

## DNR Data Deli II Unpacking and User Instructions May 2004

Now that you've successfully downloaded a bundle of GIS data from the Minnesota Dept. of Natural Resources, GIS Data Deli II there are a couple of things that you need to know about how the data in a Data Bundle is assembled and organized before you can use the information. The following document contains the following sections,

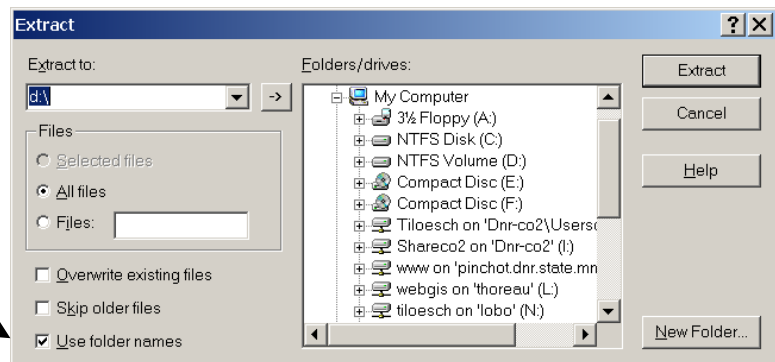
- [Unpacking](#) – Describes how to unpack the data and where it get's stored.
- [Data format](#) – Describes the data formats that you've received and where the metadata, tile indexes, and data are stored.
- [Organization](#) – Describes how the data in the bundle is organized.
- [Filenames](#) – Describes the file-naming conventions used by the DNR.

### Unpacking Instructions

When you download a “Data Bundle” from the it will be in the form of a compressed ZIP archived file that contains the data, indexes and metadata for the datasets that you've requested. Data Bundles need to be uncompressed to a hard drive or other storage device using one of the many available compression utilities before the information can be accessed and used.

The Data Bundle contains all of the data, metadata, and indexes and this information is organized into a series of folders. **When you unpack your data bundle make sure that you tell your uncompressing software to retain the folders otherwise you will have problems unpacking your data bundle.**

If you are using the popular WinZIP program make sure the “Use Folder Names” checkbox is selected.



Each bundle you download from the deli will be organized in the same fashion so you can unzip subsequent bundles to the same location and build your collection of data over time.

### Data Formats

The DNR Data Deli II contains a wide variety of GIS data in vector, raster and image formats and some of the layers are available in more than one format.

**Vector** data are distributed as ESRI formatted Shapefiles. This includes a majority of the datasets that are available on the Deli. These files are ready to use in most GIS programs.

**Raster** data are distributed in an ASCII format as defined by ESRI. This format was chosen because it is generic, supports integer, floating point and negative values, and can be imported by many of the GIS programs in use today. Examples of raster data available on the Data Deli are Digital Elevation Models, Satellite based Land-Cover and lake bathymetric data products. [See Appendix A](#) for a description of this format.

These ASCII files must be imported using procedures appropriate for the particular software you are using.

**Image** data are distributed in a variety of popular image formats including GEOTiff (USGS DRGs), JPEG (USGS DOQs), MrSID and ECW. These formats are generally ready to use in most GIS software packages. Some image formats, specifically JPEG, MrSID and ECW, may require plug-ins or extensions that are generally available free of charge.

## Organization

Each Deli data bundle has three components that are used to organize the information you've downloaded and to make it easy for you to use and interpret the data. These components are folders and are called:

- **MNDNRDATA**,
- **METADATA**, and
- **INDEX**



The **MNDNRDATA** folder is the top-level folder that identifies this as a location where data downloaded from the DNR Data Deli II is being stored. In this folder you will see the second and third components, the **METADATA** and **INDEX** folder.

The **METADATA** folder stores HTML and XML formatted files that contain information describing the spatial data you've downloaded. The HTML files are metadata that is easily opened by a browser and the XML files follow the FGDC metadata standard and can be read by ESRI's ArcCatalog and other FGDC compliant software. The filenames for these files match the spatial data filenames that you've downloaded.

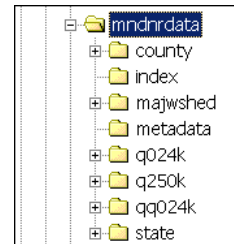
The **INDEX** folder stores tiling scheme indexes for the data that you've downloaded in this, or other Data Bundles. Every spatial dataset downloaded from the DNR Data Deli II has been tiled to some geographic extent. Some of the common tile schemes are State, USGS Quarter quad format, county and watershed boundaries. Tiling of data is done to facilitate downloading data in a reasonable time frame. In general, the more complex and voluminous the data set, the smaller each individual tile's geographic extent will be.

Each index has a standard set of Fields that describe the tile. The TILE\_NAME field contains the long name of the tile and the TILE\_ID field stores the values of the folder names used to represent this tile.

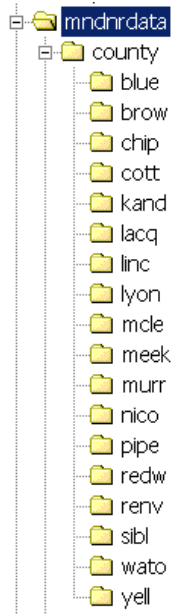
**Tile Scheme** folders are also found in the MNDNRDATA folder and each of these stores data in a particular tiling scheme as mentioned above. Valid tiling schemes for data derived from the Data Deli are:

Tile Scheme	Folder Name	Index Shapefile
County Tiles	mndnrdata\COUNTY	mndnrdata\index\county.shp
USGS 1:12,000 tiles	mndnrdata\QQ024K	mndnrdata\index\qq024k.shp
USGS 1:24,000 Tiles	mndnrdata\Q024K	mndnrdata\index\q024k.shp
USGS 1:100,000 Tiles	mndnrdata\Q100K	mndnrdata\index\q100k.shp
USGS 1:250,000 Tiles	mndnrdata\Q250K	mndnrdata\index\q250k.shp
State tiled data	mndnrdata\STATE	mndnrdata\index\state.shp
Major Watershed Tiles	mndnrdata\MAJWSHED	mndnrdata\index\majwshed.shp

Within each of the tile folders you'll see one or more folders, each representing an individual tile's worth of data and in each of the tile folders you'll see one or more data files as shapefiles, images and/or ASCII export files depending on the data you chose to download.



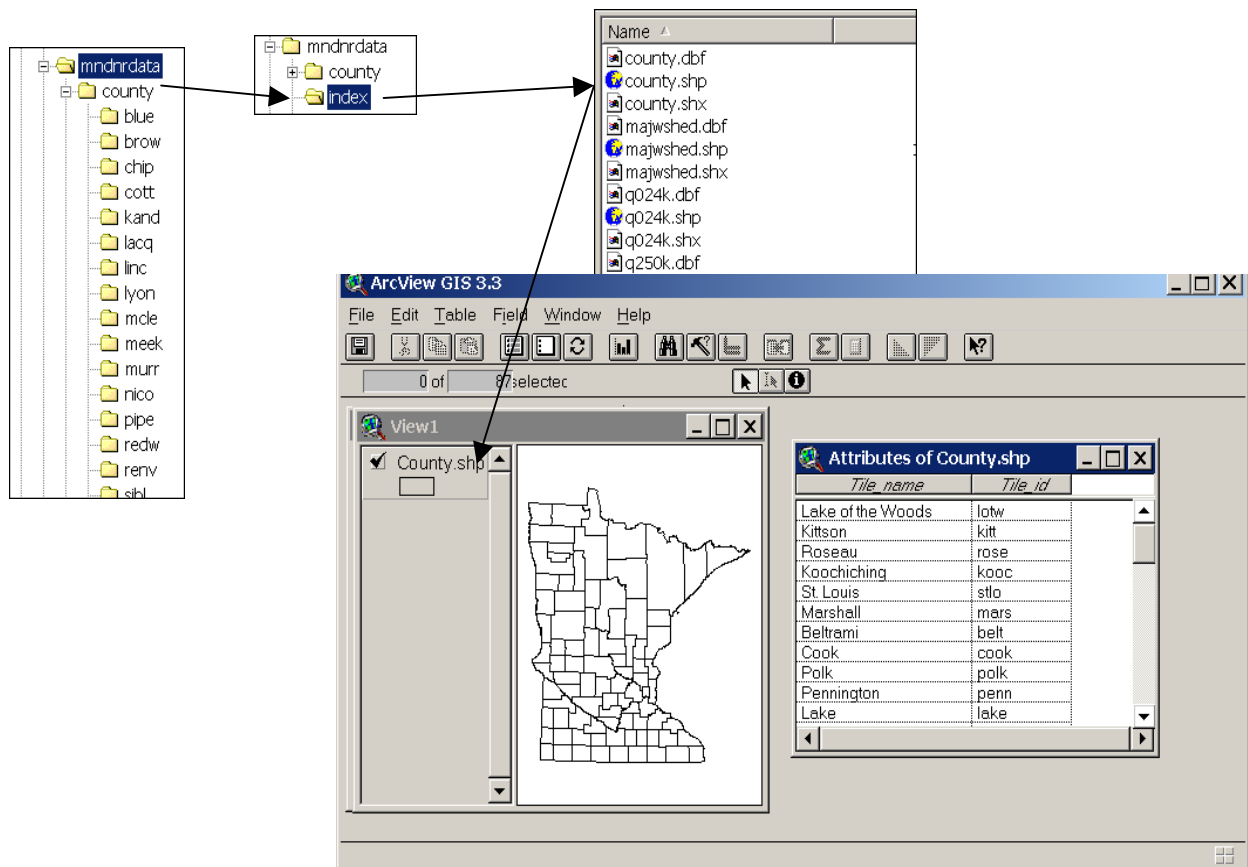
For data that is tiled by state, you'll see a \MNDNRGIS\STATE\MN folder that stores all data tiled by state that is for Minnesota. For data tiled by county you'll see one folder in the COUNTY tile folder for each of the tiles you've downloaded (see graphic). In this example you can see that there is a "County" tile folder and 18 individual county folders, named for each county tile that was downloaded. Each of these folders will contain the data and metadata that was in the Data Bundle that you downloaded.



To determine the county names for each of these folders you can consult the county index found in the MNDNRDATA\INDEX folder. There will be one index for each tile scheme that you've downloaded and the name of the index corresponds to the name of the tile scheme folder. For the above example, a shapefile named COUNTY.SHX will be found in the MNDNRDATA\INDEX folder.

Tile scheme shapefiles have two standardized Fields, Tile\_Name and Tile\_ID. The TILE\_NAME field stores the common name of the tile – a county or quadrangle name for example. The TILE\_ID field stores the name of the tile folder – a four letter county abbreviation for counties for example.

The following Graphic shows the relationship between the tile folder, the index and the fields that are stored in the index.



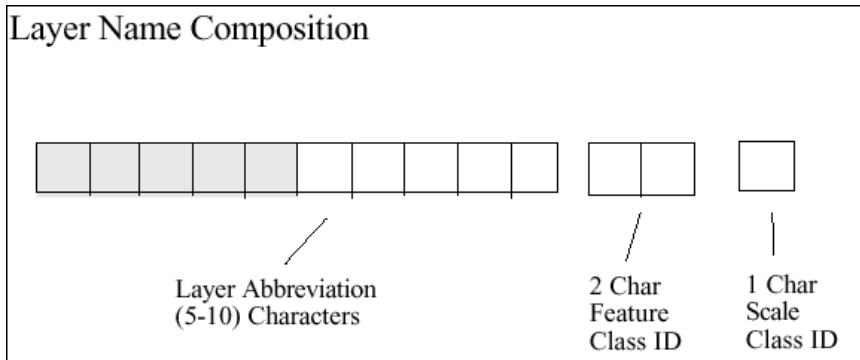
## Filenames

Data downloaded from the Data Deli is named using the DNR naming standards. This naming standard is a variable length string of eight to thirteen characters with three components, including:

- layer abbreviation,
- feature class, and
- scale specification.

Layer abbreviations can be from 5 to 10 characters in length, and form the thematic identity of the layer. They exist so that users can identify the general content and/or source of the data. Feature class refers to the type of cartographic primitive used to represent the feature (e.g. point, polygon, pixel). Scale specification refers to the scale range within which the cartographic and thematic components are expected to function,

and can be appropriately applied. This part of the name will be used to help control scale-based display properties and provide users with a visual indication of a layer's scale properties. The specification is described graphically in the following graphic:



The layer abbreviation component of the layer name is from five to ten characters in length. The first part of the string is reserved for a thematic subclass keyword that suggests the content. The second part of the string is used to further describe the specific data set.

The feature class ID component of the layer name is a 2-character substring which describes the method of spatial data representation (points, lines, polygons, etc.). It occupies the eleventh and twelfth positions in the layer name. The domain for feature class IDs are as follows:

<i>Feature Class Abbreviation</i>	<i>Feature Class Name</i>	<i>Description</i>
py	polygon	Area features
ln	line	Line features
pt	point	Single point locations
ra	raster	Thematic raster data sets, such as a raster land cover data set
ms	measures	lines with measures
im	image	Non-thematic raster data set, such as a scanned map, or satellite image

The scale class identifier is a number from 1 to 4 that generally indicates the effective scale of the data. This may indicate the actual scale of the cartographic source, the effective resolution of the data, or be a commentary on the positional and/or thematic accuracy of the data. It occupies the thirteenth position in the layer name. The domain for scale class identifiers found on the DNR Data Deli are as follows:

<i>Scale Range</i>	<i>Name</i>	<i>Scale Identifier</i>	<i>Application Type/Extent</i>	<i>Notes</i>
400K-2000K	State	1	Statewide mapping of summary data	The most generalized and least (positionally) accurate data
80K-400K	Planning	2	County Level Mapping County Level Planning Landscape Modeling	Very generalized. Not appropriate for locational measurement. Often includes simplified attribute schemes
10K-80K	Resource	3	Watershed Planning Landscape Modeling Timber Planning	Moderately (positionally) accurate data. Locational measurement can be performed with caution.
>10K	Site	4	Site-specific resource and facility management	The most (positionally) accurate data available

For a complete discussion on the DNR's filenaming standards consult the DNR "[GIS Data Resource Site Specifications](#)" document.

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## Appendix A A SCII Raster Format Description...

Raster files distributed by the DNR Data Deli II are formatted using an ASCII file format defined by ESRI. This ASCII format consists starts out with six lines of header information containing a set of keywords and values followed by cell values in row-major order.

The file format is

<NCOLS xxx>	Number of columns
<NROWS xxx>	Number of rows
<XLLCENTER xxx   XLLCORNER xxx>	X coordinate of Lower left cell
<YLLCENTER xxx   YLLCORNER xxx>	Y Coordinate of lower left cell
<CELLSIZE xxx>	Cell Size in map units
{NODATA_VALUE xxx}	Value representing No_Data
row 1	
row 2	
.	
.	
.	
row n	

The LLCORNER and LLCENTER keywords are used to define the location of the X and Y coordinate in the data cell. CENTER indicates that the coordinate refers to the center of the cell, CORNER indicates that the coordinate refers to the lower left corner of the cell.

The keyword NODATA\_VALUE is optional and defaults to -9999.

For example,

```
NCOLS 480
NROWS 450
XLLCORNER 378923
YLLCORNER 4072345
CELLSIZE 30
NODATA_VALUE -32768
43 2 45 7 3 56 2 5 23 65 34 6 32 54 57 34 2 2 54 6
35 45 65 34 2 6 78 4 2 6 89 3 2 7 45 23 5 8 4 1 62 ...
```

NOTES:

- The NODATA\_VALUE is the value in the ASCII file assigned to those cells in the input grid which contain the cell value, NODATA. This value is normally reserved for those cells whose true value is unknown.

- The end of each row of data from the grid is terminated with a carriage return in the file. This format supports both integer and floating point grid values.
- The coordinate represents the lower-left corner of the upper left grid cell.
- Each ASCII file has an associated header file which is a copy of the first six lines of the ASCII file itself. This may be useful to some users when performing the import procedure.

To import this type of data into ArcView 3.x you need the Spatial Analyst Extension. In the View document interface use the **FILE** menu, **Import Data Source** option. Select the ASCII Raster format and you're ready to go.

In ArcInfo you would use the **GRIDASCII** command to convert this dataset to a GRID, in ArcGIS use the **Import To Raster – ASCII to Grid tool** to convert this dataset to a GRID.