

4.4 Combining Imagery and Coordinates

Sometimes you will want to map both coordinates and an image. Getting the projections of the two to work together can be a challenge. This tutorial will walk you through one way to map the data.

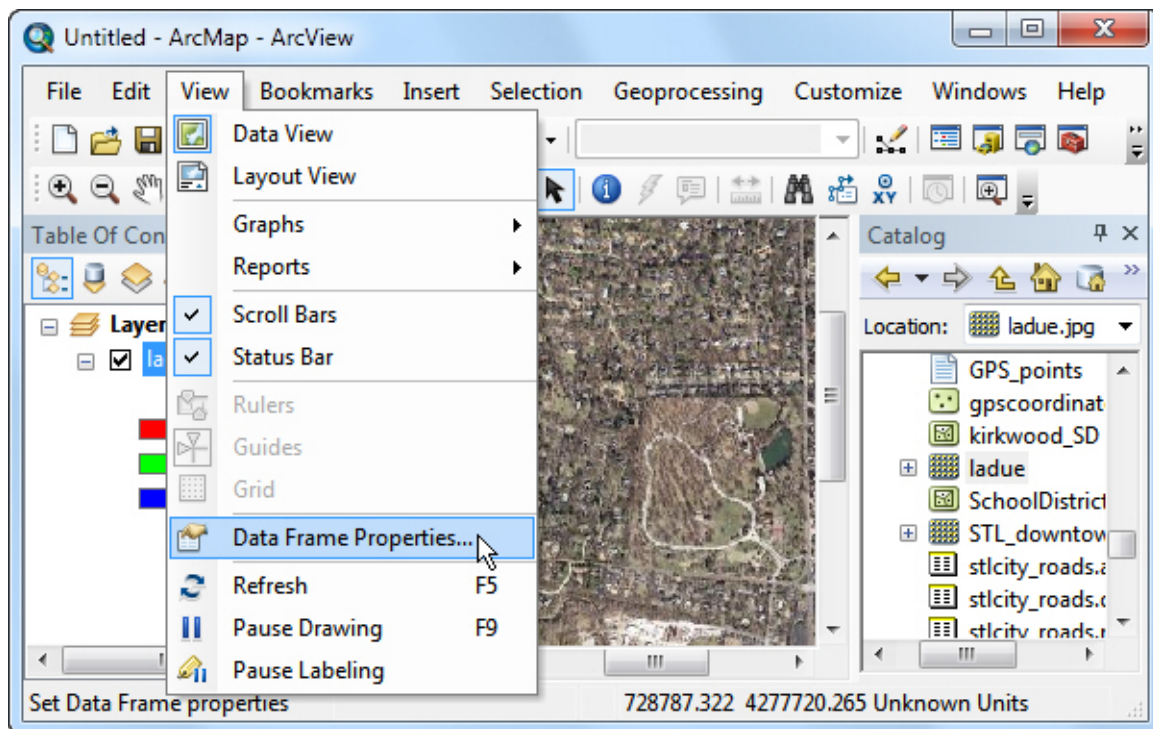
Getting the image set up

First, open ArcMap and begin a new map.

Drag the image you want to map (such as an aerial photo) from the Catalog window into the data frame. (*Instructions on finding, preparing, and downloading aerial photographs and topographic maps can be found in the section on importing imagery: 2.3.4.*)

In the example, an aerial photo of Ladue, Missouri was added.

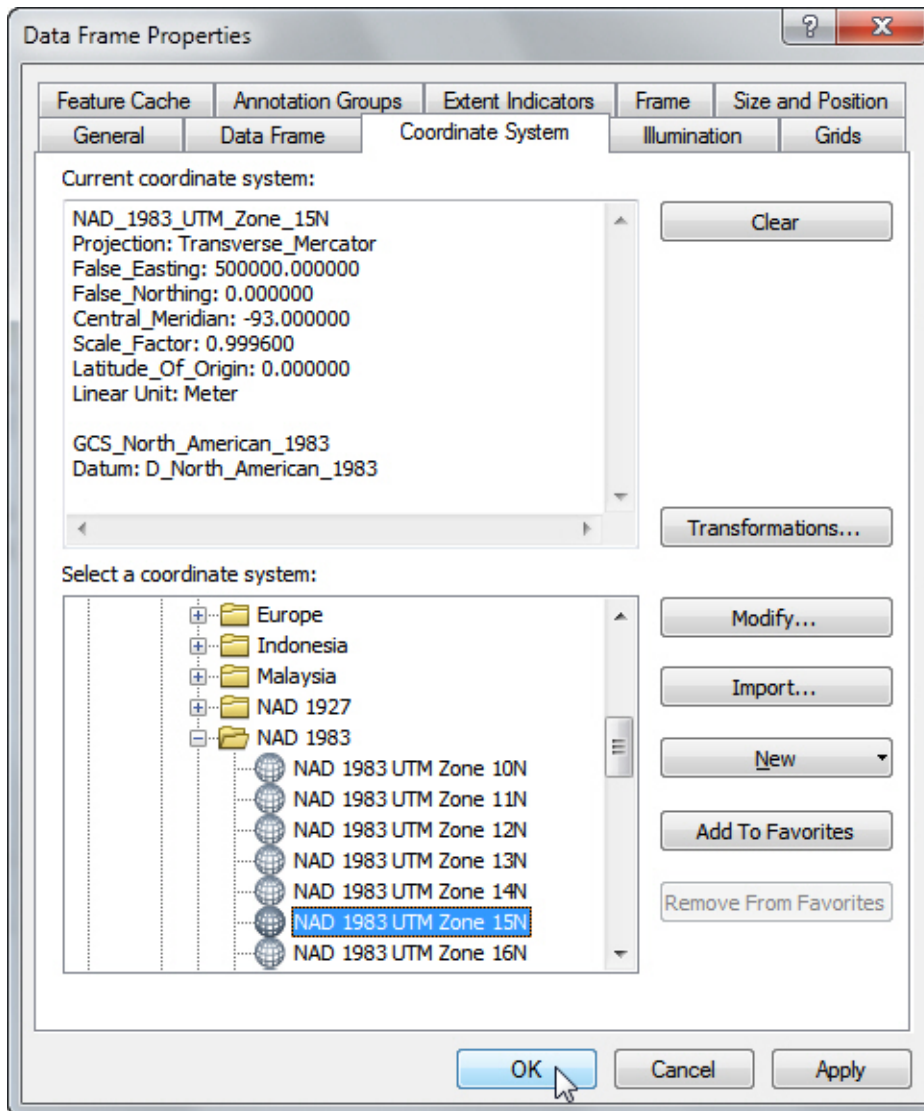
Next, we need to set the projection. To do this, open the “View” menu and then click “Data Frame Properties.”



In the “Data Frame Properties” dialog box that appears, go to the “Coordinate System” tab.

Here select whatever coordinate system was used by the image. For the example, knowing that the coordinate system for the image is NAD 1983 UTM Zone 15N, choose:

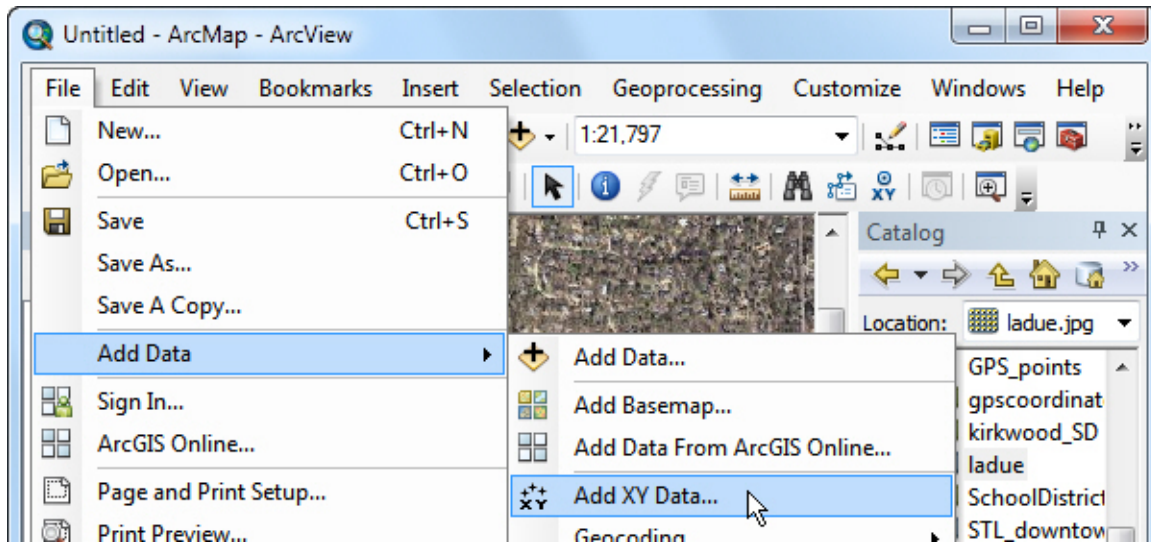
Predefined > Projected Coordinate Systems > UTM > NAD 1983 > NAD 1983 UTM Zone 15N



Click “OK” to set the coordinate system, close the box, and return to the map

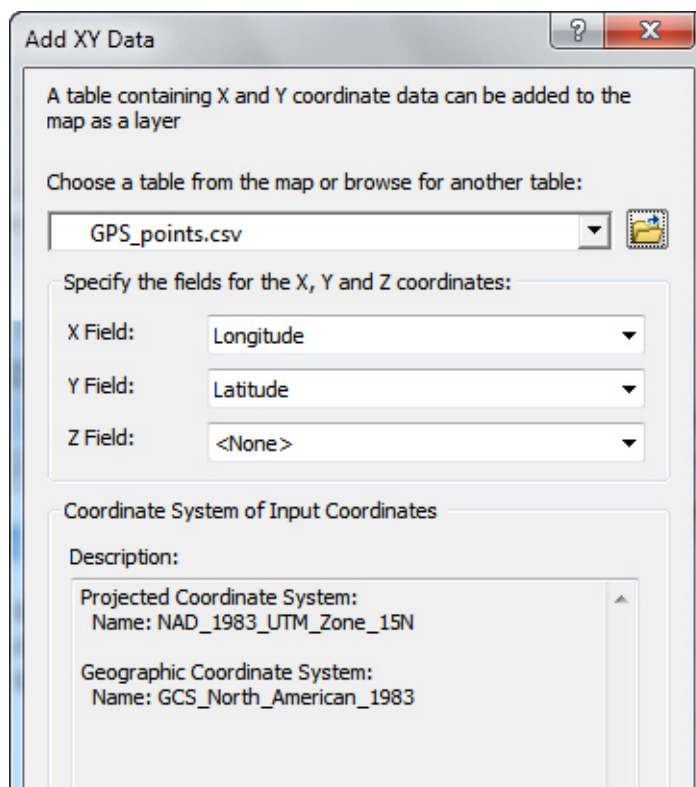
Adding the coordinates

From the “File” menu click “Add Data” then “Add XY Data.”



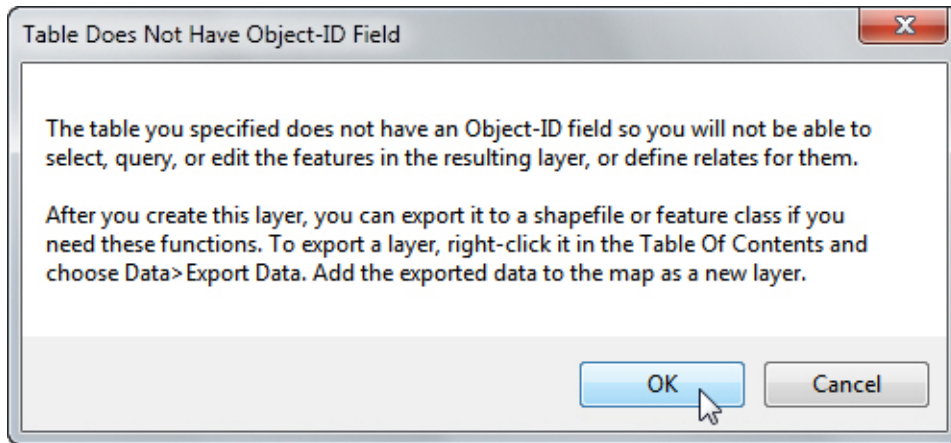
In the dialog box that appears, click on the folder icon (📁) and navigate to the .csv file you want to use. (*Instructions on saving coordinates as a .csv file can be found at 3.3.1.*)

The X Field and Y Field sections should fill themselves in with Longitude and Latitude respectively:



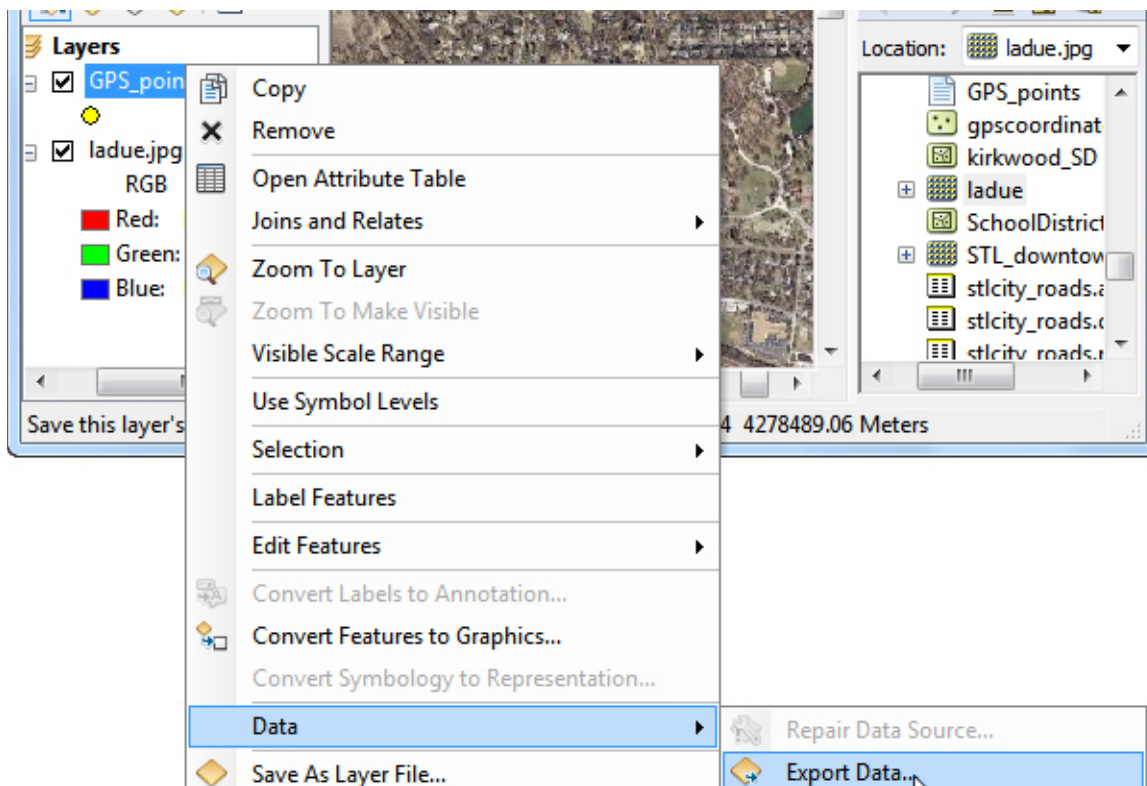
Click “OK.”

You may get an error box that your table does not have an Object-ID field. We will fix that in a moment. Click “OK” to close the error box.

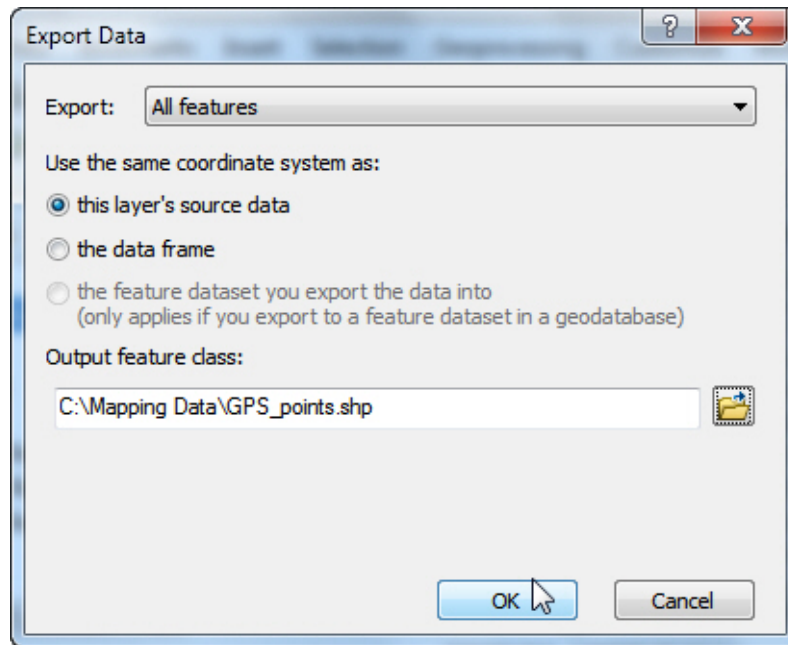


Create a shapefile from the coordinate data

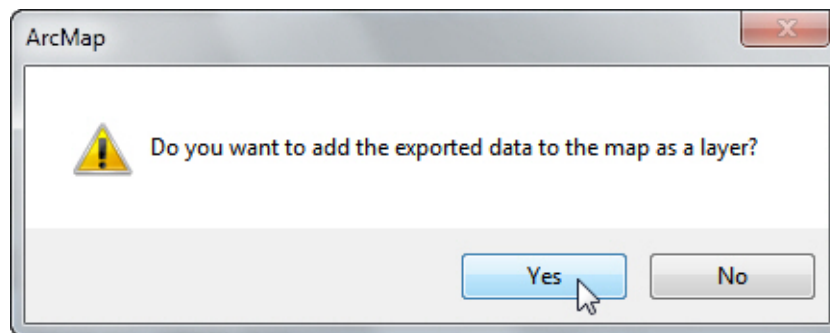
Right-click the .csv file name in the Table of Contents, then click “Data” and “Export Data...”



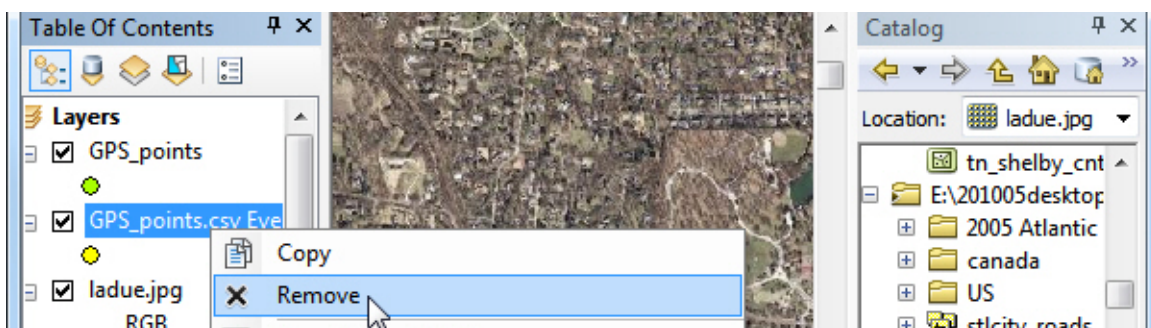
In the “Export Data” dialog box that appears, choose to export “All features” and use the same coordinate system as “this layer’s source data.” Select a file location and name for your new shapefile and click “OK.”



When asked, add the new shapefile to your map as a layer:

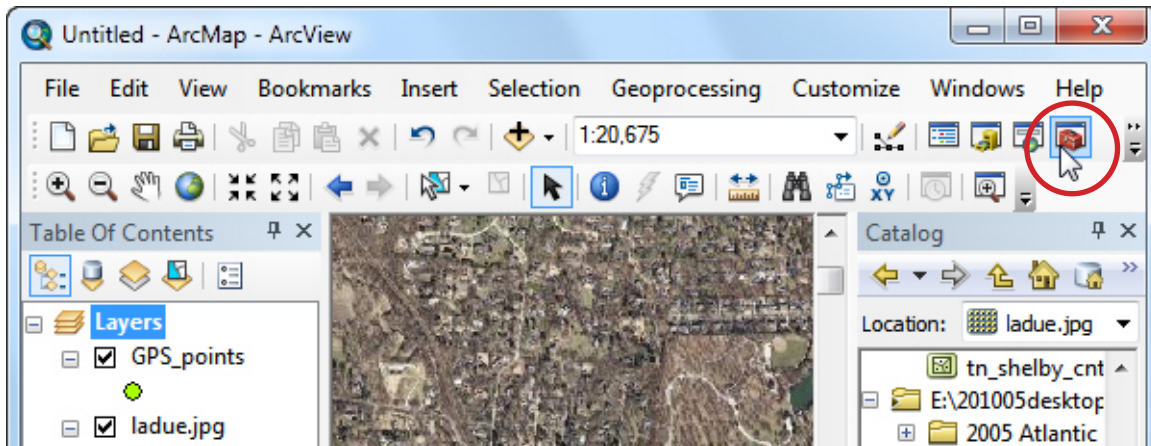


Back at your map, right-click on the .csv file name in the Table of Contents and then click “Remove.”

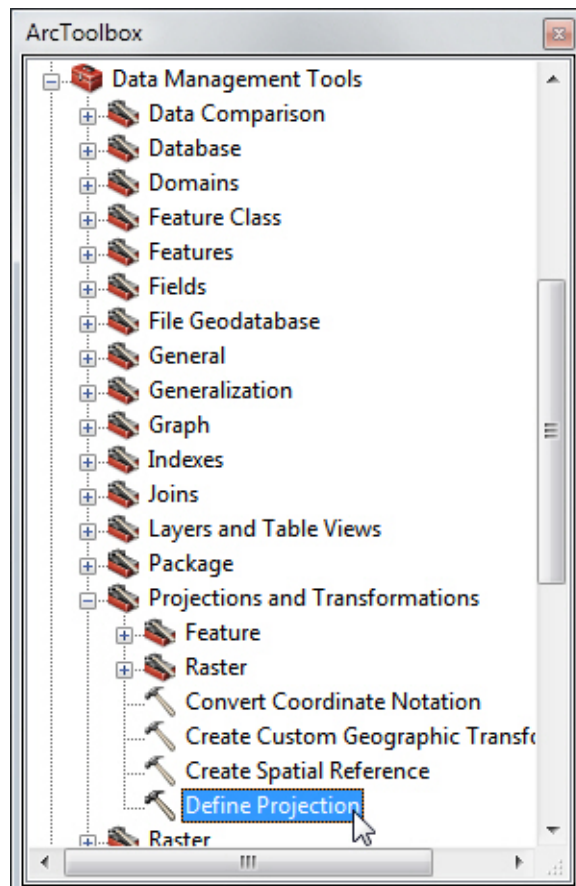


Setting the projection of the new shapefile

Open ArcToolbox by clicking on the ArcToolbox icon ().



In ArcToolbox double-click on “Data Management Tools” then double-click “Projections and Transformations.” Finally double-click “Define Projection.”



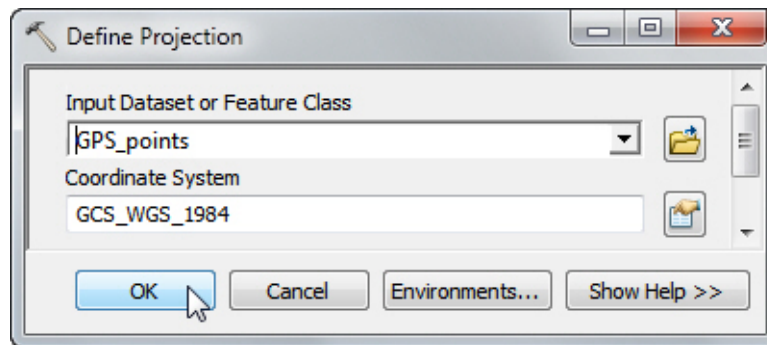
In the “Define Projection” dialog box, use the drop-down arrow or the click the folder icon (📁) next to the “Input Dataset...” box to navigate to the file for which you want to define projection (in this case the new shapefile “GPS_points”).

Then click on the 📁 icon next to the “Coordinate System” box. In the dialog box that appears, click the “Select” button. Then double-click:

Geographic coordinate system > World > WGS 1984.prj

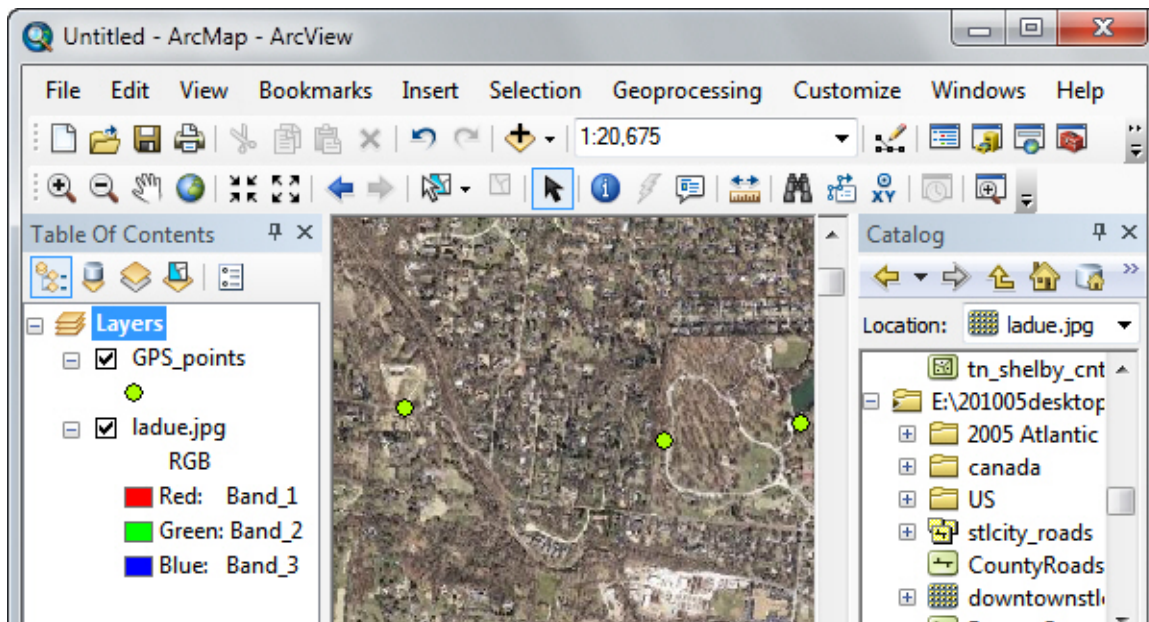
Click “OK.”

Your “Define Projection” box should look like this:



Click “OK.”

After a moment, the coordinates will appear in the correct location on your map:



This material is based upon work supported by the National Science Foundation under Grants No. 0639638 and 0833663. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.