ESRI Profile of the *Content Standard for Digital Geospatial Metadata*

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Introduction

Objective

The objective of this profile is to make metadata more accessible and useful on a daily basis when browsing, searching, and managing data. ArcGIS™ software has the capability to automatically manage and update metadata as the data changes and has made that metadata easily accessible. This profile defines additional elements to support that process and to document characteristics of datasets that are not addressed by the *Content Standard for Digital Geospatial Metadata*.

The *Content Standard for Digital Geospatial Metadata* will be referred to elsewhere in this document as the Federal Geographic Data Committee (FGDC) standard. The *ESRI Profile of the Content Standard for Digital Geospatial Metadata* will be referred to elsewhere in this document as the ESRI Profile.

Scope

The ESRI Profile is intended to support the daily use of metadata with ArcCatalog™ and other ESRI® software. This document describes minor modifications to the domains of a few elements in the FGDC standard. It also extends that standard by adding some new compound elements and data elements.

The elements added by the ESRI Profile are intended to allow an item's properties to be automatically harvested and recorded in the metadata, to provide information in terms that are more familiar and relevant to ESRI software users, and to allow metadata records to contain graphics and files that describe the dataset. The extended elements also allow improved documentation of items that aren't specifically addressed by the FGDC standard. In this document, "item" is used to refer to spatial and nonspatial datasets, maps, and other related documents, all of which may have metadata describing their contents. Overall, this profile helps ESRI to accomplish the goal of making metadata easier to generate, maintain, and use.

Applicability

Several United States government agencies are required to document their geospatial data by Executive Order 12906, *Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure*. The FGDC standard is the data documentation standard that is required to be used when complying with the Executive Order.

ESRI recognizes that many groups, even those who are not mandated to do so, would be more likely to create metadata if the task was easier and if the resulting metadata was

more readily available. This profile assists ESRI software in making FGDC-standard metadata easier to create and maintain.

Related Standards

The FGDC standard was developed to allow creation of standardized metadata to preserve the value and meaning of datasets, allow search and retrieval of metadata via clearinghouses, and aid in data transfer. The ESRI Profile was developed to further these goals by extending the FGDC standard.

International Organization for Standardization (ISO) document 19115, *Geographic Information—Metadata,* is currently a Final Draft International Standard; it will be referred to elsewhere in this document as the ISO metadata standard. The FGDC standard is the foundation on which the ISO metadata standard is built. The ESRI Profile is in part intended to facilitate the creation of ISO metadata by including some elements that were proposed for the ISO standard for which information could be automatically harvested from spatial datasets. When the FGDC adopts the ISO standard, ESRI will design a profile of the ISO standard so that properties of datasets can continue to be harvested and recorded in metadata documents.

Standards Development Process

The FGDC standard was officially adopted on June 8, 1994. Based on user feedback, the FGDC modified the standard in 1998. The modified standard included provisions for the development of extensions and profiles on the standard. One such profile is the *Biological Data Profile of the Content Standard for Digital Geospatial Metadata,* FGDC-STD-001.1-1999. The Biological Data Profile allows the use of the FGDC metadata standard in the development of metadata on biological resource datasets, regardless of whether the datasets are explicitly geospatial in nature.

This profile was developed at ESRI by members of the ArcGIS metadata team in consultation with metadata users. Following the guidelines in the FGDC standard, the ESRI Profile defines several extended elements to allow the documentation of a variety of types of data. As new data formats and nonspatial items are supported and advancements are made in harvesting properties from those items, new elements may be added. The ESRI Profile will be updated as necessary with each software release. However, this profile will remain "backwards compatible", and changes will be documented within it.

Maintenance Authority

The maintenance authority for the ESRI Profile is the ArcGIS metadata team. Questions concerning the profile should be addressed to ESRI Metadata Profile Questions, c/o ArcGIS Metadata Team, ESRI, 380 New York St., Redlands, CA 92373-8100. Copies of this publication are available on the World Wide Web at http://support.esri.com/ and http://www.esri.com/metadata/esriprof80.html. Copies of the *Content Standard for Digital Geospatial Metadata* are available on the World Wide Web at http://www.fgdc.gov/metadata/contstan.html.

Elements of the ESRI Profile

The ESRI Profile adds several elements to those defined by the FGDC standard. These additions provide information not addressed in the FGDC standard, information in terms native to ESRI data formats and software, and information used for the automated management and update of metadata records. The elements added by the ESRI Profile are summarized in Appendix D.

Each section in the ESRI Profile is described by the production rules defining the section's contents followed by a detailed description of each element that is added or modified by the ESRI Profile. The production rules follow the notation used by the FGDC standard; for convenience, an overview is included below. In the production rules, elements that are defined by the FGDC standard appear with black text. Elements added by the ESRI Profile are presented with light blue text. Elements defined by the FGDC standard whose conditionality or domain has been modified by the ESRI Profile are presented with orange text. This format makes it clear how the ESRI Profile augments the FGDC standard.

The element descriptions are arranged hierarchically to make it easier to see how the elements are organized. In an element's description, changes between software releases in how the element is used or changes to its domain will be noted with green text; these changes are summarized in Appendix B. Changes to an FGDC element's conditionality or domain are described with orange text; these changes are summarized in Appendix A. FGDC standard elements are only included if the element contains extended elements or if the element is modified by the ESRI Profile. Descriptions for these elements are taken from the *Content Standard for Digital Geospatial Metadata;* the element numbers are included for reference.

Below the element's description, its type, domain, short name, and source are defined. An element's type is either compound or a data type such as text, integer, real, date, or time. Compound elements contain other elements. Data elements contain values of a specific data type. Each data element has a domain defining the values the element can contain. FGDC guidelines must be followed when specifying an element's value. Refer to the FGDC standard for information about how to record dates and times, latitude and longitude, and network addresses and file names in the metadata. When stored in XML format, the short name is used to represent each element in the metadata document.

Overview of Production Rules

The production rules define the relationships between a compound element and the elements it may contain; refer to the FGDC standard for a complete description of the production rules. Each production rule has the compound element on the left, an equal sign, and an expression on the right. The expression may include data elements and other compound elements. The symbols used in the production rules have the following meaning

=	is replaced by, produces, consists of.
+	and.
[|]	selection—Select one term from the list of enclosed terms (exclusive or). Terms are separated by "|".
m{}n	iteration—The term(s) enclosed is(are) repeated from "m" to "n" times.
()	optional—The term(s) enclosed is(are) optional.

For example:

a = b + c	a consists of b and c.
a = [b | c]	a consists of b or c.
a = 4{b}6	a consists of four to six occurrences of b.
a = b + (c)	a consists of b and, optionally, c.

Because all items do not have the same characteristics, elements may be "mandatory if applicable". This means that if the item exhibits a characteristic, information about that characteristic must be provided. For example, if the item is a vector dataset, information about its features must be provided. If the item is a raster dataset, information describing the raster data must be provided—elements that describe vector data are not included. This concept is described by the production rule 0{term}1.

Terms enclosed by parentheses, "(" and ")", are optional. If you choose to provide optional information, you shall follow the production rules for the enclosed information. For example, if you decide to provide the optional information described by the term (a + b + c), you shall provide a and b and c.

Metadata

Metadata =
    0{ESRI_Information}1 +
    Identification_Information +
    0{Data_Quality_Information}1 +
    0{Spatial_Data_Organization_Information}1 +
    0{Spatial_Reference_Information}1 +
    0{Entity_and_Attribute_Information}1 +
    0{Distribution_Information}n +
    Metadata_Reference_Information +
    (Binary_Enclosures)

ESRI Information—Contains elements that identify a metadata record and support metadata management and synchronization by ArcCatalog.
    Type: compound
    Short Name: Esri
    Source: ESRI

Binary Enclosures—Contains additional documents that have been included in the metadata to describe the item.
    Type: compound
    Short Name: Binary
    Source: ESRI

ESRI Information

ESRI_Information =
    0{Metadata_ID}1 +
    0{Creation_Date}1 +
    0{Creation_Time}1 +
    0{Synchronize_Once}1 +
    0{Synchronization_Date}1 +
    0{Synchronization_Time}1 +
    0{Modification_Date}1 +
    0{Modification_Time}1 +
    0{Published_Document_ID}1 +
    0{Publish_Status}1 +
    0{ArcIMS_Server}1 +
    0{ArcIMS_Service}1 +

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```
                0{ArcIMS_Service_Type}1 +
                0{ArcIMS_Feature_Class_Type}1 +
                0{ArcIMS_Feature_Class_Name}1 +
                0{Data_Properties}1 +
                (Synchronize_Automatically) +
                0{Geocoding_Information}1

Data_Properties =
                0{Topology_Information}1

Topology_Information =
                Topology_Properties +
                0{Topology_Rule}n

Topology_Properties =
                Topology_Name +
                Cluster_Tolerance +
                Maximum_Error_Count

Topology_Rule =
                Topology_Rule_ID +
                (Topology_Rule_Name) +
                Topology_Rule_Type +
                (Rule_Help) +
                Topology_Rule_Origin +
                Topology_Rule_Destination

Topology_Rule_Origin =
                Feature_Class_Name +
                Subtype_Code +
                Subtype_Name +
                All_Origin_Subtypes

Topology_Rule_Destination =
                Feature_Class_Name +
                Subtype_Code +
                Subtype_Name +
                All_Destination_Subtypes

Geocoding_Information =
                This information is unavailable at this time.
```

Metadata ID—A Globally Unique Identifier (GUID) that is assigned to the metadata record when it is created. A GUID is a 128-bit number that is generated by an algorithm, for example, {227697D8-9E74-11D3-A63C-0008C7DF8C99}. While this identifier was intended to uniquely identify the metadata record and its associated item when the metadata is published to a metadata server, in practice this identifier is not guaranteed to be unique and therefore cannot be used for this purpose.
> Type: text
> Domain: 38-character text string representing a GUID
> Short Name: MetaID
> Source: ESRI

Creation Date—The date that the metadata was created.
> Type: date
> Domain: free date
> Short Name: CreaDate
> Source: ESRI

Creation Time—The time that the metadata was created.
> Type: time
> Domain: free time
> Short Name: CreaTime
> Source: ESRI

Synchronize Once—The presence of this element with the value "TRUE" indicates that the metadata hasn't been synchronized with the item it describes. Synchronization is the process of automatically harvesting an item's properties and recording them in the metadata. When synchronization occurs and the value is "TRUE", documentation hints or similar template information is added to the metadata, and the value is changed to "FALSE". NOTE: ArcCatalog 8 removed this element rather than changing its value; this will not affect synchronization with version 8.1 or later.
> Type: text
> Domain: "TRUE", "FALSE"
> Short Name: SyncOnce
> Source: ESRI

Synchronization Date—The date that the metadata was last synchronized by ArcCatalog.
> Type: date
> Domain: free date
> Short Name: SyncDate
> Source: ESRI

Synchronization Time—The time that the metadata was last synchronized by ArcCatalog.
> Type: time
> Domain: free time
> Short Name: SyncTime
> Source: ESRI

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Modification Date—The date that the metadata was last modified either by synchronization or manual editing. Manually editing the metadata in ArcCatalog refers to one of the following tasks: using a metadata editor, using the Metadata Properties dialog box (for example, to add an enclosure), creating or updating the item's thumbnail, or modifying the metadata programmatically through ArcObjects™.

      Type: date
      Domain: free date
      Short Name: ModDate
      Source: ESRI

Modification Time—The time that the metadata was last modified either by synchronization or manual editing.

      Type: time
      Domain: free time
      Short Name: ModTime
      Source: ESRI

Published Document ID—A Globally Unique Identifier that is assigned to the metadata record the first time it is published to an ArcIMS® Metadata Service. A GUID is a 128-bit number that is generated by an algorithm, for example, {227697D8-9E74-11D3-A63C-0008C7DF8C99}. This value is guaranteed to be unique; it will identify the metadata record and its associated item when the metadata is published to any ArcIMS Metadata Service.

      Type: text
      Domain: 38-character text string representing a GUID
      Short Name: PublishedDocID
      Source: ESRI

Published Status—Identifies whether or not the metadata record has been successfully published to an ArcIMS Metadata Service.

      Type: text
      Domain: "Published", "Error publishing"
      Short Name: PublishStatus
      Source: ESRI

ArcIMS Server—Used to identify the ArcIMS service that is described by the metadata record. The HTTP location associated with the ArcIMS site from which the service is available. The location should be specified in the form of a Uniform Resource Locator (URL).

      Type: text
      Domain: free text
      Short Name: Server
      Source: ESRI

ArcIMS Service—The name of the ArcIMS service that is described by the metadata record.
        Type: text
        Domain: free text
        Short Name: Service
        Source: ESRI

ArcIMS Service Type—The type of ArcIMS service described by the metadata record.
        Type: text
        Domain: "image", "feature"
        Short Name: ServiceType
        Source: ESRI

ArcIMS Feature Class Type—The type of ArcIMS feature class described by the metadata record.
        Type: text
        Domain: "image", "feature", "wms"
        Short Name: ServiceFCType
        Source: ESRI

ArcIMS Feature Class Name—The name of the ArcIMS feature class described by the metadata record.
        Type: text
        Domain: free text
        Short Name: ServiceFCName
        Source: ESRI

Data Properties—Collection of properties describing the item.
        Type: compound
        Short Name: DataProperties
        Source: ESRI

        Topology Information—Information about a topology in a geodatabase.
                Type: compound
                Short Name: topoinfo
                Source: ESRI

                Topology Properties—General properties of the topology.
                        Type: compound
                        Short Name: topoProps
                        Source: ESRI

                        Topology Name—The name of the topology.
                                Type: real
                                Domain: free real
                                Short Name: topoName
                                Source: ESRI

Cluster Tolerance—The tolerance used when validating the topology.
Type: real
Domain: free real
Short Name: clusterTol
Source: ESRI

Maximum Error Count—The maximum number of errors that will be handled during validation. If the number of topology errors found exceeds this number, validation will stop.
Type: integer
Domain: free integer
Short Name: maxErrors
Source: ESRI

Topology Rule—Information about a topology rule.
Type: compound
Short Name: topoRule
Source: ESRI

Topology Rule ID—An identifier for this topology rule.
Type: integer
Domain: free integer
Short Name: topoRuleID
Source: ESRI

Topology Rule Name—The name of the topology rule.
Type: text
Domain: free text
Short Name: topoRuleName
Source: ESRI

Topology Rule Type—The constant identifying the type of topology rule. For example, the esriTopologyRuleType constant "3" indicates a rule stating areas in the topology must not overlap.
Type: integer
Domain: $0 <= x <= 44$
Short Name: topoRuleType
Source: ESRI

Rule Help—Describes the rule.
Type: text
Domain: free text
Short Name: rulehelp
Source: ESRI

Topology Rule Origin—Information about the origin feature class for the topology rule.
> Type: compound
> Short Name: topoRuleOrigin
> Source: ESRI

> Feature Class Name—The name of the feature class participating in this topology rule.
>> Type: text
>> Domain: free text
>> Short Name: fcname
>> Source: ESRI

> Subtype Name—The name of the subtype.
>> Type: text
>> Domain: free text
>> Short Name: stname
>> Source: ESRI

> Subtype Code—The code for the subtype. Each object in a feature class or table has a numeric value, or code, in an attribute that identifies the subtype to which it belongs.
>> Type: integer
>> Domain: free integer
>> Short Name: stcode
>> Source: ESRI

> All Origin Subtypes—"TRUE" if the topology rule applies to all subtypes within the origin feature class.
>> Type: text
>> Domain: "TRUE", "FALSE"
>> Short Name: allOriginSubtypes
>> Source: ESRI

Topology Rule Destination—Information about the destination feature class for the topology rule.
> Type: compound
> Short Name: topoRuleDest
> Source: ESRI

> All Destination Subtypes—"TRUE" if the topology rule applies to all subtypes within the destination feature class.
>> Type: text
>> Domain: "TRUE", "FALSE"
>> Short Name: allDestSubtypes
>> Source: ESRI

Synchronize Automatically—Identifies whether or not the metadata will be synchronized automatically in the future. Automatic synchronization will not take place if this element is present and its value is "FALSE". This element is added to the metadata record if you check Do not automatically update metadata in the Metadata Properties dialog box. You might do this after the data and its metadata have been published.

> Type: text
> Domain: "TRUE", "FALSE"
> Short Name: Sync
> Source: ESRI

Geocoding Information—A description of the geocoding service and the process that was used to create the data. This information is added and maintained by the geocoding system, not by metadata synchronization. The contents of this compound element are not available at this time.

> Type: compound
> Short Name: RematchLocator
> Source: ESRI

Identification Information

Identification_Information =
> Citation +
> Description +
> Time_Period_of_Content +
> Status +
> Spatial_Domain +
> 0{Spatial_Domain}1 +
> Keywords +
> Access_Constraints +
> Use_Constraints +
> (Point_of_Contact) +
> (1{Browse_Graphic}n) +
> (Data_Set_Credit) +
> (Security_Information) +
> Native_Dataset_Format +
> (Native_Data_Set_Environment) +
> (1{Cross_Reference}n)

Citation =
> Citation_Information *(see Citation Information for production rules)*

Description =
> Abstract +
> Purpose +
> (Supplemental_Information) +
> Language_of_Dataset

Time_Period_of_Content =
> Time_Period_Information *(see Time Period Information for production rules)* +
> Currentness_Reference

```
Status =
        Progress +
        Maintenance_and_Update_Frequency

Spatial_Domain =
        Bounding_Coordinates +
        0{Local_Bounding_Coordinates}1 +
        0{Minimum_Altitude}1 +
        0{Maximum_Altitude}1 +
        (Altitude_Units) +
        (1{Data_Set_G-Polygon}n) +
        (Data Frames)

Bounding_Coordinates =
        West_Bounding_Coordinate +
        East_Bounding_Coordinate +
        North_Bounding_Coordinate +
        South_Bounding_Coordinate

Local Bounding_Coordinates =
        Left_Bounding_Coordinate +
        Right_Bounding_Coordinate +
        Top_Bounding_Coordinate +
        Bottom_Bounding_Coordinate

Data_Set_G-Polygon =
        Data_Set_G-Polygon_Outer_G-Ring +
        0{Data_Set_G-Polygon_Exclusion_G-Ring}n

Data_Set_G-Polygon_Outer_G-Ring =
        [4{G-Ring_Point}n |
                G-Ring]

Data_Set_G-Polygon_Exclusion_G-Ring =
        [4{G-Ring_Point}n |
                G-Ring]

G-Ring_Point =
        G-Ring_Latitude +
        G-Ring_Longitude

Data_Frames =
        Data_Frame_Count +
        0{Data_Frame_Name}n
```

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Keywords =
  1{Theme}n +
  0{Place}n +
  0{Stratum}n +
  0{Temporal}n

Theme =
  Theme_Keyword_Thesaurus +
  1{Theme_Keyword}n

Place =
  Place_Keyword_Thesaurus +
  1{Place_Keyword}n

Stratum =
  Stratum _Keyword_Thesaurus +
  1{ Stratum _Keyword}n

Temporal =
  Temporal_Keyword_Thesaurus +
  1{Temporal_Keyword}n

Point_of_Contact =
  Contact_Information *(see Contact Information for production rules)*

Browse_Graphic =
  [Browse_Graphic_Embedded |
    Browse_Graphic_File_Name] +
  Browse_Graphic_File_Description +
  Browse_Graphic_File_Type

Security_Information =
  Security_Classification_System +
  Security_Classification +
  Security_Handling_Description

Cross_Reference =
  Citation_Information *(see Citation Information for production rules)* +
  (Description_of_Association)

Language of Dataset—The language used in the dataset such as attribute values or the text on a map. The language should be represented as the appropriate two-letter code as defined by ISO 639:1988, *Code for the representation of names of languages.*

> Rationale: Allows searching for data based on the language of its content and allows for a smoother transition to the ISO metadata standard.
> Type: text
> Domain: free text
> Short Name: langdata
> Source: ESRI

Spatial Domain (1.5)—The geographic areal domain of the dataset. For nonspatial items, this element shall be considered mandatory if applicable.

> Type: compound
> Short Name: spdom
> Source: FGDC standard

> Local Bounding Coordinates—The bounding coordinates of the data, expressed in the local coordinate system used by the data.
>> Rationale: The Bounding Coordinate elements require the extent of spatial data to be expressed in decimal degrees. It isn't possible to calculate the extent of projected data in decimal degrees if its coordinate system hasn't been defined. However, the extent of a spatial dataset can always be defined using the data's actual coordinates.
>> Type: compound
>> Short Name: lboundng
>> Source: ESRI

>> Left Bounding Coordinate—Leftmost coordinate (may be west) in the local coordinate system used by the data.
>>> Type: real
>>> Domain: free real
>>> Short Name: leftbc
>>> Source: ESRI

>> Right Bounding Coordinate—Rightmost coordinate (may be east) in the local coordinate system used by the data.
>>> Type: real
>>> Domain: free real
>>> Short Name: rightbc
>>> Source: ESRI

>> Top Bounding Coordinate—Topmost coordinate (may be north) in the local coordinate system used by the data.
>>> Type: real
>>> Domain: free real
>>> Short Name: topbc
>>> Source: ESRI

Bottom Bounding Coordinate—Bottommost coordinate (may be south) in the local coordinate system used by the data.
>> Type: real
>> Domain: free real
>> Short Name: bottombc
>> Source: ESRI

Minimum Altitude—The minimum elevation or z-coordinate value in the data.
> Rationale: Allows searching for data based on its elevation.
> Type: real
> Domain: free real
> Short Name: minalti
> Source: ESRI

Maximum Altitude—The maximum elevation or z-coordinate value in the data.
> Rationale: Allows searching for data based on its elevation.
> Type: real
> Domain: free real
> Short Name: maxalti
> Source: ESRI

Altitude Units—The units of measure used to express the data's elevation.
> Type: text
> Domain: "m", "meters", "ft", "feet", free text
> Short Name: altunits
> Source: ESRI

Data Frames—A description of the data frames in an ArcMap™ document.
> Rationale: Allows a more detailed description of an ArcMap document.
> Type: compound
> Short Name: eframes
> Source: ESRI

> Data Frame Count—The number of data frames in an ArcMap document.
>> Type: integer
>> Domain: free integer
>> Short Name: framect
>> Source: ESRI

> Data Frame Name—The name of a data frame.
>> Type: text
>> Domain: free text
>> Short Name: framenam
>> Source: ESRI

Browse Graphic (1.10)—A graphic that provides an illustration of the dataset. The graphic should include a legend for interpreting the graphic.
>Type: compound
>Short Name: browse
>Source: FGDC standard

>Browse Graphic Embedded—Contains an embedded graphic file in Windows Bitmap format that illustrates what the spatial data looks like. The file is encoded as Base64 text, then stored within the metadata. This element is used when thumbnails are created with ArcCatalog 8, but not with version 8.1 or later. See the Binary Enclosures element.
>>Rationale: Allows a browse graphic to be embedded in the metadata.
>>Type: text
>>Domain: free text
>>Short Name: browseem
>>Source: ESRI

Native Dataset Format—The native ESRI terminology describing the format of the data.
>Rationale: Allows searching for items based on the format of the data, which may be different from its transfer format.
>Type: text
>Domain: "ArcIMS Feature Class", "ArcIMS Feature Service", "ArcIMS Image Service", "ArcInfo Coverage", "ArcInfo Coverage Relationship Class", "AutoCAD Drawing Exchange Format", "AutoCAD Drawing File", "Coordinate System", "dBASE Table", "Filtered file", "Graph", "Info Table, "Layer", "Map", "MicroStation Design File", "PC ArcInfo Coverage", "Personal GeoDatabase Feature Class", "Personal GeoDatabase Feature Dataset", "Personal GeoDatabase Geometric Network", "Personal GeoDatabase Relationship Class", "Personal GeoDatabase Table", "Personal GeoDatabase Topology", "Raster Dataset", "SDE Feature Class", "SDE Feature Dataset", "SDE Geometric Network", "SDE Relationship Class", "SDE Table", "SDE Topology", "Scene", "SDC Feature Database", "Shapefile", "Text File", "Tin", "VPF", free text
>>NOTE: For reference, different domain values were used by ArcCatalog 8. The above values must be used to support searching by data format in ArcCatalog 8.1 and later versions; these values will be updated automatically the first time the metadata is synchronized.
>Short Name: natvform
>Source: ESRI

Cross Reference (1.14)—Information about other related datasets that are likely to be of interest.
>Type: compound
>Short Name: crossref
>Source: FGDC standard

Description of Association—A description of the relationship between the item documented by the metadata record and the cross-referenced item.
> Rationale: Indicates why the cross-referenced item might be of interest.
> Type: text
> Domain: free text
> Short Name: assndesc
> Source: ESRI

Data Quality Information

Data_Quality_Information =
>   0{Attribute_Accuracy}1 +
>   Logical_Consistency_Report +
>   Completeness_Report +
>   0{Positional_Accuracy}1 +
>   Lineage +
>   (Cloud_Cover)

Attribute_Accuracy =
>   Attribute_Accuracy_Report +
>   (1{Quantitative_Attribute_Accuracy_Assessment}n)

Quantitative_Attribute_Accuracy_Assessment =
>   Attribute_Accuracy_Value +
>   Attribute_Accuracy_Explanation

Positional_Accuracy =
>   0{Horizontal_Positional_Accuracy}1 +
>   0{Vertical_Positional_Accuracy}1

Horizontal_Positional_Accuracy =
>   Horizontal_Positional_Accuracy_Report +
>   (1{Quantitative_Horizontal_Positional_Accuracy_Assessment}n)

Quantitative_Horizontal_Positional_Accuracy_Assessment =
>   Horizontal_Positional_Accuracy_Value +
>   Horizontal_Positional_Accuracy_Explanation

Vertical_Positional_Accuracy =
>   Vertical_Positional_Accuracy_Report +
>   (1{Quantitative_Vertical_Positional_Accuracy_Assessment}n)

Quantitative_Vertical_Positional_Accuracy_Assessment =
>   Vertical_Positional_Accuracy_Value +
>   Vertical_Positional_Accuracy_Explanation

Lineage =
>   0{Source_Information}n +
>   1{Process_Step}n

Source_Information =
    Source_Citation +
    0{Source_Scale_Denominator}1 +
    Type_of_Source_Media +
    Source_Time_Period_of_Content +
    Source_Citation_Abbreviation +
    Source_Contribution

Source_Citation =
    Citation_Information *(see Citation Information for production rules)*

Source_Time_Period_of_Content =
    Time_Period_Information *(see Time Period Information for production rules)* +
    Source_Currentness_Reference

Process_Step =
    Process_Description +
    (Process_Software_and_Version) +
    0{Source_Used_Citation_Abbreviation}n +
    Process_Date +
    (Process_Time) +
    0{Source_Produced_Citation_Abbreviation}n +
    (Process_Contact)

Process_Contact =
    Contact_Information *(see Contact Information for production rules)*

Lineage (2.5)—Information about the events, parameters, and source data that constructed the dataset and information about the responsible parties.
    Type: compound
    Short Name: lineage
    Source: FGDC standard

    Process Step (2.5.2)—Information about a single event.
        Type: compound
        Short Name: procstep
        Source: FGDC standard

        Process Software and Version—The type and version of software used to perform the process.
            Rationale: As software changes over time, it can be useful to know the version of the software that was used to modify the data.
            Type: text
            Domain: free text
            Short Name: procsv
            Source: ESRI

J-8709

Spatial Data Organization Information

Spatial_Data_Organization_Information =
    0{Indirect_Spatial_Reference}1 +
    0{Direct_Spatial_Reference_Method +
        ([Point_and_Vector_Object_Information |
            Raster_Object_Information])}1 +
    0{Geometric_Network_Information}1

Point_and_Vector_Object_Information =
    0{ESRI_Terms_Description}n +
    [1{SDTS_Terms_Description}n |
        VPF_Terms_Description]

ESRI_Terms_Description =
    ESRI_Feature_Type +
    ESRI_Feature_Geometry +
    ESRI_Topology +
    ESRI_Feature_Count +
    Spatial_Index +
    Linear_Referencing +
    0{XY_Rank}1 +
    0{Z_Rank}1 +
    0{Topology_Weight}1 +
    0{Events_On_Validation}1 +
    0{Participates_In_Topology_Rules}1 +
    0{Network_Role}1 +
    (Feature_Description) +

Participates_In_Topology_Rules =
    Topology_Rule_ID

SDTS_Terms_Description =
    SDTS_Point_and_Vector_Object_Type +
    (Point_and_Vector_Object_Count)

VPF_Terms_Description =
    VPF_Topology_Level +
    1{VPF_Point_and_Vector_Object_Information}n

VPF_Point_and_Vector_Object_Information =
    VPF_Point_and_Vector_Object_Type +
    (Point_and_Vector_Object_Count)

```
Raster_Object_Information =
        Image_Format +
        Raster_Object_Type +
        (Image_Type) +
        0{Number_of_Bands}1 +
        (Row_Count +
                Column_Count +
                0{Vertical_Count}1) +
        0{Cell_Size_X_Direction}1 +
        (Cell_Size_X_Units) +
        0{Cell_Size_Y_Direction}1 +
        (Cell_Size_Y_Units) +
        0{Bits_Per_Pixel}1 +
        (Background_Nodata_Value) +
        0{Pyramid_Layers}1 +
        0{Image_Colormap}1 +
        0{Compression_Type}1
        (Raster_Display_Type) +
        0{Raster_Origin}1 +

Geometric_Network_Information =
        Network_Type +
        0{Connectivity_Rule}n +
        (1{Network_Element}n)

Connectivity_Rule =
        Rule_Type +
        (Rule_Category) +
        (Rule_Help) +
        0{From_Edge_Feature_Class}1 +
        0{From_Edge_Subtype}1 +
        0{To_Edge_Feature_Class}1 +
        0{To_Edge_Subtype}1 +
        0{Default_Junction_Feature_Class}1 +
        0{Default_Junction_Subtype}1 +
        0{Available_Junctions}n +
        0{Edge_Feature_Class}1 +
        0{Edge_Subtype}1 +
        0{Edge_Minimum_Cardinality}1 +
        0{Edge_Maximum_Cardinality }1 +
        0{Junction_Feature_Class}1 +
        0{Junction_Subtype}1 +
        0{Junction_Minimum_Cardinality}1 +
        0{Junction_Maximum_Cardinality}1
```

```
Available_Junctions =
        Available_Junction_Feature_Class +
        Available_Junction_Subtype

Network_Element =
        Ancillary_Role +
        0{Ancillary_Role_Attribute}1 +
        Enabled_Attribute
```

Point and Vector Object Information (3.3)—The types and numbers of vector or nongridded point spatial objects in the dataset.
> Type: compound
> Short Name: ptvctinf
> Source: FGDC standard

> ESRI Terms Description—The properties and numbers of vector and point objects described using native ESRI terminology.
> > Rationale: Several properties indicate how the data can be used with ArcGIS software.
> > Type: compound
> > Short Name: esriterm
> > Source: ESRI

> > ESRI Feature Type—Identifies whether the features are simple or complex. In a geodatabase, features that are complex such as dimensions have a specific, defined behavior. Complex features are also used to construct geometric networks. Geodatabase feature classes may also contain simple features. Coverages, shapefiles, and other data formats contain simple features.
> > > Type: text
> > > Domain: "Simple", "Annotation", "Dimension", "Simple Edge", "Complex Edge", "Simple Junction", "Complex Junction"
> > > Short Name: efeatyp
> > > Source: ESRI

> > ESRI Feature Geometry—The geometry of the features in native ESRI terminology.
> > > Type: text
> > > Domain: "Point", "Multipoint", "Polyline", "Polygon", "Arc", "Node", "Region", "Route", "Tic", "Label", "Annotation", "Triangle", "Edge"
> > > Short Name: efeageom
> > > Source: ESRI

ESRI Topology—Identifies feature classes that participate in network or planar topologies. For example, coverage feature classes will have the value "TRUE" if their topology has been built. Since shapefiles do not support topology, they will always have the value "FALSE". Geodatabase feature classes will have the value "TRUE" if they participate in a geometric network or a topology.

> Type: text
> Domain: "TRUE", "FALSE"
> Short Name: esritopo
> Source: ESRI

ESRI Feature Count—The number of features.

> Type: integer
> Domain: free integer
> Short Name: efeacnt
> Source: ESRI

Spatial Index—Identifies whether or not the features have a spatial index.

> Type: text
> Domain: "TRUE", "FALSE"
> Short Name: spindex
> Source: ESRI

Linear Referencing—Identifies whether or not the features can be used for linear referencing. A route feature class in a coverage and shapefiles or geodatabase feature classes that have measures can be used for linear referencing.

> Type: text
> Domain: "TRUE", "FALSE"
> Short Name: linrefer
> Source: ESRI

XY Rank—Indicates how much you trust the accuracy of the x,y coordinates for the features in this feature class. If the coordinates are accurate, they are less likely to change during validation.

> Type: integer
> Domain: free integer
> Short Name: XYRank
> Source: ESRI

Z Rank—Indicates how much you trust the accuracy of the z coordinates for the features in this feature class. If the coordinates are accurate, they are less likely to change during validation.

> Type: integer
> Domain: free integer
> Short Name: ZRank
> Source: ESRI

Topology Weight—If two feature classes in a topology share the same XY or Z rank, the weight assigned to each feature class will be used to determine which feature class's coordinates will be modified first, if necessary.
> Type: integer
> Domain: free integer
> Short Name: topoWeight
> Source: ESRI

Events on Validation—"TRUE" if events will occur when the topology is validated.
> Type: text
> Domain: "TRUE", "FALSE"
> Short Name: validateEvents
> Source: ESRI

Participates in Topology Rules—The list of topology rules in which the feature class participates.
> Type: compound
> Short Name: partTopoRules
> Source: ESRI

Network Role—Identifies whether or not the features have an ancillary role in a geometric network.
> Type: text
> Domain: "None", "Source Sink"
> Short Name: netwrole
> Source: ESRI

Feature Description—A description of the real-world objects that the features represent such as watersheds or fire hydrants and the behavior, if appropriate, of those features.
> Type: text
> Domain: free text
> Short Name: featdesc
> Source: ESRI

Raster Object Information (3.4)—The types and numbers of raster spatial objects in the dataset.
> Type: compound
> Short Name: rastinfo
> Source: FGDC standard

Image Format—The format of the raster dataset.
> Rationale: Allows a more detailed description of a raster dataset.
> Type: text
> Domain: "ADRG Image", "CADRG or CIB Frame", "DTED Level 1&2", "ER Mapper", "ERDAS 7.5 GIS", "ERDAS 7.5 LAN", "ERDAS IMAGINE", "ERDAS Raw", "ESRI BIL", "ESRI BIP", "ESRI BSQ", "ESRI GRID", "ESRI GRID Stack", "GIF", "JFIF (JPEG)", "MrSID", "NITF National Imagery Transfer Format", "PNG", "SDR", "TIFF", "Windows Bitmap", free text
>> NOTE: For reference, different domain values were used by ArcCatalog 8. The above values are more accurate. These values will be updated automatically the first time the metadata is synchronized with version 8.1 or later.
> Short Name: rastifor
> Source: ESRI

Image Type—A brief description of the type of remotely sensed image represented by the raster dataset.
> Rationale: Allows a more detailed description of a raster dataset.
> Type: text
> Domain: "Multispectral", "Infrared", "Visible", "SLAR", free text
> Short Name: rastityp
> Source: ESRI

Number of Bands—The number of raster bands in the raster dataset.
> Rationale: Allows a more detailed description of a raster dataset.
> Type: integer
> Domain: free integer
> Short Name: rastband
> Source: ESRI

Cell Size X Direction—The distance on the earth's surface covered by a raster cell in the x direction.
> Rationale: Allows a more detailed description of a raster dataset.
> Type: real
> Domain: free real
> Short Name: rastxsz
> Source: ESRI

Cell Size X Units—The units used to describe the size of a raster cell in the x direction.
> Rationale: Allows a more detailed description of a raster dataset.
> Type: text
> Domain: "m", "meters", "ft", "feet", free text
> Short Name: rastxu
> Source: ESRI

Cell Size Y Direction—The distance on the earth's surface covered by a raster cell in the y direction.
>Rationale: Allows a more detailed description of a raster dataset.
>Type: real
>Domain: free real
>Short Name: rastysz
>Source: ESRI

Cell Size Y Units—The units used to describe the size of a raster cell in the y direction.
>Rationale: Allows a more detailed description of a raster dataset.
>Type: text
>Domain: "m", "meters", "ft", "feet", free text
>Short Name: rastyu
>Source: ESRI

Bits Per Pixel—The number of bits used to store the value in a raster cell.
>Rationale: Allows a more detailed description of a raster dataset.
>Type: integer
>Domain: free integer
>Short Name: rastbpp
>Source: ESRI

Background Nodata Value—The value assigned to a raster cell to indicate that the cell does not contain any data, for example, -9999.
>Rationale: Allows a more detailed description of a raster dataset.
>Type: integer
>Domain: free integer
>Short Name: rastnodt
>Source: ESRI

Pyramid Layers—Identifies whether or not pyramids have been created for the raster dataset.
>Rationale: Allows a more detailed description of a raster dataset.
>Type: text
>Domain: "TRUE", "FALSE"
>Short Name: rastplyr
>Source: ESRI

Image Colormap—Identifies whether or not the raster dataset includes a default colormap.
>Rationale: Allows a more detailed description of a raster dataset.
>Type: text
>Domain: "TRUE", "FALSE"
>Short Name: rastcmap
>Source: ESRI

Compression Type—The data compression technique used by the raster format.
> Rationale: For some compression formats a license is required to access the data.
> Type: text
> Domain: "Default", "JPEG", "LZW", "PackBits", "Run-Length Encoding", "Wavelet", "None", free text
> Short Name: rastcomp
> Source: ESRI

Raster Display Type—The type of data contained by the raster. For remotely sensed images, use the value "pixel codes". For other data, such as a terrain surface, use the value "matrix values".
> Rationale: Added to emulate an early version of the ISO metadata standard.
> Type: text
> Domain: "pixel codes", "matrix values"
> Short Name: rastdtyp
> Source: ESRI

Raster Origin—The corner of the raster dataset that is the origin point.
> Rationale: Added to emulate an early version of the ISO metadata standard.
> Type: text
> Domain: "Upper Left", "Lower Left", "Upper Right", "Lower Right"
> Short Name: rastorig
> Source: ESRI

Geometric Network Information—Describes a geometric network. Geometric networks maintain topological relationships between the features in many feature classes in a geodatabase.
> Type: compound
> Short Name: netinfo
> Source: ESRI

Network Type—The type of geometric network that has been created.
> Type: text
> Domain: "Utility Network", free text
> Short Name: nettype
> Source: ESRI

Connectivity Rule—Describes the rules that define how features in a geometric network are connected.
> Type: compound
> Short Name: connrule
> Source: ESRI

Rule Type—Identifies the type of connectivity rule. Edge–Edge connectivity rules define the junctions through which edges in the network can be connected. Junction connectivity rules define which junctions can connect to which edges in the network.

> Type: text
> Domain: "Edge Connectivity", "Junction Connectivity"
> Short Name: ruletype
> Source: ESRI

Rule Category—Identifies the category of the connectivity rule. Edge–Edge connectivity rules and the junction connectivity rules that are associated with them have the value one; all other rules have the value negative one.

> Type: integer
> Domain: 1, -1
> Short Name: rulecat
> Source: ESRI

From Edge Feature Class—Used to describe edge connectivity rules. The name of the feature class containing the from-edge features.

> Type: text
> Domain: free text
> Short Name: rulefeid
> Source: ESRI

From Edge Subtype—Used to describe edge connectivity rules. The subtype of features in the from-edge feature class that can connect to the to-edges.

> Type: integer
> Domain: free integer
> Short Name: rulefest
> Source: ESRI

To Edge Feature Class—Used to describe edge connectivity rules. The name of the feature class containing the to-edge features.

> Type: text
> Domain: free text
> Short Name: ruleteid
> Source: ESRI

To Edge Subtype—Used to describe edge connectivity rules. The subtype of features in the to-edge feature class that can connect to the from-edges.

> Type: integer
> Domain: free integer
> Short Name: ruletest
> Source: ESRI

Default Junction Feature Class—Used to describe edge connectivity rules. The name of the feature class containing the default junction features.
> Type: text
> Domain: free text
> Short Name: ruledjid
> Source: ESRI

Default Junction Subtype—Used to describe edge connectivity rules. The subtype of features in the default junction feature class that are used by default to connect the from-edges to the to-edges.
> Type: integer
> Domain: free integer
> Short Name: ruledjst
> Source: ESRI

Available Junctions—Used to describe edge connectivity rules. The junctions that can connect the from-edges to the to-edges.
> Type: compound
> Short Name: rulejunc
> Source: ESRI

> > Available Junction Feature Class—The name of the feature class containing the junction features.
> > > Type: text
> > > Domain: free text
> > > Short Name: junctid
> > > Source: ESRI

> > Available Junction Subtype—The subtype of features in the junction feature class that can connect the from-edges to the to-edges.
> > > Type: integer
> > > Domain: free integer
> > > Short Name: junctst
> > > Source: ESRI

Edge Feature Class—Used to describe junction connectivity rules. The name of the feature class containing the edge features.
> Type: text
> Domain: free text
> Short Name: ruleeid
> Source: ESRI

Edge Subtype—Used to describe junction connectivity rules. The subtype of features in the edge feature class that can connect to the junctions.
>Type: integer
>Domain: free integer
>Short Name: ruleest
>Source: ESRI

Edge Minimum Cardinality—Used to describe junction connectivity rules. The fewest number of edges that can connect to the junctions.
>Type: integer
>Domain: free integer
>Short Name: ruleemnc
>Source: ESRI

Edge Maximum Cardinality—Used to describe junction connectivity rules. The largest number of edges that can connect to the junctions.
>Type: integer
>Domain: free integer
>Short Name: ruleemxc
>Source: ESRI

Junction Feature Class—Used to describe junction connectivity rules. The name of the feature class containing the junction features.
>Type: text
>Domain: free text
>Short Name: rulejid
>Source: ESRI

Junction Subtype—Used to describe junction connectivity rules. The subtype of features in the junction feature class that can connect to the edges.
>Type: integer
>Domain: free integer
>Short Name: rulejst
>Source: ESRI

Junction Minimum Cardinality—Used to describe junction connectivity rules. The fewest number of junctions that can connect to the edges.
>Type: integer
>Domain: free integer
>Short Name: rulejmnc
>Source: ESRI

Junction Maximum Cardinality—Used to describe junction
connectivity rules. The largest number of junctions that can connect to
the edges.
>   Type: integer
>   Domain: free integer
>   Short Name: rulejmxc
>   Source: ESRI

Network Element—Describes the roles played by different features in the
geometric network.
>   Type: compound
>   Short Name: elemcls
>   Source: ESRI

Ancillary Role—The ancillary role of the feature class in the geometric
network. Junction feature classes that have features acting as sources
or sinks in the geometric network will have the value "Source Sink".
>   Type: text
>   Domain: "None", "Source Sink"
>   Short Name: roletype
>   Source: ESRI

Ancillary Role Attribute—The name of the attribute column containing
values that define a feature's ancillary role as a source or sink in the
network.
>   Type: text
>   Domain: free text
>   Short Name: rolefld
>   Source: ESRI

Enabled Attribute—The name of the attribute column containing values
that define which features are enabled in the network.
>   Type: text
>   Domain: free text
>   Short Name: enabfld
>   Source: ESRI

**Spatial Reference
Information**

Spatial_Reference_Information =
>   0{Horizontal_Coordinate_System_Definition}1 +
>   0{Vertical_Coordinate_System_Definition}1

Horizontal_Coordinate_System_Definition =
>   0{Coordinate_System_Name}1 +
>   [Geographic |
>   1{Planar}n |
>   Local] +
>   0{Geodetic_Model}1

Coordinate_System_Name =
    0{Projected_Coordinate_System_Name}1 +
    Geographic_Coordinate_System_Name

Geographic =
    Latitude_Resolution +
    Longitude_Resolution +
    Geographic_Coordinate_Units

Planar =
    [Map_Projection |
        Grid_Coordinate_System |
        Local_Planar] +
    Planar_Coordinate_Information

Map_Projection =
    Map_Projection_Name +
    [Albers_Conical_Equal_Area |
        Azimuthal_Equidistant |
        Equidistant_Conic |
        Equirectangular |
        General_Vertical_Near-sided_Perspective |
        Gnomonic |
        Lambert_Azimuthal_Equal_Area |
        Lambert_Conformal_Conic |
        Mercator |
        Modified_Stereographic_for_Alaska |
        Miller_Cylindrical |
        Oblique_Mercator |
        Orthographic |
        Polar_Stereographic |
        Polyconic |
        Robinson |
        Sinusoidal |
        Space_Oblique_Mercator_(Landsat) |
        Stereographic |
        Transverse_Mercator |
        van_der_Grinten |
        Behrmann |
        Bonne |
        Cassini |
        Eckert_I |
        Eckert_II |
        Eckert_III |
        Eckert_IV |
        Eckert_V|
        Eckert_VI |
        Gall_Stereographic |

Loximuthal |
Mollweide |
Quartic_Authalic |
Winkel_I |
Winkel_II |
Other_ESRI_Projection |
Map_Projection_Parameters]

Albers_Conical_Equal_Area =
1{Standard_Parallel}2 +
Longitude_of_Central_Meridian +
Latitude_of_Projection_Origin +
False_Easting +
False_Northing

Azimuthal_Equidistant =
Longitude_of_Central_Meridian +
Latitude_of_Projection_Origin +
False_Easting +
False_Northing

Equidistant_Conic =
1{Standard_Parallel}2 +
Longitude_of_Central_Meridian +
Latitude_of_Projection_Origin +
False_Easting +
False_Northing

Equirectangular =
Standard_Parallel +
Longitude_of_Central_Meridian +
False_Easting +
False_Northing

General_Vertical_Near-sided_Perspective =
Height_of_Perspective_Point_Above_Surface +
Longitude_of_Projection_Center +
Latitude_of_Projection_Center +
False_Easting +
False_Northing

Gnomonic =
Longitude_of_Projection_Center +
Latitude_of_Projection_Center +
False_Easting +
False_Northing

Lambert_Azimuthal_Equal_Area =
    Longitude_of_Projection_Center +
    Latitude_of_Projection_Center +
    False_Easting +
    False_Northing

Lambert_Conformal_Conic =
    1{Standard_Parallel}2 +
    Longitude_of_Central_Meridian +
    Latitude_of_Projection_Origin +
    False_Easting +
    False_Northing

Mercator =
    [Standard_Parallel |
        Scale_Factor_at_Equator] +
    Longitude_of_Central_Meridian +
    False_Easting +
    False_Northing

Modified_Stereographic_for_Alaska =
    False_Easting +
    False_Northing

Miller_Cylindrical =
    Longitude_of_Central_Meridian +
    False_Easting +
    False_Northing

Oblique_Mercator =
    Scale_Factor_at_Center_Line +
    [Oblique_Line_Azimuth |
        Oblique_Line_Point] +
    Longitude_of_Projection_Origin +
    False_Easting +
    False_Northing

Oblique_Line_Azimuth =
    Azimuthal_Angle +
    Azimuthal_Measure_Point_Longitude

Oblique_Line_Point =
    2{Oblique_Line_Latitude +
    Oblique_Line_Longitude}2

Orthographic =
  Longitude_of_Projection_Center +
  Latitude_of_Projection_Center +
  False_Easting +
  False_Northing

Polar_Stereographic =
  Straight-Vertical_Longitude_from_Pole +
  [Standard_Parallel |
    Scale_Factor_at_Projection_Origin] +
  False_Easting +
  False_Northing

Polyconic =
  Longitude_of_Central_Meridian +
  Latitude_of_Projection_Origin +
  False_Easting +
  False_Northing

Robinson =
  Longitude_of_Projection_Center +
  False_Easting +
  False_Northing

Sinusoidal =
  Longitude_of_Central_Meridian +
  False_Easting +
  False_Northing

Space_Oblique_Mercator_(Landsat) =
  Landsat_Number +
  Path_Number +
  False_Easting +
  False_Northing

Stereographic =
  Longitude_of_Projection_Center +
  Latitude_of_Projection_Center +
  False_Easting +
  False_Northing

Transverse_Mercator =
  Scale_Factor_at_Central_Meridian +
  Longitude_of_Central_Meridian +
  Latitude_of_Projection_Origin +
  False_Easting +
  False_Northing

van_der_Grinten =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Behrmann =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Bonne =
       Standard_Parallel +
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Cassini =
       Scale_Factor_at_Central_Meridian +
       Longitude_of_Central_Meridian +
       Latitude_of_Projection_Origin +
       False_Easting +
       False_Northing

Eckert_I =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Eckert_II =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Eckert_III =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Eckert_IV =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Eckert_V =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Eckert_VI =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Gall_Stereographic =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Loximuthal =
       Longitude_of_Central_Meridian +
       Latitude_of_Projection_Origin +
       False_Easting +
       False_Northing

Mollweide =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Quartic_Authalic =
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Winkel_I =
       Standard_Parallel +
       Longitude_of_Central_Meridian +
       False_Easting +
       False_Northing

Winkel_II =
Standard_Parallel +
Longitude_of_Central_Meridian +
False_Easting +
False_Northing

Other_ESRI_Projection =
       Appropriate data elements 4.1.2.1.23.1 through 4.1.2.1.23.18 to document
       the map projection parameters. See Appendix A for the production rules.

Map_Projection_Parameters =
       Appropriate data elements 4.1.2.1.23.1 through 4.1.2.1.23.18 to document
       the map projection parameters. See Appendix A for more details.

Grid_Coordinate_System =
      Grid_Coordinate_System_Name +
      [Universal_Transverse_Mercator |
           Universal_Polar_Stereographic |
           State_Plane_Coordinate_System |
           ARC_Coordinate_System |
           Other_Grid_System's_Definition]

Universal_Transverse_Mercator =
      UTM_Zone_Number +
      Transverse_Mercator

Universal_Polar_Stereographic =
      UPS_Zone_Identifier +
      Polar_Stereographic

State_Plane_Coordinate_System =
      SPCS_Zone_Identifier +
      [Lambert_Conformal_Conic |
           Transverse_Mercator |
           Oblique_Mercator |
           Polyconic]

ARC_Coordinate_System =
      UPS_Zone_Identifier +
      [Equirectangular |
           Azimuthal_Equidistant]

Local_Planar =
      Local_Planar_Description +
      Local_Planar_Georeference_Information

Planar_Coordinate_Information =
      Planar_Coordinate_Encoding_Method +
      [Coordinate_Representation |
           Distance_and_Bearing_Representation] +
      Planar_Distance_Units

Coordinate_Representation =
      Abscissa_Resolution +
      Ordinate_Resolution

Distance_and_Bearing_Representation =
      Distance_Resolution +
      Bearing_Resolution +
      Bearing_Units +
      Bearing_Reference_Direction +
      Bearing_Reference_Meridian +

```
Local =
        Local_Description +
        Local_Georeference_Information

Geodetic_Model =
        0{Horizontal_Datum_Name}1 +
        Ellipsoid_Name +
        Semi-major_Axis +
        Denominator_of_Flattening_Ratio

Vertical_Coordinate_System_Definition =
        0{Altitude_System_Definition}1 +
        0{Depth_System_Definition}1

Altitude_System_Definition =
        Altitude_Datum_Name +
        1{Altitude_Resolution}n +
        Altitude_Distance_Units +
        Altitude_Encoding_Method

Depth_System_Definition =
        Depth_Datum_Name +
        1{Depth_Resolution}n +
        Depth_Distance_Units +
        Depth_Encoding_Method
```

Horizontal Coordinate System Definition (4.1)—The reference frame or system from which linear or angular quantities are measured and assigned to the position that a point occupies.

> Type: compound
> Short Name: horizsys
> Source: FGDC standard

> Coordinate System Name—Descriptive names for the coordinate systems used by the data.
>> Rationale: These elements allow the familiar, user-defined name for the coordinate system to be recorded in the metadata. This name, which appears in the Properties dialog box with the coordinate system's parameters, is different from the official projection name defined in the FGDC standard.
>> Type: compound
>> Short Name: cordsysn
>> Source: ESRI

Projected Coordinate System Name—A descriptive name for the projected coordinate system used by the data.
> Type: text
> Domain: free text
> Short Name: projcsn
> Source: ESRI

Geographic Coordinate System Name—A descriptive name for the geographic coordinate system used by the data. If the data is projected, this is the name of the ellipsoid or spheroid used by the projected coordinate system.
> Type: text
> Domain: free text
> Short Name: geogcsn
> Source: ESRI

Planar (4.1.2)—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.
> Type: compound
> Short Name: planar
> Source: FGDC standard

Map Projection (4.1.2.1)—The systematic representation of all or part of the surface of the earth on a plane or developable surface.
> Type: compound
> Short Name: planar
> Source: FGDC standard

Map Projection Name (4.1.2.1.1)—Name of the map projection.
> Type: text
> Domain: "Albers Conical Equal Area", "Azimuthal Equidistant", "Equidistant Conic", "Equirectangular", "General Vertical Near-sided Projection", "Gnomonic", "Lambert Azimuthal Equal Area", "Lambert Conformal Conic", "Mercator", "Modified Stereographic for Alaska", "Miller Cylindrical", "Oblique Mercator", "Orthographic", "Polar Stereographic", "Polyconic" "Robinson", "Sinusoidal", "Space Oblique Mercator", "Stereographic", "Transverse Mercator", "van der Grinten", free text
> Extended Domain: "Aitoff", "Behrmann", "Bonne", "Cassini", "Craster_Parabolic", "Cylindrical_Equal_Area", "Double Stereographic", "Eckert I", "Eckert II", "Eckert III", "Eckert IV", "Eckert V", "Eckert VI", "Flat_Polar_Quartic", "Gall

Stereographic", "Hammer_Aitoff", "Krovak",
"Loximuthal", "Mollweide",
"New_Zealand_Map_Grid", "Quartic Authalic",
"Times", "Two Point Equidistant", "Winkel I",
"Winkel II", "Winkel_Tripel"
Short Name: mapprojn
Source: FGDC standard

Behrmann—Contains parameters for the Behrmann
projection. This element is used when metadata is
synchronized with ArcCatalog 8, but not with version 8.1 or
later. See Appendix C for details.
Type: compound
Short Name: behrmann
Source: ESRI

Bonne—Contains parameters for the Bonne projection. This
element is used when metadata is synchronized with
ArcCatalog 8, but not with version 8.1 or later. See
Appendix C for details.
Type: compound
Short Name: bonne
Source: ESRI

Cassini—Contains parameters for the Cassini projection. This
element is used when metadata is synchronized with
ArcCatalog 8, but not with version 8.1 or later. See
Appendix C for details.
Type: compound
Short Name: cassini
Source: ESRI

Eckert I—Contains parameters for the Eckert I projection.
This element is used when metadata is synchronized with
ArcCatalog 8, but not with version 8.1 or later. See
Appendix C for details.
Type: compound
Short Name: eckert1
Source: ESRI

Eckert II—Contains parameters for the Eckert II projection.
This element is used when metadata is synchronized with
ArcCatalog 8, but not with version 8.1 or later. See
Appendix C for details.
Type: compound
Short Name: eckert2
Source: ESRI

Eckert III—Contains parameters for the Eckert III projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: eckert3
> Source: ESRI

Eckert IV—Contains parameters for the Eckert IV projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: eckert4
> Source: ESRI

Eckert V—Contains parameters for the Eckert V projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: eckert5
> Source: ESRI

Eckert VI—Contains parameters for the Eckert VI projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: eckert6
> Source: ESRI

Gall Stereographic—Contains parameters for the Gall Stereographic projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: gallster
> Source: ESRI

Loximuthal—Contains parameters for the Loximuthal projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: loximuth
> Source: ESRI

Mollweide—Contains parameters for the Mollweide projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: mollweid
> Source: ESRI

Quartic Authalic—Contains parameters for the Quartic Authalic projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: quartic
> Source: ESRI

Winkel I—Contains parameters for the Winkel I projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: winkel1
> Source: ESRI

Winkel II—Contains parameters for the Winkel II projection. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Short Name: winkel2
> Source: ESRI

Other ESRI Projection—Contains parameters for other projections that are supported by ArcGIS software. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. See Appendix C for details.
> Type: compound
> Children: *Appropriate data elements 4.1.2.1.23.1 through 4.1.2.1.23.18 to document the projection's parameters.*
> > NOTE: See Appendix C for production rules.
> Short Name: otherprj
> Source: ESRI

Map Projection Parameters (4.1.2.1.23)—A complete parameter set of the projection that was used for the dataset. The information provided shall include the names of the parameters and values used for the dataset that describe the mathematical relationship between the earth and the plane or developable surface for the projection.

> Type: compound
> Children: *Appropriate data elements 4.1.2.1.23.1 through 4.1.2.1.23.18 to document the projection's parameters.*
>> NOTE: See Appendix C for production rules for coordinate systems that are supported by ArcGIS software but are not explicitly defined in the FGDC standard.
> Short Name: mapprojp
> Source: FGDC standard

Entity and Attribute Information

Entity_and_Attribute_Information =
    [1{Detailed_Description}n |
        1{Overview_Description}n]

Detailed_Description =
    Entity_Type +
    0{Attribute}n +
    0{Subtype_Information}n +
    0{Relationship_Information}1

Entity_Type =
    Entity_Type_Label +
    0{Entity_Type_Type}1 +
    0{Entity_Type_Count}1 +
    Entity_Type_Definition +
    Entity_Type_Definition_Source

Attribute =
    Attribute_Label +
    0{Attribute_Alias}1 +
    Attribute_Definition +
    Attribute_Definition_Source +
    Attribute_Type+
    Attribute_Width +
    0{Attribute_Precision}1 +
    0{Attribute_Scale}1 +
    0{Attribute_Output_Width}1 +
    0{Attribute_Number_of_Decimals}1 +
    0{Attribute_Indexed}1 +
    1{Attribute_Domain_Values}n +

```
            0{Beginning_Date_of_Attribute_Values +
                    0{Ending_Date_of_Attribute_Values}1}n +
            (Attribute_Value_Accuracy_Information) +
            (Attribute_Measurement_Frequency)

Attribute_Domain_Values =
            [1{Enumerated_Domain}n |
                    Range_Domain |
                    Codeset_Domain |
                    Unrepresentable_Domain]

Enumerated_Domain =
            Enumerated_Domain_Value +
            Enumerated_Domain_Value_Definition +
            Enumerated_Domain_Value_Definition_Source +
            0{Attribute}n

Range_Domain =
            Range_Domain_Minimum +
            Range_Domain_Maximum +
            (Range_Domain_Mean) +
            (Range_Domain_Standard_Deviation) +
            0{Attribute_Units_of_Measure}1 +
            (Attribute_Measurement_Resolution) +
            0{Attribute}n

Codeset_Domain =
            Codeset_Name +
            Codeset_Source

Attribute_Value_Accuracy_Information =
            Attribute_Value_Accuracy +
            Attribute_Value_Accuracy_Explanation

Subtype_Information =
            Subtype_Name +
            Subtype_Code +
            0{Subtype_Attribute}n

Subtype_Attribute =
            Subtype_Attribute_Name +
            0{Subtype_Default_Value}1 +
            0{Attribute_Defined_Domain}1
```

Attribute_Defined_Domain =
      Domain_Name +
      (Domain_Description) +
      (Domain_Owner) +
      Domain_Attribute_Type +
      Domain_Type +
      Merge_Rule +
      Split_Rule

Relationship_Information =
      (Description_of_Relationship) +
      Relationship_Cardinality +
      Attributed_Relationship +
      Composite_Relationship +
      Notification_Direction +
      Origin_Name +
      Origin_Primary_Key +
      Origin_Foreign_Key +
      Destination_Name +
      Destination_Primary_Key +
      Destination_Foreign_Key +
      Relationship_Forward_Label +
      Relationship_Backward_Label

Overview_Description =
      Entity_and_Attribute_Overview +
      1{Entity_and_Attribute_Detail_Citation}n

Detailed Description (5.1) —Description of the entities, attributes, attribute values, and related characteristics encoded in the dataset.
      Type: compound
      Short Name: detailed
      Source: FGDC standard

      Entity Type (5.1.1)—The definition and description of a set into which similar entity instances are classified.
            Type: compound
            Short Name: enttyp
            Source: FGDC standard

            Entity Type Type—The type of entity that is being described.
                  Rationale: To identify the type of nonspatial entities.
                  Type: text
                  Domain: "Table", "Feature Class", "Relationship"
                  Short Name: enttypt
                  Source: ESRI

Entity Type Count—The number of objects that the entity contains. For example, the number of features contained by a feature class or the number of rows contained by a table.

Rationale: To identify the number of objects contained by a nonspatial entity.
Type: integer
Domain: free integer
Short Name: enttypc
Source: ESRI

Attribute (5.1.2)—A defined characteristic of an entity.
Type: compound
Short Name: attr
Source: FGDC standard

Attribute Alias—An alias for the attribute name. Attribute aliases are supported by some data formats such as coverages and geodatabase feature classes.
Type: text
Domain: free text
Short Name: attalias
Source: ESRI

Attribute Type—The data type of the attribute. The terminology used is appropriate for the data format. For example, text data in an INFO table is referred to as Character data, while for a shapefile in ArcView® 3 it is referred to as String data.
Type: text
Domain: "OID", "Geometry", "Small Integer", "Integer", "Single", "Double", "String", "Date", "Blob", "Number", "Boolean", "Binary", "Float", "Character"
Short Name: attrtype
Source: ESRI

Attribute Width—The maximum width of an attribute. For shapefiles and coverages, the width is the maximum number of digits that values in the attribute column can have. For all other data formats the width is the maximum size of the attribute's value in bytes.
Type: integer
Domain: free integer
Short Name: attwidth
Source: ESRI

Attribute Precision—The precision of an attribute; that is, the maximum number of digits that its values can have. This element is used to describe data formats other than shapefiles and coverages.
> Type: integer
> Domain: free integer
> Short Name: atprecis
> Source: ESRI

Attribute Scale—The maximum number of decimal places that values in an attribute can have. This element is used to describe data formats other than shapefiles and coverages.
> Type: integer
> Domain: free integer
> Short Name: attscale
> Source: ESRI

Attribute Output Width—The display width for the attribute. This is the width of the column used to present an attribute's values when using ArcInfo™ Workstation. This element is only used to describe coverages and INFO tables.
> Type: integer
> Domain: free integer
> Short Name: atoutwid
> Source: ESRI

Attribute Number of Decimals—The maximum number of decimal places that values in an attribute can have. This element is used to describe shapefiles and coverages.
> Type: integer
> Domain: free integer
> Short Name: atnumdec
> Source: ESRI

Attribute Indexed—Describes the type of index that has been created for the attribute's values.
> Type: text
> Domain: free text
> Short Name: atindex
> Source: ESRI

Attribute Domain Values (5.1.2.4)—The valid values that can be assigned for an attribute.
> Type: compound
> Short Name: attrdomv
> Source: FGDC standard

Range Domain (5.1.2.4.2)—The minimum and maximum values of a continuum of valid values.
> Type: compound
> Short Name: rdom
> Source: FGDC standard

Range Domain Mean—The mean of the attribute's values.
> > Type: real
> > Domain: free real
> > Short Name: rdommean
> > Source: ESRI

Range Domain Standard Deviation—The standard deviation of the attribute's values.
> > Type: real
> > Domain: free real
> > Short Name: rdomstdv
> > Source: ESRI

Subtype Information—Describes the subtypes that have been defined for a feature class in a geodatabase. For example, within a utility pole feature class there might be subtypes representing wood, concrete, and metal poles.
> Type: compound
> Short Name: subtype
> Source: ESRI

Subtype Attribute—An attribute for which a default value or domain has been defined for this subtype.
> > Type: compound
> > Short Name: stfield
> > Source: ESRI

Subtype Attribute Name—The name of the attribute.
> > Type: text
> > Domain: free text
> > Short Name: stfldnm
> > Source: ESRI

Subtype Default Value—The default value for this attribute for all objects of this subtype. The default value will be placed in the attribute when a new object is added to the subtype.
> > Type: text
> > Domain: free text
> > Short Name: stflddv
> > Source: ESRI

Attribute Defined Domain—The domain that has been defined for this attribute for this subtype. When editing, only values that fall within the domain are permitted. For example, each type of pole might have a different domain defining the height range that is valid for the pole's material.
> Type: compound
> Short Name: stflddd
> Source: ESRI

Domain Name—The name of the domain.
> Type: text
> Domain: free text
> Short Name: domname
> Source: ESRI

Domain Description—A description of the domain.
> Type: text
> Domain: free text
> Short Name: domdesc
> Source: ESRI

Domain Owner—The owner of the domain.
> Type: text
> Domain: free text
> Short Name: domowner
> Source: ESRI

Domain Attribute Type—The data type of the attribute.
> Type: text
> Domain: "Small Integer", "Integer", "Single", "Double", "String", "Date"
> Short Name: domfldtp
> Source: ESRI

Domain Type—The type of domain.
> Type: text
> Domain: "Range", "Coded value"
> Short Name: domtype
> Source: ESRI

Merge Rule—The rule used to determine the value to be placed in the attribute if objects are merged.
> Type: text
> Domain: "Default value", "Sum values", "Weighted average"
> Short Name: mrgtype
> Source: ESRI

Split Rule—The rule used to determine the value to
be placed in the attribute if objects are split.
>Type: text
>Domain: "Default value", "Duplicate",
>"Geometry ratio"
>Short Name: splttype
>Source: ESRI

Relationship Information—Description of a relationship class that joins two
items. For example, a relationship class in a geodatabase can join any two
object classes. A coverage relationship class can join coverages and INFO
tables.
>Type: compound
>Short Name: relinfo
>Source: ESRI

Description of Relationship—A brief description of the relationship, for
example, what the relationship is between the two objects.
>Type: text
>Domain: free text
>Short Name: reldesc
>Source: ESRI

Relationship Cardinality—The cardinality of the relationship, for
example, how many objects of type A are related to an object of type B.
>Type: text
>Domain: "One to One", "One to Many", "Many to Many",
>"Many to One"
>Short Name: relcard
>Source: ESRI

Attributed Relationship—Identifies whether or not the relationship
class itself is attributed. For example, an attribute of a relationship
between parcels and owners might be percentage of ownership.
>Type: text
>Domain: "TRUE", "FALSE"
>Short Name: relattr
>Source: ESRI

Composite Relationship—Identifies whether or not the relationship
class defines a composite relationship. In a composite relationship,
objects of type A are composed of objects of type B; this means that the
lifetime of B objects depends on the lifetime of A objects.
Relationships that are not composite are simple relationships.
>Type: text
>Domain: "TRUE", "FALSE"
>Short Name: relcomp
>Source: ESRI

Notification Direction—How messages will be propagated between the related objects.
>Type: text
>Domain: "Forward", "Backward", "Both", "None"
>Short Name: relnodir
>Source: ESRI

Origin Name—The name of the origin object class.
>Type: text
>Domain: free text
>Short Name: otfcname
>Source: ESRI

Origin Primary Key—The name of the primary key for the relationship. The primary key is the attribute in the origin whose values are used to join the origin to the destination.
>Type: text
>Domain: free text
>Short Name: otfcpkey
>Source: ESRI

Origin Foreign Key—The name of the foreign key for the relationship. The foreign key is the attribute in the destination that contains the same values as those in the primary key. For attributed and many-to-many relationships, the foreign key occurs in the relationship class's table rather than in the destination.
>Type: text
>Domain: free text
>Short Name: otfcfkey
>Source: ESRI

Destination Name—The name of the destination object class.
>Type: text
>Domain: free text
>Short Name: dtfcname
>Source: ESRI

Destination Primary Key—The name of the destination's primary key. For attributed and many-to-many relationships, the destination's primary key is the attribute in the destination that contains the same values as those in the origin's primary key. For all other relationships, the primary key for the destination itself such as its object identifier attribute is recorded in this element.
>Type: text
>Domain: free text
>Short Name: dtfcpkey
>Source: ESRI

Destination Foreign Key—The name of the destination's foreign key. For attributed and many-to-many relationships, the destination's foreign key occurs in the relationship class's table rather than in the destination. For all other relationships, no value will be recorded in this element.
> Type: text
> Domain: free text
> Short Name: dtfcfkey
> Source: ESRI

Relationship Forward Label—The name for the relationship when it is navigated from the origin to the destination.
> Type: text
> Domain: free text
> Short Name: relflab
> Source: ESRI

Relationship Backward Label—The name for the relationship when it is navigated from the destination to the origin.
> Type: text
> Domain: free text
> Short Name: relblab
> Source: ESRI

Distribution Information

Distribution_Information =
> Distributor +
> 0{Resource_Description}1 +
> Distribution_Liability +
> 0{Standard_Order_Process}n +
> 0{Custom_Order_Process}1 +
> (Technical_Prerequisites) +
> (Available_Time_Period)

Distributor =
> Contact_Information *(see Contact Information for production rules)*

Standard_Order_Process =
> [Non-digital_Form |
> > 1{Digital_Form}n] +
> Fees +
> (Ordering_Instructions) +
> (Turnaround)

Digital_Form =
> Digital_Transfer_Information +
> Digital_Transfer_Option

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Digital_Transfer_Information =
        Format_Name +
        ([Format_Version_Number |
                Format_Version_Date] +
                (Format_Specification)) +
        (Format_Information_Content) +
        0{File_Decompression_Technique}1 +
        (Transfer_Size) +
        0{Dataset_Size}1

Digital_Transfer_Option =
        1{[Online_Option |
                Offline_Option]}n

Online_Option =
        1{Computer_Contact_Information}n +
        (Access_Instructions) +
        (Online_Computer_and_Operating_System)

Computer_Contact_Information =
        [Network_Address |
                Dialup_Instructions |
                SDE_Connection_Information]

Network_Address =
        1{Network_Resource_Name}n

Dialup_Instructions =
        Lowest_BPS +
        0{Highest_BPS}1 +
        Number_DataBits +
        Number_StopBits +
        Parity +
        0{Compression_Support}1 +
        1{Dialup_Telephone}n +
        1{Dialup_File_Name}n

SDE_Connection_Information =
        Server_Name +
        Instance_Name +
        0{Database_Name}1 +
        User_Name +
        Version_Name

Offline_Option =
        Offline_Media +
        0{Recording_Capacity}1
        1{Recording_Format}n +
        0{Compatibility_Information}1

Recording_Capacity =
        1{Recording Density}n +
        Recording_Density_Units

Available_Time_Period =
        Time_Period_Information *(see Time Period Information for production rules)*

Standard Order Process (6.4)—The common ways in which the dataset may be obtained or received and related instructions and fee information.
        Type: compound
        Short Name: stdorder
        Source: FGDC standard

        Digital Form (6.4.2)—The description of options for obtaining the dataset on computer-compatible media.
                Type: compound
                Short Name: digform
                Source: FGDC standard

                Digital Transfer Information (6.4.2.1)—Description of the form of the data to be distributed.
                        Type: compound
                        Short Name: digtinfo
                        Source: FGDC standard

                        Dataset Size—The size, in megabytes, of the item.
                                Rationale: The transfer size of the dataset may be different than the actual size of the dataset, for example, if the dataset is compressed for transfer.
                                Type: real
                                Domain: free real
                                Short Name: dssize
                                Source: ESRI

                Digital Transfer Option (6.4.2.2)—The means and media by which a dataset is obtained from the distributor.
                        Type: compound
                        Short Name: digtopt
                        Source: FGDC standard

Online Option (6.4.2.2.1)—Information required to directly obtain the dataset electronically.

    Type: compound
    Short Name: onlinopt
    Source: FGDC standard

Computer Contact Information (6.4.2.2.1.1)—Instructions for establishing communications with the distribution computer.

    Type: compound
    Short Name: computer
    Source: FGDC standard

SDE® Connection Information—The information required to connect to an ArcSDE® geodatabase server. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later. This information is now recorded in the Online Linkage element within the Citation Information element.

    Type: compound
    Short Name: sdeconn
    Source: ESRI

Server Name—The name or IP number of the computer on which the ArcSDE server resides. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later.

    Type: text
    Domain: free text
    Short Name: server
    Source: ESRI

Instance Name—The name or port number of the process running on the ArcSDE server that allows access to the spatial database. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later.

    Type: text
    Domain: free text
    Short Name: instance
    Source: ESRI

Database Name—The name of the database in which the data resides. This connection parameter is only used when data is stored within either a SQL Server or Sybase relational database management system. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later.

> Type: text
> Domain: free text
> Short Name: database
> Source: ESRI

User Name—The username used to access the data in the ArcSDE geodatabase. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later.

> Type: text
> Domain: free text
> Short Name: user
> Source: ESRI

Version Name—The version of the ArcSDE geodatabase that contains the data. This element is used when metadata is synchronized with ArcCatalog 8, but not with version 8.1 or later.

> Type: text
> Domain: free text
> Short Name: version
> Source: ESRI

Metadata Reference Information

Metadata_Reference_Information =
        Metadata_Date +
        (Metadata_Review_Date) +
        (Metadata_Future_Review_Date) +
        Language_of_Metadata +
        Metadata_Contact +
        Metadata_Standard_Name +
        Metadata_Standard_Version +
        0{Metadata_Time_Convention}1 +
        (Metadata_Access_Constraints) +

```
              (Metadata_Use_Constraints) +
              (Metadata_Security_Information) +
              0{Metadata_Extensions}n

Metadata_Contact =
              Contact_Information (see Contact Information for production rules)

Metadata_Security_Information =
              Metadata_Security_Classification_System +
              Metadata_Security_Classification +
              Metadata_Security_Handling_Description

Metadata_Extensions =
              0{Online_Linkage}n +
              0{Profile_Name}1
```

Language of Metadata—The language used to create the metadata. The language should be represented as the appropriate two-letter code as defined by ISO 639:1988, *Code for the representation of names of languages.*

> Rationale: The language of the metadata may be different from the language used in the data itself and allows for a smoother transition to the ISO metadata standard.
> Type: text
> Domain: free text
> Short Name: langmeta
> Source: ESRI

Binary Enclosures

```
Binary_Enclosures =
       (Thumbnail) +
       (1{Enclosure}n)

Thumbnail =
       Data

Enclosure =
       Description_of_Enclosure +
       Data
```

Thumbnail—Contains an embedded graphic file in Windows Bitmap format that illustrates what the spatial data looks like. The file is encoded as Base64 text, then stored within the metadata.

> Type: compound
> Short Name: Thumbnail
> Source: ESRI

Data—The enclosed file, encoded as Base64 text.
Type: text
Domain: free text
Short Name: Data
Source: ESRI

Enclosure—Contains a copy of an external file that describes the data. The file is encoded as Base64 text, then stored within the metadata.
Type: compound
Short Name: Enclosure
Source: ESRI

Description of Enclosure—A brief description of the enclosure.
Type: text
Domain: free text
Short Name: Descript
Source: ESRI

Citation Information

Citation_Information =
1{Originator}n +
Publication_Date +
(Publication_Time) +
Title +
0{File_or_Table_Name}1 +
0{Edition}1 +
0{Geospatial_Data_Presentation_Form}1 +
0{Series_Information}1 +
0{Publication_Information}1 +
0{Other_Citation_Details}1 +
(1{Online_Linkage}n) +
0{Larger_Work_Citation}1

Series_Information =
Series_Name +
Issue_Identification

Publication_Information =
Publication_Place +
Publisher

Larger_Work_Citation =
Citation_Information

File or Table Name—The name of the item. For example, the name of a shapefile or a feature class in a geodatabase.
> Rationale: The name of the file or the geodatabase item is different from its formal, descriptive title.
> Type: text
> Domain: free text
> Short Name: ftname
> Source: ESRI

Online Linkage (8.10)—The name of an online computer resource that contains the dataset. Entries should follow the Uniform Resource Locator convention of the Internet. For items stored in an ArcSDE geodatabase, connection information shall be recorded in the form "Server=ServerName; Service=ServiceName; Database=DatabaseName; User=UserName; Version=VersionName". For data that is distributed over the Internet using ArcIMS, the service information shall be recorded in the form "Server=http://ServerLocation; Service=ServiceName; ServiceType=TypeOfDataService; FeatureClassType=TypeOfFeatures; FeatureClassName=NameOfFeatureClass".
> Type: text
> Domain: free text
> Short Name: ftname
> Source: ESRI

Time Period Information

Time_Period_Information =
> [Single_Date/Time |
>> Multiple_Dates/Times |
>> Range_of_Dates/Times]

Single_Date/Time =
> Calendar_Date +
> (Time_of_Day)

Multiple_Dates/Times =
> 2{Single_Date/Time}n

Range_of_Dates/Times =
> Beginning_Date +
> (Beginning_Time) +
> Ending_Date +
> (Ending_Time)

Contact Information

Contact_Information =
    [Contact_Person_Primary |
        Contact_Organization_Primary] +
    (Contact_Position) +
    1{Contact_Address}n +
    1{Contact_Voice_Telephone}n +
    (1{Contact_TDD/TTY_Telephone}n) +
    (1{Contact_Facsimile_Telephone}n) +
    (1{Contact_Electronic_Mail_Address}n) +
    (Hours_of_Service) +
    (Contact_Instructions)

Contact_Person_Primary =
    Contact_Person +
    (Contact_Organization)

Contact_Organization_Primary =
    Contact_Organization +
    (Contact_Person)

Contact_Address =
    Address_Type +
    0{Address}n +
    City +
    State_or_Province +
    Postal_Code +
    (Country)

Appendix A—Summary of Changes to Elements Defined in the *Content Standard for Digital Geospatial Metadata*

All elements defined in the FGDC standard are included in the ESRI Profile. There are two domain changes and one conditionality change to the elements defined by the FGDC standard.

Domain Changes

The ESRI Profile has extended the domain of two elements defined in the FGDC standard. These changes are summarized below.

Map Projection Name

ESRI software supports several projections that are not explicitly defined in the FGDC standard. The domain of the Map Projection Name element as defined in the FGDC standard includes a name for each of the explicitly supported projections or free text. Since ArcCatalog will automatically derive coordinate system information from the item and include that information in its metadata, the domain for the Map Projection Name element has been extended to include the names of the additional projections supported by ESRI software.

Online Linkage

In the FGDC standard, the description of this element indicates that its value should be a URL but its domain is defined as free text. For objects stored in a geodatabase it is not possible to generate a URL representing the location of the data. For data distributed over the Internet using ArcIMS, a URL can document the location of the ArcIMS site in general but not the specific service that is being described. The domain for this element has been extended to include descriptions of the connection information used to access the geodatabase and the details for accessing an ArcIMS data service.

Conditionality Changes

The ESRI Profile has modified the conditionality of one element defined in the FGDC standard. This change is summarized below.

Spatial Domain

Data is not the only essential item for a geographic information system. Some items may not be specific to one area on the earth's surface. Even nonspatial items need metadata that can be published to a central repository so they can be shared with others. But for nonspatial items, it is inappropriate to require a geographic extent. For the ESRI Profile, this element shall be considered mandatory if applicable.

For example, ArcCatalog lets you create metadata for many items that may not have a spatial component including tables, relationship classes, coordinate system files, graphs, and file types such as Microsoft Word documents. If a table contains addresses or a Word document contains a report about a place, then it is appropriate to define a

geographic extent and the Spatial Domain element will be considered mandatory. Otherwise, the element will be considered optional. The same rule applies to geoprocessing tools, ARC Macro Language (AML™) scripts, and Web services. If a tool applies a function that uses parameters that are only valid for a given geographic region or a geocoding service relies on specific reference data, then a geographic extent will be mandatory. But if the item applies a generic function such as a buffer to any input data, a geographic extent will be considered optional.

Appendix B—Summary of Changes to the ESRI Profile Between Software Releases

Improvements are made with each release of ArcCatalog. This document will be updated as necessary to include any changes in the ESRI Profile that are introduced with the new release. Each element that has changed has a note with green text in the detailed description of the element. These changes are summarized below.

Changes Between ArcGIS 8.2 and 8.3

A few changes were made to the ESRI Profile to support ArcGIS 8.3.

Topology

With ArcGIS 8.3, topology objects can be created in a geodatabase. New elements were added to the ESRI Information section and the Spatial Data Organization Information section to describe the properties of a topology and of feature classes that participate in a topology. Also, new values were added to the domain of the Native Dataset Format element to support topology in personal and ArcSDE geodatabases.

Spatial Domain and Bounding Coordinates

In previous versions of this profile the Spatial Domain element was considered mandatory because this element is mandatory in the FGDC standard. Because it is not always appropriate to define a spatial extent for items that are part of your GIS, previous versions of the ESRI Profile modified the domain of the West Bounding Coordinate, East Bounding Coordinate, North Bounding Coordinate, and South Bounding Coordinate elements so they could contain the phrase "Not applicable". However, this solution caused problems when the metadata was validated because the elements contained text rather than numbers.

A more appropriate solution was to make the Spatial Domain element mandatory if applicable. This change has the effect that a metadata document that satisfies the requirements of the ESRI Profile may not satisfy the requirements of the FGDC standard because the document does not include a spatial extent.

Changes Between ArcGIS 8.1 and 8.2

A few changes were made to the ESRI Profile to support ArcGIS 8.2.

ArcIMS Image and Feature Services

With ArcGIS 8.2, ArcCatalog can automatically generate metadata for ArcIMS Image and Feature Services. New elements were added to the ESRI Information section to describe the properties of these services. Also, new values were added to the domain of the Native Dataset Format element to support ArcIMS Image and Feature Services and ArcIMS Feature Classes.

ArcIMS Metadata Services	With ArcGIS 8.2 and ArcIMS 4, metadata can be published to a central repository that can be publicly available on the Internet. When a metadata document is published to an ArcIMS Metadata Service, a unique identifier and the status of the publishing process are documented within the ESRI Information section.
Native Dataset Format	In addition to the new domain values that were described above, values were added to the domain of the Native Dataset Format element to account for spatial data catalog data, ArcGIS 3D Analyst™ software's Scene documents, and ArcGIS Survey Analyst software's geodatabase objects.
Changes Between ArcInfo 8 and ArcGIS 8.1	A few changes were made to the ESRI Profile to support ArcGIS 8.1.
Thumbnails	With ArcCatalog 8, thumbnails were stored in the Identification Information section within the Browse Graphic section defined by the FGDC standard. With version 8.1, thumbnails are instead stored within the Binary Enclosures section to avoid confusion with links to external graphic documents.
Native Dataset Format and Image Format	The Native Dataset Format element was not added for all items with ArcCatalog 8. This was resolved in version 8.1. The values that are recorded in this element at version 8.1 are also different; the new values are required in order to search for items of a specific type. This element's value will be updated automatically the first time metadata is synchronized with ArcCatalog 8.1 or later. With version 8, a raster dataset's format was recorded in two places: the Native Dataset Format element, within the Identification Information section, and the Image Format element, within the Spatial Data Organization section. With version 8.1 and later, the Native Dataset Format element will contain the value "Raster Dataset" for all rasters. The specific raster format continues to be recorded in the Image Format element; these values are now more specific than they were at version 8.
Coordinate Systems	The FGDC standard includes definitions for several map projections. ArcGIS software supports several additional projections. How these additional projections are recorded has changed between ArcCatalog 8 and 8.1. This change is discussed in detail in Appendix C.
Dataset's Location and ArcSDE Geodatabase Connection Information	With version 8, a dataset's location was recorded within the Distribution Information section. For datasets stored on disk, the file's location was recorded within the Network Resource Name element. For items stored within ArcSDE geodatabases, information about how to access the geodatabase was recorded in the SDE Connection Information section. With version 8.1 and later, the location of the item is recorded within the dataset's Citation in the Identification Information section. Either the location of the file on disk or a string containing the ArcSDE connection information is now recorded in the Online Linkage element.

Appendix C—Map Projections Supported by ArcGIS Software

The FGDC standard includes definitions for 21 specific map projections and the parameters for those projections that should be recorded in the metadata. ArcGIS software supports several additional projections that are not defined in the FGDC standard. This appendix addresses how the parameters for the additional projections are recorded in the metadata with ArcCatalog.

Using ArcInfo 8

Several elements were added by this profile to explicitly handle the following coordinate systems, which are not defined in the FGDC standard: Behrmann, Bonne, Cassini, Eckert I, Eckert II, Eckert III, Eckert IV, Eckert V, Eckert VI, Gall Stereographic, Loximuthal, Mollweide, Quartic Authalic, Winkel I, and Winkel II. These elements are defined in the Spatial Reference Information section.

In addition to the coordinate systems listed above, ArcGIS software also supported the following coordinate systems at version 8: Cylindrical Equal Area, Double Stereographic, and Two-Point Equidistant. The parameters for these projections were stored within the Other ESRI Projection element, which is also defined in the Spatial Reference Information section. The following production rules were used:

```
If Map_Projection_Name = "Cylindrical_Equal_Area"
        Other_ESRI_Projection =
                Standard_Parallel +
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Double_Stereographic"
        Other_ESRI_Projection =
                Scale_Factor_at_Projection_Origin +
                Longitude_of_Central_Meridian +
                Latitude_of_Projection_Origin +
                False_Easting +
                False_Northing
```

Parameters for the Two-Point Equidistant coordinate system were not recorded with version 8.

Using ArcGIS 8.1 and later

The FGDC standard includes the Map Projection Parameters element to contain information about other projections that are not explicitly defined. This element was overlooked at version 8. With version 8.1 and later, parameters for all projections supported by ArcGIS software that are not explicitly supported by the FGDC standard are documented using the Map Projection Parameters element. The Other ESRI Projection element is no longer used. The following production rules are used:

```
If Map_Projection_Name = "Aitoff"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Behrmann"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Bonne"
        Map_Projection_Parameters =
                Standard_Parallel +
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Cassini"
        Map_Projection_Parameters =
                Scale_Factor_at_Central_Meridian +
                Longitude_of_Central_Meridian +
                Latitude_of_Projection_Origin +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Craster_Parabolic"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Cylindrical_Equal_Area"
        Map_Projection_Parameters =
                Standard_Parallel +
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing
```

```
If Map_Projection_Name = "Double Stereographic"
        Map_Projection_Parameters =
                Scale_Factor_at_Projection_Origin +
                Longitude_of_Projection_Center +
                Latitude_of_Projection_Center +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Eckert I"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Eckert II"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Eckert III"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Eckert IV"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Eckert V"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Eckert VI"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing
```

If Map_Projection_Name = "Flat_Polar_Quartic"
      Map_Projection_Parameters =
            Longitude_of_Central_Meridian +
            False_Easting +
            False_Northing

If Map_Projection_Name = "Gall Stereographic"
      Map_Projection_Parameters =
            Longitude_of_Central_Meridian +
            False_Easting +
            False_Northing

If Map_Projection_Name = "Hammer_Aitoff"
      Map_Projection_Parameters =
            Longitude_of_Central_Meridian +
            False_Easting +
            False_Northing

If Map_Projection_Name = "Krovak"
      Map_Projection_Parameters =
            Standard_Parallel +
            Scale_Factor_at_Center_Line +
            Oblique_Line_Azimuth +
            Latitude_of_Projection_Center +
            False_Easting +
            False_Northing

If Map_Projection_Name = "Loximuthal"
      Map_Projection_Parameters =
            Longitude_of_Central_Meridian +
            Latitude_of_Projection_Origin +
            False_Easting +
            False_Northing

If Map_Projection_Name = "Mollweide"
      Map_Projection_Parameters =
            Longitude_of_Central_Meridian +
            False_Easting +
            False_Northing

If Map_Projection_Name = "New_Zealand_Map_Grid"
      Map_Projection_Parameters =
            Longitude_of_Central_Meridian +
            Latitude_of_Projection_Origin +
            False_Easting +
            False_Northing

```
If Map_Projection_Name = "Quartic Authalic"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Times"
        Map_Projection_Parameters =
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Two Point Equidistant"
        Map_Projection_Parameters =
                Oblique_Line_Point +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Winkel I"
        Map_Projection_Parameters =
                Standard_Parallel +
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Winkel II"
        Map_Projection_Parameters =
                Standard_Parallel +
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing

If Map_Projection_Name = "Winkel_Tripel"
        Map_Projection_Parameters =
                Standard_Parallel +
                Longitude_of_Central_Meridian +
                False_Easting +
                False_Northing
```

Appendix D—Summary of Elements in the ESRI Profile

The following table summarizes the elements in the ESRI Profile. It presents the long and short names of the elements in a hierarchical list. Additional columns indicate the elements whose values can be automatically synchronized by ArcCatalog, the elements whose values can be manually defined using editors provided with ArcCatalog, and which of the stylesheets provided with ArcCatalog can be used to examine the element's value(s). This table does not show production information such as whether or not an element is mandatory or how many times an element may be repeated. More detailed information about synchronization can be found in the technical paper *Synchronization in ArcCatalog,* which is available from ESRI's Online Support Center.

**Columns 1 and 2:
Long Name and
Short Name**

Columns 1 and 2 contain the long and short names of each metadata element as defined in the FGDC standard and the ESRI Profile. Short names are used as the XML tags to represent the element in the metadata XML document that is created and maintained by ArcCatalog. These elements are arranged hierarchically to make their organization easier to follow. The compound elements Citation Information, Time Period Information, and Contact Information are reused in several places; they appear in a separate table.

- FGDC-defined elements are black.

- FGDC-defined elements that have been modified by the ESRI Profile are orange.

- ESRI-defined elements are light blue.

- **Compound elements are bold.** Compound elements contain individual elements.

- Individual elements are not bold. Individual elements contain values.

- A green asterisk (*) in column 1 indicates that use of the element has changed between different versions of ArcCatalog.

**Column 3:
Synchronized[1]**

Synchronization is the process by which ArcCatalog will automatically update an item's metadata with information derived from the item itself. Values in this column indicate whether or not the element's value can be synchronized.

- **S:** element's value can be synchronized. If these elements are removed, they will be added again the next time the metadata is synchronized.

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- **H:** ArcCatalog adds hints to the metadata for the mandatory elements defined in the FGDC standard. The first time the metadata is synchronized, these elements are added to the metadata. They are only added if the element does not already exist in the metadata. If these elements are removed, they won't be added again. The value for these elements is a description of the information that should be added.

- Values for all other elements must be entered manually.

- See the footnotes for details about specific elements.

Column 4: Editable
Values in this column indicate whether or not the element's value can be edited manually.

- **Y:** element's value can be edited using the FGDC metadata editor provided by ArcCatalog.

- **N:** element's value is visible in the FGDC metadata editor but not editable.

- **P:** element's value can be edited using the Metadata Properties dialog box.

- All other elements are not visible in the FGDC metadata editor or the Metadata Properties dialog box provided with ArcCatalog.

Column 5: Visible in Stylesheet[ii]
Values in this column indicate which stylesheets can be used to look at the element's value.

- **G:** element's value can be viewed using the FGDC Geography Network stylesheet.

- **Q:** element's value can be viewed using the FGDC FAQ stylesheet.

- **E:** element's value can be viewed using the FGDC ESRI stylesheet.

- **F:** element's value can be viewed using the FGDC stylesheet.

- **C:** element's value can be viewed using the FGDC Classic stylesheet.

- All elements can be viewed using the XML stylesheet.

- See the footnotes for details about specific elements.

Metadata Content

Esri		Esri			
*	Metadata ID	MetaID	S		
	Creation Date	CreaDate	S		
	Creation Time	CreaTime	S		
	Synchronize Once	SyncOnce	S		
	Synchronization Date	SyncDate	S		
	Synchronization Time	SyncTime	S		
	Modification Date	ModDate	S	E	
	Modification Time	ModTime	S	E	
	Published Document ID	PublishedDocID			
	Publish Status	PublishStatus			
	ArcIMS Server	Server	S		
	ArcIMS Service	Service	S		
	ArcIMS Service Type	ServiceType	S		
	ArcIMS Feature Class Type	ServiceFCType	S		
	ArcIMS Feature Class Name	ServiceFCName	S		
	Data Properties	DataProperties			
	Topology Information	topoinfo			
	Topology Properties	topoProps			
	Topology Name	topoName	S	F	
	Cluster Tolerance	clusterTol	S	E,F	
	Maximum Error Count	maxErrors	S	E,F	
	Topology Rule	topoRule			
	Topology Rule ID	topoRuleID	S	E,F	
	Topology Rule Name	topoRuleName	S	F	
	Topology Rule Type	topoRuleType	S	E,F	
	RuleHelp	ruleHelp	S	F	
	Topology Rule Origin	topoRuleOrigin			
	Feature Class Name	fcname	S	E,F	
	Subtype Code	stcode	S	E,F	
	Subtype Name	stname	S	E,F	
	All Origin Subtypes	allOriginSubtypes	S	E,F	
	Topology Rule Destination	topoRuleDest			
	Feature Class Name	fcname	S	E,F	
	Subtype Code	stcode	S	E,F	
	Subtype Name	stname	S	E,F	
	All Destination Subtypes	allDestSubtypes	S	E,F	
	Synchronize Automatically	Sync		P	
	Geocoding Information	RematchLocator			
	This information is unavailable at this time.				

Identification Information	idinfo			
Citation	citation			
Citation Information	citeinfo			
See Citation Information below.		S	Y	G,Q,E,C,F
Description	descript			
Abstract	abstract	H	Y	G,Q,E,C,F
Purpose	purpose	H	Y	G,Q,E,C,F
Supplemental Information	supplinf		Y	G,Q,E,C,F
Language of Dataset	langdata	S	Y	F
Time Period of Content	timeperd			
Time Period Information	timeinfo			
See Time Period Information below.		H[1]	Y	G,E,C,F
Currentness Reference	current	H	Y	Q,E,C,F
Status	status			
Progress	progress	H	Y	G,E,C,F
Maintenance and Update Frequency	update	H	Y	G,E,C,F
Spatial Domain	spdom			
Bounding Coordinates	bounding			
West Bounding Coordinate	westbc	S[2]	Y	G,Q,E,C,F
East Bounding Coordinate	eastbc	S[2]	Y	G,Q,E,C,F
North Bounding Coordinate	northbc	S[2]	Y	G,Q,E,C,F
South Bounding Coordinate	southbc	S[2]	Y	G,Q,E,C,F
Local Bounding Coordinates	lboundng			
Top Bounding Coordinate	topbc	S		E,F
Bottom Bounding Coordinate	bottombc	S		E,F
Left Bounding Coordinate	leftbc	S		E,F
Right Bounding Coordinate	rightbc	S		E,F
Minimum Altitude	minalti	S	Y	E,F
Maximum Altitude	maxalti	S	Y	E,F
Altitude Units	altunits		Y	F
Dataset G-Polygon	dsgpoly			
Dataset G-Polygon Outer G-Ring	dsgpolyo			
G-Ring	gring			C,F
G-Ring Point	grngpoin			
G-Ring Latitude	gringlat		Y	C,F
G-Ring Longitude	gringlon		Y	C,F
Dataset G-Polygon Exclusion G-Ring	dsgpolyx			
G-Ring	gring			C,F
G-Ring Point	grngpoin			
G-Ring Latitude	gringlat		Y	C,F
G-Ring Longitude	gringlon		Y	C,F
Data Frames	eframes			
Data Frame Count	framect		Y	F
Data Frame Name	framenam		Y	F

Keywords	**keywords**			
Theme	**theme**			
Theme Keyword Thesaurus	themekt	H	Y	C,F
Theme Keyword	themekey	H	Y	G,E,C,F
Place	**place**			
Place Keyword Thesaurus	placekt		Y	C,F
Place Keyword	placekey		Y	G,E,C,F
Stratum	**stratum**			
Stratum Keyword Thesaurus	stratkt		Y	C,F
Stratum Keyword	stratkey		Y	E,C,F
Temporal	**temporal**			
Temporal Keyword Thesaurus	tempkt		Y	C,F
Temporal Keyword	tempkey		Y	E,C,F
Access Constraints	accconst	H	Y	G,Q,E,C,F
Use Constraints	useconst	H	Y	G,Q,E,C,F
Point of Contact	**ptcontac**			
Contact Information	**cntinfo**			
See Contact Information below.			Y	Q,C,F
Browse Graphic	**browse**			
* Browse Graphic Embedded	browseem			E,F
Browse Graphic File Name	browsen		Y	Q,E,C,F
Browse Graphic File Description	browsed		Y	Q,E,C,F
Browse Graphic File Type	browset		Y	Q,E,C,F
Dataset Credit	datacred		Y	Q,C,F
Security Information	**secinfo**			
Security Classification System	secsys		Y	C,F
Security Classification	secclass		Y	C,F
Security Handling Description	sechandle		Y	C,F
Native Dataset Environment	native	S	Y	E,C,F
* Native Dataset Format	natvform	S	Y	G,E,F
Cross Reference	**crossref**			
Citation Information	**citeinfo**			
See Citation Information below.			Y	C,F
Description of Association	assndesc			F
Data Quality Information	**dataqual**			
Attribute Accuracy	**attracc**			
Attribute Accuracy Report	attraccr		Y	Q,C,F
Quantitative Attribute Accuracy Assessment	**qattracc**			
Attribute Accuracy Value	attraccv		Y	C,F
Attribute Accuracy Explanation	attracce		Y	C,F
Logical Consistency Report	logic		Y	Q,C,F
Completeness Report	complete		Y	Q,C,F

Positional Accuracy	**posacc**			
Horizontal Positional Accuracy	**horizpa**			
Horizontal Positional Accuracy Report	horizpar		Y	Q,E,C,F
Quantitative Horizontal Positional Accuracy Assessment	**qhorizpa**			
Horizontal Positional Accuracy Value	horizpav		Y	E,C,F
Horizontal Positional Accuracy Explanation	horizpae		Y	E,C,F
Vertical Positional Accuracy	**vertacc**			
Vertical Positional Accuracy Report	vertaccr		Y	Q,E,C,F
Quantitative Vertical Positional Accuracy Assessment	**qvertpa**			
Vertical Positional Accuracy Value	vertaccv		Y	E,C,F
Vertical Positional Accuracy Explanation	vertacce		Y	E,C,F
Lineage	**lineage**			
Source Information	**srcinfo**			
Source Citation	**srccite**			
Citation Information	**citeinfo**			
See Citation Information below.			Y	Q,C,F
Source Scale Denominator	srcscale		Y	G,Q,C,F
Type of Source Media	typesrc		Y	Q,C,F
Source Time Period of Content	**srctime**			
Time Period Information	**timeinfo**			
See Time Period Information below.			Y	C,F
Source Currentness Reference	srccurr		Y	C,F
Source Citation Abbreviation	srccitea		Y	C,F
Source Contribution	srccontr		Y	Q,C,F
Process Step	**procstep**			
Process Description	procdesc		Y	Q,C,F
Process Software and Version	procsv		Y	F
Source Used Citation Abbreviation	srcused		Y	Q,C,F
Process Date	procdate		Y	Q,C,F
Process Time	proctime		Y	C,F
Source Produced Citation Abbreviation	srcprod		Y	Q,C,F
Process Contact Information	**proccont**			
Contact Information	**cntinfo**			
See Contact Information below.			Y	Q,C,F
Cloud Cover	cloud		Y	C,F
Spatial Data Organization Information	**spdoinfo**			
Indirect Spatial Reference	indsprdf		Y	Q,C,F
Direct Spatial Reference Method	direct	S	Y	Q,E,C,F

Point and Vector Object Information	ptvctinf			
ESRI Terms Description	esriterm			
ESRI Feature Type	efeatyp	S	N	E,F
ESRI Feature Geometry	efeageom	S		E,F
ESRI Topology	esritopo	S	N	E,F
ESRI Feature Count	efeacnt	S	N	E,F
Spatial Index	spindex	S	N	E,F
Linear Referencing	linrefer	S	N	E,F
Network Role	netwrole	S		E,F
XY Rank	XYRank	S		E,F
Z Rank	ZRank	S		E,F
Topology Weight	topoWeight	S		E,F
Events on Validation	validateEvents	S		E,F
Participates in Topology Rules	partTopoRules			
Topology Rule ID	topoRuleID	S		E,F
Feature Description	featdesc		Y	E,F
SDTS Terms Description	sdtsterm			
SDTS Point and Vector Object Type	sdtstype	S	Y	Q,E,C,F
Point and Vector Object Type Count	ptvctcnt	S	Y	Q,E,C,F
VPF Terms Description	vpfterm			
VPF Topology Level	vpflevel	S	Y	Q,E,C,F
VPF Point and Vector Object Information	vpfinfo			
VPF Point and Vector Object Type	vpftype	S	Y	Q,E,C,F
Point and Vector Object Type Count	ptvctcnt	S	Y	Q,E,C,F
Raster Object Information	rastinfo			
* Image Format	rastifor	S	Y	E,F
Raster Object Type	rasttype	S	Y	Q,C,F
Image Type	rastityp		Y	F
Number of Bands	rastband	S	Y	E,F
Row Count	rowcount	S	Y	Q,E,C,F
Column Count	colcount	S	Y	Q,E,C,F
Vertical Count	vrtcount	S	Y	Q,E,C,F
Cell Size X Direction	rastxsz	S	Y	E,F
Cell Size X Units	rastxu		Y	F
Cell Size Y Direction	rastysz	S	Y	E,F
Cell Size Y Units	rastyu		Y	F
Bits Per Pixel	rastbpp	S	Y	E,F
Background Nodata Value	rastnodt		Y	F
Pyramid Layers	rastplyr	S	N	E,F
Image Colormap	rastcmap	S	Y	E,F
Compression Type	rastcomp	S	Y	E,F
Raster Display Type	rastdtyp	S	Y	E,F
Raster Origin	rastorig	S	Y	E,F

Geometric Network Information	**netinfo**			
Network Type	nettype	S		E,F
Connectivity Rule	**connrule**			
Rule Type	ruletype	S		E,F
Rule Category	rulecat	S		E,F
Rule Help	rulehelp	S		E,F
From Edge Feature Class	rulefeid	S		E,F
From Edge Subtype	rulefest	S		E,F
To Edge Feature Class	ruleteid	S		E,F
To Edge Subtype	ruletest	S		E,F
Default Junction Feature Class	ruledjid	S		E,F
Default Junction Subtype	ruledjst	S		E,F
Available Junction	**rulejunc**			
Available Junction Feature Class	junctid	S		E,F
Available Junction Subtype	junctst	S		E,F
Edge Feature Class	ruleeid	S		E,F
Edge Subtype	ruleest	S		E,F
Edge Minimum Cardinality	ruleemnc	S		E,F
Edge Maximum Cardinality	ruleemxc	S		E,F
Junction Feature Class	rulejid	S		E,F
Junction Subtype	rulejst	S		E,F
Junction Minimum Cardinality	rulejmnc	S		E,F
Junction Maximum Cardinality	rulejmxc	S		E,F
Network Element	elemcls			
Ancillary Role	roletype	S		F
Ancillary Role Attribute	rolefld	S		F
Enabled Attribute	enabfld	S		F
Spatial Reference Information	**spref**			
Horizontal Coordinate System Definition	**horizsys**			
Coordinate System Name	**cordsysn**			
Projected Coordinate System Name	projcsn	S	Y	E,F
Geographic Coordinate System Name	geogcsn	S	Y	E,F
Geographic	**geograph**			G
Latitude Resolution	latres	S	Y	Q,E,C,F
Longitude Resolution	longres	S	Y	Q,E,C,F
Geographic Coordinate Units	geogunit	S	Y	Q,E,C,F
Planar	**planar**			
Map Projection	**mapproj**			
Map Projection Name	mapprojn	S	Y	G,Q,E,C,F

Albers Conical Equal Area	albers	S		F
Standard Parallel	stdparll	S	Y	Q,E,C,F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
Latitude of Projection Origin	latprjo	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Azimuthal Equidistant	**azimequi**	S		F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
Latitude of Projection Origin	latprjo	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Equidistant Conic	**equicon**	S		F
Standard Parallel	stdparll	S	Y	Q,E,C,F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
Latitude of Projection Origin	latprjo	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Equirectangular	**equirect**	S		F
Standard Parallel	stdparll	S	Y	Q,E,C,F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
General Vertical Near-Sided Perspective	**gvnsp**			F
Height of Perspective Point Above Surface	heightpt		Y	Q,E,C,F
Longitude of Projection Center	longpc	S[4]	Y	Q,E,C,F
Latitude of Projection Center	latprjc	S[4]	Y	Q,E,C,F
False Easting	feast	S[4]	Y	Q,E,C,F
False Northing	fnorth	S[4]	Y	Q,E,C,F
Gnomonic	**gnomonic**			F
Longitude of Projection Center	longpc	S[4]	Y	Q,E,C,F
Latitude of Projection Center	latprjc	S[4]	Y	Q,E,C,F
False Easting	feast	S[4]	Y	Q,E,C,F
False Northing	fnorth	S[4]	Y	Q,E,C,F
Lambert Azimuthal Equal Area	**lamberta**	S		F
Longitude of Projection Center	longpc	S	Y	Q,E,C,F
Latitude of Projection Center	latprjc	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F

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Lambert Conformal Conic	lambertc	S		F
Standard Parallel	stdparll	S	Y	Q,E,C,F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
Latitude of Projection Origin	latprjo	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Mercator	**mercator**	S		F
Standard Parallel	stdparll	S	Y	Q,E,C,F
Scale Factor at Equator	sfequat		Y	Q,E,C,F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Modified Stereographic for Alaska	**modsak**			F
False Easting	feast		Y	Q,E,C,F
False Northing	fnorth		Y	Q,E,C,F
Miller Cylindrical	**miller**	S		F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Oblique Mercator	**obqmerc**	S		F
Scale Factor at Center Line	sfctrlin	S	Y	Q,E,C,F
Oblique Line Azimuth	**obqlazim**			
Azimuthal Angle	azimangl	S	Y	Q,E,C,F
Azimuth Measure Point Longitude	azimptl	S	Y	Q,E,C,F
Oblique Line Point	**obqlpt**			
Oblique Line Latitude	obqllat	S	Y	Q,E,C,F
Oblique Line Longitude	obqllong	S	Y	Q,E,C,F
Oblique Line Latitude	obqllat	S	Y	Q,E,C,F
Oblique Line Longitude	obqllong	S	Y	Q,E,C,F
Latitude of Projection Origin	latprjo	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Orthographic	**orthogr**			F
Longitude of Projection Center	longpc	S[4]	Y	Q,E,C,F
Latitude of Projection Center	latprjc	S[4]	Y	Q,E,C,F
False Easting	feast	S[4]	Y	Q,E,C,F
False Northing	fnorth	S[4]	Y	Q,E,C,F
Polar Stereographic	**polarst**			F
Straight Vertical Longitude from Pole	svlong		Y	Q,E,C,F
Standard Parallel	stdparll		Y	Q,E,C,F
Scale Factor at Projection Origin	sfprjorg		Y	Q,E,C,F
False Easting	feast		Y	Q,E,C,F
False Northing	fnorth		Y	Q,E,C,F

Polyconic	**polycon**	S		F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
Latitude of Projection Origin	latprjo	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Robinson	**robinson**	S		F
Longitude of Projection Center	longpc	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Sinusoidal	**sinusoid**	S		F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Space Oblique Mercator (Landsat)	**spaceobq**			F
Landsat Number	landsat		Y	Q,E,C,F
Path Number	pathnum		Y	Q,E,C,F
False Easting	feast		Y	Q,E,C,F
False Northing	fnorth		Y	Q,E,C,F
Stereographic	**stereo**	S		F
Longitude of Projection Center	longpc	S	Y	Q,E,C,F
Latitude of Projection Center	latprjc	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
Transverse Mercator	**transmer**	S		F
Scale Factor at Central Meridian	sfctrmer	S	Y	Q,E,C,F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
Latitude of Projection Origin	latprjo	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
van der Grinten	**vdgrin**	S		F
Longitude of Central Meridian	longcm	S	Y	Q,E,C,F
False Easting	feast	S	Y	Q,E,C,F
False Northing	fnorth	S	Y	Q,E,C,F
* **Behrmann**	**behrmann**	S[3]		F
Longitude of Central Meridian	longcm	S	Y	E,F
False Easting	feast	S	Y	E,F
False Northing	fnorth	S	Y	E,F
* **Bonne**	**bonne**	S[3]		F
Standard Parallel	stdparll	S	Y	E,F
Longitude of Central Meridian	longcm	S	Y	E,F
False Easting	feast	S	Y	E,F
False Northing	fnorth	S	Y	E,F

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*	Cassini	cassini	S[3]		F
	Scale Factor at Central Meridian	sfctrmer	S	Y	E,F
	Longitude of Central Meridian	longcm	S	Y	E,F
	Latitude of Projection Origin	latprjo	S	Y	E
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	Eckert I	eckert1	S[3]		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	Eckert II	eckert2	S[3]		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	Eckert III	eckert3	S[3]		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	Eckert IV	eckert4	S[3]		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	Eckert V	eckert5	S[3]		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	Eckert VI	eckert6	S[3]		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	Gall Stereographic	gallster	S[3]		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	Loximuthal	loxmuth	S[3]		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	Latitude of Projection Origin	latprjo	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	Mollweide	mollweid	S[3]		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F

*	**Quartic Authalic**	**quartic**	S³		F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	**Winkel I**	**winkel1**	S³		F
	Standard Parallel	stdparll	S	Y	E,F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	**Winkel II**	**winkel**	S³		F
	Standard Parallel	stdparll	S	Y	E,F
	Longitude of Central Meridian	longcm	S	Y	E,F
	False Easting	feast	S	Y	E,F
	False Northing	fnorth	S	Y	E,F
*	**Other Projection Definition**	**otherprj**	S³		F
	Individual map projection parameters. See Appendix C for production rules.		S	Y	Q,E,F
	Map Projection Parameters	**mapprojp**	S⁴		F
	Individual map projection parameters. See Appendix C for production rules.		S⁴		E,F
Grid Coordinate System		**gridsys**			
Grid Coordinate System Name		gridsysn	S	Y	G,Q,E,C,F
Universal Transverse Mercator (UTM)		**utm**			
UTM Zone Number		utmzone	S	Y	Q,E,C,F
Transverse Mercator		**transmerc**			
	See Transverse Mercator above		S	Y	Q,E,C,F
Universal Polar Stereographic (UPS)		**ups**			
UPS Zone Identifier		upszone		Y	Q,E,C,F
Polar Stereographic		**polarst**			
	See Polar Stereographic above.			Y	Q,E,C,F
State Plane Coordinate System (SPCS)		**spcs**			
SPCS Zone Identifier		spcszone	S	Y	Q,E,C,F
Lambert Conformal Conic		**lambertc**			
	See Lambert Conformal Conic above.		S	Y	Q,E,C,F
Transverse Mercator		**transmer**			
	See Transverse Mercator above.		S	Y	Q,E,C,F
Oblique Mercator		**obqmerc**			
	See Oblique Mercator above.		S	Y	Q,E,C,F
Polyconic		**polycon**			
	See Polyconic above.		S	Y	Q,E,C,F

ARC Coordinate System	**arcsys**			
ARC System Zone Identifier	arczone		Y	Q,E,C,F
Equirectangular	**equirect**			
See Equirectangular above.			Y	Q,E,C,F
Azimuthal Equidistant	**azimequi**			
See Azimuthal Equidistant above.			Y	Q,E,C,F
Other Grid System Definition	othergrd		Y	Q,E,C,F
Local Planar	**localp**			G
Local Planar Description	localpd		Y	Q,E,C,F
Local Planar Georeference Information	localpgi		Y	Q,E,C,F
Planar Coordinate Information	**planci**			
Planar Coordinate Encoding Method	plance	S	Y	Q,E,C,F
Coordinate Representation	**coordrep**			
Abscissa Resolution	absres	S	Y	Q,E,C,F
Ordinate Resolution	orders	S	Y	Q,E,C,F
Distance and Bearing Representation	**distbear**			
Distance Resolution	distress		Y	Q,E,C,F
Bearing Resolution	bearers		Y	Q,E,C,F
Bearing Units	bearunit		Y	Q,E,C,F
Bearing Reference Direction	bearrefd		Y	Q,E,C,F
Bearing Reference Meridian	bearrefm		Y	Q,E,C,F
Planar Distance Units	plandu	S	Y	Q,E,C,F
Local	**local**			G
Local Description	localdes		Y	Q,E,C,F
Local Georeference Information	localgeo		Y	Q,E,C,F
Geodetic Model	**geodetic**			
Horizontal Datum Name	horizdn	S	Y	Q,E,C,F
Ellipsoid Name	ellips	S	Y	Q,E,C,F
Semi-Major Axis	semiaxis	S	Y	Q,E,C,F
Denominator of Flattening Ratio	denflat	S	Y	Q,E,C,F
Vertical Coordinate System Definition	**vertdef**			
Altitude System Definition	**altsys**			
Altitude Datum Name	altdatum		Y	Q,E,C,F
Altitude Resolution	alters	S	Y	Q,E,C,F
Altitude Distance Units	altunits		Y	Q,E,C,F
Altitude Encoding Method	altenc	S	Y	Q,E,C,F
Depth System Definition	**depthsys**			
Depth Datum Name	depthdn		Y	Q,E,C,F
Depth Resolution	depthres		Y	Q,E,C,F
Depth Distance Units	depthdu		Y	Q,E,C,F
Depth Encoding Method	depthen		Y	Q,E,C,F

Entity and Attribute Information	eainfo			
Detailed Description	detail			
Entity Type	enttyp			
Entity Type Label	enttypl	S	Y	Q,E,C,F
Entity Type Type	enttypt	S	N	E,F
Entity Type Count	enttypc	S	N	E,F
Entity Type Definition	enttypd		Y	Q,E,C,F
Entity Type Definition Source	enttypds		Y	Q,E,C,F
Attribute	attr			
Attribute Label	attrlabl	S	Y	Q,E,C,F
Attribute Alias	attalias	S		E,F
Attribute Definition	attrdef	S[4]	Y	Q,E,C,F
Attribute Definition Source	attrdefs	S[4]	Y	Q,E,C,F
Attribute Type	attrtype	S	N	E,F
Attribute Width	attwidth	S	N	E,F
Attribute Precision	atprecis	S	N	E,F
Attribute Scale	attscale	S		E,F
Attribute Output Width	atoutwid	S		E,F
Attribute Number of Decimals	atnumdec	S		E,F
Attribute Indexed	atindex		N	F
Attribute Domain Values	attrdomv			
Enumerated Domain	edom			
Enumerated Domain Value	edomv		Y	Q,C,F
Enumerated Domain Value Definition	edomvd		Y	Q,C,F
Enumerated Domain Value Definition Source	edomvds		Y	C,F
Range Domain	rdom			
Range Domain Minimum	rdommin		Y	Q,C,F
Range Domain Maximum	rdommax		Y	Q,C,F
Range Domain Mean	rdommean		Y	F
Range Domain Standard Deviation	rdomstdv		Y	F
Attribute Units of Measure	attrunit		Y	Q,C,F
Attribute Measurement Resolution	attrmres		Y	Q,C,F
Codeset Domain	codesetd			
Codeset Domain Name	codesetn		Y	Q,C,F
Codeset Domain Source	codesets		Y	Q,C,F
Unrepresentable Domain	udom	S[4]	Y	Q,C,F
Beginning Date of Attribute Values	begdatea		Y	C,F
Ending Date of Attribute Values	enddatea		Y	C,F
Attribute Value Accuracy Information	attrvai			
Attribute Value Accuracy	attrva		Y	C,F
Attribute Value Accuracy Explanation	attrvae		Y	C,F
Attribute Value Measurement Frequency	attrmfrq		Y	Q,C,F

Subtype Information	**subtype**			
Subtype Name	stname	S		E,F
Subtype Code	stcode	S		E,F
Subtype Attribute	stfield	S		
Subtype Attribute Name	stfldnm	S		E,F
Subtype Default Value	stflddv	S		E,F
Attribute Defined Domain	**stflddd**			
Domain Name	domname	S		E,F
Domain Description	domdesc	S		E,F
Domain Owner	domowner	S		E,F
Domain Attribute Type	domfldtp	S		E,F
Domain Type	domtype	S		E,F
Merge Rule	mfgtype	S		E,F
Split Rule	splttype	S		E,F
Relationship Information	**relinfo**			
Description of Relationship	reldesc	S		F
Relationship Cardinality	relcard	S		E,F
Attributed Relationship	relattr	S		E,F
Composite Relationship	relcomp	S		E,F
Notification Direction	relnodir	S		E,F
Origin Name	otfcname	S		E,F
Origin Primary Key	otfcpkey	S		E,F
Origin Foreign Key	otfcfkey	S		E,F
Destination Name	dtfcname	S		E,F
Destination Primary Key	dtfcpkey	S		E,F
Destination Foreign Key	dtfcfkey	S		E,F
Relationship Forward Label	relflab	S		E,F
Relationship Backward Label	relblab	S		E,F
Overview Description	**overview**			
Entity and Attribute Overview	eaover		Y	Q,E,C,F
Entity and Attribute Detail Citation	eadetcit		Y	Q,E,C,F
Distribution Information	**distinfo**			
Distributor	**distrib**			
Contact Information	**cntinfo**			
See Contact Information below.			Y	Q,C,F
Resource Description	resdesc		Y	Q,C,F
Distribution Liability	distliab		Y	Q,C,F
Standard Order Process	**stdorder**			
Non-Digital Form	nondig		Y	Q,C,F
Digital Form	**digform**			
Digital Transfer Information	**digtinfo**			
Format Name	formname	S[3]	Y	Q,E,C,F
Format Version Number	formvern		Y	Q,C,F

	Format Version Date	formverd		Y	C,F
	Format Specification	formspec		Y	Q,C,F
	Format Information Content	formcont		Y	Q,C,F
	File Decompression Technique	filedec	S³	Y	E,C,F
	Transfer Size	transize	S	Y	Q,E,C,F
	Dataset Size	dssize	S	Y	E,F
Digital Transfer Option		**digtopt**			
Online Option		**onlinopt**			
Computer Contact Information		**computer**			
Network Address		**networka**			
	Network Resource Name	networkr	S³	Y	Q,E,C,F
Dialup Instructions		**dialinst**			
	Lowest BPS	lowbps		Y	C,F
	Highest BPS	highbps		Y	C,F
	Number DataBits	numdata		Y	C,F
	Number StopBits	numstop		Y	C,F
	Parity	parity		Y	C,F
	Compression Support	compress		Y	C,F
	Dialup Telephone	dialtel		Y	E,C,F
	Dialup Filename	dialfile		Y	E,C,F
SDE Connection Information		**sdeconn**			
*	Server Name	server	S³		E,F
*	Instance Name	instance	S³		E,F
*	Database Name	database	S³		E,F
*	User Name	user	S³		E,F
*	Version Name	version	S³		E,F
	Access Instructions	accinstr	S³	Y	E,C,F
	Online Computer and Operating System	oncomp		Y	C,F
Offline Option		**offoptn**			
	Offline Media	offmedia		Y	Q,E,C,F
Recording Capacity		**recap**			
	Recording Density	recden		Y	Q,C,F
	Recording Density Units	recdenu		Y	Q,C,F
	Recording Format	recfmt		Y	Q,C,F
	Compatibility Information	compat		Y	Q,C,F
Fees		fees		Y	Q,C,F
Ordering Instructions		ordering		Y	Q,C,F
Turnaround		turnarnd		Y	Q,C,F
Custom Order Process		custom		Y	Q,C,F
Technical Prerequisites		techpreq		Y	Q,C,F

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Available Time Period	**availabl**			
Time Period Information	**timeinfo**			
See Time Period Information below.			Y	C,F
Metadata Reference Information	**metainfo**			
Metadata Date	metd	S	Y	Q,E,C,F
Metadata Review Date	metrd		Y	Q,E,C,F
Metadata Future Review Date	metfrd		Y	Q,E,C,F
Language of Metadata	langmeta	S	Y	F
Metadata Contact	**metc**			
Contact Information	**cntinfo**			
See Contact Information below.		H[1]	Y	Q,E,C,F
Metadata Standard Name	metstdn	S	Y	Q,E,C,F
Metadata Standard Version	metstdv	S	Y	Q,E,C,F
Metadata Time Convention	mettc	S	Y	E,C,F
Metadata Access Constraints	metac		Y	C,F
Metadata Use Constraints	metuc		Y	C,F
Metadata Security Information	**metsi**			
Metadata Security Classification System	metscs		Y	C,F
Metadata Security Classification	metsc		Y	C,F
Metadata Security Handling Description	metshd		Y	C,F
Metadata Extensions	**metextns**			
Online Linkage	onlink	S	Y	Q,E,C,F
Profile Name	metprof	S	Y	E,C,F
Binary Enclosures	**Binary**			
Thumbnail	**Thumbnail**			
Data	Data			E,F
Enclosure	**Enclosure**			
Description	Descript		P	E,F
Data	Data		P	E[a],F

Reusable Metadata Sections

Citation Information	**citeinfo**			
Originator	origin	H	Y	G,Q,E,C,F
Publication Date	pubdate	H	Y	G,Q,E,C,F
Publication Time	pubtime		Y	E,C,F
Title	title	S	Y	G,Q,E,C,F
File or Table Name	ftname	S		E,F
Edition	edition		Y	C,F
Geospatial Data Presentation Form	geoform	S	Y	G,Q[b],E,C,F
Series Information	**serinfo**			
Series Name	sername		Y	Q,E,C,F
Issue Identification	issue		Y	Q,E,C,F

Publication Information	**pubinfo**			
Publication Place	pubplace		Y	G,Q,E,C,F
Publisher	publish		Y	Q,E,C,F
Other Citation Details	othercit		Y	Q,C,F
* Online Linkage	onlink	S[4]	Y	Q,E,C,F
Larger Work Citation	**lworkcit**			
Citation Information	**citeinfo**			
See Citation Information.			Y	Q[c],C,F
Time Period Information	**timeinfo**			
Single Date/Time	**sngdate**			
Calendar Date	caldate	H[1]	Y	G,Q,E,C,F
Time of Day	time		Y	E,C,F
Multiple Dates/Times	**mdattim**			
Single Date/Time	**sngdate**			
Calendar Date	caldate		Y	G,Q,E,C,F
Time of Day	time		Y	E,C,F
Single Date/Time	**sngdate**			
Calendar Date	caldate		Y	G,Q,E,C,F
Time of Day	time		Y	E,C,F
Range of Dates/Times	**rngdates**			
Beginning Date	begdate		Y	G,Q,E,C,F
Beginning Time	begtime		Y	Q,E,C,F
End Date	enddate		Y	G,Q,E,C,F
End Time	endtime		Y	Q,E,C,F
Contact Information	**cntinfo**			
Contact Person Primary	**cntperp**			
Contact Person	cntper		Y	Q,E,C,F
Contact Organization	cntorg		Y	Q,E,C,F
Contact Organization Primary	**cntorgp**			
Contact Organization	cntper	H[1]	Y	Q,E,C,F
Contact Person	cntorg	H[1]	Y	Q,E,C,F
Contact Position	cntpos		Y	Q,C,F
Contact Address	**cntaddr**			
Address Type	addrtype	H	Y	E,C,F
Address	address		Y	Q,E,C,F
City	city	H	Y	Q,E,C,F
State or Province	state	H	Y	Q,E,C,F
Postal Code	postal	H	Y	Q,E,C,F
Country	country		Y	Q,E,C,F
Contact Voice Telephone	cntvoice	H	Y	Q,E,C,F
Contact TDD/TTY Telephone	cnttdd		Y	C,F
Contact Facsimile Telephone	cntfax		Y	Q,E,C,F
Contact Electronic Mail Address	cntemail		Y	Q,E,C,F
Hours of Service	hours		Y	Q,E,C,F
Contact Instructions	cntinst		Y	Q,E,C,F

1. Hints are added to the metadata for mandatory elements. If there is more than one option for specifying the mandatory element, the hint is placed in one of the options. A different option may be used; if so, the hint should be removed from the element where it was added.
   - The Time Period of Content element must contain date information. One of three options may be used to define the dates. The hint is placed in the Single Date/Time element.
   - The Metadata Contact element must contain either the name of the person or organization to contact. Which one to use depends on whether the person or the organization is the primary contact. The hint is placed in the Contact Organization within the Contact Organization Primary element.

2. Bounding Coordinates are mandatory in FGDC standard. If the bounding coordinates can't be synchronized, either because the coordinate system is undefined or because the item is nonspatial, hints are placed within the elements.

3. The values of these elements were synchronized by ArcCatalog 8, but they are no longer synchronized in version 8.1 or later.
   - SDE Connection Info and Network Resource Name in Distribution Information. This information is now recorded in the Online Linkage element as part of the item's Citation.
   - Digital Transfer Information elements in Distribution Information. When we stopped synchronizing the above elements we also stopped synchronizing the elements Format Name, File Decompression Technique, and Access Instructions.
   - Parameters describing some ESRI-supported projections that are not defined in the FGDC standard were placed into ESRI-defined group elements in version 8, but in versions 8.1 and later these elements are no longer used.

4. The values of these elements are synchronized by ArcCatalog in versions 8.1 and later but were not in version 8.
   - Standard Attribute Definition and Attribute Definition Source will be added for ESRI-defined attribute columns, such as Shape and FID, and coverage columns such as FNODE and <coverage>#.
   - Unrepresentable Domain element is also added for the attributes described above except for <coverage>-ID, which is by definition a user-defined ID column.
   - With versions 8.1 and later, ESRI-supported projections that are not defined in the FGDC standard are described by placing the individual projection parameter elements into the FGDC-defined generic element Map Projection Parameters.
   - At version 8.1 ESRI added support for some FGDC-defined projections; however, with 8.1 and later versions their parameter elements are placed into the Map Projection Parameters element rather than the appropriate specific group element for those projections.

[ii] **Column 5: Visible in Stylesheet**
a. The contents of the Data element within the Enclosure element only appear in the FGDC and FGDC ESRI stylesheets if the enclosure is an image (i.e., if the Image check box was checked when the enclosure was added).

b. Geospatial Data Presentation Form is shown in the FGDC FAQ stylesheet separately from the rest of the dataset's Citation.

c. When viewing a Larger Work Citation in the FGDC FAQ stylesheet, the same citation elements will appear for the larger work as for the regular citation. That is, the following elements will not be shown for the larger work: Publication Time, File or Table Name, and Edition. As indicated above, Geospatial Data Presentation Form is not shown as part of the citation in this stylesheet.

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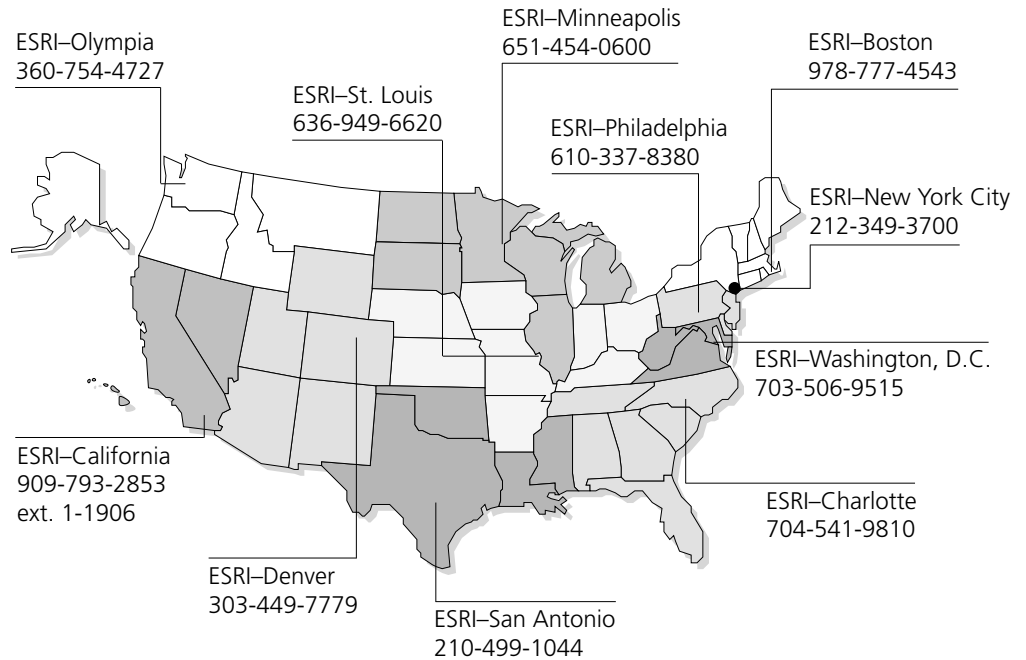or contact an ESRI reseller near you.

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