

Methodology - USEPA Region 5 Load Reduction Modeling of Completed Conservation Practices in Indiana

Related to the Indiana Conservation Partnership's "Conservation Accomplishments and Nutrient and Sediment Load Reductions Report" 2013, 2014, 2015, 2016, etc. <http://www.in.gov/isda/2991.htm>

Updated 3/15/17

The Indiana Conservation Partnership's (ICP) use of the EPA Region 5 load reduction model to estimate Nutrient and Sediment load reductions in Indiana is part of a collective effort to generate a comprehensive statewide picture of government assisted, voluntary conservation impact across the state. Cooperation in this effort by local, state and federal partners in the ICP allows for conservation tracking and load reduction estimation at an order of magnitude greater than any single agency or entity could achieve alone. The ICP utilizes the end products of this process to establish baselines and measure load reduction trends by watershed for each calendar year, allowing for prioritization of workload and staffing needs, all while serving as a tangible component of Indiana's Nutrient Reduction Strategy.

The collection of practice data for the model is the first step in this effort. Several members of the ICP participate on this front end, which makes the Division of Soil Conservation's (hereafter referred to as the Division) use of the model and subsequent mapping possible. Practice information from several sources is consolidated by our Accountability and Technology Program Manager and then run through the model by Division field staff¹. These data include Clean Water Indiana and the Conservation Reserve Enhancement Program conservation tracking data in Microsoft SharePoint (ISDA, Soil and Water Conservation Districts), practice data from Farm Bill programs (NRCS/FSA)², practice data from EPA-319 funded projects (IDEM) and practice data from the Lake and River Enhancement³ program (IDNR).⁴ It should be noted that data not related to the Region 5 model is also consolidated in this way, though it is instead published in reports online.⁵ These include tillage transect data and ICP financial reports. For utilizing the Region 5 model, practice data from ICP partners is collated into an Annual ICP Conservation Accomplishments datasheet, which includes Best Management Practice (BMP) types, practice locations, measurements and other necessary attributes to enter into the Region 5 model. Practice data are then divided up by county and assigned to Division staff (4-6

¹ All Division staff are trained to use the Region 5 Model with initial instruction of the Model as well as refresher training and Q&A. A [training webinar](#) has been completed for new and existing users of the model, which illustrates examples and explains the equations behind the model's function(s). The Division of Soil Conservation Team Leaders also developed a guidance document for the Region 5 Model, which serves to maintain consistency in the Model's use and to reduce and avoid human error where possible. The guidance document includes specific practice notes and comments, and includes a tab to assist with the "coverage factor" in the model.

² Section 1619 Data Sharing Agreement on file

³ MOU on file

⁴This data collection process is represented with the green boxes at the top of the ICP Workload Accountability Data flow chart seen on pg 3

⁵ Represented in the yellow rectangular boxes in the Workload Accountability flow chart. These are published on ISDA and ICP websites (small purple rectangle, lower left quadrant of the Workload Accountability flow chart) seen on pg 3

assigned counties each).⁶ By distributing workload on a county basis, practice data can be run through the model by Division staff on a manageable timeline. All practices within a given calendar year are modeled with maps and reports generated in March of the following year.

As practice reduction estimates are completed in the model by Division staff, the nitrogen, phosphorus and sediment load reduction numbers are entered back into the Annual ICP Conservation Accomplishment datasheet.⁷ Once completed, the Accountability and Technology Program Manager lays over watershed or county layers in GIS with practice locations and their respective nutrient and sediment reductions. In this way, a cumulative picture of conservation impact is created at watershed scales.⁸ Value ranges are assigned for load reduction to illustrate the load reductions across the state by watershed at the HUC-8 level.

Seeking continuous improvement, new quality control measures are regularly adopted. In 2016, ICP data was cross referenced with USGS modeling tools including SPARROW.

USEPA Region 5 Load Reduction Model:

<http://it.tetrattech-ffx.com/steplweb/default.htm>

Region 5 Model Training Webinar:

[What Is the Region 5 Model and How Do You Use It? https://engineering.purdue.edu/watersheds/webinars/Region5/](https://engineering.purdue.edu/watersheds/webinars/Region5/)

⁶ Represented in the two small orange circles on the Workload Accountability flow chart seen on pg 3

⁷ Represented in the two small orange circles on the Workload Accountability flow chart seen on pg 3

⁸ Represented in the small blue rectangle in the lower right quadrant of the Workload Accountability flow chart seen on pg 3