# TCEQ SURFACE WATER QUALITY MONITORING GUIDANCE ADVISORY WORKGROUP–June 16, 2011

## *SUMMARY OF MEETING COMMENTS*

***All information presented in this document is a compilation of TCEQ staff notes and is not a transcript of the meeting; inadvertent errors and/or unintentional omissions of information may exist in this document. Any information cited should be verified by the user.***

### General Welcome and Staff Introductions

### Kelly Holligan

Kelly Holligan, Division Director of the Water Quality Planning Division of the Office of Water at the TCEQ welcomed all attendees and gave a brief overview of the organizational structure of the Office of Water. The Office was formed almost two years ago to closely align the water programs of the agency to facilitate both water quality and water quantity decision making. There are three divisions in the Office of Water. These include the Water Supply Division, the Water Quality Division and the Water Quality Planning Division. Management staff introductions were made and a brief description of the purpose of the meeting of the Surface Water Quality Monitoring Guidance Advisory Workgroup was given.

The purpose of the Surface Water Quality Monitoring Guidance Advisory Workgroup (GAWG) meeting is to begin developing the 2012 Texas Integrated Report and 303(d) List, formerly called the "Texas Water Quality Inventory and 303(d) List". This evaluation is a requirement of the Clean Water Act and is due on April 1 of even numbered years.

The GAWG advises the TCEQ on revisions to the Guidance for Assessing and Reporting Surface Water Quality in Texas. The Guidance is the set of procedures that is used to evaluate data and information for development of the Integrated Report. The Integrated Report and the 303(d) List is a very important activity for the TCEQ, the results of which can impact permits, TMDLs, and Watershed Protection Plans. The members of this Guidance Advisory Workgroup represent diverse organizations and interests of the state and are either directly or indirectly impacted by the results of the Integrated Report. This advisory group includes but is not limited to state agencies, consultants, river authorities, environmental groups, industry, agricultural interests, and municipalities. The participation of these members and interested parties is appreciated.

At this time the moderator, Debbie Ustas, provided the structure of the meeting. She explained the protocols to be followed during the speakers' presentations, as well as the procedures to follow in the event of an emergency.

### Overview and Purpose of the Meeting

### Laurie Curra

Laurie Curra, Section Manager of the Monitoring and Assessment Section expressed appreciation for all the attendees and their participation in this initial meeting of the 2012 Integrated Report process and introduced the groups within the Monitoring and Assessment Section including the Surface Water Quality Monitoring Team, the Water Quality Standards Group, the Clean Rivers Program, and the Data Management and Analysis Team

This meeting publically initiates the 2012 Integrated Report, previously known as the Texas Water Quality Inventory and 303(d) List. The Integrated Report describes the long term status of water quality and identifies those water bodies that do not meet the uses and criteria described the Texas Surface Water Quality Standards. This report is required by the Federal Clean Water Act, Sections 305b and 303d and is due to the EPA on April 1 of even numbered years.

Activities related to the Integrated Report are ongoing and the TCEQ appreciates the water quality data contributed by many in the room. Data for the Integrated Report must meet minimum quality assurance requirements established by the TCEQ. In order to increase the data available to the TCEQ for water quality assessment purposes, TCEQ staff work closely with local and regional agencies and other interest groups to develop and implement data collection procedures under an established quality assurance and quality control program. Revisions to the Water Quality Standards are ongoing and an update will be provided in a moment. The statistical analysis tools are being modified to accommodate new criteria and uses. The Data Management and Analysis Team has been verifying and validating the data.

Today you will be discussing the "Guidance for Assessing and Reporting Surface Water Quality in Texas." Andrew Sullivan, Team Leader for the Surface Water Quality Monitoring Program will provide a timetable which marks key times between January 2011 and April 1, 2012 when this report is due to EPA.

At this meeting TCEQ staff will provide presentations for consideration in preparing the 2012 Integrated Report. These presentations will be on the internet following a 30 day formatting process needed to comply with the Texas Commission on Environmental Quality requirements for availability on the internet. If anyone needs access to any presentations prior to this time, they may be requested by email from Michele Blair.

There are two comment periods noted on the timetable. The SWQM staff will receive comments on proposals from this meeting until June 25, 2011. In September and October 2011 there will be a comment period for data providers. In December 2011, the report will be available in the Texas Register for a 30-day formal public comment period.

Question: Do I understand that there is no staff draft of the new procedures presented before the first week of July?

Answer: There is not.

A meeting for the Water Quality Standards revisions will be held next week for any questions you might have regarding revisions to the Water Quality Standards. The focus today is on the 2012 Integrated Report and any concerns or questions you might have. Thank you for your participation.

## 2010 Assessment Summary and 2012 Goals and Process

## Andrew Sullivan

Andrew Sullivan presented background information concerning the Integrated Report including a description, federal requirements for submittal and the milestones leading to the submittal of the draft 2010 document to EPA on September 18, 2010. He provided information graphically including the total number of impairments, total number of new impairments, total number of new impairments by basin, total number of delistings by parameter and a schedule to develop TMDLs. This also included results of the overall summary of uses and results of the reservoir condition index. He also summarized the

successes associated with the development of the 2010 IR and provide the goals for the 2012 submission of the Integrated Report.

Question: Has there been any discussions with EPA concerning the 2010 guidance document that may need to be brought into the discussion? Has there been any discussion of the methods?

Answer: There are currently no outstanding comments from EPA regarding the methods for the 2010 Integrated Report. Many of the comments pertain to site specific assessment results.

## Water Quality Standards Status Update

## Jim Davenport

(Jim Davenport is a technical specialist with the Monitoring and Assessment Section to support water quality management efforts.) TCEQ staff coordinated extensively with an advisory to develop revisions to the Texas Surface Water Quality Standards. The revisions were publicly proposed on January 13, 2010, and adopted at the TCEQ agenda meeting on June 30, 2010. Revisions to the Standards Implementation Procedures for wastewater permitting were also approved by the Commission on June 30, 2010. The revised standards became effective as of July 22, 2010 as a State rule. The adopted standards revisions were sent to EPA for approval on July 22, 2010. Full documentation and supporting information for the adopted state revisions to the standards was sent to EPA on 8/4/2010. EPA responded on December 2, 2010 with comments on the Standards Implementation Procedures; and on May 17, 2011, EPA requested additional information and also relayed additional concerns about TCEQ's newly adopted nutrient criteria. TCEQ is in the process of addressing EPA's comments on both the Standards Implementation Procedures and the new nutrient criteria.

The major revisions to the standards included substantial updates to toxic criteria to protect human health for fish consumption and drinking water, as well as revisions and additions to selected toxic criteria to protect aquatic life. Categories for recreational uses and associated bacteria criteria were expanded, and new criteria were added for nutrients (as chlorophyll a) for 75 reservoirs. There were over 100 changes in site-specific standards such as aquatic life uses and site-specific criteria for dissolved oxygen, dissolved solids, pH, and aquatic-life toxic criteria. All of these changes were supported by use-attainability analyses and extensive criteria evaluations.

Question: Since the proposed standard changes have not received approval from EPA, what standards criteria should this workgroup focus on?
Answer: The TCEQ staff has a SAS tool that is designed to apply the standards that are being proposed for the 2012 Integrated Report or default to the standards used for the 2010 Integrated Report.

The presentations for this workgroup are based on approval of the 2012 proposed standards. All comments should be made accordingly.

### Contact Recreation Criteria and Assessment

### Joe Martin, Robin Cypher

The 2010 revisions of the TWQS expand the contact recreation use from two categories (primary contact recreation and noncontact recreation) to four categories with the addition of secondary contact recreation 1 and secondary contact recreation 2. In conjunction, numeric criteria based on the geometric mean have been developed for the new categories and revised for the previous categories. Enterococcus as an indicator

bacteria for salty inland freshwater bodies is also included as part of the contact recreation revisions. A high flow exemption for bacteria is proposed for bacteria samples for a 24 hour period following extreme hydrologic conditions when flow exceeds the 90th percentile or a flow severity of flood.

For the 2012 Integrated Report, the geometric mean will be used to evaluate recreational use. Primary contact recreation will be presumed for all water bodies unless otherwise designated in the Appendices A or G of the TWQS. Secondary contact recreation 1 will only be applied to water bodies when a lack of (primary) contact recreation has been demonstrated. Secondary contact recreation 2 and noncontact recreation must be designated in Appendices A or G. Oyster waters will continue to be assessed based on the most recent Department of State Health Services shellfish harvesting maps. The high flow exemption is currently under review for the feasibility of implementation in the 2012 IR.

Comment: It's unlikely that sampling occurs during high flow for flooding conditions due to safety concerns.

Question: Will Recreation Use Attainability Analyses (RUAAs) conducted during the past year and a half be processed and recommendations made for the 2012 assessment?

Answer: The RUAAs currently in progress (and with the report still in preparation) will not be available for the 2012 assessment.

Question: If no RUAAs will be ready for the 2012 assessment and, according to the slide, secondary 1 is only applied when lack of contact recreation has been demonstrated, you will not be using that for the 2012 assessment?

Answer: Some of the finalized reports (that have already been submitted to TCEQ) may be available for the 2012 assessment; that is still not clear.

Question: Will RUAAs be adopted in the appendices versus just having them done?

Answer: They will go through a process with full public participation such as TMDL, the assessment, or a permit action, or coming back to a Standards revision.

Question: RUAA secondary contact would not be published for a 30 day public comment, but instead be part of a permit action?

Answer: It would be a conspicuous part of that permit action.

Question: If an RUAA is not done associated with a permit, it would be made public through some type of public meeting?

Answer: If it were not done through a permit action (or in association with the Integrated Report, or as part of a TMDL), we would fall back on a Standards revision but there are some potential options the agency has.

Question: TPWD has not seen any recent RUAAs out for public comment. Has there been any that we missed?

Answer: No, but a number are potentially pending for that.

Question: I think that you need a bigger process than a permit or TMDL to handle that, even for the first ones. Maybe your email group for a larger community can take a look at those first ones that are not clued in to a smaller interest (such as permits)?

Answer: I think you will see us use a fairly assertive public participation process.

Question: There have been a lot of RUAAs done for our area, and we don't know their status. We've had a couple of public meetings but don't know a status. Is there some place we can go to see the completed ones?

Answer: Our intention is to have the report on one website and a copy in our regional offices.

Question: Ultimately, they would have to be in the next Standards revision?

Answer: That is our intent. I think that is the way we will proceed.

Comment: One of our concerns is that a recreation change could be adopted without going through a Standards revision.

Comment: You do get to see those on the permit notices that those have been done. They go to the public and the agencies. The purpose was so they didn't have to wait for 4 or 10 years.

Question: The question that strikes me is that the efficiency that is needed for permit purposes, is that needed for assessment purposes?

Answer: Yes, it has to have gone through some public process.

Comment: It is important to have better public notice when you are at a point to make a decision. Frankly, trying to find out the status of RUAAs at any time is virtually impossible from my standpoint. You can't go to the TCEQ website and find out any info on RUAAs.

## Contact Recreation Assessment -Addressing Uncertainty

### Andrew Sullivan

Andrew Sullivan presented background information concerning how recreational uses are assessed against the geometric mean criteria and the advantages and disadvantages of each approach. He discussed data variability associated with bacteria criteria as well as the goals of this proposal. He presented case studies of the new impairments from the 2010 Integrated Report - specifically two approaches (increasing sample sizes and applying confidence intervals) for addressing uncertainty. The effects of each approach on the number of new impairments for the 2010 303(d) list were evaluated as well as the advantages and disadvantages of each of the approaches.

Question: How many samples or years do you need to delist a water body?

Answer: Ten samples are required. The ten samples that resulted in the listing will still be used increasing the dataset and potentially reducing uncertainty. A listing results in a Category 5c placement which initiates additional sample collection.

Question: Do you have an idea of the effect of increased sample size on the total number of assessments? What is the percentage shift in number of assessments with increased sample size?

Answer: The case study only evaluated the new 2010 impairments and that would be the proposal for 2012. We have not done an analysis of all of the assessments.

Question: What about the 68 new AU impairments, and will increasing sample size reduce the number of impairments?

Answer: The next slide should answer this question, since it compares the two options.

Question: IS there a summary on the difference between a concern and impairment with respect to data collection.

Answer: An impairment has the regulatory impacts related to the 303(d) List and a concern initiates additional monitoring for the coordinated efforts with agency partners.

Comment: High variability associated with increased sample size is an indicator of the high degree of variability associated with bacteria data. These proposals are attempting to remove noise from the bacteria data assessments.

Question: How many of the AUs with more than 30 samples where the lower boundary exceeded the 80$^{th}$ percentile were the same?

Answer: They largely corroborate each other but there is not a one-for- one correlation.

Comment: There is no statistical effect demonstrated in the increased sample size on confidence and that it just indicates that a higher number of AUs that would be excluded. The graph does not show a higher degree of confidence with increased sample size. Even high numbers of samples result in a high degree of variability. Suggested additional analyses

Comment: Increased sample size provides a better estimate of the geometric mean.

Comment: You could extend the assessment period and collect more samples. They used an example from Lake Granbury. Initial sampling indicated wide scale problems but subsequent years smoothed out the data revealing specific problems. A combination of both approaches may be justified.

Comment: The confidence intervals become narrower with an in increase sample size.

Comment: There may be significant impact to permittees if you are impaired in error with only ten samples.

Question: Have you looked at AUs with geomeans below the criteria where the upper bound of the confidence interval crossed the criteria?

Answer: We did not specifically look at this but could provide additional information. The case study was meant to only consider new impairments identified in 2010.

Comment: Under quarterly monitoring it would be difficult to meet minimum sample numbers higher than 20 within a 7 year time period using quarterly sampling.

Comment: Increasing sample size will need to consider options for addressing concerns or impairments through additional monitoring.

Question: Are there frequency requirements related to bacteria sampling schedules

Answer: There were temporal recommendations included in the guidance for the temporal distribution of bacteria samples

Question: Would TCEQ consider a 5a or 5b designation if we were to apply one of the methods intended to reduce uncertainty.

Comment: Participant supported the suggestion to place in an AU in Category 5a if variability was part of the consideration.

Answer: We have not considered this but welcome feedback on this possibility.

<After Break>

Comment: Increasing sample sizes limits the amount of assessments whereas the confidence interval approach will allow for the use of fewer samples and consider very high values. Specified that 90$^{th}$ CI was too high and that a lower CI would be preferable.

Comment: Decreasing CI did not make much difference in terms of the number of impairments identified.

Comment: An 80$^{th}$ CI was 10 % on each end of the interval. A one-sided distribution with a 90$^{th}$ CI would be the same.

Comment: Concerns about limiting the number of assessments by increasing the sample size but would be comfortable with the confidence interval approach.

Comment: Need to either increase sample size or the length of the period of record. *BRA* liked the confidence interval approach. Possibly a combination of both approaches could be developed.

Comment: Participant concurs that 10 samples is insufficient for identifying impairments. Some kind of confidence interval is a good idea in combination with increasing sample size.

Comment: AUs with wide confidence intervals may need more attention. Identify those that exceed but lower interval is below that have high variability for additional sampling

Comment: You could identify a cap for the upper bound of the CI for those that are above but CI below that would trigger additional sampling (10X standards). Still use CI.

Comment: Participant agrees with the CI and 90$^{th}$ may be too restrictive. Discussed how increased sample size could impact monitoring resources.

Comment: TCEQ indicated that there would be increased pressure to get to the high sample numbers if the minimum number of samples was increased.

Comment: Increasing sample size may be arbitrary and problems may be missed at by not assessing results with low sample sizes.

Comment: TCEQ posed a question about the appearance of not listing a waterbody that had a geomean above the criteria. How would we respond to questions?

Comment: It is important for us to focus resources on the worst areas. Did not like the idea of not identifying impairments that were above the criteria.

Comment: It would be good to refrain from listing in order to collect additional samples since it is difficult to get removed from of the 303(d) list. This would ensure that high bacteria impairments would be included on the list. Wasted resources associated with addressing the impairment when additional sampling will overcome seasonal variability and delist the waterbody is a problem.

Comment: The AUs where the lower bound exceeds the criteria have a high level of confidence in the determination go straight to listing (5a/5b) with no additional sampling. Others would be additional sampling

Comment: TCEQ specified that concerns are meant to trigger additional monitoring to make sure the problem is real without being impaired. No one really addresses the concerns list. However, these waterbodies get a higher priority for coordinated monitoring

Question: Is the period of record for bacteria was 7-10 years

Answer: A minimum of two years is necessary and up to ten years could be evaluated.

Comment: Participant indicated that they would like to see a longer minimum time requirement for assessing before listing. A period of record longer that two years would be more appropriate for the initial assessment.

Comment: TCEQ commented that a two year dataset could identify a concern and the next two years would provide for additional sample collection for the identification of an impairment.

Comment: Participant supported the use of a concern list to accommodate additional sampling prior to impairment.

Question: Is there a minimum of two years that identified an impairment and then the subsequent two years were lower (bringing the geomean below the criteria) then it would be removed from the list)?

Comment: Participant indicated that the ones close to the criteria should not be listed. The AUs where the lower bound is above the criteria should go to 5a and skip additional data collection

Comment: Participant liked the idea of doing a combination of both approaches. They recommended the possibility of evaluating trends and possible changes in the watershed that could to prevent impairments. Identify problems before they occur in unimpaired areas.

Comment: TCEQ indicated that this is a good idea but would be difficult to implement.

Comment: Participant provided an example where high bacteria levels based on a limited dataset spurred an expenditure of resources and subsequent data collection during more normal conditions demonstrated that there was not a problem.

Comment: TCEQ mentioned that we had previously included a threatened category and this may need to be explored further to accommodate trends.

Comment: EPA indicated that they view threatened the same as impaired.

Comment: TCEQ indicated that we have tried to evaluate trends in the past and have been unsuccessful in indentifying problems

Comment: EPA indicated that the World Health Organization includes guidelines for addressing variability when setting recreational use criteria.

Comment: Participant specified that both approaches appear to be arbitrary. Increasing sample sizes will need to consider sampling effort by the data providers.

Question: Participant asked is they could see the CI for less than ten samples.

Answer: This could be generated and provided later.

Comment: TCEQ indicated that we could explore ways to continue dialogue and accept comments though additional follow-up after the meeting. There are challenges with staying on schedule; however this is an important topic. TCEQ indicated the possibility of increasing comment deadlines.

Question: What about federal changes to criteria and if this would affect assessment. What considerations are being for future assessments.

Response: TCEQ responded that there is not an indication about any fundamental changes. EPA indicated that there will not be any big changes to the criteria for states already implementing criteria.

## Nutrients Criteria

## Laurie Eng, Jill Csekitz

Jill Csekitz of the Surface Water Quality Monitoring Team reviewed current nutrient assessment practices which are based upon parameter-specific screening levels for each water body type. The screening levels are not regulatory and are used to identify concerns, not impairments. In rare instances, water bodies are identified as not supporting the Narrative Criteria, described in the 2000 Water Quality Standards as 'Nutrients ...shall not cause excessive growth of aquatic vegetation which impairs an existing, attainable, or designated use.".

Laurie Eng Fisher of the Water Quality Standards Group reviewed the reservoir nutrient criteria adopted by TCEQ on 06/30/2010. Criteria for 75 reservoirs are documented in Appendix F of the 2010 Water Quality Standards revision, and are based on historical chlorophyll a data for each reservoir at the specified station of the main pool or dam site. These criteria are awaiting approval by EPA.

Jill presented proposed methods implementing reservoir nutrient criteria into assessment procedures. Once approved, reservoirs with criteria would be assessed for compliance with the designated General Use. Data considered for use support would be comprised of samples collected from the stations indicated in Appendix F during the 7 – 10 year period of record. Use support would be determined by comparing the long-term median of chlorophyll a samples to the segment-specific chlorophyll a criteria. The outcome of this comparison would apply to the entire segment associated with the station in Appendix F. Identification of nutrient concerns using existing non-regulatory screening levels would only occur in water bodies without approved reservoir criteria.

Question: What about reservoirs not included in Appendix F? Would these be assessed for nutrient screening levels?

Answer: Yes.

Question: Would TCEQ consider adopting site-specific chlorophyll a screening levels based on Appendix F criteria, which could be applicable to other stations in the reservoir?

Answer: TCEQ would take this under advisement.

Question: Is there any thought as to how we'd use all reservoir data sampled from coves to identify increasing eutrophication?

Answer: No, but this could be considered. Question: What is the timeline for adding additional reservoirs to Appendix F?

Answer: Reservoirs can be considered in the 2013 WQS revisions as sufficient data become available.

Question: What is the justification for basing an assessment solely on adopted criteria and forgoing the use of screening levels?

Answer: The spatial variability associated with cholorophyll a, and lack of data in other portions of most reservoirs, make the stations near the dam the most representative for Use Support determination.

Question: Have you considered applying criteria to other portions of the lake as screening levels?

Answer: No, but TCEQ could consider this as an option.

Recommendation: Prymnesium parvum should not be included under the Narrative Criteria (excessive nutrients shall not create algal blooms) because current research suggests p. parvum blooms occur when conditions are nutrient limited.

Response: TCEQ will take this under advisement.

Recommendation: Assess for segment- specific concerns using data from all stations in the reservoir using Appedix F criteria as chlorophyll a screening levels.

Response: TCEQ will take this under advisement.

Recommendation: Existing screening levels for nutrient parameters such as ortho-phosphorus, total phosphorus, ammonia, and nitrite + nitrate should continue to be assessed for concerns in all portions of the reservoir. Stakeholders invest significant resources to collect this information. Note: This recommendation was made by several of the participants in the GAWG.

## Near Surface and Mixed Surface Layer Sampling

### Jason Godeaux, Christine Kolbe

Christine Kolbe of the Surface Water Quality Monitoring Team introduced this topic by explaining that in some cases, the TSWQS include specifications for depths at which samples need to be collected to be spatially representative. This is necessary to ensure that water quality standards attainment is determined based on ambient conditions and the conclusions are valid. The 2010 IR Guidance includes data sample depth considerations when determining attainment.

For 2012, the TCEQ is clarifying the existing practices and seeking additional input on the current methods employed for determining data suitability. For TSWQS attainment, a single sample (for pH, bacteria, water temperature, chloride, sulfate, TDS, and chlorophyll a) collected near the surface (0.3m) is considered representative. DO attainment using a near surface sample was added to the 2010 TSWQS. The 2010 TSWQS revision clarifies the use of near surface water samples for assessing standards attainment. Aquatic life and human health criteria apply to samples collected at any depth but are generally assessed using samples collected at 0.3m. The DO mean and pH median are the two parameters that are assessed using profile data when available.

## Dissolved Oxygen-East Texas Assessments

### Jason Godeaux, Anne Rogers

The 2000 TSWQS include provisions for determining site specific DO criteria using a regression equation that was derived from data collected in east and south Texas based on stream bed slope. The plan for the 2010 Integrated Report is to use this equation consistently across the appropriate areas of the state.

A number of examples were provided showing how the criteria could differ from the designated criteria when the regression equation is used under varying flows at the same station. It was explained that in the absence of flow data, the regression equation could not be applied to determine a site specific criterion.

Question: Would using the default of 0.1 cfs in the equation be better instead of “zero?”

Answer: Either way does not affect the outcome of the regression equation, so using “zero” flow in the equation is more conservative and would tell you whether flow would make any difference at all in the outcome of any criteria change.

Question: Why are the DO values truncated?

Answer: Because the values were published in a table and table is in the rule, the values were truncated to be consistent. In the future, we may not truncate these values.

Question: Will the regression equation be used on each sample that shows exceedance?

Answer: Yes, if there is a data set that results in a concern or impairment of the criteria, we would then run the equation on each DO/flow pair and use the appropriate derived criterion for each DO value and re-run the assessment. If there is no flow measurement and a flow severity is not "1", then we would use the presumed criterion for that sample. You can still list a water body with no flow data if you have flow severity numbers. If there is no flow data and we decide to not use those DO values that would be a departure from how it was done in past assessments. Currently if there is no flow data and no flow severity values, we presume there was flow and we use the DO values. We could explore the possibility of using different strategy of "not assessing" or limiting the assessment to a "concern". We still need to evaluate more what to do with a mixed data set where some DO values have flow and others do not, do we then apply the regression equation to the whole set or only where we have flows. The way we do it now is that we only eliminate DO values with no flow where we have a flow severity value of 1. If any other flow severity or no flow severity is reported we presume the stream was flowing and use the DO value.

No specific questions were asked, but there was general discussion by the group on how to get flows, when to use flow severity, flow estimates, etc. Comments were made regarding using a flow estimate to derive a criterion is a risky proposition due to the highly subjective nature of estimates and flow severity determinations. The nature of why entities are not/cannot collect flows was also explored. Continued discussion in the afternoon:

Comment: Concern that if there is no flow and we don't assess, that it sets up a potential for flow to not be collected. There needs to be an incentive toward assessing these water bodies rather than not.

Comment: We should at least have the data collector check a box stating whether the site was flowing or not.

Response: We use flow severity values for this and it is very clear when folks pick either dry or no flow on flow severity so that is already reliable data.

Comment: Plugging "0" into the equation to see if it would make a difference in the criteria would be reasonable.

Comment: If folks are measuring flow, it surely is because they want the data looked at and therefore we should presume that it is flowing or they would have most likely said it was not flowing, so in those situations, we should default to the presumed criteria.

Comment: When we are getting data from in kind sources like cities, we are limited in how much we are sometimes limited in the flow data they provide. We have to look for alternatives, maybe contracting out or extra training.

Comment: It is not a matter of knowing whether there is flow or not, we have to have a number in order for the regression equation to work. There needs to be an incentive for folks to collect that measured flow value and if we don't get it, the presumed criteria apply and we go on.

Comment: Concurs with previous comment that that alone is enough incentive and that if flow is not measured, the presumed criteria apply.

Comment: For the site specific sites, flow was obviously collected in order to generate the equations, so it can be done there and we need to emphasize that and promote flow collection there.

Comment: It is often a matter of not having the time due to pressures of holding times and number of sites to visit before traveling great distances back to labs. This can often make the difference on whether flow is collected or not. Commentor does not like the idea of saying that if you don't have flow values, the water body won't be assessed for DO.

Comment: Whenever folks report "no flow" under flow severity, they can also report "0" as a measured flow value.

Comment: Gages can also be used as measured values if gage is close enough.

### Dissolved Oxygen-Conditional and Seasonal Assessments

### Jason Godeaux, Michele Blair

The 2000 TSWQS include specifications for addressing seasonal and flow-based considerations for adjusting dissolved oxygen criteria. Prior to the 2012 IR the Surface Water Quality Monitoring (SWQM) program had limited capabilities for implementing these evaluations in making attainment decisions. Data assessment tools now provide a means to include these specifications and increase the ability to accurately assess use attainment.

A number of examples were provided for flow and seasonally dependent criteria. An example of one creek was used to illustrate how the SAS tool implements criteria based on conditions. It was demonstrated how DO criteria could not be determined in the absence of flow for the flow-dependent calculations.

Question: Are monitoring partners being consulted to emphasize the need for flow in the equations?

Answer: Yes, this has been improved upon over the past years. Difficulties exist due to water body conditions and resource issues but there has been improvement.

Question: Why was 1.5 mg/L not used in the example of Rocky Creek? It is the lowest criteria allowed in the Standards. Even if flow data exists, the lowest value would be 1.5 mg/L in any scenario of the variability. The data should at least be hand-evaluated further and perhaps used for Concerns rather than eliminated.

Answer: We can consider that. The Standard was developed to determine a DO criterion value based on flow. There is no longer a presumption with these water bodies.

Comment: But, it is not an automatic conclusion of 1.5 mg/L if it is below the 7Q2.

Comment: The regular criterion should be used unless you do have flow. That way, people won't decide not to measure flow. If you have to measure flow to get the lower criterion or the 7Q2 exclusion, people will take more flow.

Comment: In the case of Rocky Creek, the flow is too low for measuring. It is not that folks are just disregarding the need for flow.

Comment: You create an incentive not to measure flow if you do not use the DO data when there is no flow data.

Question: Can you use flow severity?

Answer: Flow severity does not provide the numeric value for criteria determination.

Comment: Flow severity is highly subjective.

Question: Can we use a numeric flow estimate?

Answer: This would be better than severity but it has not been discussed.

Comment: We should use a hierarchical approach of preferred methods if data variables are missing. Flow estimates are too variable. Use a reference value.

Comment: Data providers are often not going to be able to provide flow at many stations due to conditions or abilities.

**Continued discussion in the afternoon.**

Comment: If we are saying that we will not assess if we do not have flow data, the incentive is created not to take flow data. The next revision of the Standards should perhaps address no flow cases.

Comment: Resources are wasted if the data are not used.

Comment: There should be a requirement to record flowing or not flowing.

Comment: Flow severity at least provides the certainty of dry or no flow.

Comment: Then we should default using the .01 cfs.

Comment: Data collectors want their data used and we should presume there was flow and use the regular criteria unless there was low flow documented.

Comment: If flow were absolutely required, data would not be collected in many cases. Flow estimates are often our only option.

Comment: If there is not flow data, default to the presumed criteria. This creates incentive to provide flow data.

Comment: In the broad East Texas equation, the fallback is already there to go back to the presumed criteria. For the site-specific criteria, we know we can measure flow because that is how the equations were derived.

Comment: In large basins, time for collecting flows is an issue for collectors due to miles driven and bacteria holding times. Clean Rivers partners will be greatly impacted if we do not use the DO data due to no flow values.

Comment: Physical constraints are also a problem such as those found in East Texas. Log jams and beaver dams sometimes make it impossible to measure flow.

Comment: We can also use a gage if it is within a certain distance.

## Toxic Criteria

### Debbie Miller, Pat Bohannon

The 2010 TSWQS include revisions to both human health and aquatic life based criteria for toxic pollutants. Human health criteria were developed for (28) new toxicants as were two new aquatic life criteria. Based on new EPA guidance, recalculations of the human health criteria incorporated a higher assumed rate of fish consumption (17.5 g/pp/day) for all fish and shellfish, thus eliminating the separate criteria for saltwater and freshwater fish, and also included childhood exposure in the calculations for all non-carcinogens. New tissue based criteria have been included for several organic compounds (DDT, dioxins, PCBs) and for methylmercury. The mercury criterion of 0.7 mg/kg, also used by the Texas Department of State Health Services (DSHS), was adopted rather than the EPA recommended criterion of 0.3 mg/kg.

## Results below the Limit of Quantitation

### Bill Harrison

The limit of quantitation (LOQ) is the lowest concentration or quantity of a target variable that can be reported with a specified degree of confidence. The LOQ for analytes is specified in Table A7 of the Surface Water Quality Monitoring Program, Water Quality standards Program, and Water Quality Assessment Program Quality Assurance Project Plan (QAPP). Sample values below the LOQ are included in the Integrated Report (IR) in order to: include as many data points as possible;

to indicate the level of monitoring effort;

convey evidence that the "actual concentration is between zero and the LOQ;

provide assurance that the actual concentration is below that specified in the Texas Surface Water Quality Standards (TSWQS) to support and protect desired uses;

to inform the public that the concentration of a particular analyte of interest is below the level of concern.

Sample results that are below the LOQ commonly occur in all parameter groups, and in all geographic regions of Texas.

There are three primary elements of the current approach to evaluating sample results below the LOQ for the IR:

evaluation of individual sample values;

evaluate proportion of total samples below the LOQ;

ensure that the criterion and the LOQ are exceeded more than one time before identifying impairment.

In general, for assessments requiring either averages, or evaluation of the rate of exceedance, the TCEQ currently substitutes half of the LOQ or half the criterion (whichever is lower) for the <LOQ in calculations.

Because of the potential implications of acute effects from acute toxic substances in water, the TCEQ accepts a higher probability of identifying a water body as not supporting when that water body is actually fully supporting (Type I Error) in assessing the toxic substances acute criterion. Based on this, a minimum of two exeedances out of ten samples are required for identification of impairment based on acute toxics. For data sets with several too many results below the LOQ, more than one result above the LOQ is required in order to list.

The average of all sample results for a water body is calculated for assessing toxic substances chronic criteria. The data set used to calculate the average is evaluated to ensure that the LOQ, and the criterion are exceeding more than one time. If the average exceeds the chronic criterion as a result of only an occasional high value, a concern rather than impairment may be determined.

A status of not assessed may be identified, rather than fully supporting or no concern, if most of the values in a data set are less than the LOQ, and the LOQ is significantly greater than the criterion.

The TCEQ is currently evaluating alternative methods for using values below the LOQ in deriving summary statistics. These alternative methods include:

Distributional methods which use the characteristics of an assumed distribution to estimate summary statistics.

Robust methods which combine observed data above the LOQ with below-LOQ values extrapolated assuming a distributional shape, in order to compute estimates of summary statistics.

Comment: One of the primary problems with the substitution of ½ LOQ is that there is usually not a single LOQ, the LOQ varies from sample date to sample date. This essentially results in an artificial distribution of data which is not really related to the data itself.

Comment: The GAWG discussed this briefly in 2008 meeting. Commenter suggests that the robust methods are not that difficult to implement. Commenter routinely uses Cullens Maximum Likelihood and/or the Delta Lognormal methods. For censored data, these methods allow calculation of a relatively unbiased means. Cullens can deal with multiple LOQ's as mentioned by previous commenter. Recommends at least 10 samples for these methods. EPA used these methods to determine effluent guidelines, with data sets with 6 – 7 samples, and 2 – 3 results less than the LOQ. Most statistical literature suggests that the data set should not be used to estimate the mean if greater than 10% of the sample results are less than the LOQ. Commenter suggests that it may be a bit too rigorous to try to quantify the allowable percentage of samples in data set that are less than the LOQ. In their experience, any data set with greater than 30% of the sample results below the LOQ can have a big influence on the mean and standard deviation. May have to transform data, but any bias introduced by transformation is less than that introduced when using the simple substitution method.

Overall, commenter suggests that TCEQ move towards incorporating the distributional methods as a tool for analysis of data sets that include results less than the LOQ. Commenter agreed to provide references for these methods.

Comment: Use of 40% as acceptable Type I error rate for toxic parameters doesn't necessarily fit "real world" and commenter suggests that this rate is perhaps too high when considering expense involved for utilities to deal with it. Prior to establishing more stringent permit limits, or listing a water body, commenter suggests that more samples should be collected to gain more certainty.

Answer: The acceptable Type I error rate is a part of the guidance that was developed in the context of the GAWG. Modification of that acceptable error rate would require a separate topic to be discussed at future GAWG. Most listed water bodies are initially placed in category 5c resulting in collection of more data to increase the level of confidence in the determination.

Comment: With reference to acceptable error rates, this was a group decision. Also, should consider Type II (the probability that the water body is actually impaired, when the conclusion is non-impaired) error rates which generally are 60 - 80%.

Comment: Commenter stated that they represent "environmental" side, and their impression is that error rates, etc. already are biased toward the regulated community as opposed towards the protection of aquatic life. For the in-stream biota, we should work to be more certain that the problem is or isn't real, and perhaps err on the side of the biota. Also, commenter suggests that previous comment was more related to permitting which is different arena than the IR.

## General Discussion/Other Guidance Issues

### Andrew Sullivan

TCEQ asked if there were any additional topics that needed to be brought up or discussed. None of the participants had any additional suggestions.

## Summary

### Andrew Sullivan

TCEQ provided a summary of the meeting topics discussed to conclude the meeting:

TCEQ stated that this meeting provided a kickoff for the 2012 IR Process. The restructure of the Office of Water will assist in this process and facilitate coordination between the water quality programs

A summary of the meeting topics included emphasis of the challenge of the WQS approval process, a summary of the 2010 IR, and a reiteration of the goals of the 2012 IR summary of proposals,

A summary of proposals include:

- Three Types:
- Changes dependant on WQS approval
  - Changes concerning changes for existing WQS
  - Revisions to existing methods
- Proposals for evaluating uncertainty when identifying bacteria impairments
- Nutrient assessments – identifying concerns – contingent on WQS approval
- Mixed surface\near surface data and how to better represent the data
- Regression based assessment related to Aquatic Life Use
  - Impact on Monitoring program and how data is collected
- Toxic Criteria
  - Assessment remains same numbers will change based on WQS approval
- Limits of quantification
- Looking for input on low level data and how to account for data below quantification

TCEQ indicated that TCEQ would have internal discussions on how to proceed and communicated via email.

Question: Participant asked if the presentations would be made available

Answer: TCEQ indicated that anyone can request this information via email and we can supply right away as long as it is not needed in accessible format. Otherwise they will be made available on the webpage in 30-days

Question: Comments about entire guidance or just methods discussed today

Answer: Comments can be made on any aspect of the 2010 guidance