



SAM Hydraulic Design Package for Channels

Technology

SAM, a hydraulic design package with an integrated system of programs, provides hydraulic, sediment transport, and sediment yield calculations for the design of stable channels. Using SAM, civil engineers, geologists, scientists and others can rapidly calculate channel size in both fixed and mobile streams. SAM meets engineers' need for a qualitative, easy-to-use methodology for making analyses associated with the preliminary design, of flood-control channels and stream restoration projects. The package is especially helpful in preliminary screening of alternatives where funds for more extensive investigations are not available.

The SAM package was developed through the Flood Damage Reduction Research Program and is designed to run on PC computers. The software is currently available in Windows, and is sometimes called SAMwin. Three main modules of the program can be used separately or in tandem for various hydraulic design situations

Problem

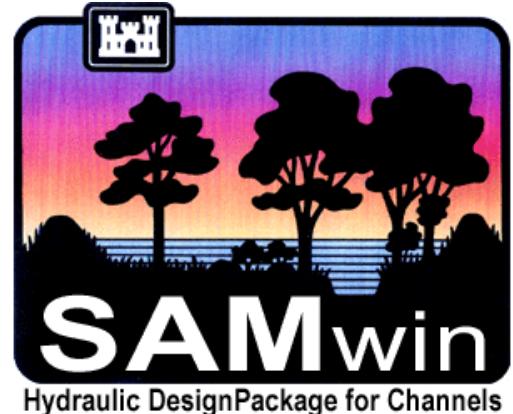
Before the existence of SAM, considerable time was spent on computations for hydraulic design calculations, and there was a lack of consistency in methodology. Also it was difficult to switch from hydraulic calculations to bed material sediment transport rating curves to sediment yield. Another problem involved the difficulty in applying a variety of sediment transport functions. There are 20 such functions in SAM. In the past, the design of stable channels focused on the erosion process, which is only one of five fundamental processes in sedimentation, erosion, entrainment, transportation, deposition, and compaction. SAM provides the computational capability to include all five processes.

Expected Cost To Implement

SAM software and support is free to U.S. Army Corps of Engineers Districts, Divisions, Laboratories, and Centers. Ayres Associates, Fort Collins, CO, developed a Windows-based users interface for the SAM package through a Cooperative Research and Development Agreement (CRDA) with the U.S. Army Engineer Research and Development Center (ERDC). As part of the agreement, Ayers has the right to market the SAM package to all users outside the Corps of Engineers.

Benefits/Savings

SAM can be used to rapidly determine whether there is channel instability on a project, and then to determine the magnitude of that instability. It provides an inexpensive way to make a reliable determination of the extent of investigation a project will require. SAM can also be used to evaluate the relative effects on channel stability, in terms of reducing aggradation and/or degradation, of various project proposals. SAM can save project resources because of its ease of use and low input data requirements.



Status	Under agreement with ERDC, Ayres Associates developed a Windows interface for the SAM package. This was released in 2002 as SAMwin replacing the older DOS version. As part of the agreement, Ayers has the right to market the SAMwin package to all users outside the Corps.
ERDC POC	James R. Leech CEERD-HC-R, e-mail: James.R.Leech@erdc.usace.army.mil Phone: 601-634-3025.
Distribution Sources	USACE users can contact Dinah McComas, Phone: 601-634-2157, e-mail, Dinah.N.McComas@erdc.usace.army.mil or SAM ERDC-CHL-MS or SAM@erdc.usace.army.mil . Non-Corps users should contact Linda Brock at Ayers Associates, e-mail, brock@AyersAssociates.com , Phone: 970-223-5556
Available Documentation	SAM User's Manual contains information related to the theoretical development of the program as well as user's instructions and example problems. The User's Manual comes with the package in PDF format and is installed on the user's computer along with the computation modules. It is available on the Internet at http://chl.wes.army.mil/software/sam/docs.htm
Available Training	Hands-on training is also provided for USACE users as part of the PROSPECT course, "Flood Control Channel Design." More information on PROSPECT courses is available at the USACE Professional Development Support Center's Web site at http://pdsc.usace.army.mil/ or contact David L. Derrick, ERDC, Coastal and Hydraulics Laboratory, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, e-mail David.L.Derrick@erdc.usace.army.mil Workshops on the application and use of the SAM package can be scheduled on an as-requested basis and can be tailored to the requesting group's needs. Contact Dinah McComas, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199; e-mail: Dinah.N.McComas@erdc.usace.army.mil or SAM@erdc.usace.army.mil Phone: 601-634-2157.
Available Support	USACE users can contact Dinah McComas, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199; e-mail: Dinah.N.McComas@erdc.usace.army.mil SAM ERDC-CHL-MS or SAM@erdc.usace.army.mil Phone: 601-634-2157. Non-Corps users should contact Lyle Zevenbergen, e-mail lylez@AyersAssociates.com for installation and software questions. More information on SAM can be found at http://chl.wes.army.mil/software/sam/