Geodatabase Design Enhancements for the North Carolina Floodplain Mapping Program (UC2114)

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Abstract

As the nation's first Cooperating Technical State, North Carolina has assumed primary responsibility of the state's DFIRMs. Because the North Carolina Floodplain Mapping Program's (NCFMP) original DFIRM database design was completed before the geodatabase became prevalent in the industry, and given that each mapping contractor has since adopted the geodatabase model, the NCFMP database was updated for compatibility with the geodatabase, and data was migrated to an SDE geodatabase/SQL Server environment to eliminate the costly conversion process required for submittal. This data migration involved modernizing original field definitions and redefining domain table values. To facilitate NCFMP's obligation to prepare the DFIRM geodatabase in a FEMA standard submission format, a Submission Standards Interoperability Tool was also developed. The increased efficiency for NCFMP and its contractors has simplified data maintenance and distribution, making critical data highly available to the general public, as North Carolina's DFIRM studies transition more quickly from preliminary to effective status.

Background

Since 1989, there have been 20 federally declared disasters in North Carolina. Damages from Hurricane Floyd alone in 1999 reached $3.5 billion. As a result of Hurricane Floyd, 4,117 uninsured and under-insured homes were destroyed. North Carolina's particular vulnerability to hurricanes and flooding make it crucial that communities and property owners have direct access to accurate information about flood risks. The updated Digital Flood Insurance Rate Maps (DFIRMs) produced through the North Carolina Floodplain Mapping Program (NCFMP) help protect lives and property, and contribute to the general well being of North Carolina citizens.

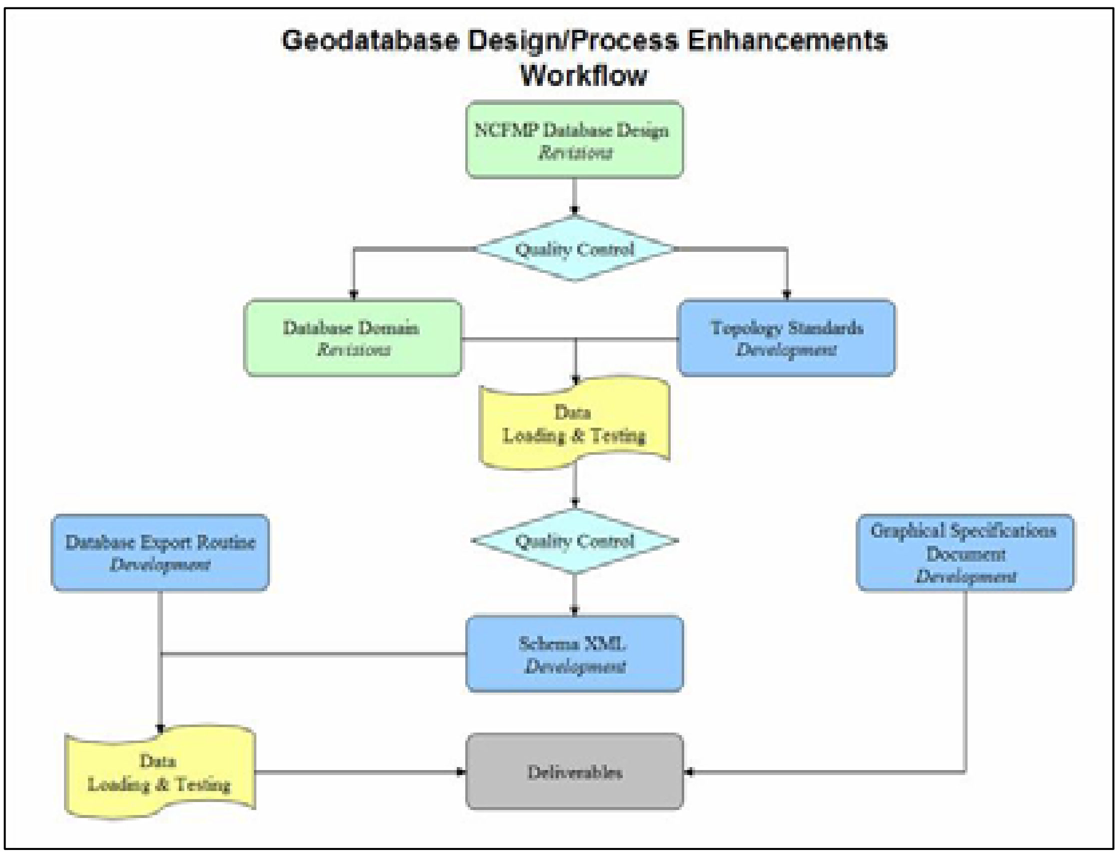
The Geodatabase design enhancements are a benefit and resource not only to the NCFMP and its contractors, but also to FEMA. Both NCFMP and its contractors share the same DFIRM production environment, resulting in immediate compatibility and increased efficiency between the agencies. The DFIRM data is available on the NCFMP website, www.ncfloodmaps.com.

Objectives

The objective of the Geodatabase design enhancements for the North Carolina Floodplain Mapping Program was to improve processes associated with the production, review, delivery and distribution of North Carolina DFIRMs. The original NCFMP design was created prior to the release of the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners (specifically, Appendices L & N). Because of fundamental design differences between the NCFMP and FEMA databases, the original NCFMP data format required extensive submittal conversion and review processes for both client and contractor, costing extra time and money. To improve these processes, the NCFMP took advantage of the best GIS technology available by migrating DFIRM data and associated components to the ESRI Enterprise Geodatabase model, while implementing a database schema that requires less data transformation to meet the DFIRM database submittal requirements established in the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners (Guides and Specs). The migration, schema redesign, and related outcomes have alleviated many data conversion and review issues while increasing efficiency for the NCFMP and its contractors. Watershed Concepts was tasked with: 1. converting all NCFMP data from ESRI shapefiles with Microsoft Access Database relational tables to the ESRI Enterprise Geodatabase model utilizing Microsoft SQL Server 2000, 2. performing a comparative analysis between the FEMA Appendix L & N standards and the original NCFMP database design, and 3. based on the results from the comparative analysis, migrating the DFIRM data to an Appendix L- & N-based schema.

Migration to the Geodatabase model involved changes to several components within the NCFMP data, starting with modifications to the original database design. The NCFMP schema was modified to more closely mirror the schema established by Appendix L & N, while still keeping in mind intent of the original NCFMP database design. To establish the groundwork for these schema modifications, a comparative analysis was first performed between Appendices L & N and the original NCFMP design. The original shapefile/Access .mdb field definitions were then translated to field definitions that are compatible with ArcSDE/SQL Server 2000. The original domain table values were also updated to facilitate interoperability with Appendix L & N. Once the schema modifications were complete, all original DFIRM and associated data was loaded into the updated NCFMP Geodatabase, where enterprise functionality such as topology and relationship classes is utilized.

The subsequent development of a Submission Standards Interoperability Tool facilitates NCFMP's obligation to prepare standard FEMA submissions by automating the conversion of the NCFMP Geodatabase data into the FEMA Standard or Enhanced formats. The creation of this tool allows for the efficient preparation of submissions to Harvard Design and Mapping (HDM) and FEMA. A supplemental dataset of scoping streams, as well as a Raster Catalog of North Carolina statewide imagery were also developed. Finally, a Graphical Specifications document was created in an effort to fully support contractor DFIRM production efforts. The graphic below shows the basic workflow for the Geodatabase design enhancement effort.



Revisions to the NCFMP Geodatabase schema

Comparative Analysis

There are four basic data classifications in the NCFMP dataset. The first two classifications, prefixed by base- and map-, consist of feature classes and tables necessary for the production and display of the DFIRM. The second two classifications, prefixed by eng- and inv-, consist of feature classes and tables housing engineering and inventory data that is relevant to the Flood Insurance Study and/or DFIRM. As with the map- and base- data design, the eng- and inv- data designs were developed prior to the release of the FEMA Guides and Specs. Accordingly, NCFMP and Watershed Concepts discussed whether the 6-year-old design was still relevant, or whether the more current, FEMA-endorsed Appendix N and Appendix L Enhanced schema would be more appropriate. While keeping in mind the possible migration of the eng- and inv- data to the Appendix N standard, a migration of the NCFMP map- and base- tables to the current Appendix L Enhanced specifications was also discussed. It was determined that an extensive comparison was needed to determine whether the full intent of the complete NCFMP design could be reflected in the Appendix N schema, as well as in the Appendix L Enhanced Database schema. Because Appendix N is not currently in the Geodatabase format, an initial analysis was necessary determine the immediate compatibility of Appendix N to the Enterprise Geodatabase model, and to make modifications as necessary where the Appendix N design was not compatible. The results of these analyses helped to institute NCFMP's pursuit of a more FEMA-based format in the process of the redesign.

First, a Geodatabase was compiled using the designs of Appendix L Enhanced, Appendix N, and the NCFMP Geodatabase. This step provided the opportunity to eliminate duplicate fields between Appendices L & N, while maintaining critical supplemental elements from the NCFMP Geodatabase. The compiled Geodatabase was then imported into SQL Server for data type mapping and testing, as discussed above in "Conversion of NCFMP Data to the Geodatabase Model."

Once the compiled Geodatabase was validated for ArcSDE/SQL Server 2000, the fields were compared to the original NCFMP database schema.

Implementation of the Database Redesign

Using ER diagrams that were created for both the FEMA and NCFMP schema types, a third diagram was developed for the final Geodatabase schema. This final schema contained each element of Appendix L & Appendix N, as well as derived from the original NCFMP design that were not covered by the FEMA standard designs. The ER diagram was then exported from Visio as a UML model to create the final NCFMP Geodatabase schema.

The redesign also marked an effort to further modernize the NCFMP Geodatabase schema by removing obsolete feature and object classes from the original design. Data duplication between feature classes, such as between the maptransportation and baseroad, baserailroad, and baseferry feature classes was eliminated by establishing the map- feature class as the standard. Furthermore, the structure of each remaining feature class that did not directly correspond to the schema of the updated Geodatabase was also examined and modified as necessary to conform to the schema in Appendices L & N. Any changes were intended to improve feature and object class interaction within the Geodatabase, and to facilitate submittals to Harvard Design and Mapping (HDM) by modifying the schema to more closely mirror the database design established in Appendix L and Appendix N.

SQL Constraint Scripts

Finally, to maintain maximum data integrity, it was necessary to implement a series of Geodatabase constraints and primary keys for the DFIRM data, to eliminate null values in critical fields for submissions to the NCFMP. However, the number of constraints and primary keys inhibited normal DFIRM editing and production processes. To this end, Watershed Concepts developed two sets of SQL Scripts: one to disable primary keys and constraints as necessary for DFIRM production, and one to re-enable the primary keys and constraints for data integrity checks and submissions to the NCFMP.

Conversion of NCFMP Data to the Enterprise Geodatabase Model

Data Transformation between shapefile/Access .mdb and ArcSDE

Migration to the Enterprise Geodatabase model required additional modifications to the original database design. In addition to adopting a more FEMA-based format, the new design focused on the translation of all previous shapefile and Access .mdb field definitions to definitions compatible with ArcSDE. Because the original database design was completed in 2001 (before the use of the Enterprise Geodatabase became prevalent in the industry), some of the field types established in the original design were inherently incompatible with ArcSDE field types. These incompatible field types required transformation. For example, while the *Memo* data type successfully loads from shapefile/Access .mdb into SQL Server 2000, it does not function properly inside ArcCatalog.

A compatibility test was performed between the original shapefile/Access .mdb field definitions and the ArcSDE field definitions to pinpoint the possible incongruities in data types. This was accomplished by attempting to load the original NCFMP database design into ArcSDE/SQL Server 2000. Feature classes and tables that returned errors or that did not load successfully were marked for transformation. The incompatible database objects were then transformed into the new Geodatabase design using the SQL Server 2000 Enterprise Manager Transformations dialog. The Transformations dialog allowed for the automatic conversion of incompatible field types so that every original database object would successfully load into the new Geodatabase design.

Feature classes and tables that were immediately compatible were also inspected to ensure that the format change from shapefile/Access .mdb to Geodatabase did not inadvertently create discrepancies with the intent of the original database design. It became necessary to update several shapefile/Access .mdb field type names and parameters in the new design to properly reflect Geodatabase field type names and parameters. These updates occasionally resulted in the exclusion of default values for current parameters, such as *Length* or *Scale*.

Field Type Name Changes

Original Shapefile/Access Field Type Name	Updated Geodatabase Field Type Name
Number	double/short integer
String	text
Date/Time	date

Every effort was made to maintain the specifications established in the original database design. Any revisions to feature class and table fields were performed with regard to the overall consistency of the original compatible database design. To maintain attribute integrity, required fields do not accept null values.

As a final step, a list of field parameter changes was compiled. Because ArcCatalog displays specific SQL Server 2000 data types in a generalized format, any attempts to manually recreate portions of the NCFMP Geodatabase were performed in ArcCatalog (rather than SQL Server 2000) to ensure complete compatibility with the master Geodatabase design.

SQL Server 2000 Data Types & Corresponding ArcCatalog Data Types

SQL Server Data Type	ArcCatalog Data Type
varchar	text
int(4)	long integer
datetime	date

Revisions to the Database Domains

Migration to the Geodatabase model also involved updating all Geodatabase domain tables and values to promote data integrity during production processes, to facilitate interoperability with the current FEMA Standard and Enhanced database formats, and to improve efficiency within the database.

The original domain codes and their corresponding descriptions consisted of identical text-based values. The text-based codes were cumbersome when making calculations, allowing for frequent user errors, and proving to be inefficient for production purposes. To update the domains, the original text-based domain code was matched to its corresponding numeric FEMA code according to the domain descriptions. The original text-based domain code was then replaced with the corresponding FEMA numeric code. For example, the “1pct annual chance flood hazard” text-based domain code was translated to the FEMA-derived numeric domain code of ‘2001’. Any features existing in the NCFMP domain tables that did not directly correspond to a FEMA code were appended to the updated domain tables, while maintaining any existing numeric code patterns set forth in the FEMA design. For example, if the highest FEMA code was ‘2002’, the next NCFMP code of ‘2003’ was added to the NCFMP domain table with its corresponding NCFMP description.

Furthermore, since the inception of the North Carolina statewide mapping effort, many feature types had been added to domain tables, but had not been formally documented in the original database design. For example, the line type of “Future 1pct annual chance flood hazard” had been added to the D_FldLn domain table. The new database design included these updates to the domain tables codes and descriptions. The abbreviation of ‘2003’ was created for “Future 1pct annual chance flood hazard,” which does not exist in FEMA domain tables.

To facilitate the implementation of the numerical domain codes, a series of models was developed to automatically convert the text-based codes to the numerical codes. This also facilitated data loading into the updated Geodatabase schema; because the numerical codes were pre-calculated, when the DFIRM data was loaded into the updated Geodatabase schema, the domains and codes automatically linked together.

Creation of the NCFMP Dataset

The feature datasets in the NCFMP Geodatabase define the spatial reference for the DFIRM feature classes. All data in the NCFMP datasets is bound to the specified spatial extent. Storing DFIRM feature classes in the datasets also allows the user to access additional enterprise functionality, such as topology and relationship classes. DFIRM data that does not need to participate in this functionality may reside outside the NCFMP datasets as standalone feature classes.

Accurate preparation of the project-specific spatial extent has been imperative to project success. Because the dataset’s spatial extent determines the actual geographic area for which data can be loaded into the Geodatabase, it was important to consider all potential data sources and their geographic area when determining the spatial extent. Early and proper planning helped to avoid situations where feature class data failed to fit within the specified geographic extent of the dataset. Such errors would be costly, potentially requiring the creation of new datasets into which data must be manually re-imported.

Several specific parameters were defined so that the entirety of the NCFMP data could be successfully loaded into the ArcSDE/SQL Server 2000 environment. These specific parameters, descriptions and justifications are discussed below.

Dataset Extents

The NCFMP datasets have been established to accommodate floodplain and base data covering the entire geographic area of North Carolina while maintaining an appropriate dataset precision. Special consideration has been given to legitimate data that could be located outside the North Carolina state boundary, such as streamlines or basins crossing the state line. The spatial extent itself is horizontally referenced to North Carolina State Plane, NAD83 Feet, FIPS 3200, and extends to 20 miles beyond the North Carolina state boundary. To create the spatial extent for North Carolina, a shapefile of all North

Carolina counties was merged into a seamless polygon representing the state outline. The resulting polygon was buffered by 20 miles.

Dataset Precision
The precision specified for the NCFMP dataset is 192, which equates to a real-world accuracy of 1/16th of an inch. The 20-mile buffer around the North Carolina state boundary is the maximum buffer distance that allows up to 1/16th inch accuracy within the dataset. If a buffer distance larger than the current 20-mile extent were to be chosen, a coarser precision would have to be used for the dataset.

Geodatabase Topology
Basic topology rule sets were created to serve as a template for the generation and maintenance of topology inside the NCFMP Geodatabase. Due to the unique nature of the North Carolina digital database specifications, topological relationships within the database are expressed as general spatial integrity requirements; i.e., dangles should be eliminated. Proper spatial relationships between separate feature classes, as well as within the same feature class, are also maintained. Special rules for individual features that are coincident between and within particular feature classes (such as zone breaks and Limit of Study lines, or cross sections and Limit of Study lines) are also included. The NCFMP topology rule sets reflect criteria established inside the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, Appendix L, Sections L.2 and L.3. Examples of typical general topology requirements are listed below:

All lines must be simple features:
- Lines must begin and end at a vertex.
- Lines that connect must do so at a vertex.
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- Lines must contain the least possible number of pseudo-nodes.
- Lines must not contain arcs, curves, splines, multipart, or unioned features.

All lines must be continuous:
- Lines must not exhibit gaps or dangles (must not extend past the last intended vertex). All line patterning or dashing must be expressed through ESRI line styles, not in the line geometry itself.
- Lines displayed on a printed map must not cross other displayed lines, between separate feature classes, or within the same feature class. Displayed lines may cross non-displayed lines (BFEs may cross non-printed cross section lines).
- Valid intersections between lines within the same feature class must occur at a vertex.
- Lines must not self-overlap or self-intersect.

Polygons must be simple, continuous features:
- Polygons must not contain hatching or patterning. All patterning or hatching must be expressed through ESRI polygon styles.
- Polygons must not exhibit gaps, overlaps, or slivers.

Coincident boundaries between feature classes must be continuous and identical:
- Lines representing corresponding polygon boundaries must not exhibit overshoots, undershoots, or dangles not represented in the polygons.
- Corresponding polygon boundaries and the lines representing those boundaries must be identical. Vertex count and placement must be identical between polygon boundaries and the lines representing those boundaries.

Coincident boundaries between features within one feature class must be simple:
- Lines from two separate features must not duplicate each other. Where such lines are coincident, only one line feature will be represented in the database:
  Where any combination of the floodway, the 1% annual chance flood hazard, and/or the 0.2% annual chance flood hazard boundaries occurs, only the floodway shall be represented in the database.
  Where a combination of the 1% annual chance flood hazard and 0.2% annual chance flood hazard boundaries occurs, only the 1% annual chance flood hazard boundary shall be represented in the

database. Where any combination of state/county, corporate, and/or forest/park/reservation boundaries occurs, only the state/county boundary shall be represented in the database. Where a combination of state/county and corporate boundaries occurs, only the state/county boundary shall be represented in the database.

All other coincident lines are fully represented in their respective feature classes. For example, where a cross section line and a Limit of Study line are coincident, both are represented in the database.

Because the precision of the database is set at the time of feature dataset creation, the default cluster tolerances were accepted when creating the topology rule sets. ArcMap allows the user to zoom in to features at a scale finer than the cluster tolerance setting, thus it may appear that vertices and lines are not properly snapped or coincident when viewed at too large a scale. However, the vertices and boundaries are indeed snapped and/or coincident within the cluster tolerance, and the data is represented in an accurate manner when viewed at the correct scale. It is not recommended that the user view features at a scale finer than 1:0, or at a scale finer than the cluster tolerance setting.

To maintain spatial integrity between separate feature classes, these feature classes participate inside the same set of topology rules. Each feature class in a topology rule set has a rank assigned to it to control whether the individual features could be automatically adjusted during topology validation. Feature classes of a lower rank are permitted to shift during validation to match their associated feature classes of a higher rank. Feature class ranks were carefully chosen so that the geometry of the highest priority feature class is preserved. For instance, a large portion of DFIRM data rests on accurate representation of cross section line placement. Therefore, to protect their spatial integrity within the cross section/bfe topology rule set, cross section lines are ranked at 1 over bfes to eliminate any cross section movement during topology validation. Other critical data such as flood hazard lines, streamlines, political areas, and the DFIRM paneling scheme also have a ranking of 1.

Relationship Classes

To maximize usability of the data, relationship classes were established between frequently used feature classes and tables. For example, the mapwtrln streamlines feature class was related to its associated stream name lookup table in the database per the common stream name ID field. Because the stream names are separated in a lookup table from the streamlines, stream names are not immediately accessible from the streamline feature class. The addition of a relationship class increases usability of the data inside ArcMap or ArcCatalog, so that the user does not have to research the stream name separately from the stream name ID.

Development of a Schema XML

The NCFMP Geodatabase schema was exported to an XML format utilizing the ArcCatalog Geodatabase Designer extension developed by the Applications Prototype Lab at ESRI Redlands. The XML provided NCFMP with the ability to distribute an unpopulated schema of the Geodatabase. The distributed schema can then be used to enforce data format requirements for the receipt of new or updated contractor data.

While Geodatabase Designer was not meant to replace other methods of initial NCFMP geodatabase construction, such as ArcCatalog wizards or CASE tools, it did provide a way to quickly view, edit, and reapply the Geodatabase schema. These capabilities were particularly useful during the database design testing phase, particularly because Geodatabase Designer incorporates additional geodatabase export functionality to allow for the export and import of individual feature classes and feature datasets, object classes, domains, relationship classes, geometric networks and topologies. The Geodatabase Designer extension is available at www.esri.com.

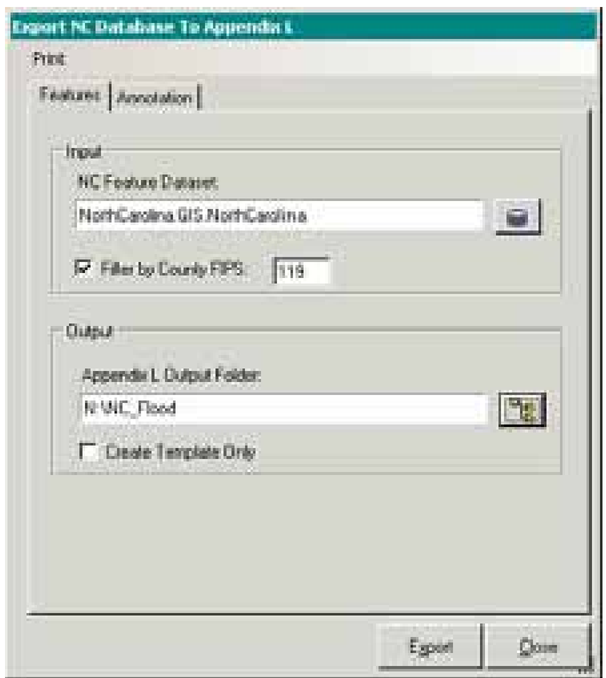
Submission Standards Interoperability Tool

The NCFMP has obligations to prepare FEMA and Harvard Design and Mapping (HDM) submissions in FEMA Standard or Enhanced formats. The development of a Submission Standards Interoperability Tool was essential to seamlessly and automatically convert data from the NCFMP format to the FEMA Standard or Enhanced formats.

The Submission Standards Interoperability Tool (SSIT) converts field names and field types from the NCFMP format for both basic feature classes and annotation feature classes to the necessary FEMA standard formats according to Appendix L and Appendix N. The tool was developed in Visual Basic .NET and deployed as a custom extension to ArcGIS Desktop using ESRI ArcObjects. Explained below are the basic functions of the SSIT.

Basic Feature Class Conversion

The SSIT works on the dataset level. To begin the feature class format conversion, the North Carolina feature dataset must be loaded into the first dialog. Because the NCFMP data is presented in a statewide format, the capability to process countywide portions of the data is sometimes necessary. To meet this need, the SSIT allows the user the option to filter the data using the County FIPS code.

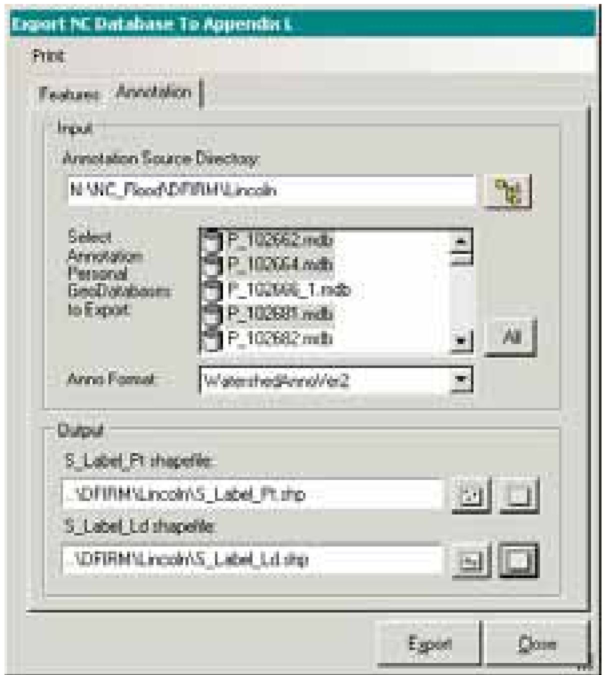


The user can then choose the directory to which the FEMA format shapefiles will be written. If the user wishes only to create a blank schema of the FEMA format and not include the actual data output, the “Create Template Only” option may be chosen.

Once “Export” is clicked, the SSIT processes each feature class and compiles FEMA Standard shapefiles from the NCFMP dataset. In some cases, one specific NCFMP format feature classes may not completely fulfill its corresponding FEMA feature class on its own. In this case, the SSIT compiles the necessary data from multiple NCFMP feature classes to fulfill the necessary FEMA-format feature class. All FEMA-formatted output shapefiles are automatically projected to North Carolina State Plane, NAD83 Feet, FIPS 3200.

Annotation Feature Class Conversion
Annotation is converted directory-wide, on the Personal Geodatabase level. Once the annotation source directory is chosen, the Personal Geodatabases containing annotation are automatically populated in the lower window. The user may process all Personal Geodatabases in the directory, or highlight individual Personal Geodatabases to process.

Although each NCFMP contractor uses the Personal Geodatabase format for panel annotation, there are variations within each contractor's Personal Geodatabase design, and variations within each contractor's methods for producing DFIRM panel annotation. For this reason, a dialog is provided to choose the annotation format. Each contractor's format is taken into account and processed as appropriate.



The output shapefiles for the FEMA Standard S_Label_Pt and S_Label_Ld can be created automatically from scratch, or the output from individual (or a set of) Personal Geodatabases may be appended to existing FEMA Standard annotation shapefiles. The output is projected to North Carolina State Plane, NAD83 Feet, FIPS 3200.

Development of Graphical Specifications Document
To support contractors in their effort to product North Carolina Standard DFIRMs, a Graphical Guidelines and Specifications Document was developed. The Document provides a set of standards, and certifies graphical specifications for all features shown on the FIRM panels, including but not limited to fonts, line styles, line weights, hatching and patterns, etc. The Document is of similar format to portions of Appendix K of FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners.

The content of the Document focuses on the graphical specifications for the NCFMP product, as well as on the FEMA specifications that form the foundation for the NCFMP DFIRM product. While the Document does provide general usage for graphical DFIRM elements, it does not cover topics such as methodology, techniques, formats or deliverables.

To efficiently access all styles included in the Document, the graphical specifications from the existing NCFMP style file were accessed with the Style Dump Utility extension in ArcMap. The Style Dump Utility processes a specified style file, outputting examples of the styles as graphics in the ArcMap layout window. Each graphic was closely verified with the printed DFIRM product and with Appendix K, and the

Graphical Guidelines and Specifications Document was compiled using tables in Microsoft Word. The Document is distributed in a PDF format. The style file is available to contractors to assist their NCFMP DFIRM panel production efforts.

Style Dump Utility Results

Example of Compiled Results

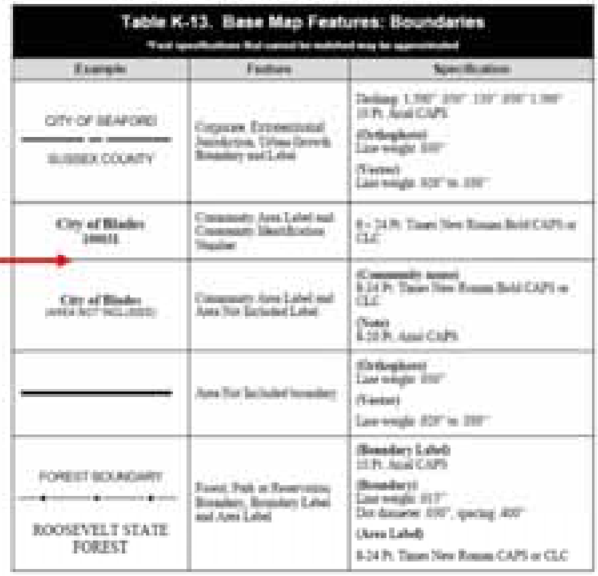


Table K-13. Base Map Features: Boundaries

Example	Feature	Specification
CITY OF SEAFORD / SUSSEX COUNTY	Corporate, Extraterritorial Jurisdiction, Urban Growth Boundary and Label	[illegible] Pt. Arial CAPS (Orthophoto) Line weight [illegible] (Vector) Line weight [illegible]
City of Blades [illegible]	Community Area Label and Community Identification Number	[illegible] Pt. Times New Roman Bold CAPS or CLC
City of Blades (AREA NOT INCLUDED)	Community Area Label and Area Not Included Label	(Community name) [illegible] Pt. Times New Roman Bold CAPS or CLC (Note) [illegible] Pt. Arial CAPS
	Area Not Included boundary	(Orthophoto) Line weight [illegible] (Vector) Line weight [illegible]
FOREST BOUNDARY / ROOSEVELT STATE FOREST	Forest, Park or Reservation Boundary, Boundary Label and Area Label	(Boundary Label) [illegible] Pt. Arial CAPS (Boundary) Line weight [illegible] Dot diameter [illegible], spacing [illegible] (Area Label) 8-24 Pt. Times New Roman CAPS or CLC

Supplemental Datasets

Conversion of Scoping Data to Geodatabase

All scoping data for North Carolina was converted to the Geodatabase format using the same processes that were applied to the main NCFMP dataset. Because the original Scoping data design was completed parallel to the main NCFMP dataset, the same data migration and transformation processes were necessary to successfully import all Scoping data. Topology has also been applied within the Scoping dataset; because the geometry relationships within the Scoping data are not as complex as the relationships within the floodplain and associated base data, the rule sets inside the Scoping dataset concentrate mainly on general data structure and geometry integrity.

Compilation of a NC Statewide Imagery Raster Catalog

A Managed Raster Catalog was created to store the statewide imagery for North Carolina. The Raster Catalog was created with the intention that imagery will continually be updated and appended to the Catalog over time. The Catalog uses the same spatial extent as the Floodplain and Scoping datasets.

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