**Timber Harvest Task Force Meeting – 4/24/2024**

**Lit Review on Forest Harvesting Practices**: *Lorenzo Cinalli, USFS, & Alanna Crowley, MD DNR*

Lorenzo and Alanna gave an overview of CAST and described how timber harvests are modeled and how forest harvesting BMPs apply an efficiency, or a percent reduction, in modeled loads.

The last forest harvest BMP report was done in 2009 by Edwards and Williard with a literature review of relevant material which established recommended efficiencies from BMPs and established a credit duration. Base harvested forest loads were established based on work Justin Hynicka (MD DNR) did for the Phase 6 model update.

At the January THTF meeting, we requested that Lorenzo and Alanna to do an initial evaluation of the literature to determine whether a formal re-evaluation of forest harvest BMP efficiencies or harvested forest loads was needed for Phase 7. This lit review looked at literature from 2009 – present and focused on CBW and neighboring states. Lorenzo and Alanna also interviewed experts. Experts interviewed include those in the USFS and North Carolina.

Overall findings:

With proper BMP implementation, sediment and nutrient loads from harvested forest are very low. The review determined an average of 88% sediment reduction, as well as a near-total reduction in nitrogen and phosphorus. The literature was also corroborated by interviews with experts. There was also evidence that BMPs provide these water quality benefits for more than one year.

There wasn’t any research looking at harvested forests without BMPs so there is insufficient research to merit re-evaluating the base loading rates of harvested forest.

To change how forest harvesting BMPs are modeled in CAST, there would need to be a formal review by the Forestry Workgroup (and THTF) as well as the Watershed Technical WG, with final recommendations submitted to the Water Quality GIT for approval. The purpose of this presentation was to discuss if the THTF thinks it is worthwhile to explore this further.

Discussion:

Q: Clarification on efficiency rates- with BMPs, are the loading contributions of harvested forest similar to true forest? A: Correct—with proper BMPs, it effectively removes 100% of sediment, as found in the Dangle et al. 2019 study.

Currently the harvested forest is only treated as harvested forest for one year in the model but this is incorrect. The evaluation of loading rates was based on a three-year average of the loads post-harvest. This suggests that credit duration for forest harvesting BMPs could also be applied for three years, not just one.

Q: Is it safe to assume that the lifespan of the BMP is the same as the amount of time we expect water quality impacts from harvest? A: We will need input from this group to re-evaluate this, but the research does suggest that the benefits of BMPs extend for multiple years.

There was a suggestion to consider whether the base loading of harvested forest should be reduced, based on the assumption that with BMPs, harvested forest will load much more closely to a true forest. Although we don’t think there is much/any harvesting without BMPs, this approach would reduce accountability to ensure BMPs are being implemented properly and some states don’t have a consistent way of tracking and reporting BMPs on private lands.

There was also discussion about changes in climate and storms and how they will they impact sediment loads from harvest. With an increased intensity of storms, we could expect increased sediment loads. Climate change will impact all land uses and additional loads have already been assigned to the states, but there will likely still need to be an evaluation of how climate change will impact BMP efficiencies (across all BMPs). As we conduct our review, we could also consider how climate change may affect the efficiency of forest harvesting BMPs.

When the efficiency for forest harvest BMPs was initially established, it was very conservative. Most our impacts are at the stream crossing, so with proper practices at the stream crossing there should be limited water quality impacts. We should continue to be conservative, but should evaluate whether we are being too conservative. Consulting with Rebecca Hanmer who was involved with these earlier efforts could be worthwhile.

**Timber harvest reporting mapping and modeling in phase 7:** *Katie Brownson, USFS*

Katie presented options for improving the way we count timber harvest acreages in the model and how we model their spatial distribution. This is an issue brought up in previous meetings about needing 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.

For both reported forest harvests and default harvested forest, these acres get pulled from “true forest” as harvested forest. Mapped clearcut harvests get modeled as mixed open, but again are subtracted from “true forest”. This means that we are essentially double-counting clearcuts.

For Phase 7, we have proposed a workaround to avoid this double-counting issue where the mapped acres get subtracted from the reported or default acres at the county-scale before getting spatially distributed back to their original catchments. The group generally supported this approach to avoid double-counting.

We will also need to address how to allocate reported (but not mapped) harvest acres across catchments in CAST. We could just continue our current approach which is to distribute harvested forest acreage proportionately based on the amount of true forest in each land river segment (or catchment) OR we could develop a more refined approach to distribute the harvested forest acreage based on the relative amount of “harvestable” forest. Forests in rural areas with large patch and parcel sizes may be the most likely candidates for future harvest.

The group discussed whether it would be worth the effort to improve the spatial distribution of the harvested forest acreage. If we can develop relatively simple rules based on patch and parcel size it could be beneficial so we aren’t increasing loads in more urban forest patches that are not getting harvested.

There was a comment that as planning targets change, if we have more effective BMPs there could be impacts on loads over time so it is important to try to align forest harvesting with reality. Temporal landsat data could potentially be used to help backcast and better look at trends through time and how well they align with variations in the reported data.

At the next meeting we will continue discussing whether we can identify simple rules for defining “harvestable forest”. We will also look at approaches for back-casting forest harvest acres through the Phase 7 model calibration period.