Aquaveo News

WATERSHED MODELING SYSTEM (WMS) EDITION

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"Wouldn't it be nice if WMS downloaded all your data from the internet or your local data storage system and automatically setup your model for you?"

Modeling Roadway Embankments

The USGS provides digital elevation data for anywhere in the world that can be downloaded from http://seamless.usgs.gov/. These USGS Digital Elevation Model (DEM) files are very useful for watershed modeling, but they also present some problems. One problem is that linear structures such as roads, railroads, and canals may not be accurately represented in a DEM. When delineating a watershed model from a DEM, flow paths tend to run across these linear features rather than parallel to them as you would expect.
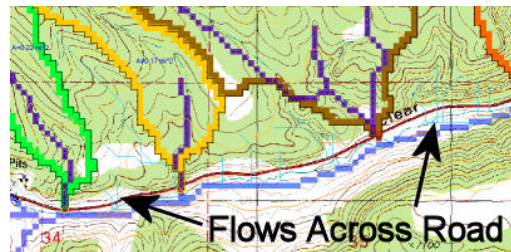
Coming Soon to WMS

Wouldn't it be nice if WMS downloaded all your data from the internet or your local data storage system and automatically setup your model for you? The next version of WMS (WMS 8.1) will be one step closer to having this capability.

When the Beta version of WMS 8.1 is released, it will have a tool called the "Hydrologic Modeling Wizard". This tool will step you through the entire process of obtaining all the data for a watershed model, delineating a basin, and defining your hydrologic data. One important feature of this tool is that it uses web service technology to download digital aerial photography, topographic maps, elevation, and land use data.

The hydrologic modeling wizard will step you through each of the steps involved in creating a hydrologic model…the wizard will help you select a
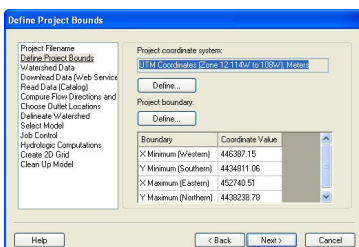
Aquaveo and HY-8

The Federal Highway Administration gave Aquaveo a contract to develop the Windows-based HY-8 7.0 and 7.1 culvert analysis software. HY-8 6.1 and other previous versions of HY-8 were trusted programs that incorporated the methods in FHWA's HDS-5 document into a computer program. HY-8 was used for several years by engineers throughout the United States. But the HY-8 6.1 software was written for a DOS interface which was becoming outdated, as you can see from a screen capture of the program below:
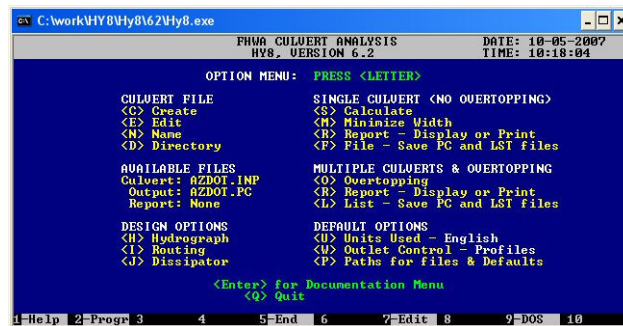
The FHWA gave Aquaveo the task of converting all the analysis code in HY-8 6.1 to a modern, object-oriented programming language (C++) and writing an updated, windows-based graphical user interface for the analysis code. This effort was led by the world-renown Dr. Rollin Hotchkiss at BYU, with the assistance of long-time HY-8 expert Phil Thompson. Dr. Jim Nelson and Dr. Chris Smemoe led the effort of converting this vast amount of code, and they were assisted by graduate students such as Brian Rowley and Eric Jones. The result was HY-8 7.0, a robust, feature-filled windows-based application for analyzing culverts.
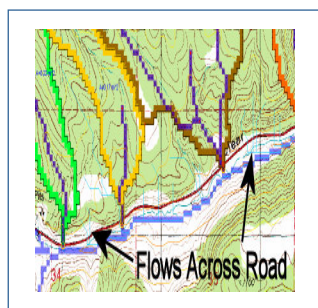
"The FHWA gave Aquaveo the task of converting all the analysis code in HY-8 6.1 to a modern, object-oriented programming language (C++) and writing an updated, windows-based graphical user interface for the analysis code."

When delineating a watershed model from a DEM, flow paths tend to run across linear features (such as roads) rather than parallel to them as you would expect.

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Fortunately, WMS provides tools for correcting this problem. To solve this problem, you place stream arcs parallel to and upstream from the road's embankment. When a flow path reaches the stream, it will be assigned to the basin associated with the stream. Stream arcs are a powerful tool for assigning areas to the proper sub-basins.
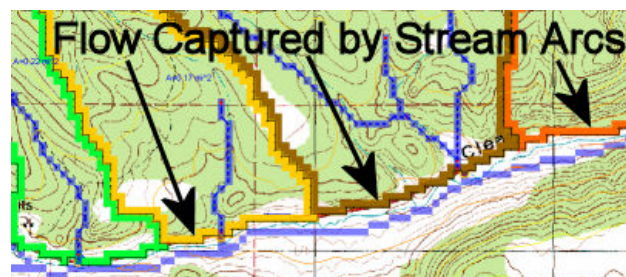
Organizations Using Aquaveo Software

Did you know that the software developed by Aquaveo, including WMS, GMS, and SMS, is used by over 8,000 engineering consulting firms, universities, and government agencies in over 60 countries around the world?

In addition, Aquaveo has ongoing software development and consulting contracts with many federal, state, and local government agencies. Our software also supports models developed by many of these agencies. Some of the government entities we have worked with in the past and continue to work with include the following:

1. The US Army Corps of Engineers

2. The US Federal Highway Administration

3. Los Angeles County Department of Public Works (and other counties in southern California)

4. The US Geological Survey

5. The US Department of Energy

6. The UN Educational, Scientific, and Cultural Organization

WMS is used by government agencies such as the US Army Corps of Engineers, the US Federal Highway Administration, and the US Department of Energy

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project filename, define a project boundary, obtain data from the internet or your company's network, delineate your watershed and sub-basins, and define parameters for a selected hydrologic model.

One really great feature of the hydrologic modeling wizard is the ability to define your project boundary using the Virtual Earth map locator tool.
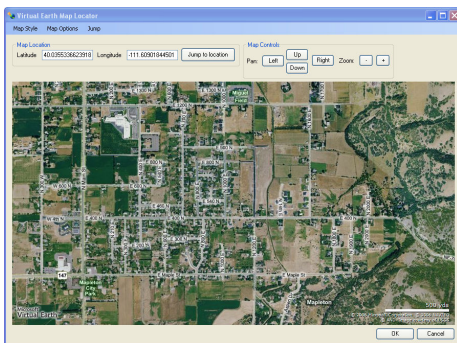
With the Virtual Earth map locator tool, the web service client features, and the other capabilities in the hydrologic modeling wizard, your data collection and watershed modeling projects will be much easier to complete in WMS 8.1.

"With the Virtual Earth map locator tool, the web service client features, and the other capabilities in the hydrologic modeling wizard, your data collection and watershed modeling projects will be much easier to complete in WMS 8.1."

When most of the full-time employees at BYU's EMRL moved off-campus and Aquaveo was started, the people who had their "hands in the HY-8 7.0 code" moved to Aquaveo. By this time, we had a contract to make some improvements to HY-8 7.0. The FHWA wanted tools such as an energy dissipation calculator, a database of shapes in HY-8, and the capability to model embedded culverts. Most of the parts of this new contract have now been completed and will be incorporated into HY-8

7.1, shown below:
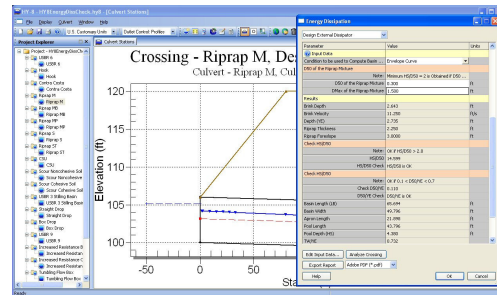
Upcoming Training Courses

The Aquaveo staff is committed to providing training courses that improve your knowledge of the Groundwater Modeling System (GMS), Surfacewater Modeling System (SMS), and the Watershed Modeling System (WMS) software. These are high quality, hands-on training courses taught by experienced instructors who are experts in their specialty. We also provide custom training and consulting services to your company on demand. The following training courses are scheduled during the next few months:

- **1D/2D Hydraulic Modeling with SMS and TUFLOW** (October 23-25, 2007 | Park City, Utah USA)

- **MODRAT & Orange County Hydrologic Modeling with WMS** (November 5-7, 2007 | Alhambra, California (LA County Dept. of Public Works Headquarters))

- **Advanced Topics in Surface-Water Modeling with SMS** (December 4-7, 2007 | Orem, Utah USA)

Register for these courses today! You can register online by visiting www.aquaveo.com and clicking on the "Training Courses" link or by calling Aquaveo at 1.801.691.5528. You can also send an e-mail to training@aquaveo.com