Message

From: Dunn, John [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3A95618CC07745F9A4B30B3F654CD05D-DUNN, JOHN]
Sent: 10/10/2019 2:15:24 PM
To: Madden, Venessa [Madden.Venessa@epa.gov]
Subject: FW: Labadie 316(a) Biological Report

FYI

From: Hackler, Pam <pam.hackler@dnr.mo.gov>
Sent: Wednesday, October 09, 2019 2:57 PM
To: Dunn, John <Dunn.John@epa.gov>
Subject: FW: Labadie 316(a) Biological Report

Hello John,
Our water quality monitoring section had a few comments as well.

-Pam

Pam Hackler

Pam Hackler, Environmental Scientist
Missouri Department of Natural Resources
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We'd like your feedback on the service you received from the Missouri Department of Natural Resources. Please consider taking a few minutes to complete the Department's Customer Satisfaction Survey at https://www.surveymonkey.com/r/MoDNRsurvey. Thank you.

My normal office hours are from 7-3:30 M-F. Thanks!

From: Michaelson, Dave <dave.michaelson@dnr.mo.gov>
Sent: Wednesday, October 9, 2019 2:20 PM
To: Hackler, Pam <pam.hackler@dnr.mo.gov>
Subject: Labadie 316(a) Biological Report

Pam,

I got farther along into the Labadie Final Demonstration Report this week and had a few other comments.

On page 5-41 Section 5.4.2.3 "Community Characteristics: Diversity," it states, "Due to the differences in taxonomic level (class, order, family, etc.) of identification of the benthic macroinvertebrates, diversity was calculated at the family level because most organisms could be identified to this level." This section goes on to describe differences in macroinvertebrate diversity among sampling zones, ultimately determining in the last sentence of the paragraph, "This analysis demonstrates that the LEC thermal discharge has not adversely affected the benthic macroinvertebrate diversity in the Thermally Exposed and Downstream zones."

> *Basing diversity on family level identification can mask differences among stations, and this measure as presented lacks the precision to say definitively whether or not the macroinvertebrate community is affected by thermal discharge. It has been our experience that genera within a given family respond differently to pollutants. For example, some genera of mayflies are highly sensitive to heavy metals, whereas others are less so. In that scenario, the family is still represented, but there is no measure of the overall community being altered. Their study plan (Appendix A, page 11) and SOP (separate document) both state that identifications will be taken to the lowest practicable taxonomic level. If this level of effort was spent, why not base diversity*

measures on that? MDNR protocols also require lowest practicable taxonomic level, but our biological metrics and criteria thresholds are not limited to the family level.

The study plan (Appendix A) says on page 11 that samples will be subsampled to 200 specimens.

I could not tell whether they subsampled Hester-Dendy and ponar samples to 200 specimens, but Table 5-6 shows a total of 71,594 individuals identified from Hester-Dendy samplers and 23,115 from ponar samples in 2017-2018. This table also has macroinvertebrate taxa presented both at the family and species level, which suggests that they may have identified specimens to the lowest practicable level, but did not present the data. The heading of "species" in Table 5-6 should be reconsidered, given that relatively few macroinvertebrates can be taken to the species level, especially as larvae.

Also on page 11 of the study plan it says that, "Benthic macroinvertebrate habitat and community analysis will include, but may not be limited to the following metrics: density (#/m^2), taxa richness, dominant taxa, EPT index, Biotic index, Shannon diversity index, qualitative sediment characterization (percent abundance of particle types, Wentworth scale). The study plan goes on to say on page 12 that detailed information regarding sample processing and analysis can be found in the SOP and QAPP documents that accompanied the study plan.

Density, "EPT Species," and "EPT Intolerant" are presented in Appendix B, Tables B-46 through B-49. The remaining biological metrics (taxa richness, dominant taxa, biotic index, and Shannon diversity index) are not presented in the report. Based on the study plan, I would have expected to see more biological metrics provided and discussed. Tables B-37 through B-49 present a great deal of information, but biological metric trends among stations is notably lacking.

The SOP concurs with the study plan in that specimens will be identified to the lowest practicable taxon. The QAPP has a section that discusses fish identification, but there is no such discussion for macroinvertebrate identification.

This is a minor point, but in Appendix B, the List of Tables needs to be corrected. For example, the List of Tables shows macroinvertebrate data beginning with Table B-31 (Abundance statistics for benthic macroinvertebrate community sampling for 2017-2018 LEC study by zone, and season). However, macroinvertebrate data are presented in Tables B-37 through B-49. There may be other errors, but I did not check the rest of the tables against the List of Tables.

If you'd like to meet at some point to discuss the report, please let me know.

Dave

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