

Chapter 15 Creating and Editing Metadata

If you work with computers on a regular basis, you have probably come across a file that you created a while ago and have been unable to remember exactly what is in the file or where you got the data that you stored there. In many instances this represents a minor annoyance. In the case of spatial data sets where the cost of compiling, digitizing, error correcting, and rectifying are very significant, lacking information concerning the detailed characteristics of your data sets can be extremely costly and time-consuming. Initially with GIS, people doing analysis were frequently building their databases from start to finish. This condition, currently, is almost nonexistent. Increasingly, the very first thing one does when contemplating building a GIS database is to search and try to find what has already been done in the area for which the database is to be constructed. This is the reason for the rapidly growing importance of metadata. You cannot safely use data for any serious application unless you know, in detail, about the characteristics of those data.

Suppose that you are working on a GIS project and as part of the project you need a data set that will require enormous labor in order to produce. You begin searching to see if anyone has produced such a data set previously. Eventually, you come across a data set that seems appropriate; however, the data set has no documentation. As a consequence, you have no idea who produced it, when it was produced, the sources of the data, or the accuracy standards used in its production. Although you might be tempted to use this data set, doing so would be extremely unwise. Avoiding this dilemma is the reason why metadata is so important in geographical information systems.

What exactly do we mean by metadata? The shortest definition is simply to say: metadata is data about data. Here, you will learn about the basic requirements for producing metadata for any data set. You also learn how to use the Arc Catalog metadata editor. This will complete the first stage of our exploration into building databases, as you will have imported data from a variety of sources, transformed those data from foreign formats into formats usable by ArcMap, defined coordinate systems for each layer, and projected data sets as necessary. Documenting the contents of your data files is the one remaining task required in order to make your data sets more useful to you in the future, and to make them useful to others who may come across them.

One perplexing paradox about metadata is that the producer of the data might well benefit less from its production than will those who, at a later time, will access and use the metadata in the process of searching for appropriate data sets. It is only when data producers realize that the entire community will benefit from readily accessible metadata that we will begin to see its wide scale production.

What are some of the uses to which metadata is put? First, is the use by the organization that produced the original data set. In any organization employees come and go, often unpredictably. It is important that those who produce data sets document, in detail, what they have done. Otherwise, those coming later, who are unfamiliar with the content and characteristics of the data set, will be less able to use it. Second, increasingly metadata is published as a bibliography of spatial data sets. These bibliographies are often online in the form of data clearing houses. The basic idea is that those seeking data sets should be able to go to a clearinghouse and search for them. Having standards for the collection and formatting of metadata can be a tremendous help in ensuring that these data are in a form that will be easily and consistently usable by people accessing the metadata clearinghouse. Third, comprehensive metadata is a tremendous help in the process of transferring data sets from one format to another. As you will recall, in some of the data manipulations that you have performed you were required to specify the existing coordinate system for a data set that had not yet had its coordinate system formally defined. If you did not know, for instance, that some of your data sets were in geographic coordinates, and others in New Jersey State Plane coordinates, you

would have been unable to specify the existing coordinate system and furthermore you would have been unable to project those data so that in the end all of your layers would be rectified to a single geographic coordinate system.

For many years there has been widespread agreement concerning the need to document data sets of all types. Beginning in the 1990s the national government of the United States formed a group and charged it with a task of establishing standards for metadata. This group is the United States Federal Geographic Data Committee. The committee established a Content Standard for Digital Geospatial Metadata, which has served to provide some order and discipline to data documentation and metadata. The authors of our text identify ten major features for digital geospatial metadata content standards. The standards are as follows:

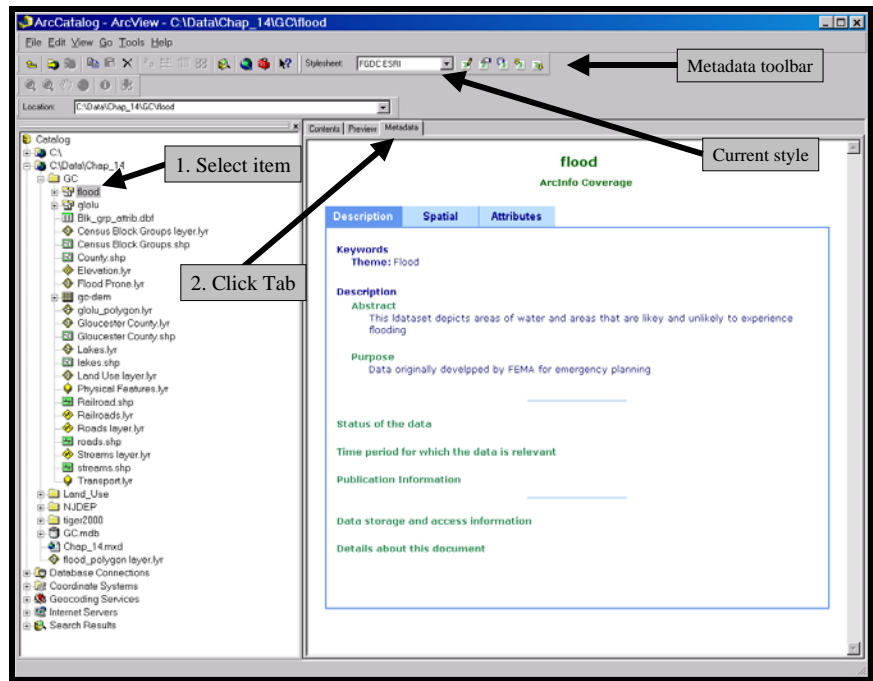
1. Identification information. Metadata should include enough information concerning the content of the data set so that potential users will be able to identify quickly whether or not the data set is relevant to their needs.
2. Data quality information. Metadata associated with a data set should include information about the precision and accuracy of the data set. For instance, and the case of an attribute data set including fields for things like education, income, and population are the item values based on measurements on an entire population or measurements on a sample.
3. Spatial data organization information. This item answers the question: How does the data set represent spatial features? For instance, are features positioned using Cartesian coordinates, or row and column position.
4. Spatial reference information. The metadata must indicate the horizontal datum, and the coordinate system used to position entities in spatial data set.
5. Entity and attribute information. This item provides detail about the contents of the data set. For example in the case of a table each attribute field should be listed and there should be an explanation of the meaning of the attribute. One of the layers you have worked with in an earlier assignment depicts the spatial distribution of areas that are or are not flood prone. Metadata for this layer needs to explain exactly what is meant by flood prone. Do these areas flood every year? Do these areas flood, on the average, every 100 years? Knowing this kind of information about the data set greatly enhances its utility.
6. Distribution information. Here the user of the metadata should find out how, where, and at what price he or she can obtain the data set.
7. Metadata reference information. This item identifies the person or institution that is responsible for producing and maintaining the metadata.
8. Citation information. This item provides a suggested set of information to be included in any citation of the data set. This is the equivalent of the author of a book explaining how he or she would like the book cited.
9. Time period information. This item identifies the time to which the data are relevant.
10. Contact information. Here, the creators of the metadata identify the organization or individual responsible for the data set.¹

¹ I have adapted to this list from *Geographic Information Systems and Science* by Paul A. Longley e. al. Published by John Wiley & Sons limited Chichester, England 2001. P. 155.

Viewing Metadata. To see the metadata for an item, run Arc Catalog, connect to the folder that contains the item, and display the folder in the catalog tree. Click on the item to select it and then click the Metadata tab near the top portion of the larger window. The program will display the metadata for the item using the currently selected metadata style.



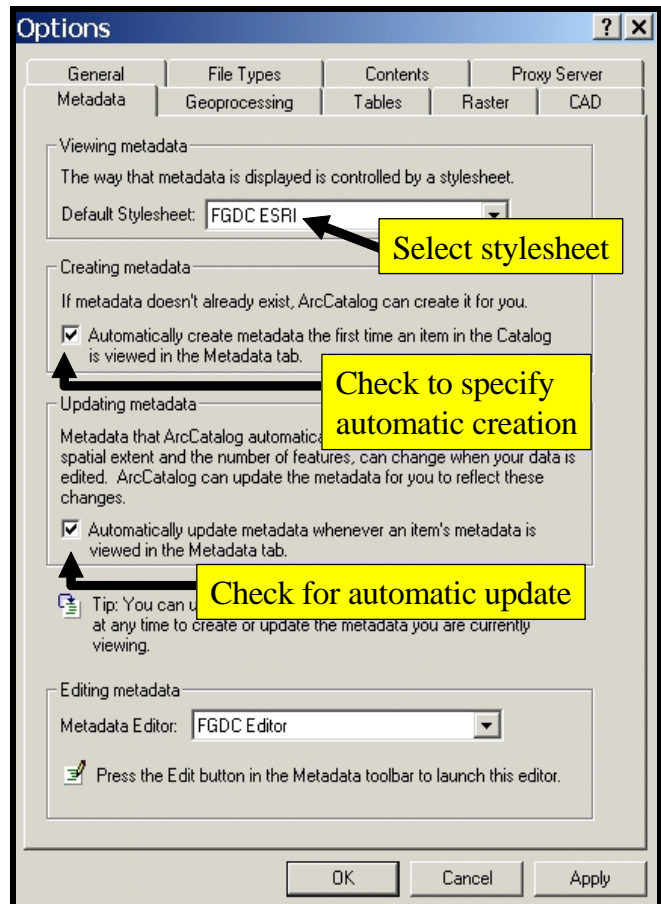
Arc Catalog supports several different styles for displaying the metadata of an item. You change the currently selected style by clicking in the Stylesheet field and clicking to select from the drop down menu. In the illustration the selected style is called FGDC ESRI. Each of the available stylesheets presents the metadata in a different format. Which style you use depends on your preference and on the requirements of the organization that will be publishing your metadata.



Viewing Metadata in FGDC ESRI Format

In the FGDC ESRI stylesheet you can select tabs to see a general description of the data, its spatial characteristics or description of the attribute fields in the table.

In the previous assignment [CL #3] you performed various operations on a variety of spatial and nonspatial data sets. In the end, you stored all of the resulting data sets in the GC folder. If you go to the GC folder and examine a few of the data layers, you will notice that some of the metadata information is already present. This is because by default the program updates some of the metadata information for an item automatically each time you click on the Metadata tab to view metadata. For instance, datum and coordinate system information both get updated automatically. You can change how the program deals with automatic updating by clicking the Tools in the Main menu and selecting Options from the drop down menu. Click the Metadata tab of the Options dialog to specify your preferences for the default metadata stylesheet, and other options presented.

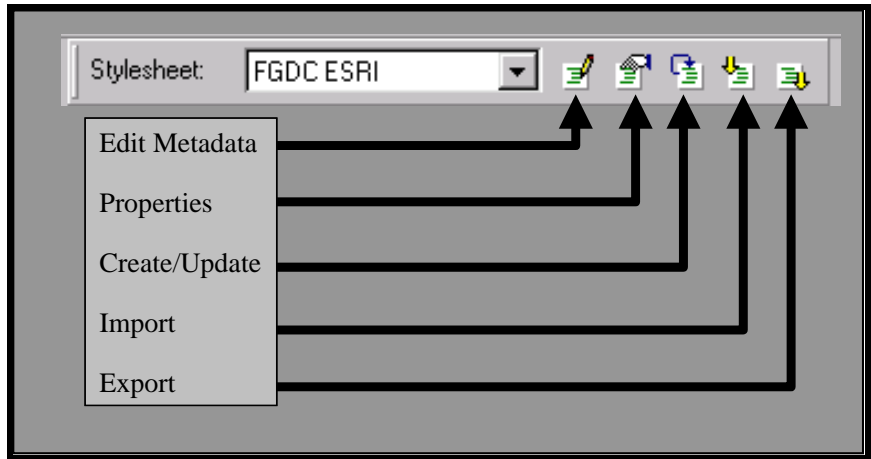


Editing Metadata. To start the process of editing the metadata for an item, click its entry in the Catalog tree and then click the Metadata tab in the larger Arc Catalog window. The program will display the existing metadata in the stylesheet you have selected as the default.

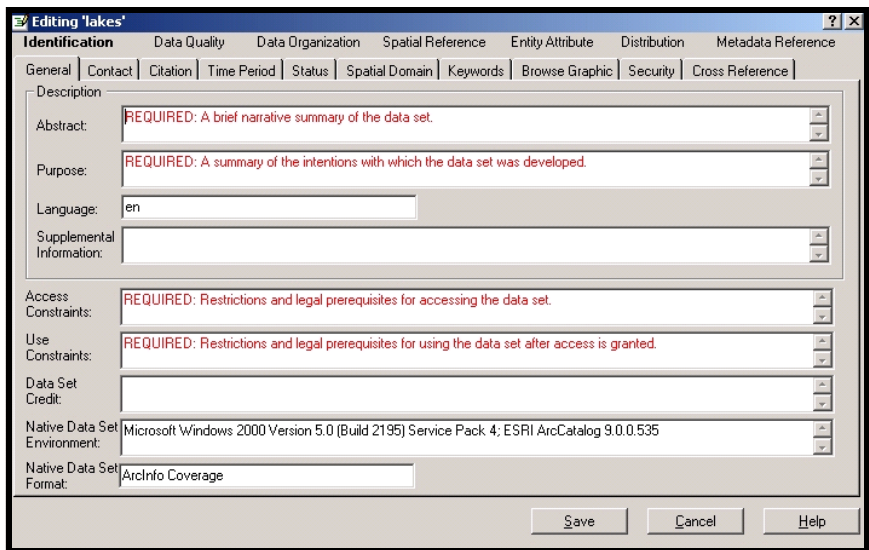
If you have specified, in the Metadata tab of the Options dialog, that the program should update metadata automatically, then several file characteristics that are an important part of metadata will be updated as soon as you click the Metadata tab located in the larger window. These include the type of horizontal coordinate system, the bounding coordinates of the layer in both latitude and longitude and in projected coordinates and a brief description of the type of spatial data the file contains. In the case of raster data the program reports the cell size and the number of rows and columns in the grid.

To make metadata useful to others, you will need to specify additional information about your data by entering it into the metadata editor. To use the editor, you must first open the Metadata Toolbar by clicking View in the Main Menu, pointing to Toolbars from the drop down menu and then clicking on Metadata on the slide out menu.

To activate the editor, click the Edit Metadata button in the Metadata toolbar [see illustration at top of page]. The program will display the Editing dialog. Take a moment to examine the illustration. The fields in which you see the word “REQUIRED” plus a brief description of the kind of information you will enter into the field identify information categories that you must include in order for your metadata to meet the requirements of the Federal Geographic Data Committee. Explore the dialog by clicking each tab and examining the fields present in each of the dialogs.

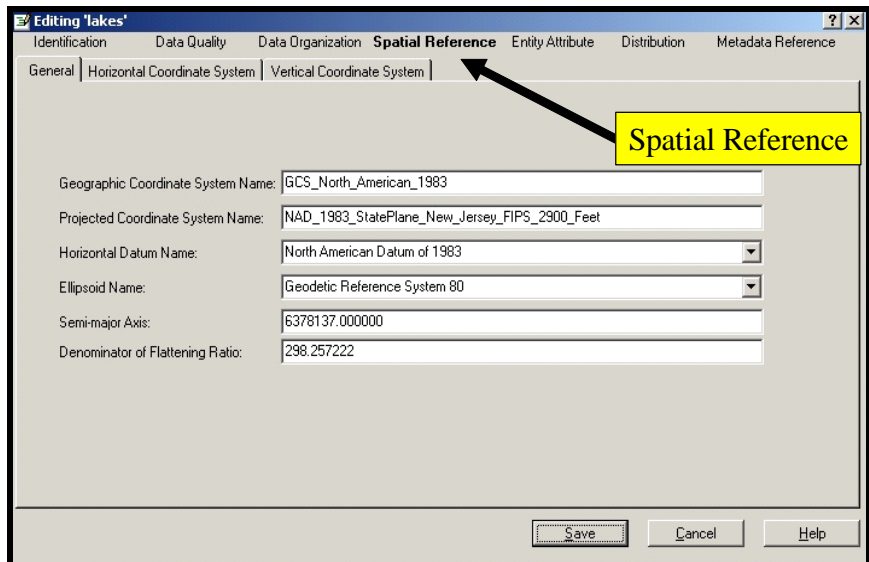


Metadata Toolbar



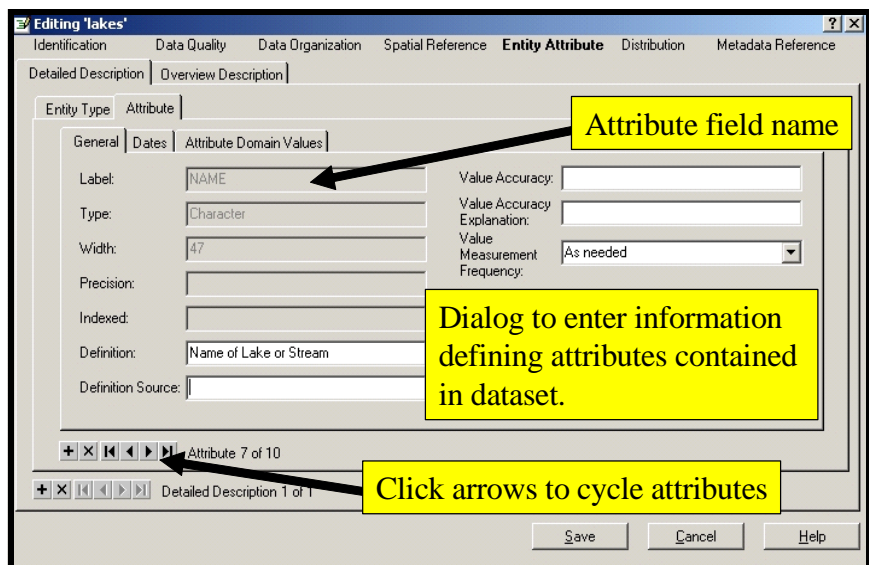
Editing Dialog Depicting Example of REQUIRED Information

To illustrate the kinds of metadata information Arc Catalog supplies automatically, I have clicked the Spatial Reference tab to display coordinate system information for the Lakes layer. In the illustration you can see the names of the geographic coordinate system, the projected coordinate system, the horizontal datum and other information about the geometric characteristics of the data set. Of course, for Arc Catalog to generate this information, it must be present in the data set. As you know you can supply spatial reference information using the Define Projection tools of Arc Toolbox.



Spatial Reference Information

One of the things you can do to improve the utility of data sets that you produce is to provide descriptions of attributes so that users will have a better idea about the meaning of the data they are mapping. If you select Entity Attribute from the Editing dialog and then click the Attribute tab, you can provide a brief description of each of the attributes in a layer. In the illustration I have clicked the arrows near the bottom left side of the dialog until the attribute field name displayed in the Label field cycles to LUCODE. In the Definition field I have provided a brief description of the contents of data in the field.

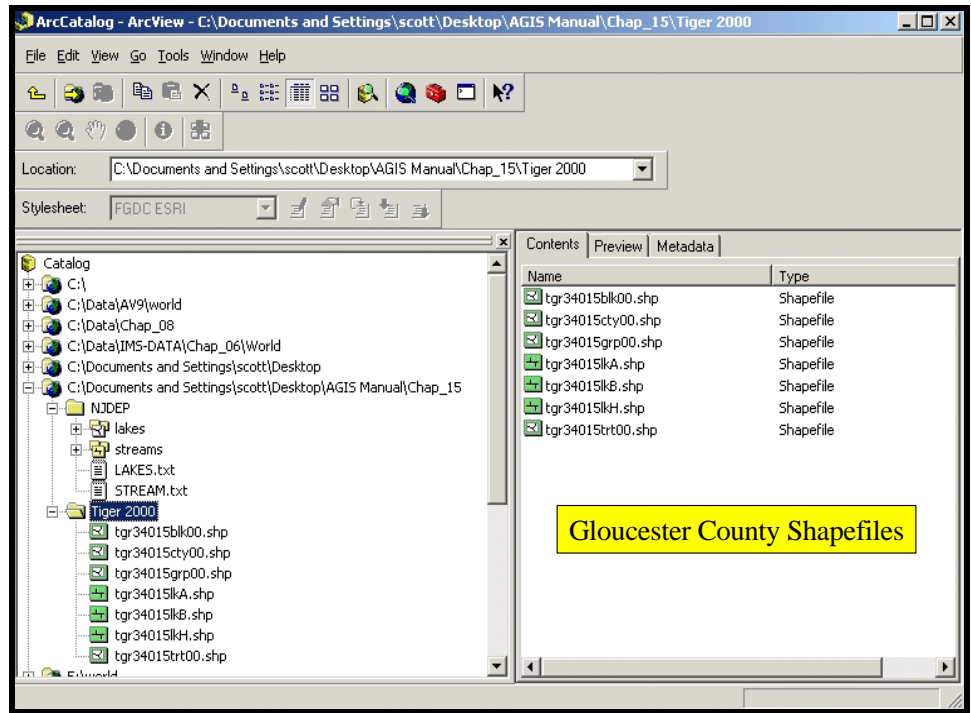


Exporting and Importing Metadata. If you have several data layers that share much of their metadata information, then there are some simple techniques that you can use to increase the efficiency with which you supply metadata. For example, suppose that you have a set of shapefiles that you have downloaded from ESRI. These shapefiles are all derived from United States Census Tiger files that ESRI has converted to shapefile format and made available on their web site. If all of the shapefiles contain data pertaining to one geographic area, then you can save yourself time and gain a higher degree of consistency in your metadata if you create the metadata that is common to all of the files for just one of them and then use the Export button on the Stylesheet toolbar to save the metadata in a file. Next, you can begin the process of editing the metadata for another one of the shapefiles that you downloaded from ESRI and use the Import button on the Stylesheet toolbar to fill in the required information that is common to the set of files. You will still need to enter data that is unique to each of the files in the set, but you will have saved a significant amount of time by using the Export and Import buttons to avoid duplicate typing of metadata information.

An easy way for you to learn this procedure is to work through an example with me. In the Chap_15 data set there is a folder called Tiger 2000. The data in this folder consist of shapefiles downloaded from the ESRI web site. The very first thing you will want to do is rename the files to give them more meaningful names. Next, in preparation for creating metadata, you carry out the following operations for these data:

1. Use Arc Toolbox to define the current projection.
2. Use Arc Toolbox to project the data to New Jersey State Plane coordinates using the North American Datum of 1983.

To begin, run Arc Catalog and connect to the Tiger 2000 folder, which is located in the Chap_15 folder. The illustration shows the files as they were upon receipt from the ESRI web site. Notice the



naming conventions used for these files. The first three characters [tgr] identify them as having originated as United State Census Bureau Tiger files. In the first file in the list, the letters, tgr, are followed by the number 34015. Thirty-four [34] is the FIPS code for state of New Jersey. The 015 is the FIPs code for Gloucester County. The remainder of this file’s name, blk00, indicates that the file contains US Census Tiger data for census blocks, which are approximately the same as a city block. The remaining files in the listing also follow the “tgr” with 34015. The remainder of each name is more than a little obtuse in meaning. To help you figure out the precise contents of the files you download, ESRI sends along a file, *readme.html*, that explains their contents. I have reproduced a small portion of that file here.

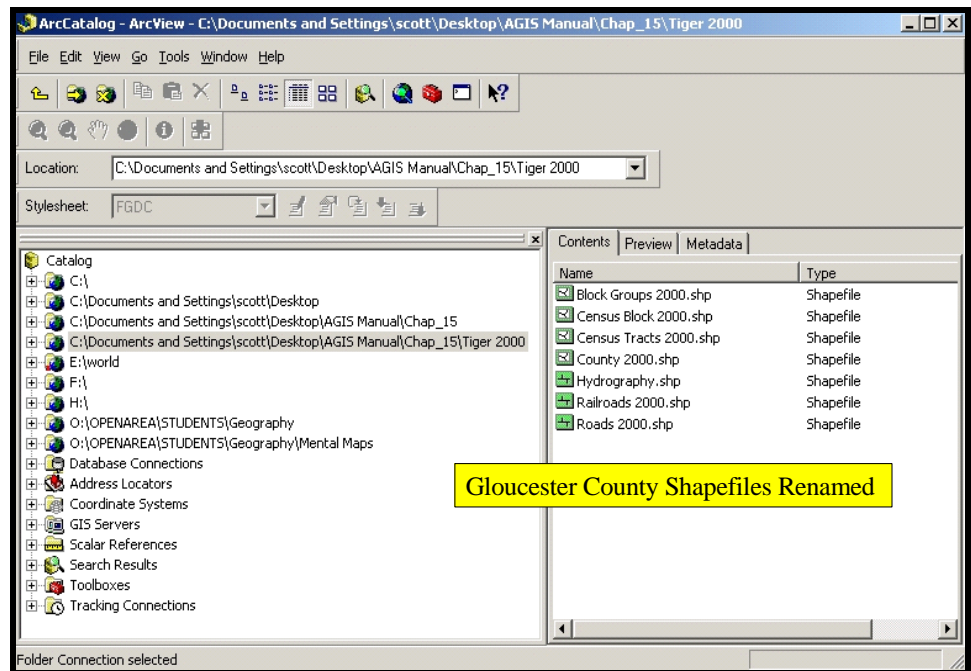
As you can see by comparing the names of the files I downloaded with the information in the readme file, the files consist of data depicting the locations of census blocks, county boundaries, census block group boundaries, railroads, hifhways, hydrography and census tracts. Let’s rename the files as indicated in the following table.

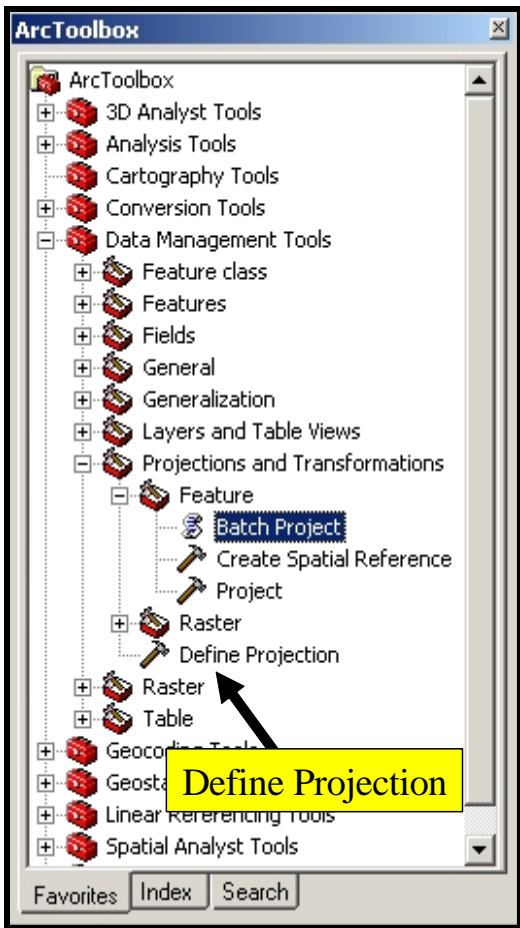
Partial Contents of Readme.html	
Layer Name	Abbreviation
Line Features - Roads	lkA
Line Features - Rails	lkB
Line Features - Misc. Transport	lkC
Line Features - Landmarks	lkD
Line Features – Physical	lkE
Line Features – Non-visible	lkF
Line Features – Hydrography	lkH
Line Features – Unknown	lkX
County 1990	cty
County - Current	ctycu
County 2000	cty00
Census Tracts 1990	trt
Census Tracts 2000	trt00
Block Groups 1990	grp
Block Groups 2000	grp00

File Names

Old Name	New Name
tgr34015blk00.shp	Census Block 2000.shp
tgr34015cty00.shp	County 2000.shp
tgr34015grp00.shp	Block Groups 2000.shp
tgr34015lkA00.shp	Roads 2000.shp
tgr34015lkB00.shp	Railroads 2000.shp
tgr34015lkH00.shp	Hydrography.shp
tgr34015trt00.shp	Census Tracts 2000.shp

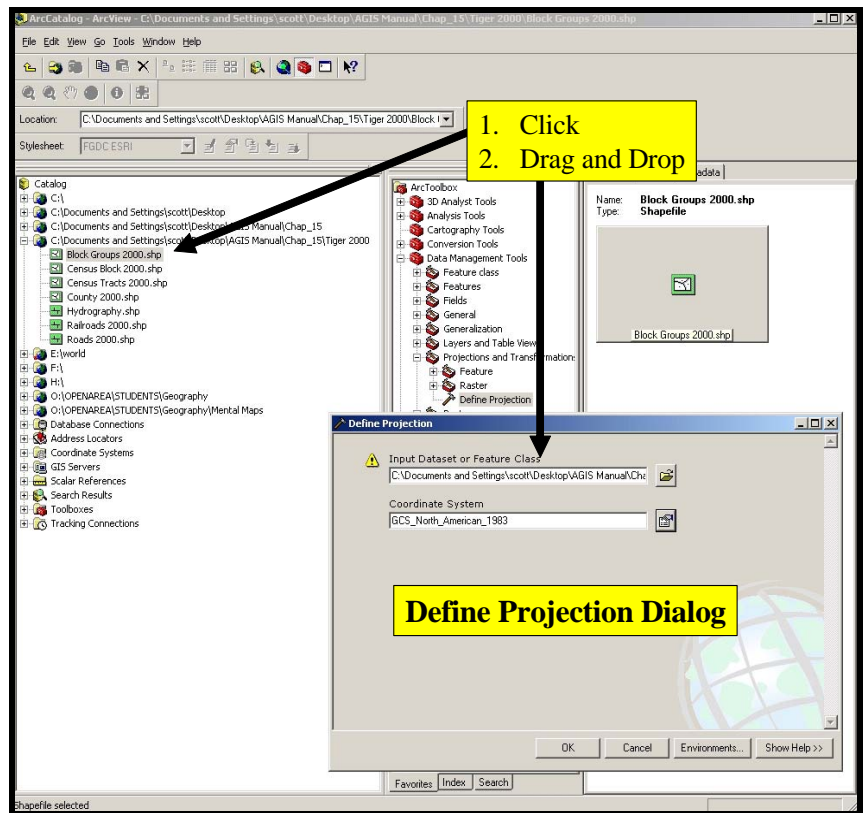
After you have renamed the files, your Arc Catalog screen will look like the one in the illustration. You are now ready to specify the coordinate system for the files and then project them. In previous chapters, you learned to use Arc Toolbox to specify coordinate systems for data layers. Here you will use that technique to define the coordinate system for each of the layers in the Tiger 2000 folder.





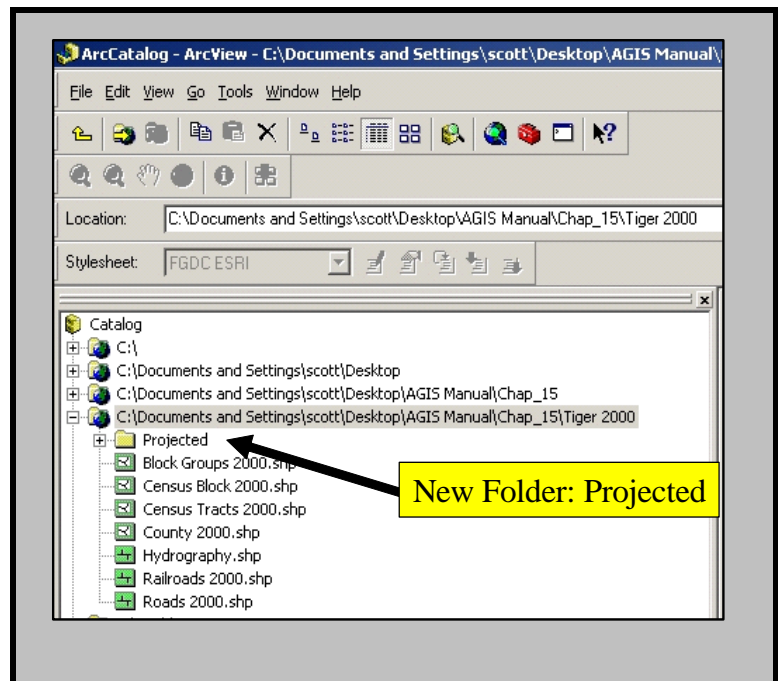
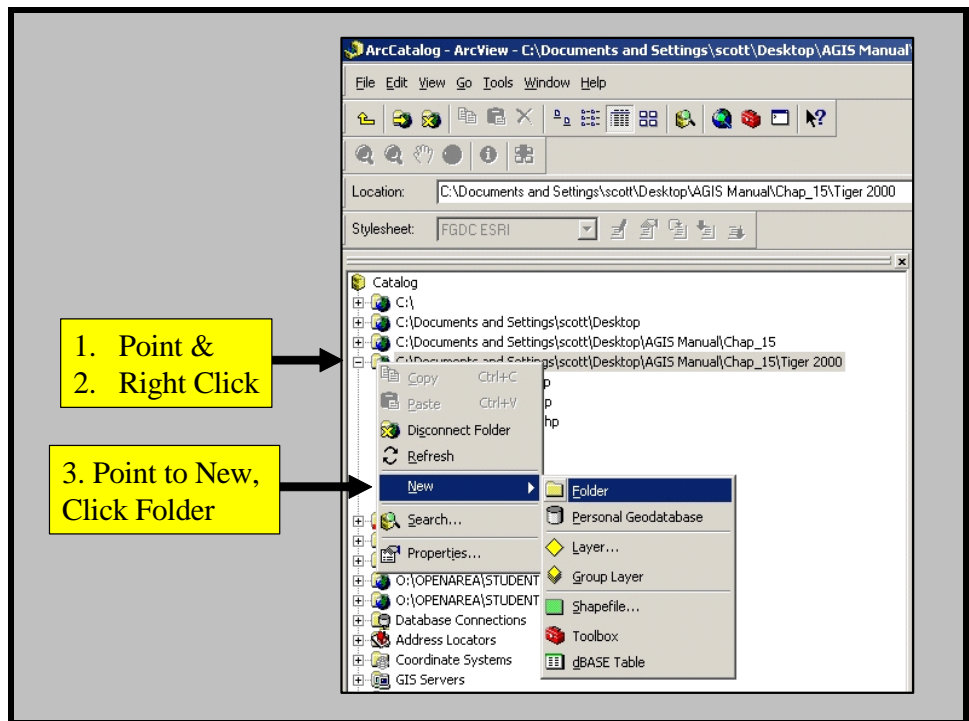
To specify the coordinate system for a layer open Arc Toolbox, click to select Data Management Tools and then Projection and Transformations. To use the Define Projection tool, double click it.

In Arc Catalog click to select the file for which you wish to

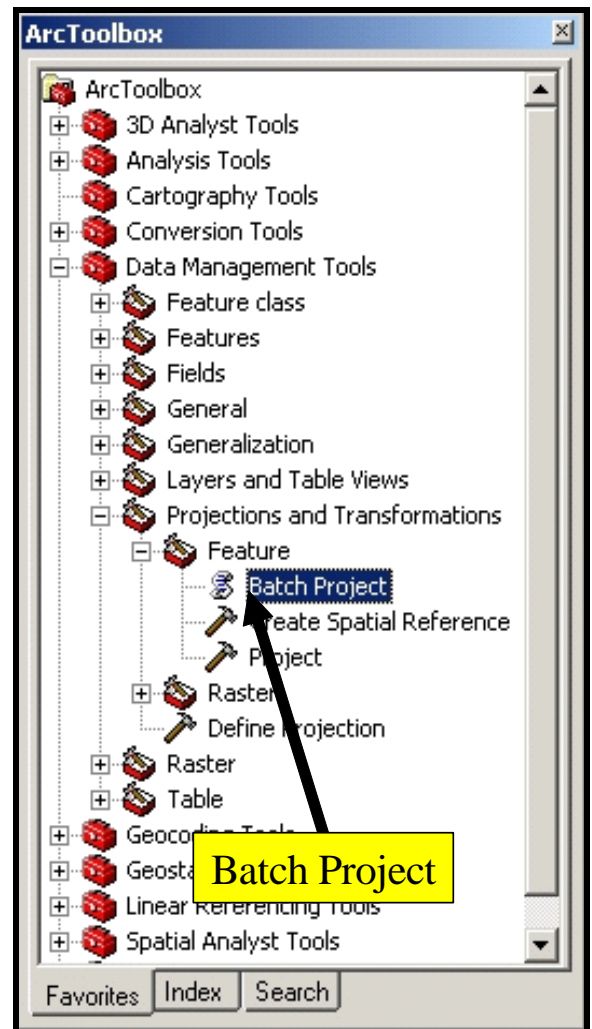


specify a projection and drag the file into Arc Toolbox Define Projection tool Input Dataset or Feature Class field as indicated in the illustration. Next, click the browse button to the right of the Coordinate system field and navigate to the coordinate system you wish to specify. When you have finished, the projection definition information becomes a part of the shapefile and will stay with it as you move or copy it. In this case, the files are in geographic coordinates, so you will use Arc Toolbox to specify that coordinate system for each of the Tiger 2000 shapefiles [see illustration]. Remember, at this point you are merely telling the program about the existing coordinate system. You are not yet changing that system.

After you have defined the projection for the files, you are ready to change their projection from geographic to New Jersey State Plane coordinates. Before you carry out the projection, you will create a new folder in which to store the new projected shapefiles. To create a new folder within Arc Catalog, simply right click on the folder within which you want to create the new folder. The program will open a popup menu. Point to New in the popup menu and select Folder from the slide out menu. Arc Catalog inserts the new folder with the name, New Folder. Type the name you want for the folder and press the Enter key. In this case, I have called the new folder, Projected. See illustration.



You are now ready to carry out the batch projection operation. To begin, open Arc Toolbox and double click on Data Management Tools box. Within Data Management Tools select Projections and Transformations and then Feature. To open the Batch Project dialog double click on the script symbol [looks like a roll of paper unrolling]. The program will open a dialog into which you can drag and drop the files you want to project.

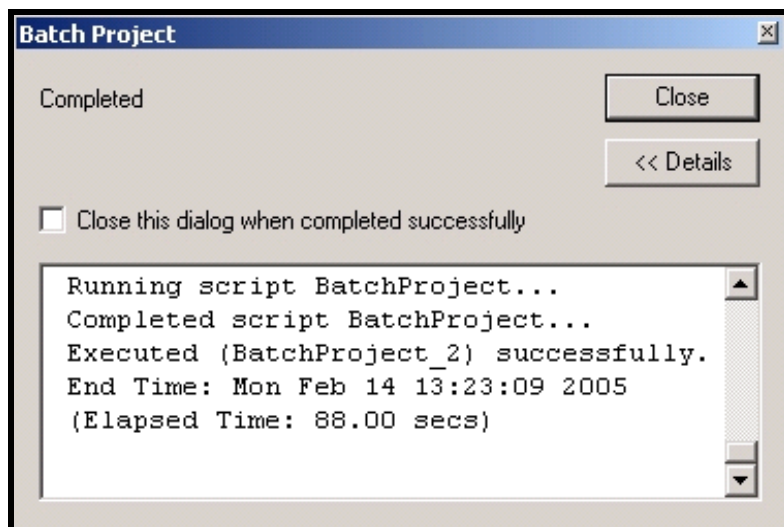
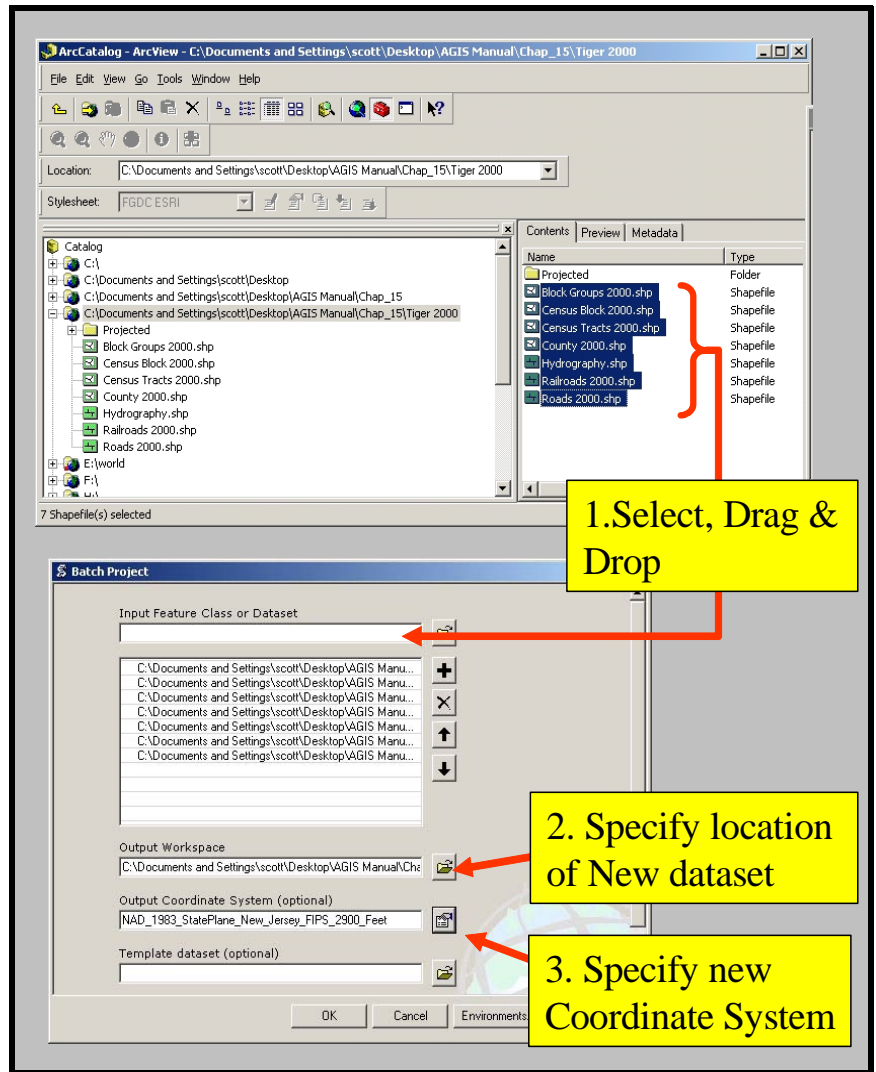


Within Arc Catalog, select the files by holding the Control key as you click them and then drag the files into the Input Feature class or Dataset field of the Batch Project dialog as illustrated here [Number 1]. The location and names of the files will appear in the window of the Batch Project dialog.

To continue click the Browse button to the right side of the Output Workspace field [2. In illustration]. Navigate to the location where you want to write the new files that the Batch Projection operation will create.

Click the Browse button to the right side of the Output Coordinate System field and navigate to the coordinate system specification you want to apply to the new dataset you are creating [Number 3]. In this case, you would specify New Jersey State Plane coordinates using the North American Datum of 1983. When you have completed the procedure, you will have seven new shapefiles, projected as you specified. Of course, you have also begun the process of creating metadata describing the spatial characteristics of these files, as Arc Catalog inserts the information automatically the first time you access metadata.

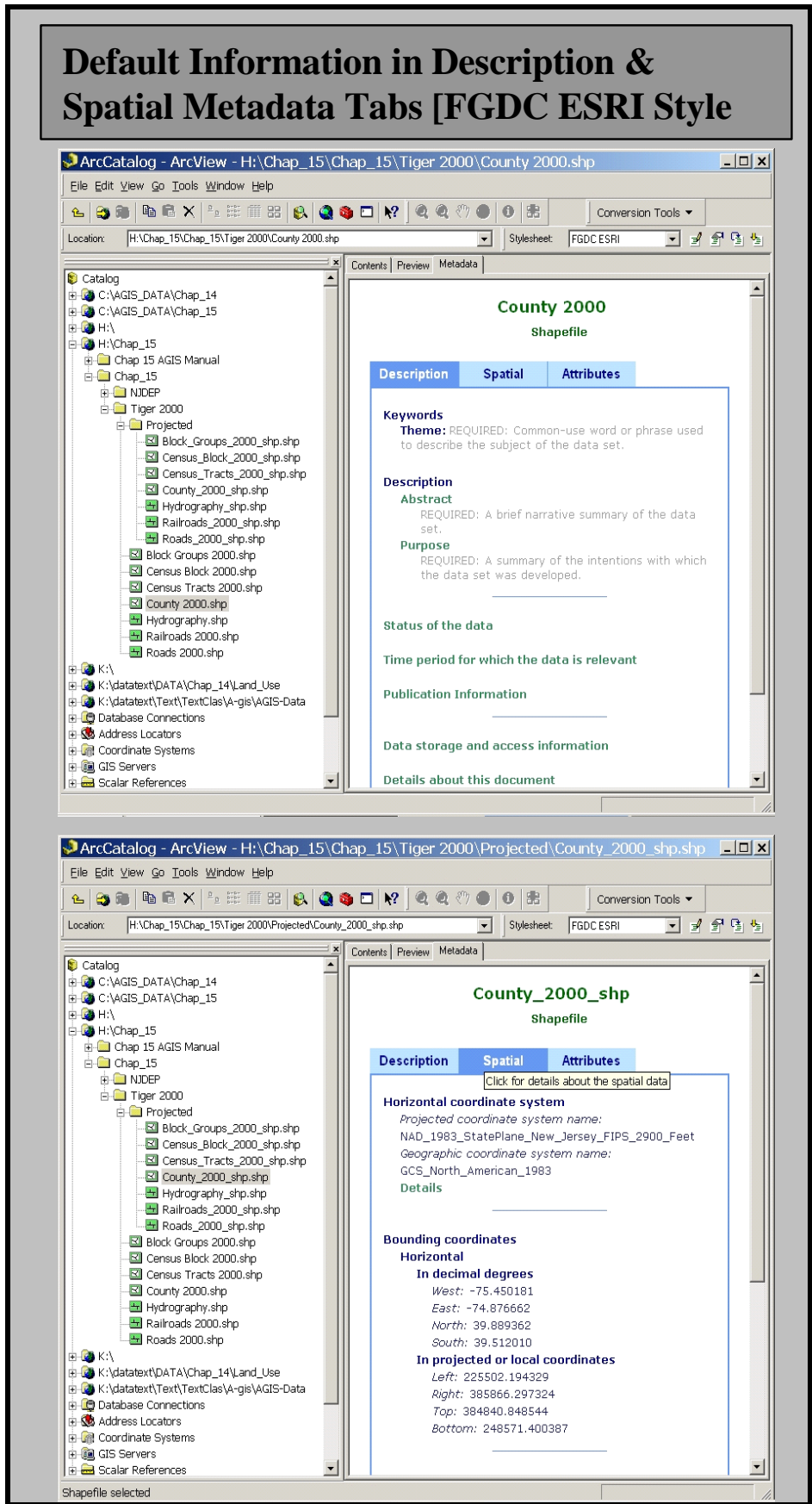
When the program completes the projection process, it displays a message in the Batch Project progress dialog that confirms that the projection completed successfully.



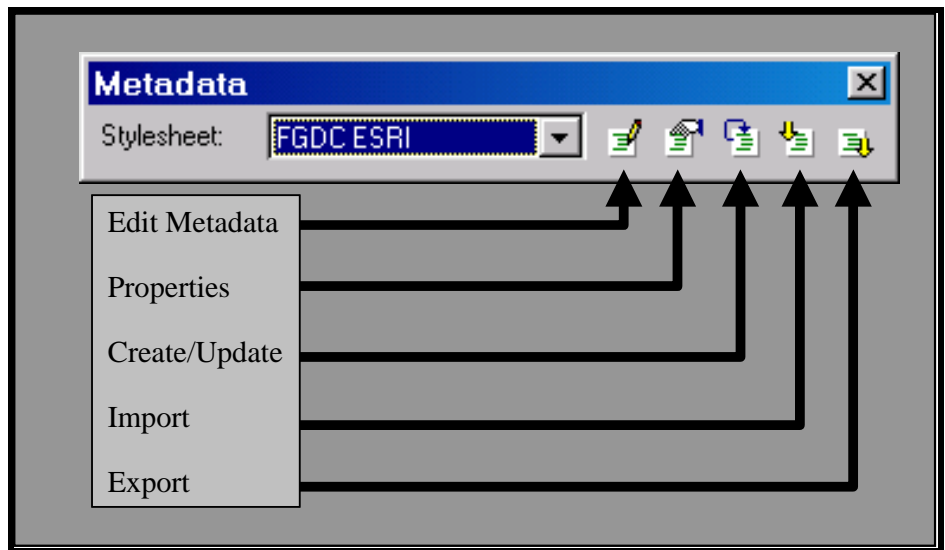
At this point you are ready to begin specifying metadata for the shape files. The strategy here is to specify information that is common to the set of shapefiles and then export it to a file. You can then specify metadata for the other files in the set by importing the metadata file.

To begin select one of the shapefiles in Arc Catalog and click the Metadata tab in the larger window. The program will display the default metadata in the style you have selected. In the illustration, I have selected the County file and I am using the FGDC ESRI style.

Take a moment to examine the illustration. Notice that the name and type of the file are listed at the top. This is part of the automatically provided metadata. The information under the Description tab is missing—you will have to provide it. If you click the Spatial tab, you can see that Arc Catalog has inserted information about the coordinate system, projection, and extent of the layer. If you were to scroll down, you could see additional information about the spatial characteristics of the layer. This is a good thing, as in my experience one of the more difficult things to determine about a file that is missing metadata is the basic characteristics of its coordinate system. Without this information, using the file ranges from difficult to impossible.

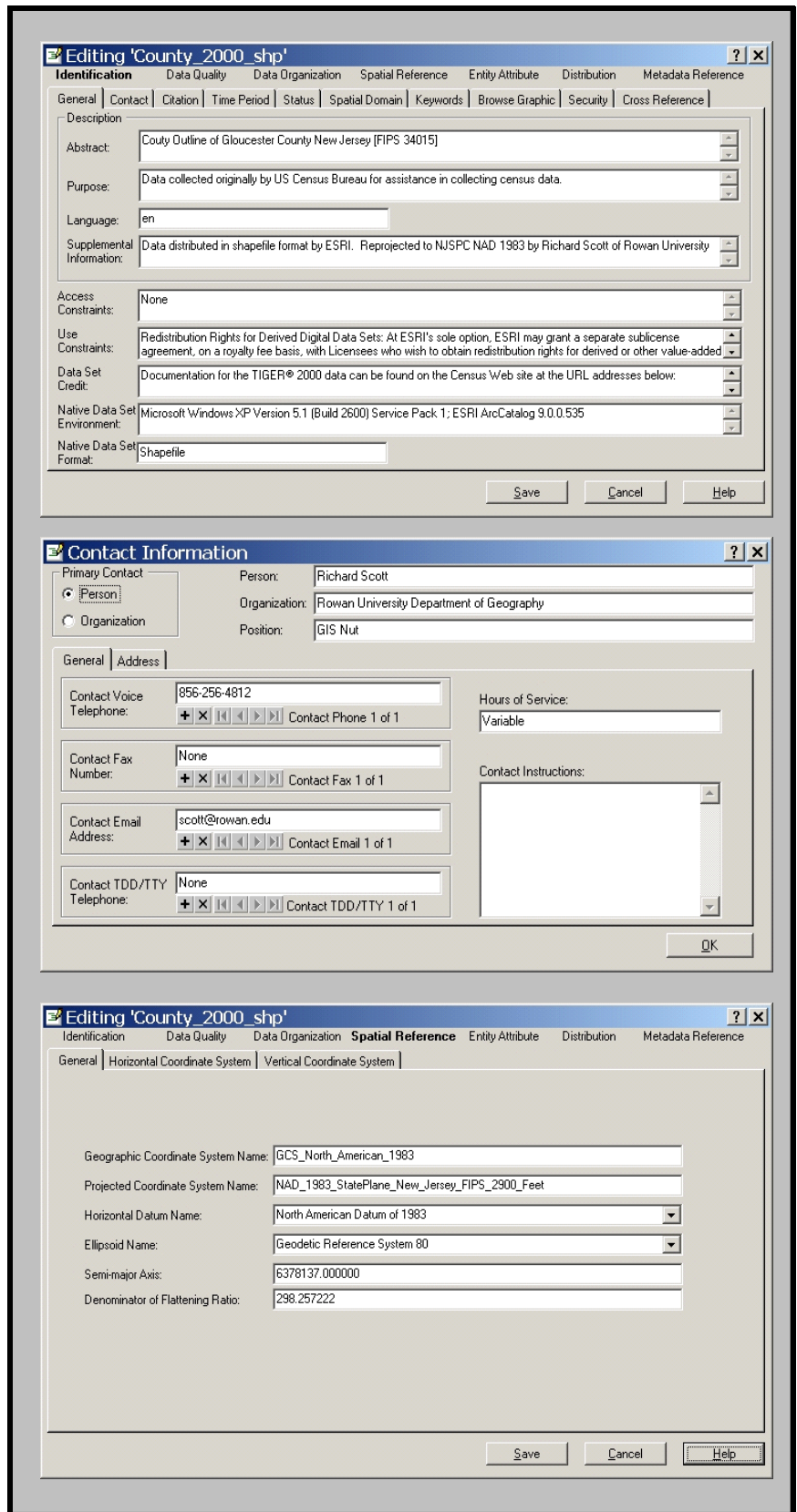


To begin specifying metadata for the County shapefile, click on the Edit Metadata button in the Metadata Toolbar, which I have reproduced here in the form it takes if you remove it from an anchored position within Arc Catalog. The program will open the first of the Edit metadata dialogs.



In the illustration I have reproduced three dialogs of the type you will fill out when specifying metadata. Because you are going to export this information you should, by and large, limit it to information that applies to all members of the group of layers for which you are preparing metadata. In the example, I have included a few items that are specific to the county outline file, so the layers into which you import this metadata will have to have some of the information I provide here modified slightly. Also notice that under the items, Use Constraints and Data Set Credit, I have copied and pasted information from the ESRI web site into the metadata description.

After you complete the specification of metadata for the County shapefile, the next step is to save your entries and then export the metadata. To save the metadata you have entered, simply click the Save button located near the bottom right side of the Editing dialog.

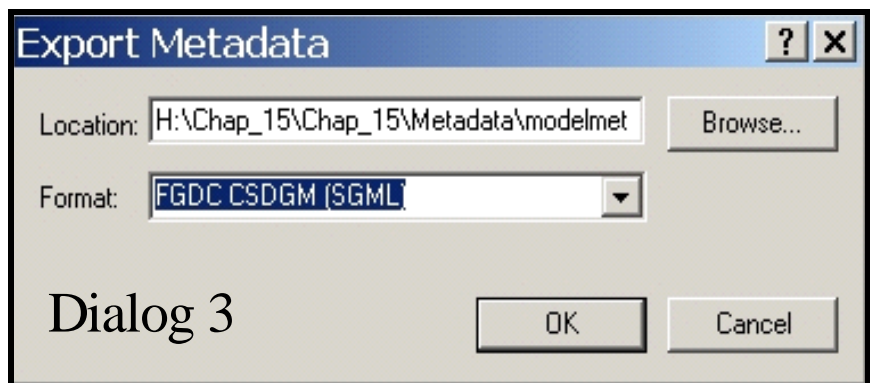
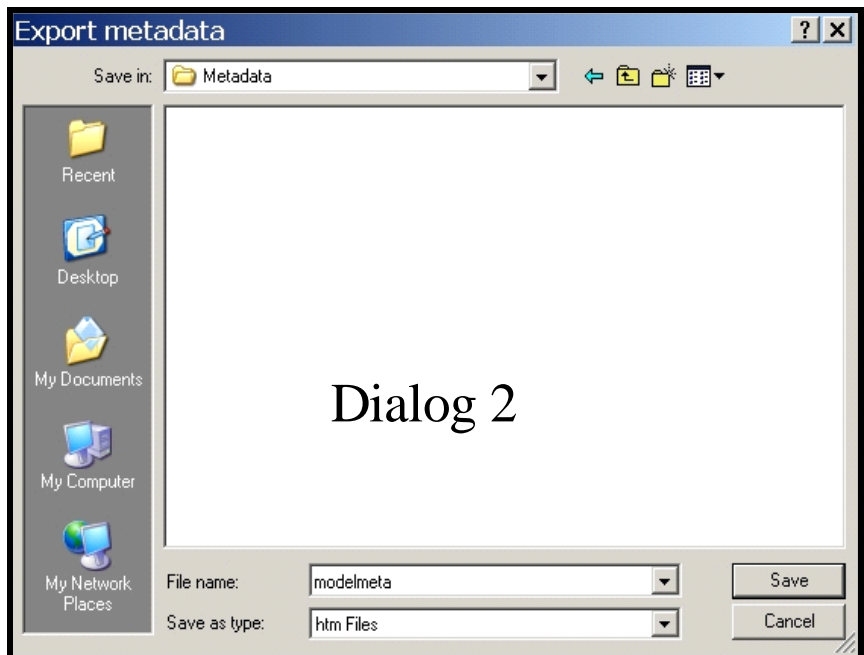
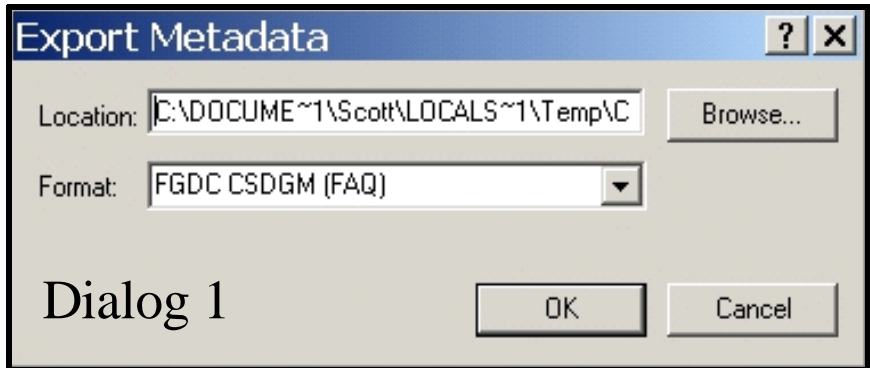


To begin the process of exporting the metadata for a layer, you must be in the metadata viewing mode. After you have created the metadata, in the Table of Contents click on the layer from which you wish to export metadata and then click the Metadata tab of the larger window. You will now be able to see the metadata for the layer.

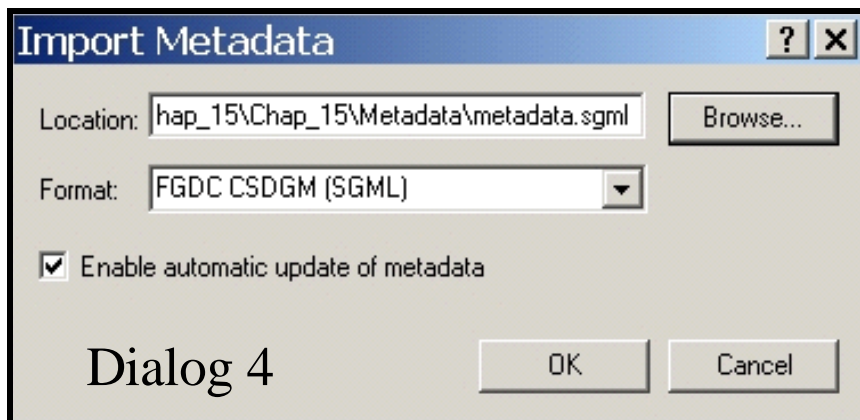
To export the metadata and store it in a file, click the Export metadata button on the Metadata toolbar. The program will open the Export Metadata dialog [Dialog 1 in the illustration]. Use the Location field to specify where you wish to store the export file and give it a name. In the illustration, for Dialog 1 I have clicked the Browse button and will navigate to the location where I wish to store the exported metadata file.

Dialog 2 depicts the navigation and naming of the export metadata file, which I have called “modelmeta.” After navigating to the location and specifying the file name, click Save to close the dialog and return to the Export metadata dialog again Dialog 3].

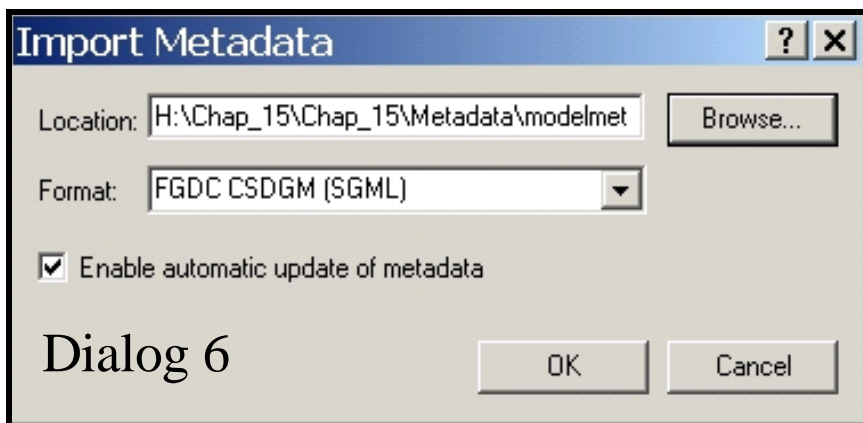
In Dialog 3 you can specify the format you want [see the help file to learn about format]. To do this click the down arrow and click to select. To save the file click the OK button. You have exported the metadata you specified for the file you had selected at the beginning of the operation.



To import metadata into a layer, in the Catalog tree click the layer into which you wish to import metadata and then click the Metadata tab in the larger window. You are now in the mode that enables you to view the existing metadata for the selected item. In the Metadata toolbar click the Import Metadata button to open the Import Metadata dialog [Dialog 4 in the illustration]. If you wish, you can type the location and name of the file to import into the Location field. You might find it easier and less taxing on your memory to use the Browse button to navigate to the location where you have stored the metadata file.



When you click the Browse button the program opens the second Import Dialog [Dialog 5 in the illustration]. In the dialog, navigate to the location where you have stored the export file and click to select it. If you want Arc Catalog to update metadata automatically, then be sure to click to place a check in the Enable automatic update of metadata check box, located in either of the Import Metadata dialogs [Dialog 4 or 6 in the illustration]. Click the Open button. The program returns to the original Import Metadata dialog [Dialog 6]. Use the format field to select the format [FGDC CSDGM (XML)] and click the OK button. The item you selected in the Catalog tree now has the same metadata as the item from which you performed the export. At this point, you should click the Edit Metadata button and make any changes required because of differences between this file and the export file. For instance, if the export file was the county boundary shapefile and the import file is the county block group file, then you would need to change the description of the file in the Abstract section of the Editing dialog.



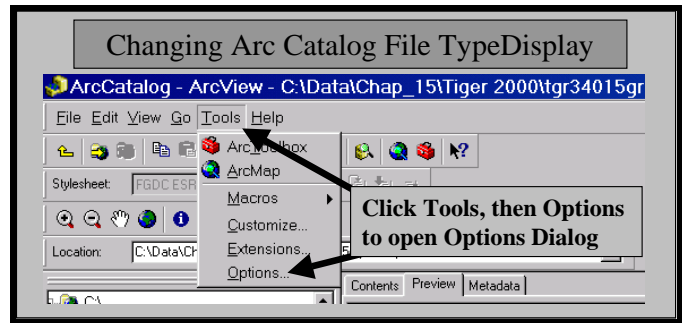
Metadata Workshop

In this workshop you will gain experience with generating metadata. Before you begin the workshop you must copy the folder, Chap_15 from the Geography open area to your H: drive. In the folder you will find two sub-folders: NJDEP and Tiger 2000. Both of these folders contain data for Gloucester County, New Jersey. The following table provides a brief overview of the contents of the folders within Chap_15.

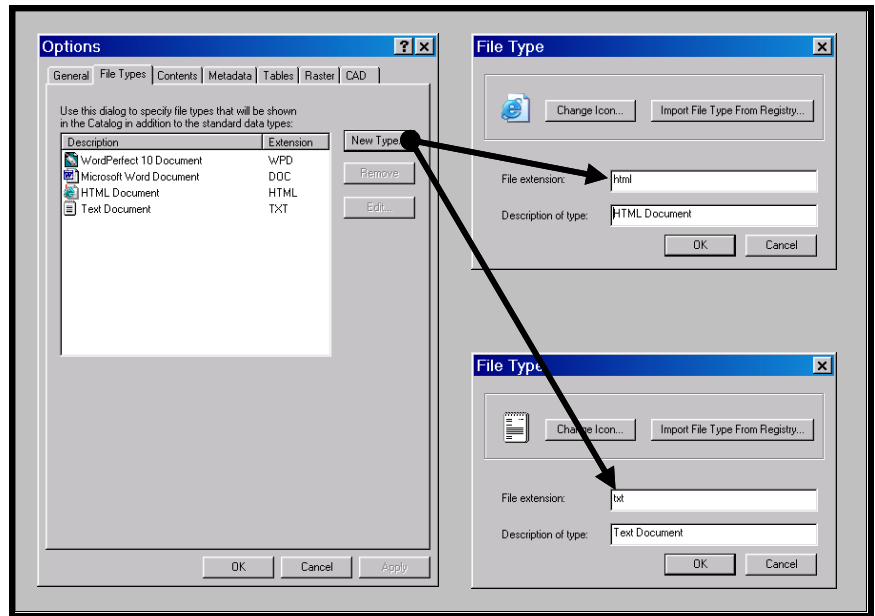
Folders and Files in Chap_15 Folder				
Folder	Files in Folder	File Type	Coordinate System	Contents
NJDEP	Lakes	Arc Info Coverage	NJ SPC NAD 1983	Lake polygons and attributes
NJDEP	Streams	Arc Info coverage	NJ SPC NAD 1983	Streams as linear features.
NJDEP	Lakes.txt	Text file	NA	Information to create metadata
NJDEP	Streams.txt	Text file	NA	Information to create metadata
Tiger 2000	tgr34015blk00.shp	Shapefile	Undefined [assumed geographic]	Census blocks
Tiger 2000	tgr34015cty00.shp	Shapefile	Undefined [assumed geographic]	County outline
Tiger 2000	tgr34015grp00.shp	Shapefile	Undefined [assumed geographic]	Census block groups
Tiger 2000	tgr34015lkA.shp	Shapefile	Undefined [assumed geographic]	Roads
Tiger 2000	tgr34015lkB.shp	Shapefile	Undefined [assumed geographic]	Rail Roads
Tiger 2000	tgr34015lkh.shp	Shapefile	Undefined [assumed geographic]	Hydrography
Tiger 2000	datalicense.html	Hypertext	NA	Information to create metadata
Tiger 2000	readme.html	Hypertext	NA	Information to create metadata

Take a moment to examine the table. Notice that in both folders there are file types that are unsupported by the default set of Arc Catalog file types. Specifically, the extensions: .txt and .html do not appear in file listings within Arc Catalog. In order to be able to work seamlessly with the catalog for this workshop, you should register the two file types so that they will appear in listings. Here is how you do that.

To alter the types of files that you will be able to see within Arc Catalog, click on Tools in the Main Menu and then select Options from the drop down menu. The program will open the Options dialog displayed below.



In the Options dialog click the File Types tab to see the current list of non-default file types that Arc Catalog will display. In the listing, you can see that I have told it to display WordPerfect, Word, HTML, and Text files. You can also see the file name extension used by each of the files. To add a file type, click the New Type button to open the File Type dialog and type the file extension of the file type in the File extension field. If you click in the Description of type field, the program will probably pop in the name of the type of file. In the illustration, I have added the Html and txt extensions. Click Ok to exit the File Type dialog. Continue in this way until you have added all of the file types you want Arc Catalog to display.



If at a later time you decide that you want to remove a file type from the list of non-default files, open the Options dialog, click the File Types tab, click the file type you wish to remove from the list, and click the Remove button. Close the dialog by clicking OK.

Creating Metadata for NJDEP Data Files. These files are already in the target coordinate system and have projection definition information, so you need not do any work within Arc Toolbox to define or alter the projection of these files. Your main task will be to fill in the required fields in the Metadata editor. You will get this information from the two text files that I have stored with the data, Lakes.txt and Streams.txt. You might find it easier to review this information if you print the files, but in the process of creating the metadata, you will probably find it easiest to copy and paste information from the text files into the Metadata editor.

Here is a list of the items I want you to complete in the Editing dialog for each of the files in the NJDEP folder. Start with the Lakes coverage:

1. Identification
 - a. General
 - i. Abstract
 - ii. Purpose
 - iii. Access Constraints
 - iv. Use constraints
 - v. Data Set Credit
 - b. Contact Information
 - i. Person: You
 - ii. Organization: RU
 - iii. Position: Make it up
 - c. Citation
 - i. Organization
 - ii. Publication Date
 - d. Status
 - i. Progress: Set to Complete
 - ii. Update Frequency: Set to As needed
2. Entity Attribute
 - a. Detailed Description
 - i. Attribute
 - (1) General
 - (2) WATBOD Use arrows keys to cycle to this attribute
 - (3) Definition: Type of water body [you will specify this in a layer file]

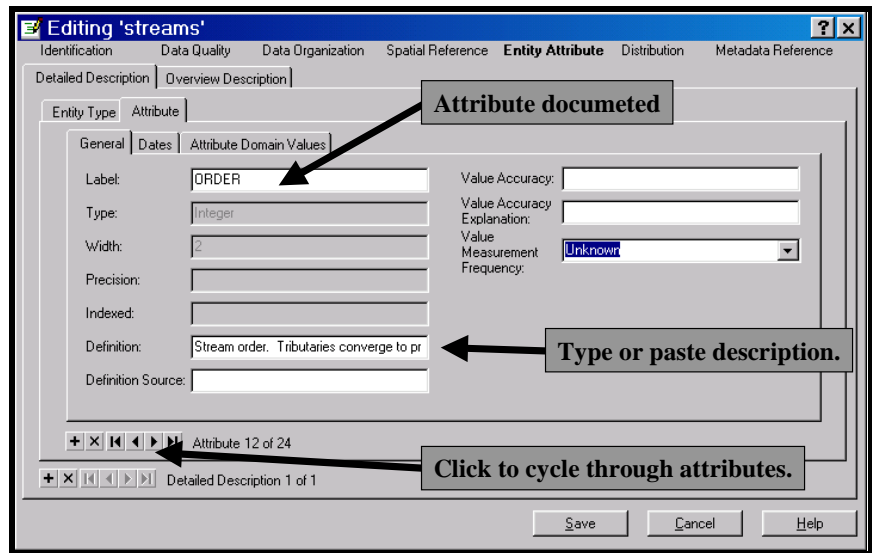
After you complete the information for the Lakes coverage, save it and then use the export function to export the metadata to a file:

1. Click on the Lakes layer in the catalog tree [if it is not already selected] to select it.
2. Click the Export Metadata button in the Metadata toolbar and export the information to a file in FGDC CSDGM (XML) format. Give the file a descriptive name, but do not change the extension.

You are now ready to create the metadata for the streams layer:

1. Click on the Streams layer in the catalog tree.
2. Click the Metadata tab in the larger window.
3. In the Metadata toolbar, click the Import button and follow the instructions for importing metadata.

4. Click the Metadata Editor button in the Metadata toolbar and manually edit the metadata so that it describes the streams layer accurately. You need to do this, because the metadata for the lakes layer is only partly correct when applied to the streams layer. One item you will need to change is in the Identification section under the General tab you will need to supply an appropriate:
 - a. Abstract
 - b. Purpose
5. Additionally, in the Entity Attribute section under the Detailed Description tab you will need to supply a Definition, which you can find in the Streams.txt file, for the following attributes:
 - a. Order
 - b. Level
 - c. Periodicity
6. Save the metadata.



Creating Metadata for the Tiger 2000 Shapefiles. You are now ready to begin creating the metadata for the data in the Tiger 2000 folder. All of these files are in shapefile format and are currently in geographic coordinates. In this case, the files have much in common and you can make things go more smoothly if you work with them in batches. Here are the tasks you need to perform:

1. Drag and drop the files from Arc Catalog to Arc Toolbox's Define Projection Wizard (shapefiles, Geodatabases) and specify the following coordinate system for all of the files:
 - a. Geographic Coordinate System
 - b. North America
 - c. North American Datum 1983
2. Create a new folder in which to store the projected files. You might call it "projected"
3. Drag and drop the files from Arc Catalog to Arc Toolbox's Project Wizard (Shapefiles, Geodatabases) and make the following selections to specify the coordinate system for the files:
 - a. Projected Coordinate Systems
 - b. State Plane
 - c. NAD 1983 (Feet)
 - d. NAD 1983 State Plane New Jersey FIPS 2900 (Feet)

4. Rename the files to give them names that a human being would understand. Use the Contents column of the Folders and Files in Chap_15 Folder table as a guideline.
5. Delete the shapefiles in the Tiger 2000 folder—you no longer need them.
6. Copy the newly projected and renamed shapefiles from the folder where you created them in step 3 into the Tiger 2000 folder.

You are now ready to create metadata for one of the files. In this case you will use the information in the readme.html and datalicense.html files to provide the information you need for creating metadata. Start with any one of the Tiger files and use the Metadata Editor to provide, as best you can, information for each of the following:

1. Identification
 - a. General
 - i. Abstract
 - ii. Purpose
 - iii. Access Constraints
 - iv. Use constraints
 - v. Data Set Credit
 - b. Contact Information
 - i. Person: You
 - ii. Organization: RU
 - iii. Position: Make it up
 - c. Citation
 - i. Organization
 - ii. Publication Date
 - d. Status
 - i. Progress: Set to Complete
 - ii. Update Frequency: Set to As needed

When you have finished providing metadata for one of the shapefiles in the Tiger 2000 folder, use the Export Metadata button to export the information to a file in the FGDC CSDGM (XML) format.

Finally, for each of the remaining files in turn use the Import Metadata button in the Metadata Toolbar to copy the metadata you exported into the file. For information that is unique to each file, you will have to use the Metadata Editor to complete metadata creation.

Assignment: To demonstrate your mastery of creating, editing, and manipulating metadata in Arc Catalog, print the metadata for four of the files in the Chap_15 folder. Print out at least one set of metadata from each of the sub-folders, Tiger 2000 and NJDEP. An example of how the metadata for each of the four files should look follows.

NJ DEP County Data Sets: lakes

ArcInfo Coverage

Description Spatial Attributes

Keywords

Theme: hydrography, rivers, streams, lakes

Place: Gloucester county

Description

Abstract

Hydrography polygon coverages for NJ counties

Purpose

Environmental analysis

Status of the data

Complete

Data update frequency: As needed

Time period for which the data is relevant

Date and time: unknown

Description:

publication date

Publication Information

Date and time: 1986 at time Unknown

Data storage and access information

File name: lakes

Type of data: vector digital data

Data processing environment: Microsoft Windows 2000 Version 5.0 (Build 2195) Service Pack 3; ESRI ArcCatalog 8.2.0.700

Accessing the data

Size of the data: 0.769 MB

Data transfer size: 0.769 MB

Constraints on accessing and using the data

Access constraints: Requires Data Distribution Agreement with NJDEP.

Use constraints:

Basemap (photoquad) feature positions are good to about +/- 60 feet or better.

Delineated lines are good to about +/- 50 feet from locations on manuscript.

Coastline data was integrated from NJDEPE 1986 Coast coverage.

Details about this document

NJ DEP County Data Sets: lakes

ArcInfo Coverage

Description Spatial Attributes

Horizontal coordinate system

Projected coordinate system name: NAD_1983_StatePlane_New_Jersey_FIPS_2900_Feet

Geographic coordinate system name: GCS_North_American_1983

Details

Bounding coordinates

Horizontal

In decimal degrees

West: -75.450050

East: -74.882821

North: 39.889625

South: 39.515613

In projected or local coordinates

Left: 225540.046875

Right: 384134.437500

Top: 384944.250000

Bottom: 249883.625000

Spatial data description

Vector data information

ESRI description

arc

ESRI feature type: Simple

Geometry type: Arc

Topology: FALSE

Feature count: 3358

Spatial Index: FALSE

Linear referencing: FALSE

label

polygon

tic

SDTS description

Feature class: SDTS feature type, feature count

- arc: Complete chain, 3358
- label: Label point, 1210
- polygon: GT-polygon composed of chains, 1210
- tic: Point, 24

NJ DEP County Data Sets: lakes

ArcInfo Coverage

Description Spatial Attributes

Details for lakes.pat

Type of object: Feature Class

Number of records: 1210

Attributes

FID

Shape

AREA

PERIMETER

LAKES#

LAKES-ID

NAME

MODULE

WATBOD

Alias: WB

Data type: Integer

Width: 1

Output width: 1

Definition:

Water bodies in the county

HUC11