Timber Harvest Task Force Meeting – 3/11/2024

Recap of last meeting (Katie)

- The THTF has started shifting focus towards the watershed model and CAST. Lorenzo and Alanna are doing as lit review to determine whether we need to reevaluate loading rates/ BMPs efficiencies.
- There was an agreement at the last meeting to correct the amount of time a harvested forest is treated as harvest before it reverts to true forest (3 years, not 1).
- The default rate has been an ongoing conversation. The recommendation from the THTF is to reduce the default rate to 1.1%
- Discussed the spatial precision needed for modeling harvest in phase 7. Can/should we separate out clear cuts in reporting so we can model harvest at the catchment scale?

Phase 7 overview (Gary Shenk, USGS)

- Gary gave a presentation on how the THTF can inform Phase 7 Watershed Model Development. He started with background on the Watershed Models. Current CAST is one of the Bay Program models. It takes inputs (Fertilizer, Manure, Atmospheric Deposition, Fixation, Wastewater) * land management * Watershed Delivery to spit out a load by land river segment and land use. Gary ran through an example of how CAST works in relation to a harvested forest watershed.
- Gary then talked about how CAL CAST (the calibration version of CAST) will inform the Phase 7 CAST and how Phase 7 CAST will be constrained by the temporal downscaling model.
- Regarding who is responsible for the components of Phase 7 CAST, it falls onto the Water Quality GIT and the Modeling Workgroup, with input from experts to ensure the rates are correct.
- CAST and other decision support models (land use change model, airshed model, bay model, and criteria assessment procedures) all play a role in helping us understand if we are achieving appropriate dissolved oxygen, clarity, and chlorophyll in the Bay.
- There is a need for consistency in the model and that is more important than accuracy. Spatial and temporal trends are more important that the absolute value.
- For Phase 7, the THTF has the ability to re-examine and suggest changes to:
    - Land use types- The mapped land uses for Phase 7 will be more specific compared to Phase 6
    - Relative Loading Rates- In Phase 6, the FWG divided natural loads into harvested forest and true forest. True forest is the reference land use and loads the same as wetlands. Harvested forest loading rates are relative to true forest.
    - Sensitivities –THTF can advise the Modeling Workgroup on the types and numbers. The sensitivities of N in phase 6 are based on the average response of Phase 5 watershed model. P sensitivities are based on based on pasture sensitivity * load ratios. For both N and P and harvested forest the sensitivity is based on “Harvested forest is the loading rate ratio * forest rate”.
    - Inputs – inputs that change loads coming from land uses.
        - Inputs for Phase 6:
            - TN: Atmospheric deposition
            - TP: Stormflow and sediment
    - BMPs.

Discussion

- Peter: We need to 1) consider how we allocate reported harvest acres at county scales to catchments based on the LULC and 2) reconcile the reported and mapped harvest acres.
    - The modeling scale is NHD 100k. The WQGIT will get to the decided final scale of CAST. Early indications show a split between scales: Some want it to stay the same, while others want it to be finer. We don't know what the scale is going to be for CAST
        - Even if CAST stays at the land river segment (lrseg) scale, there is a lot of information at the finer catchment scale that could be made available
- For Phase 7- don't we have the option of redoing the entire history back to the 1980s with "real" data?
    - Yes, in phase 7 everything is new, and we can look backwards.
    - Dave- we have a responsibility to revise land use history back to 85 where needed and possible
    - If we re-do the land use history, in some places there will be a shift in acres from harvested forest to forest. Will there be a reallocation of responsibility of loads due to a big decrease in harvested forest?
- Dave- we might want to shift to modeling road and landings as places where there is higher loading. If we re-do the history and separate out different forms of harvest, we may see a shift from more prevalent clearcutting in the 80s to more selective harvesting.
    - Not certain that the ratio of clearcuts to total harvests have changed that much over time for hardwoods
    - We do not have currently have different loading rates for clear cuts and selective cuts. If we are going to separate this out in the history we will also need to do this going forward. But this group isn't sure it would be worth the effort because there likely isn't a big difference in loads.
- Peter- When it comes to preventing how to reconcile what's reported with what we map, separating out clearcut from harvest would be very helpful because we don't map selective cuts; we map clear cuts. And we know to reconcile those acres with what we map is timber harvest. When it comes to selective cuts, we don't know where they are just from the spatial data. What's happening now is that the reported acres come out of forests, even though we're currently mapping. We didn't have a timber harvest class in the past. Could be helpful to separate out the clear-cut and selective-cuts
    - Clearcut lands also include the BMPs in those areas, so the loading will not be different.
    - Would we need to have historical data to do the backcasting back to the 80s?
        - We map what's been harvested within the last four years. Beyond 2013, we could probably do it, but it would be extremely challenging.
    - Assuming 1.1% of forest vs mapping 2013 I would map at 2013 and not bias at the trend. Make reasonable assumptions the whole time.
        - The ratio of clear-cut to total harvest could help derive total harvest rates from the mapped data
        - If states have the same rate of clear cut: total harvest we could use the ratio to backcast using mapped data and reporting data

        - So for the model, if Peter's goal is to map clear cuts and the model needs all harvest, we would have a way to make the history, we could put both… it'll take a little bit of work, but could be done.
        - We were able to use FIA data to estimate the % of total harvests that were more intensively harvested. We could potentially use those FIA numbers, but we have more confidence in state-level numbers for states that more area (and more sampling plots) within the watershed. The 1.1% default came from FIA.
- Lorenzo and Alanna's literature review could help us determine whether we should separate out different forms of harvest for water quality modeling. They can also look at sensitivities and inputs to see if there are any recommendations we should make for harvested forest
- Caitlin- Can you share how the 12lbs/acre of harvested forest was calculated?
    - Working down from total loads through an Algebraic equation
    - We discussed the process for deriving the loading rates and BMP efficiencies at the last meeting, those materials can be shared.
- Caitlin- do you have other info on how they calculated the impact of climate change, and how that is expected to impact the model?
    - We still don't know exactly how it will affect the model. Originally we thought with more runoff we'd expect more N coming out. Some newer papers say that with increased denitrification we may have reduced nitrogen. For P, with increased stormflow and sediment transport, we expect increases.