

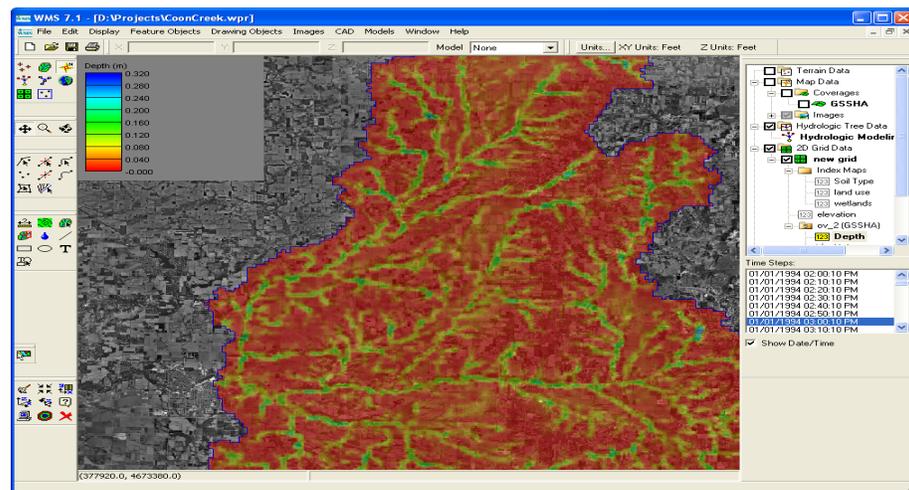


**US Army Corps  
of Engineers®**  
Engineer Research and  
Development Center

# Department of Defense Watershed Modeling System

## Technology

The Department of Defense (DoD) Watershed Modeling System (WMS) is a state-of-the-art computer software program that integrates hydrology, hydraulics, and water quality to help civil engineers and others involved in hydrodynamic modeling make informed decisions about watershed management. A variety of watershed models are available, each requiring different input data in a structured format. The models utilize digital terrain data to delineate watershed and sub-basin boundaries and compute geometric parameters used in hydrologic modeling. Digital elevation, land use, and soil data can be analyzed to determine watershed boundaries, stream networks, and hydrologic parameters necessary for model construction. WMS allows the incorporation of other sources of data, such as imagery and radar rainfall estimates, into the modeling process. A new feature in WMS is the use of web services to download pertinent data for your study from within WMS. Model results can be analyzed in a number of ways including traditional plotting of outflow hydrographs, color contouring of spatial results, animation of spatial data over time, and export of results in standard formats, including GIS formats.



## Problem

The nation deals daily with the problems of urban flooding, stream erosion, and non-point source pollution due to urban runoff, construction activities, hydrologic modifications, and forestry, mining, and agriculture practices. These problems are complex and involve atmospheric, land based, wetland, riverine, and coastal systems. Management of these problems requires an integrated knowledge of the systems involved and requires quantitative analysis and predictive capability.

## Expected Cost To Implement

WMS is available at no cost to employees of the DoD, the U.S. Environmental Protection Agency (EPA), and onsite contractors of these agencies. Commercial use is available from Aquaveo.

## Benefits/Savings

WMS integrates and simplifies the process of applying hydrologic models by bringing together all of the tools needed to complete a successful study. The WMS system significantly increases hydrologic modeling productivity by reducing the amount of time needed to assimilate disparate sources of data and construct hydrologic model inputs. Whereas it might require a month or more to construct a typical lumped parameter model, such as TR-20 or HEC-1, using traditional methods, such a model can be constructed in about 1 week with the WMS. For a typical project engineer, that's a savings of about \$6,000 per study, just in model setup. This time savings, and the ability to easily modify model input, allows more time to be spent on modeling scenarios and less on model setup and modification. It also allows engineers to apply more complicated models, such as GSSHA, in less time than a simple model can be applied without WMS.

## Status

WMS works only on Windows platforms, which include Windows 2000 and XP. Currently, WMS provides an interface for the following hydrologic and hydraulic models: Rational Method, TR-20, TR-55, HEC-1, NFF, HSPF, HEC-HMS, HEC-RAS, CE-QUAL-W2, and GSSHA. Current development is focused on expanding the water quality and land management modeling capabilities for the two-dimensional, physically-based, hydrologic model GSSHA.

## ERDC POC

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## Distribution Sources

WMS is distributed via Internet download, which includes the full program, tutorial files, documentation, and supported model executables. DoD and EPA users contact the WMS Support Center at [wms@usace.army.mil](mailto:wms@usace.army.mil), Phone: 601-634-4286. Fax: 601-634-4208. All others may contact Aquaveo. Phone: 801-691-5530. Fax: 801-691-5529. E-mail: [sales@aquaveo.com](mailto:sales@aquaveo.com). More information is available at <http://www.aquaveo.com>.

## Available Documentation

The WMS Program, Tutorial Documentation, and Supported Models are provided with the "Full Install" software download from CHL's website: <http://chl.erd.usace.army.mil/wms>.

## Available Training

The DoD and EPA may contact WMS support at [wms@usace.army.mil](mailto:wms@usace.army.mil). All others may contact Aquaveo, which conducts WMS training courses on a continuing basis throughout the year. Inquiries can be directed to [training@aquaveo.com](mailto:training@aquaveo.com).

## Available Support

The DoD and EPA users may direct questions to the Watershed Modeling Technical Support Center, E-mail: [wms@usace.army.mil](mailto:wms@usace.army.mil), Phone: 601-634-4286 or the CHL website: <http://chl.erd.usace.army.mil/wms>. All others may direct questions to Aquaveo.

