Watershed P Index Inventory Work Group Meeting  
Dec. 3, 2010

Present: Chris Baxter, UW-Platteville; Bob Hansis, DNR; John Panuska, UW-Madison; Pat Sutter, Dane County Land Conservation Department; Paul McGinley, UW-Stevens Point; Jim VandenBrook, DATCP; Bill Hafs, Brown County Land Conservation Department; Eric Cooley, Discovery Farms; Scott Watson, DNR; Steve Richter, The Nature Conservancy; Andy Johnson Marathon County Land Conservation Department; Matt Diebel, DNR; Joseph Britt, Sand County Foundation; Nancy Drummy, Discovery Farms; Buzz Sorge, DNR; Faith Fitzpatrick, USGS; Laura Good, UW-Madison

The purpose of this gathering was to share experiences regarding the use of the Phosphorus Index in watershed projects around Wisconsin for inventory, tracking, and implementation purposes.

Goals of Current Projects
- Test the use of P Index in smaller (ranging 38,000 to 4000 acres) watersheds as a targeting tool for critical sites and to evaluate practices to achieve watershed P loss reductions/water quality goals
- Use the P Index in TMDL watersheds to evaluate management practices and partition existing loads and future reductions
- Define the relationships between field-level nutrient management and phosphorus loss assessment (P Index) and watershed delivery:
  - Link field-level P Index with larger watershed model SWAT
  - P Index development, modifying P transport routines from field to stream
  - Identify time lags and channel process effects on in-stream transport.
  - Simplify P Index, develop a screening tool
  - Develop farmer education on the relationship between nutrient management, the P Index, and phosphorus runoff.

Obtaining Information for Farm and Field Inventories
- Watershed project inventories have been or are being conducted by consultants, LCD staff, students (graduate and undergraduate)
- Important to meet directly with farmers because existing plans that might be used to provide information on land management are frequently not accurate depictions of past history or of what will actually happen.
- Understanding and identifying property ownership and who is responsible for field management is time-intensive
- Lots of small fields (especially in SW WI) make cost of inventory and developing a plan higher.
- Have to determine how many years of past history are needed.
- Farmers often can not provide application rates, spreader capacity, and accurate livestock numbers.
- Crops and management can change quickly so planning over a long rotation may be problematic
- Reducing runoff can only be achieved by planning and for a rotation and then adjusting management for annual changes
• How important are other land uses on farms that might be runoff P sources, including dry lots? What additional information should / could be collected during inventories?

Data Handling / Information Processing
• Many projects using watershed PI data use mapping and analysis of P Index and soil test P distribution by field. Some projects will archive P Index and soil test P maps by year to track progress.
• SNAP plus or other automated nutrient management plans produces a large amount of data for each field on a farm.
• Data can come from a variety of sources.
• Moving information to GIS can take time. Discrepancies between the FSA maps from the actual field boundaries are found. Hand digitizing fields takes time.
• Some efforts starting to obtain and update GIS-ready information in the field.
• Can be difficult for county staff to manage amount of data generated for a watershed.
• Do we know how accurate the land management accounting needs to be for developing watershed sediment and phosphorus budgets? It would be useful to understand the relative importance of data collected for the PI.
• It would be useful to have central data storage for screening tool development.

Watershed P Index assessment/implementation issues
• Scale of watershed – what is a manageable size to inventory and still be representative of the watershed’s region?
• Nutrient management planning rules bias towards planning for most erodible areas of fields – would using predominant conditions on fields be more appropriate for watershed planning?
• Lack of good method for assessing runoff P losses from grazed woods and barnyards.
• Soil test P may be more accurate than rest of nutrient management planning data. Is it more reliable than the P Index?
• What is the relationship of P Index to losses in large runoff events?
• What bias is introduced from incomplete inventories? What is the level of coverage required to get a representative distribution for the watershed?
• Need to make sure measuring enough to come to conclusions for effects of land management changes on P loss reductions (e.g. need to understand sediment budgets, legacy effects).
• How do ditches or tile lines affect P delivery?
• How/when can P Index values in a watershed be compared to gage data?
• Does look at year to year variation within rotations in a watershed explain some of the year to year variability in water quality?
• Need to address whole farm in management of critical sites so don’t reduce runoff P losses on one part of farm by increasing them on another.

Summary
• This meeting identified a number of questions and areas where additional information would be useful.
• There is an immediate need to refine methods and understand strengths/limitations of PI inventories.
• It would be useful if this group (with others involved with inventories and interested in their application) could meet regularly to coordinate efforts and oversee efforts to answer questions raised here.

Next Steps
• Establish future meeting times for larger group and include others with interest
• Identify smaller workgroups that could address specific questions raised here and in the future.
• Establish a timeline or schedule
• Some potential workgroup topic areas and initial products could include:
  ▪ Inventory Development
    • Methods for streamlining PI data acquisition
    • Identify difficulties and develop strategies for using nutrient management data for watershed water quality evaluation
    • Develop an FAQ on data collection (rotation history etc).
    • GIS data sources / summarizing tools
    • Summarize inventory time and costs
  ▪ Implementation Issues
    • Develop an overview of what we know/don’t know about the PI and watershed water quality
    • An adaptive management blueprint for moving ahead with inventories and implementation while water quality questions are being addressed.
    • Streamlining the P Index for assessment and screening
  ▪ Watershed Water Quality
    • How can we integrate the PI assessment with watershed analysis (eg through watershed models or other methods)?
    • How do we address legacy sediment and P in watersheds?