Nutrient Scientific Advisory Board Meeting #7 Minutes

Friday, April 1, 2011
TJCOG - 4307 Emperor Blvd, Durham NC, 27703
9:30 am -12:00 pm

Attendees
Members: Matt Flynn, Michael Layne, Andy McDaniel (for Matt Laufer, absent), John Cox (and Michelle Woolfolk, alt), Todd BenDor (for Larry Band, absent), David Phlegar, Chris Jensen (for Trish D'Arconte, absent),Grady McCallie, Bill Hunt (and Kathy DeBusk, alt). (Fred Royal, absent with no alternate).

Non-Members: Andy Sachs (facilitator), Jason Robinson (DWQ), Rich Gannon (DWQ), Kathy Stecker (DWQ), Heather Saunders (TJCOG), Sarah Bruce (TJCOG), Michael Schlegel (TJCOG), Britt Stoddard (Wake), Sally Hoyt (UNC), Sandra Wilbur (Durham), John Huisman (DWQ), Trevor Clements(TT), Josh Johnson (AWCK), Michael Sloop (CDM)

Convene
The NSAB facilitator convened the meeting and outlined the agenda and desired outcome of the meeting: 1) Revisit *and summarize what the Board has discussed to date* and 2) *Discuss specific ideas for estimating jurisdictional baseline loading and reduction goals.*

The Board agreed on the proposed agenda. DWQ passed out revisions to the minutes that were emailed to the Board. These revisions were minor edits to the description of Dr. Larry Band's presentation. The Board had no comments on the minutes, and they were approved without discussion.

Accounting method criteria
At the start of the meeting, DWQ distributed a list of criteria for deciding on a method to estimate baseline loading and load reduction goals for existing development.

Rich Gannon explained DWQ's reasoning for compiling the list: The criteria were gleaned from Board meetings and discussion. Agreeing on the relevance and importance of the criteria should make it easier for the Board to decide on a method to estimate load reduction goals. Rich then reiterated the purpose of the accounting method: to estimate the total loading from existing developed lands for the baseline period (1997-2001), separated from other land covers and sources for portions of each jurisdiction within the Jordan watershed, and to adjust these loads for loading increases and reductions for the post-baseline transition period (2002-mid-2012).

Rich Gannon then went through the list of criteria, in roughly descending order of importance:

- The method should work with available data for the baseline and transition period. This could include data not previously utilized. For example, if the Jordan Watershed model were used, adding more calibration points may be possible.

- The method should be precise. (It was decided later this criterion should be "accurate" instead of "precise"). More complex may be more accurate and/or may add more uncertainty. Instead a model should be chosen that gives the most accurate estimate, while considering several constraints: 1) the model should be developed within 1 to 1.5 years; 2) the cost for developing

the method should be minimized; 3) the method should have the ability to maximize ongoing accounting utility, including possible subsequent improvements and refinements, like measuring load reduction from the disconnection of impervious cover, improvements to septic systems, etc.

- The method should have utility and be functional. For example, it should estimate the same "type" of pounds as the method to be used for credit accounting. Rich used the example of using the Jordan watershed model (WS) to determine the baseline and the Jordan/Falls Lake Stormwater Nutrient Load Accounting Tool (JFLSNLAT) to account for nutrient reductions. The WS model, coupled with SPARROW, estimates pounds delivered to the lake from 14-digit HUs, while the JFLSNLAT estimates runoff from small sites and doesn't account for groundwater. Unless there was an adjustment, these two methods would not be compatible.
- The method should be relatively easy to use. DWQ has to come up with the baseline load and reduction needs, so experts could be used to create this, and modelers and other DWQ staff should be able to work with this. However, local governments and developers will be responsible for using the credit accounting tool, so this method should be able to be easily used by non-modelers.
- Another criterion to consider when choosing a method is its adaptability. It should be able to accommodate additional load-reducing measures and other improved science later. For example, the JFLSNLAT tool is fairly simple, uses Schueler's simple method, and could be amenable to refinement, like accounting for impervious disconnects and adding new BMPs. On the other hand, the Jordan WS model wouldn't be good for many small-scale BMPs but might be more appropriate for adding refinements like estimating load reductions as a result of a fertilizer ordinance.
- The method should allow for inter-HU load reduction crediting, or trading. The 14-digit HU delivery factors established by Tetra Tech using SPARROW could be used for this. These delivery factors could be updated.
- The method should allow for cost optimizations. For example, JFLSNLAT would require numerous individual iterative runs. A more convenient method of automated cost optimization might be preferable.
- The methods should be credible; for example, peer-reviewed, tested, and in the public domain. The JFLSNLAT is new, and hasn't been tested much, but DWQ anticipates that it will be well received based on the research and work that went into it The Jordan WS model was done well and was peer-reviewed, but limitations have been recognized, such as limited calibration points, possible overestimates of septic loading, and limited land cover data.
- Transferability: JFLSNLAT is more readily transferable than the Jordan watershed model in that it is already designed to apply across physiographic regions and requires fewer inputs; a watershed model would be transferable more in the sense that it would serve as an example of choosing that platform.

The Board then raised the following points during its discussion of the draft criteria:

- Concern was expressed over the unit-area loading rate numbers use in the Jordan WS model.
- The Jordan WS model already estimates total loading from the three subwatersheds. These total loadings are listed in the Jordan Purpose and Scope Rule (.0262). Since the WS model estimates the total loading from each arm, can't those loads be divvied up into the different sources, including existing development? Or are we developing new loading numbers? If so, wouldn't the credibility of that be called into question? Are we bound by those numbers?

- DWQ explained that the Board's recommendations need not be bound by the numbers estimated by the WS model and in the Rule. However, any new loading numbers should be *compatible* with the WS model's loading numbers. If they aren't comparable, then adjustments should be considered. Later in the meeting it was suggested that compatibility between the WS numbers and the number the method comes up should be in the list of criteria under "utility".
- The Board is tasked with determining a method to estimate loading from Existing Development, separate from other sources. The total loadings also need to be broken-down between jurisdictions. However, the WS model does neither of those things. In addition, the WS model's loading numbers do not take into account the "transition period", which includes any loading increases or reductions between the baseline period that the WS model represents (1997-2001) and when local governments will begin implementing their Jordan new development programs (Aug 2012).
- A Board member asked if the WS Model was capable of isolating loading from existing development. Tetra Tech explained that the WS model estimated a lump sum at the mouth of each HU. While the existing development data in the model was probably the best of the sources, one would have to go into each HU and break-out the existing development data, which would be difficult.
- "Precision" of the model was addressed again. A board member made the distinction that precision would mean matching the real world loading, not the loading that was already estimated by the WS model. "Accuracy" is a better term, he suggested. Some Board members felt this was the most important criterion. Others said that accuracy should be balanced against cost, utility, and the timeframe it will take to develop the method (within 1 to 1 ½ years).
- One Board member said that he had many unanswered fundamental questions and, as a result, he was concerned about formally adopting these criteria.

DWQ then suggested that all Board members list out their fundamental concerns about the criteria or the Board's overall task. The following points were raised:

- Existing D estimates need to mesh with load estimates from all other sources, can't develop them in isolation. Need to fit with the New D loading rate targets. Are we bound to the lake loads in the goals rule?
- Monthly sampling leads to uncertainties. It misses peak flows when most of the loading occurs. *Editor's note: Only quarterly sampling is done.*
- NCSU made it clear that they do NOT think the JFLSNLAT should used for this task, since it only looks at stormwater releases to a storm drain network for a small site. It doesn't account for groundwater, and it's not appropriate for large-scale sites.
- Are we forcing it with one of these existing methods? Do we have enough time, energy, money and data to develop an accurate method? The method needs to be credible. A remodel is the right way if we can do it.
- Can we revise the Jordan watershed model to make it workable, and what would that take? Trevor Clements identified some improvements including additional calibration points, SPARROW improvements. He also noted that the Jordan model is essentially a mid-level model re. comprehensiveness, that EPA's SUSTAIN would be a flexible, more comprehensive option. It would also be more expensive and time-consuming than reworking the Jordan model, but could be done off-line while something simpler is used to meet regulatory obligations in the meantime. This would be an adaptive approach, and would recognize the importance of not fixing on and locking into one set of numbers indefinitely.

- Would rework of Jordan w/s model give jurisdictional answers with confidence, or what would? Models like LSPC or HSPF would allow compliance points within HU's.
- It is going to take many years, potentially decades, for local governments to achieve their reductions. The reduction measures will probably take place in phases. Local governments would probably go after the "low-hanging fruit" first, so it may not be necessary to have exact reduction numbers in the beginning. Therefore, a less sophisticated method could be used to get approximate reduction needs now. This would give local governments an idea of their goals. Modeling for a more accurate load reduction goal would continue in the background. If this more accurate modeling gave a much different baseline number than in the rule (produced by the WS model) then additional rulemaking may be appropriate.
- The SAB should assume the ability to make statements/recommendations about the right way to go.
- Why come up with an initial estimate if eventually it will be replaced by a more accurate estimate? Local governments know their reduction needs. They won't come close to achieving it in the first few years. The Session Law doesn't specify a deadline for when baseline loads must be calculated, but does require that DWQ develop an accounting for nutrient reduction crediting by July 2012.
- Land cover data is readily available, but not land use data. Land use data comes from satellite imagery. Land cover data is "ground-truthed." The two sometimes show vast differences. The Jordan WS model used a hybrid of the two. The State has just done statewide aerial photography for emergency management. This included infrared photography that was not purchased by the state. This infrared photography could be purchased.
- SUSTAIN would take "a lot of time," but not necessarily too much time.
- Spending extra money now may pay off in the end.
- DWQ stated that they will look into funding from the 319 grant program, but explained that funds are limited this year due to the economy.
- How will compliance with the rules be judged?

Future Meetings

- Always the first Friday of each month, 9:30 – 12:00 at TJCOG
- DWQ to work on a hybrid straw man proposal to be discussed over email and at the May NSAB meeting.
- Decide if we're going to delay timeline.
- Establish if we need to do a new model.
- Look at "low hanging fruit"(maybe not for next meeting).
- It was suggested that Board members and jurisdictions share monitoring data through email.