

ADWR GIS Metadata Policy

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PURPOSE OF POLICY

The purpose of this ADWR GIS Metadata Policy is primarily to provide confidence in data quality and assurance and secondly, to maintain consistent record keeping.

This will assist ADWR with integration of department databases.

Introduction

What is Metadata?

Metadata is data about data. It carries critical information as to the dataset purpose, location, content, and lineage. Geospatial software and analysts increasingly rely on metadata to understand, display, and manage data. Perhaps most significantly, metadata is the user's information needed to locate and assess available geospatial data resources for a particular use. Metadata instills data accountability and limits data liability. The timely capture of metadata is fundamental to the quality of the data set as a whole.

Why is it important?

It reduces the data management workload.

A well done metadata process:

- checks and improves data quality
- preserves the data history so that it can be re-used or adapted
- assesses which data should be maintained, updated, or deleted
- instills data accountability by requiring you to document the data
- limits data liability by designating its limits of use
- accesses the lineage and content of outsourced data production
- provides a common language of attributes and process methods and a place to record and share progress
- formats and specifies the data types
- documents content needed to support the project
- prevents duplication of work effort

When to fill metadata?

During the workflow process

- during development
- as updates or edits are performed

Completing metadata during the workflow process ensures data integrity and reduces obstacles for metadata creation later on which may result in incomplete or inaccurate data.

Standards

FGDC content standards for geospatial metadata

Standards facilitate the development, sharing, and use of geospatial data. The Federal Geographic Data Committee (FGDC) is an interagency committee that promotes the coordinated development, sharing, use, and dissemination of geospatial data on a national basis. This nationwide data publishing effort is known as the [National Spatial Data Infrastructure](#) (NSDI). (Source: <http://www.fgdc.gov/>)

For more information please visit the Federal Geographic Data Committee (FGDC) website <http://www.fgdc.gov/metadata/metadata-business-case>

ISO 19115 geographic information metadata standard

The International Organization for Standards (ISO) provides a list of topic category codes that should be used for consistency throughout the agency and other departments we may gather data from. This category field can then be used as a search field or keyword when querying for data. (Appendix A)

FGDC sections applicable to ADWR datasets

1. Identification Information – the basic information about the data set.
2. Data Quality Information – evaluation of the quality of the data set.
3. Spatial Reference Information – description of the projection and coordinate system.
4. Metadata Reference Information – is distribution information about obtaining the data set.

1 Identification Information	2 Data Quality Information	3 Spatial Reference Information	4 Metadata Reference Information
Abstract	Completeness	Projected coordinate system name	Metadata author and organization
Purpose		Geographic coordinate system name	Organization address and phone
Access Constrains		Horizontal Datum Name	
Use Constraints		Ellipsoid Name	
Currentness Reference		Horizontal Units	
Time Period of Content Date		If Raster	
Progress		Cell Width	
Update Frequency		Cell Height	
Theme Keyword*			

1. Identification Information

- Abstract: REQUIRED: A brief narrative summary of the data set.
- Purpose: REQUIRED: A summary of the intentions with which the data set was developed.
- Access Constrains: REQUIRED: Restrictions and legal prerequisites for accessing the data set.
- Use Constrains: REQUIRED: Restrictions and legal prerequisites for using the data set after access is granted.
- Currentness Reference: REQUIRED: The basis on which the time period of content information is determined.
- Time Period of Content Date: REQUIRED: The year (and optionally month, or month and day) for which the data set corresponds to the ground.
- Progress: REQUIRED: The state of the data set.
- Update Frequency: REQUIRED: The frequency with which changes and additions are made to the data set after the initial data set is completed.
- Theme Keyword: REQUIRED: Common-use word or phrase used to describe the subject of the data set.(page 8-9 of [MetadataQuickGuide.pdf](#)).
* Optional: If data is used in a publication, list project or publication report as a second keyword.

2. Data Quality Information

- Completeness: REQUIRED: includes information about omissions, selection criteria, generalization, definitions used, and other rules used to derive the data.

3. Spatial Reference Information

- Projected coordinate system name: REQUIRED: A reference system used to locate x, y, and z positions of point, line, and area features in two or three dimensions. It is defined by a geographic coordinate system, a map projection, any parameters needed by the map projection, and a linear unit of measure.
- Geographic coordinate system name: REQUIRED: A reference system that uses latitude and longitude to define the locations of points on the surface of a sphere or spheroid. A geographic coordinate system definition includes a datum, prime meridian, and angular unit.
- Horizontal Datum Name: REQUIRED: It may be local or geocentric. If it is local, it specifies the shape and size of an ellipsoid representing the earth, the location of an origin point on the ellipsoid surface, and the orientation of x- and y-axes relative to the ellipsoid. If it is geocentric, it specifies the shape and size of an ellipsoid, the location of an origin point at the intersection of x-,y-, and z-axes at the center of the ellipsoid, and the orientation of the x-,y-, and z-axes relative to the ellipsoid. Examples of local horizontal geodetic datums include the North American Datum of 1927. Examples of geocentric horizontal geodetic datums include the North American Datum of 1983 and the World Geodetic System of 1984.

- Ellipsoid Name: REQUIRED: Identification given to establish representation of the Earth's shape.
- Horizontal Units: REQUIRED: Dependent on the projection units e.g., meters, feet.
- If Raster
 - Cell Width: The column width of a raster cell expressed in distance units of measure.
 - Cell Height: The row height of a raster cell expressed in distance units of measure.

4. Metadata Reference Information

- Metadata author and organization: REQUIRED: The name of person/s that typed in the metadata and where they work.
- Organization's address and phone number: REQUIRED: Current ADWR mailing address and general phone number.

Supplemental standards used

Raster Metadata

The FGDC extends its metadata model by adding extensions. The purpose of the "Extension for Remote Sensing Metadata" (RSE) is to describe geospatial data obtained from remote sensing. The RSE include metadata describing the sensor, the platform, geographic location, resolution and temporal characteristics of the remotely sensed data.

Metadata is usually included with the images. Important information such as platform (the satellite name, e.g., SPOT, Landsat, etc), instrument; (a sensor e.g., AVHRR), and instrument information (year, version) is necessary.

ArcCatalog was not intended for creating remote sensing metadata therefore, these fields are not included in the default metadata template.

Policies

Datasets archived at ADWR SDE must have FGDC/ISO compliant metadata records.

Datasets created at ADWR that are going to be included in the SDE for agency use must have compliant metadata included.

Derived datasets (e.g. online data) also require FGDC-compliant metadata records.

Datasets from other sources that are going to be included in the SDE for agency use must have compliant metadata included.

Metadata Responsibilities

- ADWR *Metadata Managers* shall be identified for each project and are the metadata contacts for their metadata records.
- Creation and editing of metadata is the responsibility of the creator of the data.
- The *Metadata Managers* are responsible for checking that the metadata records comply with the standards and policies.
- Approval and publishing of metadata records is the responsibility of the *Metadata Manager*.

Terms, Definitions, and Acronyms

Quality Control (QC) - Quality controls are the standards to achieve and the methods to check the specific quality of an existing dataset during production.

Quality Assurance (QA) - Quality Assurance is the process used to check the quality of the data after its production.

Geospatial - is a term widely used to describe the combination of [spatial](#) software and [analytical](#) methods with terrestrial or [geographic](#) datasets.

ArcCatalog – is an integrated and unified view of all the data files, databases, and ArcGIS documents available to ArcGIS users.

FGDC - The Federal Geographic Data Committee (FGDC) is an interagency committee that promotes the coordinated development, sharing, use, and dissemination of geospatial data on a national basis.

ISO - The International Organization for Standards (ISO) is a federation of national metadata standards from 145 countries.

Resources

- 1) ArcGIS Desktop Help
- 2) Institutionalize Metadata Before It Institutionalizes You:
http://www.fgdc.gov/metadata/documents/InstitutionalizeMeta_Nov2005.doc
- 3) Metadata Quick Guide: <http://www.fgdc.gov/metadata/documents/MetadataQuickGuide.pdf>
- 4) Minnesota Geographic Metadata Guidelines:
http://www.gis.state.mn.us/pdf/Mgmg1_2.pdf
- 5) NGDC Metadata Policy:
http://www.ngdc.noaa.gov/metadata/nesdis/ngdc/DRAFT_NGDC_Metadata_Policy-20050809.pdf
- 6) The Federal Geographic Data Committee: <http://www.fgdc.gov/>

Appendix A

ISO Topic Category Name, ISO Topic Category Code – Modified for ADWR data

EXAMPLE:

- **Keyword, ISO Topic Category Code**
General description
e.g., specific examples
- ***farming, 001***
cultivation of plants
e.g., agriculture, crops
- ***boundaries, 003***
legal land descriptions
e.g., political and administrative boundaries
- ***climatologyMeteorologyAtmosphere, 004***
processes and phenomena of the atmosphere
e.g., processes and phenomena of the atmosphere
- ***economy, 005***
economic activities, conditions, and employment
e.g., business and economics
- ***elevation, 006***
height above or below the earth's surface
e.g., altitude, bathymetry, dem's, slope, derived products
- ***environment, 007***
environmental resources, protection, and conservation
e.g., natural resources, pollution, impact assessment, monitoring, land analysis
- ***geoscientificInformation, 008***
information pertaining to the earth sciences
e.g., geology, minerals, earthquakes, fissures, landslides, soils, gravity, hydrogeology, erosion
- ***imageryBaseMapsEarthCover, 010***
base maps
e.g., land cover, topographic maps, imagery, annotations
e.g., military bases, structures, activities
- ***inlandWaters, 012***
inland water features, drainage systems and characteristics
e.g., rivers, lakes, water use plans, dams, currents, floods, water quality, hydrographic charts
- ***location, 013***
positional information and services
e.g., addresses, geodetic networks, control points, postal zones, place names
- ***planningCadastre, 015***

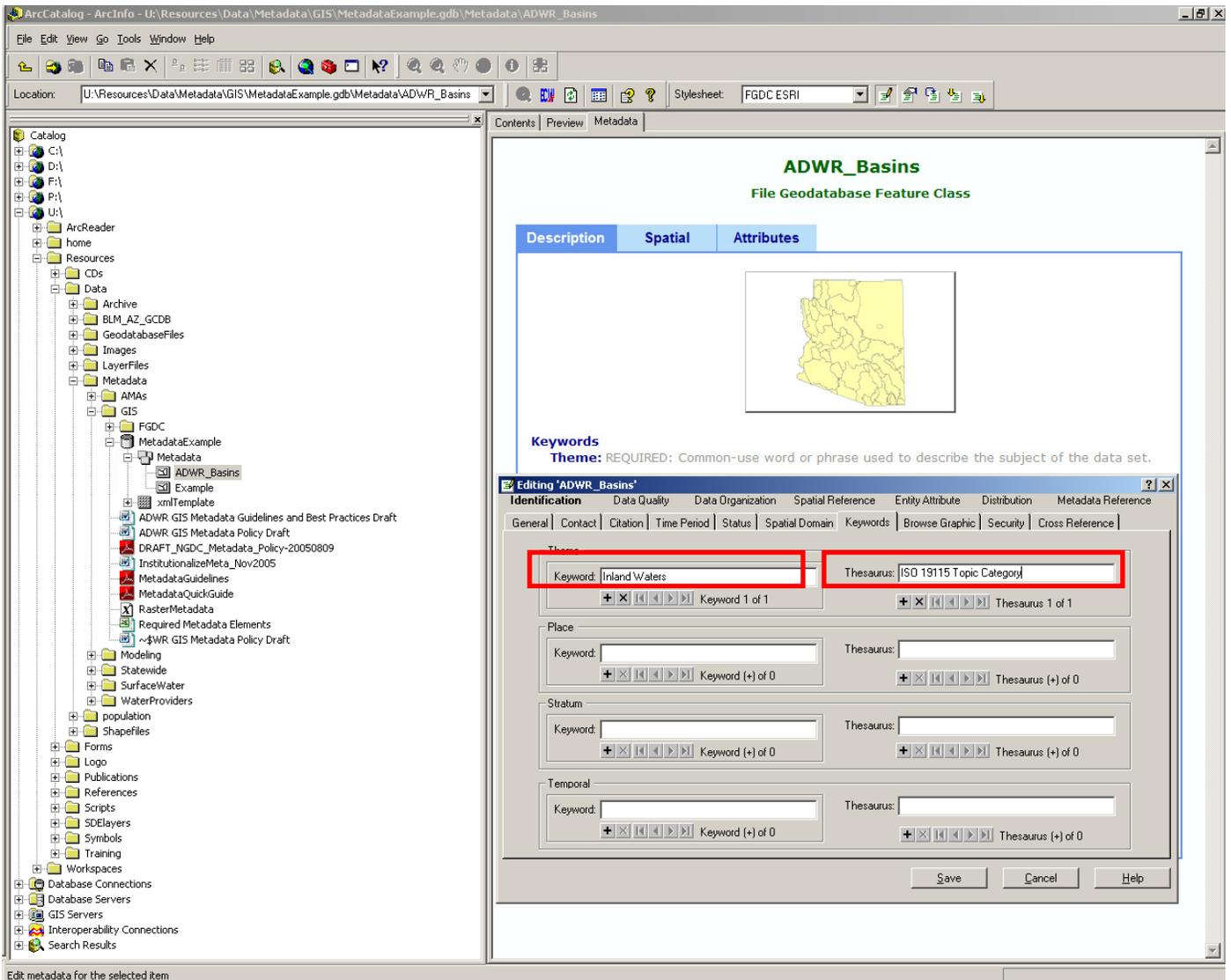
- information used for appropriate actions for future use of the land*
 e.g., land use maps, zoning maps, cadastral surveys, land ownership
- ***society, 016***
characteristics of society and culture
 e.g., anthropology, archaeology, religion, demographics, population,
 - ***structure, 017***
man-made construction
 e.g., architecture, buildings, museums, churches, factories, housing, monuments, shops, towers
 - ***transportation, 018***
means and aids for conveying persons and/or goods
 e.g., roads, airports, nautical charts, railways, trails
 - ***utilitiesCommunication, 019***
energy, water and waste systems, and communications infrastructure
 e.g., hydroelectricity, solar, and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electrical and gas distribution, data communication

Appendix B

How to Develop Metadata

ArcCatalog does not provide a list of subject headings based upon the ISO 19115 topic category. Here are the steps to include it:

1. Include the “Topic Category Names” (from the list below) as *Theme_Keyword*
2. Cite the related *Theme_Keyword_Thesaurus* as :”ISO 19115 Topic Category”

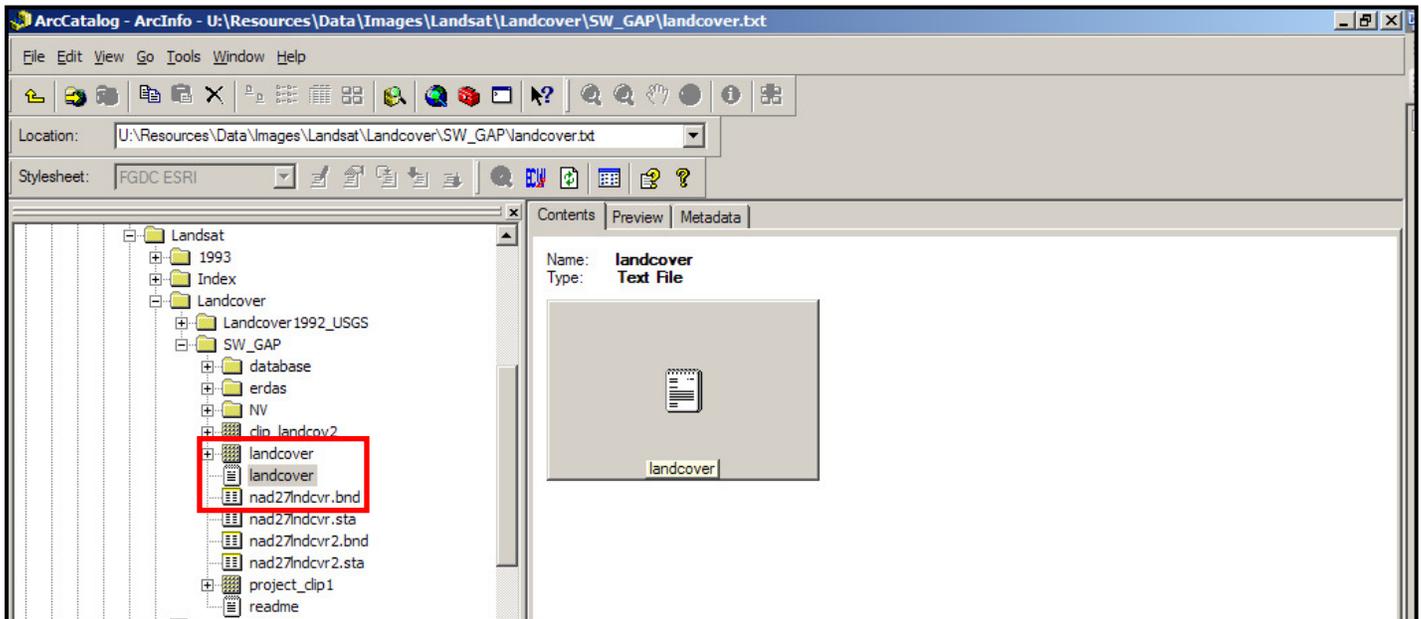


There are two ways to develop metadata.

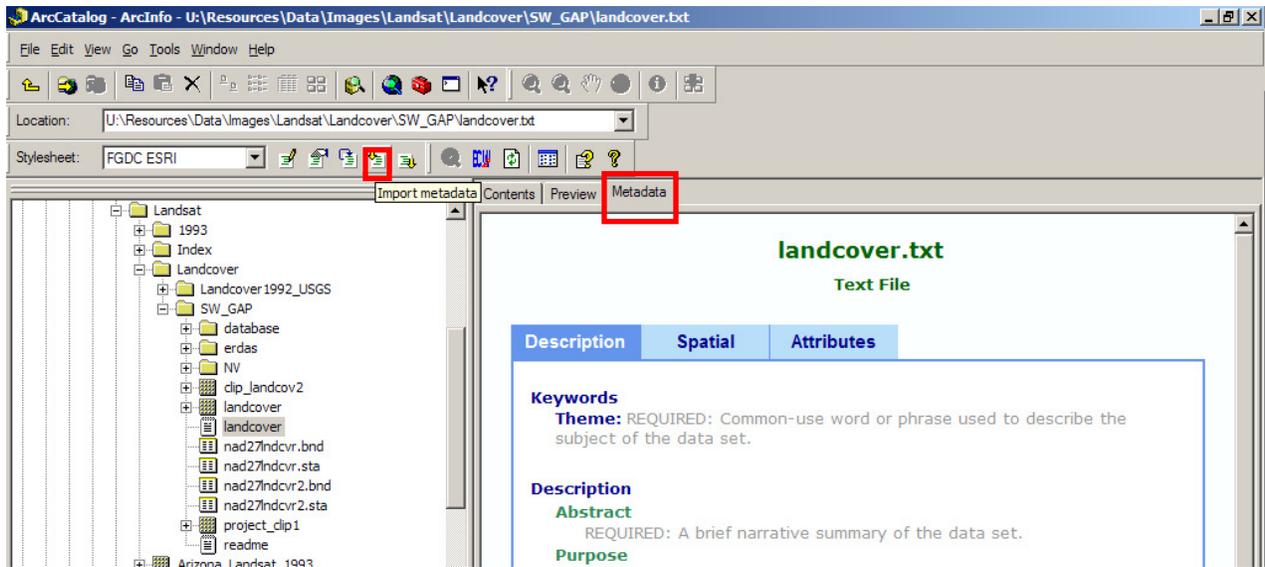
- I. Import**
- II. Create**

I. Importing is often used when downloading data that has already been created from another source and has metadata.

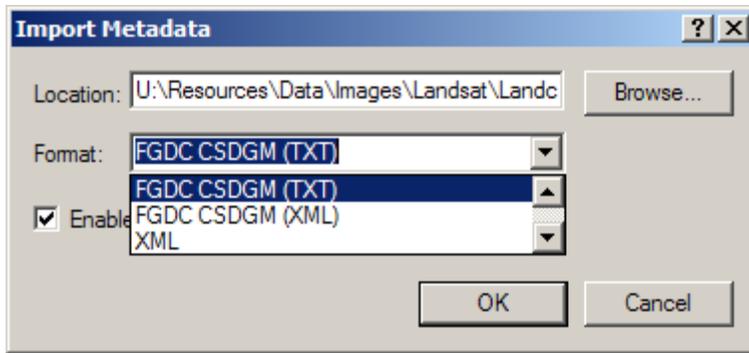
1. Look for .txt or .xml file in ArcCatalog after the download is complete.



2. Click Metadata Tab
3. Click Import Metadata Button



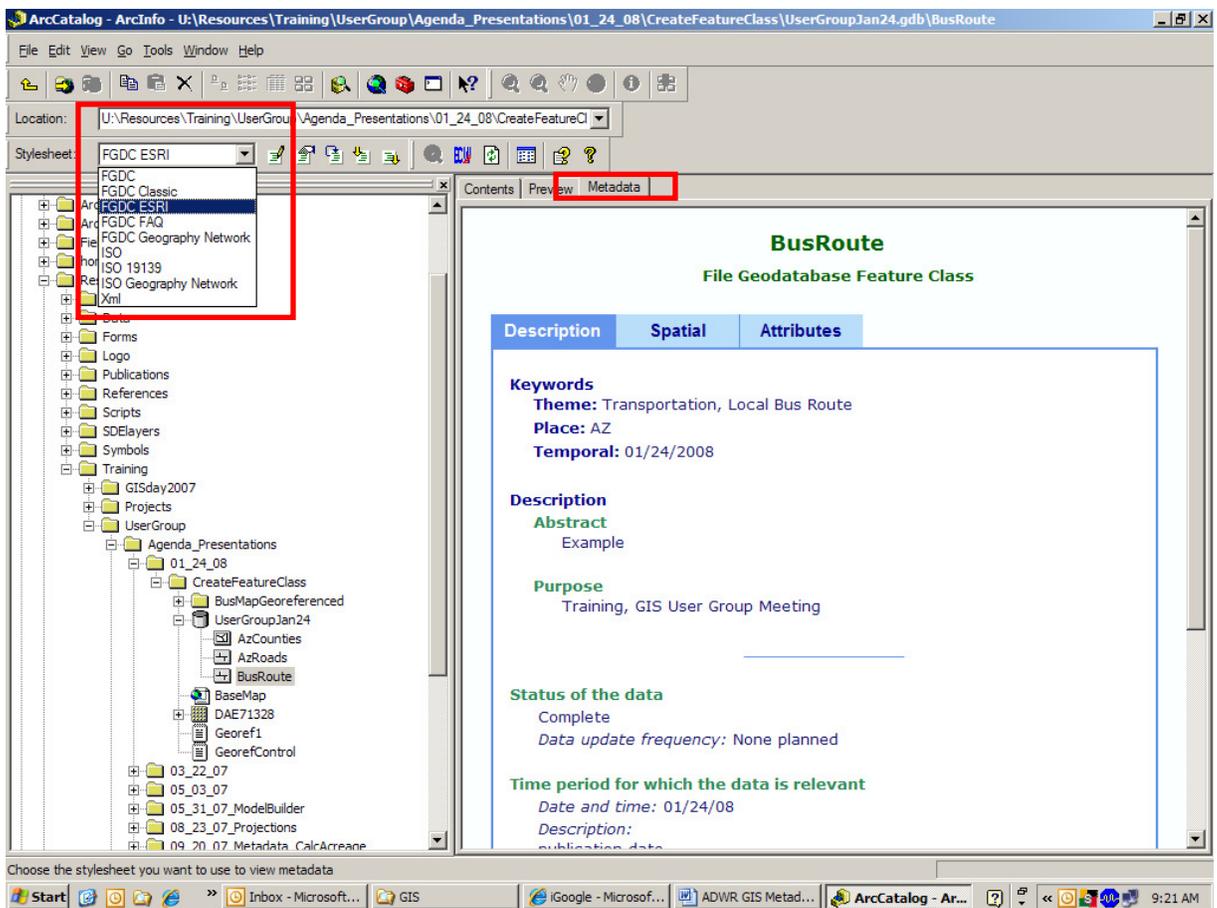
4. Choose Location and Format



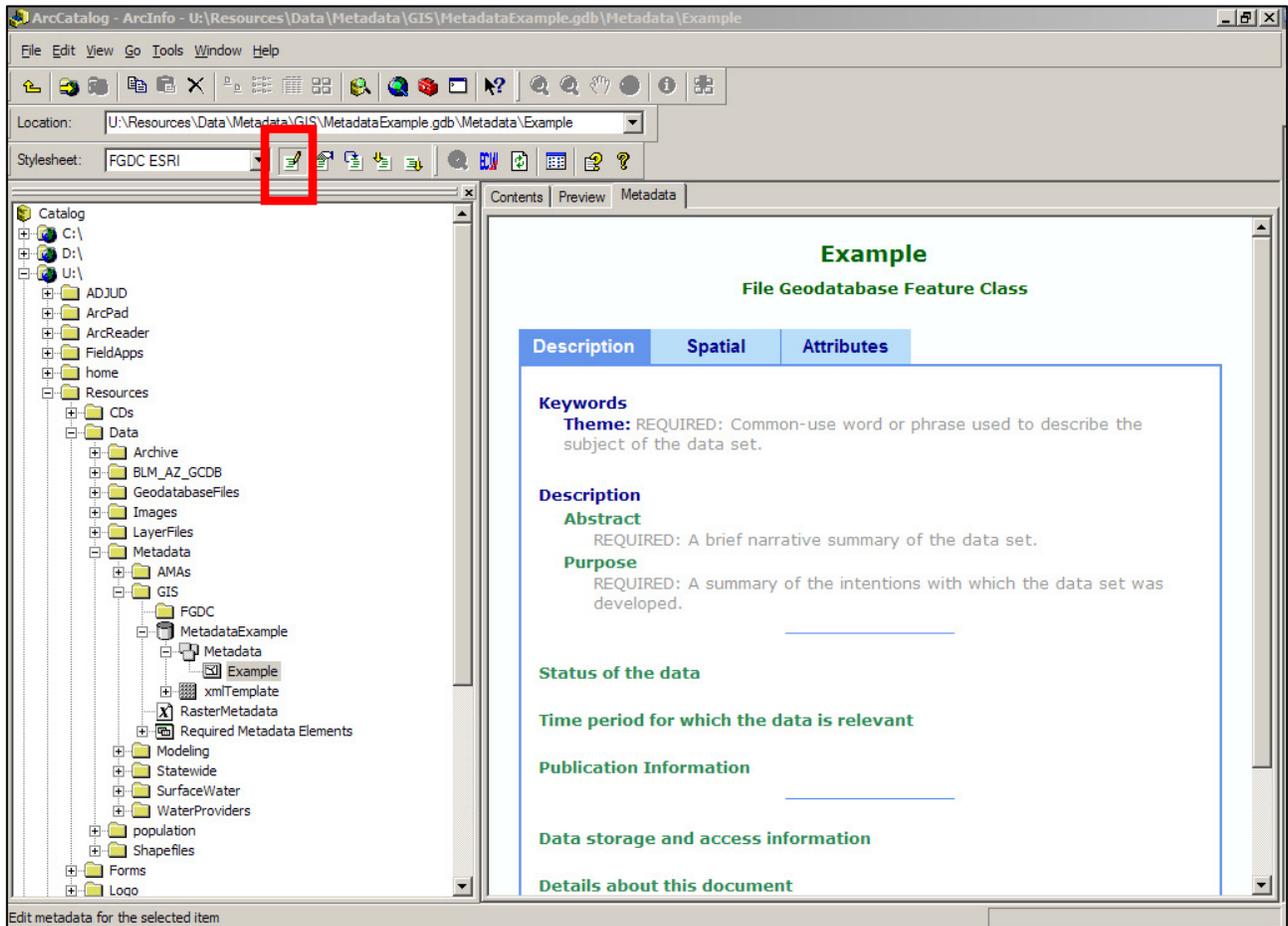
5. Click OK

II. When developing a new Feature Class or Shapefile you will need to **create** the metadata.

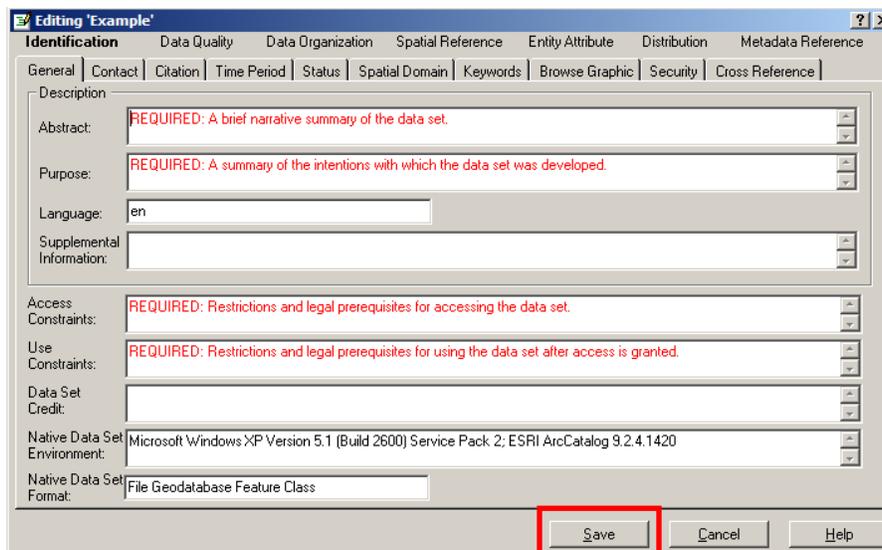
1. Open ArcCatalog. From there, scroll to your data file location.
2. Click the “Metadata” tab.
3. Select a FGDC Stylesheet (use any FGDC version you prefer).



4. Edit Metadata – Click the edit button for metadata



5. A form will pop up for you to type in the required metadata.



6. Make sure you click Save

Appendix C

Checklist

- Topology Integrity (local consistency) - Make sure that:
 - Lines are connected
 - Lines don't overlap
 - There are no duplicate lines
 - There should be no gaps between polygons and no slivers (small, narrow polygon).

- Attributes - Make sure required fields are completely filled and there is uniformity of terms and punctuation to insure correct queries.

- Lineage - Documented process Steps taken to create the data.

- Completeness – Information about omissions, generalizations, selection criteria and other rules used to develop the data. Thresholds such as the minimum size for polygons. For example the Florida Keys have many small islands that may not be included in the dataset because they do not fit the minimum size requirements (threshold).