

NATIONAL IMPLEMENTATION OF AND ENHANCEMENTS TO THE STREAMSTATS WEB APPLICATION

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StreamStats is a Web application that provides streamflow statistics and basin characteristics for U.S. Geological Survey (USGS) data-collection stations and for user-selected ungaged sites on streams. This information is needed for the design of structures, such as dams and bridges, and for water-resource planning and management. Example information from StreamStats includes such streamflow statistics as the 100-year flood, the mean annual flow, and the 90-percent-duration flow; and such basin characteristics as drainage area, stream slope, and percent forested area. Users select sites on maps displayed in the StreamStats user interface. If the selected site is a USGS data-collection station, information for the station is provided from a database. If the selected site is on an ungaged stream, the location of the site is transferred over the Web to a server running a Geographic Information System (GIS) application, which determines the drainage-basin boundary for the site, measures a number of basin characteristics, and solves regression equations to estimate the streamflow statistics for the ungaged site. This process is completed in a few minutes, whereas prior to StreamStats, the manual process could require more than a day to complete for a large basin.

StreamStats is available on the Web at <http://streamstats.usgs.gov>. This Web site provides a detailed description of the application, user instructions, discussion of limitations, definitions of terms, answers to frequently asked questions, links to documentation, and links to the individual applications for each implemented State. Currently (December 2005), the application has been implemented for four States: Idaho, Pennsylvania, Vermont, and Washington. Eleven States are scheduled for implementation during Federal fiscal year 2006 (October 1, 2005 to September 30, 2006), and seven additional States are currently committed to implementing the application during subsequent fiscal years. Implementation is usually funded through the USGS Cooperative Water Program, whereby State and local agencies share implementation costs with the USGS. A goal of the USGS is for full national implementation of StreamStats by the end of fiscal year 2009.

The GIS application on which StreamStats runs is currently being replaced with a new application that, when completed, will allow improved scalability, easier maintenance, and a better development environment for advanced functionality. This new version of StreamStats will also allow remote access to StreamStats functionality by other Web applications. In addition, several enhancements to StreamStats are being developed, including the ability to determine the National Hydrography Dataset (NHD, <http://nhd.usgs.gov>) reach address, the ability to locate point events, such as dams and effluent discharges, along the NHD, and the ability to adjust estimated streamflow statistics for ungaged sites based on the flow per unit drainage area of the statistics for upstream or downstream USGS streamgaging stations.