



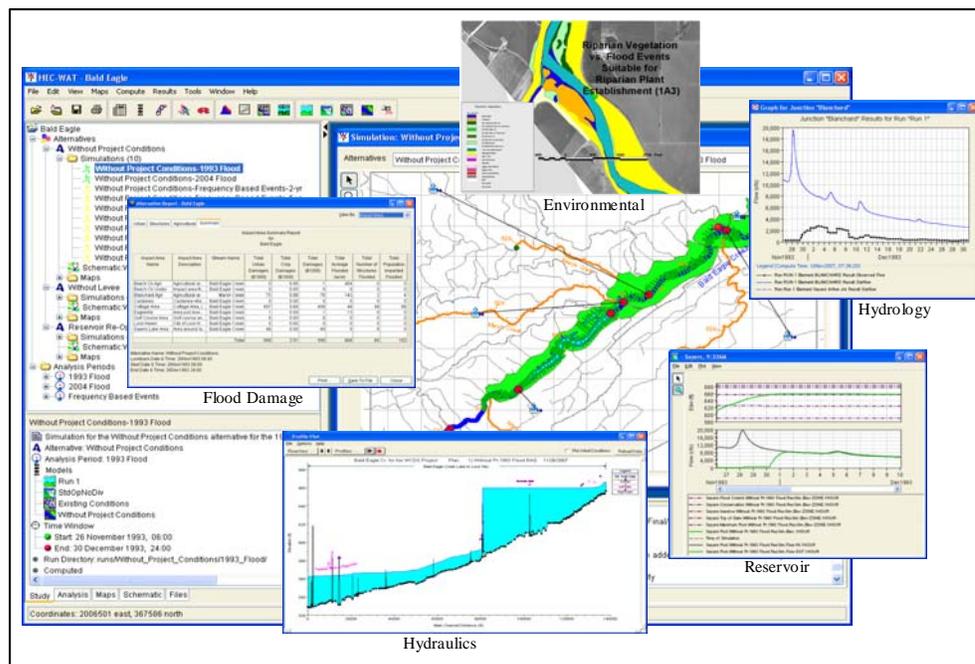
US Army Corps  
of Engineers®

## Flood&Coastal Storm Damage Reduction R&D Program

# HEC-WAT

### Description

The Watershed Analysis Tool (HEC-WAT) is being developed by the Hydrologic Engineering Center (HEC). The goal of the WAT is to help U.S.



### HEC-WAT integration of models

Army Corps of Engineers offices perform all types of water resources studies in a coordinated and comprehensive fashion. The WAT accomplishes this goal through an interface that streamlines and integrates tools commonly applied by the District and Division offices to perform water resources studies in an efficient and coordinated manner. The Corps, along with its study partners, conduct water resources studies. These studies often begin with the definition of problems, issues, and opportunities and continue with various analyses to determine impacts so that appropriate decisions may be made. The studies often require hydrologic, hydraulic, economic, environmental, and social impact analyses. In most cases, varying sections within a District office perform these analyses independently with the reporting and visualization of modeling results through independent models. For the project study, coordination, file/data sharing, logistics, reporting of modeling results, and status reporting are often a problem for the modeling teams as well as project management. To address these needs, HEC has developed the WAT. It will streamline and integrate the tools commonly applied by the District and Division offices so that more efficient and coordinated modeling and planning may be performed.

Software such as HEC-Hydrologic Modeling System (HMS), HEC-Statistical Software Package (SSP), HEC-River Analysis System (RAS) and the ArcGIS extension (HEC-

GeoRAS), HEC-Reservoir System Simulation Program (ResSim), HEC-Data Storage System Visual Utility Engine (DSSVue), HEC-Flood Impact Analysis (FIA), HEC-Ecosystems Functions Model (EFM), and HEC-Geospatial Hydrologic Modeling System (GeoHMS) are currently implemented within HEC-WAT, thus allowing a study team to perform many of the necessary hydrologic, hydraulic, and planning analyses all orchestrated from a single interface. The WAT is able to integrate various pieces of software knowing little about the individual software's code, through the concept of a "plug-in". The WAT provides a framework to coordinate the study, while the individual pieces of software provide the analytical computations. As the WAT matures, additional pieces of software outside of the HEC family (i.e., Riverware, Adaptive Hydrology/Hydraulics (ADH)) will be incorporated into the WAT that will allow additional analyses and decisions to be made.

The WAT's common, central framework allows the user to: load GIS based layers; establish stream networks and schematics; identify locations where models would share information; define the modeling programs and their sequence order; import and edit existing models; develop new models; organize and store data; organize and develop alternatives, analysis periods, and simulations; run modeling programs directly; and, view and compare alternative results.

**Benefits** HEC-WAT modeling teams will benefit because they will develop their models in a closely coordinated manner, track progress of other models, and automatically retrieve results from previous model runs thus assuring more efficient and coordinated results. The management team will benefit by using a common interface to track project status through each modeling component and displaying results during public and project status meetings.

**Status** The alpha version of HEC-WAT was demonstrated at a Peer Review in June 2006, with 14 different Corps offices and one engineering firm representative participating in the review. The development process began in FY 2004 and a beta version of the WAT has now been released.

**Distribution Source(s)** HEC-WAT will be obtainable upon release from the HEC Web site at the following location: [www.hec.usace.army.mil](http://www.hec.usace.army.mil).

**Available Documentation** Documentation for HEC-WAT currently consists of a user's manual, which will also be downloadable from the HEC Web site. In addition to the user's manual, the software comes with an example data set. User's can install the example data set and use it as a teaching aid on how to use the WAT.

**Available Training** There is currently no separate training course based solely on using HEC-WAT. However, the WAT is introduced in lectures within the "Water & Watershed" and "CWMS Modeling for Real-Time Water Management" classes offered at HEC. To find out more about these classes, and when they are offered, visit the HEC Web site under the training area.

**Available Support** Support for HEC-WAT will be available to all Corps employees. Corps users will be able to e-mail or call HEC with questions and/or comments. Additionally, all users of the WAT will be able to provide bug reports or comments with suggestions through the HEC Web site from the WAT specific page.

**Application** Beta tests have been performed on the Dry Creek Flood Control System near Healdsburg, California, the Putah Creek watershed in California, and the Bald Eagle Creek watershed in Pennsylvania.

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**Partners** N/A.