

The 'report380data' folder contains spatial vector data (.shp), attribute data (.dbf), and metadata (.pdf/.xml) for data released for MN DNR Report 380, "Aggregate Resource Potential in Parts of Northern St. Louis and Lake Counties, MN." Additionally, for ArcGIS 9.3 or ArcGIS 10 users the digital data has been packaged into a File Geodatabase including the metadata taken from .xml files. Below you will find some basic definitions and information regarding the common spatial data formats and metadata that are included in this data folder. Additionally, if you do not have GIS software to view this data you may download ArcExplorer for free at:

<http://www.esri.com/software/arcexplorer/index.html>

*"ArcExplorer is a lightweight GIS data viewer developed by ESRI. This freely available software offers an easy way to perform a variety of basic GIS functions, including display, query, and data retrieval applications. It can be used on its own with local data sets or as a client to Internet data and map servers."*  
-ESRI Definition

## **Spatial Vector Data**

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### *ESRI SHAPEFILE*

<http://en.wikipedia.org/wiki/Shapefile>

The *ESRI Shapefile* is a popular geospatial vector data format for geographic information systems software (exp. ESRI ArcView 3.3, ESRI ArcGIS 9x/10x, or ArcExplorer 9x). It is developed and regulated by ESRI as a (mostly) open specification for data interoperability among ESRI and other software products. A "shapefile" commonly refers to a collection of files with ".shp", ".shx", ".dbf", and other extensions on a common prefix name (i.e., "lakes.\*"). The actual shapefile relates specifically to files with the ".shp" extension, however this file alone is incomplete for distribution, as it depends on the other supporting files seen below as optional files.

Shapefiles spatially describe points, polygons, polylines. These, for example, could represent field observations or sand and gravel potential, respectively. Each item also has attributes that describe the items, such as the material type or landform.

### **Mandatory files:**

**.shp** - the file that stores the feature geometry  
**.shx** - the file that stores the index of the feature geometry  
**.dbf** - the database of attributes

### **\*\*A NOTE REGARDING .DBF FILES\*\***

**If you are not using GIS software a .dbf file can still be opened in a spreadsheet application such as Microsoft Excel. To access the .dbf data, right click on a .dbf file and select 'Open With'. In the 'Open With' GUI (Graphic User Interface) you can either select the spreadsheet application in the list and click okay, or if you don't see the program, click the browse button and search for your chosen spreadsheet**

**application. Once found, click okay and the file will be opened in your selected application.**

### **Optional files:**

**.sbn** and **.sbx** - store the spatial index of the features

**.fbn** and **.fbx** - store the spatial index of the features for shapefiles that are read-only

**.ain** and **.aih** - store the attribute index of the active fields in a table or a theme's attribute table

**.shp.xml** - metadata for the shapefile

**.atx** - attribute index for the .dbf file in the form of <shapefile>.<columnname>.atx (ArcGIS 8 and later)

Listed below is an example of a shapefile (MPES Project 380, Sand and Gravel Resource Potential) included in this folder (data/resource/mn\_dnr/spatial):

- report380\_sgp.shp
- report380\_sgp.shx
- report380\_sgp.dbf
- report380\_sgp.sbx
- report380\_sgp.sbn
- report380\_sgp.shp.xml

### *ESRI FILE GEODATABASE*

*<http://www.esri.com/software/arcgis/geodatabase/index.html>*

The geodatabase is the common data storage and management framework for ArcGIS. It combines "geo" (spatial data) with "database" (data repository) to create a central data repository for spatial data storage and management. It can be leveraged in [desktop](#), [server](#), or [mobile](#) environments and allows you to [store GIS data](#) in a central location for easy data access and management.

The geodatabase offers you the ability to:

- **Store** a rich collection of spatial data in a centralized location.
- Apply **sophisticated rules and relationships** to the data.
- Define **advanced geospatial relational models** (e.g., topologies, networks).
- **Maintain integrity** of spatial data with a consistent, accurate database.
- Work within a **multiuser access and editing** environment.
- **Integrate spatial data** with other IT databases.
- Easily **scale** your storage solution.
- Support **custom features** and behavior.
- **Leverage** your spatial data to its full potential

**The file geodatabase provided in MN DNR Report 380 can only be viewed with ArcGIS 9.3 and ArcGIS 10 software products.**

## **Spatial Raster/Image Data**

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A spatial data model that defines space as an array of equally sized cells arranged in rows and columns, and comprised of single or multiple bands. Each cell contains an attribute value and location coordinates. Unlike a vector structure, which stores coordinates explicitly, raster coordinates are contained in the ordering of the matrix. Groups of cells that share the same value represent the same type of geographic feature. Raster datasets can be stored in many formats, including TIFF, Imagine, ESRI Grid, and MrSid.

THERE ARE NO RASTER/IMAGE FORMATS SEEN IN THIS DATA FOLDER:

## **Metadata**

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Metadata is information that describes the content, quality, condition, origin, and other characteristics of data or other pieces of information. Metadata for spatial data may describe and document its subject matter; how, when, where, and by whom the data was collected; availability and distribution information; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard. Metadata consists of properties and documentation. Properties are derived from the data source (for example, the coordinate system, projection of the data, and date/year of data) and documentation is entered by a person (for example, keywords used to describe the data). Metadata within this folder is stored in **.pdf** files (adobe pdf documents) and also **.xml** files (seen within a shapefile or feature class). If you have ArcGIS Desktop you can view the metadata in ArcCatalog under the tab 'metadata'. If you don't have ArcGIS it is recommended to view the metadata in the **.pdf** files by clicking on the **.pdf** file. For better metadata viewing it is recommended to use the 'mgmg' stylesheet developed by LMIC (Land Management Information Center). To download the mgmg stylesheet for ArcGIS 9 visit: <http://www.lmic.state.mn.us/chouse/arccatalog.html>.

Listed below is an example of the metadata files for shapefile 'report380\_sgp', which displays the Sand and Gravel Potential in Parts of Northern St. Louis and Lake Counties:

The shapefile is found at the following folder directory:

*Report380data\resource\shapefiles\mn\_dnr\spatial\report380\_sgp.shp*

The metadata for the Sand and Gravel Potential in Parts of Northern St. Louis and Lake Counties is found here:

*Report380data\resource\shapefiles\mn\_dnr\metadata*

- **report380\_sgp.pdf** {metadata document with attribute table descriptions}
- **report380\_sgp.shp.xml** {best read in a GIS program like ArcGIS 9x, or ArcExplorer 9x, does not include the attribute table, see the .pdf file}.