

Notes: In this and following tutorials, I will try to use the following
[New] a button activated by clicking on it
“A new blank map project” a checkbox activated by put a check in the box by clicking on the box
“Username” a text-box name where you enter data by typing it in



ISSUE

a potential limitation to the use of the software



NOTE

an addition comment to point out addition functionality or information



TASK

Asking you to practice a skill we just discussed



QUESTION:

Asking you to collect information provided by a **TASK**



Plug-in



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MapWindow GIS 4.1.2342



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Support

Support

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#####

 **000.0**

Setup and Update

 **001.0**

Introduction



001.1 *General Information*

001.1.1 *Introduction*

001.1.1.01 **Introduction:** The MapWindow application is a free, extensible, geographic information system (GIS) that can be used in many ways:

- As an open-source alternative desktop GIS
- To distribute data to others
- To develop and distribute custom spatial data analyses

001.1.1.02 **Features:**

- As an open-source tool, MapWindow is free to use and redistribute to your clients and other end users.
- MapWindow is more than just a data viewer. It is an extensible geographic information system. This means that you can write plug-ins to add additional functionality (models, special viewers, hot-link handlers, data editors, etc.) and pass these along to any number of your clients and end users.
- MapWindow includes standard GIS data visualization features as well as DBF attribute table editing, Shapefile editing, and grid importing and conversion.
- MapWindow also includes a complete ActiveX component which may be used to instantly add GIS capabilities to your existing software product.

 **002.0**

Getting the software



002.1 *MapWindow*

002.1.1 *General Information for MapWindow*

002.1.1.01 MapWindow is an open source "Programmable Geographic Information System" that supports manipulation, analysis, and viewing of geospatial data and associated attribute data in several standard GIS data formats. MapWindow is a mapping tool, a GIS modeling system, and a GIS application programming interface (API) all in one convenient redistributable open source form.

002.1.1.02 MapWindow was developed to address the need for a GIS programming tool that could be used in engineering research and project software, without requiring end users to purchase a complete GIS system, or become GIS experts.

002.1.1.03 For example, a researcher or company may want to deploy a tool that lets users build and interact with maps of GPS data overlaid on USGS quad maps. One approach is to build the tool as an extension to commercial GIS software, and then require users to purchase that software to run the extension. Alternatively, the company could use MapWindow as a platform and build a specialized application that does the needed function and then give it or sell it directly to end user with no need for third party software purchases.

002.1.1.04 MapWindow consists of the main MapWindow application, Core Components, and plug-ins.

- Main MapWindow Application: This is the central interface for MapWindow. From here, you may view data elements such as Shapefiles and Grids. For more details on how to interact with the main application, please see the heading "Using MapWindow".
- Core Components: These are the components which operate underneath MapWindow. The three main components are MapWinGIS, MapWinInterfaces, and MapWinX.
 - MapWinGIS: This is an ActiveX control which may be placed into any project in any programming language that supports ActiveX. This is the main map component - if you wanted to write a program that displayed shape data, for example, you could use this control for the display portion of your program. For detailed instructions on using this component, please see the Developer Documentation.
 - MapWinInterfaces: Also called the "Plug-in Interface", this is a DLL file which will allow you to write your own plug-ins to the main MapWindow application. This may be done from any

programming language which supports the creation and use of Microsoft .NET Dynamic Link Libraries (DLLs). For more information on developing your own custom plug-ins, please see the Developer Documentation.

- MapWinX: This is a .NET library of geoprocessing functions, including tools for managing projections, clipping, and buffering.
- Plug-ins: These are specialized tools written to interact with the main MapWindow application. Where MapWindow is mainly a data viewing tool, the real power of MapWindow comes in the form of plug-ins.
 - The MapWindow installer includes plug-ins for hyperlinking, editing attribute tables, editing shapefiles, labeling shapefiles, identifying features and cells, and performing some geoprocessing.
 - Other plug-ins are available via the MapWindow website and are under development by third parties for various custom applications.

002.1.2 *Getting and Setting up MapWindow*

002.1.2.01 Open your web browser and navigate to the MapWindow GIS website at <http://www.mapwindow.org/>

002.1.2.02 Click on the [**Download Now**] Button



002.1.2.03 Click on the [**MapWindow GIS Application**] menu item



NOTE #01***** *the MapWindow application includes the GUI, MapWindow Interfaces DLL (which includes the legend component), MapWindow ActiveX control, table editor plug-in, feature identifier plug-in, and other core plug-ins. The installer includes sample data and is compatible with Windows 98 and up. Source code can be downloaded using our SVN code repository (<http://www.mapwindow.org/svn.php>).*

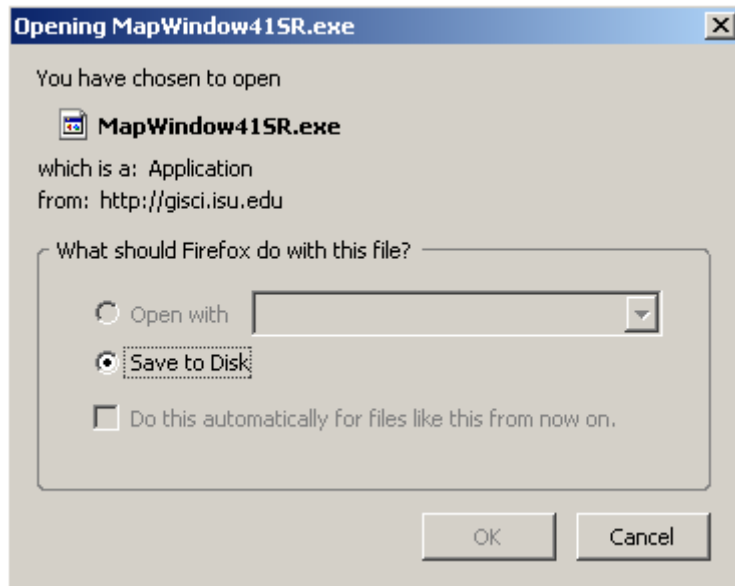
002.1.2.04 Click on the [**MapWindow41SR.exe**] menu item



NOTE #02***** *Two downloads are available for the MapWindow application. **MapWindow41SR.exe**. The second installer (**MapWindowCFInstall.exe**) is*

for bundling with other application installers for people developing their own applications using MapWindow.

002.1.2.05 You should see the window below



002.1.2.06 Click [**OK**]

002.1.2.07 Navigate to your download directory and click on
MapWindow41SR.exe

002.1.2.08 Follow the Screen prompts to finish the installation

002.1.2.09 This will create a desktop icon (shortcut) labeled MapWindow



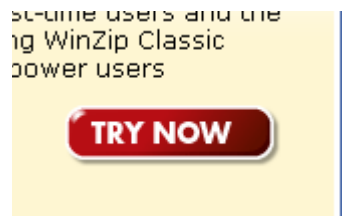
002.2 WinZip

002.2.1 General Information for WinZip: Not Applicable

002.2.2 Getting and Installing WinZip

002.2.2.01 Open your web browser and go to www.winzip.com

002.2.2.02 Click on the [Try Now] Button”



002.2.2.03 Click on the [Try Now] Button

a license fee is required



002.2.2.04 Select the “Download.com” Button



002.2.2.05 This will down load winzip100.exe to your machine

002.2.2.06 To install Winzip, you double-click the download file **winzip100.exe** to start the installation procedure.

002.2.2.07 Follow the screen prompts to complete the installation of WinZip

003.0 *Getting the data*



003.1 *To Obtain Data from National Atlas*

003.1.1 *General Information for Obtaining Data from National Atlas: Not Applicable*

003.1.2 *To Obtain Data from National Atlas*

003.1.2.01 Create a directory called workspace on your machine e.g. D:/workspace.

003.1.2.02 Open your web browser and go to
<http://www.nationalatlas.gov/atlasftp.html>

003.1.2.03 Click on “Boundaries”

Raw Data Download by Chapter		
↓ Agriculture	↓ Environment	↓ People
↓ Biology	↓ Geology	↓ Transportation
↓ Boundaries	↓ History	↓ Water
↓ Climate	↓ Map Reference	

▶ Agriculture: Agriculture Census 2002 - Crops, Expenses, Farmland...
▶ Biology: Bat Ranges, Butterflies, Forests, Invasive Species, Land Cover...
▶ Boundaries: Congressional Districts, Counties, Federal lands, States...
▶ Climate: Precipitation, Hazard Events, Hurricanes, Sea Temperature...
▶ Environment: Air Releases, Hazardous Waste, Toxics Release...
▶ Geology: Earthquakes, Landslides, Shaded Relief, Volcanoes...
▶ History: Presidential General Election 2000 County and State Results.
▶ Map Reference: Cities and Towns, Urban Areas...
▶ People: Census, Crimes, Energy Consumption, Mortality...
▶ Transportation: Airports, Parkways and Scenic Rivers, Railroads, Roads...
▶ Water: Aquifers, Dams, Watersheds, Streams and Waterbodies...

003.1.2.04 Download the following Shapefile layers and unzip them into your Workspace folder:

- County Boundaries, 2001
- Federal Lands
- State Boundaries

003.1.2.05 Download the following Shapefile layer from “Map Reference” and unzip them into your Workspace folder:

- Urban Areas

003.1.2.06 Download the following Shapefile layers from “Transportation” and unzip them into your Workspace folder:

- Airports
- Railroads
- Roads

003.1.2.07 Download the following Shapefile layer from “Water” and unzip them into your Workspace folder:

- Streams and Waterbodies

003.1.2.08 Download the following Shapefile layers from “Biology” and unzip them into your Workspace folder:

- Invasive Species - Africanized Honey Bees
- Invasive Species – Zebra Mussel Distribution

003.1.2.09 Download the following Shapefile layer from “People” and unzip them into your Workspace folder:

- Mortality, Various Causes

003.1.2.10 Download the following Shapefile layer from “Geology” and unzip them into your Workspace folder:

- Shaded Relief Land - Color - 1 Kilometer Resolution
- Shaded Relief Land - Color - Conterminous United States 200 Meter Resolution

004.0 *Updating MapWindow*



004.1 *Updating MapWindow*

004.1.1 *General Information for Updating MapWindow*

004.1.1.01 The only way to update MapWindow is to go back to the home site and get the latest version.

#####

100.0 *Projects*

101.0 *Projects*



101.1 *Creating a New Project*

101.1.1 *General Information for Creating a New Project: Not Applicable*

101.1.2 *Setup for Creating a New Project: Not Applicable*

101.1.3 *Creating a new project*

101.1.3.01 Double Click on the Desktop Icon

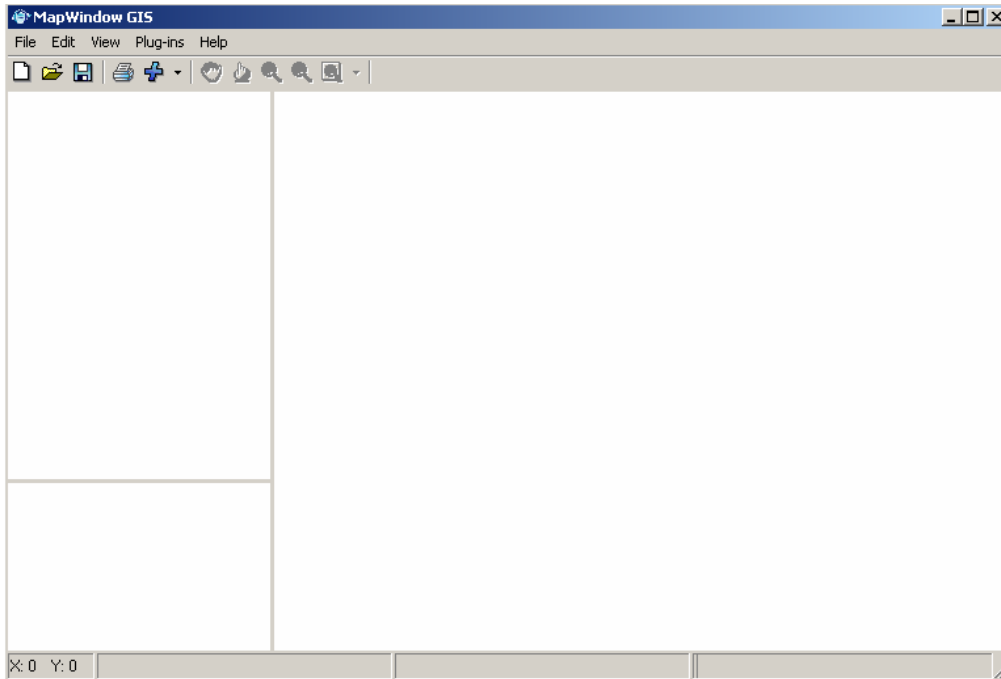


101.1.3.02 The following screen should appear (if this is your first time running MapWindow)



101.1.3.03 Click the [Close] button and the following main window will appear.

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101.2 Loading an Existing Project

101.2.1 General Information for Loading an Existing Project

101.2.2 Setup for Loading an Existing Project: Not Applicable

101.2.3 Steps for Loading an Existing Project

101.2.3.01 Click on [**File**]

101.2.3.02 Click on [**Open**]

101.2.3.03 Select a Project file (ends in .mwprj) and Click [**Open**]



NOTE #03***** An example of a project file can be found at C:\Program Files\MapWindow\Sample Projects\World\World.mwprj.



101.3 Saving a Project

101.3.1 General Information for Saving a Project: Not Applicable

101.3.2 *Setup for Saving a Project: Not Applicable*

101.3.3 *Steps for Saving a Project*

101.3.3.01 While working on any project it is advisable to save regularly to guard against data lost and for later retrieval. When saving a project for the first time it is necessary to provide a name for the project file. It is important to note that a saved project file does not contain any map data. The project file contains references to map data, as well as other information, such as layer symbology. Projects are stored on the hard drive with an .mwprj extension

101.3.3.02 Click the [**File**] on the Main Toolbar.

101.3.3.03 Click the [**Save**]. If this is the first time you have saved the project, you will be prompted to provide a path and filename.

101.3.3.04 Click the [**Save**]

 **102.0** *Our First Project*



102.1 *Additional windows*

102.1.1 *General Information for Additional Windows:*

102.1.1.01 All necessary windows are open as default settings: i.e. Layers, map, preview map

 **103.0** *Rendering*



103.1 *Rendering*

103.1.1 *General Information about Rendering:* There is no capability for this function

104.0 ***Projections***



104.1 ***Projections***

104.1.1 ***General Information about Projections***

104.1.1.01 MapWindow does not support on-the-fly projection because it gives you a false sense of your data being in a projection that it's not. This is a situation that is OK for viewing, but bad for modeling .

104.1.2 ***Setup for Projections: Not Applicable***

104.1.3 ***Usage of Projections***

104.1.3.01 So the first layer you add with an ESRI ".prj" file, the project will adopt that projection (this can be viewed under the file/settings menu).

104.1.3.02 Then when additional layers are added, if they are in the same projection, they just load.

104.1.3.03 If they are in a different projection, then the user gets a prompt asking how to handle it where the default is to reproject the new layer to the projection of the original added layer.



104.2 ***Assigning Projections***

104.2.1 ***General Information about Assigning Projections***

104.1.1.01 MapWindow allows you to assign a project to a shapefile and thus create a .prj file.

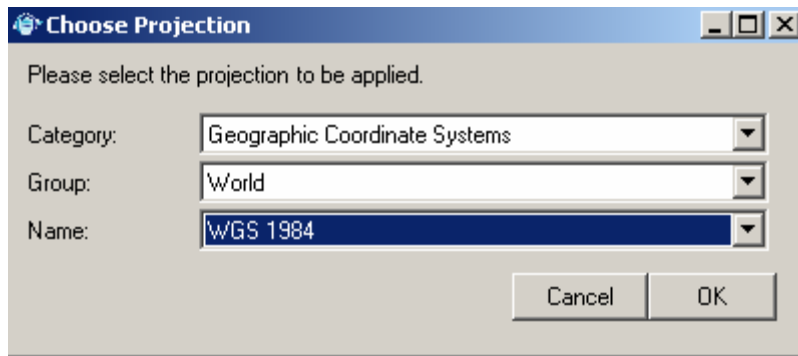
104.2.2 ***Setup for Assigning Projections: Not Applicable***

104.2.3 ***Usage of Assigning Projections***

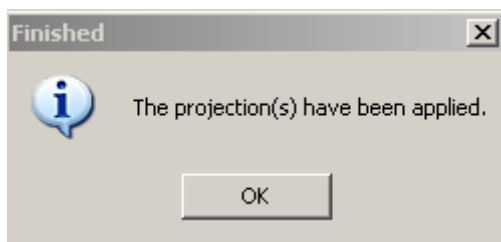
104.2.3.01 Click on [**GIS Tools**] then [**Vector**] then [**Assign Projection to Shapefile**]

104.2.3.02 A window will open for your work directory, select the file you want to create a projection file for.

104.2.3.03 A dialog will open where you can specify the desired projection.



104.2.3.04 Select the select the desired entries and press [OK]



104.2.3.05 Click [OK]



104.3 *Reprojections*

104.3.1 *General Information about Reprojections*

104.3.1.01 MapWindow allows to reproject files to place them in the same projection for modeling and mapping .

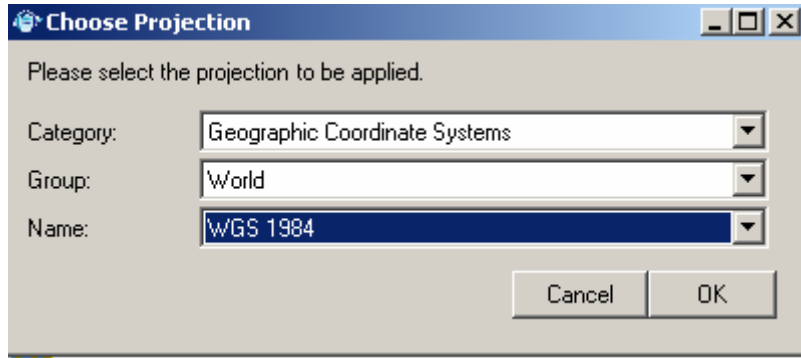
104.3.2 *Setup for Reprojections: Not Applicable*

104.3.3 *Usage of Reprojections*

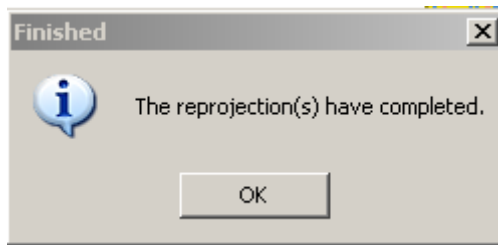
104.3.3.01 Click on [GIS Tools] then [Vector] then [Reproject a Shapefile].

104.3.3.02 A window will open for your work directory, select the file you want to create a projection file for.

104.3.3.03 A dialog will open where you can specify the desired projection.



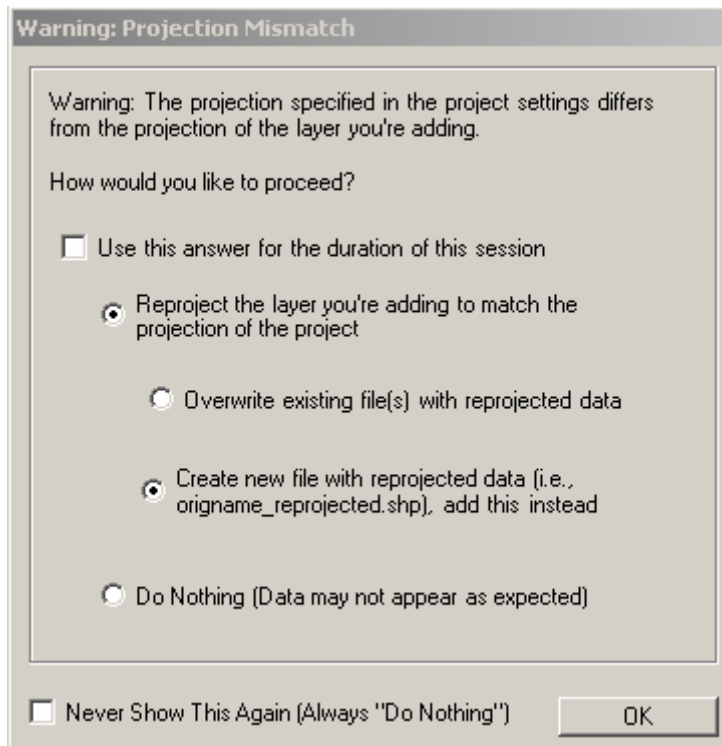
104.3.3.04 Select the select the desired entries and press [OK]



104.3.3.05 Click [OK]



NOTE #04***** You can set up the system so it automatically reprojects into the projection that your project is in.





104.4 Custom Reprojections

104.4.1 General Information about Custom Projections



ISSUE #01 ***** There currently is no way to set or save custom projections.



NOTE #05***** From Christopher Michaelis [cmichaelis@happysquirrel.com]

Basically, what we've been doing is saying "Send us your projection, either a .PRJ file or a proj4 string, along with a human-readable name, and we'll add it." This way, when we rebuild installations, it includes everyone's custom projections.

#####

200 Interface

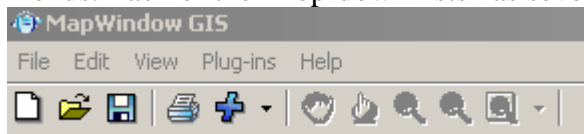
201 The MapWindow Interface



201.1 The Standard Toolbars

201.1.1 General Information about the Standard toolbar

201.1.1.01 In the upper left corner of the program is a toolbar with several drop-down menus. Each of the Drop-down lists has several functions within them.



NOTE #06***** *several of the Buttons appear in both the drop-down lists and individual tool bars. I will only define the button the first time.*

201.1.1.02

[File]

- [New] - Create a new project - See Section 101.1 for more information
- [Open] - Opens an existing project file - See Section 101.2 for more information

- -----
- [**Save**] - Save under an existing project name - See Section **101.3** for more information
- [**Save As**] - Save as a new project - See Section **101.3.3.03** for more information
- -----
- [**Print**] - Prints a hard copy of the map - See Section **801.1** for more information
- -----
- [**Settings**] - Controls general preferences of the application
- [**Recent Projects >**] - Contains a list of recently opened projects.
- -----
- [**Close**] - close the project but not the program
- [**Exit**] - Closes the program

201.1.1.03

- [**Edit**]
 - [**Copy >**] - Places any of the following elements on the system clipboard.
 - [**Map**]
 - [**Legend**]
 - [**Scale Bar**]
 - [**North Arrow**]
 - [**Export Map >**] Exports any of the following elements to a graphic file.
 - [**Map**] - See Section **801.1.3.01** for more information
 - [**Georeferenced Map**] - Exports a georeferenced image from the current map view - See Section **801.1.3.05** for more information
 - [**Scale Bar**] - See Section **801.1.3.06** for more information
 - [**North Arrow**] - See Section **801.1.3.07** for more information
 - -----
 - [**Preview Map >**]
 - [**Update**] - Updates or refreshes the Preview Map Pane
 - [**Clear**] - Clears the Preview Map Pane

201.1.1.04

- [**View**]
 - [**Add Layer**] - Adds a geospatial layer to the map. - See Section **401.1.3** for more information
 - [**Remove Layer**] - Removes the selected geospatial layer. - See Section **402.4** for more information
 - -----
 - [**Clear Layers**] - Clears all layers from the map.
 - -----
 - [**Zoom In**] - Changes the current cursor behavior to zoom in mode - See Section **301.2** for more information

- [**Zoom Out**] - Changes the current cursor behavior to zoom out mode
- See Section **301.3** for more information
- [**Zoom to Full Extent**] - Zoom the map to the full extents of all currently loaded data. - See Section **301.4** for more information
- -----
- [**Previous Zoom**] - Will return the map to the previous zoom. - See Section **301.5** for more information
- [**Next Zoom**] - This is used with Previous Zoom to move back and forward within saved zoom extents. - See Section **301.5** for more information

201.1.1.05

[**Plug-ins**]

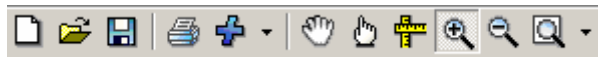
- [**Edit Plug-ins**]
- [**Scripts...**]
- -----
- [**Document Launcher**] - See **604.1.2** for more information
- [**GIS Tools**]
- [**Identifier**] – See Section **405.1** for more information
- [**Shapefile Editor**]
- [**Shapefile Labeler**] - See Section **404.1** for more information
- [**Table Editor**]




201.1.1.06









[**Help**]

- [**MapWindow Documentation Online**] - During startup MapWindow will check for an active internet connection and, if one is available, this menu will link to the MapWindow web-based documentation. If not, it will link to local documentation. - See Section **901.1.4** for more information
- [**MapWindow Documentation Offline**] - During startup MapWindow will check for an active internet connection and, if one is available, this menu will link to the MapWindow web-based documentation. If not, it will link to local documentation.
- -----
- [**Keyboard Shortcuts**]
- -----
- [**Welcome Screen**] - Will display the Welcome Screen
- [**About**] - Will display the About screen

201.1.1.07



-  - New Project - See Section **101.1** for more information
-  - Open Project - See Section **101.2** for more information
-  - Save Project - - See Section **101.3** for more information

-  - Print - See Section **801.1** for more information
-  - Add Map Layer
 - [Add Layer] - See Section **401.1.3** for more information
 - [Remove Layer] - See Section **402.4** for more information
 - [Clear Layer]
-  - Pan - See Section **302.1** for more information
-  - Select - See Section **406.1** for more information
-  - Measure Distance - See Section **303** for more information
-  - Zoom In - See Section **301.2** for more information
-  - Zoom Out - See Section **301.3** for more information
-  - Zoom
 - [Previous] - See Section **301.5** for more information
 - [Next] - See Section **301.5** for more information
 - -----
 - [Full Extents] - See Section **301.4** for more information
 - [Layer] - See Section **301.6** for more information
 - [Selected]



201.2 Additional Menus:

201.2.1 General Information about Additional Menus:

201.2.1.01 If you click on the [Plug-ins] menu item, a drop-down menu will appear. By clicking on different plug-in names you can add extra menus and toolbar buttons. See section **600** for details on plug-ins and their uses.

201.2.1.02 [Document Launcher] - This plug-in launches documents or web pages from features on a map. If your shapefile has a field called FileOrURL then, when a user selects a shape, the specified file or URL in the attribute table will be launched – See **604.1.2** for more information

201.2.1.03 [GIS Tools] - Generic vector and raster tools for MapWindow.







- [Raster >]
 - [Assign Projection to Grids]
 - [Reproject Grids]
 - [Change Grid Formats]
 - [Create Grid Images]
 - [Resample Grids]

- [Merge Grids]
- [Clip grid with Polygon]
- [Geo-reference an Image or Grid]
- [Generate a Contour Shapefile]
- [Vector >]
 - [Assign Projection to Shapefile] - See Section **104.2** for more information
 - [Reproject a Shapefile] - See Section **104.3** for more information
 - [Buffer Shapes] - See Section **603.2.3** for more information
 - [Calculate Polygon Areas] - See Section **603.2.4** for more information
 - [Clip Polygon with Line] - See Section **603.2.5** for more information
 - [Clip Shapefile with Polygon] - See Section **407.3** for more information
 - [Erase Shapefile with Polygon] - See Section **603.2.7** for more information
 - [Merge Shapes] - See Section **603.2.8** for more information


201.2.1.04 [Identifier] -  - Identifier tool for raster and vector data - See Section **405** for details

201.2.1.05 [ShapeFile Editor] - Edit and create shapefiles and shape geometry.



-  - Create New Shapefile - See Section **407.1** for more information
-  - Add new Shape to current Shapefile
-  - Remove Shape from current Shapefile
-  - Move an existing vertex in a shape - See Section **407.2.3.08** for more information
-  - Add a vertex to an existing shape
-  - Remove a vertex from an existing shape

201.2.1.06 [Shapefile Labeler]  - Contains a tools for adding labels to features in a vector (shapefile) layer. - See Section **404.1** for more information

201.2.1.07  - The MapWindow Table Editor is a quick and easy way to view and modify shapefile table data. - See Section 407.2 for more information

#####

 **300 Tools**

 **301.0 Zoom Tools**



301.1 Map Zoom Tools

301.1.1 General Information for Map Zoom Tools

301.1.1.01 When working with a map it may be necessary to zoom in to view an area in more detail, or zoom out to see a larger area.




301.2 Zooming In

301.2.1 General Information for Zooming In: Not Applicable

301.2.2 Setup for Using the Zoom-in Function: Not Applicable

301.2.3 Steps for Using the Zoom-in Function

301.2.3.01 Click the  button on the Tools toolbar, move the mouse over the map, single click to zoom in around a point.

301.2.3.02 Zoom in to a specific area. Click and hold the left mouse. Move the mouse to drag a rectangle to create the area you wish to zoom to. Release the mouse button to complete the zoom.

301.2.3.03 If your mouse has a scroll wheel on top, it can be used to zoom in by rolling it forward.

301.2.3.04 When in Zoom Out mode, a right-click on the mouse will Zoom in.



301.3 *Zooming Out:*

301.3.1 *General Information for Zooming Out: Not Applicable*

301.3.2 *Setup for Using the Zoom-out Function: Not Applicable*

301.3.3 *Steps for Using the Zoom-out Function*

301.3.3.01 Click the [**Zoom Out**] button on the Tools Toolbar, move the mouse over the map. Single Click to zoom out around a point

301.3.3.02 If your mouse has a scroll wheel on top, it can be used to zoom out by rolling it backwards.

301.3.3.03 When in Zoom In mode, a right-click on the mouse will Zoom Out



301.4 *Zooming to Full Extent*

301.4.1 *General Information for Zooming to Full Extent*

301.4.1.01 Zooming to full extent resets the map view so that every feature of every layer is contained within the visible extent

301.4.2 *Setup for Zooming to Full Extent: Not Applicable*

301.4.3 *Steps for Zooming to Full Extent*

301.4.3.01 Click the [**Zoom**] button on the Tools toolbar

301.4.3.02 Select [**Full Extents**] in drop down menu



301.5 *Zooming to Previous or Next Extent:*

301.5.1 *General Information for Zooming to Previous or Next Extent*

301.5.1.01 Zooming to previous extent allows stepping back through past map views. For example, start with a map view at full extent then zoom in to an area on the map. Now click the previous extent button; the map will return to the most recent previous map view, which was the full extent.

301.5.2 *Setup for Zooming to Previous or Next Extent: Not Applicable*

301.5.3 *Steps for Zooming to Previous or Next Extent*

301.5.3.01 For Zooming To Previous Extent – Click the [**Zoom**] button on the Tools Toolbar then select [**Previous**] on drop-down menu

301.5.3.02 For Zooming To Next Extent – Click on the [**Zoom**] button on the Tools Tool bar then select [**Next**] on drop-down menu



301.6 *Zoom to Layer Extent*

301.6.1 *General Information for Zoom to Layer Extent*

301.6.1.01 Zoom to a layers extent will set the map display to an area just big enough to show every feature in the currently selected layer.

301.6.2 *Setup for Zooming to Layer Extent: Not Applicable*

301.6.3 *Steps for Zooming to Layer Extent*

301.6.3.01 Click on the [**Zoom**] button on the main toolbar then [**Layer**] on drop-down menu

301.6.3.02 Right-click on the layer in the legend, a new menu will popup. Click on [**Zoom to Layer**].

 **302.0** *Panning*



302.1 *Panning*

302.1.1 *General Information for Panning*

302.1.1.01 Panning allows you to move the map display around to show areas outside of the current viewing area without changing the scale of the map.

302.1.2 *Setup for Panning: Not Applicable*

302.1.3.01 Click the [**Pan**] button on the Tools toolbar.

-
- 302.1.3.02 Move the mouse over the map.
 - 302.1.3.03 Click and hold down the left mouse button.
 - 302.1.3.04 Move the mouse, still holding down the mouse button. The map will move with the mouse.
 - 302.1.3.05 Release the mouse button to complete the pan operation

303.0 Measuring





303.1 Measuring distance

303.1.1 General Information for measuring distance

303.1.1.01 The measurement tool is used to calculate distances between two or more user-defined points on the map.

303.1.2 *Setup for Measuring Distance: Not Applicable*

303.1.3 Measuring Distance

303.1.3.01 Click on the   Tool

303.1.3.02 Click on the first point

303.1.3.03 Click on the next point

303.1.3.04 On the bottom left of the main application window is displayed the cumulative distance. Right Click to start over again with new measurement.

303.1.3.05 Click the  button again to unselect it and leave Measure mode.

#####

400 Vector Data

401.0 Adding Vector Data



NOTE #07 ***** *in this exercise we will use d:\workspace or the directory you created when you installed the software*



401.1 Adding Vector Map Data

401.1.1 General Information for Adding Vector Map Data:

401.1.1.01 MapWindow supports three different types of Shapefiles:

- Line Shapefile: Composed of line segments that may be interconnected but don't have to be. Can have vertices; these can be anchor points about which a line turns, for example.
- Point Shapefile: Composed of individual points. Cannot have vertices, as the point itself is the shape.
- Polygon Shapefile: Composed of solid shapes which are, in turn, composed of interconnected vertices. These are anchor points about which the lines composing the shape turn.

401.1.1.02 Each GIS data set will be added to the map project as a single layer

401.1.2 Setup for Adding Vector Map Data: Not Applicable

401.1.3 Adding Vector Map Data

401.1.3.01 Add data by clicking on  or by clicking on [View] then [Add Layer]

401.4.3.02 When the Add Map Layer window opens, navigate to the data directory you want, then click on the GIS data you want to add as a new layer in your project.



NOTE: #08 ***** *If you want to add multiple layers, hold down the control key and select each addition layer by clicking on it.*

401.4.3.03 Click the [Open] button. The new layer will be added to your project



TASK #01 ***** *Go ahead and add afrbeppp020, airportx020, countyp020, fedlandp020, hydrogpl020, hydrogpp020, mortalp020, railrdl020, roadtrl020, statep020, urbanp020, and zmussel020 layers to your project.*



TASK #02 ***** *Leave the Statep020 Layer turned on and turn the other layers off by removing the check inside the boxes next to the layer names in the legend.*

402.0 The Legend



402.1 Using the Legend to Control the Layers

402.1.1 General Information about Using the Legend to Control the Layers

402.1.1.01 The legend is a graphical representation of all the map layers in the current project. The position of the legend is the left hand side of the screen. The legend offers layer manipulation functionality including but not limited to changing a layers symbology or the order of display for the layers. The legend is always displayed

402.1.1.02 Legend Information

Legend	Meaning
	Point Layer
	Polygon
	Polyline

- Visibility Checkbox: This indicates whether a layer is always visible (checked), always hidden (blank).
- Text: This is the name of the layer.
- Each line represents a layer of data that's in the main view. The image to the right of the legend is an indicator to help identify the data layer. If, for example, you had a polygon Shapefile that was filled, the color in this image would be the same as the fill color. For a line Shapefile, the color here will match the color the line is drawn with. Some layers have a plus or minus next to them. This indicates that they are collapsible or expandable. For example, a grid may have a coloring scheme indicating terrain height which may be displayed by expanding the layer, and hidden by collapsing it.

402.1.1.03 Right Click Functionality

- **Add Group** – bunch a selected set of layers under a common header

- [Add Layer]
- [Remove Layer]
- [Clear Layers] – Removes all layers
- [Zoom to Layer]
- [View Metadata]
- -----
- [Expand Group]
- [Expand All]
- [Collapse Group]
- [Collapse All]
- -----
- [Properties]



402.2 *Changing the Layer Name.*

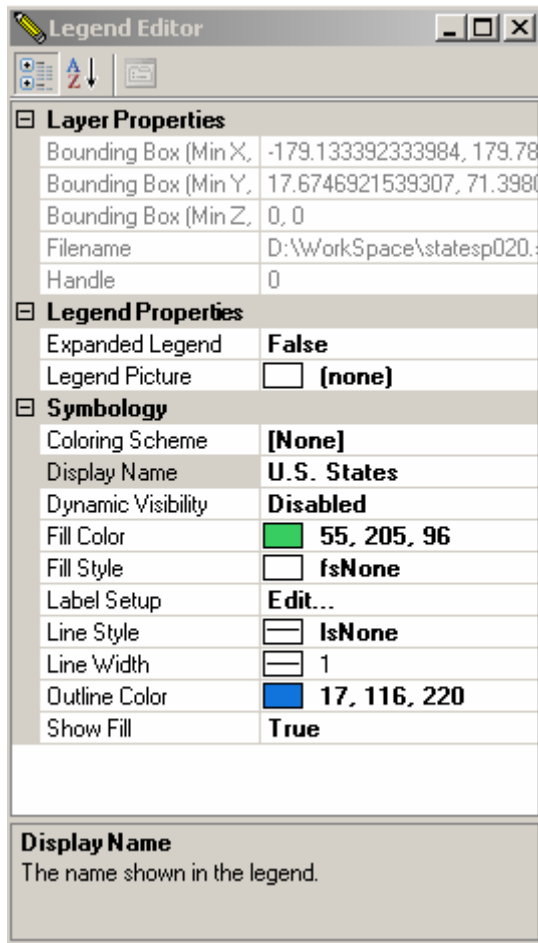
402.2.1 *General Information for Changing the Layer Name*

402.2.1.01 Changing the name of a layer does not affect the underlying data. The layer name is project dependent and will not modify any information stored against the map source.

402.2.2 *Setup for Changing the Layer Name: Not Applicable*

402.2.3 *Steps for Changing the Layer Name*

402.2.3.01 Double-click on the layer in the legend and the ‘Legend Editor’ appears



402.2.3.03 Change the text in the “Display Name” box. This will be the new layer name.

402.2.3.04 Click the [X] button to close the Layer Properties dialog. The legend will update to show the new layer name.



TASK #03 ***** Change

- *afrbeep020 to Africanize Honey Bees*
- *airportx020 to U.S. Airports*
- *countyp020 to U.S. Counties*
- *fedlandp020 to Federal Lands*
- *hydrogpl020 to Rivers and Streams*
- *hydrogpp020 to Lakes and Ponds*
- *mortalp020 to Mortality 1988-1992*
- *railrdl020 to Railroads*
- *roadtrl020 to Roads*
- *statesp020 to U.S. States*
- *urbanp020 to Urban Areas*

- *zmusslx020 to Zebra Mussels*
-



402.3 ***Changing the Drawing Order:***

402.3.1 ***General Information for Changing the Drawing Order:***

402.3.1.01 The legend indicates the order that layers are drawn in. The first layer in the legend is the top layer of the map. The last layer in the legend is the bottom layer on the map. The layers are drawn from bottom up, hence the bottom layer is drawn first then the last but one layer and so on. As a result is it important to carefully order your map layers so data is not obscured by layers placed on top.

402.3.2 ***Setup for Using the Changing the Drawing Order: Not Applicable***

402.3.3 ***Steps for Using the Changing the Drawing Order:***

402.3.3.01 Click and drag a layer to the desired location.



TASK #04 ***** *Put the layers in the following order from top to bottom,*

Zebra Mussels
Africanized Honey Bees
Airports
Roads
Railroads
Mortality 1988-1992
Rivers and Streams
Federal Lands
Urban Areas
U.S. Counties
U.S. States
Lakes and Ponds

Then save your project



402.4 ***Removing a Layer from the Map***

402.4.1 ***General Information for Removing a Layer from the Map***

402.4.1.01 Removing a layer does not remove or delete the underlying data, it just removes the reference to the layer from the project.

402.4.2 *Setup for Using the Removing a Layer from the Map: Not Applicable*

402.4.3 *Steps for Using the Removing a Layer from the Map*

402.4.3.01 Right-click on the layer in the legend, a new menu will popup.

402.4.3.02 Click on [**Remove Layer**]

402.4.3.03 Or select the layer, click on [**View**] then [Remove Layer].

402.4.3.04 If you right-click on a layer in the legend, a new menu will popup. By selecting [**Clear Layers**], it will ask you to confirm and then remove all layers.



402.5 *Making the Layer Scalable*

402.5.1 *General Information for Making the Layer Scalable: Not Applicable*

402.5.2 *Setup for Making the Layer Scalable: Not Applicable*

402.5.3 *Steps for Making the Layer Scalable*

402.5.3.01 Zoom into the scale that you want the desired layer to appear

402.5.3.02 Double click on the layer in the legend

402.5.3.03 Click the ‘DynamicVisibility’ Disabled and a drop-down arrow will appear.

402.5.3.04 Put a check in ‘ **Use Dynamic Visibility**’

402.5.3.05 Click the [**Use Current Extend**] button

402.5.3.06 Close the Legend Editor.



NOTE: #9 ***** *If you set up a dynamic visibility, and then unselect the layer in the legend, it will reset the dynamic visibility to disabled, This means you will have to reset it again.*



TASK #05 ***** *Zoom into the area around the Great Lakes*



TASK #06***** Zoom out to the Full extent of the map using the **[Full Extent]** Button



TASK #07***** using the **[Previous]** and **[Next]**, you can switch between the Great Lakes and the Whole coverage



TASK #08***** Turn on the Zebra Mussel layer and zoom to its extent



403.0 Map Symbolization



403.1 Map Layer Symbolization

403.1.1 General Information for Map Layer Symbolization:

403.1.1.01 Default Symbology - When adding a new map layer to your project a default symbol will be automatically generated. MapWindow will select a random color scheme and pick a pen and fill style appropriate to the geometry type of the data to be used for display purposes.



403.2 Changing the Default Symbology

403.2.1 General Information for Changing the Default Symbology: Not Applicable

403.2.2 Setup for Changing the Default Symbology: Not Applicable

403.2.3 Steps for Changing the Default Symbology

403.2.3.01 Double-click on the layer in the legend, the Legend Editor will appear

403.2.3.02 Changes made under the Display properties section will become the new default symbology



TASK #09***** Lets change the color of the U.S. States Layer. Right-click on the layer in the Legend. Click the **[Properties]**. Click the **'OutlineColor'** and

change it to 156, 143, 0. Then go to the ‘FillColor’ and change it to 240,219, 0. Set ‘Line Width’ to 2, Click [X] to close.



TASK #10***** Zoom to the state of Maine. Turn on the County. Right-click on the layer in the Legend. Click the [Properties]. Click the ‘OutlineColor’ and change it to 23,169,105,. Then go to the ‘Show Fill’ and change it to False. Select ‘Dynamic Visibility’, Click [Set New Dynamic Exte], Set ‘Line Style’ to lsDashDotDash, Click [X] to close.

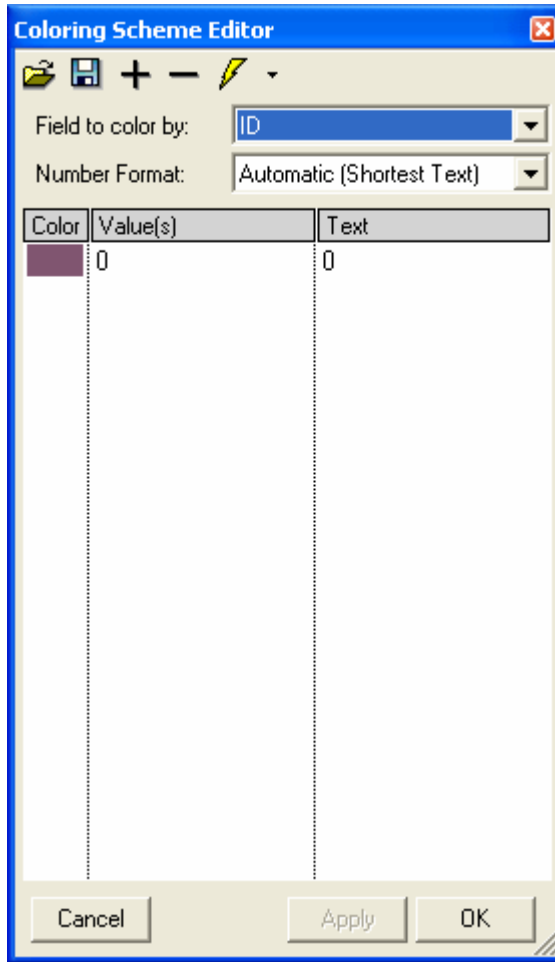
403.2.3.03 In this property edit page, you can change the color scheme (or fill color) of the layer.

403.2.3.04 Double click on the layer to open the Legend Editor

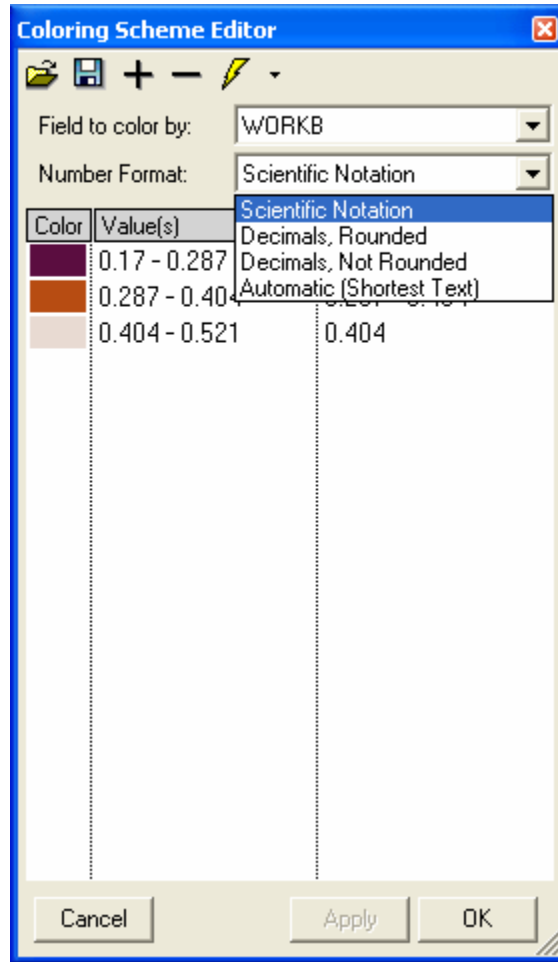


403.2.3.05 Click on the Coloring scheme and an icon will appear.

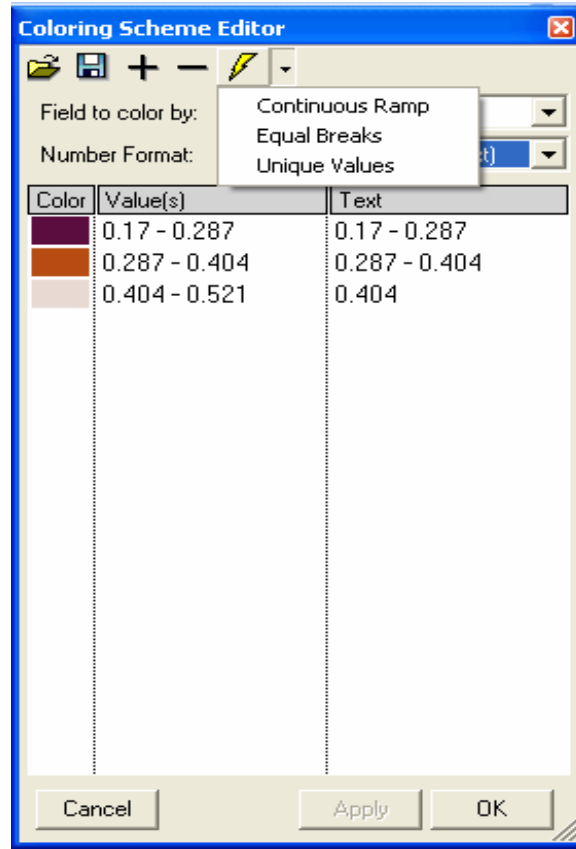
403.2.3.06 Click on the icon and a color schema editor dialog box will show up:



403.2.3.07 You can choose a field in the shape's attribute table to calculate the color on, and assign the number format of it.




403.2.3.08 By clicking on the color, you can change the color of each category, but the easiest to do it is to use the pre-defined color schema:



- 403.2.3.09 The Legend Editor will also allow you to
- Change Display properties like Point/Line color, width, and style.
 - Change layer dynamic visibility
 - Change Legend properties (Expand, picture)
 - Change Map Bitmap and Transparent Color.



TASK #11 ***** Then Turn on Zebra Mussels, double click the layer in the legend,

click on coloring scheme, select Y as field to color by click on  and select Continuous Ramp on Dropdown list. Set start color to blue and end color to red, click [OK]

Set value as follows 1988-1990, 1991-1995, 1996-2000, 2000-2005, 2006-3000, Click [OK], Set 'PointSize' to ptTriangleUp. Set 'PointSize' to 5, Click [X] to close

You can now see the spread of Zebra Mussels across the eastern United States



404.1 Adding a Label to a Layer

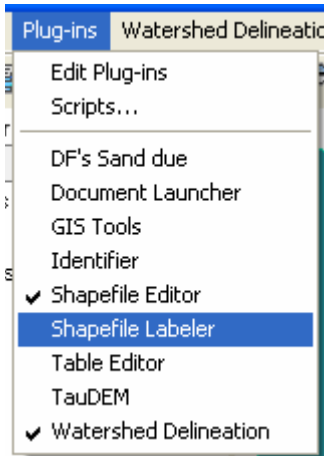
404.1.1 General Information for Adding a Label to a Layer

404.1.1.01 Label themes are an easy method to add dynamic text labels to geometry feature on the map. MapWindow will extract a user-defined field from the map data to be used as the label text.

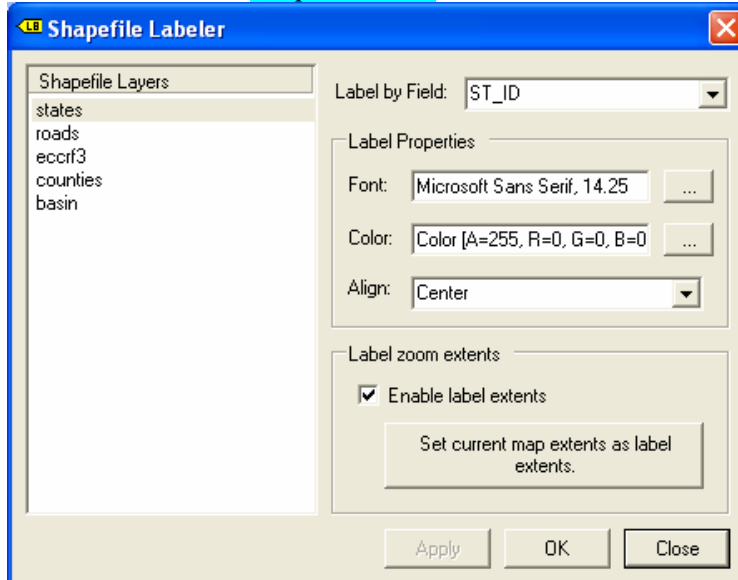
404.1.2 Setup for Adding a Label to a Layer: Not Applicable

404.1.3 Steps for Adding a Label to a Layer

404.1.3.01 Make sure the Shapefile Labeler plug-in is checked in the [Plug-ins] menu.



404.1.3.02 Then click on the [Shape Labeler] button on main toolbar




404.1.3.02 Select the theme or layer you want to label.

404.1.3.03 Select the 'Label by Field' value you want to label with.

404.1.3.03 Click [**Apply**] then [**Ok**], or just [**OK**]



ISSUE #02 ***** *Apparently, if you set a label column or field, the program will label each polygon or segment, so if you label state, each island in Florida would be labeled separately and the labels overlap. This should not occur if the polygon representing your feature is a Multi-part polygon, such that the individual islands are all part of the same shape. For example, see the United States sample in the MapWindow samples folder. In this sample data, all of the islands of Florida are part of one shape and so the overall state will get only one label.*

404.1.3.04 To remove the label theme, Click on the [**Shape Labeler**]  button on main toolbar and set the 'Label by Field' value to 'none'. Make sure when you do this that the layer for which you want to turn off the labels is selected in Layers List in the Labeler window.



TASK #12 ***** *Go ahead and label U.S. States with the state names. Examine Florida or Maine, then remove the labels.*



TASK #13 ***** *Go ahead and label U.S. Counties with the County names. Zoom in until the counties and their name appear and then zoom out again to the Zebra Mussel Coverage*

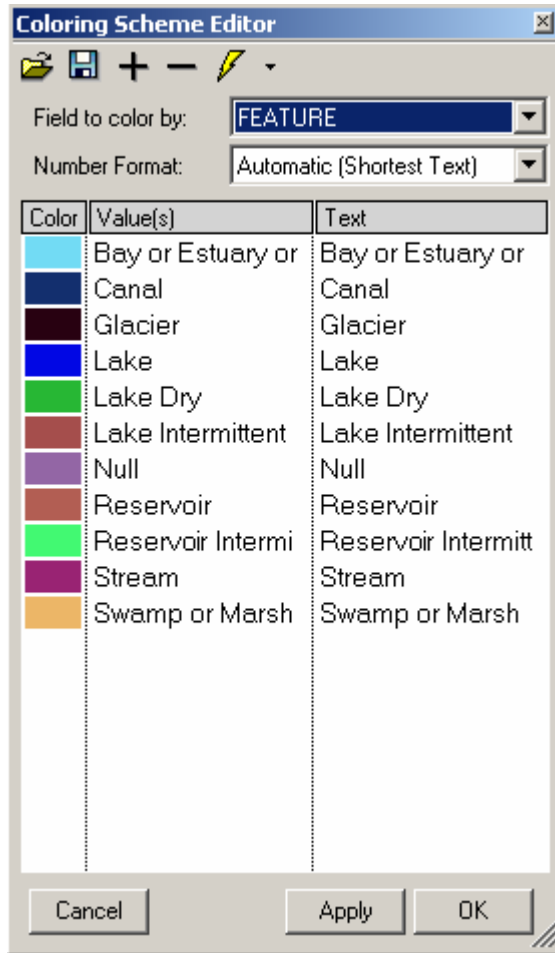


TASK #14***** *Right-click on Lakes and Ponds, Select properties, click on*

Coloring Scheme, set "Field to color by" to 'Feature', click on



and select 'Unique Value',



change the colors as follows

'Null' to 'FillColor' RGB 240,219, 0

'Glacier' to RGB 250, 250, 250



*'Bay or Estuary or Ocean', Canal, Lake, Reservoir, Stream to RGB
76,143,209*

'Swamp or Marsh' to RGB 76,209,185

*'Lake Dry', 'Lake Intermittent', 'Reservoir Intermittent', to RGB
197,132,2*

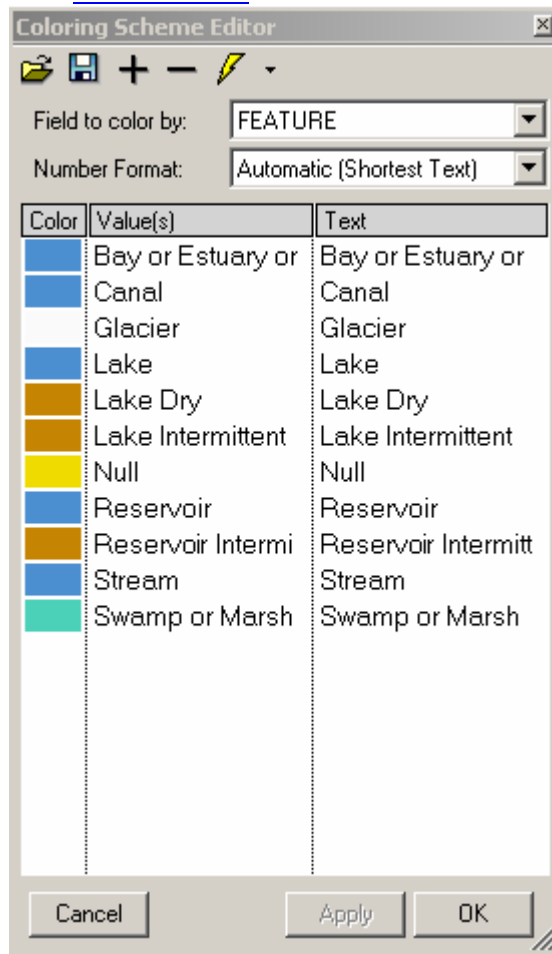
*Click [**Ok**], set 'Line Width' to 0, click [x] to close*



NOTE #10***** *Before you click [**Ok**], you may want to choose to save this coloring scheme for later use (to avoid having to re-enter it manually). To save the current coloring scheme, click the  button on the Coloring Scheme Editor form. This will prompt you for a name filename where the current coloring scheme should be saved. Similarly, to re-load an existing coloring scheme from a file, and to apply it to the current data, click the  button and browse to the coloring scheme file you previously saved.*

Click **[OK]**

Set “OutlineWidth” to ‘0’ and then turn on layer



TASK #15*****Open the State layer properties and set “ShowFill” to ‘False’ and close



ISSUE #03 ***** You can not hide null layers and have to place this layer on the bottom of the stack, which would not allow you to place this layer over an image.



TASK #16*****Zoom into the State of Wisconsin, Turn on Rivers and Streams, Right click on it in the legend, Click the **[Properties]**. Set “LineColor” to RGB 76,143,209, Set “DynamicVisibility”, zoom in and out



TASK #17***** Turn on Urban Areas, Right click on it in the legend, Click the [Properties]. Set “FillColor” to RGB 244,150,104; Set “OutlineWidth” to ‘0’, close

405.0 Manipulating the map



405.1 Querying Map Features

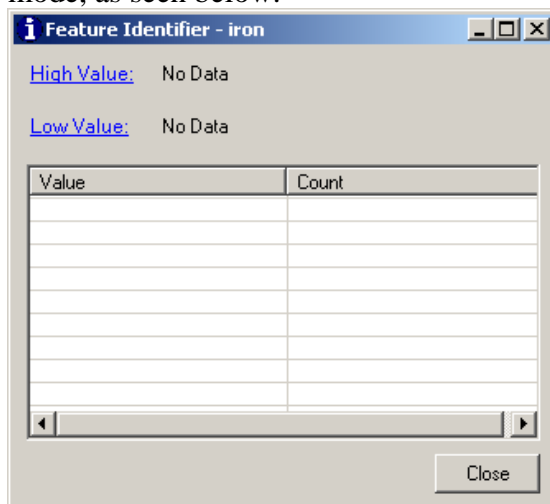
405.1.1 General Information for Querying Map Features

405.1.1.01 Identifying features - The identify tool is the simplest way to retrieve attribute data about a feature on the map Clicking the Identifier button () will activate the Identifier plug-in and set your cursor into identifier mode.

405.1.1.02 The layer to be identified is set via the selected layer in the legend, as seen below. (The darker rectangle indicates selected layer).

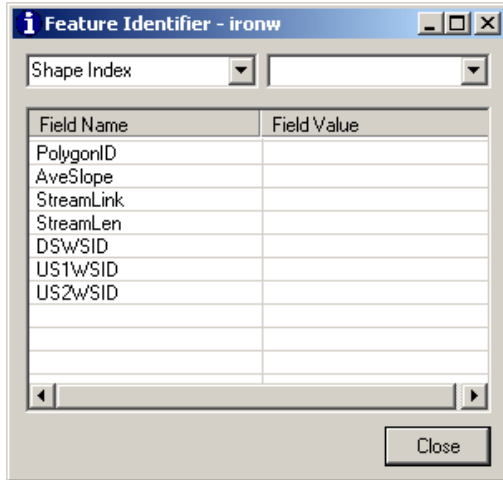


405.1.1.03 If a raster layer is selected, the identifier window will be put into Raster mode, as seen below.

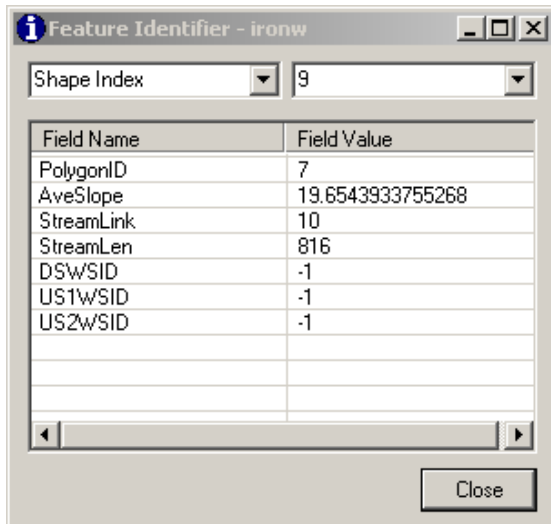


405.1.1.04 If a shapefile layer is selected, the identifier window will be put into Shapefile mode, as seen below.

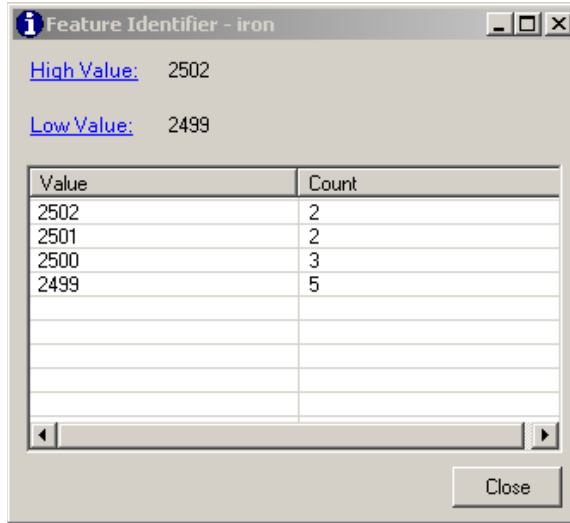
MapWindow GIS Tutorial
6/6/2006



405.1.1.05 The identifier can be used to select a shape in a shape layer or a cell or group of cells from a raster and show information on them.
vector



or raster



405.1.1.06 The identify result tool has a limited radius of effect.

405.1.2 Setup for Querying Map Features:

405.1.2.01 Click the **[Plug-ins]** menu from the main menu.

405.1.2.02 Click on the **[Identifier]**

405.1.3 Steps for Querying Map Features

405.1.3.01 Select the layer you wish to query in the legend

405.1.3.02 Click the **[Identifier]** button on the toolbar

405.1.3.03 Move the mouse over the map and click on the feature to be identified.
The Feature Identifier dialog will be displayed.

406.0 Selecting Features



406.1 Selecting Features by Rectangle

406.1.1 General Information for Selecting Features by Rectangle

406.1.1.01 Select by Rectangle allows you to select features on the map by drawing a rectangle. Any features of the active layer that fall within the selection tolerance of the rectangle will be selected

406.1.2 *Setup for Selecting Features by Rectangle: Not Applicable*

406.1.3 *Steps for Selecting Features by Rectangle*

406.1.3.01 Click on the layer you want to select feature from on the legend. This will make the layer active.

406.1.3.02 Click the **[Select]** button  on the toolbar.


406.1.3.03 Move the mouse over the map and click and hold the mouse button. This click will represent the first corner of the rectangle.

406.1.3.04 Move the mouse to another location, keeping the mouse button held down.

406.1.3.05 Release the mouse button to specify the opposite corner of the rectangle. Features of the active layer that fall within the selection tolerance will be selected and drawn.



NOTE #11** ** by holding down the control key, you can draw additional rectangles and add the selection to the original selected data.*

406.1.3.06 Viewing Attribute Data of Selected Features by click on .

406.1.3.07 Click on **[View]**

406.1.3.08 Click on **[Show Selected]**, the Attribute Table data for the selections will be shown.

406.1.3.09 Click on the **[Selection]** and then **[Export Selected Features]** to create a new shapefile consisting only of these selected features.

 **407.0** *Data Editing and Creating*



407.1 *Creating a New Layer*


407.1.1 *General Information about Creating a New Layer:*

407.1.2 *Setup for Creating a New Layer:*

407.1.2.01 Click the [**Plug-ins**] menu from the main menu.

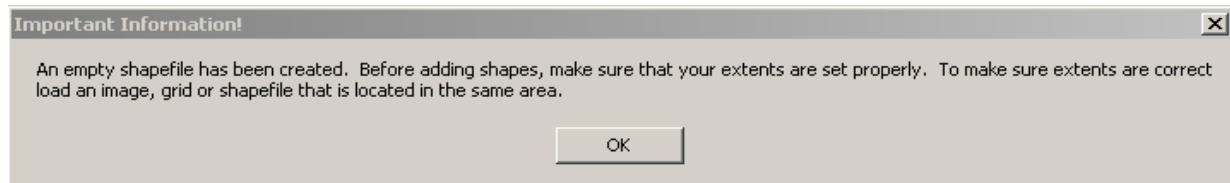
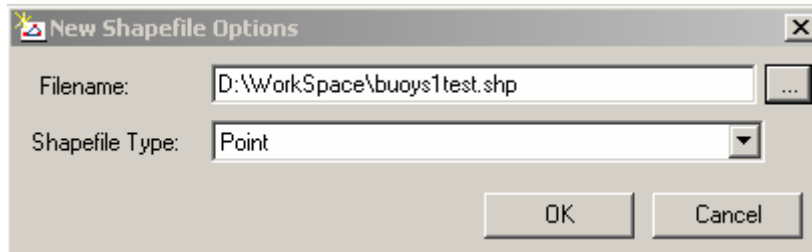
407.1.2.02 Click on the [**Shapefile Editor**]


407.1.3 Usage of Creating a New Layer


407.1.3.01 To create a new layer for editing, choose  [**Create New Shapefile**] from the main menu.

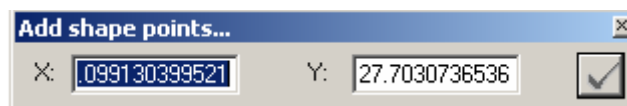
407.1.3.02 The New Shapefiles Options dialog will be displayed. Choose the type of layer (point, line, or polygon).

407.1.3.03 Type in File name including path



407.1.3.04 To complete the creation of the new layer, add the desired attributes by clicking on the  button and moving the cursor to the point to be added entering x, y values by right clicking.

 **ISSUE #04** ***** *You should be able to enter the positional data for point shapefiles image by entering it at the user Interface rather than just estimating off the map. This is a known bug that will be addressed in a future version.*



 **TASK #18******* *Create a new layer called buoysTest and add the following points*

<i>callsign</i>	<i>lat</i>	<i>long</i>
<i>SGOF1</i>	<i>29.41</i>	<i>-84.86</i>
<i>DRYF1</i>	<i>24.64</i>	<i>-82.86</i>
<i>SECG1</i>	<i>30.8</i>	<i>-80.32</i>
<i>DUCN7</i>	<i>36.18</i>	<i>-75.75</i>




407.2 *Editing a Layer*


407.2.1 *General Information for Editing a Layer*

407.2.1.01 MapWindow supports basic capabilities for editing spatial data. Before performing any edits, always make a backup of the dataset you are about to edit.

407.2.2 *Setup for the Editing a Layer: Not Applicable*

407.2.3 *Steps for Editing a Layer*

407.2.3.01 If you wish to edit an existing layer, add attributes by clicking on the  button and moving the cursor to the point to be added entering x, y values by right clicking.

407.2.3.02 Click on  to open the attribute table for editing


407.2.3.03 Click on [**Edit**] then [**Add Field**].

407.2.3.04

407.2.3.05 When you click on [**Apply**] or [**OK**], it will come up and ask you if you want to save the changes that were made, click [**Yes**].



TASK #19***Add a Call_Sign column and enter the four buoys.**

- 407.2.3.06 Under **[Tools]**, you can also do **[Find]** and **[Replace]**.
- 407.2.3.07 Under **[Edit]**, you can **[Rename Field]** or **[Remove Field]**
- 407.2.3.08 If a point or vertex is in the wrong place, you can adjust it using 
- 407.2.3.09 There are also tools to add and remove vertex from a shape.
- 407.2.3.10 There are two clipping tools as well. What you will need:
- The input shapefile that you want to clip.
 - A shapefile containing at least one polygon (or line) to clip with. If you don't already have one, use the shapefile editor tool to create one.
-



407.3 Clipping a Layer

407.3.1 General Information for Clipping a Layer: Not Applicable

407.3.2 Setup for Clipping a Layer: Not Applicable

407.3.3 Steps for Clipping a Layer

- 407.3.3.01 Navigate to **[GISTools]** > **[Vector]** > **[Clip Shapefile With Polygon]**
- 407.3.3.02 Select a shapefile to clip from the drop-down list (if already loaded in MapWindow) or browse to one using the button on the far side (folder icon).
- 407.3.3.03 Select a POLYGON shapefile to clip with from the drop-down list or browse to one.
- 407.3.3.04 Click the **[Select Shapes]** button. Your cursor will turn into the selection tool (hand) and you can now click on the shapes that you want to do the clipping with.
- 407.3.3.05 Click the **[Done]** button (it has replaced the **[Select Shapes]** button of the previous step). The number of shapes that you selected will be displayed on the bottom of the form.
- 407.3.3.06 If you do not like the default result file, rename it or browse to a file that you would like to save the results to (any previous contents will be overwritten).

- 407.3.3.07 Push the **[OK]** button. The cursor should change to an hour glass and the form will close when it has completed the process.
- 407.3.3.08 The outlines of your clipped shapes should now be displayed on the screen (unless you unchecked the **"Add Results to Map"** box).
- 407.3.3.09 Clipping with lines is very similar to the above, except that you must select both the polygon you want to clip and the line to clip it with (and it really doesn't like you clipping with multiple lines). Just be sure to always press the **[Done]** button after selecting your objects.



NOTE 12******You should not need to have any projection set when using the clipping tools. They should work with whatever coordinates they are given. But if it does not work, try setting a projection and try it again*

#####

 **500.0 Raster Data**

 **501.0 Raster Data**



501.1 Raster Data

501.1.1 General Information about Raster Data

501.1.1.01 Definition: Raster data in GIS are matrices of discrete cells that represent features on, above or below the earth's surface. Each cell in the raster grid is the same size, and cells are usually square but can be rectangular in MapWindow. Typical raster datasets include remote sensing data such as aerial photography or satellite imagery and modeled data such as an elevation matrix. In the case of true georeferenced imagery, such as true color land photography (as might be obtained in MrSID or GeoTIFF format), the data of the cells of the raster image is not accessible in the normal manner of grids, but instead it is displayed simply as an image with whatever RGB values are stored within it normally.

501.1.1.02 Supported Raster Formats:
MapWindow supports a number of different raster and image formats. Currently implemented formats include:

- Utah State University Binary Grid (*.bgd)
- Arc/Info Binary Grid (sta.adf)
- Arc/Info ASCII Grid (*.asc)


-
- Arc/Info FLT grid (*.flt)
 - GeoTIFF (*.tif)
 - USGS ASCII DEM (*.dem)
 - Spatial Data Transfer Standard Grids (with some limitations) (*.ddf)
 - PAux (PCI .aux Labeled)
 - PIX (PCIDSK Database) (*.pix)
 - DTED Elevation Raster (*.dhm or *.dt0 or *.dt1)
 - ECW Enhanced Compression Wavelet (*.ecw)
 - Erdas Imagine Images (*.img)
 - Arc/Info Grid Images (*.grd or hdr.adf)
 - Arc/Info HDR/BIL Images (*.bil)
 - MrSID Images (*.sid)
 - Bitmap Images (*.bmp)
 - GIF Images (*.gif)
 - JPEG/JPEG2000 Images (*.jpg or *.jp2)
 - Portable Network Graphics Images (*.pgm, *.pnm, *.png, *.ppm)
 - TIF Images (*.tif)
 - Windows Metafile (*.wmf)

501.0.2.02 Because the raster implementation in MapWindow is based on the GDAL library, other raster formats implemented in GDAL are may become available.

501.0.2.03 Unlike vector data, raster data typically do not have an associated database record for each cell.

501.1.2 *Creation or Setup Subsection: Not Applicable*

501.1.3 *Loading Raster Data*

501.1.3.01 Raster layers are loaded either by clicking on the Add Layers icon () or by selecting the [View] and then [Add Layer] menu option. More than one layer can be loaded at the same time by holding down the Control key and clicking on multiple items in the file dialog.



501.2 *Legend Editor*

501.2.1 *General Information about Legend Editor*

501.2.1.01 The properties associated with Rasters are edited via the layer properties, which can, in turn, be accessed through the Legend Editor.

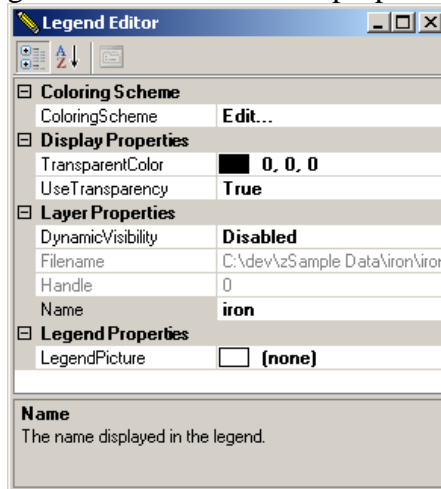
501.2.1.02 These properties can include the color scheme, hillshading, color transparency, dynamic visibility, and a legend icon

501.2.2 Setup of Legend Editor: Not Applicable

501.2.3 Usage of Legend Editor

501.2.3.01 The Legend Editor is accessed by double-clicking on a layer item in the legend or right-clicking on it and selecting [**Properties**].

501.2.3.02 In the case of Raster Grids, this will display the following window which gives access to the raster properties.



501.2.3.03 If the raster properties being viewed are for a Grid-type raster, then it is possible to alter the way in which that raster is displayed and colored. This is done through the Coloring Scheme Editor.

501.2.3.04 MapWindow allows partial transparency of the grids by allowing a user to choose a transparency color and then set Transparency to true.

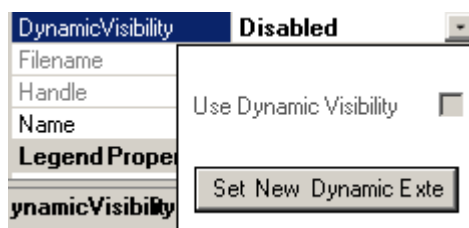
501.2.3.05 What this will do is make all cells of that color completely transparent.

501.2.3.06 Most often this is used to set black to the color of the NoData values and then set it transparent so that NoData cells will be transparent in the grid display.

501.2.3.07 Dynamic visibility is a feature in MapWindow whereby a user can set the viewing extents at which a layer is displayed or hidden.


501.2.3.08 Most often this is used with shapefiles to display complex shape files only when zoomed in to a close scale, but it can be used with Rasters as well.

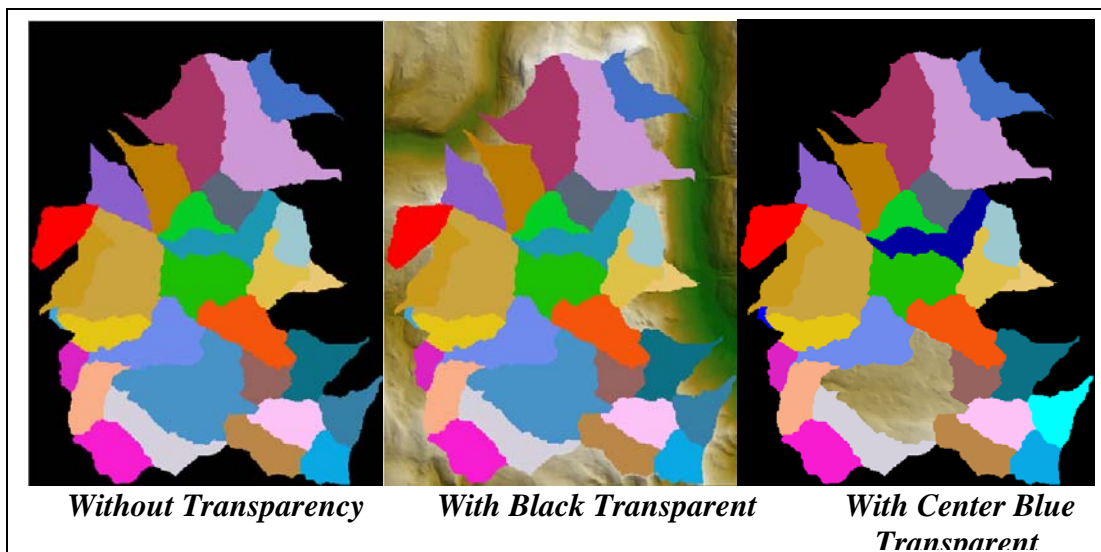
501.2.3.09 To do this, zoom to the scale/extents where you wish for the layer to be visible, open the Legend Editor and then select the Dynamic Visibility option, then click the [Set New Dynamic Extents] button and it will automatically set visibility to true. Now if you zoom out beyond those extents, the layer will disappear and if you zoom in to that level, it will reappear.



501.2.3.10 To turn it off, simply select the Dynamic Visibility option in Legend Editor and uncheck the “Use Dynamic Visibility” Option

501.2.3.11 To change the display name of the layer, open Legend Editor and select the Name option, then change the text found there to the new name

501.2.3.12 To change the icon which displays to the left of the layer name in the Legend, open Legend Editor and select the LegendPicture option, then click the  button, which will open up a file browser. Select the icon file you wish to use and open it and it will be used as the layer icon.






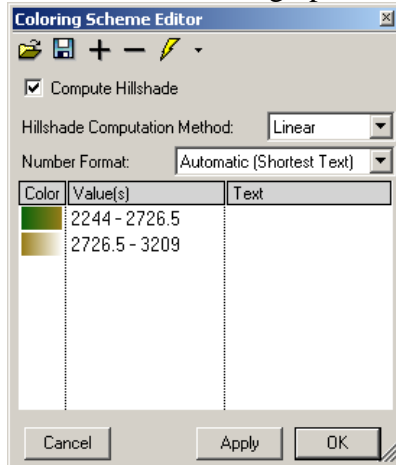
501.3 *Coloring Scheme Editor*


501.3.1 *General Information about Coloring Scheme Editor: Not Applicable*


501.3.2 *Setup of Coloring Scheme Editor: Not Applicable*


501.3.3 *Usage of Coloring Scheme Editor*


501.3.3.01 Within the Legend Editor, select the ColorScheme “Edit...” cell then click the  button to bring up the Coloring Scheme Editor, as seen below.



501.3.3.02 The  will provide an open file browser which allows you to select a *.mwleg file which will contain a coloring scheme to use for the grid

501.3.3.03 The  will provide a save file browser which allows you to select a *.mwleg file which the current coloring scheme will be saved to.

501.3.3.04 The  will add a new color break to the list below. By using this, you can develop fully custom coloring schemes by adding ranges of values to color in certain ways and changing the display color or gradient as you wish.

501.3.3.05 The  will remove a selected color break from the list.

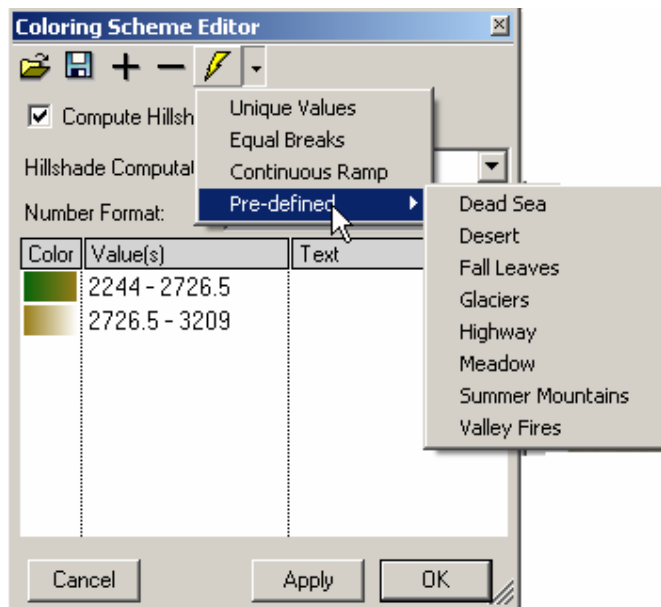
501.3.3.06 If the Compute Hillshade checkbox is checked, the display of the grid will be generated in such a way that it gives it a three-dimensional feel. This only works well with DEMs however and thus the option can be turned off to simply display the grid as flat values by the color breaks.

501.3.3.07 There are three different types of algorithms to generate the hillshade, the default Linear, a Logarithmic, and an Exponential. Selecting these from the drop-down will change how the hillshade displays and some are more useful for certain datasets.

501.3.3.08 The Number Format dropdown lets you select different styles for displaying the range of values in the legend, as sometimes decimal or scientific notation are needed. The default is to use the shortest method of display.

501.3.3.09 The [Cancel], [Apply], and [OK] buttons all act as standard dialog buttons to leave without changes, apply changes to the raster without leaving, and apply changes and leave.

501.3.3.10 As can be seen below, the  button is used to automatically colorize the grid by setting up predefined color breaks via the drop down menu





501.3.3.11 The Unique Values option will seek to find all the unique data values in a grid and assign a unique color to each of them. In a DEM where there are thousands of unique values, this is not possible, but in other data sets this can be quite helpful for making distinction between different data

501.3.3.12 The Equal Breaks option will prompt for the number of breaks and then seek to divide the dataset range equally across that number of breaks and assign a unique value to each break. This can be a good way to set up groups within the range.

501.3.3.13 The Continuous Ramp option will prompt for two colors which will then be used in the color scheme as a gradient over the entire data range for

coloring the grid. Distinct colors are recommended to avoid confusion of display.

501.3.3.14 Finally, the Predefined sub-menu contains a series of MapWindow custom color schemes which have been developed to work well with DEMs and give distinct elevation breakdown by use of two gradient color breaks. The default color scheme with which all DEMs are opened is Summer Mountains.

501.3.3.15 As mentioned before, using the  and  buttons the user is able to add and remove custom color breaks from the table, but once a break is added it must be customized to be at all useful.

501.3.3.16 The first and most important thing to do is to set the range of values to be displayed with that given break. To do this, simply select the Value(s) column of that break and it will become editable. A single value or a range with two values separated by a dash (-) can be inputted. It is possible to have overlapping ranges, but not recommended as the behavior may be different than expected.

501.3.3.17 The next part is to set the color for the data to be displayed in. You do this by clicking on the Color box of the break. If you left click, you will be given a color selector of solid colors and all values in the given range will be that one color. If you right-click instead, you will be prompted for two colors to be used in a gradient for the range of values. Distinct colors are recommended for clarity of display, as are colors not used in other breaks.

501.3.3.18 Finally, the Text column of the table can be changed to display the entered text. If the Text column is blank, the Value(s) column will be used as the display text of that break.

#####

600.0 Plug-ins

601.0 Plug-in Basics



601.1 MapWindow Plug-in

601.1.1 General Information about MapWindow Plug-ins

601.1.1.01 MapWindow has an extensible architecture that allows you to write plug-ins to add functionality using Visual Basic .NET or C#.



601.2 Adding a Plug-in to MapWindow

601.2.1 General Information about addinmg Plug-ins

601.2.1.01 You can download plug-ins from <http://www.mapwindow.org/download.php> and install them using the directions provided in the download.



602.0 Managing Plug-ins



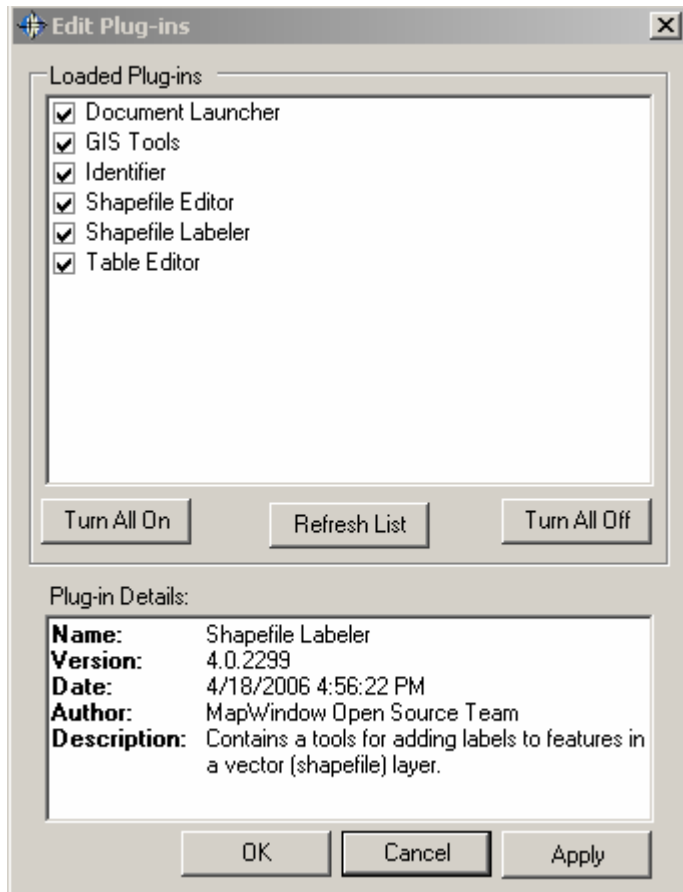
602.1 Plug-ins Menu

602.1.1 **General Information about Plug-in Tool: Not Applicable**

602.1.2 **Creation of Plug-in Tool: Not Applicable**

602.1.3 **Usage of Plug-ins Tool**

602.1.3.01 When you click on the [**Plug-in**] button on the main menu and then select [**Edit Plug-ins**]



This allows you to load plug-ins and to review details of the plug-in in the Lower box

- 602.1.3.02 Activating/Deactivating Plug-ins by putting a check in the box next to their name.
- 602.1.3.03 Refreshing Plug-in List by clicking on the [**Refresh List**] button
- 602.1.3.04 Viewing Plug-in Details by highlighting a plug-in and then looking at the box at the bottom.



602.2 *Scripts*

602.2.1 *General Information Scripts*

- 602.2.1.01 The scripting system allows you to set up custom actions or build your own plug-in, without needing a programming environment such as Visual Studio

602.2.2 *Setup of Scripts*

602.2.3 *Usage of Scripts*

602.2.3.01 A simple example script is displayed by default. You may change this to do anything you wish.

602.2.3.02 Compiling a plug-in will prompt you to save a .DLL file, which is added to the plug-in menu. Execution may not immediately start until the plug-in is turned on by selecting it from the Plug-in Menu.



602.3 *Plug-in List*

602.3.1 *General Information about plug-in list*

602.3.1.01 See Section *201.1.1.05* for complete list of core plug-ins

 **603.0** *GIS Tools Plug-in*



603.1 *GIS Tools*

603.1.1 *GIS Tools Overview*

603.1.1.01 Generic vector and raster tools for MapWindow.

 **604.0** *Raster Tools*



604.1 *Assign Projection To Grids*

604.1.1 *General Information about Assign Projection To Grids*

604.1.2 *Creation of Assign Projection To Grids*

604.1.3 *Usage of Assign Projection To Grids*



604.2 ***Reproject Grid***

604.2.1 *General Information about Reproject Grids*

604.2.2 *Creation of Reproject Grids*

604.2.3 *Usage of Reproject Grids*



604.3 ***Change Grid Formats***

604.3.1 *General Information about Change Grid Formats*

604.3.2 *Creation of Change Grid Formats*

604.3.3 *Usage of Change Grid Formats*



604.4 ***Create Grid Images***

604.4.1 *General Information about Create Grid Images*

604.4.2 *Creation of Create Grid Images*

604.4.3 *Usage of Create Grid Images*



604.5 ***Resample Grids***

604.5.1 *General Information about Resample Grids*

604.5.2 *Creation of Resample Grids*

604.5.3 *Usage of Resample Grids*



604.6 ***Merge Grids***

604.6.1 *General Information about Merge Grids*

604.6.2 *Creation of Merge Grids*

604.6.3 *Usage of Merge Grids*



604.7 *Clip Grid with Polygon*

604.7.1 *General Information about Clip Grid with Polygon*

604.7.2 *Creation of Clip Grid with Polygon*

604.7.3 *Usage of Clip Grid with Polygon*



604.8 *Georeference Image or Raster*

604.8.1 *General Information about Georeference Image or Raster*

604.8.2 *Creation of Georeference Image or Raster*

604.8.3 *Usage of Georeference Image or Raster*



604.9 *Generate a Contour Shapefile*

604.9.1 *General Information about Generate a Contour Shapefile*

604.9.2 *Creation of Generate a Contour Shapefile*

604.9.3 *Usage of Generate a Contour Shapefile*

 **605.0** *Vector Tools*



605.1 *Assign Projection to Shapefile*

605.1.1 *General Information about Assign Projection to Shapefile: Not Applicable*

605.1.2 *Setup for Assign Projection to Shapefile: Not Applicable*

605.1.3 *Usage of Assign Projection to Shapefile*

605.1.3.01 See Section **104.2** for more information



605.2 *Reproject Shapefile*

605.2.1 *General Information about Reproject Shapefile: Not Applicable*

605.2.2 *Setup for Reproject Shapefile: Not Applicable*

605.2.3 *Usage of Reproject Shapefile*

605.2.3.01 See Section **104.2** for more information



605.3 *Buffer Shapes*

605.3.1 *General Information about Buffer Shapes: Not Applicable*

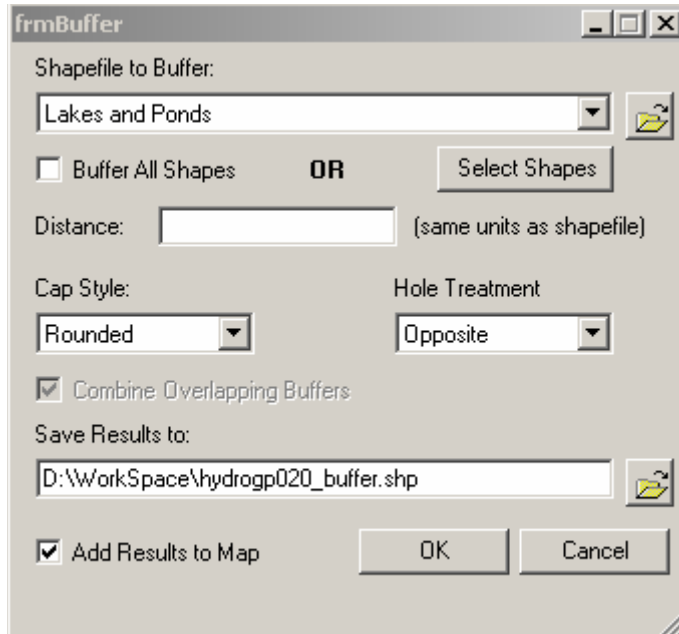
605.3.2 *Setup for Buffer Shapes: Not Applicable*

605.3.3 *Usage of Buffer Shapes*

605.3.3.01 Click on [[GIS Tools](#)]

605.3.3.02 Click on [[Vector](#)]

605.3.3.03 Click on [[Buffer Shapes](#)]



- 605.3.3.04 Select layer to buffer
- 605.3.3.05 Decide if you want to buffer all shapes or just selected ones
- 605.3.3.06 Select distance, remember it is the same units as your data, in this case decimal degrees.
- 605.3.3.07 Decide if you want to combine overlapping Buffers
- 605.3.3.08 Set name of resulting shapefile
- 605.3.3.09 Click [OK]



TASK #20*****Zoom into the State of West Virginia, Select the airports in West Virginia and build a Buffer of .06 Decimal degrees around them, call it buffer1



TASK #21*****Using the selected airports in West Virginia and build a Buffer of .15 Decimal degrees around them, call it buffer2. Save both of these buffers for later



605.4 Calculate Polygon Areas

605.4.1 General Information about Calculate Polygon Areas: Not Applicable

605.4.2 *Setup for Calculate Polygon Areas: Not Applicable*

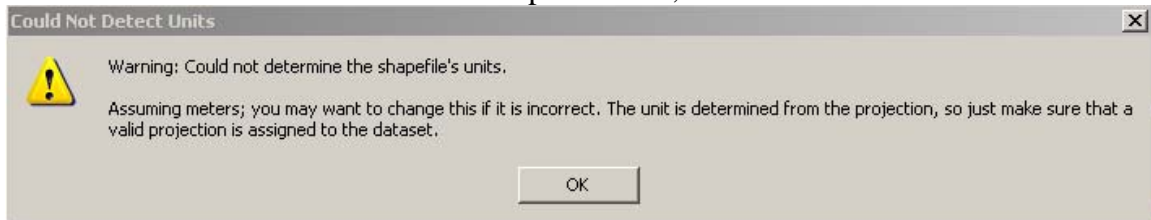
605.4.3 *Usage of Calculate Polygon Areas*

605.4.3.01 Click on [**GIS Tools**]

605.4.3.02 Click on [**Vector**]

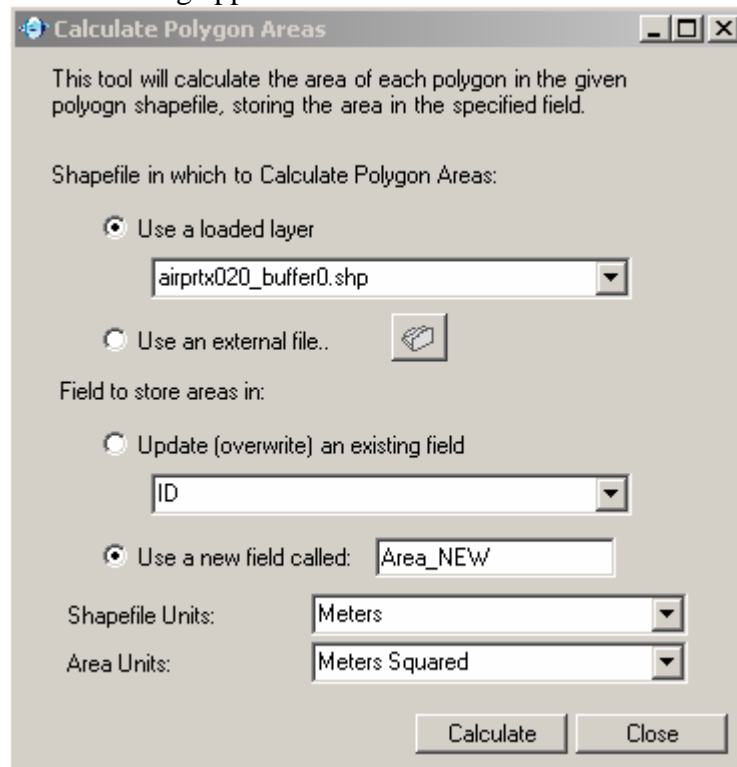
605.4.3.03 Click on [**Calculate Polygon Areas**]

605.4.3.04 If it can not detect the shapefile units,



Click [**Ok**]

605.4.3.05 The following appears:



605.4.3.06 Select the layer

605.4.3.07 Set the shapefile units

605.4.3.08 Set the units of the area you want created

605.4.3.09 Click on [**Calculate**]



TASK #22*****Using the buffer2 shaepfile, calculate the Square Miles contained the buffers around the airports. Remember the data is in decimal degrees.



605.5 *Clip Polygon with Line*

605.5.1 *General Information about Clip Polygon with Line: Not Applicable*

605.5.2 *Setup for Clip Polygon with Line: Not Applicable*

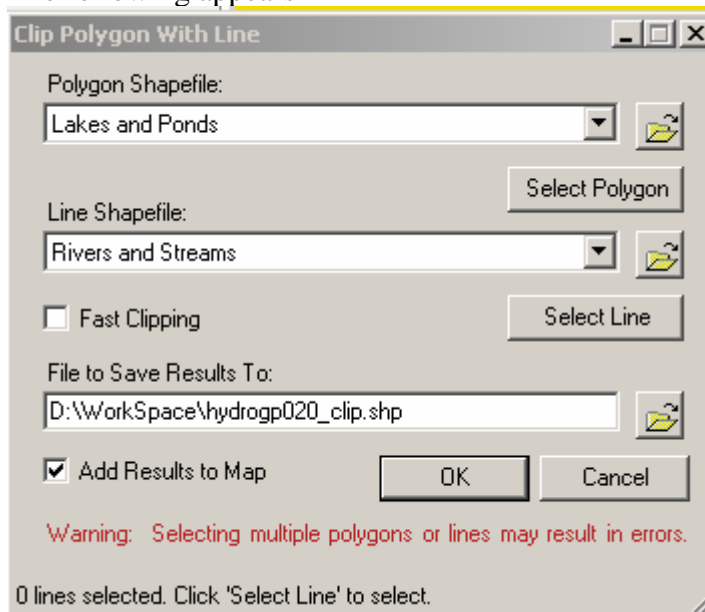
605.5.3 *Usage of Clip Polygon with Line*

605.5.3.01 Click on [**GIS Tools**]

605.5.3.02 Click on [**Vector**]

605.5.3.03 Click on [**Clip Polygon With Line**]

605.5.3.04 The following appears



605.5.3.05 Select the polygon to be clipped

605.5.3.06 Select the clip file

605.5.3.07 Name the result file

605.5.3.08 Click [**OK**]



TASK #23******Select Greenbrier Valley Airport, create a line file that intersects the Buffer2 polygon around Greenbrier, following the screen prompts clip the buffer2 polygon around Greenbrier Valley Airport.*



605.6 Clip Shapefile with Polygon

605.6.1 General Information about Clip Shapefile with Polygon: Not Applicable

605.6.2 Setup for Clip Shapefile with Polygon: Not Applicable

605.6.3 Usage of Clip Shapefile with Polygon

605.6.3.01 See Section **407.2.3.11** for more information



TASK #24******Select Greenbrier Valley Airport, clip buffer2 using buffer1.*



605.7 Erase Shapefile with Polygon

605.7.1 General Information about Erase Shapefile with Polygon: Not Applicable

605.7.2 Setup for Erase Shapefile with Polygon: Not Applicable

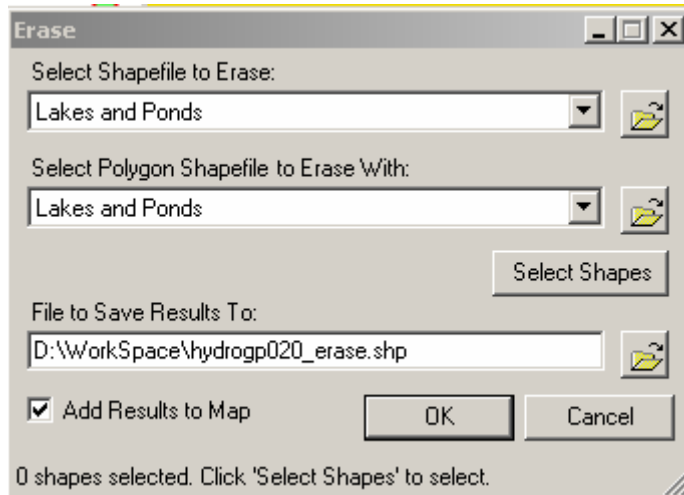
605.7.3 Usage of Erase Shapefile with Polygon

605.7.3.01 Click on [**GIS Tools**]

605.7.3.02 Click on [**Vector**]

605.7.3.03 Click on [**Erase Shapefile with Polygon**]

605.7.3.04 The following will appear



- 605.7.3.05 Select the shapefile to erase
- 605.7.3.06 Select the shapefile to erase with
- 605.7.3.07 Name the result file
- 605.7.3.08 Click [**OK**]

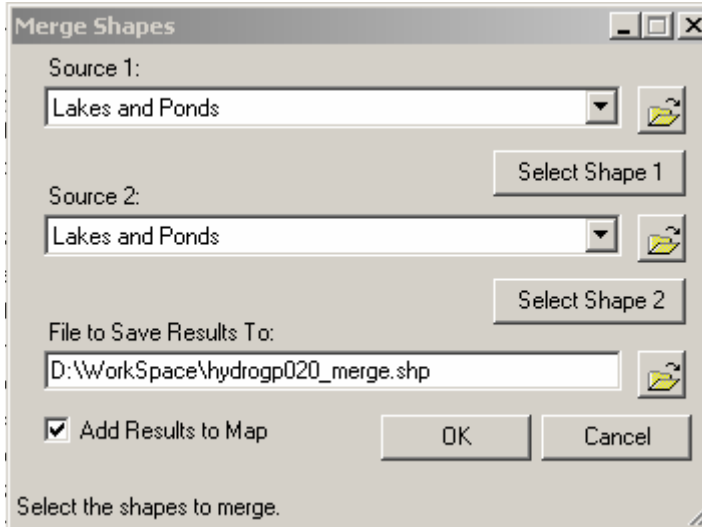


TASK #25******Select Greenbrier Valley Airport, erase buffer2 using buffer1.*



605.8 Merge Shapefiles

- 605.8.1 ***General Information about Merge Shapefiles: Not Applicable***
- 605.8.2 ***Setup for Merge Shapefiles: Not Applicable***
- 605.8.3 ***Usage of Merge Shapefiles***
 - 605.8.3.01 Click on [**GIS Tools**]
 - 605.8.3.02 Click on [**Vector**]
 - 605.8.3.03 Click on [**Merge Shapefile**]
 - 605.8.3.04 The following appears



605.8.3.05 Select the two shape to be merged

605.8.3.06 Determine output file

605.8.3.07 Click [OK]

606.0 Miscellaneous Plug-ins



606.1 Identifier

606.1.1 *General Information about Identifier: Not Applicable*

606.1.2 *Setup for Identifier: Not Applicable*

606.1.3 *Usage of Identifier*

606.1.3.01 See Section 405.1 for more information



606.2 Document Launcher

606.2.1 *General Information about Document Launcher:*

-
- 606.2.1.01 This is a simple plug-in designed to provide a teaching framework for programming the plug-in interface.
- 606.2.1.02 Files to compile this plug-in DLL can be found at <http://svn.mapwindow.org/svnroot/MapWindow40/DocLauncher/>
- 606.2.1.03 Functionally, this particular plug-in will be activated when a shape in a shapefile is selected. If the shapefile has an attribute entitled “FileOrURL” and the selected shape has text in that attribute column, then the plug-in will seek to launch that path as a file or a URL. Most commonly, this is used to launch images or webpages associated with given shapes.
- 606.2.2 *Setup for Document Launcher: Not Applicable*
- 606.2.3 *Usage of Document Launcher: Not Applicable*



606.3 *Shapefile Labeler*

- 606.3.1 *General Information about Shapefile Labeler: Not Applicable*
- 606.3.2 *Setup for Shapefile Labeler: Not Applicable*
- 606.3.3 *Usage of Shapefile Labeler*
- 606.3.3.01 See section **404.1** for detailed information on the Shapefile Labeler Plug-in.



606.4 *Shapefile Editor*

- 606.4.1 *General Information about Shapefile Editor: Not Applicable*
- 606.4.2 *Setup for Shapefile Editor: Not Applicable*
- 606.4.3 *Usage of Shapefile Editor*
- 606.4.3.01 See section **407.1** for detailed information on the Shapefile Editor Plug-in.



606.5 *Table Editor*

606.5.1 *General Information about Table Editor: Not Applicable*

606.5.2 *Setup for Table Editor: Not Applicable*

606.5.3 *Usage of Table Editor*

606.5.3.01 See section **407.2** for detailed information on the Table Editor Plug-in.



606.6 *EPA BASINS 4*

606.6.1 *General Information about EPA BASINS 4: Not Applicable*

606.6.2 *Setup for EPA BASINS 4: Not Applicable*

606.6.3 *Usage of EPA BASINS 4*

606.6.3.01 In Development

 **607.0** *Third Party Plug-ins*



607.1 *Third Party Plug-ins*

607.1.1 *General Information about Third Party Plug-ins: Not Applicable*

607.1.2 *Setup for Third Party Plug-ins: Not Applicable*

607.1.3 *Usage of Third Party Plug-ins*



607.2 *EMRG Plug-ins*

607.2.1 *General Information about EMRG Plug-ins: Not Applicable*

607.2.1..01 Plug-ins Contributed by the [Utah Water Research Laboratory EMRG](#)

-
- **3-D TIN Viewer Plug-in** - This source code includes C++ code for an ActiveX control 3-D Triangulated Irregular Network viewer as well as code for a MapWindow plug-in for working with TINs.
 - **Photo Viewer Plug-in** - This plug-in allows one to link a shapefile of photo points on a map to digital photos.
 - **Streamflow Analyst Plug-in** - This plug-in allows one to link a shapefile of streamflow gaging stations to station and streamflow data in an external database. The tool includes functions for computing statistical summaries and producing a variety of plots. To compile the source code, you will need a license to the GigaSoft ProEssentials graphing library.
 - **Water Quality Analyst Plug-in** - This plug-in is similar to the Streamflow Analyst but extends the functionality to include analysis of any number of water quality parameters. This code also requires a valid license for GigaSoft ProEssentials graphing library.
-



607.3 *MapWindow Plug-ins*

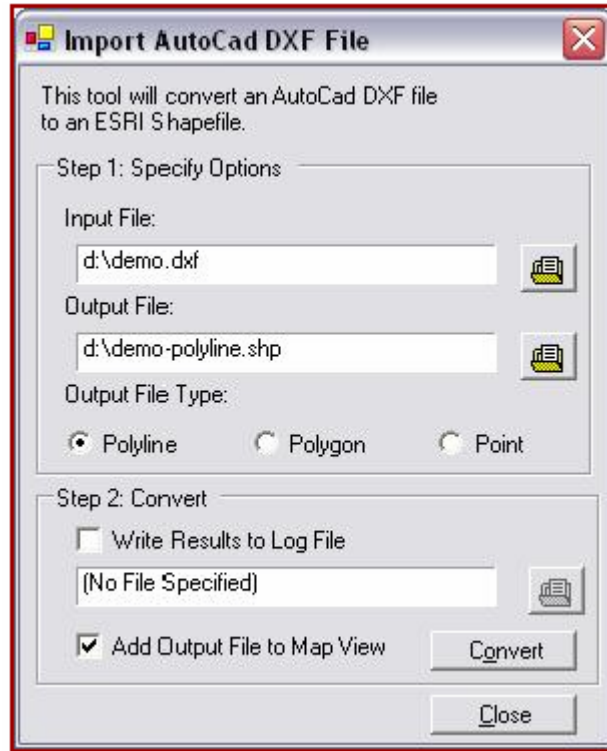
607.3.1 *General Information about MapWindow Plug-ins: Not Applicable*

607.3.2 *Setup for MapWindow Plug-ins: Not Applicable*

607.3.3 *Usage of MapWindow Plug-ins*

607.3.3.01 MapWindow Plug-ins

- **Safety Software Suite** - Crash Analysis, Intersection Analysis, Signs management, Road Shape File Attribute correction Wizard, and more... All for Traffic Safety Improvement
- **Document Launcher Plug-in** - This was originally developed as a demonstration plug-in. The plug-in captures a click on a shape and looks for a file or URL in the attribute table for the shape and tries to open that document or web-site.
- **Bayesian Network Analyst Plug-in** - This plug-in was developed to allow one to build a Bayesian decision network directly in a GIS. It requires the user to have a current license to the Netica Bayes net engine which it utilizes and ties to shapefile points in the map.
- **DXF to Shapefile Converter** - This is a plugin to convert from AutoCad DXF (Data eXchange Format) files into ESRI Shapefiles (the format also used by MapWindow).



- **AutoCAD Layer Exporter** - The ACAD Exporter will export all entities visible in the window to AutoCAD. This plug-in requires a valid license for AutoCAD on your computer. Modified code to not explicitly reference a particular version of the AutoCAD object library. Instead, uses generic objects that seem to allow the code to work with any version of AutoCAD.
- **UMN Mapserver Exporter** - This is a MapWindow plug-in to export the currently loaded project to a University of Minnesota MapServer project ("Map File").

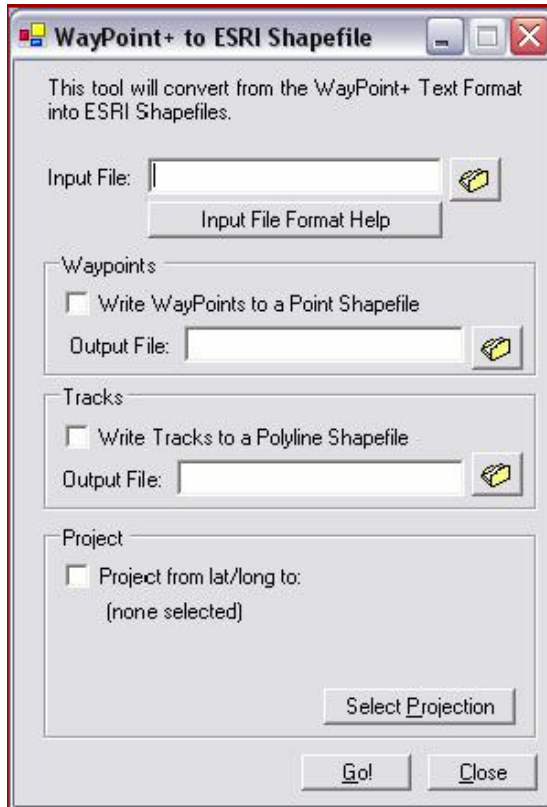
608.0 Stand Alone Utilities



608.1 Stand Alone Utilities

608.1.1 General Information about Stand Alone Utilities

- 606.1.1.01 WayPoint+ to Shapefile Converter** - This is a standalone program to convert WayPoint+ text format files to ESRI Shapefile format files. The program will optionally reproject the data from lat/long during conversion.



608.1.1.02 **Georeferencing Tool** - his is a standalone tool to allow a user to georeference an image or raster data file by clicking three points on the image and providing the real-world coordinates for those points. The image can optionally be rectified such that north is straight up. The appropriate world file will then be written

608.1.1.03 **MonoComp** - Update: **26March-2006**: MonoComp initially was concieved for analysing image profiles by Variance-CoVariance Analysis methods and as tool to measure image coordinates (pixel positions). The latter could be use in conjunction with a coordinate transformation program, like Trans.EXE, to transform image positions into either photo positions (photogrammetry) or world system positions (GIS). By now it has grown into a tool for georeferencing areial photos and for digitising photo content into GIS shapfiles and much more. **10-Jan-2006**: Added real time GPS data collection, improved layer handling, corrected some bugs. **22-February-2006**: Fixed one more seriuos bug; added attribute table editing. However, a word of warning: MonoComp is work in progress and most likely has plenty of bugs. The current version can digitise point features, (10-January-2006:) polyline and polygon features and their 3D Z-Versions also. Watch this page from time to time for updates.

#####

 **700** *Extra Features*

 **701.0** *Map Overview*

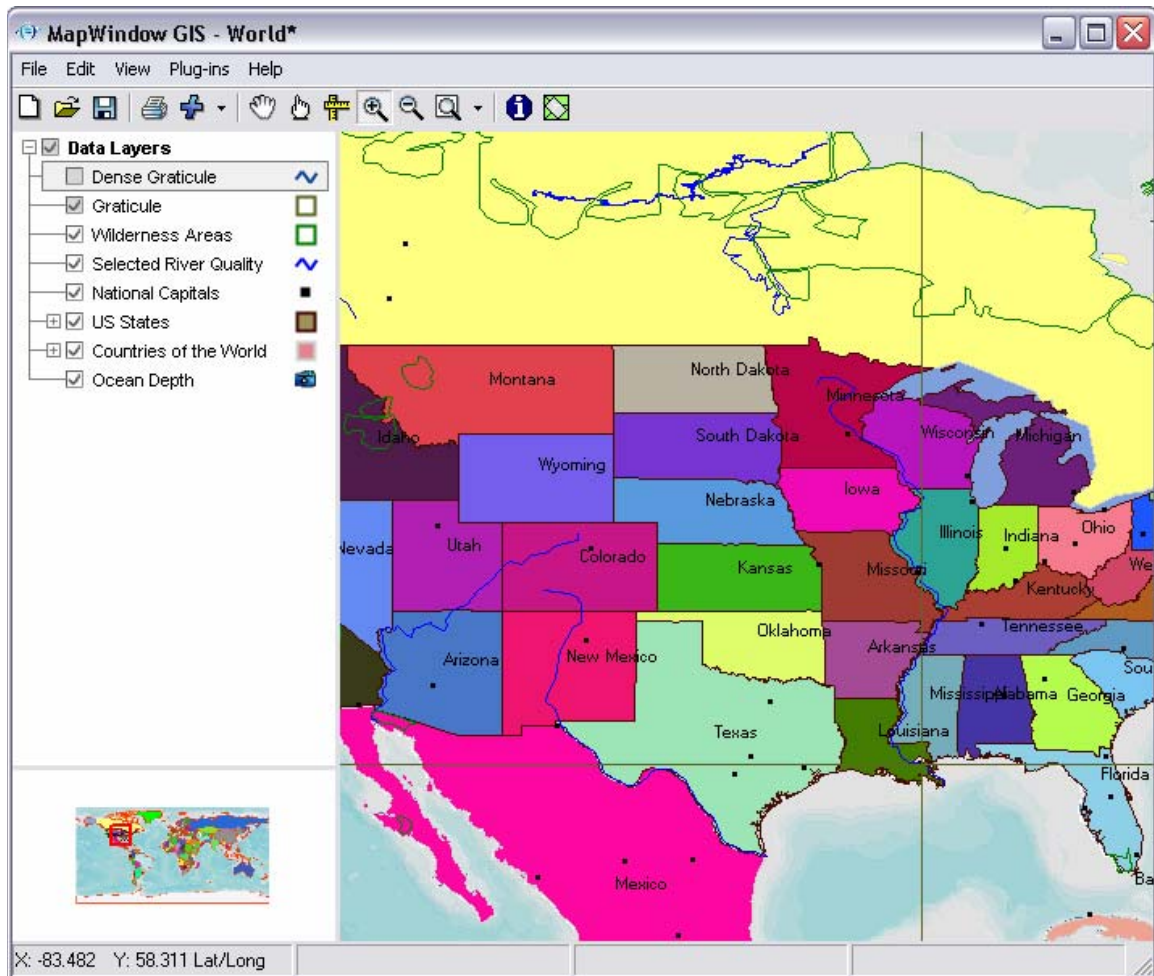


701.1 *Map Overview*

701.1.1 *General Information for Map Overview*

701.1.1.01 The map overview area provides a full extent view of layers added to it. Within the view is a red rectangle showing the current map extent. This allows you to quickly determine which area of the map you are currently viewing. Note that labels are not rendered to the map overview even if the layers in the map overview have been set up for labeling.

701.1.1.02 The map overview appears in the lower left corner:



701.1.2 *Setup for Using the Map Overview***701.1.3** *Usage of Map Overview*

701.1.3.01 The map overview may be updated at any time by right-clicking the overview map and choosing [*Update*], or by choosing the [*Edit*] menu, then [*Preview Map*], then [*Update*]. When you update the map, the image in the locator window will be built using the layers and symbology currently displayed in the main map. Be sure to turn off any layers which are extremely detailed, leaving only those layers important for orienting the user.

701.1.3.02 If you don't want to use the overview map, you may right-click the overview map and choose [*Clear*], or choose the [*Edit*] menu, then [*Preview Map*], then [*Clear*]. This will clear out the current preview map.

 **702.0** *Customization and Programming*
**702.1** *Plug-in Creation***702.1.1** *General Information about Plug-in Creation*

702.1.1.01 MapWindow allows users to create plug-ins, which are individual extensions that may be loaded into the software. These are similar in spirit to ArcGIS Extensions or VBA Scripts. A plug-in may be developed in Microsoft Visual Studio using the .NET framework. Plug-ins may operate on the map and map data, allowing a user to create custom tools to perform specialized functions. Often users wish to distribute MapWindow as a viewing platform for GIS data, including a custom-built plug-in to perform additional analysis or perform specialized database queries.

702.1.1.02 MapWindow has a very simple plug-in system, making it very easy to learn and use. Unlike other GIS platforms where there are dozens of interfaces that must be implemented, MapWindow only has one interface which needs to be implemented. This is contained in the file *MapWinInterfaces.dll*, and the interface is called *MapWindow.Interfaces.IPlugin*.

702.1.1.03 MapWindow plug-ins should be built as a "Class Library" output, in other words, a .DLL file. Once you've finished implementing the *IPlugin* interface, the resulting .DLL file should be copied into the MapWindow plugin directory. This is typically *c:\Program Files\MapWindow\Plugins*.

If you wish, you may create subdirectories inside this Plugins directory for organizational purposes.

702.1.1.04 While the *MapWindow.Interfaces.IPlugin* interface has many events and properties, only one is absolutely required – *Name*. This name is used by MapWindow to keep track of your plug-ins during program execution.

702.1.1.05 A simple example plug-in called *Document Launcher* is available from the MapWindow website at this link:

<http://svn.MapWindow.org/svnroot/MapWindow40/DocLauncher/DocLauncher.vb>

This plug-in will perform an action every time a shape is selected on the screen. The tool will check the shapefile's attribute table to see if a field called "FileOrURL" exists. If it does, the *Document Launcher* will launch that file or URL. For instance, if the field contained a link to a photo, then the photo would be displayed.

702.1.1.06 For help in developing custom plug-in tools, a number of resources are available:

Online Documentation for Plug-in Developers:

http://www.mapwindow.org/wiki/index.php?title=MapWindow_Developers%27s_Guide

Online Discussion Forum for Plug-in Development Questions:

<http://www.mapwindow.org/phorum/list.php?2>



702.2 ***Custom Application Development using MapWinGIS ActiveX***

702.2.1 ***General Information about Custom Application Development using MapWinGIS ActiveX: Not Applicable***

702.2.1.01 If you want to develop your own standalone application that does not use MapWindow, you may make use of the *MapWinGIS ActiveX Control* to instantly add mapping and GIS capability to any application developed in an ActiveX-capable language. ActiveX is supported by most programming languages. Some examples include Microsoft Visual Basic 6, Visual Basic .NET, Visual C++, Visual C#, Visual J#, Borland Delphi, and many others. Even Microsoft Access supports the use of ActiveX controls!

702.2.2 ***Setup for Custom Application Development using MapWinGIS ActiveX:
Not Applicable***

702.2.3 ***Usage of Custom Application Development using MapWinGIS ActiveX***

702.2.3.01 The *MapWinGIS ActiveX Control* is actually used within MapWindow itself – it is the “white box” area of the MapWindow application, where map data appears.

702.2.3.02 Once you add the *MapWinGIS ActiveX Control* to your project, you’ll see the same white box. You can then write code to add data to the map and manipulate it, or tie the control to other elements inside your application to allow the user to control the map.

702.2.3.03 The *MapWinGIS ActiveX Control* was designed with simplicity in mind. Common tasks are extremely simple to perform; even complex functionality is easy to create. Regardless of your level of experience, from beginner to expert, you’ll likely find the ActiveX control to be a pleasant and easy-to-learn tool.

702.2.3.04 A complete sample application has been written in a variety of languages to demonstrate the use of the *MapWinGIS ActiveX Control*:

Microsoft Visual Basic 6.0:

<http://www.mapwindow.org/samples/SimpleMap-VB6.zip>

Microsoft Visual C++ 2003:

<http://www.mapwindow.org/samples/SimpleMap-C++.zip>

Borland Delphi:

http://www.mapwindow.org/samples/delphi_sample_bailey.zip

Microsoft Access 2000:

<http://www.mapwindow.org/download/MapWindowInAccess2000.mdb>

702.2.3.05 For help in developing applications using the *MapWinGIS ActiveX Control*, there are a number of resources available:

Online Documentation for MapWinGIS:

http://www.mapwindow.org/wiki/index.php?title=MapWinGIS_Developer%27s_Guide

Online Discussion Forum for ActiveX Control Development:

<http://www.mapwindow.org/phorum/list.php?3>

 **800** ***Hard Copy / Exporting***

 **801.0** ***Printing a Hard Copy or Exporting***



801.1 ***Printing a Hard Copy***

801.1.1 ***General Information about Printing***

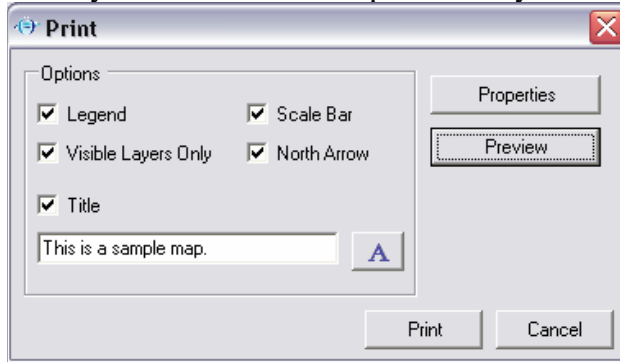
801.1.1.01 Presently, the printing functionality in MapWindow is not very extensive. It is, however, under very active development and we expect a much-improved printing interface soon.

801.1.2 ***Setup for Printing:***

801.1.3 ***Printing***

801.1.3.01 In order to print the current map view, select the [**File**] menu

801.1.3.02 Select [**Print**]. You will be presented with a dialog (shown below) which allows you to select what map elements you would like displayed.



801.1.3.03 Select [**Properties**] and set up your windows printer. Press [**OK**]

801.1.3.04 Select [**Print Preview**] to check for changes.

801.1.3.05 Select [**Print**].

ISSUE #05 ******The scale bar option puts the wrong units on the hard copy map*



801.2 ***Exporting***

801.2.1 *General Information about Exporting:*

801.2.1.01 You may export a map image as a bitmap (.BMP) or graphic interchange file (.GIF)

801.2.2 *Setup for Exporting: Not Applicable*

801.2.3 *Usage of Exporting:*

801.2.3.01 To do this, select the **[Edit]** menu

801.2.3.02 Select **[Export]**,

801.2.3.03 Select **[Map]**. You'll be presented with a dialog asking where you'd like to save the file. This option is suitable for including map imagery in word processing documents among other uses.

801.2.3.04 Specify where you want to save the map and also the file extension (either .bmp or .gif), then click **[OK]**

ISSUE #06 ******The hard copy export as a .gif file changes the coloring of the map. However export as a .bmp sees to work fine. And I was unable to locate the export file created that specifies the geographic location*

801.2.3.05 You may also export a georeferenced map image. This means that a file will be written along with the image file which specifies the geographic location of the image. This is desirable if you wish to load the map image into any GIS software.

801.2.3.06 You may export a scale bar by selecting the Edit menu, then Export, then Scale Bar. This will prompt you for a location to save the resulting image file. This file could then be used in word processing or publishing software.

801.2.3.07 Lastly, you may export a north arrow by choosing the Edit menu, then Export, then North Arrow. This also will prompt you for a location to save the image.

#####

 **900 *Support and Help***

 **901 *Support***



901.1 Support

901.1.1 General Information about Support

901.1.1.01 MapWindow is under very active development, and there is a very large user base to draw upon for questions and experience. Depending upon what kind of help or support you're looking for, there's a different place to go.

901.1.1.02 If you have found a problem and wish to report it, or if you want to request an enhancement or new feature, visit the bug tracking system called BugZilla, located at: <http://bugs.MapWindow.org>

901.1.1.03 There are several different discussion forums available, including one specifically for users of the MapWindow Application, one for development of plug-ins, one for ActiveX programming, a forum in Spanish, and a forum for those actively working on the development of MapWindow.

All of these forums may be reached at:
<http://www.MapWindow.org/phorum>

901.1.1.04 Also available is an online WIKI, or community-editable database of pages, providing documentation on MapWindow. The online documentation is geared toward the developers using MapWindow for plug-ins and applications using the ActiveX control, but help is also available for some plug-ins such as GIS Tools, as well as MapWindow itself.

