



Use of Wetland Designations as Supplement to Existing Zone A Floodplain Boundaries

The use of areas designated as wetlands by the National Wetlands Inventory (NWI) to supplement existing Zone A floodplains involves adding those areas that have been designated as 'wetlands' by NWI to the Special Flood Hazard Area (SFHA) in the effective Flood Insurance Rate Maps (FIRMs). This procedure is done to ensure that all flood prone areas are publicized as such on any new FIRMs that are produced.

Why Add NWI Data to Existing Zone A areas?

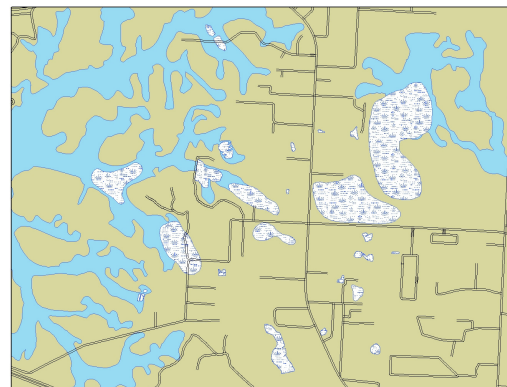
As FIRMs are updated, the use of external sources of data should be used in order to most accurately depict the floodplain boundaries. NWI data contains detailed information of areas that have been determined to be 'wetlands'. The fact that by definition, wetlands are areas where the water table is at or near the surface, or the land is covered by shallow water should be reason enough to determine that the land is flood prone and thus, allow its inclusion into the Zone A areas of the floodplain.

While NWI areas may be added to the existing Zone A flood areas, they may not be used in determining new Zone AE or VE boundaries. The NWI classification is reserved for areas that meet one of three classifications. They must, at least periodically, support predominately hydrophytes, or consist mostly of undrained hydric soil, or be an area that is saturated or covered by shallow water at some time during the growing season. Because Zone AE and VE areas are those where the base flood elevations have been determined, and the criteria for wetlands classification do not involve the detailed estimation of water-surface elevations,

the inclusion into areas with known flood elevations cannot be made. Zone A flood areas, however do not take into account any flood elevation information, so it is acceptable to supplement these areas with other areas of unknown flood elevations.

Method of Incorporating the NWI data into Zone A Flood Boundaries

Once it is determined that NWI data will be used to supplement the exiting Zone A areas, there are a few procedural steps that should be followed in order to ensure that the floodplain boundary topology will be maintained and that the NWI data will not replace any existing Zone AE or VE data. The first thing is to select the NWI data that will be used. This can be accomplished by querying the NWI dataset to select the data that is classed as 'wetlands'. The results of this query should be exported as a shapefile as this represents all of the data that will be considered for inclusion.



The above image shows the effective flood areas in blue and the NWI data with the white/blue symbology.

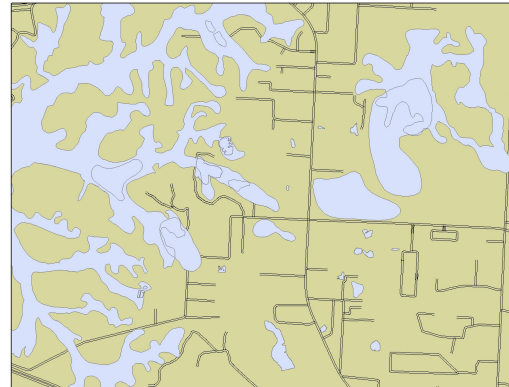
This represents the data that will be combined to supplement the Zone A flood areas.

At this point, validation of these chosen areas should take place. The extent of this validation could range from simply a visual inspection of the NWI data against the orthophotos to determine their authenticity to comparing the NWI data with a separate dataset, such as soil type data or digital elevation data. Digital soils data developed by the National Resources Conservation Service (NRCS) is often available and may be useful in conjunction with digital elevation models to show wetlands and connectivity to NWI data. These data sets may be useful when utilized together to refine or slightly expand the NWI polygons and map new Zone A areas.

Another consideration that should be made is the size of the individual NWI areas that will be added to the Flood Hazard Area dataset. Since some of the areas that remain in the NWI data from the two previous queries could be very small, a minimum acceptable size should be determined to avoid including small flood areas that are inconsequential to the overall flood area and only serve to clutter the map with unnecessary labels. A size of no less than 2500 square feet is recommended, meaning that any and all NWI polygons that are less than 2500 square feet should be deleted at this point. This size was determined with consideration of FEMA's accuracy regulations of 1/10th of the map scale. On a 1" = 500' scale panel, 1/10th of the map scale is 50'. Using that benchmark, an area that is 50' by 50' is 2500 square feet. At this point, the data that will supplement the Zone A flood areas has been chosen. However, larger areas may be chosen for removal after practical considerations such as hill slope or geography are considered. In addition, areas where map accuracy issues are identified may also be removed.

Preparation of the existing floodplain data is required before this data can be added to the Zone A areas. The current Zone X data must first be deleted. This can be done by querying the floodplain data for flood zone equal to 'X'. The selected data can be deleted. With the Zone X areas deleted, a 'Union' procedure can be run to combine the datasets that contain the NWI data and the floodplain data. This will combine all areas from both datasets into one, and will

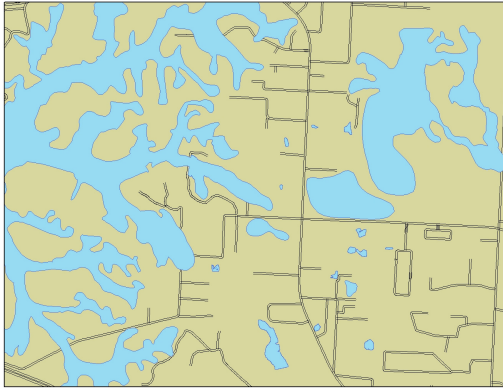
combine all attributes from both datasets into one database.



The above image shows the NWI data and the floodplain data after the "Union" process

In this database, the next thing to be done is to attribute the new Zone A areas that were created from the NWI data. This is done by running a query to select all areas that have Flood Zone = '' (blank). With these selected, calculate those records to a value of 'A'. Next, select all records with Flood Zone equal to 'A' and export those records as a shapefile. Start editing on the newly created 'Zone A' shapefile and merge all data together. Once this is completed, explode the dataset to separate the multi-part features.

Now that the Zone A areas have been successfully modified, they can be placed back in to the floodplain file to complete the entire flood area file. Using the original floodplain file, where the Zone "X" areas have already been removed, apply the same methodology to delete the Zone 'A' areas. Since these now represent the 'old' Zone 'A' areas, they are no longer needed. With the edit session still active, select and paste the newly created Zone 'A' polygons into that floodplain file. It should now contain all the appropriate flood zones, except for Zone 'X'. At this point ensure that all polygons in the file have their appropriate flood zone value attributed in the database. The next step is to recreate those deleted Zone 'X' areas. This is done by running a 'Union' process on the newly created floodplain file and the county polygon file. This essentially will fill in all the space that is not currently occupied by any of the other flood zones. Next, the Zone 'X' areas should be attributed. Since they should be the only polygons without attribution at this point, select all areas with a Flood Zone = '' (blank) and calculate those to a value of 'X'. Once this is done, the Zone 'X' areas should be exploded.



The above image shows the combined NWI data and floodplain data in one dataset. The two formerly separate datasets are now indistinguishable

The preceding steps will create a shapefile that represents the entire county floodplain. In order to create and validate the topology, however, this shapefile must be converted to a coverage. This is accomplished with ArcToolBox's 'Feature Class to Coverage' tool. Once this tool has been run and the coverage has been created, use the Coverage Toolbox to 'Build' the topology from the newly created coverage for both lines and polygons.

These lines and polygons represent the spatial data that will go in to the creation of the DFIRM projects and their respective databases should be designed and attributed according to FEMA specifications.

It should also be noted that while many of these individual steps need to be manually initiated, the use of ArcToolBox and ArcMAP's querying abilities, this overall process is, in effect, automated. Also, once this process becomes more established and time tested, further automation can be achieved with the use of scripts to initiate the series of queries and individual procedures. Additionally, this procedure may be repeated as many times as necessary to maintain accurate representation of updated wetlands data. When newer, more accurate wetlands NWI becomes available, this procedure may be run again, and the resulting floodplain file will reflect the latest updates to wetlands data in the Zone 'A' areas.

Also, we recognize the possibility that exceptional situations may occur when wetlands data is spatially compared to the existing floodplain data. There may be areas that require unique consideration while working through this

process. One of these situations may be the handling of '0.2% annual flood chance' areas. Situations where the wetlands data may overlay this data may suggest the need to change the '0.2% annual flood chance' areas to Zone A based on principles discussed earlier, and arguments could be made in favor of this point. The fact that the '0.2% annual flood chance' areas are determined through study of an area, however, may put those areas in much the category as the Zone AE and VE and they should not be altered. We believe that these circumstances of whether '0.2% annual flood chance' areas should be changed to Zone A based on NWI data should be looked at in a case-by-case basis and if need be, discussed with the community.