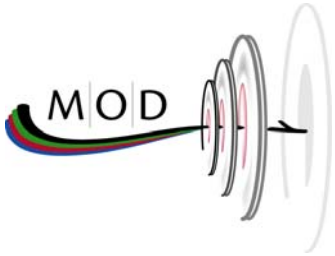
Flood Map Modernization

NFIP Metadata Profiles Specifications

Version 1.1

April 6, 2006



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Map Mod Team

1. Introduction

This document contains specifications for the National Flood Insurance Program (NFIP) metadata profiles, which are used to characterize and inventory DFIRM datasets and associated data artifacts in the Mapping Information Platform (MIP). The ability to describe, search, discover, and reuse DFIRM artifacts is a key requirement of the Flood Map Modernization (MOD) program. To achieve this, metadata about DFIRM artifacts must be recorded and updated throughout the DFIRM life cycle, from study scoping to collection, storage and management, production, publication, dissemination, and use.

The MOD program developed operational procedures that institutionalize metadata production and maintenance as part of MIP workflows, content management infrastructure, and maintenance tools. Metadata based on industry-standard information models is a key component of the data development and management process. Guidance regarding the development and submission of NFIP metadata may be found in the companion document titled NFIP Metadata Profiles Guidance.

This document contains an overview of the NFIP metadata profiles, a table that summarizes the required metadata elements for these profiles, and the actual NFIP metadata profile specifications.

2. Reference Documents

This section identifies the documents that are referenced directly in the metadata requirements or were used to derive the metadata requirements.

2.1. Applicable Documents

Applicable documents contain content that is considered to be part of the requirements. The specified parts of the applicable documents carry the same weight as if they were stated within the body of this document. The applicable documents are:

- FEMA Internet Publication Standards, v.4.0, Revised February 23 2004.
- Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata (FGDC-STD-001-1998), located at http://www.fgdc.gov/metadata/metadata.html

2.2. List of Reference Documents

Reference documents are those documents that, although not a part of this document, serve to amplify or clarify its contents. The specific reference documents are:

- Federal Agency Guidance for Modules 2 and 3 of the Geospatial One Stop Initiative, available at: http://www.geo-one-stop.gov/docs/GOS2_3Guidance1.1.22.pdf

- Request for Comment, Geospatial One-Stop Portal Version 2, Annex A: Functional Requirements, July 15, 2004, available at: http://www.geo-one-stop.gov/GosRfc/RFC_GOS_Ver_2_Portal_specs.doc
- FGDC "Contract for Interoperable Geospatial Portal Components" found at http://www.fgdc.gov/geoportal/
- FGDC Metadata Quick Guide located at http://www.fgdc.gov/metadata/education/MetadataCliffNotes.pdf
- FGDC Top Ten Metadata Errors at http://www.fgdc.gov/metadata/top10metadataerrors.pdf
- FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, Appendix L: Guidance for Preparing Draft Digital Data and DFIRM Databases, April 2003, located at http://www.fema.gov/fhm/dl_cgs.shtm
- FEMA Guidelines and Specifications for Flood Hazard Mapping Partners: Data Capture Standards, Preliminary Draft April 2004 located at http://www.fema.gov/fhm/dl_cgs.shtm
- Hazard Metadata Assessment Deliverable located at http://extranet.lotus.com/QuickPlace/femamip/main.nsf
- Geospatial One Stop (GOS) Reporting Requirements http://extranet.lotus.com/QuickPlace/femamip/main.nsf

3. Overview of NFIP Metadata Profiles

This section describes the NFIP metadata profiles, which are based on the FGDC CSDGM. A CSDGM profile is a subset of the metadata entities and elements of the base standard that describe the application of the standard to a specific user community. Adopting a profile permits modifications to the optionality or repeatability of non-mandatory elements and domains in the underlying standard, and may additionally contain extended elements. The NFIP metadata profiles described in this document have been developed from the CSDGM using this profiling process.

FGDC publishes a set of guidelines that must be adhered to when creating a CSDGM profile, including:

- A profile must not change the name, definition, or data type of a standard element.
- A profile may impose more stringent conditionality on elements than the standard requires. (Elements that are optional in the standard may be mandatory in a profile.)
    - A profile may contain elements with domains that are more restrictive than the standard. (Elements whose domains have free text in the standard may have a closed list of appropriate values in the profile.)
    - A profile may restrict the use of domain values allowed by the standard. For example, if the standard contains five domain values for a standard element, the profile may specify that its domain consist of three domain values identified in the profile. The profile may require that the user select a value from the three domain values.

- A profile will not permit anything not allowed by the standard. (If the standard element has a domain of three values, without a free text element, the profile will not allow a user to enter anything other than those three values.)
- Before creating a profile, the metadata producer will check existing registered profiles.
- A profile must be made available to anyone receiving metadata collected according to that profile.
- The profile document submitted to the FGDC for formal approval contains the same six sections as the introduction section of this standard.

A detailed set of NFIP metadata profiles based on the CSDGM was created to describe the metadata content and structure to be used for NFIP digital geospatial data. Each of these profiles contains information on recommendations and/or business rules about specific elements in the underlying CSDGM. Information about each profile is provided below, with a focus on these recommendations and business rules.

3.1. Mandatory, Recommended, and Optional Metadata Elements

The set of mandatory metadata elements for each NFIP metadata profile was specified by retaining all FGDC mandatory elements as mandatory in the NFIP metadata profiles, and also making mandatory selected FGDC, -if-applicable, and optional elements. The mandatory designation of NFIP metadata-profile elements includes the following:

- Data quality information (specifically requiring lineage information in the form of a listing of data sources used for a particular submission and processing steps summarizing the submission production steps)
- Spatial data organization information (specifically specifying the direct spatial reference method)
- Spatial reference information (specifically horizontal system projection information, grid system information, datum information; and in the case of elevation, terrain and survey packages, and vertical coordinate system information)
- Entity and attribute information (especially requiring definitions of entity types enclosed within each submission, as well as the mandatory overview description)
- Distribution information (especially requiring information about the digital standard order process)

3.2. Controlled Vocabularies

Controlled vocabularies are domain-specific taxonomies, thesauri, dictionaries, and schema for terms and data elements developed by "communities of interest" as an authority controlling the use and update of the vocabulary. FEMA and MIP stakeholders involved in all or parts of the DFIRM life cycle may be considered a "community of interest." For MIP data submission types, controlled vocabularies have been created for the following elements:

- Geospatial representation (controlled list of MIP data submission types)
- Theme keywords (controlled list of keywords per submission type)
- Place keywords (controlled list of States and counties)
- Native data set environment (controlled list of hydrology, hydraulic, coastal, and alluvial fan models)
- Lineage source information (controlled list of information sources per submission type)
- Entity type (controlled list of entities and their descriptions per submission type)

With this controlled vocabulary defined and consistently applied during the development of MIP metadata, automated search and discovery capabilities of MIP data holdings will be greatly improved in the future. By using a common, controlled vocabulary for metadata, users can be confident that data granules being returned from one geographic location or project are consistent with other parts of the search area, even if the work was not completed as a part of the same study.

3.3. MIP Searchable Elements

End users may perform searches of NFIP metadata using a number of metadata catalogs and services; the technologies and standards upon which metadata catalogs and services are based are described in Section 2.3, "*Metadata Catalogs and Service,s*" of the *NFIP Metadata Profiles Guidelines* document. The NFIP metadata will be searchable through the Content Manager (CM) component of the MIP as well as through the Geospatial One Stop (GOS) portal, which is part of the National Spatial Data Infrastructure (NSDI).

When NFIP metadata is searched via the GOS portal, a search will be performed using the Z39.50 Geo Profile, which is described in Section 2.3.1 entitled "Z39.50 – Geo Profile" of the *NFIP Metadata Profiles Guidelines* document. Table 1 shows the mandatory Z39.50 GEO Profile elements and their support within Content Manager for searching. The table shows the CSDGM elements that are required to fully support external metadata searches from the NSDI and GOS systems, and the current support within Content Manager for searches by these elements.

Table 1. Mandatory Searchable Elements of Z39.50 Geo Profile[1]

CSDGM Element Number	CSDGM Long Name	CSDGM Short Name	Z39.50 Use Code	Z39.50 Structure Code	CSDGM Element Path	MIP Name or Usage
1.5.1	Bounding Coordinates	bounding	2060	112	metadata/ idinfo/spdom/ bounding	Bounding Box
1.5.1.1	-	westbc	2038	108	metadata/idinfo/spdom/ bounding/westbc	West
1.5.1.2	-	eastbc	2039	108	metadata/idinfo/spdom/ bounding/eastbc	East
1.5.1.3	-	northbc	2040	108	metadata/idinfo/spdom/ bounding/northbc	North
1.5.1.4	-	southbc	2041	108	metadata/idinfo/spdom/ bounding/southbc	South
1.1.2	Publication Date	pubdate	31	5	metadata/idinfo/citation/ citeinfo/pubdate	Not Applicable
1.3.1.x	Beginning Date	begdate	2072	5	metadata/idinfo/timeperd/ timeinfo/rngdates/begdate	Not Applicable
1.3.1.x	Ending Date	enddate	2073	5	metadata/idinfo/timeperd/ timeinfo/rngdates/enddate	Not Applicable
1.1.4	Title	title	4	105	metadata/idinfo/citation/ citeinfo/title	Title
1.1.1	Originator	origin	1005	105	metadata/idinfo/citation/ citeinfo/origin	Originator
1.1.8.2	Publisher	publish	1018	6	metadata/idinfo/citation/ citeinfo/publish	Not Applicable
1.2.1	Abstract	abstract	62	6	metadata/idinfo/descript/ abstract	Abstract
1.2.2	Purpose	purpose	2003	6	metadata/idinfo/descript/ purpose	Not Applicable
1.1.6	Geospatial Data Presentation Form	geoform	3805	6	metadata/idinfo/citation/ geoform	Submission Type
1.6.1.2	Theme Keyword	themekey	2002	6	metadata/idinfo/keyword/ theme/themekey	Theme Keyword, Project ID/Keyword
1.4.1	Progress	progress	3108	6	metadata/idinfo/status/ progress	Project Status
-	Any	any	1016	6, 103	--	Not Applicable
-	Extent	extent	3148	109	derived from Bounding Coordinates (2060)	Not Applicable

[1] Source: http://www.fgdc.gov/publications/documents/metadata/geo20f.html and http://www.blueangeltech.com/standards/GeoProfile/geo22.htm

CSDGM Element Number	CSDGM Long Name	CSDGM Short Name	Z39.50 Use Code	Z39.50 Structure Code	CSDGM Element Path	MIP Name or Usage
1.3.1.x (9.1.1)	Time Period Information	timeinfo	2062	210	metadata/idinfo/timeperd/ timeinfo/sngdate/caldate (only) Note: (metadata/idinfo/timeperd/timeinfo/rngdate/begdate and metadata/idinfo/timeperd/ timeinfo/rngdate/enddate) not supported	Effective Date
1.3.1. (9.1.1)	Time Period of Content/ Time Period of Information/ Single Date/ Time Calendar Date	caldate	3903	210	metadata/idinfo/timeperd/ timeinfo/sngdate/caldate	Effective Date

In addition to supporting NFIP metadata searches via the Z39.50 Geo Profile elements indicated in table 1, the MIP supports searching via the additional elements shown in table 2.

Table 2. Additional Elements Used by MIP Content Manager (CM) for Search[2]

CSDGM Element Number	CSDGM Long Name	CSDGM Short Name	CSDGM Element Path	MIP Name or Usage
1.1.11.4	Citation/ Larger Work Citation/ Title	lworkcit. title	metadata/idinfo/citation/ citeinfo/lworkcit/citeinfo/title	FEMA Case Number[3]
1.6.2.2	Place Keyword	placekey	metadata/idinfo/keywords/ theme/placekey	Region/State, County, Community Name, Community ID, Project ID/Keywords
1.7	Access Constraints	accconst	metadata/idinfo/citation/ accconst	Restriction

[2] Sources: "Component Technical Design: Content Manager Integration Components eXtensible Media Beans (XMB)" (01/11/2005); Source: "Component Technical Design: Search and Fetch Content" (12/03/2004)

[3] NSP assigned meaningful project case number or ID (e.g., 05-05-0001S)

1.9 (10.1.2)	Contact Person Primary/ Contact Organization	cntorg	metadata/idinfo/ptcontac/cntinfo/cntperp/cntorg	Contact Name
4.1.2.1.1	Map Projection Name	mapprojn	metadata/spref/horizsys/ planar/mapproj/mapprojn	Projection
4.1.2.2.1	Grid Coordinate System Name	gridsysn	metadata/spref/horizsys/ planar/gridsys/gridsysn	Grid Coordinate System
5.1.1.1	Entity Item Label	enttypl	metadata/eainfo/detailed/ enttyp/enttypl	Entity Type
1.3.2[4]	Currentness Reference	current	metadata/idinfo/timeperd/ current	The basis on which Time_Period_of_Conter t [1.3.1] is determined (e.g., "Publication Date", "Ground Condition", "FIRM and FIS Effective Date")
7.1[5]	Metadata Date	metd	metadata/metainfo/metd	The date that the metadata were created or last updated.

3.4. MIP Metadata-Element Business Rules

In addition to specific guidance provided in the individual metadata profiles presented in Section 4 of this document, business rules that govern the content of metadata elements are provided in table 3. These business rules include explanation and guidance that is driven by the relationship between individual metadata elements. As an example, the distinction between Originator (element 1.1.1) and Publisher (element 1.8.1.2), and the relationship between date elements such as Publication Date (element 1.1.2) and Time Period (element 1.3.1), should be reviewed carefully and understood.

Table 3. Business Rules and Meaning of Key Metadata Elements

CSDGM Element Number	CSDGM Long Name	CSDGM Short Name	Business Rules
1.1	Citation	Citation	Citation describes the DATA PACKAGE.
1.1.1	Originator	Origin	For existing data, Originator would be the data provider.

[4] The current element [1.3.2] was recommended to be an additional searchable element within the MIP CM data model.

[5] The 'metd' element [7.1] is required for GOS harvesting of recently updated metadata records.

<table>
<tr><th>CSDGM Element Number</th><th>CSDGM Long Name</th><th>CSDGM Short Name</th><th colspan="2">Business Rules</th></tr>
<tr><td></td><td></td><td></td><td colspan="2">For data developed for the study, Originator would be the responsible party, for example the IDIQ, CTP, or other federal agency.

Example: “Johnson County GIS Department”.

For DFIRM submissions, must always be “Federal Emergency Management Agency”.</td></tr>
<tr><td rowspan="2">1.1.2</td><td rowspan="2">Publication Date</td><td rowspan="2">pubdate</td><td>Business Rules for Non DFIRM Datasets</td><td>Business Rules for DFIRM Datasets</td></tr>
<tr><td>For existing data, Publication Date would be the date the data was published by the originator [1.1.1].
For data developed for the study, Publication Date would be the submittal date to the MIP.
<u>Implication</u>: once set, these dates never change</td><td>For Draft and Preliminary DFIRM, the date is the MIP submission date;
For Final DFIRM product, the date is the effective date.
<u>Implication</u>: For Draft and Preliminary data, this field will never change
<u>Implication</u>: Submitters of Final DFIRM submissions know a priori the effective date. And this never changes.
<u>Implication</u>: Effective date of Final DFIRM may be determined after submission and changed at that time.</td></tr>
<tr><td>1.1.4</td><td>Title</td><td>Title</td><td colspan="2">Title should be of format:
[Name of submission type], [MIP Project Title]

<u>Notes:</u>
Goal is to follow rules for “MIP Project Title”, as already implemented on the MIP.</td></tr>
<tr><td>1.1.6</td><td>Geospatial Data Presentation Form</td><td>Geoform</td><td colspan="2">For each profile, Geoform Domain will be a <u>single</u>, <u>required</u> text string, such as “FEMA-Study-Basemap” for the Basemap profile.

<u>Notes:</u>
DFIRM includes “Vector digital data” to ensure backward compatibility.</td></tr>
<tr><td>1.1.8.1</td><td>Publication Place</td><td>Pubplace</td><td colspan="2"><u>Note:</u>
Required for FGDC completeness/compatibility with element 1.1.8.1 Publisher.</td></tr>
<tr><td>1.1.8.2</td><td>Publisher</td><td>Publish</td><td colspan="2">User has the option of specifying whether this data will be distributed directly by FEMA or by the user’s organization (FEMA maintains an archived copy in this case). If the user will be distributing the data, then this contact information should be</td></tr>
</table>

CSDGM Element Number	CSDGM Long Name	CSDGM Short Name	Business Rules	
			identical to the distribution contact information (Section 6). See also Element 1.9 Point of Contact, and Section 6.	
1.1.10	Online Linkage	Onlink	Business Rules: For case where FEMA is the steward, this field should be the high-level URL http://hazards.fema.gov For DFIRM this should be the Map Service Center URL, http://www.fema.gov/msc For case where FEMA is not the steward, Online Linkage should be the steward's high-level URL.	
1.1.11	Larger Work Citation	Lworkcit	Business Rules: Larger Work Citation is used to relate the DATA PACKAGE to the CASE.	
1.1.11.4	Title	Title	Title should be FEMA Case Number of the form: **"***yy-rr-nnnnt***"** where: *yy* = year, *rr* = FEMA region number, *nnnn* = 4 character project code, t=type of project	
1.2.1	Abstract	Abstract	Abstracts should contain general description followed by a sentence or two with DATA PACKAGE specific information.	
1.3.1	Time Period	Timeperd/ timeinfo	**Business Rules for Non DFIRM Datasets**	**Business Rules for DFIRM Datasets**
			For not-yet-effective data, date should be MIP submission date; For effective data, date should be the effective date. **Implication**: system will update this element when "effective event" occurs	For Draft and Preliminary DFIRM, the date is the MIP submission date; For a Final DFIRM product, the date is the effective date. **Implication**: Does this date ever change for Draft or Preliminary DFIRM (for an "effective event")? **Implication**: For Final DFIRM submission, is the effective date known prior to submission?
1.3.2	Currentness Reference	Current	For not-yet-effective data, should be "MIP submission date". For effective data, should be "FIRM and FIS Effective Date". See notes in Element 1.4.1 RE synchronization with element 1.4.1 Progress Element.	
1.4.1	Progress	Progress	Should synchronize with Currentness Reference: When Progress is "In work", Currentness Ref is "MIP Submission date" When Progress is "Complete", Currentness Ref is "FIRM and	

CSDGM Element Number	CSDGM Long Name	CSDGM Short Name	Business Rules
			FIS Effective Date".
1.4.2	Maintenance and Update Frequency	Update	Domain of Update should be "unknown".
1.6.1	Theme	Theme	There will be multiple (compound) Theme elements, and multiple Theme Keywords within each Theme. Themes will be: *ISO 19115 Topic Category* *FEMA NFIP Topic Category*
1.6.1.2	Theme Keyword	Themekey	For each profile the following will be true: for each Theme, specific Theme Keywords will be required, but will also allow optional Theme Keywords.
1.9	Point of Contact	Ptcontac	Metadata profiles and Guidelines note that the data originator can provide contact information here, in particular if the data will be distributed via the MIP, in which case the information in Section 6 would not facilitate contact with the data originator.
1.13	Native Data Set Environment	Native	Note: the Native Data Set Environment element is used to capture the hydraulic and hydrologic models used.
1.14	Crossref*	Cross Reference	DFIRM profile includes explanation that this section should cross-reference the effective hardcopy map, flood insurance text and raster version of the map. Future Requirement: **A future requirement is the following:** Cross Reference section is used to relate the STUDY PACKAGE to the EFFECTIVE MAP/FIS. (This would apply to all packages.)
2.3	Completeness Report	Complete	Note: This element should be used to state whether all the printed panels within the study are digitally mapped.
2.5.1	Source Information	Srcinfo*	Contains high-level metadata for each component of the DATA PACKAGE. In particular for geospatial data sets, special attention should be paid to the source scale element (2.5.1.2). Source citations should be provided for the entity types listed in element 5.1.1 (enttype).
2.5.2.1	Process Description	procdesc	General description of how the package components were analyzed and combined to create a final product. A general description of the methodology used to create this package. Suitable material may be found in the TSDN
2.5.2.3	Process Date	Procdate	Submission date to the MIP. See description for elements 1.1.2 and 1.3.1
5.1.1.3	Entity Type Definition Source	Enttypds	Should reference Appendix N or Appendix L; may reference metadata profiles and/or the future Appendix O.
7.1	Metadata Date	metd	The 'metd' element [7.1] is used by some systems to determine what records have changed since a specified date. This element is used by the GOS system, for example, to

CSDGM Element Number	CSDGM Long Name	CSDGM Short Name	Business Rules
			harvest recently updated metadata records.

3.5. Metadata Requirements for Submitting Packages

The following requirements for metadata collection during the DFIRM production life cycle pertain to the package submissions as noted, and are based in part on the Guidance for Preparing Draft Digital Data and DFIRM Databases [6].

- To facilitate data discovery, access, and processing, the assigned Mapping Partner shall submit Federal Geographic Data Committee (FGDC) compliant metadata.
- The assigned Mapping Partner shall prepare and submit a metadata file with all digital data submittals to facilitate the use of these data and the transfer of data files between users.
- Only one metadata file is required for each submittal. However, in this one file, the assigned Mapping Partner must distinguish between the different origins of the various datasets included.
- Source Citation:
  - For each data source used, the assigned Mapping Partner shall add a Source Citation entry to the DFIRM metadata file in the Lineage section under Data Quality. Within the metadata file, each data source is assigned a Source Citation Abbreviation.
  - The metadata file must include a description of the source material from which the data were derived and the methods of derivation, including all transformations involved in producing the digital files.
  - The description shall include the dates of the source material and the dates of ancillary information used for update. The date assigned to a source must reflect the date that the information corresponds to the ground. If the assigned Mapping Partner does not know this date, then the Mapping Partner may use a date of publication and indicate as such.
  - Each data source in the metadata file must be assigned a Source Citation Abbreviation as described in Appendix L of FEMA's guidelines & specifications.
  - The assigned Mapping Partner shall describe any database created by merging information obtained from distinct sources in sufficient detail to identify the actual source for each element in the file.
- Entity and Attributes Information:
  - Because not all DFIRM database tables are included in every draft DFIRM digital data submittal, the Overview Description Section of the Entity and Attribute Information of the DFIRM package metadata file must include a list of all DFIRM database tables included in the submittal.
- As part of data collection, coordination, and submittal, the assigned Mapping Partner shall document the following information for all of the digital data used and submitted:
  - data sources

  - date of collection or digitizing
  - scale of digitizing
  - projections
  - coordinate systems
  - horizontal datum and vertical datum

- Each source citation abbreviation for a distinct data source should be numbered (e.g., BASE1, BASE2, BASE3).
- The digital data deliverables must clearly identify the data structure options that were used.
- Raster data may be provided in many formats, but also require metadata.
  - Digital orthophoto files may be submitted in Tagged Image File Format (.TIF), Georeferenced TIF (GeoTIF), Band Interleaved by Pixel (.BIP or .BIL), Multi-Resolution Seamless Image Database (MrSID), Portable Network Graphics (PNG), or Joint Photographic Experts Group (JPEG) format.
  - Raster files must be accompanied with metadata that provides coordinate information so that they can be georeferenced.

- Vector data may be provided in many formats.
  - ESRI export file – E00; ESRI shape file – SHP; MicroStation design file – DGN; MapInfo interchange format – MIF; MapInfo native table format – TAB; AutoCAD drawing file – DWG; Drawing exchange format – DXF; Digital Line Graph – DLG; or Spatial Data Transfer Standard – SDTS; other

- Wherever possible, the assigned Mapping Partner shall use the following metadata file naming convention for DFIRM submissions.
  - The file should be named with the combination of the two-digit State FIPS code and community or county identification number (CID), followed by an "_" and the effective date of the study (using the YYYYMMDD format), followed by "_metadata" and the appropriate file extension (i.e., <ST_FIPS><PCOMM>_<EFF_DATE>_metadata.txt). The CID is the first through the sixth digits of the panel number. For community based maps this corresponds to the FEMA CID. For countywide maps this is the county (or county equivalent) FIPS code with a "C ". For studies that are Draft or Preliminary and not yet effective, the word "DRAFT" or "PRELIM" should be used instead of the effective date. For example, the name of a metadata file for an effective study would be similar to 99001C_19980915_metadata.txt [.xml] while the same file for a preliminary study could be 99001C_PRELIM_metadata.

4. FIP Metadata Profile Element Summary

Metadata profiles for the nine NFIP submission packages are described in Section 4 entitled "*NFIP Metadata Profiles*". However, Table 4 provides a convenient summary of the required elements for each of the ten NFIP metadata profiles:

- Alluvial Fan
- Basemap
- Coastal
- DFIRM
- Floodplain Mapping/Redelineation
- Hydraulics
- Hydrology
- Orthoimagery
- Survey
- Terrain

In table 4, an "**R**" in a column indicates that the corresponding metadata element is required for the specific NFIP metadata profile. As noted earlier, the NFIP metadata profiles are based on the CSDGM, which is a hierarchical organizational structure. In both the CSDGM and the NFIP metadata profiles that have been derived from them, "parent" elements are used to organize "child" elements, and do not contain textual content; parent elements serve to group child elements, which in turn may serve as parents to other child elements, and so on. It is only the lowest-level child elements that actually contain textual content.

Given this distinction between required parent and children elements, table 4 denotes all required elements (both parent and children) with an "**R**"; however, only the lowest-level children elements are indicated with a shaded "**R**" for which a value is required. A review of the metadata examples provided in Section 5 entitled "*NFIP Metadata Profile Examples*" in the *NFIP Metadata Profiles Guidelines* document should readily clarify this distinction. An asterisk (*) after an element name means that this element may be repeated an unlimited number of times.

Table 4. Summary of required elements for NFIP metadata profiles

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
1	idinfo	Identification Information – Basic information about the data set	R	R	R	R	R	R	R	R	R	R
1.1	Citation	Citation -- information to be used to reference the data set	R	R	R	R	R	R	R	R	R	R
1.1.1	Citeinfo	Citation Information -- the recommended reference to be used for the data set.	R	R	R	R	R	R	R	R	R	R
1.1.1.1	Origin*	Originator -- the name of an organization or individual that developed the data set.	R	R	R	R	R	R	R	R	R	R
1.1.1.2	Pubdate	Publication Date -- the date when the data set is published or otherwise made available for release.	R	R	R	R	R	R	R	R	R	R
1.1.1.4	Title	Title -- the name by which the data set is known.	R	R	R	R	R	R	R	R	R	R
1.1.1.6	Geoform	Geospatial Data Presentation Form -- the mode in which the geospatial data are represented.	R	R	R	R	R	R	R	R	R	R
1.1.1.8	Pubinfo	Publication Information -- publication details for published data sets.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
1.1.1.8.1	Pubplace	Publication Place -- the name of the city (and state or province, and country, if needed to identify the city) where the data set was published or released.	R	R	R	R	R	R	R	R	R	R
1.1.1.8.2	Publish	Publisher -- the name of the individual or organization that published the data set.	R	R	R	R	R	R	R	R	R	R
1.1.1.10	Onlink*	Online Linkage -- the name of an online computer resource that contains the data set.	R	R	R	R	R	R		R	R	R
1.1.1.11	Lworkcit	Larger Work Citation -- the information identifying a larger work in which the data set is included.	R	R	R	R	R	R	R	R	R	R
1.1.1.11.1	Citeinfo	Citation Information -- the recommended reference to be used for the data set.	R	R	R	R	R	R	R	R	R	R
1.1.1.11.1.1	Origin*	Originator -- the name of an organization or individual that developed the data set.	R	R	R	R	R	R	R	R	R	R
1.1.1.11.1.2	Pubdate	Publication Date -- the date when the data set is published or otherwise made available for release.	R	R	R	R	R	R	R	R	R	R
1.1.1.11.1.4	Title	Title -- the name by which the data set is known.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
1.2	Descript	Description -- a characterization of the data set, including its intended use and limitations.	R	R	R	R	R	R	R	R	R	R
1.2.1	Abstract	Abstract -- a brief narrative summary of the data set.	R	R	R	R	R	R	R	R	R	R
1.2.2	Purpose	Purpose -- a summary of the intentions with which the data set was developed.	R	R	R	R	R	R	R	R	R	R
1.3	Timeperd	Time Period of Content -- time period(s) for which the data set corresponds to the currentness reference.	R	R	R	R	R	R	R	R	R	R
1.3.1	Timeinfo	Time Period of Information – Information about date and time of event.	R	R	R	R	R	R	R	R	R	R
1.3.1.1	Sngdate	Single Date/Time – means of encoding a single date and time.	R	R	R	R	R	R	R	R	R	R
1.3.1.1.2	Caldate	Calendar Date – the year (and optionally month, or month and day)	R	R	R	R	R	R	R	R	R	R
1.3.2	Current	Currentness Reference -- the basis on which the time period of content information is determined.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
1.4	Status	Status -- the state of and maintenance information for the data set.	R	R	R	R	R	R	R	R	R	R
1.4.1	Progress	Progress -- the state of the data set.	R	R	R	R	R	R	R	R	R	R
1.4.2	Update	Maintenance and Update Frequency -- the frequency with which changes and additions are made to the data set after the initial data set is completed.	R	R	R	R	R	R	R	R	R	R
1.5	Spdom	Spatial Domain - the geographic areal domain of the data set.	R	R	R	R	R	R	R	R	R	R
1.5.1	Bounding	Bounding Coordinates - the limits of coverage of a data set expressed by latitude and longitude values	R	R	R	R	R	R	R	R	R	R
1.5.1.1	Westbc	West Bounding Coordinate -- western-most coordinate of the limit of coverage expressed in longitude.	R	R	R	R	R	R	R	R	R	R
1.5.1.2	Eastbc	East Bounding Coordinate -- eastern-most coordinate of the limit of coverage expressed in longitude.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
1.5.1.3	Northbc	North Bounding Coordinate -- northern-most coordinate of the limit of coverage expressed in latitude.	R	R	R	R	R	R	R	R	R	R
1.5.1.4	Southbc	South Bounding Coordinate -- southern-most coordinate of the limit of coverage expressed in latitude.	R	R	R	R	R	R	R	R	R	R
1.6	Keywords	Keywords -- words or phrases summarizing an aspect of the data set.	R	R	R	R	R	R	R	R	R	R
1.6.1	Theme*	Theme -- subjects covered by the data set	R	R	R	R	R	R	R	R	R	R
1.6.1.1	Themekt	Theme Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of theme keywords.	R	R	R	R	R	R	R	R	R	R
1.6.1.2	Themekey*	Theme Keyword -- common-use word or phrase used to describe the subject of the data set.	R	R	R	R	R	R	R	R	R	R
1.6.2	Place*	Place -- geographic locations characterized by the data set.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
1.6.2.1	Placekt	Place Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of place keywords.	R	R	R	R	R	R	R	R	R	R
1.6.2.2	Placekey*	Place Keyword -- the geographic name of a location covered by a data set.	R	R	R	R	R	R	R	R	R	R
1.7	Accconst	Access Constraints -- restrictions and legal prerequisites for accessing the data set.	R	R	R	R	R	R	R	R	R	R
1.8	Useconst	Use Constraints -- restrictions and legal prerequisites for using the data set after access is granted.	R	R	R	R	R	R	R	R	R	R
1.9	Ptcontac	Point of Contact -- contact information for an individual or organization that is knowledgeable about the data set.										R
1.9.1	Cntinfo	Contact Information -- Identity of, and means to communicate with, person(s) and organization(s) associated with the data set.										R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
1.9.1.2	Cntorgp	Contact Organization Primary -- the organization, and the member of the organization associated with the data set.										R
1.9.1.2.1	Cntorg	Contact Organization -- the name of the organization to which the contact type applies.										R
1.9.1.4	Cntaddr*	Contact Address -- the address for the organization or individual.										R
1.9.1.4.1	Addrtype	Address Type -- the information provided by the address.										R
1.9.1.4.2	Address*	Address -- an address line for the address.										R
1.9.1.4.3	City	City -- the city of the address.										R
1.9.1.4.4	State	State or Province -- the state or province of the address.										R
1.9.1.4.5	Postal	Postal Code -- the ZIP or other postal code of the address.										R
1.9.1.4.6	Country	Country -- the country of the address.										R
1.9.1.5	Cntvoice*	Contact Voice Telephone -- the telephone number by which individuals can speak to the										R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
		organization or individual.										
1.9.1.8	Cntemail*	Contact Electronic Mail Address -- the address of the electronic mailbox of the organization or individual.										R
1.14	Crossref*	Cross Reference -- information about other, related data sets that are likely to be of interest.										R
1.14.1	Citeinfo	Citation Information -- the recommended reference to be used for the data set.										R
1.14.1.1	Origin*	(See CSDGM Description)										R
1.14.1.2	Pubdate	(See CSDGM Description)										R
1.14.1.4	Title	(See CSDGM Description)										R
1.14.1.6	Geoform	(See CSDGM Description)										R
1.14.1.8	Pubinfo / pubplace & pubinfo / publish	(See CSDGM Description)										R
1.14.1.10	Onlink*	(See CSDGM Description)										R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
2	dataqual	Data Quality Information -- General assessment of the quality of the data set	R	R	R	R	R	R	R	R	R	R
2.1	Attracc	Attribute Accuracy -- an assessment of the accuracy of the identification of entities and assignment of attribute values in the data set.										R
2.1.1	Attraccr	Attribute Accuracy Report -- an explanation of the accuracy of the identification of the entities and assignments of values in the data set and a description of the tests used.										R
2.2	Logic	Logical Consistency Report -- an explanation of the fidelity of relationships in the data set and tests used.	R	R	R	R	R	R	R	R	R	R
2.3	Complete	Completeness Report -- information about omissions, selection criteria, generalization, definitions used, and other rules used to derive the data set.	R	R	R	R	R	R	R	R	R	R
2.4	Posacc	Positional Accuracy -- an assessment of the accuracy of the positions of spatial		R	R	R			R	R		R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
		objects.										
2.4.1	Horizpa	Horizontal Positional Accuracy -- an estimate of accuracy of the horizontal positions of the spatial objects.		R		R			R	R		R
2.4.1.1	Horizpar	Horizontal Positional Accuracy Report -- an explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used.		R		R			R	R		R
2.4.1.2	Qhorizpa*	Quantitative Horizontal Positional Accuracy Assessment -- numeric value assigned to summarize the accuracy of the horizontal coordinate measurements and the identification of the test that yielded the value.							R	R		
2.4.1.2.1	Horizpav	Horizontal Positional Accuracy Value -- an estimate of the accuracy of the horizontal coordinate measurements in the data set expressed in (ground) meters.							R	R		

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
2.4.1.2.2	Horizpae	Horizontal Positional Accuracy Explanation – the identification of the test that yielded the Horizontal Positional Accuracy Value.							R	R		
2.4.2	Vertacc	Vertical Positional Accuracy -- an estimate of accuracy of the vertical positions in the data set.		R	R	R						R
2.4.2.1	Vertaccr	Vertical Positional Accuracy Report -- an explanation of the accuracy of the vertical coordinate measurements and a description of the tests used.		R	R	R						R
2.4.2.2	Qvertpa*	Quantitative Vertical Positional Accuracy Assessment -- numeric value assigned to summarize the accuracy of vertical coordinate measurements and the identification of the test that yielded the value.			R							
2.4.2.2.1	Vertaccv	Vertical Positional Accuracy Value -- an estimate of the accuracy of the vertical coordinate measurements in the data set expressed in (ground) meters.			R							

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
2.4.2.2.2	Vertacce	Vertical Positional Accuracy Explanation – the identification of the test that yielded the Vertical Positional Accuracy Value.			R							
2.5	Lineage	Lineage -- information about the events, parameters, and source data which constructed the data set, and information about the responsible parties.	R	R	R	R	R	R	R	R	R	R
2.5.1	Srcinfo*	Source Information -- list of sources and a short discussion of the information contributed by each.	R	R	R	R	R	R		R	R	R
2.5.1.1	Srccite	Source Citation -- reference for a source data set.	R	R	R	R	R	R		R	R	R
2.5.1.1.1	Citeinfo	Citation Information -- the recommended reference to be used for the data set.	R	R	R	R	R	R		R	R	R
2.5.1.1.1.1	Origin*	(See CSDGM Description)	R	R	R	R	R	R		R	R	R
2.5.1.1.1.2	Pubdate	(See CSDGM Description)	R	R	R	R	R	R		R	R	R
2.5.1.1.1.4	Title	(See CSDGM Description)	R	R	R	R	R	R		R	R	R
2.5.1.3	Typesrc	Type of Source Media -- the medium of the source data set.	R	R	R	R	R	R		R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
2.5.1.4	Srctime	Source Time Period of Content -- time period(s) for which the source data set corresponds to the ground.	R	R	R	R	R	R		R	R	R
2.5.1.4.1	Timeinfo	Time Period of Information – Information about date and time of event.	R	R	R	R	R	R	R	R	R	R
2.5.1.4.1.1	Sngdate	Single Date/Time – means of encoding a single date and time.	R	R	R	R	R	R	R	R	R	R
2.5.1.4.1.1.1	Caldate	Calendar Date – the year (and optionally month, or month and day)	R	R	R	R	R	R	R	R	R	R
2.5.1.4.2	Srccurr	Source Currentness Reference -- the basis on which the source time period of content information of the source data set is determined.	R	R	R	R	R	R		R	R	R
2.5.1.5	Srccitea	Source Citation Abbreviation -- short-form alias for the source citation.	R	R	R	R	R	R		R	R	R
2.5.1.6	Srccontr	Source Contribution -- brief statement identifying the information contributed by the source to the data set.	R	R	R	R	R	R		R	R	R
2.5.2	Procstep*	Process Step -- information about a single event.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
2.5.2.1	Procdesc	Process Description -- an explanation of the event and related parameters or tolerances.	R	R	R	R	R	R	R	R	R	R
2.5.2.3	Procdate	Process Date -- the date when the event was completed.	R	R	R	R	R	R	R	R	R	R
2.6	Cloud	Cloud Cover -- area of a data set obstructed by clouds, expressed as a percentage of the spatial extent.								R		
4	Spref	Spatial Reference Information – the description of the reference frame for, and the means to encode coordinates in the data set.	R	R	R	R	R	R	R	R	R	R
4.1	Horizsys	Horizontal Coordinate System Definition -- the reference frame or system from which linear or angular quantities are measured and assigned to the position that a point occupies. (4.2.1 or 4.2.2 or 4.2.3)	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
4.1.1	Geograph[6]	Geographic -- the quantities of latitude and longitude which define the position of a point on the Earth's surface with respect to a reference spheroid.	R	R	R	R	R	R	R	R	R	
4.1.1.1	Latres	Latitude Resolution -- the minimum difference between two adjacent latitude values expressed in Geographic Coordinate Units of measure.	R	R	R	R	R	R	R	R	R	
4.1.1.2	Longres	Longitude Resolution -- the minimum difference between two adjacent longitude values expressed in Geographic Coordinate Units of measure.	R	R	R	R	R	R	R	R	R	
4.1.1.3	Geogunit	Geographic Coordinate Units -- units of measure used for the latitude and longitude values.	R	R	R	R	R	R	R	R	R	

[6] The Horizsys.Geograph, Horizsys.Planar and Horizsys.Local elements are mutually exclusive (i.e., only one of these elements must be used). See profiles for details.

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
4.1.2	Planar[7] *	Planar -- the quantities of distances, or distances and angles, which define the position of a point on a reference plane to which the surface of the Earth has been projected.	R	R	R	R	R	R	R	R	R	R
4.1.2.1	Mapproj[8]	Map Projection -- the systematic representation of all or part of the surface of the Earth on a plane or developable surface.	R	R	R	R	R	R	R	R	R	
4.1.2.1.1	Mapprojn	Map Projection Name – name of the map projection.	R	R	R	R	R	R	R	R	R	
4.1.2.1.2	(Map Proj. Param.)	[map projection parameters for selected projection, e.g. projection center, meridian, false easting/northing, etc.]	R	R	R	R	R	R	R	R	R	
4.1.2.2	Gridsys[8]	Grid Coordinate System -- a plane-rectangular coordinate system usually based on, and mathematically adjusted to, a map projection so that geographic positions	R	R	R	R	R	R	R	R	R	R

[7] The Horizsys.Geograph, Horizsys.Planar and Horizsys.Local elements are mutually exclusive (i.e., only one of these elements must be used). See profiles for details.

[8] The Planar.Mapproj, Planar.Gridsys and Planar.Localpd elements are mutually exclusive (i.e., only one of these elements must be used). See profiles for details.

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
		can be readily transformed to and from plane coordinates.										
4.1.2.2.1	Gridsysn	Grid Coordinate System Name -- name of the grid coordinate system.	R	R	R	R	R	R	R	R	R	R
4.1.2.2.2	(Grid Sys. Param.)	[grid system parameters for selected grid system. E.g. UTM or state zone]	R	R	R	R	R	R	R	R	R	R
4.1.2.3	Localpd[8]	Local Planar -- any right-handed planar coordinate system of which the z-axis coincides with a plumb line through the origin that locally is aligned with the surface of the Earth.	R	R	R	R	R	R	R	R	R	
4.1.2.3.1	Localpd	Local planar description	R	R	R	R	R	R	R	R	R	
4.1.2.3.2	Localpgi	Georeference Information	R	R	R	R	R	R	R	R	R	
4.1.2.4	Planci	Planar Coordinate Information -- information about the coordinate system developed on the planar surface.	R	R	R	R	R	R	R	R	R	R
4.1.2.4.1	Plance	planar coordinate encoding method	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
4.1.2.4.2	Coordrep	coordinate representation	R	R	R	R	R	R	R	R	R	R
4.1.2.4.2.1	Absres	Abscissa resolution	R	R	R	R	R	R	R	R	R	R
4.1.2.4.2.2	Ordres	Ordinate resolution	R	R	R	R	R	R	R	R	R	R
4.1.3	Local[8]	Local -- a description of any coordinate system that is not aligned with the surface of the Earth.	R	R	R	R	R	R	R	R	R	
4.1.3.1	Localdes	Local Description -- a description of the coordinate system and its orientation to the surface of the Earth.	R	R	R	R	R	R	R	R	R	
4.1.3.2	Localgeo	Local Georeference Information -- a description of the information provided to register the local system to the Earth (e.g. control points, satellite ephemeral data, inertial navigation data).	R	R	R	R	R	R	R	R	R	
4.1.4	Geodetic	Geodetic Model -- parameters for the shape of the earth.	R		R	R	R	R		R	R	R
4.1.4.1	Horizdn	Horizontal Datum Name -- the identification given to the reference system used for defining the coordinates of points.	R		R	R	R	R		R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
4.1.4.2	Ellips	Ellipsoid Name -- identification given to established representations of the Earth's shape.	R		R	R	R	R		R	R	R
4.1.4.3	Semiaxis	Semi-major Axis -- radius of the equatorial axis of the ellipsoid.	R		R	R	R	R		R	R	R
4.1.4.4	Denflat	Denominator of Flattening Ratio -- the denominator of the ratio of the difference between the equatorial and polar radii of the ellipsoid when the numerator is set to 1.	R		R	R	R	R		R	R	R
4.2	Vertdef	Vertical Coordinate System Definition -- the reference frame or system from which vertical distances (altitudes or depths) are measured.			R	R						R
4.2.1	Altsys	Altitude System Definition -- the reference frame or system from which altitudes (elevations) are measured.			R	R						R
4.2.1.1	Altdatum	Altitude Datum Name -- the identification given to the surface taken as the surface of reference from which altitudes are measured.			R	R						R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
4.2.1.2	Altres*	Altitude Resolution -- the minimum distance possible between two adjacent altitude values, expressed in Altitude Distance Units of measure.			R	R						R
4.2.1.3	Altunits	Altitude Distance Units -- units in which altitudes are recorded.			R	R						R
4.2.1.4	Altenc	Altitude Encoding Method -- the means used to encode the altitudes.			R	R						R
5	eainfo	Entity and Attribute Information – details about information content of the data set, including entity types, their attributes and the domains from which attribute values may be assigned.	R	R	R	R	R	R	R	R	R	R
5.1	Detailed*	Detailed Description -- description of the entities, attributes, attribute values, and related characteristics encoded in the data set.	R	R	R	R	R	R		R	R	R
5.1.1	Enttype	Entity Type -- the definition and description of a set into which similar entity instances are classified.	R	R	R	R	R	R		R	R	R
5.1.1.1	Enttypl	Entity Type Label -- the name of the entity type.	R	R	R	R	R	R		R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
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5.1.1.2	Enttypd	Entity Type Definition -- the description of the entity type.	R	R	R	R	R	R		R	R	R
5.1.1.3	Enttypds	Entity Type Definition Source -- the authority of the definition.	R	R	R	R	R	R		R	R	R
5.2	Overview*	Overview Description -- summary of, and citation to detailed description of, the information content of the data set.	R	R	R	R	R	R	R	R	R	R
5.2.1	Eaover	Entity and Attribute Overview -- detailed summary of the information contained in a data set.	R	R	R	R	R	R	R	R	R	R
5.2.2	Eadetcit*	Entity and Attribute Detail Citation -- reference to the complete description of the entity types, attributes, and attribute values for the data set.	R	R	R	R	R	R	R	R	R	R
6	distinfo	Distribution Information – information about the distributor of and options for obtaining the data set. *	R	R	R	R	R	R	R	R	R	R
6.1	Distrib	Distributor -- the party from whom the data set may be obtained.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
6.1.1	Cntinfo	Contact Information -- Identity of, and means to communicate with, person(s) and organization(s) associated with the data set.	R	R	R	R	R	R	R	R	R	R
6.1.1.2	Cntorgp	Contact Organization Primary -- the organization, and the member of the organization associated with the data set.	R	R	R	R	R	R	R	R	R	R
6.1.1.2.1	Cntorg	Contact Organization -- the name of the organization to which the contact type applies.	R	R	R	R	R	R	R	R	R	R
6.1.1.4	Cntaddr*	Contact Address -- the address for the organization or individual.	R	R	R	R	R	R	R	R	R	R
6.1.1.4.1	Addrtype	Address Type -- the information provided by the address.	R	R	R	R	R	R	R	R	R	R
6.1.1.4.2	Address*	Address -- an address line for the address.	R	R	R	R	R	R	R	R	R	R
6.1.1.4.3	City	City -- the city of the address.	R	R	R	R	R	R	R	R	R	R
6.1.1.4.4	State	State or Province -- the state or province of the address.	R	R	R	R	R	R	R	R	R	R
6.1.1.4.5	Postal	Postal Code -- the ZIP or other postal code of the address.	R	R	R	R	R	R	R	R	R	R
6.1.1.4.6	Country	Country -- the country of the address.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
6.1.1.5	Cntvoice*	Contact Voice Telephone -- the telephone number by which individuals can speak to the organization or individual.	R	R	R	R	R	R	R	R	R	R
6.1.1.8	Cntemail*	Contact Electronic Mail Address -- the address of the electronic mailbox of the organization or individual.	R	R	R	R	R	R	R	R	R	R
6.1.1.10	Cntinst	Contact Instructions -- supplemental instructions on how or when to contact the individual or organization.							R			R
6.3	Distliab	Distribution Liability -- statement of the liability assumed by the distributor.	R	R	R	R	R	R	R	R	R	R
6.4	Stdorder	Standard Order Process -- the common ways in which the data set may be obtained or received, and related instructions and fee information.	R	R	R	R	R	R	R	R	R	R
6.4.1	Nondig	Non-digital Form -- the description of options for obtaining the data set on non-computer-compatible media.										

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
6.4.2	Digform*	Digital Form -- the description of options for obtaining the data set on computer-compatible media	R	R	R	R	R	R	R	R	R	R
6.4.2.1	Digtinfo	Digital Transfer Information - description of the form of the data to be distributed.	R	R	R	R	R	R	R	R	R	R
6.4.2.1.1	Formname	Format Name -- the name of the data transfer format.	R	R	R	R	R	R	R	R	R	R
6.4.2.2	Digtopt	Digital Transfer Option -- the means and media by which a data set is obtained from the distributor.	R	R	R	R	R	R	R	R	R	R
6.4.2.2.1	Onlinopt*	Online Option -- information required to directly obtain the data set electronically.	R	R	R	R	R	R	R	R	R	R
6.4.2.2.1.1	Computer*	Computer Contact Information -- instructions for establishing communications with the distribution computer.	R	R	R	R	R	R	R	R	R	R
6.4.2.2.1.1.1	Networka	network address	R	R	R	R	R	R	R	R	R	R
6.4.2.2.1.1.1.1	Networkr*	Resource name	R	R	R	R	R	R	R	R	R	R
6.4.2.2.2	Offoptn	Offline Option -- information about media-specific options for receiving the data set.							R			R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
6.4.2.2.2.1	Offmedia	Offline Media							R			R
6.4.2.2.2.3	Recfmt	recording format							R			R
6.4.3	Fees	Fees -- the fees and terms for retrieving the data set.	R	R	R	R	R	R	R	R	R	R
7	metainfo	Metadata Reference Information – information on the currentness of the metadata information and the responsible party	R	R	R	R	R	R	R	R	R	R
7.1	Metd	Metadata Date -- the date that the metadata were created or last updated.	R	R	R	R	R	R	R	R	R	R
7.4	Metc	Metadata Contact -- the party responsible for the metadata information.	R	R	R	R	R	R	R	R	R	R
7.4.1	Cntinfo	Contact Information -- Identity of, and means to communicate with, person(s) and organization(s) associated with the data set.	R	R	R	R	R	R	R	R	R	R
7.4.1.1	Cntperp	Contact Person Primary -- the name of the individual to which the contact type.	R	R	R	R	R	R	R	R	R	R
7.4.1.1.1	Cntper	Contact Person -- the name of the individual	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
		to which the contact type applies.										
7.4.1.1.2	Cntorg	Contact Organization -- the name of the organization to which the contact type applies.	R	R	R	R	R	R	R	R	R	R
7.4.1.3	Cntpos	Contact Position -- the title of individual.										R
7.4.1.4	Cntaddr*	Contact Address -- the address for the organization or individual.	R	R	R	R	R	R	R	R	R	R
7.4.1.4.1	Addrtype	Address Type -- the information provided by the address.	R	R	R	R	R	R	R	R	R	R
7.4.1.4.2	Address*	Address -- an address line for the address.	R	R	R	R	R	R	R	R	R	R
7.4.1.4.3	City	City -- the city of the address.	R	R	R	R	R	R	R	R	R	R
7.4.1.4.4	State	State or Province -- the state or province of the address.	R	R	R	R	R	R	R	R	R	R
7.4.1.4.5	Postal	Postal Code -- the ZIP or other postal code of the address.	R	R	R	R	R	R	R	R	R	R
7.4.1.4.5	Country	Country -- the country of the address.	R	R	R	R	R	R	R	R	R	R
7.4.1.5	Cntvoice*	Contact Voice Telephone -- the telephone number by which individuals can speak to the organization or individual.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
7.4.1.8	Cntemail*	Contact Electronic Mail Address -- the address of the electronic mailbox of the organization or individual.	R	R	R	R	R	R	R	R	R	R
7.5	Metstdn	Metadata Standard Name -- the name of the metadata standard used to document the data set.	R	R	R	R	R	R	R	R	R	R
7.6	Metstdv	Metadata Standard Version -- identification of the version of the metadata standard used to document the data set.	R	R	R	R	R	R	R	R	R	R
7.11	Metextns*	Metadata Extensions -- a reference to extended elements to the standard which may be defined by a metadata producer or a user community.	R	R	R	R	R	R	R	R	R	R
7.11.1	Onlink*	Online Linkage -- the name of an online computer resource that contains the metadata extension information for the data set. Entries should follow the Uniform Resource Locator convention of the Internet.	R	R	R	R	R	R	R	R	R	R

CSDGM Metadata Element			NFIP Metadata Profile									
			DCS				Study		Fmwk			
Number	Name	CSDGM Description	HYDRO	HYDRA	TERRAIN	SURVEY	COASTAL	ALLUV	BASEMAP	ORTHO	FLOODPLAIN	DFIRM
7.11.2	Metprof	Profile Name -- the name given to a document that describes the application of the Standard to a specific user community.	R	R	R	R	R	R	R	R	R	R

5. NFIP Metadata Profiles

Metadata profile specifications for the ten different NFIP submission packages below are currently maintained as separate documents, as described in table 5.

Table 5. NFIP Metadata Profiles and Corresponding Specifications Documents

NFIP Metadata Profile and Submission Package	Specification Document for NFIP Metadata Profile
Alluvial Fan	FEMA NFIP Metadata Profile: Alluvial Fan
Basemap	FEMA NFIP Metadata Profile: Basemap and/or Orthoimagery
Coastal	FEMA NFIP Metadata Profile: Coastal
DFIRM	FEMA NFIP Metadata Profile: DFIRM
Floodplain Mapping	FEMA NFIP Metadata Profile: Floodplain Mapping/Redelineation
Hydraulics	FEMA NFIP Metadata Profile: Hydraulics
Hydrology	FEMA NFIP Metadata Profile: Hydrology
Redelineation	FEMA NFIP Metadata Profile: Floodplain Mapping/Redelineation
Survey	FEMA NFIP Metadata Profile: Survey
Terrain	FEMA NFIP Metadata Profile: Terrain

6. Glossary of Terms

Authority Record	A record that shows the preferred form of a personal or corporate name, geographic region, or subjects.
Controlled Vocabulary	A collection of preferred terms that are used to assist in more precise retrieval of content.
Crosswalk	A table that maps the relationships and equivalencies between two or more metadata formats.
CSGDM	The Content Standard for Digital Geospatial Metadata (FGDC-STD-001-1998), an FGDC-developed standard for describing the content, quality, condition, and other key characteristics of geospatial data.
Dublin Core	A 15-element metadata set intended to facilitate discovery of a wide range of electronic resources.
Element	A discrete unit of metadata.
Extensible Markup Language (XML)	A W3C standard markup language for documents containing structured information. As opposed to HTML, which is designed specifically for web browsers, XML is the basis for a broad array of standards that describe messages between systems, document structures, etc. XML is human readable and platform independent.
FGDC	The Federal Geographic Data Committee, a 19-member interagency committee composed of representatives from the Executive Office of the President, Cabinet-level, and independent agencies.
GOS	Geospatial One-Stop, an intergovernmental project managed by the Department of the Interior in support of the President's Initiative for E-Government, and designed to improve the ability of the public and government to use geospatial information to support the business of government and facilitate decision making.
Metadata	A definition or description of data. "Data about data".
Metadata Profile	A set of metadata elements, policies, and guidelines defined for a particular application.
OAI	The Open Archives Initiative, maintainers of the OAI Protocol for metadata harvesting: http://www.openarchives.org
Schema	A systematic, orderly combination of elements. A set of rules for encoding information that supports a specific user community.
Thesaurus	A taxonomy that includes associated and related terms. A type of controlled vocabulary used to standardize terminology, and subsequently, to inform discovery systems.
Uniform Resource Locator (URL)	A technique for indicating the name and location of Internet resources. The URL specifies the name and type of the resource, as well as the computer, device, and directory where the resource may be found.

World Wide Web Consortium (W3C)	An international industry consortium founded to develop common protocols and standards and to ensure interoperability on the Web.
Z39.50	An ISO standard for an application layer protocol for information retrieval which is specifically designed to aid retrieval from distributed servers: http://lcweb.loc.gov/z3950/agency.