



US Army Corps
of Engineers®

Flood & Coastal Storm Damage Reduction R&D Program

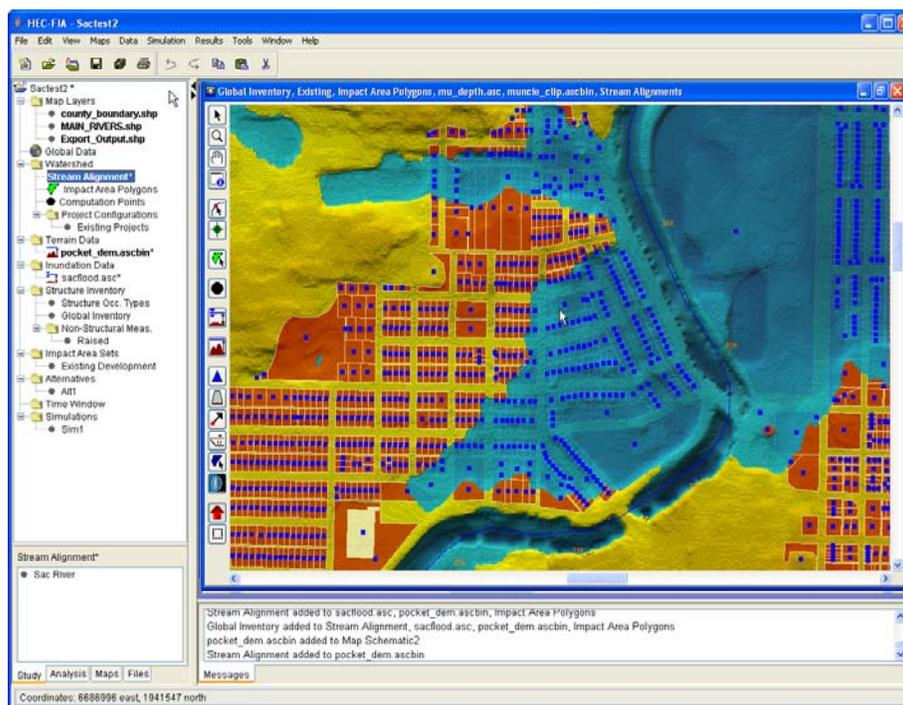
HEC-FIA

Description

The Hydrologic Engineering Center's Flood Impact Analysis software (HEC-FIA) is a stand-alone application that provides state-of-the-art techniques to calculate post-flood or forecasted-flood impacts for a user-specified event. It is also used to determine flood damage reduction benefits attributed to individual flood-control projects (reservoirs, levees, and diversions) and for real-time response activities as part of the U.S. Army Corps of Engineers Water Management System.

For the specified event, HEC-FIA computes urban and agricultural flood damage, area inundated, number of structures inundated, population at risk, and life loss. The life loss computation in HEC-FIA is based on the LifeSim methodology developed at Utah State University, and includes consideration of many factors including initial distribution of population for day and night, redistribution of that population base on dam failure warning, evacuation potential, and sheltering opportunities. Damage analysis of crops involves a complex series of factors and considerations including the type of crop, season, cropping patterns, duration and magnitude of flooding, and much more. Monetary damage values for agriculture are determined from investment losses, mature-crop price values, harvest costs, and may include secondary business losses.

The new version of the software, HEC-FIA 2.1 (beta), includes a graphical user interface with multiple GIS capabilities.



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<https://swwrp.usace.army.mil/>

Benefits HEC-FIA 2.1 contains capabilities that allow it to access and utilize the growing amount of GIS information available to efficiently perform flood damage related studies at all levels of detail. These data include:

Individual Structure Damage Computations

HEC-FIA 2.1 allows users to compute damages structure by structure using a flood inundation depth grid. Users are able to access individual structure damage reports in table format or through a GIS interface that allow them to select a structure and view the depth and damage at that structure for a flood event.

Non-Structural Measures Analysis

HEC-FIA 2.1 contains capabilities that facilitate analyzing flood damage reduction for nonstructural measures. It allows users to quickly apply nonstructural measures to a structure or group of structures, compute the modified flood damage, and visualize the damage reduction attributable to the nonstructural measure for an event.

Structure Inventory Generation

Flood damage reduction studies and project benefit analyses are dependent on extensive structural inventories and/or stage damage relationships. Collecting structure and crop data can be extremely expensive. Often, existing structural inventories and stage damage relationships are dated and incomplete, and damage relationships for crops are non-existent. The cost of performing rigorous structure and crop surveys are often prohibitive and old data or crude assumptions are frequently used instead. HEC-FIA 2.1 contains capabilities that will allow users to generate approximate structure inventories from readily available data, including land use maps, census block data (FEMA HAZUS), and parcel maps.

Status HEC-FIA 1.3 is available to all Corps Districts as part of the Corps Water Management System. HEC-FIA 1.3 does not include the GIS enhancements that will be available in HEC-FIA 2.0. HEC-FIA 2.1 is beta release and available by contacting HEC. It is scheduled for full release on the HEC FTP site with documentation by the end of FY10.

Distribution Source(s) HEC-FIA Beta 2.1 can be obtained through the HEC ftp site at the following location:
<ftp://ftp.hec.usace.army.mil/public/HEC-FIA/>

Available Documentation Documentation for HEC-FIA currently consists of a User's Manual (version 1.3). A quick-start guide is available with the beta version of HEC-FIA 2.1 on the ftp site. A full technical reference manual, applications guide, and user's manual will be available at the end of FY 10.

Available Training Training for HEC-FIA is currently available through the Mapping, Modeling, and Consequence (MMC) center. A course is provided for members of the MMC each December at HEC. HEC-FIA is introduced in the "Risk Analysis for Flood Damage Reduction Studies" class and the "Corps Water Management System" class offered at HEC. To find out more about these classes, and when they are offered, visit the HEC Web site.

Available Support Support for HEC-FIA is available to all Corps employees. Corps users can either e-mail or call HEC with questions and/or comments.

Application HEC-FIA 2.1 (beta) is being used as the main tool to estimate consequences (economic, population at risk, and life loss) in support of risk assessment for the Corps' Dam and Levee Safety programs.

Point of Contact Jason Needham, Hydrologic Engineering Center, Davis, CA, (530) 756-1104
Email: Jason.T.Needham@usace.army.mil

Partners N/A.