Oklahoma Comments on the Simulation Plan and the Modeling QAPP

Simulation Plan:

Overall, we think the simulation plan is well written and addresses most of the key issues in developing the models. The following comments are meant to provide suggestions to further complete and strengthen the plan.

- Numerical criteria for calibration and validation for both models (particularly the lake model) need more justification other than past experiences and a few general modeling references. What have other similar models used? How about specific criteria values used in published modeling studies? And especially what about models used in other established or similar TMDLs in the nation (e.g., Chesapeake Bay models)?
- Quite a few model input values for HSPF are "evolving" or still being "investigated" (e.g., litter application rates prior to 2011 on the Arkansas side of the watershed, commercial fertilizers, and other minor sources). What are the end points for such investigations and what is the contingent plan if information does not become available for an extended period of time?
- We very much appreciate it that the project team added break points for the watershed segmentation upon Oklahoma's request. However, the final watershed segmentation still has some problems: 1) state line break points for the Illinois River and the Flint Creek are either at a wrong place or non-existent; 2) there is no break point for the Westville treatment plant; 3) there are no break points for the treatment facilities of the cities of Lincoln and Gentry (Is it due to the location of the discharge points of these facilities close enough to existing watershed divides?).
- Page 51: The validation period is set from WY 1992-2000. We would like to caution the project team on using the data collected from that period for loading validation due to the lack of high flow samples from the period.
- Page 69: How will EFDC simulation of TSS, POC, Chl-*a*, and light extinction be used to correlate to the 25 NTU turbidity standard in the lake? We understand that EFDC does not directly simulate turbidity in NTUs. However, there needs to be a connection between the simulated parameters and turbidity in NTUs.
- (This comment is provided by ODAFF) Page 77, item #2: the amount of poultry litter generated in the Illinois River watershed in Oklahoma could be estimated either based on:
    - the estimated average amount of litter generated of 125 -150 tons per house, per year;
    - or the estimated amount of litter generated of 18 lbs per bird space, per year.

  The former method of estimation gives a lower amount than the latter.

  It is noted that the number of poultry houses operated in 2009 in the Upper Illinois River watershed, where scenic river status is designated, was 357, and the corresponding number of birds was 7,070,530. The numbers given in the Simulation Plan of 550 houses and 10,699,230 birds are for the whole Illinois River watershed, which includes both the Upper and Lower Illinois River watersheds.

- Lines 3-5, paragraph 2, Page 82: This sentence seems to suggest that if water quality standards in Lake Tenkiller are not met, further load reductions will only be implemented (simulated) on the Oklahoma portion of the watershed. No more reduction will be implemented on the AR portion as long as the scenic river TP standard of 0.037 mg/l is met at the state line. Such an approach is not acceptable. Previous studies have shown that the majority of the nonpoint source TP load to the lake is from pasture land in the watershed and Arkansas portion of the watershed has more than half of the pasture land in the watershed. Consequently, any load reduction scenario intended to achieve water quality standards in the lake would be impractical if Arkansas portion of the watershed was not considered.

The following are editorial remarks on the simulation plan:

- Line 6, first full paragraph, Page 19: The total number of Mesonet stations is 120 with at least one station per county in Oklahoma (77 counties in total).
- Line 5, Section 3.4.1, Page 41, please provide the website.
- Line 3, first paragraph, Page 43: please provide Dutnell (2000) citation in the reference section.
- Line 2, paragraph after the formula, Page 43: "… is shown B", what is "B"?
- Paragraph above Table 4.1, Page 53: …. "the green sites indicating OK gages"….; it should be yellow instead of green.

QAPP:

The following are comments on the modeling QAPP.

- The project timeline seems a bit ambitious: modeling and scenarios by Nov 2011 and establishment of TMDL by May 2012. How confident are we in meeting those dates and what if we can't?
- There are no descriptions on the TMDL end points, i.e., what the water quality goals are in the lake and in the stream, and how the TMDL will use the models to design load reduction scenarios to achieve these goals? The simulation plan briefly describes the end points issue (last four paragraphs of Section 6.4). Will there be a separate QAPP for the TMDL process to more comprehensively address this issue? If not, the current QAPP should do so.
- Second to the last line of Page 4, what is a "WAL"? And the third line of the last paragraph on Page 15, what is a "WAM"?