Customer and Data Services (CDS)

Hazus Release 2.2

User Release Notes

Version 1.0

February 4, 2015

Document Management History

Revision History

Version Number	Date	Summary of Changes	Team/Author
1.0	02/04/15	Final Version	Risk MAP CDS

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1. Introduction

Hazus Release 2.2 is a full release of the software. The new release contains identical functionality to Hazus 2.1, but is compatible with ArcGIS 10.2.2 and Windows 8. Compatibility with ArcGIS 10.0 and Windows XP will no longer be supported for Hazus 2.2. No 2.2 service packs are available for download at this time.

In addition to the software release, an updated version of the Hazus default data will also be released concurrently with Hazus 2.2. The new default data is sourced primarily from Census 2010 data, and includes updated data for the General Building Stock (GBS) and other resources.

Both Hazus 2.2 and the updated default data will be released via the MSC Hazus download webpage (http://msc.fema.gov) for free, public download. The scheduled release date is January 12, 2015. Upon deployment of Hazus 2.2 and the Census 2010 data, Hazus 2.1 and Census 2000 data will no longer be available for download. To request a copy of Hazus 2.1 or previous versions of the software and/or data, please contact the FMIX at 1-877-FEMA-MAP or FEMAMapSpecialist@riskmapcds.com.

The purpose of this document is to describe the functional changes and known issues found in the Hazus 2.2 release and associated data updates.

2. Contents of the Release

Flood Model:

- Changes to riverine hydraulics to make use of spatial computation changes in ArcGIS 10.2, such that reaches and depth grids are calculated similarly to Hazus 2.1
- Changes to the Quick Look and Enhanced Quick Look functionality to ensure analysis completion
- Updates to the Shelter and Agricultural parameters menus to allow full functionality in ArcGIS 10.2
- Updates to the USGS DEM automated import, such that DEM import into Hazus is successful

Earthquake Model:

- Changes to the MapControl functionality to ensure proper display and usage of the ArcGIS mapping interface
- Addition of primary key values for multiple, simultaneous layer editing
- No explicit building count data exists in the census for multi-family dwellings – statistics are tabulated based on the number of dwelling units, in ranges (duplex, triplex/quad, 5-9 units, 10-19 units, etc.). Previously, Hazus used an assumed floor area per housing unit to estimate square footage from the census' housing unit counts, by Residential 3 (RES3) sub-class (see Table 3.5 in the EQ Technical

Manual). Then building count was derived by dividing those square footages by assumed RES3 sub-class building sizes, per the Hazus standard.

- In this update, two changes were made to RES3:
    - Newly available data from the Environmental Impact Assessment (EIA) was used to develop housing unit floor area assumptions that varied by census region (updating Table 3.5).
    - Building count estimates were made directly from the housing unit data by assuming a typical unit count per building (rather than assuming a typical size per building and deriving counts from square footages). This makes the data more internally consistent.
- Three major data enhancements:
    - Incorporation of the new 2014 NEHRP soil amplification factors provided by Sehyan and Stewart (2014), described here: https://content.femadata.com/Hazus/EarthquakeProjects/USGS_Hazard/2014NEHRP_Soil/Seyhan%20&%20Stewart%202014%20New%20NEHRP%20Factors.pdf. These amplification factors are contained in the EqAnalParams.mdb in the Hazus earthquake program data folder. The changes are generally increases in the amount of amplification in softer soils at lower levels of ground motions and slight decreases at bedrock sites or at higher levels of ground motions. Hazus formatted data are available here: https://content.femadata.com/Hazus/EarthquakeProjects/USGS_Hazard/2014NEHRP_Soil/EqAnalParams.zip
    - Incorporation of the new 2014 USGS earthquake hazard mapping for the lower 48 States http://earthquake.usgs.gov/hazards/, which is the basis for the latest earthquake building codes in the U.S. These incorporate the latest hazard map data published by the USGS on a six year cycle for use in Hazus probabilistic loss estimation scenarios for 8 return periods, as well as for annualized earthquake losses. The data are provided in the usgs.mdb in the Hazus earthquake program data folder. Older versions of USGS ground motion data continue to be used for Alaska (2007), Hawaii (1998) and Puerto Rico (2003). The Hazus formatted ground motion data are available for download here: https://content.femadata.com/Hazus/EarthquakeProjects/USGS_Hazard/2014_USGSHazard/USGS.zip
    - Incorporation of earthquake mapping schemes that were rolled back to the Hazus 2.0 release. Users found that the earthquake mapping scheme updates in Hazus 2.1 produced anomalously low losses in many cases. In addition, the steel building distribution error in the New Mexico data was corrected. These corrected mapping schemes are incorporated in the Hazus 2.2 release.

Hurricane Model:

- New surface roughness coefficients were developed using NLCD 2011 LULC and tree canopy layers
- Tree coverage data was updated using the 2013 USFS Forest Inventory Analysis (FIA) Database (for tree type, tree height, and maximum stems per acre), the 2011 NLCD tree canopy percentages (to reduce the stems per acre in non-forested LULC pixels), and 2013 US Census TIGER data (for tree collection factors)
- NLCD 2001 was used for Hawaii, since this state was not included in NLCD 2006 or 2011 datasets
- Probabilistic hurricane wind speeds were updated based on a new hurricane event set very similar to the model used to build the current ASCE 7 maps, but the new Hazus event set is based on a few more years of climatology data for storm genesis points, sea surface temperatures, and wind shear.

Shell and Utility Items:

- Hazus registry changed to recognize ArcGIS 10.2.2 startup process
- Updates made to Crystal Reports to allow full report functionality on Windows 8 operating systems, and reflect Census 2010 data usage
- No changes made to CDMS, however some state data sets require manual changes to be usable in CDMS. See Section 3: Known Issues for more information.

Data Changes:

- Demographic, boundary (county, tract, block), and GBS data updated based on Census 2010. Specific source data for each data type is available in the metadata files included with each state.
- Dam data included in previous Hazus default data were removed due to new sensitivity requirements for critical infrastructure. This data will not be included in this release and is no longer publicly available.
- Street lengths included in previous Hazus default were not updated and will not be included in this release.

3. Known Issues

- Quantitative results obtained using the Hazus 2.2 Flood module may vary slightly from results obtained in 2.1 due to minor changes made by Esri in 10.2 spatial computation methods.

- Census blocks containing large percentages of water, which were removed from previous default Hazus data, will be included in this release.

- Some state data contains default security settings of read-only. During state wide data update operation using CDMS, ensure that the state data file (*.mdb) has read-write permission enabled. Right click on the file to view properties. Verify that the attribute read-only is unchecked on the state data file. Repeat this for the user's TEMP folder.

- Data topology settings within ArcGIS have changed between Census 2000 and Census 2010 data. Topology values in Census 2010 may not match those in Census 2000. These differences may result in slight gaps or overlaps between census boundary polygons. The scale of these discrepancies is minimal and is not expected to impact analysis.

- Default mapping schemes for Iowa are incorrect; a correct version and instructions for replacement are available through the Hazus Help Desk

- Default flood mapping schemes, census block types for flood, and entry NFIP dates are incorrect; a corrected version will be available to users in the near future