Meeting Minutes

2020 TCEQ Nutrient Criteria Development Advisory Workgroup Meeting

August 5, 2020

Location: Online Webinar

Time: 9:00 am – 12:00 pm

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9:00 a.m. Welcome and Webinar Instructions, presented by Jeremy Walls, TCEQ Water Quality Standards Group

- Call to order and general welcome.
- Instructions regarding the webinar and how attendees may ask questions of the presenters and contribute to discussion.

General Discussion

ATTENDEE: Can we get meeting information/materials after the nutrients meeting?

MR. WALLS: We will be posting our agenda, presentations, and meeting notes on our website.

9:10 a.m. TCEQ Nutrient Criteria Development Plan Update, Presented by Jeremy Walls, TCEQ Water Quality Standards Group

- Mr. Walls gave a presentation regarding updates on the TCEQ Nutrient Criteria Development Plan. Please see the PowerPoint presentation entitled "TCEQ Nutrient Criteria Development Plan Updates" for details.
- For more information, email the water quality standards group at standards@tceq.texas.gov

General Discussion

No questions for this section of the meeting

9:15 a.m. Federal Updates on Numeric Nutrient Criteria Development, presented by Jill Csekitz, TCEQ Technical Specialist

- Ms. Csekitz gave a presentation on federal updates on numerical nutrient criteria development. Please see the PowerPoint presentation entitled "Federal Updates on Numeric Nutrient Criteria Development" for details.
- For more information, contact Jill Csekitz, Technical Specialist, at jill.csekitz@tceq.texas.gov; 512-239-3136.

General Discussion

ATTENDEE: For clarification, can you verify that you are looking at the empirical relationship between microcystin, zooplankton and chlorophyll *a*; and modeling total nitrogen and total phosphorous loadings?

MS. CSEKITZ: EPA's guidance focuses on target concentrations rather than loadings for nutrients, as outputs of EPA's model. You are correct, that the stressor response relationships of nutrients, chlorophyll *a*, zooplankton and microcystin are the factors included in the model.

ATTENDEE: Are you basing your microcystin levels on finished drinking water or water before it is treated for microcystin?

MS. CSEKITZ: EPA's health advisory for microcystin in drinking water is based on finished drinking water after treatment. There is a precedent in water quality standards to base some toxic criteria that are protective of human health when drinking water on maximum contaminant levels, which is the maximum concentration of a regulated contaminant that is allowed in drinking water.

ATTENDEE: Many treatment systems do have filters (e.g. carbon filters) that will remove some microcystin from source water. This is one thing to take into account with the microcystin criteria.

MS. CSEKITZ: That is a good thing to consider. EPA's criteria document includes assumptions for consideration by program managers, such as the credible interval and allowable exceedance probability. The applicability of the target threshold in light of treatment is a factor that may be considered and accounted for when considering and selecting these assumptions.

ATTENDEE: Do you anticipate that there will be an expectation going forward to monitor microcystin in drinking water or surface water?

MS. CSEKITZ: I can't answer that. The decision for additional regulation will primarily be driven by EPA, when a regulatory determination associated with the

Unregulated Monitoring Contaminant Rule is published in accordance with the Safe Drinking Water Act. Once finalized, EPA may provide more information and guidance regarding cyanotoxins with this regulatory action.

9:30 a.m. Coastal Nutrient Modeling Project, presented by Sierra Cagle, Texas A&M University

- Dr. Sierra Cagle gave a presentation on a project modeling the influence of freshwater flows, nutrient loading, and other factors on productivity and dissolved oxygen in two bay systems. Details on the project can be found in the presentation "MUMPS – A modeling tool for the prediction of algal biomass and dissolved oxygen in Texas bays," which is available upon request.
- For more information, email the water quality standards group at standards@tceq.texas.gov

General Discussion:

ATTENDEE: How do you define minimum DO in your models? Was this a measure of instantaneous minimum DO or the lowest daily average?

DR. CAGLE: We used the lowest instantaneous DO over a 1-year model simulation. We used the lowest instantaneous DO from the last year of a 50-year simulation.

ATTENDEE: Are you considering incorporating a measure of uncertainty in the model?

DR. CAGLE: We haven't done this yet, but we can look into incorporating that into this next phase of work when we are developing our models further.

10:30 a.m. Evaluation of laboratory methods to quantify chlorophyll *a*, Presented by Sarah Whitley, TCEQ Surface Water Quality Monitoring Team

- Ms. Whitley gave a presentation on the results of a study by TIAER evaluating different methods for quantifying chlorophyll *a*. This study measured variability in chlorophyll *a* results using differing methods and laboratories. See the PowerPoint presentation "Evaluation of Laboratory Methods to Quantify Chlorophyll-a: Phase I results and Phase II plans" for more details.
- For more information, contact Sarah Whitley at sarah.whitley@tceq.texas.gov; 512-239-5831

General Discussion:

ATTENDEE: Can we get a copy of the Phase I report?

MS. WHITLEY: Yes.

ATTENDEE: How much experience did these laboratories have with these methods? Were these new procedures to them, or were these methods routinely performed?

MS. WHITLEY: Laboratories performed analyses using methods they were familiar with and could perform on a routine basis. TIAER and TAMUCC both performed all three methods.

ATTENDEE: Most lakes were relatively small waterbodies. Is there any intent to perform these analyses on larger waterbodies or perhaps include a wider range of lakes?

MS. WHITLEY: TIAER was not targeting specific water bodies. Reservoirs were chosen based on whether they had nutrient concentrations in the desired targeted range and based on proximity to TIAER. Reservoirs closer to TIAER were generally chosen due to concerns regarding processing and delivering samples within the holding time.

ATTENDEE: The results showing variability of results between laboratories raises questions. Is there a way to make the laboratories change operating procedures to be more consistent?

MS. WHITLEY: One of the major components of Phase II will be to compare and find differences between the SOPs of the different laboratories. We cannot instruct external laboratories to change SOPs. TIAER can provide results, and we can provide suggestions based on these results. Results from this phase won't be available until sometime next year.

ATTENDEE: I imagine the laboratories will want to learn from this information.

ATTENDEE: There are some potential issues connected with using the YSI sensors to measure chlorophyll *a* levels. Will there be re-testing if some of their ranges according to the YSI sonde were inaccurate? Will data be re-analyzed using a correction factor?

MS. WHITLEY: We initially targeted water using a YSI 6920 chlorophyll *a* sensor, but there were issues when this sensor was used. I did not present any results from this sonde. An EXO sonde was subsequently used, and the EXO sonde targeted the desired range with the exception of the mid-low and mid-high ranges. These categories have relatively narrow target ranges (15 µg/L).

ATTENDEE: Considering that there is variability in results of the probes, could you focus on rate of chlorophyll *a* change rather than the magnitude of chlorophyll *a*? Then perhaps you could use the rate of change between waterbodies.

MS. WHITLEY: That is an interesting point. We are getting more temporal data now that these waterbodies are being sampled monthly. This is something we might be able to look into.

ATTENDEE: Are all the laboratories diluting samples to ensure they are in the linear range of the calibration curve?

MS. WHITLEY: I don't know because I have not read each lab's SOPs personally, but all the laboratories are following EPA methods and their SOPs for analyses. There is some flexibility to how laboratories prepare samples.

ATTENDEE: It is interesting that there is so much variability between different laboratories when using the same methods. Looking at change over time might still be telling even if there is less precision between labs.

MS. WHITLEY: This is an interesting point. We can look into evaluating rate of change since TIAER is collecting monthly samples. Laboratories are producing internally consistent results. However, when you compare results for the same method from different labs, there are discrepancies.

ATTENDEE: How were samples prepared by TIAER before they were sent to other labs? How much variability between lab results could be caused by differences within the split samples? After TIAER split samples, could they run analyses on all split samples and then send to the contracted labs?

MS. WHITLEY: TIAER minimized variability in these samples. Samples were homogenized using an oscillator. Each laboratory received samples containing equal parts of each depth of the resulting sample. This should minimize variability of the sample, but it isn't a perfect solution.

ATTENDEE: There is still a potential for variability in samples. You should look into this so that you don't overestimate variability between labs/sample methods.

ATTENDEE: There could also be an issue with shipping the samples to different labs.

MS. WHITLEY: TIAER hand-delivered samples to each contracted laboratory to minimize this issue.

11:00 a.m. Proceeding with reservoirs with disapproved chlorophyll *a* criteria, presented by Jeremy Walls, TCEQ Water Quality Standards Group

- Mr. Walls presented a presentation on potential approaches for developing numeric nutrient criteria for reservoirs with disapproved nutrient criteria. Please see the PowerPoint presentation entitled "Proceeding with reservoirs with disapproved chlorophyll *a* criteria" for details.
- For more information, contact the water quality standard team at standards@tceq.texas.gov

General Discussion:

ATTENDEE: Do you anticipate using additional reservoirs in the near future?

MR. WALLS: At this time we are trying to get a method to handle the reservoirs with disapproved criteria before we expand out to other reservoirs.

ATTENDEE: What is your schedule for finishing setting criteria for the initial set of 75 reservoirs and addressing EPA comments?

MR. WALLS: We are currently working with EPA on implementation of the assessment guidance, so we don't currently have a timeline or deadline for when replacement criteria will be proposed. That will depend on how talks with EPA proceed.

ATTENDEE: I like the idea of using site-specific standards. Our reservoirs are so different from each other. I have concerns over redoing criteria for reservoirs that were already approved. I don't know that redoing everything is realistic at this point.

MR. WALLS: We appreciate the input. Thank you.

ATTENDEE: Do you plan on using the new EPA lake criteria tool for any of these 75 reservoirs to see how the chlorophyll *a* numbers would come out? Is there no way to reset or tweak this model to use for Texas reservoirs?

MS. CSEKITZ: We have looked at this modeling tool, but it has limited applicability directly in Texas because of the national data set. Yes, you can customize the model. However, you need state data to customize the stressor-response relationships in the model. In particular, since we want to stick with site-specific criteria, we don't have the data to customize this tool for specific reservoirs.

ATTENDEE: Since the National Lakes Assessment included data from Texas reservoirs, why is it not applicable?

MS. CSEKITZ: There were 50 Texas reservoirs tested in each National Lakes Assessment. Samples were collected from a lot of size classes and included everything

from stock ponds to major reservoirs. The dataset contains a number of really small reservoirs and stock ponds on private property that may not be applicable to our major reservoirs. We don't have enough state data to supplement the National Lakes Assessment dataset and develop stressor-response relationships.

ATTENDEE: I thought their modeling approach was to set the threshold and use your own lake data to input into the model.

MS. CSEKITZ: You can select your own settings for factors such as ecoregion, lake depth, etc. However, we don't have the necessary stressor-response data, particularly the intermediary steps (zooplankton, phytoplankton – including biovolume and percent cyanobacteria) necessary to use in a Bayesian network model. We have nutrient data that are not very sensitive, and our chlorophyll *a* data may be imprecise, as indicated in the previous talk. We need all the intermediate steps to be able to adapt this model, and we just don't have the dataset to do this.

ATTENDEE: Is it significant that every criteria below 11 µg/L was approved and anything higher was disapproved? Is EPA making a statement that they aren't willing to go above this threshold?

MS. CSEKITZ: I can't speak on EPA's behalf. In their Technical Support Document provided with their action letter on the site-specific chlorophyll *a* criteria, 20 µg/L appears to be a threshold that they focused on, and instantaneous values of 30 µg/L or more are used as an indication of trophic issues in a reservoir. I think there are some subtle things to learn from this, but I don't think that's the entire story of what is going on.

ATTENDEE: When you don't have any information to go off of, you "read tea leaves."

MS. CSEKITZ: Those may be some indication of "tea leaves", and we incorporated how EPA considered values above 30 ug/L when developing the methodology to assess these reservoirs.

ATTENDEE: When working with the collected data, sampling in reservoirs only occurs once every 3-4 months, which is not convenient to build models. Is there some minimum level of temporal resolution of data needed to build nutrient models?

MR. WALLS: Most reservoir data are from routinely collected data, which are typically collected quarterly. If we decided to take a modeling approach, then a higher frequency of data would be preferable. Without high frequency data, model development feasibility might be dependent on how many years of data we have. The modeling capability is going to be highly dependent on how much data we have for each independent reservoir.

11:30 a.m. Open floor for general discussion and further questions

- Mr. Walls invited questions about any of the previous talks or other questions/discussion about nutrient criteria development in general.

General Discussion

ATTENDEE: Are any of Austin's lakes included on the EPA disapproved criteria list?

MS. CSEKITZ: There are some reservoirs in the Colorado River basin that have disapproved nutrient criteria, but none of those are in Austin. These reservoirs are: Lake Colorado City, Brady Creek Reservoir, Twin Buttes Reservoir and O.C. Fischer Lake.

ATTENDEE: (question for Dr. Cagle) In the simulations you ran, elevated nutrients didn't result in higher chlorophyll *a* levels. Can you expand on your statement about light limitation? It seems turbidity is a major factor here.

DR. CAGLE: The models do indicate that higher nutrients aren't resulting in higher chlorophyll *a* in the simulations. The other major factor is light limitation. Algal cells also contribute to light limitation. Light limitation is a constant in our model, but we will change that in the next phase. More algal cells will mean more light limitation.

ATTENDEE: These models indicate that inflow has a larger influence on chlorophyll *a* than nutrients. That's a complicated issue to regulate inflows and could make setting criteria complicated.

DR. CAGLE: As far as our contract, we are trying to produce results that show how factors work together to produce results. Any regulatory recommendations are outside the scope of this projects.

12:00 pm Adjourn