

Monitoring Leads to Successful TMDL Development

Tim A. Wool¹ and Steven R. Davie²

¹US EPA Office of Research and Development, National Exposure Research Laboratory/Ecosystems Research Division, Atlanta Federal Center, 61 Forsyth Street, Atlanta, GA 30303, wool.tim@epa.gov

²Tetra Tech. Inc., 2110 Powers Ferry Road, Suite 202, Atlanta, GA, 30339, steven.davie@tetrattech-ffx.com

Biographical Sketches of Authors

Tim Wool is the Director of the Watershed and Water Quality Modeling Technical Support Center located within the U.S. Environmental Protection Agency's Office of Research and Development, National Exposure Research Laboratory in the Ecosystems Research Division. He was previously with EPA Region 4, as a member of the TMDL modeling and technical support section where he was responsible for the development and review of numerous TMDLs.

Steven Davie is the Regional Director of water resources projects in the southeast for Tetra Tech, Inc. He has over 9 years of experience working on water resources related projects including expertise with hydrodynamic and water quality monitoring, water quality modeling, hydrodynamic modeling, TMDL development, and water resources planning. Mr. Davie has managed several data collection efforts in the Savannah Harbor Estuary GA, Masons Inlet NC, Naples Bay FL, Mill Creek GA, Calebee Creek AL, and several projects in the Everglades. As a modeler, he has worked on the numerous riverine, lake, and estuarine model applications in the southeast.

Abstract

The success of a TMDL determination is relied on the use of good science in linking pollutant sources with water quality. Many times TMDLs are developed using limited amount of data that does not provide detailed information on what are the trends and problems in the waterbody. It is paramount to collect adequate information to parameterize the current loadings, the resultant water quality to applied sophisticated mathematical models.

This paper suggests methodologies that should be used in the development of TMDLs where social and economic consequences can be high. The case study presented here is for the Neuse River Estuary, where a TMDL for total nitrogen was developed and approved by the Environmental Protection Agency (EPA). The Neuse River Basin is 179 miles long with a maximum width of 51 miles (3,640,353 acres). The Neuse River Basin has a very diverse landuse distribution that ranges from urban (Raleigh/Durham metropolitan area) to agricultural and livestock.

The State of North Carolina realized that a TMDL developed for total nitrogen could have an impact on the municipalities and business located within the basin. The State committed to the development and implementation of monitoring plan that could be used to characterize the loadings to the estuarine portion of the watershed. Furthermore, State collected other information such as: salinity, temperature, dissolved oxygen, nutrient data, water surface elevation data that could be used in the application of hydrodynamic and water quality model. It is because of this commitment to gather adequate information, informed and reasonable decisions could be made in the development of the TMDL.

A summary of the monitoring objectives, review of station locations and summary of the collected data will be given. Finally, a review of how this monitoring leads to the development of a successful hydrodynamic and water quality model.