

**HAZUS STATEWIDE MULTI-EVENT FLOOD STUDY MAPS
ALL NEW 2007 STATEWIDE FLOOD RISK
GIS LAYERS & COUNTY SUMMARY REPORTS
FOR 10, 50, 100, 200 & 500 YEAR FLOODS
NOW AVAILABLE HERE FOR DOWNLOAD**

In 2006, PEMA completed a statewide study of a 100 year flood event using FEMA's HAZUS-MH risk analysis software. In 2007, PEMA concluded a broader statewide study using the latest version of HAZUS-MH MR 2.0 that includes damage estimates for 10, 50, 100, 200 and 500 year flood events. The study computed damages in dollars for total economic loss, building and content damage, and other economic impacts. The study also estimated the number of damaged homes and the degree of damage to those homes.

With these results, Statewide GIS shapefiles for economic losses and damaged homes were created for each flood scenario using ArcMap 9.1. These files can be displayed using ArcMap 9.0 or higher version - you do not need the HAZUS software to use them. They can be overlaid on other GIS maps (county, local roads, street maps, municipal maps, etc) to show the location and extent of potential flood damages for each of the flood severity levels.

The Flood Study maps and information contained in these files can be used by local emergency management agencies, GIS and planning departments, watershed organizations, and other interested parties for hazard identification and risk assessment, mitigation planning, and flood response training activities. **IT IS IMPORTANT TO NOTE:** These files are estimates of damages and locations generated by the FEMA HAZUS flood analysis model. These files do not include all possible flood risk areas and are not based on actual past flood events. The data should not be used to determine regulated floodplain areas or the location of individual homes and buildings.

The GIS files for the various flood events have been compressed (ZIP files) and can be downloaded from this webpage. The size of the files range from 4 MBs to 25 MBs - download time may be considerable depending on the speed of your Internet connection. Contained in each ZIP file are Pennsylvania Statewide Flood Study ARCGIS shapefiles generated with the HAZUS Multihazard Flood Risk Analysis program.

The shapefiles represent all census blocks affected by each flood event. The economic loss layer shows total losses in thousands of dollars. The damaged homes layer shows the number of flood-affected residential structures. Additional information for each layer is contained in its attribute table which can be viewed and edited in ArcMap. The display can also be modified or enhanced by changing the layer's properties in ArcMap (change the display to "classified" and the number of classes to "10," for example).

COUNTY LEVEL DATA

Also included in each ZIP file is a Statewide County shapefile. County level HAZUS results can be selected from the Statewide HAZUS layer using the SELECT feature in ArcMap. Select the County of interest and then use SELECT BY LOCATION to identify the HAZUS census block

data within that County ("select feature with centerpoint" in SELECTED COUNTY works best) and create a new county-level feature from the selection.

ECONOMIC LOSSES

The attribute tables for ECONOMIC LOSSES (ecloss) include Total Damage (in thousands of dollars), Building Damage, Content Damage, and a host of other economic loss estimates for each affected census block. Totals for these amounts can be calculated by right-clicking any column in the attribute table and selecting STATISTICS and reading the SUM total (again in thousands of dollars). This layer is currently set to display TOTAL LOSSES. You can change how this information is displayed by right-clicking on the layer in your ArcMap Table-of-Contents and opening its PROPERTIES. Selecting Graduated Colors and number of classes in the display will help in displaying higher-risk areas more graphically (Because of the number of census blocks displayed, you may have to reset the sample size under SYMBOLOGY to properly display GRADUATED COLORS - consult ArcMap Help for more info). From PROPERTIES you can also select another field to be displayed (Damages to Buildings or Content Damage, for example). These compressed files are about 10MB each.

Download Economic Loss GIS files here:

[Losses - 10 Year Flood](#)

[Losses - 50 Year Flood](#)

[Losses - 100 Year Flood](#)

[Losses - 200 Year Flood](#)

[Losses - 500 Year Flood](#)

DAMAGED HOMES

This shapefile displays the census block areas that contain flood-damaged homes for each flood event scenario (10, 50, 100, 200 and 500 year floods). The attribute table includes total homes at risk, the total number damaged, substantially damaged homes, and homes by percent of damage for each of the affected census blocks. Totals for these amounts can be calculated by right-clicking any column in the attribute table, selecting STATISTICS, and reading the SUM total (again in thousands of dollars). You can change how this information is displayed by right-clicking on the layer in your ArcMap table-of-contents and opening its PROPERTIES. Selecting Graduated Colors and number of classes in the display will help in displaying higher risk areas more graphically. (Because of the number of census blocks displayed, you may have to reset the sample size under SYMBOLOGY to properly display GRADUATED COLORS - consult ArcMap Help for more info). From PROPERTIES you can also select another field to be displayed. Compressed files are about 4 MB in size.

Download Damaged Home Count GIS shapefiles here:

[Damaged Homes - 10 Year Flood](#)

[Damaged Homes - 50 Year Flood](#)

[Damaged Homes - 100 Year Flood](#)

[Damaged Homes - 200 Year Flood](#)
[Damaged Homes - 500 Year Flood](#)

EXPORTING ATTRIBUTE TABLES

Attribute tables of the GIS shapefiles can be exported out as DBF files using the OPTIONS button in the Attribute Table display. DBF files can be opened with MS Excel and resaved as spreadsheet files (.xls) for data manipulation, calculation and totaling, etc.

COUNTY SUMMARY REPORTS

HAZUS Summary Reports for all 67 Pennsylvania counties can also be downloaded from this site. Download, save and unzip these two files - each county will have summary reports for each of the 5 flood scenarios.

Download county HAZUS summary reports here:

[HAZUS County Flood Risk Summaries \(Counties A thru K\)](#)

[HAZUS County Flood Risk Summaries \(Counties L thru Z\)](#)

HAZUS FLOOD STUDY EXPORT FILES

If you are using the HAZUS MR2 risk analysis software, the original HAZUS studies for your county are available as export files. These study files can be imported directly into HAZUS for review and/or additional studies at the local level. These files are very large but they can be transferred over the Internet or provided on CD upon request - see contact information below if you are interested in acquiring the HAZUS base study export files for your county.

More detailed local studies can be modeled with FEMA's HAZUS Multi-Hazard Risk Analysis software. For more information about using HAZUS for local hazard mitigation, contact the State HAZUS Mitigation Specialist at **(717) 651-2142** or by email at [HAZUS Tech Specialist \(jyu@pa.gov\)](mailto:HAZUS_Tech_Specialist@pa.gov).