

**Texas Surface Water Quality Standards Workgroup Meeting**  
**30 TAC Chapter 307**  
March 7, 2007

Introduction & Welcome – L’Oreal Stepney, P.E., Director, Water Quality Division

Introductions of Workgroup Members – Sidne Tiemann

**I. Update on EPA Approval of 2000 Standards – Sidne Tiemann**

1. Changes in the 2000 standards that EPA disapproved
  - a. Sam Rayburn – Dissolved oxygen and aquatic life use changes
  - b. Selenium Water effects ratios (WER)
    - Dixon Creek
    - Caney Creek, Linville Bayou
  
2. Items that EPA took no action on
  - a. Definition of “Surface waters in the state”. 2000 standards included waters in the Gulf 10.36 miles into the Gulf. EPA retained Clean Water Act jurisdiction past 3 miles into the Gulf.
  - b. Fecal coliform for effluent limits
  - c. Bacteria criteria for Red River
  - d. Appendix B – Low flow 7Q2 and harmonic mean table – may be moved to the Implementation Procedures.
  
3. Approved by EPA
  - Appendix D – Site-specific uses and criteria for small unclassified water bodies for which a Receiving Water Assessment has been performed.
  - Appendix C – descriptions of the segments and their boundaries
    - All new and revised segment boundaries
  - Appendix E – Site-Specific Criteria – table of toxic site-specific criteria
    - All new Copper, Zinc, and Aluminum WERs
  - Saltwater Aquatic toxic criteria – Table 1
  - Human Health criteria – Table 3
  - 307.6 - Toxic Materials – all text changes
  - 307.3 definitions – all new definitions and revisions to existing definitions
  - Provision to implement WERs in permits once EPA approves them instead of waiting until they are placed in the standards in Appendix E, in the rule.
  - Nueces River Tidal Dissolved Oxygen and aquatic life use changes
  - Appendix A – Water Uses and Numeric Criteria for segments
    - All New segments
    - The addition of Aquifer protection to a number of segments
    - All changes to Dissolved minerals, TDS, chlorides, and sulfates
    - Changes in pH in several segments
    - Change in bacterial indicators from fecal coliform to E. coli & Enterococcus depending on whether a segment is freshwater or tidal.

#### Under EPA Review

- a. Freshwater aquatic toxic criteria in Table 1
- b. Text changes in 307.4 General Criteria.
- c. The application of Table 5 concerning critical low-flow values for DO in eastern and southern Texas ecoregions to classified water bodies.
- d. The addition of wetland functions & seagrass use
- e. Text changes in 307.8 – Application of Standards
- f. Text changes in 307.9 – Determination of Standards Attainment
- g. 307.10 – temperature changes in the Comal River

## **II. Update on General Status of Standards Revision Process – Sidne Tiemann**

- a. Management have given approval to begin the rule making process and to form a workgroup.
- b. Staff have been working internally within the standards team and with other groups in the agency to resolve comments and needed changes.
- c. Just to let everyone know, when we go proposed there is now the ability to send in comments through e-mail.
- d. we will also look into what it takes to set up a list server.

### **Workgroup Meetings**

- a. Today we will be discussing
  - Nutrient criteria for reservoirs
  - Toxic criteria
- b. At the Next group meeting we hope to discuss
  - Bacteria
  - Changes to 307.9 – Determination of Standards Attainment

### **What TCEQ is Working On**

- Whole-effluent toxicity (WET)
- Sole Source Drinking Water
  - Handouts with the bill summary and excerpts from the bill were included as well as a list of the water bodies that have preliminarily been identified as sole source drinking water bodies.
- Changes to definitions
- Whether to include a seagrass use
- Segment boundaries as a result of changes in the morphology of rivers/streams. Will be looking at Caddo Lake since parts of the Lake are so different from other parts.
- Site-specific changes to segments. Use Attainability Analyses have been performed on these segments. Any changes in the aquatic life use or DO that is less than it is currently listed in the standards will require EPA approval. We hope to include these changes in this standards review.
  - Salado Creek
  - Caney Creek
  - Clear Fork Trinity River
  - West Fork Trinity River

- Little Wichita
- Black Bayou
- Dixon Creek
- Slaughter Creek
- Appendix D – We have RWAs on approximately 95 streams that will be added. Some will require EPA approval if the DO and aquatic life use are lower than the presumptions.
- Appendix E – New WERs have been added for 15 water bodies
- EPA has recommended that smaller discharges, less than 1 MGD remove chlorine. We are looking at a cut off of possibly 0.5 or 0.1 MGD.
- Bacteria –
  - We are currently evaluating existing recreational standards & assessment procedures
  - We will be looking at adding a broader range of uses.

### **Timeline**

Draft timeline – dates may change depending on the number of workgroup meetings that are held.

– <b>Management approval</b>	<b>Dec 2006</b>
– <b>1<sup>st</sup> stakeholder meeting</b>	<b>Mar 2007</b>
– Final rule to rule team	Jan 2008
– Proposed Agenda	Mar 2008
– Adoption by Commission	Sept 2008

### **Preliminary Comments**

Preliminary comments from March 2006 have been summarized and will be posted as a handout on the website. This is a comment summary only. No indication of resolution.

## **III. Nutrient Criteria – Recalculations using book formula – Jim Davenport**

- a. Handouts included:
  - a list of all reservoirs with Chlorophyll *a*, total phosphorus (TP) and total nitrogen (TN) criteria calculated.
  - lists of reservoirs divided into land use percentages and the chlorophyll *a* criteria and other information used in calculating the criteria.
  - lists of TP and TN with the additional information. All reservoirs with sufficient data were included in those lists.
- b. Lake Benbrook was not included
- c. Why were other lakes which have been studied extensively not been included in the list, example, Lake Dunlap. These reservoirs have typically been studied over short periods of time and not over decades, which is the data that have been used so far by TCEQ to calculate criteria.
- d. criteria for TP and TN can be used as screening numbers.
- e. little data for TN (USGS added TKN + NO<sub>2</sub> + NO<sub>3</sub>=TN)

- f. With so little TN data would it be better to use only NO<sub>2</sub> + NO<sub>3</sub> or another measure of nitrogen?
- g. Comment concerning detection limits for chlorophyll *a* and if some data was deleted because of the changes in detection limits. Suggested that it would be useful to include in the handouts the detection limits over time. There is a concern about setting a criteria at a level at a detection limit and the true values of the reservoirs are lower.
- h. A question of streams and river came up about criteria for them, but they will not be addressed in this standards revision. It was pointed out that there is data for the San Marcos river going back to 1939.
- i. TCEQ has watershed rules in place in some watersheds, do currently look at some discharges into coves and reservoirs and have placed 1 mg/L TP in permit limits, have gone as low as 0.5 mg/L for some permits. Is now achievable. Some facilities have monitoring.

#### **IV. TPWD Criteria Suggestions – Texas Parks and Wildlife Department**

Handout included.

#### **V. Group Discussions Concerning Nutrient Questions**

- 1. For which reservoirs should nutrient criteria be designated in the next standards revision? All groups agreed that criteria should be included for all the reservoirs for which there is sufficient data. “Sufficient” data was not defined. One group questioned what constituted agricultural land use. Was it only row crop or was hay included? Whose GIS was used to determine land use? It was stated that the Texas Water Development board had such data available. Group questioned how if criteria were to least impacted reservoirs only, how would you apply criteria to more impacted reservoirs? Stated that some need more than anti-degradation. Use all reservoirs with existing methodology but may need more stringent criteria later on some. Can’t make looser but can make more stringent.

One group’s detailed notes: TPWD would like to see criteria for all reservoirs for which we have data. Mary Etter with LCRA asks how will setting nutrient criteria for some reservoirs impact permit limits for dischargers on reservoirs without criteria? Lynda says we are more concerned with chronic effects when setting permit limits. Randy Palachek says TPWD proposal is based on an anti-degradation kind of approach. Some reservoirs are trending upward and on those we have to make a decision about where to set the limit. For most reservoirs using the historical data is an anti-degradation approach. The question is how many reservoirs to bite off for this revision of the standards. Lynda asked Randy if he thinks throwing out the “old data” would affect the lists of proposed criteria that Sidne passed out early in the meeting. Randy says the TPWD approach to just look at the last ten years would obviate that problem. He said the list might change if old data were left out of the analysis. Larry Hauck said that even for lakes which might already be impacted, TPWD is saying that’s okay, let’s manage

from here. Using existing data we will determine a criterion that maintains the status quo. Randy says TWCA is concerned about only doing a subset of reservoirs now because how are you going to handle the other ones. The unknowns are too great so people are concerned about the implications of setting the criterion for reservoirs which do not have criteria yet. Larry Hauck likes answer (d) – reservoirs with chlorophyll *a*, TP, and TN data. If you don't have enough data, you can't set the criteria. George Caldwell said that way you would have discussion about reservoirs with inadequate data. He said reservoirs with data (answer d) would be good. Take a closer look at those that appear to be impacted by nutrients. Anne Rogers says all the classified reservoirs have monitoring. Dave Buzan says that gives you 10-15 points over 5 years, but not all the data may be samples from the main pool. Would that be adequate? Larry Hauck said that was discussed some in the nutrients work group. Anne says they usually get quarterly sampling at the “main body” of the reservoir. Larry says this is a chance for constituents to voice their opinion. The approach on the table would maintain the status quo. John Cowan also likes answer (d). If you have sufficient data you can implement control processes for nutrient loads for those with problems. This is independent of nutrient sources and aimed at getting a consistent outcome of identifying increasing nutrient trends. Randy said to consider index period because only that data is in the time period where nutrient impacts are a problem. Anne said we might miss important data if we don't look at the historical period because some of the big human impacts are from the last ten to twenty years or so. The ten years is an arbitrary thing. Ryan King commented on detection limits. Different labs have different detection limits ranging as high as 80 ug/L or 0.1 mg/L, for example in the Lampasas River. So large numbers of the data are high because they are under the very high detection limit. Dave Buzan said to add how non-detects will be handled in setting the criteria and conducting assessments.

## 2. Questions on implementation of criteria

How models would be used is difficult to answer for permitting and assessment.

Non-point source sources of nutrients should be included not just point sources. There was agreement that the main pool criteria not be applied to coves. Suggested that there be a number for the main pool and then narrative criteria to translate to coves. Expand for other parts of reservoirs for the next standards.

Question to use current draft TP and TN as screening tools. It would be ok to use them for screening as long as someone modeled the results and that the screening not be used as a basis for a permit.

Group felt that applying models would be better than applying geographically broad regressions of chlorophyll *a* versus N and P to estimate effects of N and P loading.

Group questions how to address a translator from chlorophyll *a* to N and P, use a fully mixed model? However, there may not be a link to a “problem”, ex. Golden algae.

For localized effects there needs to be a screening approach for this and clarification of what near reservoir, etc would be. What does “nutrient load” mean? It needs more discussion, and would it result in a TMDL?

There was concern about criteria being set from open water samples and how this is different in cove discharger situations. Suggested a better definition of cove and main body. Concern that the target is too focused on wastewater discharge when most of the nutrients are coming from non-point source. How can nonpoint source be regulated?

After clarification that specific problem is not in the language but in the implementation, some felt they were forced in to the first option provided “Apply screening models of entire reservoirs assuming completely mixed, steady state conditions to estimate relative impacts of wastewater dischargers, etc.” Also Golden Algae was brought up as being the problem in some cases and not chlorophyll *a*. Stated that EPA set the TN, TP, link with Chlorophyll *a* and the 2 are not necessarily linked. Event based issues vs. trend of the reservoir over time. Again what can you regulate?

Watershed rule approach is a good idea.

The questions need to be more specific.

One group’s detailed notes: Mary Etter likes the 4th bullet - further quantify existing approaches for screening localized effects of wastewater discharges in or near the reservoir. Karolyn Hardaway with Eastman likes 2, 4, and 5. Two is use current draft criteria as screening tools to evaluate permitting actions. Five is add more specificity on evaluating nutrient loads in the antidegradation portion of the IPs. Randy said the watershed rules (bullet 6) have benefit because it’s hard to identify all the nutrient sources. With the benefit of local stakeholder involvement. Watershed protection plan with full stakeholder involvement is fair and effective (Cowan). But targeting a regulated entity is not fair. If you go a watershed approach it has to include nonpoint sources as well as point sources. As Lynda paraphrased, taking a TMDL approach and leaving source identification to implementation.

## **VI. Recalculations of Toxic Criteria – Debbie Miller**

Potential Changes to 307.6 – Debbie Miller went over the list. Cadmium will be changing. Freshwater and salt water criteria for nonylphenol needs to change from revise to add. Lipid correction factors were not used in the latest calculations. They and Relative Source Contributions (RSCs) were taken into account.

Human health - Michael Pfeil discussed the changes in human health. The handouts included EPA’s requested additions, a comparison of what Table 3 values are now and what they may change to with the recalculations, and a handout with TCEQ calculations and EPA’s Nation

Recommended Water Quality Criteria. Also included were handouts showing how the criteria were calculated. Child exposure rates were only included in the calculations for noncarcinogens.

Methyl mercury – Debbie Miller discussed the options/ possibilities of how to deal with methyl mercury criteria. Texas Health Department sets fish advisories at 0.7 mg/kg, TCEQ at 1 mg/kg. Lots of Hg is air deposition and ends up in the sediment. Chemical changes at the sediment layer results in it being released. Suggest adding to Implementation Procedures so that there is not a gridlock on TMDLs to segments where there are no sources, except air deposition.

Questions posed to the group:

Everyone agreed that child exposure rates should be included in the calculations.

There were concerns about using a biotic ligand model and a WER if the results were different. Which would be used in permitting? Since both are expensive, it is unlikely that a facility would do both. A biotic ligand model would be slightly less stringent than a WER but more realistic than WER. Currently the only input is water hardness. You would be using other water quality data that is already being collected like TOC and inputting this into the model. So a more realistic model of the biological exposure. No real objection to this idea. Some question about whether this would be less protective and whether that would be a bad thing. There was a suggestion to run biotic ligand model on the WERs that we have now for Cu and see what the difference would be on these.

The following is from EPA's copper fact sheet that may clarify the confusion:

"Since EPA published the hardness-based recommendation for copper criteria in 1984, new data have become available on copper toxicity and its effects on aquatic life. The Biotic Ligand Model (BLM) – a metal bioavailability model that uses receiving water body characteristics to develop site-specific water quality criteria – utilizes the best available science and serves as the basis for the new national recommended criteria.

The BLM requires ten input parameters to calculate a freshwater copper criterion (a saltwater BLM is not yet available): temperature, pH, dissolved organic carbon (DOC), calcium, magnesium, sodium, potassium, sulfate, chloride, and alkalinity. The BLM is used to derive the criteria rather than as a post-derivation adjustment as was the case with the hardness-based criteria. This allows the BLM-based criteria to be customized to the particular water under consideration.

BLM-based criteria can be more stringent than the current hardness-based copper criteria and in certain cases the current hardness-based copper criteria may be overly stringent for particular water bodies. We expect that application of this model will result in more appropriate criteria and eliminate the need for costly, time-consuming site-specific modifications using the water effect ratio."

Two of the groups indicated that they thought that criteria for aesthetic chemicals needed a different status or should be removed from the human health criteria, since they concerned taste and odor issues. Some feel that manganese is not a threat to human health and could be taken off the list.

Everyone agreed to removing the diazinon abatement program and adding a criterion into the appropriate table.

One group suggested that the Water only column be deleted because it was confusing. Another group suggested that a geographic factor be included in fish consumption.

PCB TEF would be difficult to do. One group agreed that we needed to move to congeners, but there may not be enough time to include it in this standards revision. In 2000 TCEQ only listed ones that go down to 0.1 TEF. There was only one dioxin-like PCB at that level. PCBs may be present in the environment at several times the concentration of dioxins even though they are much less toxic than dioxin.

For mercury, one group indicated that a base tissue number was fine, but that TCEQ, the Texas Health Department, and EPA needed to reconcile any differences. The other groups agreed with a tissue number, and suggested a screening value or the equation. There was concern that the equation would trigger a TMDL when not appropriate. One group wanted a site-specific option. A tissue number would force site-specific criteria. You would have to do fish sampling. If the criteria is exceeded, who is responsible? If you find it in fish, it is most likely not from a wastewater discharge. Most direct dischargers have been cleaned up. There are lots of site-specific differences. One group suggested that 0.3 mg/kg may be a better criterion and let the permit writers deal with the permits individually to meet the WQS. If it is a source that's likely to have mercury in the discharge, deal with that in implementation. Don't try to develop a water quality criterion from a fish tissue criterion. Another group discussed the possibility of putting the tissue number, 0.3 mg/kg, in the standards, and also putting text in the implementation procedures about how the criteria would be implemented. Doing it this way could allow water column sampling, in addition to fish-tissue sampling, for assessment purposes, provided an approved BAF was used. BCFs don't seem appropriate because they ignore the sediment (or other) exposure routes. If the criteria requires fish tissue to prove toxicity it requires waiting until a problem exists. If there is a screening water level assessment methodology, where would the screening level be set? It would just be an assessment level.

One group said that since there was not much confidence in BAFs, that BCFs should be used. One group said that there were different exposure pathways, and they were concerned about BCFs because they only pertained to water. Site-specific factors would be hard to do without a template. BAFs are better information if you have confidence in the numbers, but BCFs are a little stronger number. Group talked a little bit about developing basin-specific BAFs for Texas. One group discussed basin wide site specific BAFs.

## **VII. Topics for the Next Meeting**

- Next meeting May 16, 2007 in same location.
- Format of the meeting was considered fine.
- Next meeting staff will return with more information on Nutrients and Toxics based on the workgroup input.
- Next meeting will cover bacteria and changes to 307.9 Determination of Standards Attainment.

Surface Water Quality Standards Advisory Work Group  
March 7, 2007  
Austin, Texas  
Attendee List

Pepsi Nunes	CITGO Petroleum
Glenn Clingenpeel	Trinity River Authority
Jay Bragg	Brazos River Authority
Pat Radloff	TPWD
Scot Sullivan	TxDot
Kevin Phillips	Eastman Chemical Company
Linda Broach	TCEQ – Houston Region
Patricia Wise	TCEQ – CRP
Mary Etter	LCRA
Vickie Reat	Remediation Division /TCEQ
Ken Hall	CH2M Hill
Tracie Phillips	TCEQ – Toxicology
Ryan Smith	The Nature Conservancy
Randy Palacheck	Parsons/TWCA
Norman Mullin	Enviro-Ag Eng
Rebecca Rivas	SARA
John Taylor	TPWD
David T. Villareal	TDA
Jack Fairchild	SMRF
Okla Thornton	CRMWD
Catherine Nash	NRCS
David Hall	AEP
Paul Jensen	PBS & J
Cindy Contreras	TPWD
Mark Lowry	TCB
Miles Hall	SRA
John Cowan	TAD
Larry Hauck	TIAER
Lori Ziehr	USDA-NRCS
Russell Castro	USDA-NRCS
Brian Faulkner	Baker Botts
Kaci Myrick	TCEQ
Mark Ernst	TRWD
Lynda Clayton	TCEQ
Clare Lee	USFWS
Karolyn Hardaway	Eastman
Karen Holligan	TCEQ
Chris Shank	UT Marine Science
Andrew Sullivan	TCEQ-TMDL

Ryan King	Baylor
Tom Weber	TCEQ
Diane Evans	EPA
Louis Brzuzy	Shell Oil Products
Jennifer Beraman	QEA
Elaine Darby	QEA
Larry Koenig	TCEQ
Myron Hess	NWF
Kathy Richolson	GCA
Yujuin Yang	TWDB
Charles Maguire	TCEQ
Mark Fisher	TCEQ
Clyde Bohmfalk	TCEQ
Laurie Curra	TCEQ
David Foster	Clean Water Action
Anne Rogers	TCEQ-SWQM
Steve Stubbs	ICEQ-QA
Vincent Keis	TIAER
Ken Kramer	Sierra Club
Peggy Glass	APAI
Nicole Cass	PHA
David Buzan	PBS & J
Donna Long	TSSWCB
Michele Wilkinson	TCEQ/SBEA/SBLGA
Steve Kilpatrick	Dow Chemical
George Caldwell	Texas Farm Bureau
Bob Stokes	Galveston Bay Foundation
Tom Ballou	Sherwin Alumina/TCC
David Nuckels	TxDot
Gail Rothe	TCEQ
David Cowan	LCRA
Warren Schlechte	TPWD