Calculating Pollution Prevention from Projects & Practices associated with Agricultural Practices or Wastewater Treatment Facilities

Agricultural Practices

Visualizing Ecosystems for Land Management Assessment (VELMA) Model
A computer software model that regional planners and land managers can use to quantify the effectiveness of natural and engineered green infrastructure management practices for reducing nonpoint sources of nutrients and contaminants in streams, estuaries, and groundwater. These practices include riparian buffers, cover crops, and constructed wetlands. Visit: https://www.epa.gov/water-research/visualizing-ecosystem-land-management-assessments-velma-model-20

Preventing Nitrogen Loading Spreadsheet Tool for Estimating Pollutant Loads (STEPL)
STEPL employs simple algorithms to calculate nutrient and sediment loads from different land uses, and the load reductions that would result from the implementation of various best management practices. STEPL provides a user-friendly Visual Basic (VB) interface to create a customized spreadsheet-based model in Microsoft (MS) Excel. It computes:
watershed surface runoff; nutrient loads, including nitrogen, phosphorus, and 5-day biological oxygen demand (BOD5); and sediment delivery based on various land uses and management practices. STEPL can be used to evaluate loading and load reductions at a variety of scales. Although the terminology used throughout STEPL to define land use areas is "watershed," these same input fields can also be treated as smaller areas, such as a project area or individual agricultural fields. For instance, if a user needs to estimate the load reductions from BMPs on individual farm fields, the "watersheds" can be further defined as "Field 1", "Field 2", "Field 3", etc. There is no functional difference in the way STEPL calculates loads when watersheds or fields are used. The user defines the size and characteristics of each area being evaluated, based on the total acreage of each landuse entered into STEPL. This flexibility is not limited to agricultural fields, the "watersheds" could similarly be defined by the user as city blocks in an urbanized area. Visit:
https://www.epa.gov/nps/spreadsheet-tool-estimating-pollutant-loads-stepl

Region 5 Model (MDEQ 1999) is an Excel workbook that provides a gross estimate of sediment and nutrient load reductions from the implementation of agricultural and urban BMPs. The algorithms for non-urban BMPs are based on the "Pollutants controlled: Calculation and documentation for Section 319 watersheds training manual". The algorithms for urban BMPs are based on the data and calculations developed by Illinois EPA. A recent version of the Region 5 Model estimates the flow volume captured and treated by urban stormwater controls (infiltration practices) and adds the functionality of estimating baseline load based on the annual rainfall and event mean concentration in the surface runoff. Visit:
https://www.epa.gov/nps/region-5-model-estimating-pollutant-load-reductions

Case Studies from Preventing N Loading at Treatment Plants

Case Studies about Implementing Low-Cost Modifications to Improve Nutrient Reduction at Wastewater Treatment Plants. Visit:

https://www.epa.gov/sites/default/files/2015-08/documents/case_studies_on_implementing_low-cost_modification_to_improve_potw_nutrient_reduction-combined_508_-_august.pdf