identified with fecal coliform will be placed in Category 5c, and an adequate dataset for assessment</i>	

	<i>with E. coli or Enterococcus will be collected.</i>	
Bact 5	For Oyster Waters that are administratively closed, report as Not Assessed	<p>TCEQ will propose that waters which are administratively closed, without actual data indicating poor water quality, be identified as Not Assessed. It would be incorrect to identify these waters as Not Supporting the oyster water bacteria criterion when there is no evidence to indicate that.</p> <p>In contrast, where there is data that establish poor water quality, but no water quality solution would be accepted by the Department of State Health Services Shellfish Sanitation Program and allow the oyster use to be supported, the oyster waters will be identified as impaired in Category 4c.</p>
	<p><i>Staff recommends that waters which are administratively closed, without actual data indicating poor water quality, be identified as Not Assessed.</i></p> <p><i>Areas that are administratively closed <u>and</u> that exhibit water quality that is not good enough to allow shellfishing will be listed (rather than as previously proposed, above, in Category 4c).</i></p>	
Standards 2	Discontinue the Surface Water concern assessment method for Public Water Supply Use (for TDS, chlorides and sulfate).	The water quality standards include segment specific criteria for these parameters which consider PWS attainable uses. These are already assessed and reported for attainment of General Uses and this assessment method is duplicative.
	<i>Staff recommends this change.</i>	
Standards 3	Describe requirements for representative stations in enough detail that judgement can be made about the use of the station and documented by the assessor.	Provide guidance (for “considering data from all stations”) that is consistent with the TSWQS. See the excerpt from the Guidance at the bottom of this document; perhaps this is adequate.
	<i>Staff has solicited changes to the text that appeared in the original handout. The <u>revised version</u> is now in the same place at the end of this document.</i>	
Standards 4	Describe representative temporal requirements for data sets in enough detail that judgement can be documented by the assessor.	Provide guidance for “considering data” from all sampling dates or conditions that is consistent with the TSWQS. Can we establish what portion of the samples may be part of a routine dataset and can be included without biasing the assessment dataset. See the excerpt from the Guidance at the bottom of this document; perhaps this

		is adequate.
	<i>Staff has solicited changes to the text that appeared in the original handout. The revised version is now in the same place at the end of this document.</i>	
Biol 1	<p>Water bodies are 303(d) listed if either the DO criteria or the biological data indicate nonattainment.</p> <p>However, in rollup summaries for EPA, we have been reporting the Aquatic Life Use as fully supporting when water body is listed for DO, yet the biological data indicates support. Change these rollups to make this reporting consistent with the 303(d) list.</p>	<p>Reporting these listed water bodies as fully supporting serves to slightly increase the miles reported as fully supporting the aquatic life use. It reports the attainment status in two different ways and adds an additional layer of bookkeeping to the assessment.</p>
	<i>Staff recommends this change.</i>	
Biol 2	<p>Report the habitat assessment with a support status of a Concern rather than use support.</p>	<p>Reporting the support status for habitat differently, depending on the biological conditions, is a potential source of errors. Because habitat cannot currently list a water body on its own and must have an associated nonsupporting biological status, this change will not effect listing outcomes.</p>
	<i>Staff recommends this change. All habitat datasets that indicate the habitat condition is not supporting (using the habitat index) will be reported as Concerns.</i>	
WaterTox3	<p>For determining site specific criteria, use the median of the hardness for the station, AU, or off-segment water body rather than the 15th percentile.</p>	<p>The criteria are conservative and the use of the median is appropriate when derived for specific locations.</p>
	<p><i>Staff recommends that hardness for use in determining criteria be calculated in the following manner based on approximately 30 hardness samples:</i></p> <ul style="list-style-type: none"> • <i>Classified segments –15th percentile of hardness will be assigned to the segment. These are published in the implementation procedures, RG-194.</i> • <i>Unclassified segments (water bodies) – use available data to determine the 15th percentile and assign to the segment, because these water bodies may be large and have highly variable hardness. When there are insufficient data to develop default hardness, use the values published in RG-194 for the classified segment.</i> • <i>Assessment Area (AU) for classified and unclassified water bodies – the 50th percentile will be assigned to the AU.</i> • <i>Station – the 50th percentile will be assigned to the station.</i> 	
WaterTox 4	When most of the reported values	If the criterion is lower than the ability to

	<p>for a parameter to be evaluated as an average are nondetects, and their values are greater than the criterion, report only Not Assessed status rather than reporting use support as Fully Supporting. However, if there are a sufficient number of exceedances, report Concern or Not Supporting.</p>	<p>measure with confidence, then we cannot determine if the criteria is supported.</p>
	<p><i>Staff recommends that when most of the reported values for a parameter which is evaluated as an average are nondetects, and the detection limit is greater than the criterion, report the status as Not Assessed, rather than reporting use support as Fully Supporting. However, the support status can be reported as a Concern or Not Supporting, if there are a sufficient number of exceedances for the total sample number.</i></p>	
<p>AUs 2</p>	<p>To the extent possible, AUs will be redefined to represent hydrologically distinct areas.</p> <p>It is likely that most changes will be made for the 2010 assessment.</p>	<p>This is consistent with current practice and the goal for a systematic revision of the AUs georeferencing them with an accepted GIS protocol in 2010 and future assessments.</p>
<p><i>This is just a clarification of current procedures.</i></p>		

Is this text adequate for the Guidance?

On representative stations

Water quality standards and criteria are set to protect the attainable uses for each water body. Sample sites used for ambient water quality monitoring are located in areas determined to be characteristic of major hydrologic portions of the water body and where the criteria are expected to be attained. Often the most representative sites for water sample collection are in areas of good flow or circulation. For biological sampling, all habitat types are sampled for characteristics of the fish community, while optimal available habitat, for example cobble substrate riffles, are sampled for benthic macroinvertebrates. The assessor can use judgment in determining if sites are representative of an assessment area and if it is appropriate to apply criteria to the data.

On temporal representativeness

The assessment must use a sample set that is temporally representative of conditions in the assessment area. Optimally, sampling should be routinely scheduled over several years, with approximately the same intervals of time between sampling events. This routine sampling plan results in monthly or quarterly sample data sets which are considered temporally representative of long-term conditions.

In some instances where water quality has dramatically improved or declined recently, only the more recent and representative data set may be used for the assessment. These changes in water quality could be due to identified permanent changes in pollutant loadings, such as a new treatment facility, implementation of best management practices, or hydrologic changes.

Samples from monitoring projects that are determined to bias the data set will be excluded, such as, data collected as part of a complaint investigation, equipment test, or a focused short term special study targeting specific conditions. Data from sampling projects targeted to high or low flow conditions should not be evaluated for assessment. Such data can be used to add to a narrative for the water body assessment, but, in general, should not be used in the calculation for determining use support, listing, or delisting.