| **Project: How quickly can target phosphorus reductions be met? Robust predictions from multiple watershed and lake models**  **Watershed Management Scenarios for Modeling Groups**  To be completed by August 3, 2017 | | |
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|  | **Scenario** | **Notes** |
| 1 | *Suite of practices from the previous project*  Re-run three scenarios and sensitivity analyses from the previous project that have already been run for the HABRI project, but we have modified our models since then. Scenarios are:   1. Increase the adoption of cover crops, subsurface placement and vegetative buffer strips by 50% from the baseline as follows    1. Target based on simulated critical source areas    2. Randomly allocate practices 2. Remove all the point sources – sensitivity | 1. We ask modelers to run the three variants of scenario 1 and name them 1a, 1b and 1c. 2. Please complete this, and all subsequent scenarios, after updating Mercer County manure application rates. |
| 2 | *Likely adoption rates of effective practices*  In a single scenario, increase the targeted adoption of cover crops, subsurface placement, and vegetative buffer strips based on farmer survey responses:   1. Target new adoption of cover crops to highest TP-loading HRUs, raising total adoption to 60% of all agricultural HRUs 2. Target adoption of subsurface placement to highest TP-loading HRUs, raising total adoption to 68% of all agricultural HRUs 3. Target adoption of buffer strips to highest TP-loading HRUs, raising total adoption to 50% of all agricultural HRUs | 1. Combine all three practices and run only one scenario 2. This scenario closely matches likely adoption rates determined from farmer surveys 3. Targeting should take place only for new adoption of a practice, leaving these practices in the baseline alone 4. Make sure the total adoption rates include both baseline and new adoption of the practice in your model |
| 3 | *Farm practices plus wetlands*  In a single scenario, run a targeted suite of practices that includes wetlands as follows:   1. Adoption of subsurface placement to 50% of agricultural HRUs targeted to highest TP loading HRUs 2. Adoption of cover crops at 58% of agricultural HRUs targeted to highest TP loading HRUs 3. Creation of wetlands in 78% of subbasins targeting to highest TP-loading subbasins | 1. Combine all three practices and run only one scenario 2. Use the same parameters we provided for wetlands 3. Targeting should take place only for new adoption of a practice, leaving these practices in the baseline alone 4. Make sure the total adoption rates include both baseline and new adoption of the practice in your model |
| 4 | *In-field practices including drainage water management*  In a single scenario, implement the following targeted management practices:   1. Drainage water management targeted to15% highest TP-yielding agricultural HRUs 2. No-till targeted to 50% highest TP-yielding agricultural HRUs 3. Subsurface placement targeted to 60% highest TP-yielding agricultural HRUs and incorporation in the rest (40%) 4. Cover crops targeted to 50% highest TP-yielding agricultural HRUs | 1. Combine all practices and run only one scenario 2. Targeting should take place only for new adoption of a practice, leaving these practices in the baseline alone 3. Make sure the total adoption rates include both baseline and new adoption of the practice in your model |
| 5 | *Fertilizer management scenarios*  Run the following two scenarios, 5a and 5b:   1. Maintain phosphorus application at crop removal rates 2. Reduce phosphorus application rate by 25% across cropland in the entire watershed | 1. We ask modelers to run two variants of scenario 5 and name them 5a and 5b 2. Scenario 5a is going to require some interpretation by the modeling groups, as it is not straightforward. You may choose to adjust your fertilizer and manure rates on all HRUs so that each HRU has approximately the right amount of nutrients, or you can run a few scenarios of percentage nutrient application reductions until the basin-level crop yields are quite close to the fertilizer applied. 3. In scenario 5a you should check to ensure your crop yields are not reduced from the baseline scenario. |
| 6 | *Increase soil organic matter*  In a single scenario, adjust the soil organic matter in the top layer of soil to 5% in all agricultural HRUs |  |