

MapCruzin™ Map-Tutorial

by

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Note that you must be online for the links in this document to work.

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1. INTRODUCTION

Welcome

This introduction to GIS (Geographic Information System) mapping will help you to begin to feel comfortable with GIS technology and to get to know some of the jargon. If, after going through this tutorial, you wish to go further with GIS, I have some recommendations for you at the end of this document. We also have a more advanced tutorial. If you are interested, check www.Learn2Map.com.

If there is anything that I can do, any questions I can answer, anything that I should do to make this tutorial more clear, more comprehensive or easier to use, please email me at mike@learn2map.com and let me know. I hope to hear from you soon.

Pass It On

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Best Regards,

Mike Meuser

2. GETTING STARTED

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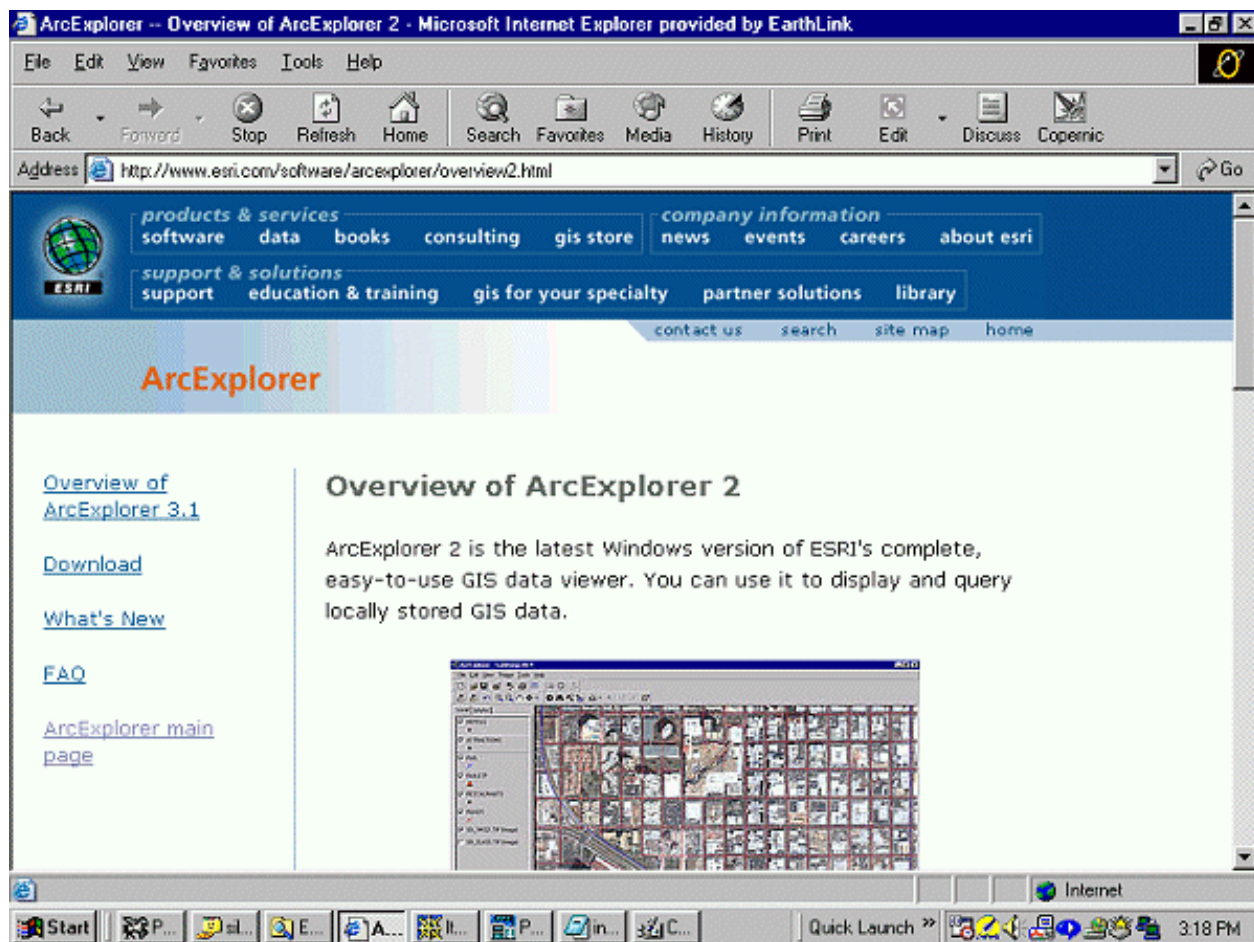
In this first section I have prepared a simple mapping project that will help to introduce you to digital mapping. It is based on U.S. Census Tiger 2000 files (more on this later) and ArcExplorer®, a free GIS program from ESRI. The sample project covers my home county, Santa Cruz, California. We will work on this together - step-by-step. First you will download ArcExplorer®, the free GIS from ESRI®, and install it. Then you will download the mapping project that I have prepared. Later on you will learn how to create your own mapping project and add a variety of map layers.

One way to think about all of this is to imagine a paper map -- a base map -- that may have such features as the outline of county, perhaps some topography, major roads, etc. If you wanted a single map with more than that, some features might obscure others. The solution to this is to add map layers. Layers can be thought of as transparencies that you would place on top of your paper map allowing you to see the base map as well as the added features as you add, remove and change the order of the layers. As you work with ArcExplorer® this will become clear.

Downloading ArcExplorer®

The first thing to do is to download the GIS viewer, ArcExplorer®. For the ArcExplorer® 2.0 program and detailed instructions click on the link below (Note that all links to web pages will open in a separate internet browser window. You must be online for these links to work.):

[Click here to download](#)



Download ArcExplorer® 2.0 to any directory that suits you (I like c:/mapcruzin_maps/downloads/). Once you have downloaded the program, go to the directory on your hard disk where you downloaded it, double-click on its icon and follow the installation steps.

Downloading the Sample Project

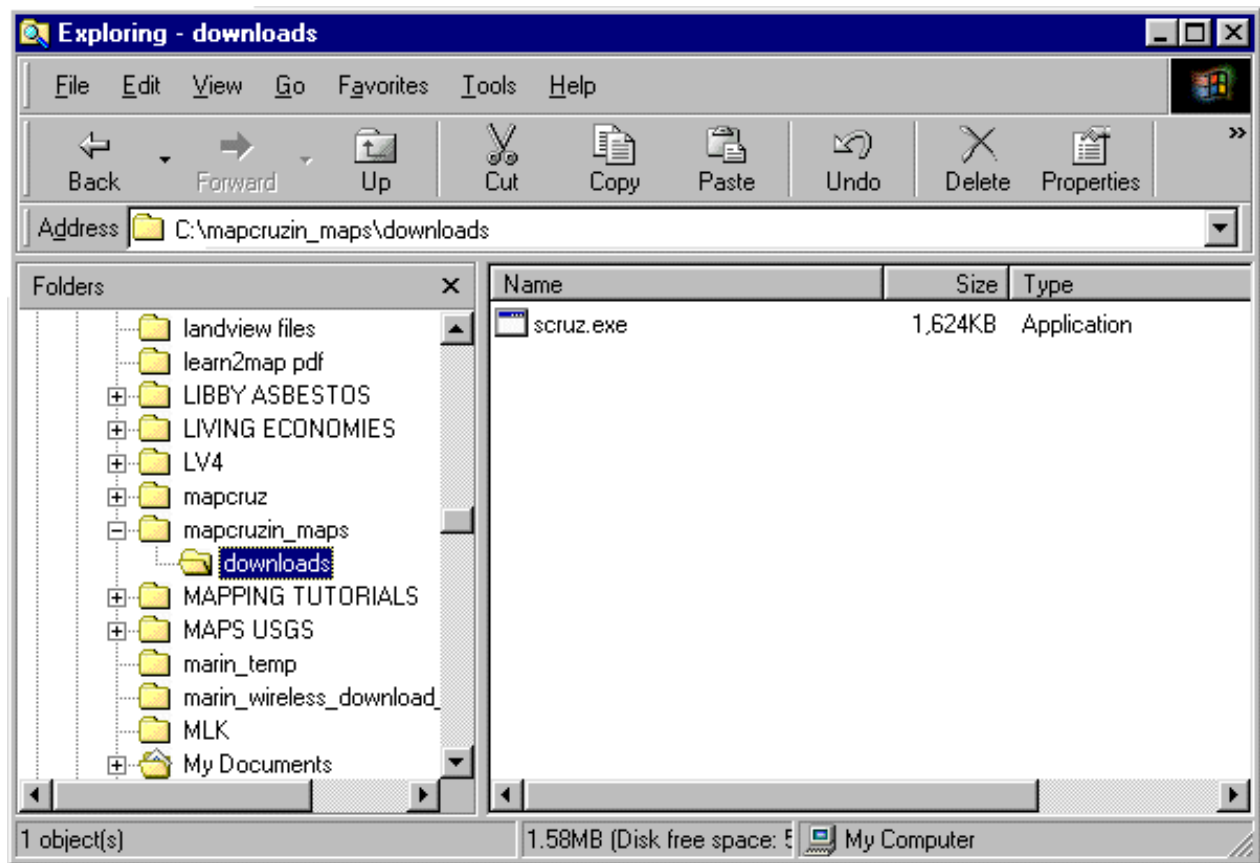
Now you will download the sample project for Santa Cruz County, California. [In the advanced tutorial](#) you will find instructions for downloading the files for your county and creating your own project. The project includes the map layers, listed below, in a single file archive (scrucz.exe). [Click here](#) to download scrucz.exe (1.6mb).

Map layers included in the Santa Cruz County project (check the readme.html included in scrucz.exe for layer details).

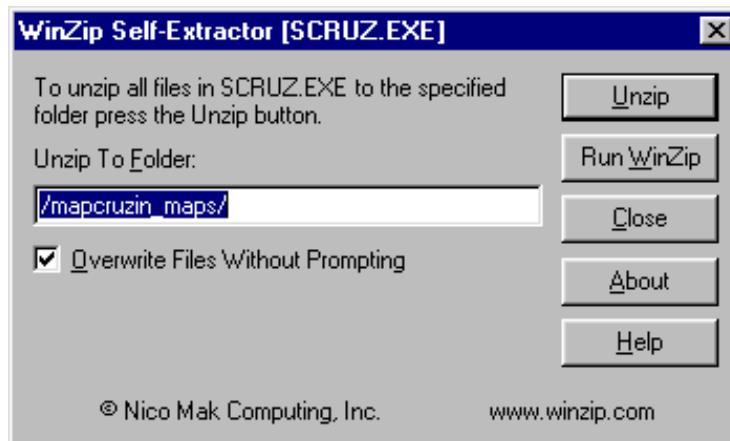
- Census Tracts 2000
- Congressional Districts
- Designated Places
- Key Geographic Locations

- Landmark Points
- Landmark Polygons
- Line Features - Hydrography
- Line Features - Miscellaneous Transport
- Line Features - Non-visible
- Line Features - Physical
- Line Features - Rails
- Line Features - Roads
- School Districts - Elementary
- School Districts - Secondary
- School Districts - Unified
- Urban Areas
- Water Polygons

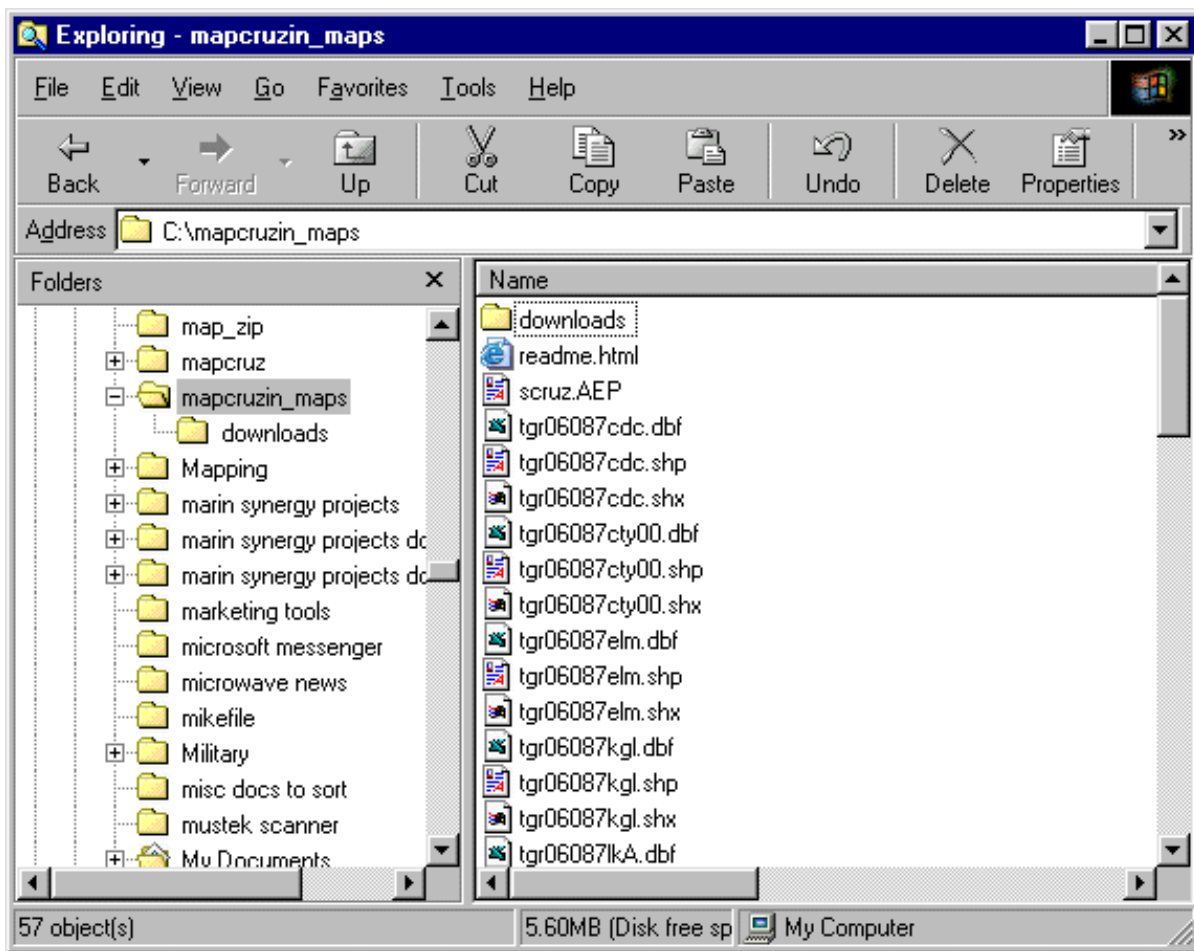
Go to the file archive, "scruz.exe," on your hard disk.



Double-click on the file name and a dialogue box will open.



Click on "unzip" and the file archive will automatically unzip creating 56 new files in a new directory on your hard disk named "mapcruzin_maps" (c:/mapcruzin_maps).

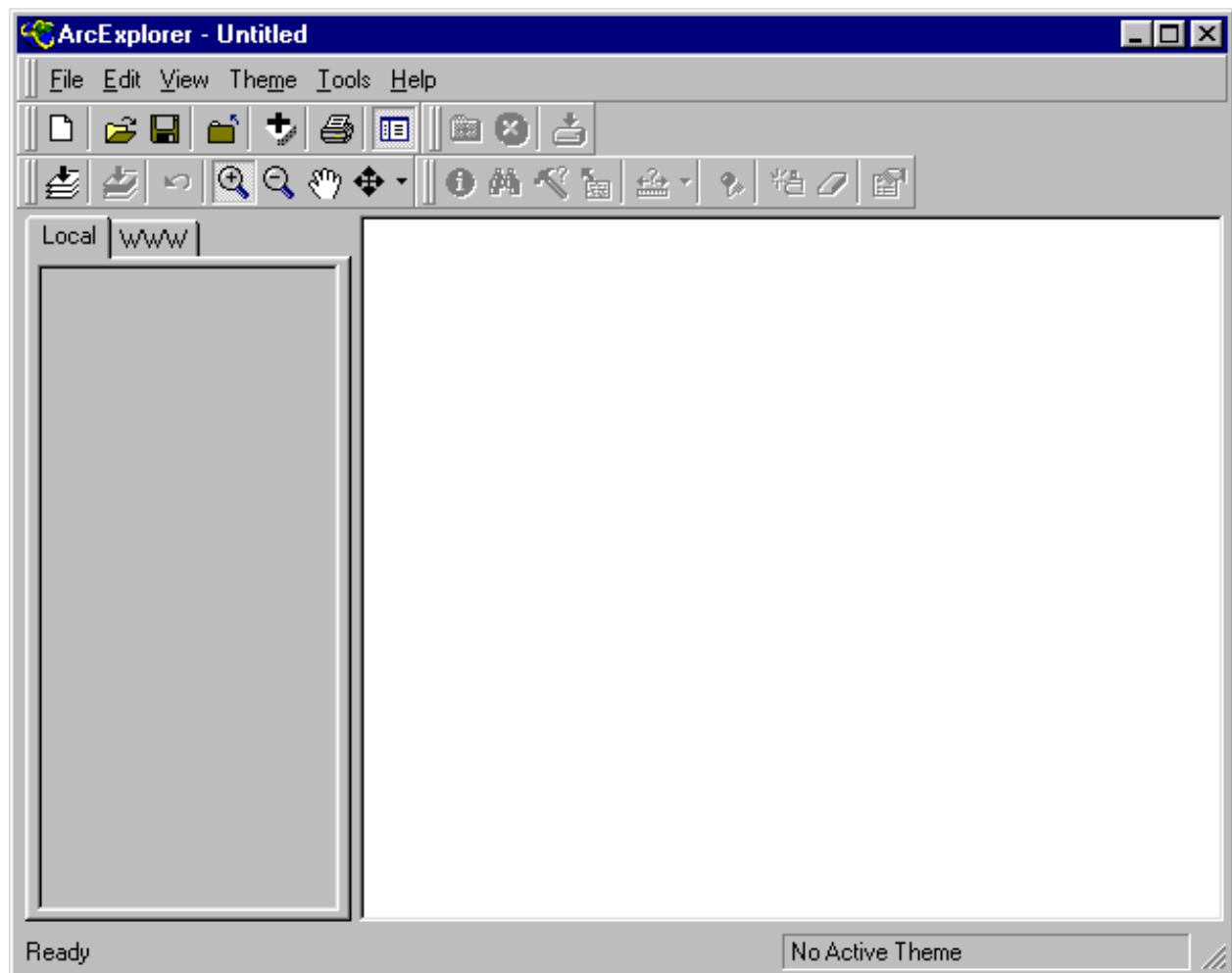


If you wish, you can over ride this default and unzip the maps to any directory that you prefer.

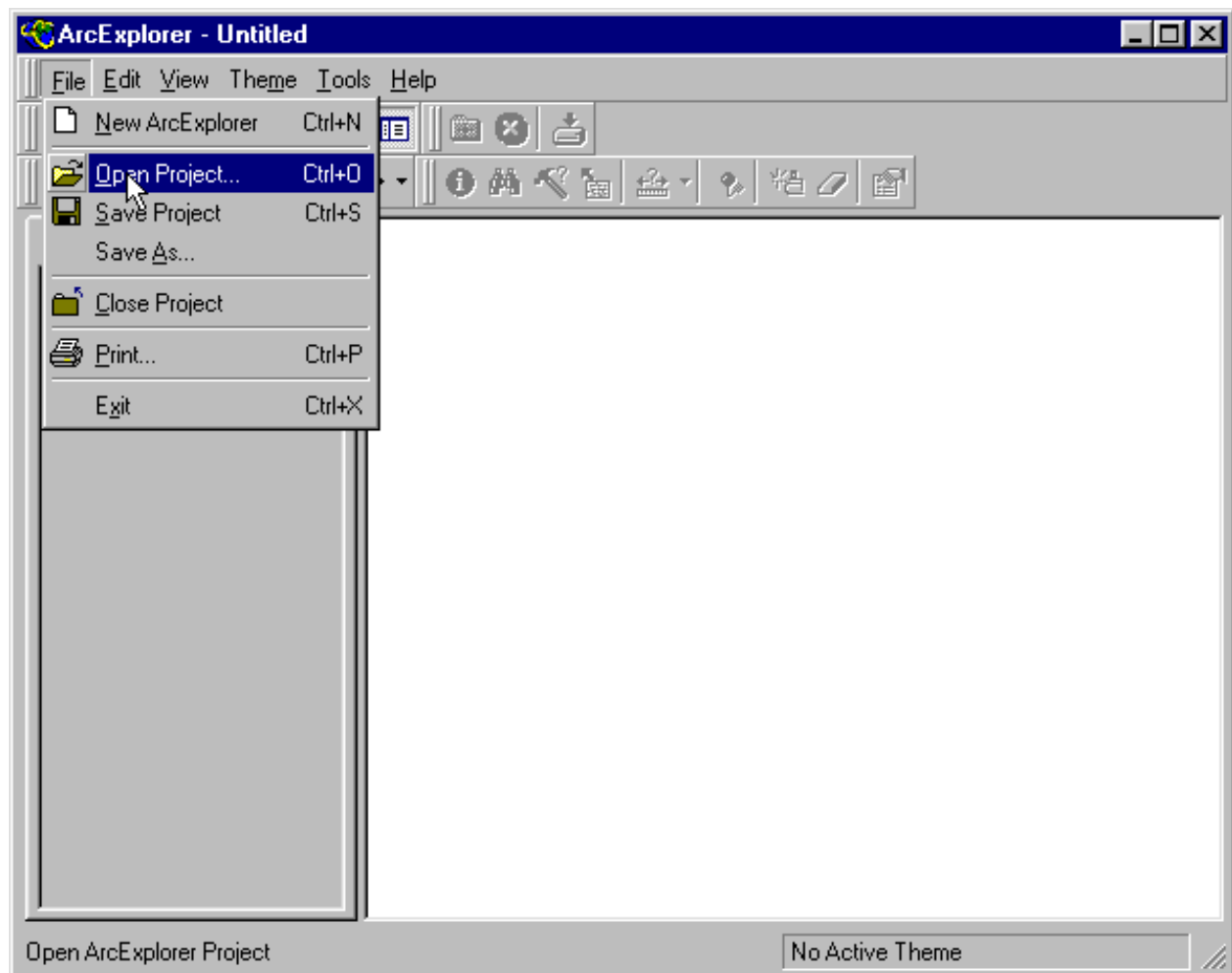
3. RUNNING ARCEXPLORER® WITH A SAMPLE PROJECT

Note that you must be online for the links in this document to work.

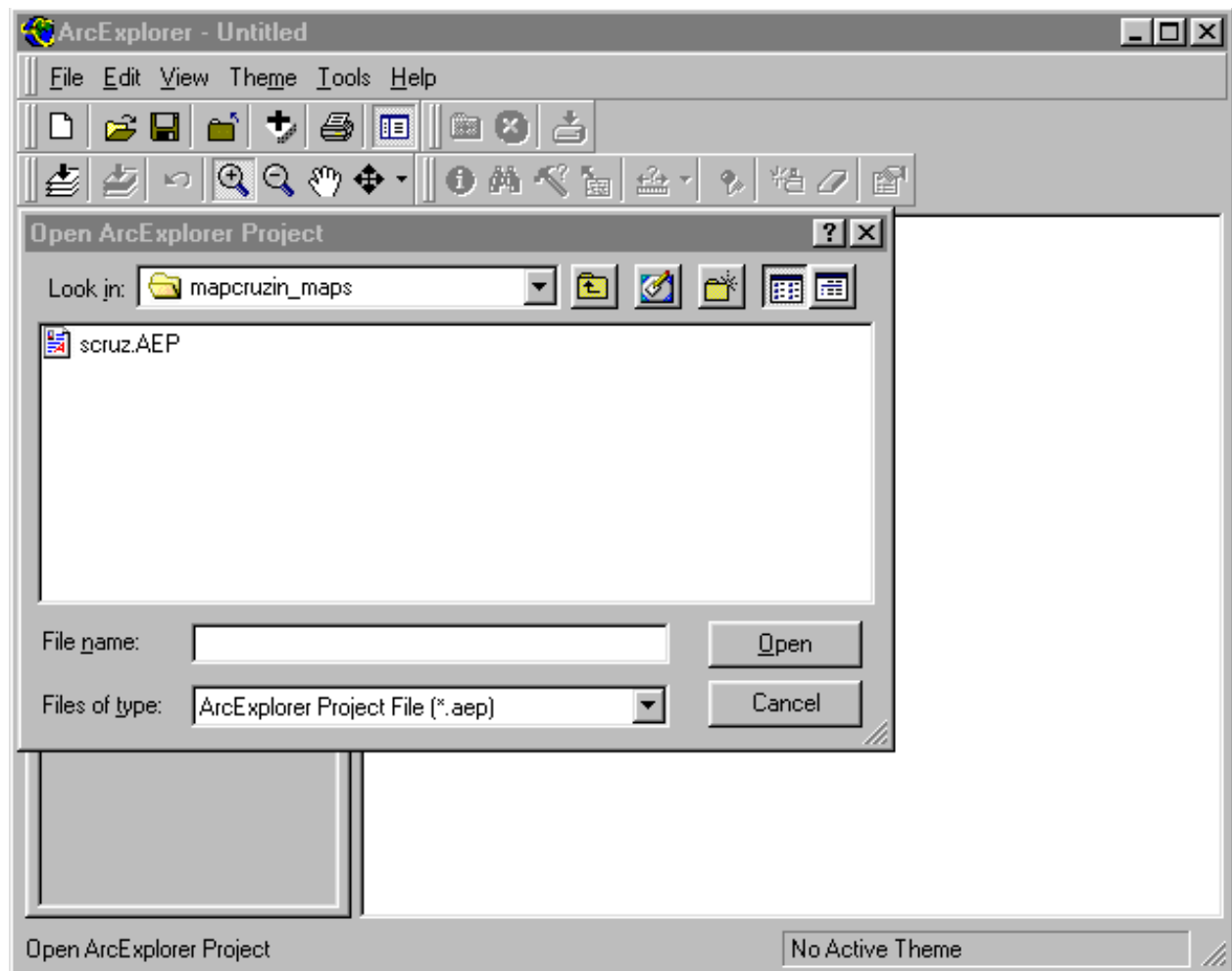
Go to your computer's start menu and run ArcExplorer® 2.0. Your computer should have put it in a menu folder named "ESRI." When first run, ArcExplorer® should look like this.



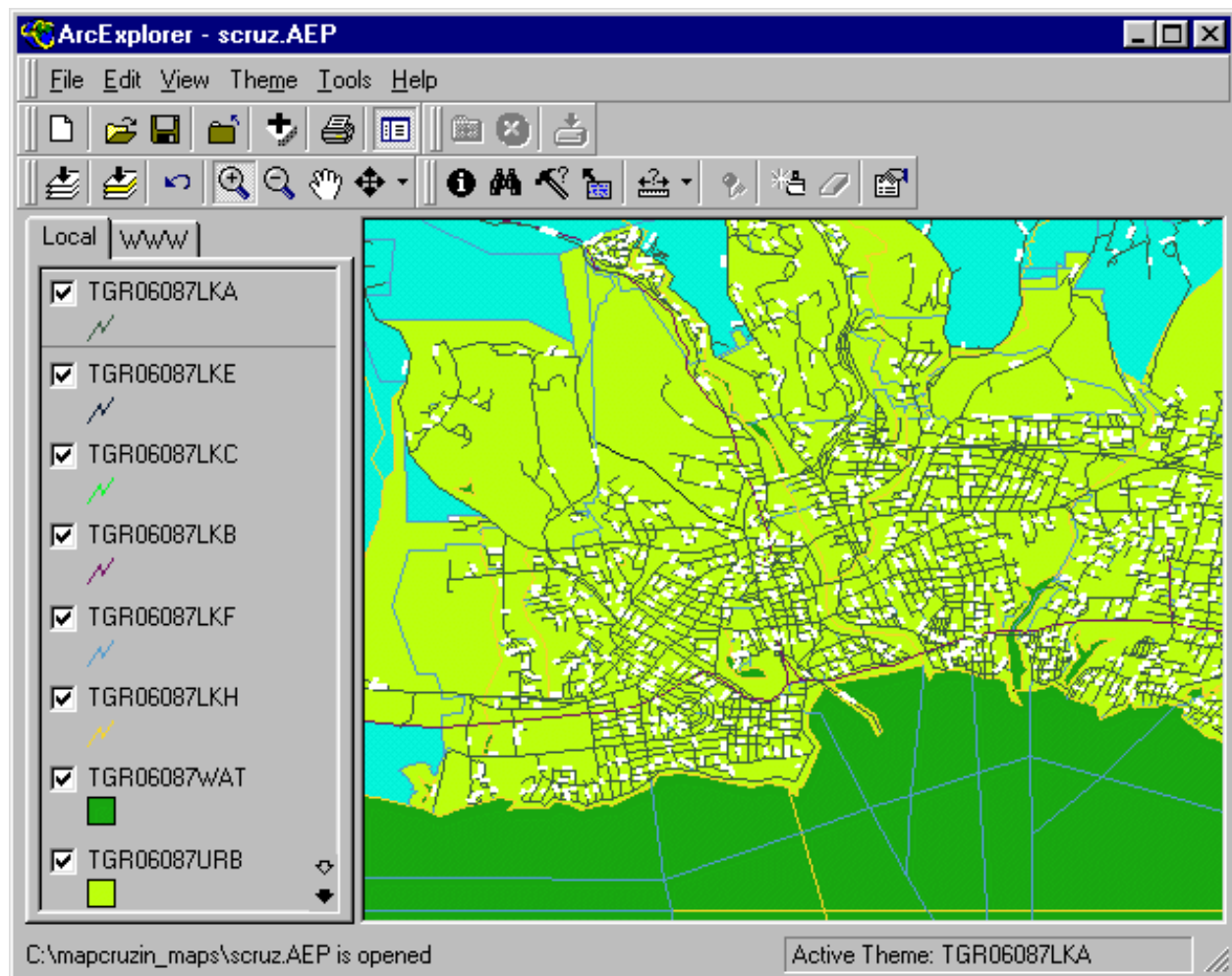
Once ArcExplorer® is running, click on the top menu item "File" and scroll down to and click on "Open Project."



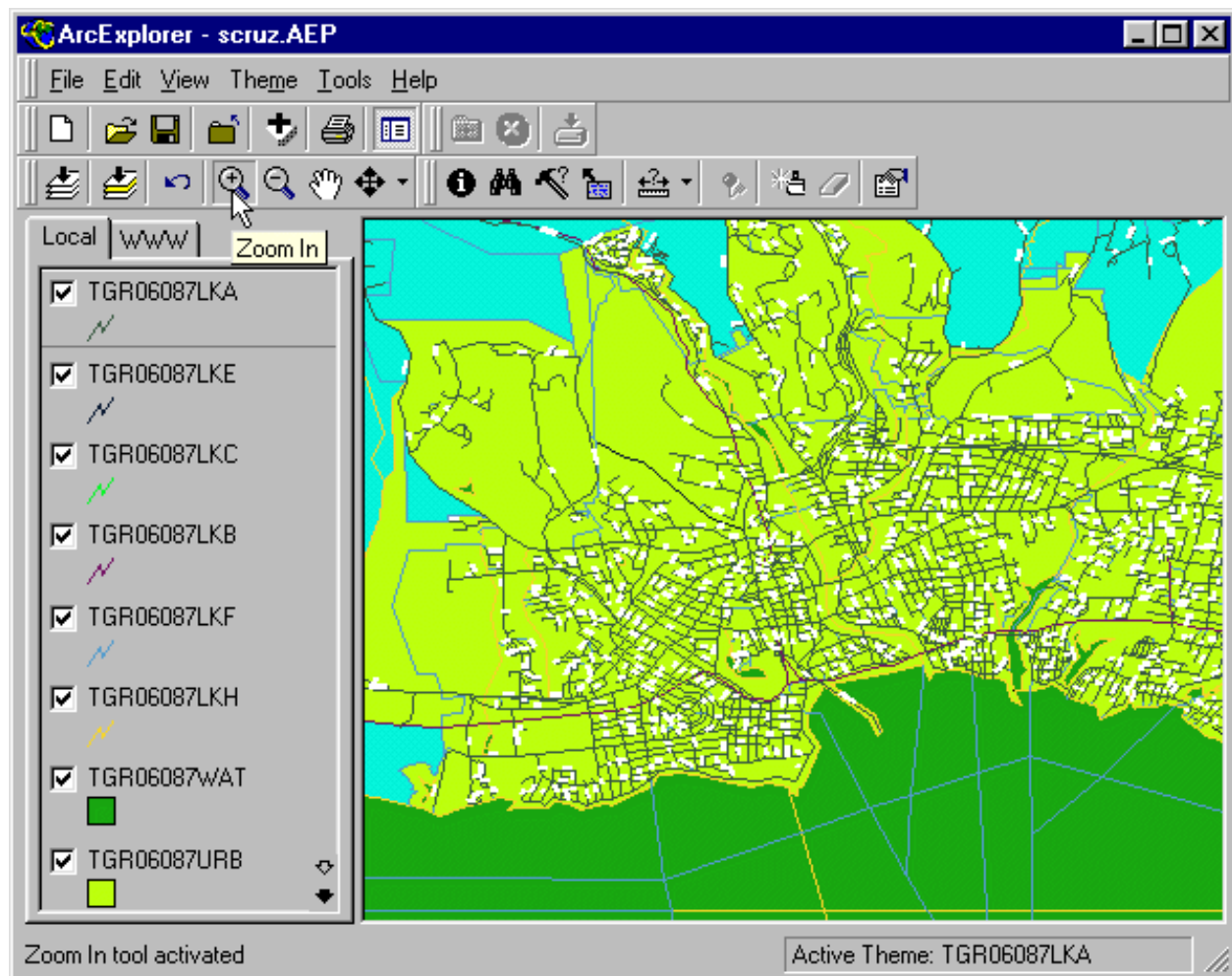
Navigate to `c:/mapcruzin_maps` (or the directory that you chose to install your maps in). Once there, double-click on "scruz.AEP." (Note that an alternative to this is to use Windows Explorer to navigate to the folder and file, `scruz.AEP`. Once there, double-click on `scruz.AEP` and it will open the project in ArcExplorer).



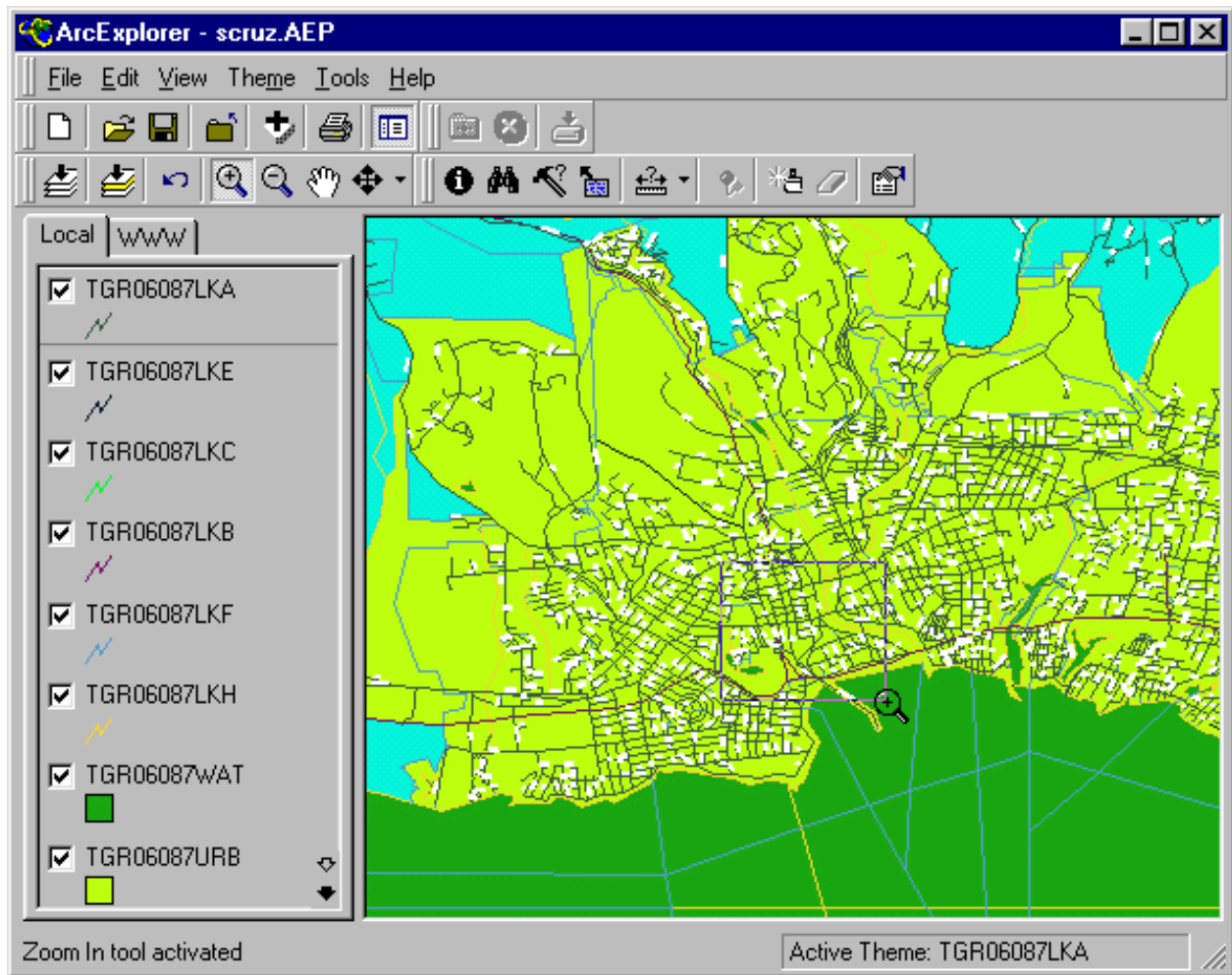
In the ArcExplorer® map window you will see a map of Santa Cruz County, California. By default, all of the layers are turned on. You can turn various layers on and off by checking or unchecking the box to the left of the map layer's name. For now, leave them all on.



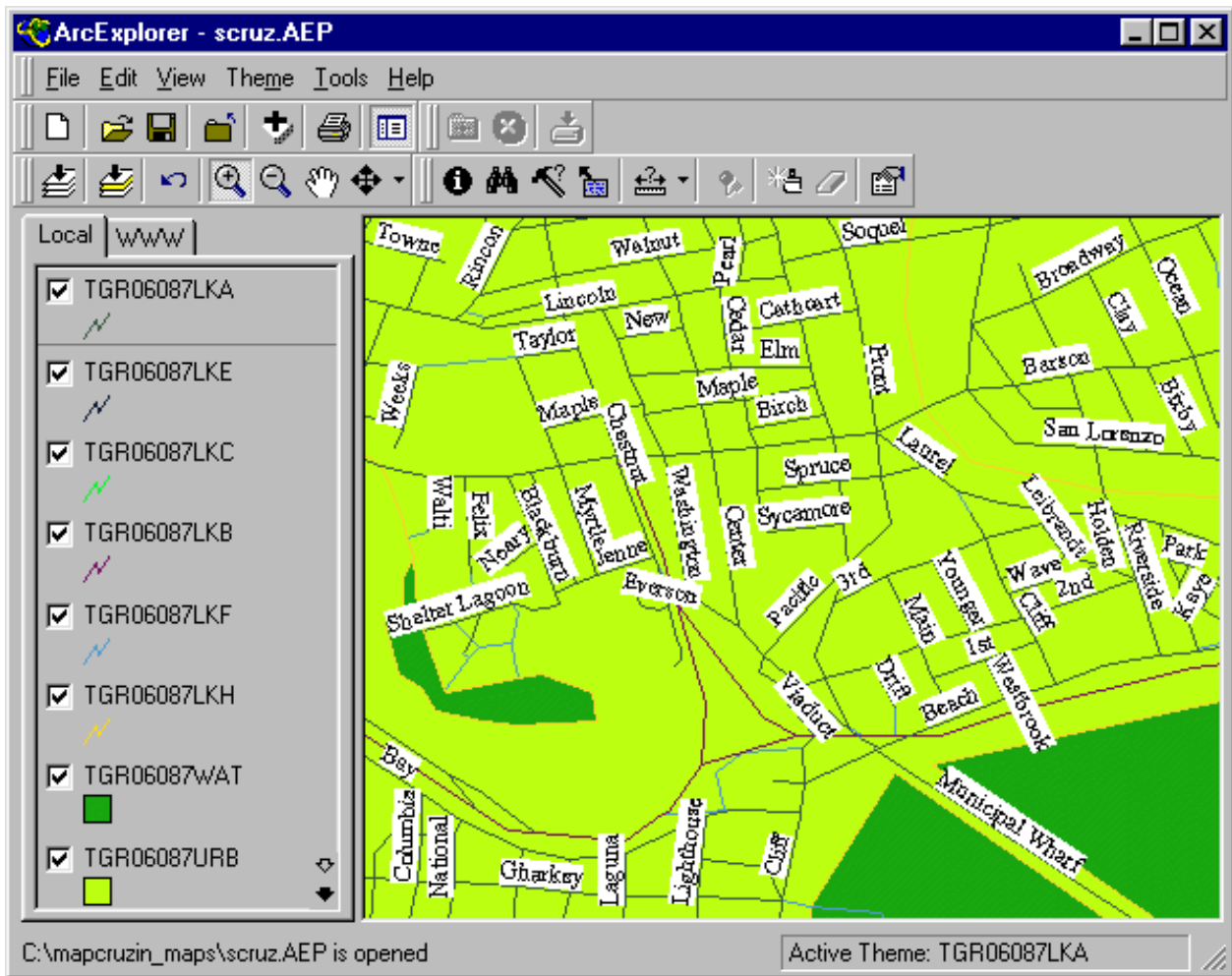
First, you will learn to become familiar with the basic navigation tools. Click on the small magnifying glass icon with a plus (+) on it.



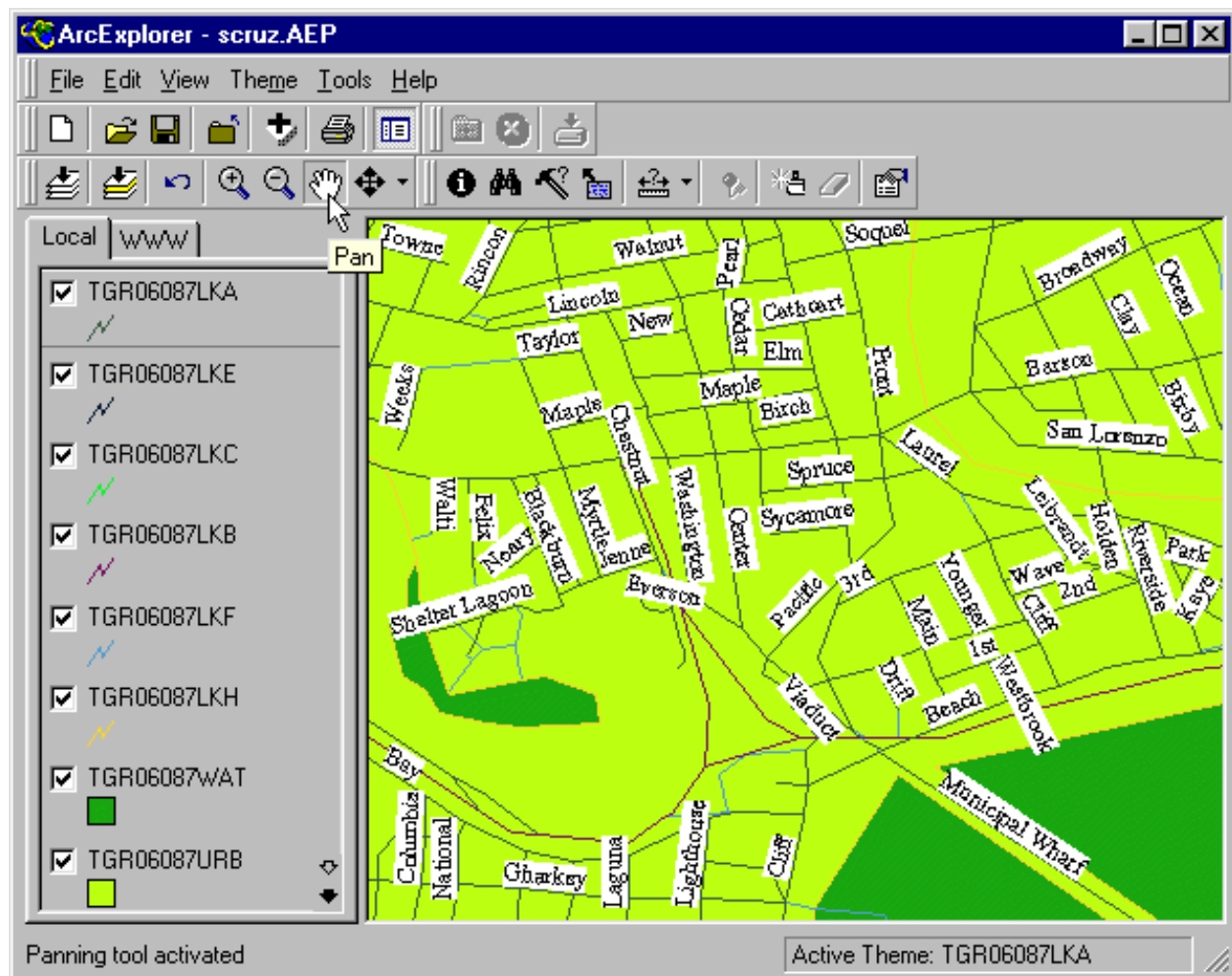
Now move your mouse over the map, hold down your left button and draw a box.



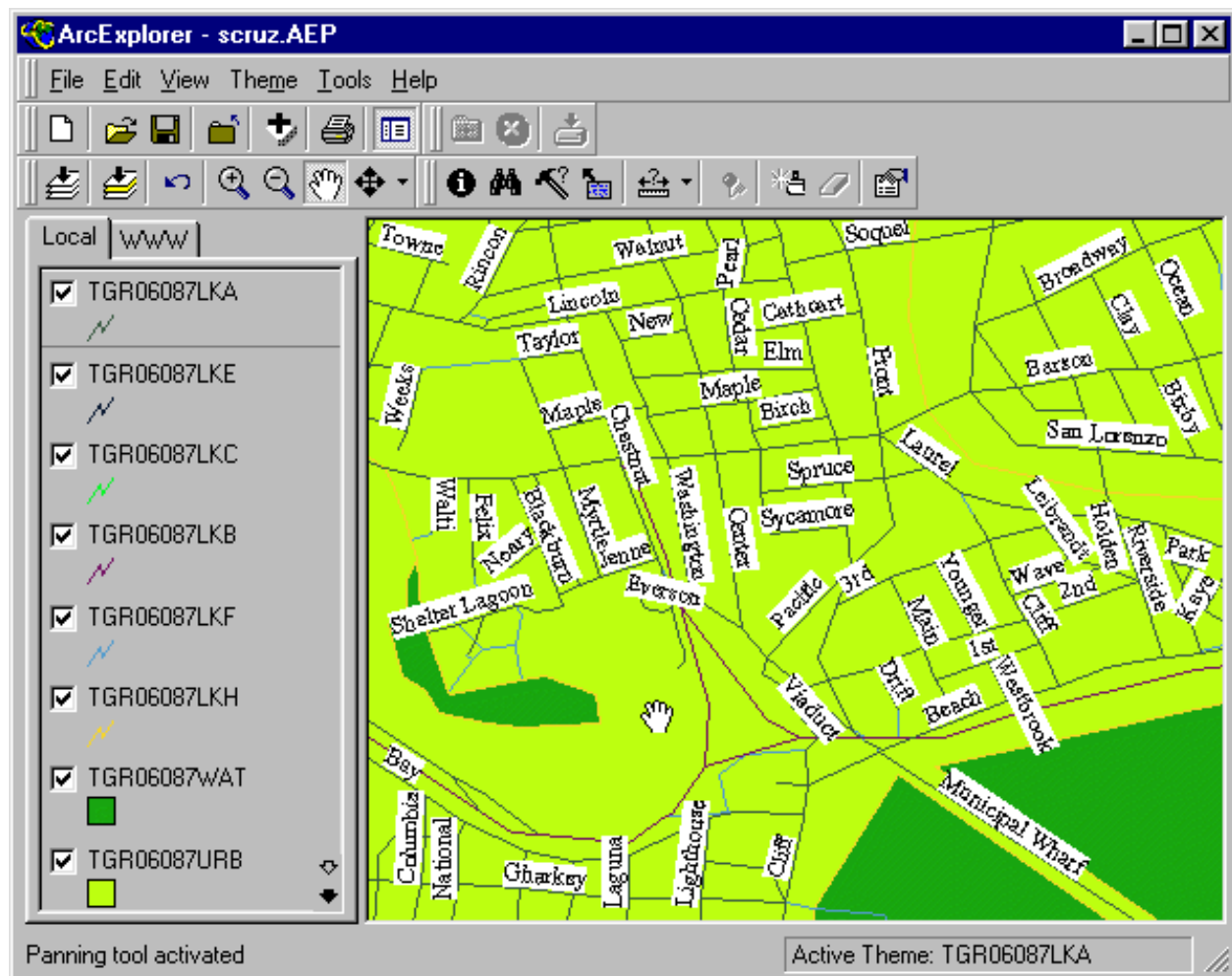
Release the button and your map will zoom-in providing more detail.



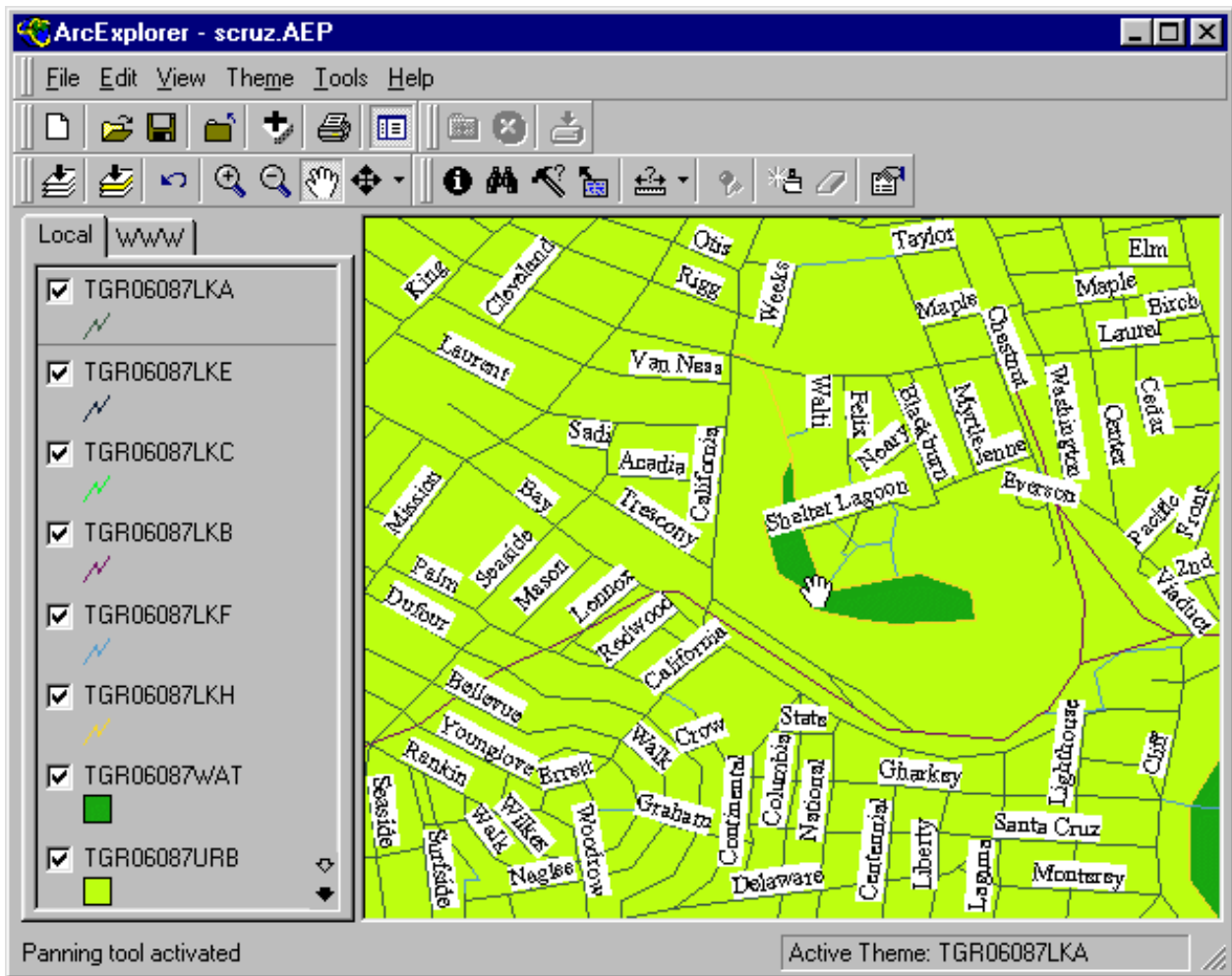
Now click on the hand icon.



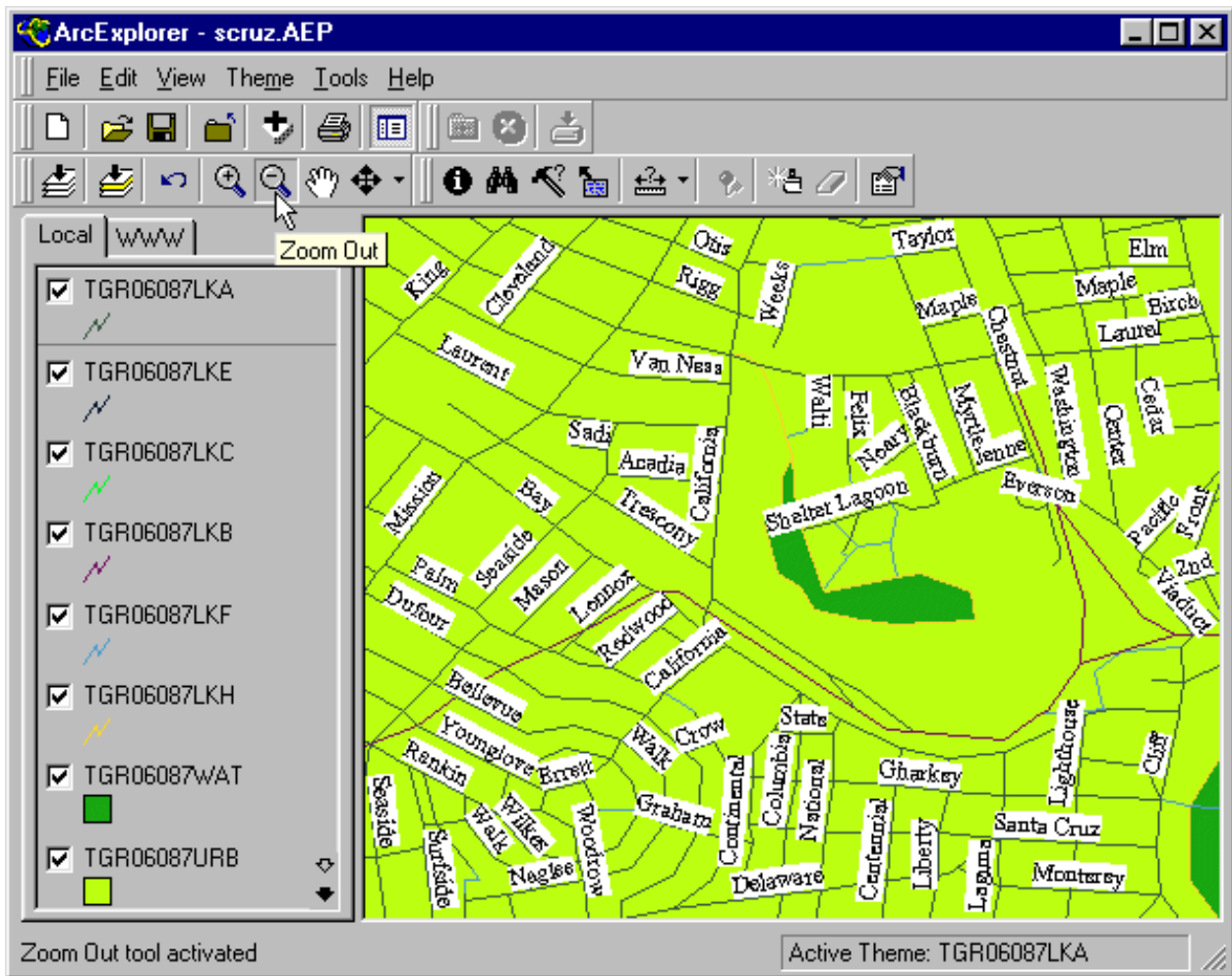
Move your mouse over to the map once again and you will see that your mouse pointer has changed to a hand icon.



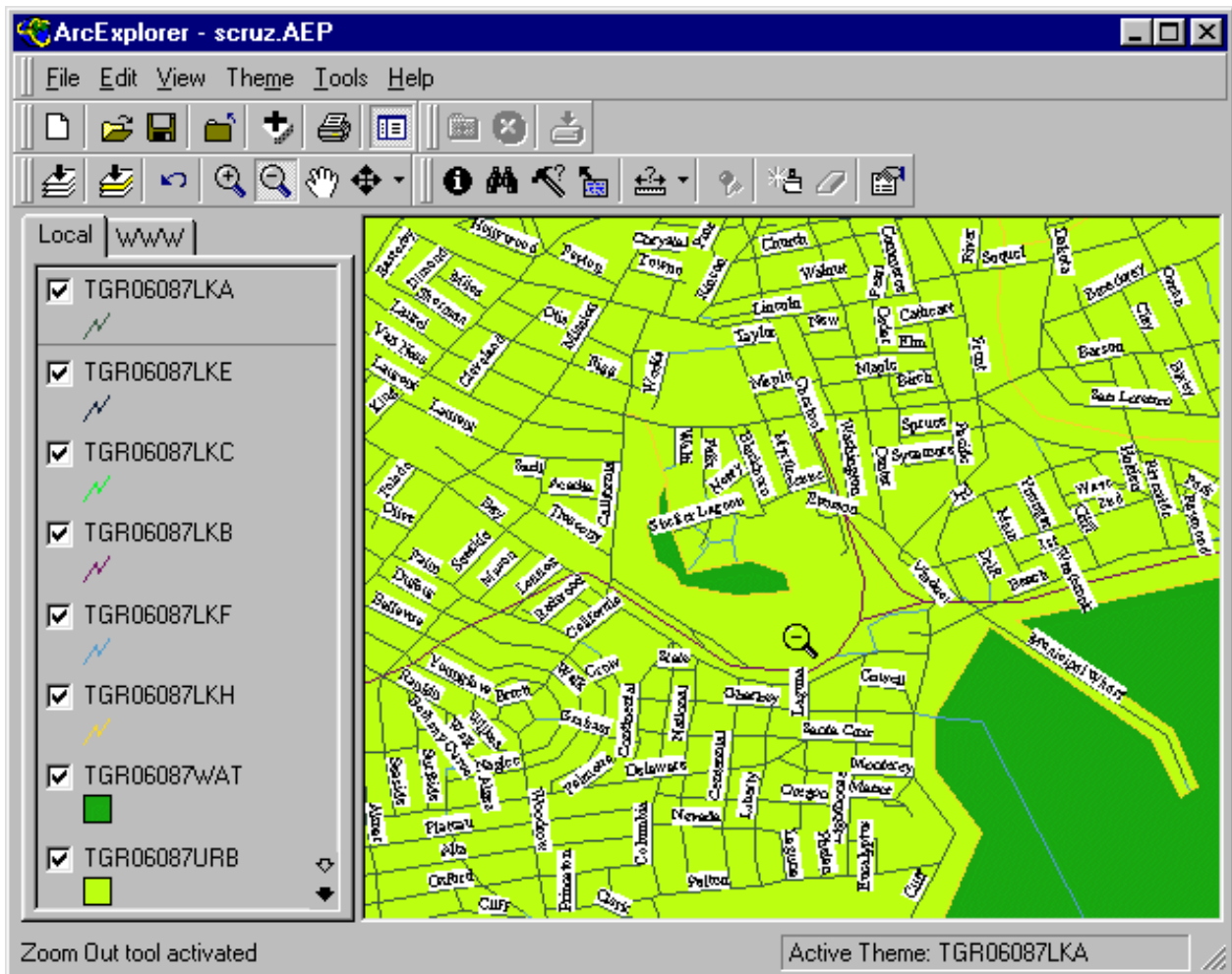
Hold down your left button and drag the map to a new location and release the button. The map will redraw at the new location. This is known as "panning."



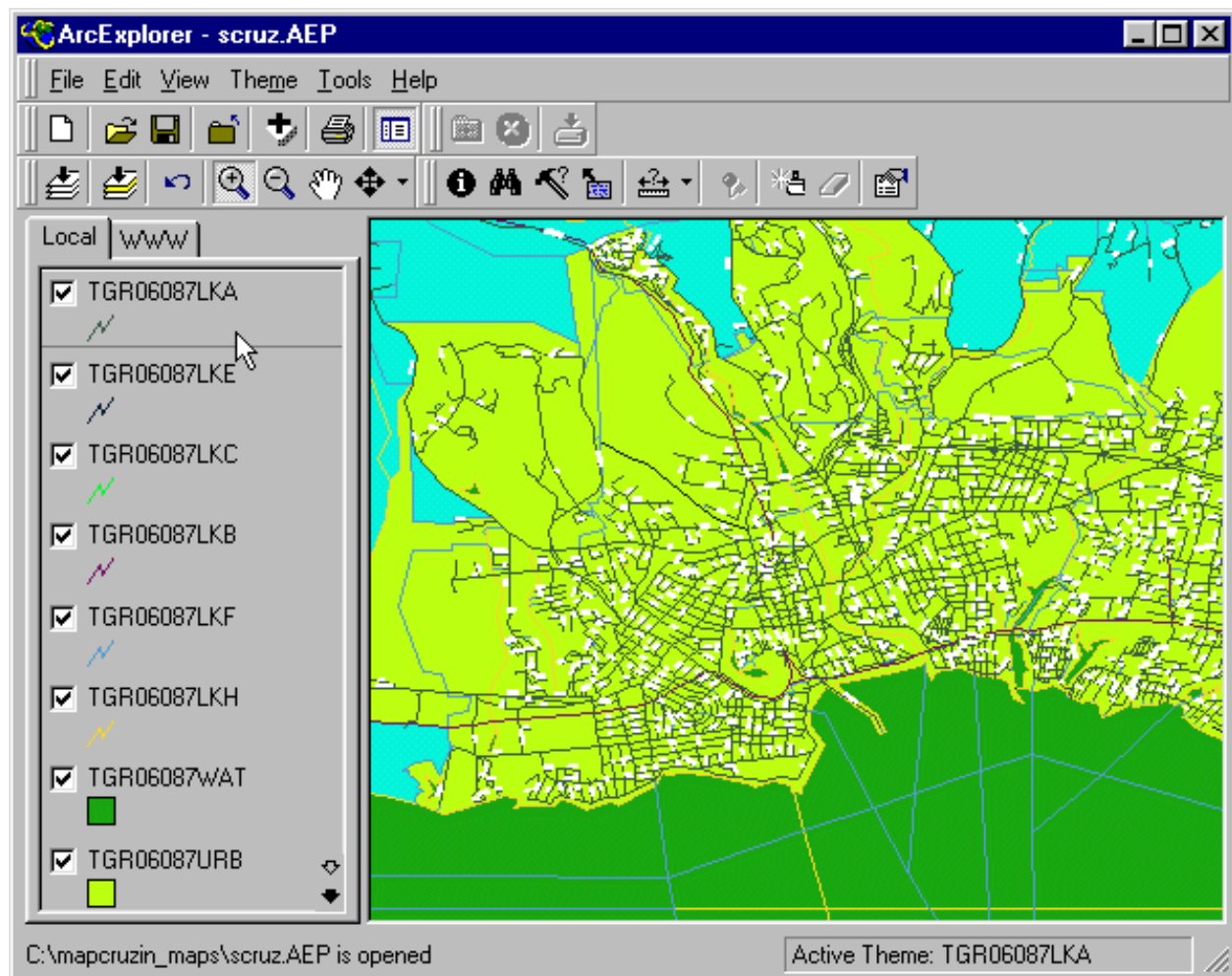
Finally, click on the small magnifying glass icon with a minus(-) symbol.



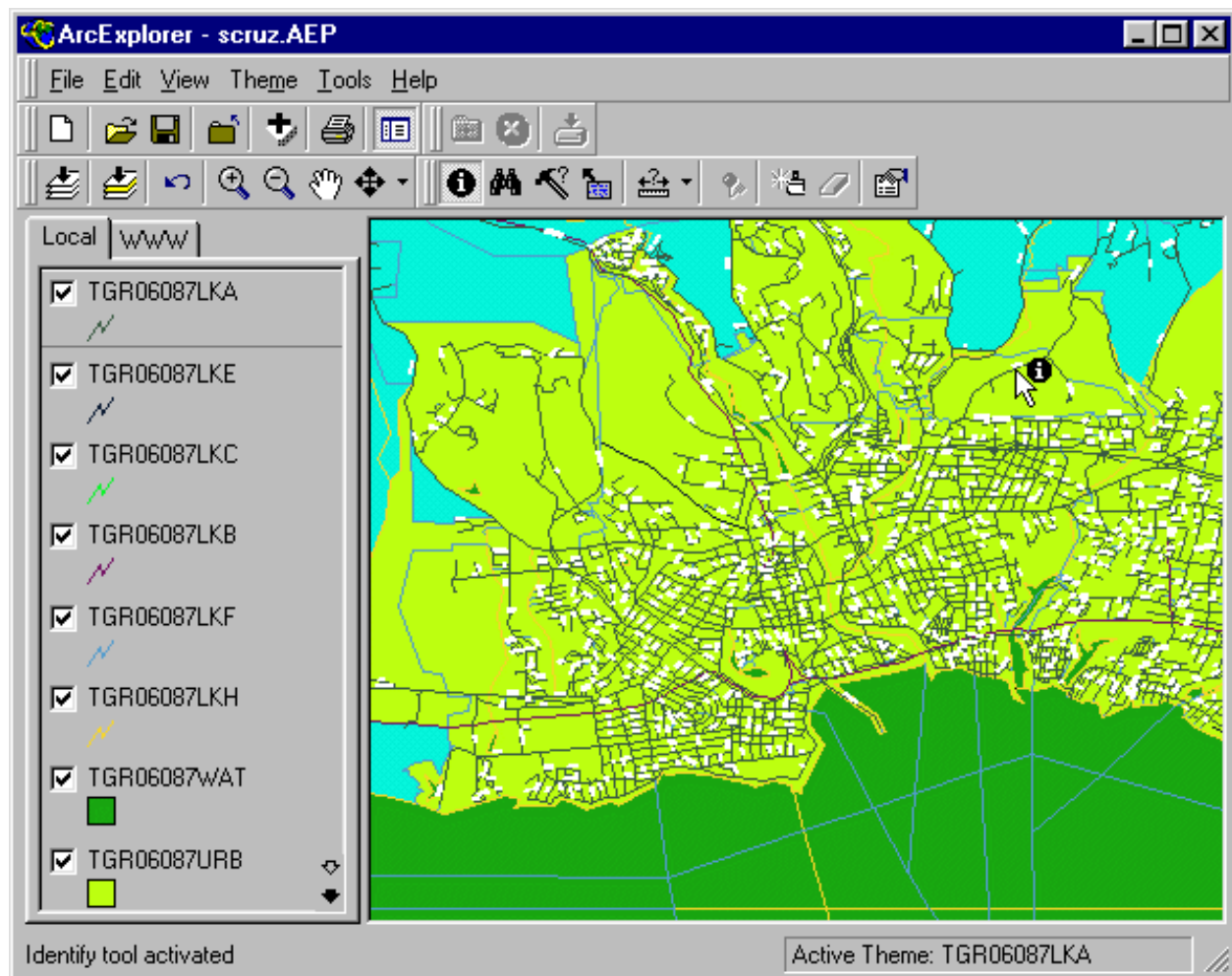
Click anywhere on the map and the map will zoom-out centering on where you clicked.



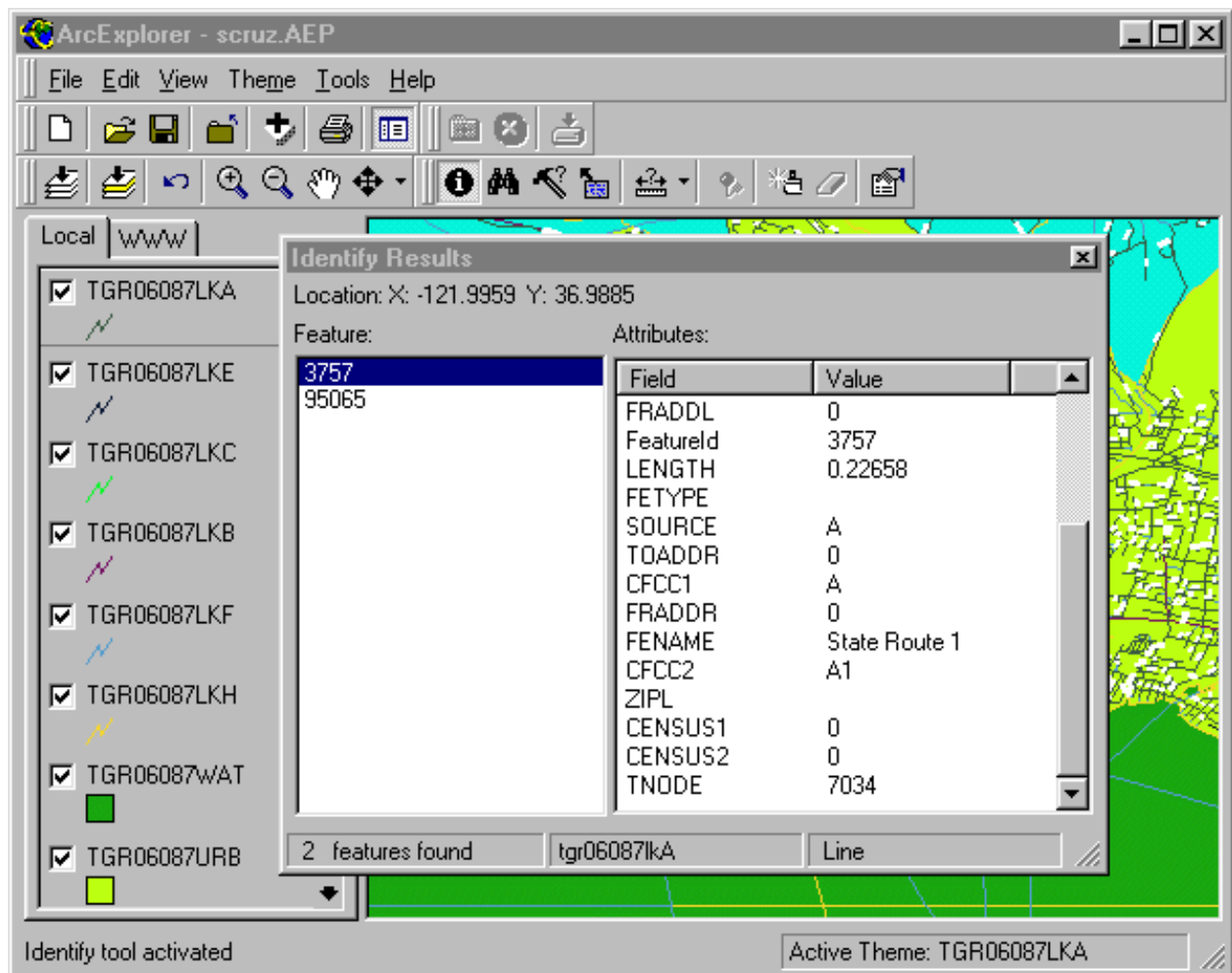
Now you will learn to identify features on a map. I set "roads" as the top layer. It is the topmost layer on the map itself and on the theme menu to the left of the map. The roads layer is named "TGR06087lka" (more about these obscure names below). To obtain information about a feature in a layer, the layer must be highlighted. Click on the name of any layer and you will see a raised box appear around it.



Click on the information tool (a black circle with the letter "i" on it), move your mouse pointer to the map, place its point on a road and click the mouse button.

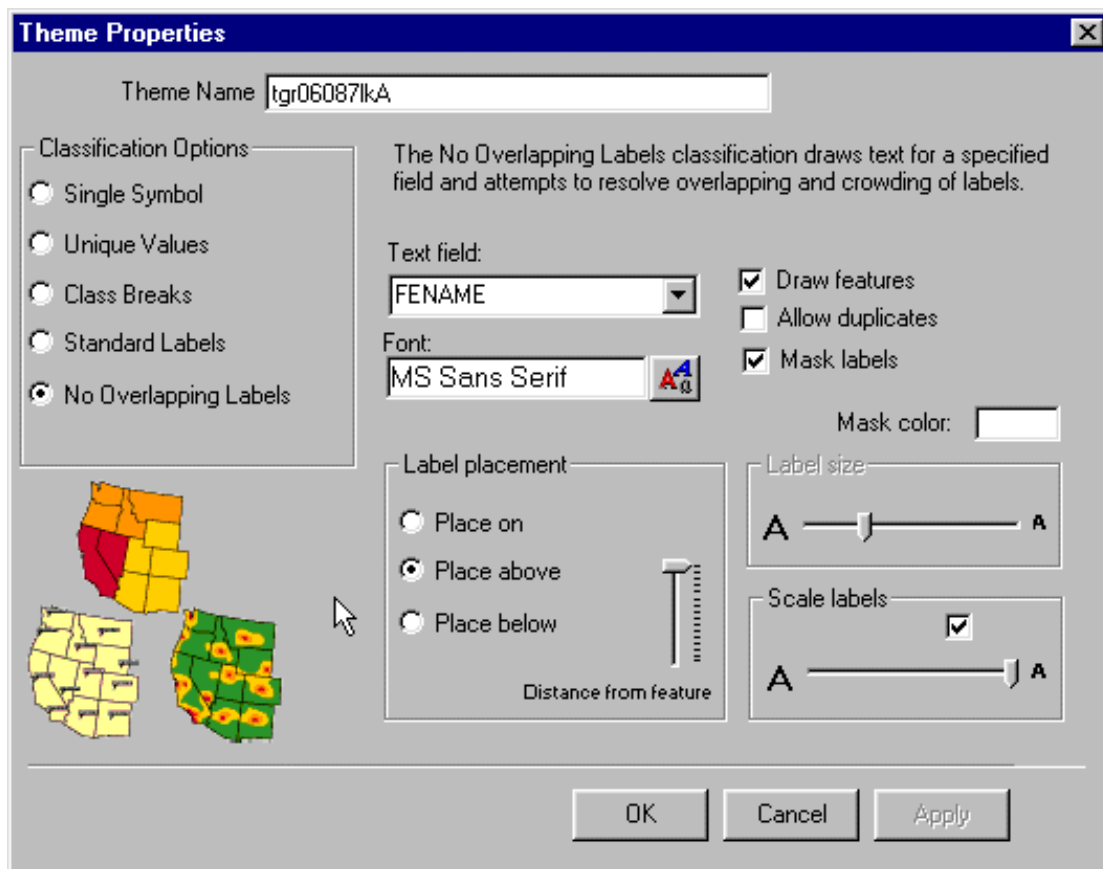


A box will open up showing all the information in the database related to that road including its name.



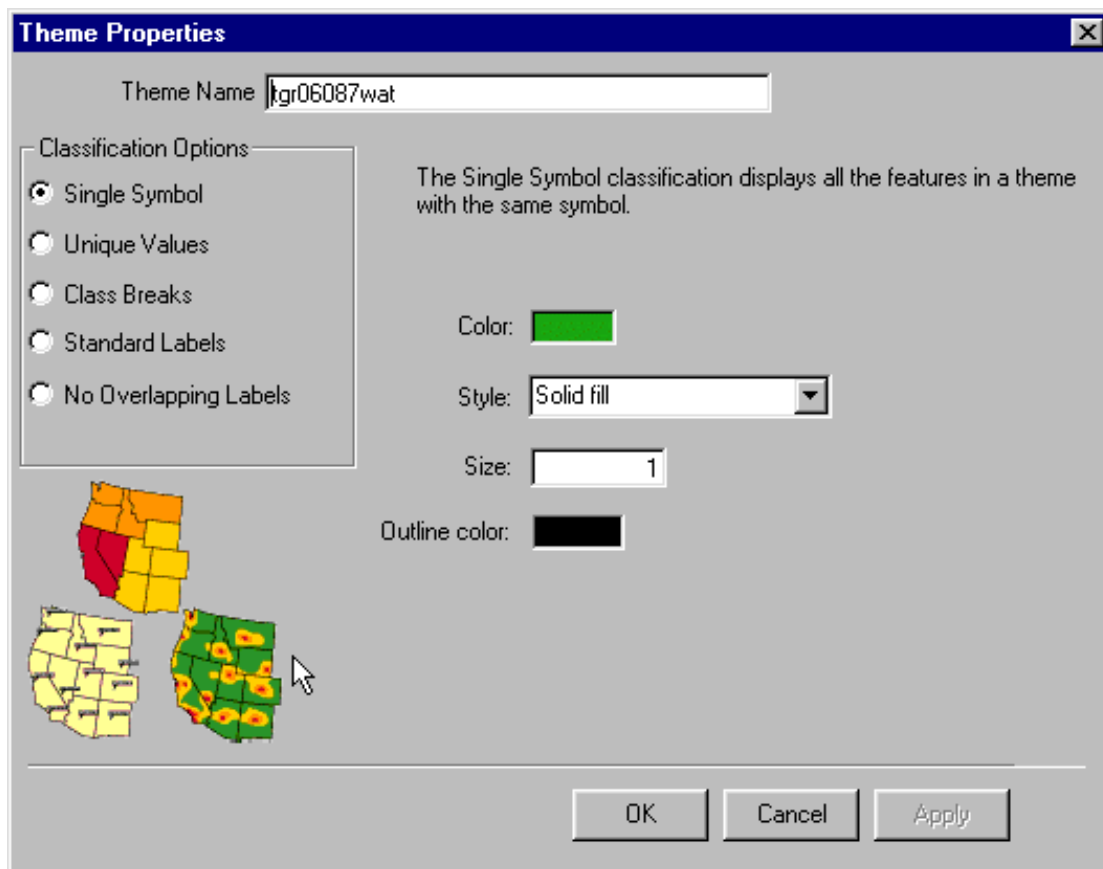
Layer names like "TGR06087lka" are named that way in the Tiger files. To find out what these layer names mean, click on the file "readme.html" in your c:/mapcruzin_maps/ directory. An internet browser window will open up. You will see that files with that end in "lka" as the above file does, are "Line Features - Roads." That is a little less obscure at least.

Now go back to ArcExplorer®, click on the name of the top layer "TGR06087lka" to highlight it if it is not already highlighted. Now double-click on "TGR06087lka" and a box will open.



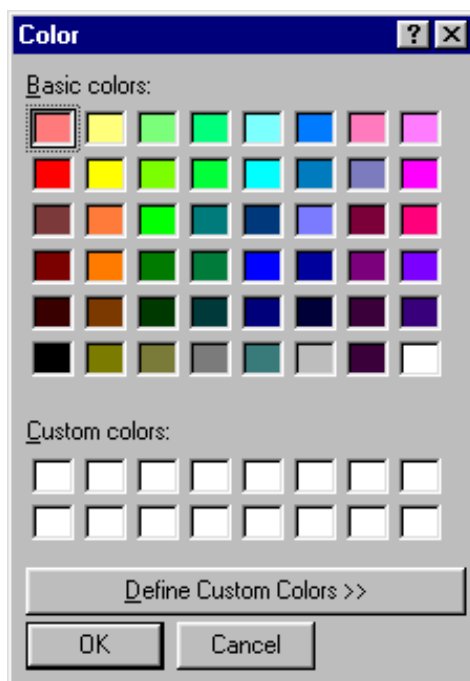
You can change all sorts of theme attributes. At the top you can change the name of the theme to something like "Roads" or "Streets." Give it a try. This is also a good time to experiment with the other attributes. Change colors, label sizes, etc. -- play with this for awhile.

Here is another one to try. In the last example, you were changing the attributes of a line layer -- roads, streets and highways. In this example you are changing the attributes of a polygon layer. Highlight layer "TGR06087WAT" and double-click on it. This dialogue box looks a bit different than the last.

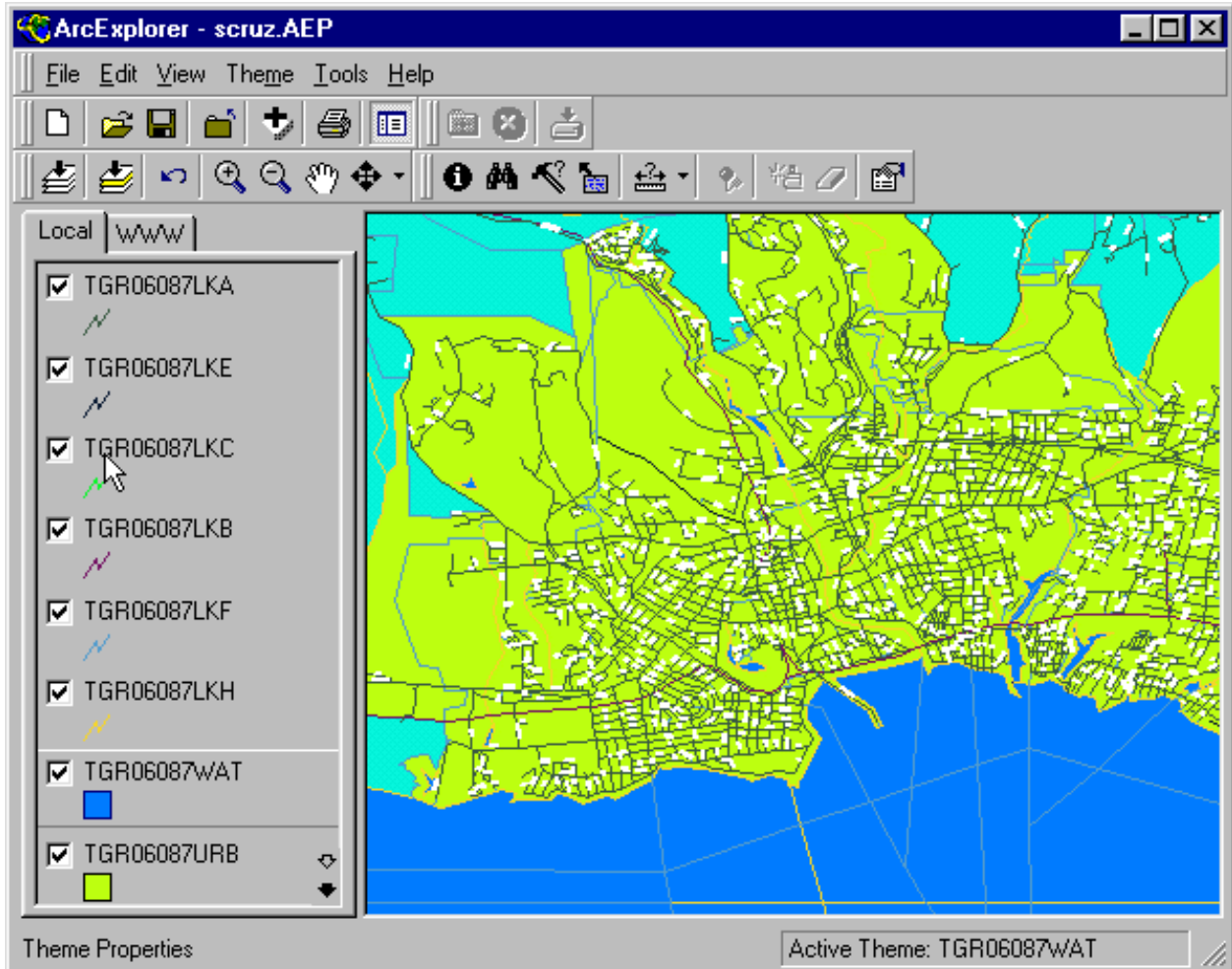


This layer happens to be the water body layer. Normally water is colored blue on maps rather than green, so let's change the color to blue and change the outline to a darker blue.

First, double-click on the green color box and a dialogue box should pop-up that looks like this.



Click on any blue that you like for your water color. Now close this box and you will be back to the water layer dialogue box. Double-click on the black "outline color" box and change the outline of your water layer in a similar fashion. You also change styles, line sizes, and other things. Experiment! If you chose color similar to mine, your map should look something like this.



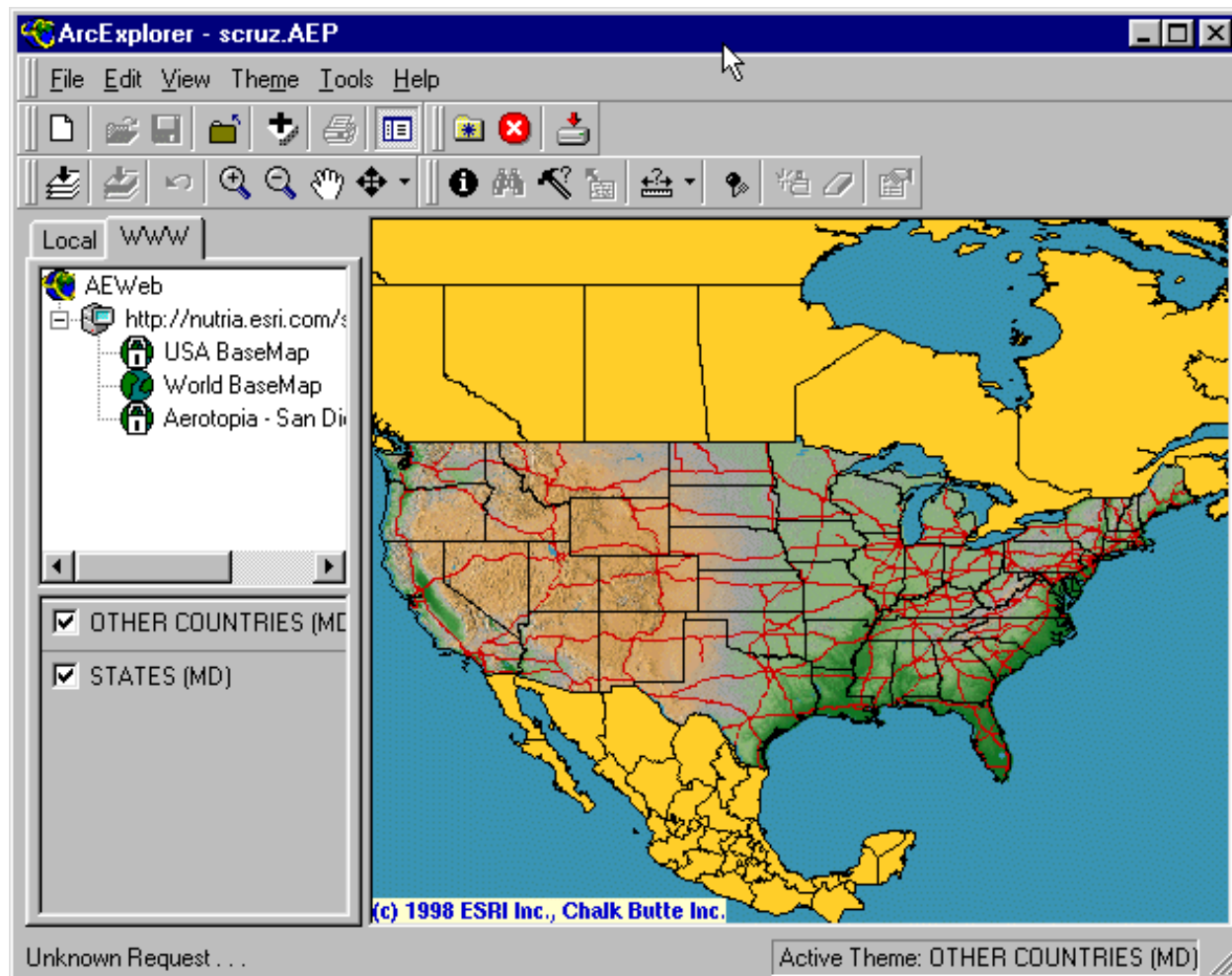
Remember, you can't break anything. At worst, you can go to the "File" menu and choose "Close Project." When asked if you would like to save the project, answer "no." When you reopen the project it will be just like it was when you began the tutorial. BUT, if you like what you have done so far, by all means save it. If worse comes to worse, you can reinstall the project by re-running the "scrux.exe" program as described earlier in the tutorial (2. GETTING STARTED).

To maintain the original project and your new project go to "File" and "Save As" and choose a new name for your project. Now you will have both the original and your modified project.

As you go through the "readme.html" and identify the various layers, you can change their attributes and rename them so that they make more sense to you. You can also turn various layers on and off by checking or unchecking the box to the left of its name. Try unchecking the topmost roads layer. You will see that your map now redraws much faster. This is because the roads layer has much more data than any other layer in the project. The more data you have, the slower the map gets.

You can also reorder your layers and define which layer is on top, which is on the bottom and the order of all those in between. Do this by placing your mouse pointer over the layers name, holding the left button down and dragging the layer up or down to a new location. As you do this you will discover that some layers have obscured others. Getting the layers in the "right" order and all their attributes "correct" is one of the major tasks of a digital cartographer. Take some time getting familiar with this.

Fun stuff. This is neat and it will also give you a sense of how "real" cartographers choose attributes for their various layers. Make sure that you are online and click on the tab "WWW" at the top of the map layer menu. Now double-click on "AE Web." A box will open with "ESRI ArcExplorer® Web Site" - click on "add url." You will see that 3 subcategories have been added. I clicked on "USA Basemap" and came up with this.



Double-click "USA Basemap" and some themes will appear. Now zoom-in and more themes will be added - pretty nifty. You can zoom-in, zoom-out, navigate and identify features on this map just like you can with your offline project. Take some time here and have some fun while you learn.

4. LEARNING MORE

Note that you must be online for the links in this document to work.

ArcExplorer® is a wonderful learning tool. Be sure to download the documentation so that you can take advantage of all its features -- there is quite a bit there. When you are ready to move up to a "full-blown" GIS, I recommend [Caliper's Maptitude GIS](#). I use it for all of my work and have found it to be very powerful, very inexpensive compared to the competition, easy to use and it includes a large bundle of free data. It also handles the ArcView®/ArcExplorer® shapefile format and almost every other digital format very well.

5. ADVANCED TUTORIAL

We have a more advanced tutorial, our Learn2Map GIS Mapping Tutorial and Atlas. It is enhanced with various screenshots and includes detailed instruction on creating your own GIS project, learning how to download and add more layers to your map project. It also includes an enhanced list of free GIS resources and free tutorials. This list is updated frequently. Visit www.Learn2Map.com for more information.

If you have any comments or questions, need help or need custom map layers, I would love to hear from you. Please email me at mike@learn2map.com. I look forward to hearing from you.

6. FREE UPDATES

If you haven't already done so, be sure to signup so that you will be notified of updates to and new editions of this GIS tutorial. Go to, http://www.mapcruzin.com/learn_to_map/ to signup now.

Thank You,



Michael R. Meuser, M.A., Ph.D. (abd)

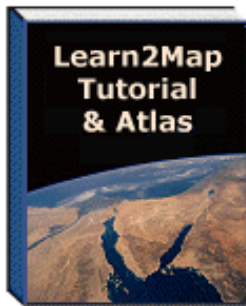
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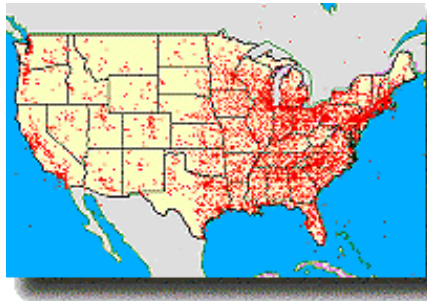
Visit [Mike's web page](#).

These are highlights of the various products that we offer. Click on the links in each description below for full details and ordering information. **If you have any problems with the links below, please visit www.mapcruzin.com.**



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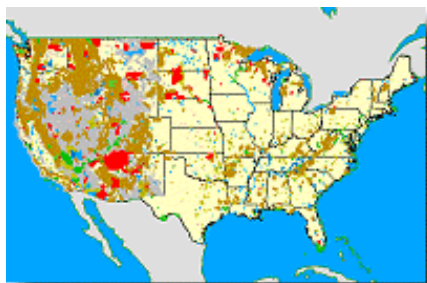
We have just updated our Learn2Map GIS Tutorial and Atlas, adding many screenshots, more geodata and to help you learn to use the program and navigate the maps. We also have a free GIS tutorial that you may download - [Click here](#) for details.



[Toxic Release Inventory \(TRI\) Maps](#) - Learn more about the potential risks that toxic chemical releases pose for your community.

We have taken the Toxic Release Inventory (TRI) data and created digital maps for your use. These environmental pollution maps are in shapefile format and will work with the free ArcExplorer® GIS viewer, ArcView® GIS, and many other GIS and mapping programs.

We have also included easy to follow instructions that show you how to add streets, highways, census tracts and much more to your maps. Use our [free mapping tutorial](#) with ArcExplorer® and learn even more ... [Click Here](#) for immediate access.



[Federal Lands & Indian Reservations Maps](#)

Shapefiles work with the free ArcExplorer® GIS viewer, ArcView® GIS, and many other GIS and mapping programs. Each layer includes easy to follow instructions that show you how to add streets, highways, census information and much more to your maps. Map layers include Indian lands (BIA), Forest Service Bureau, National Park Service, Bureau of Land Management and more ... [Click Here](#) for immediate access.

You can easily learn to make use of any of these maps with the help of our free [Mapcruzin Map-Tutorial](#) or our [Learn2Map Tutorial and Atlas](#).

Please [contact us](#) for more information.

If you have any problems with the links above, please visit www.mapcruzin.com

Thanks For Your Consideration and Best Regards,



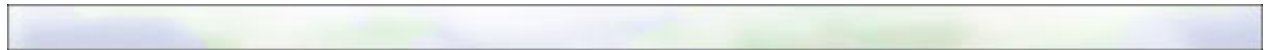
Michael R. Meuser

MapCruzin.com, online since 1996, is an independent firm specializing in the publication of educational and research resources.

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Developed and Maintained by Michael R. Meuser, meuser@mapcruzin.com
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Programming, Web and Graphic Design by [Aran C. Deltac](#)

Managed hosting & custom programming provided on our dedicated server, SilentForest.net

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