

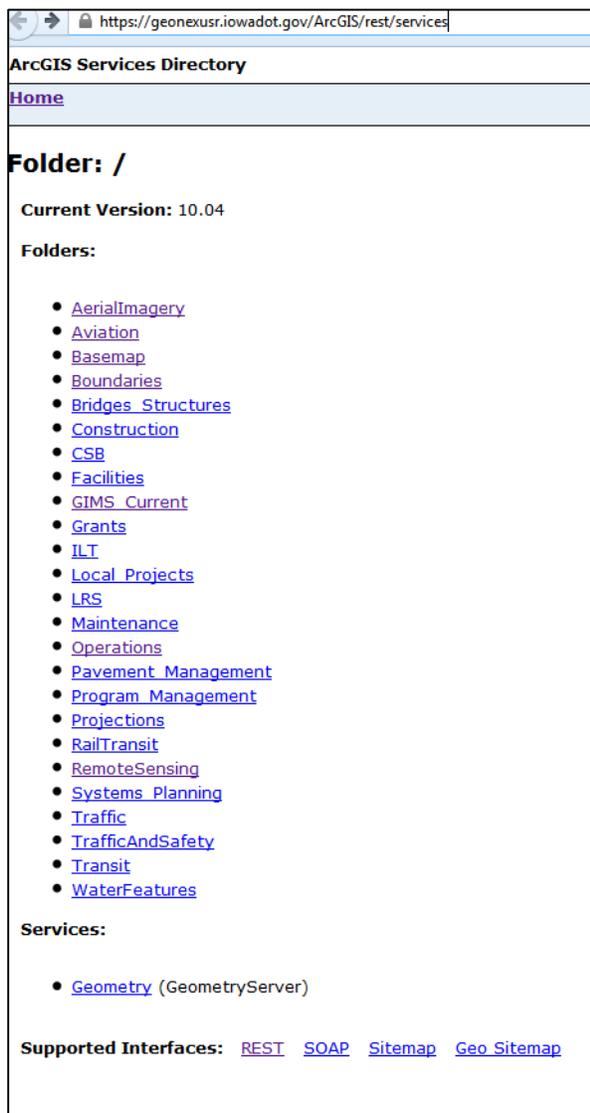
A Brief Explanation of Basic Web Services

What is REST?

Representational State Transfer (REST) is a way for software to work when distributed across a network. For example, if I want to view the Iowa Dept of Transportation basemap. I send a request to their server. The server then processes the request and sends the basemap back to me for viewing.

Please explain how to use a REST Services Endpoint page.

Upon clicking on the Iowa Department of Transportation's GIS REST services link (<https://geonexusr.iowadot.gov/ArcGIS/rest/services>) you will encounter the following image:

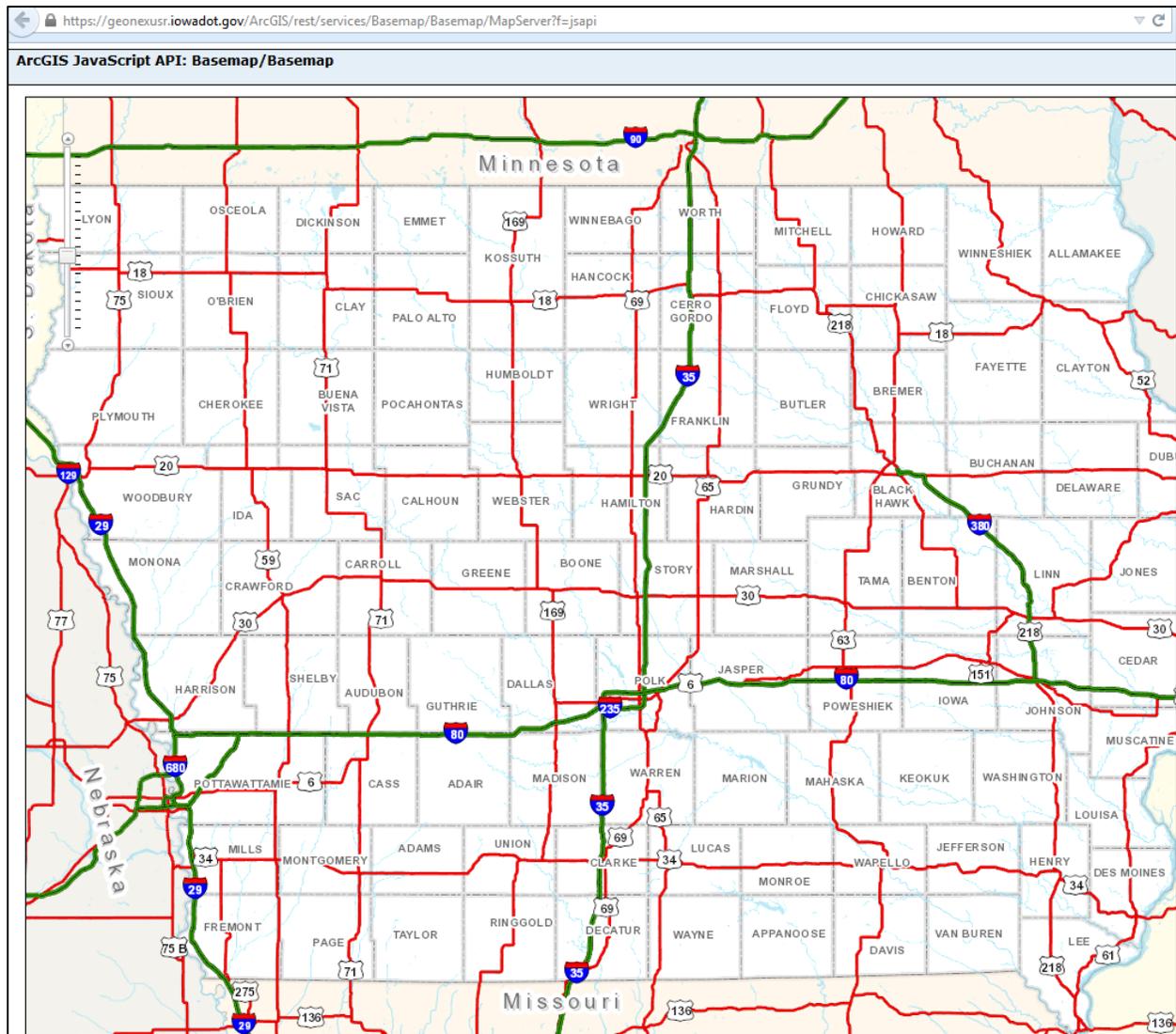


Now what?

There are many useful things that you can do. We will cover two options: viewing the REST services in a browser and adding the REST Services to ArcMap.

Viewing the REST Service in a Browser:

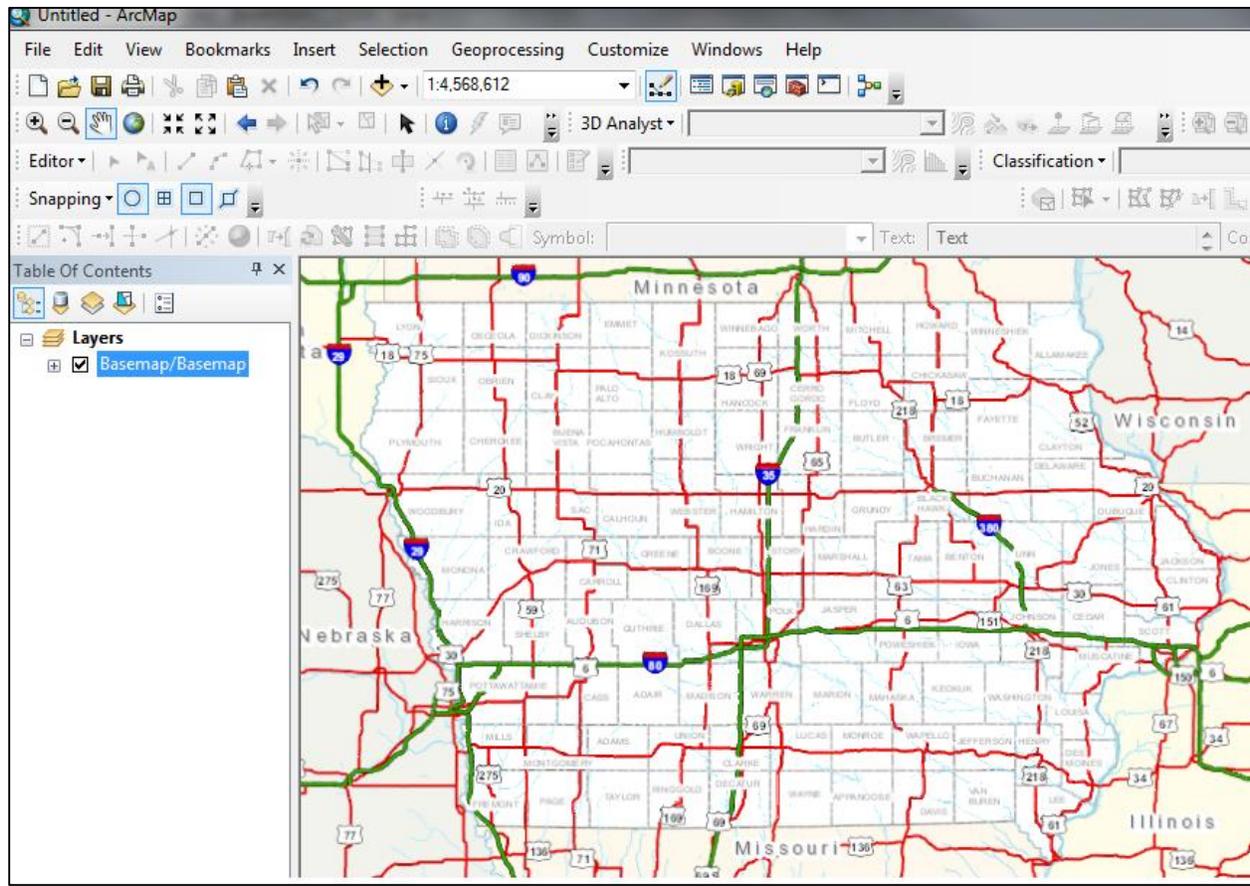
An easy way to view the REST service is to click on the service you would like to view – **Basemap**. This then takes you to a list of basemap options – choose **Basemap/basemap**. Now a page with details about this map are available. To view this map, choose – **View In: ArcGIS JavaScript**. A nice basemap of the Iowa should appear.



Adding the REST Service to ArcMap:

To add this REST service in ArcMap, start the program. Click on the **Add Data** button. From the Look In drop down menu, choose **GIS Servers**. Then choose **Add ArcGIS Sever**. The Add ArcGIS Server Wizard will start. Choose the first option - **Use GIS Services** and click on the Next button. Go back to your browser and enter the REST Services endpoint link (<https://geonexus.iowadot.gov/ArcGIS/rest/services>). Now click **Finish**. The Iowa DOT server

should now appear as *ArcGIS on geonexusr.iowadot.gov (user)*. Highlight that server name and then click **Add**. It will give you a list of folder options available on that server. Find the folder called **Basemap** and click on it. Now choose the Map Service called **Basemap** and click **Add**. The basemap should now be added to your project.



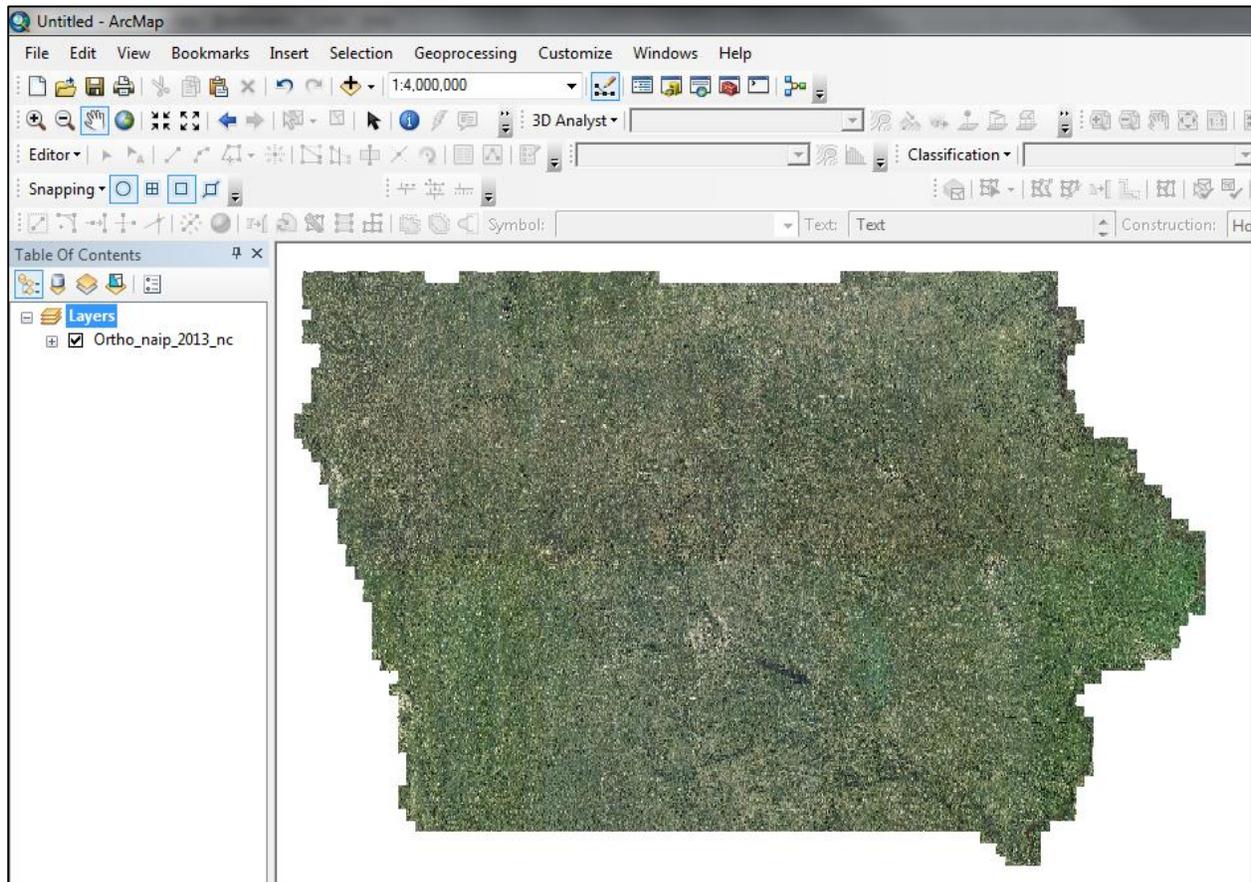
What is WMS?

Web Map Service (WMS) layers are map layers that are streamed over the internet. They may be imagery or map coverages. An advantage to using a WMS layer is the ability to access and use large files, for example high resolution imagery, without having to download or store those large files on a local machine. They are also nice because when the WMS layer is updated, you don't need to download it again because the service will remain as up to date as the publisher makes it. Another advantage to using a WMS layer is that the images are seamless, whereas when downloading individual county data, there is not always a good alignment on the edges. One thing to remember when using a WMS layer is that you need a good high speed internet connection to be able to view and navigate the layer quickly.

To add a WMS layer in ArcMap, start ArcMap. Click on the **Add Data** button. From the Look In drop down menu choose **GIS Servers**. Then choose **Add WMS Server**. The Add WMS Server window will appear. For this example, we will be using the NAIP 2013 Natural Color Imagery from the Iowa Geographic Image Server -

http://ortho.gis.iastate.edu/arcgisservice/services/Ortho/naip_2013_nc/ImageServer/WMServer?

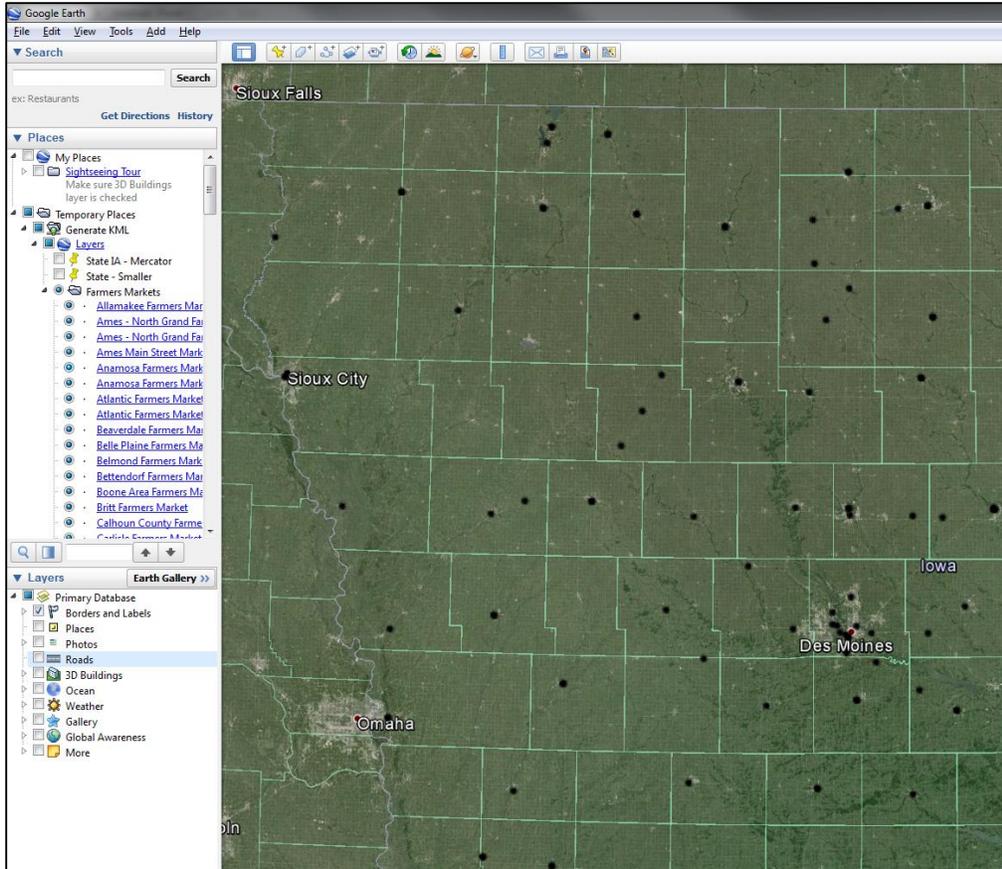
enter that whole URL including the question mark in to the URL box. Then click on the button **Get Layers** and highlight the layer below and click **OK**. A natural color image of Iowa should appear.



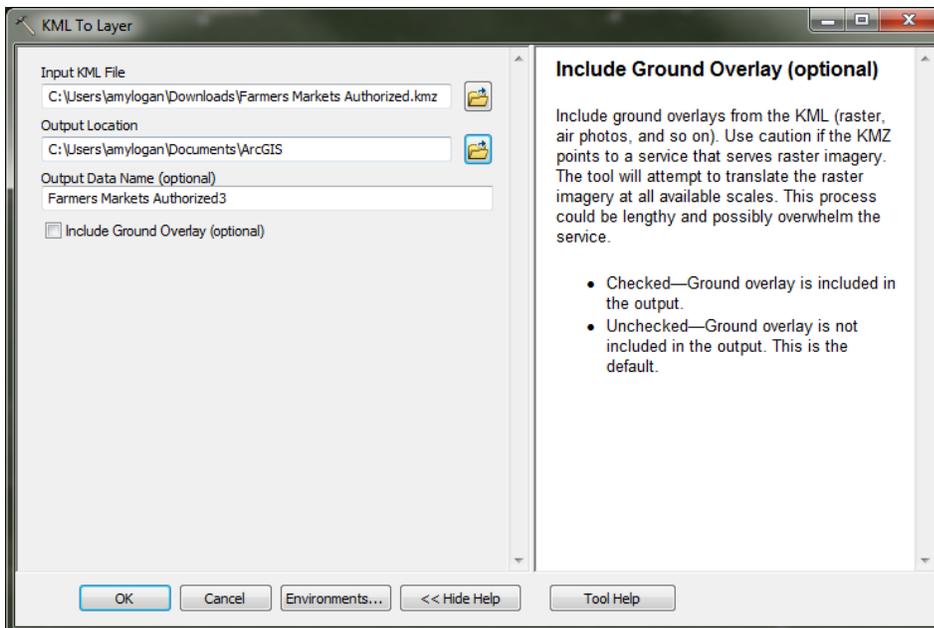
What are KML and KMZ?

Keyhole Markup Language (KML) is a file type that was developed for use with Google Earth and contains basic geographic coordinate information such as points or lines. KMZ is a zipped format of a KML file. These files can be easily created and shared through Google Maps or Google Earth, as well as many GIS programs such as ArcMap or QGIS.

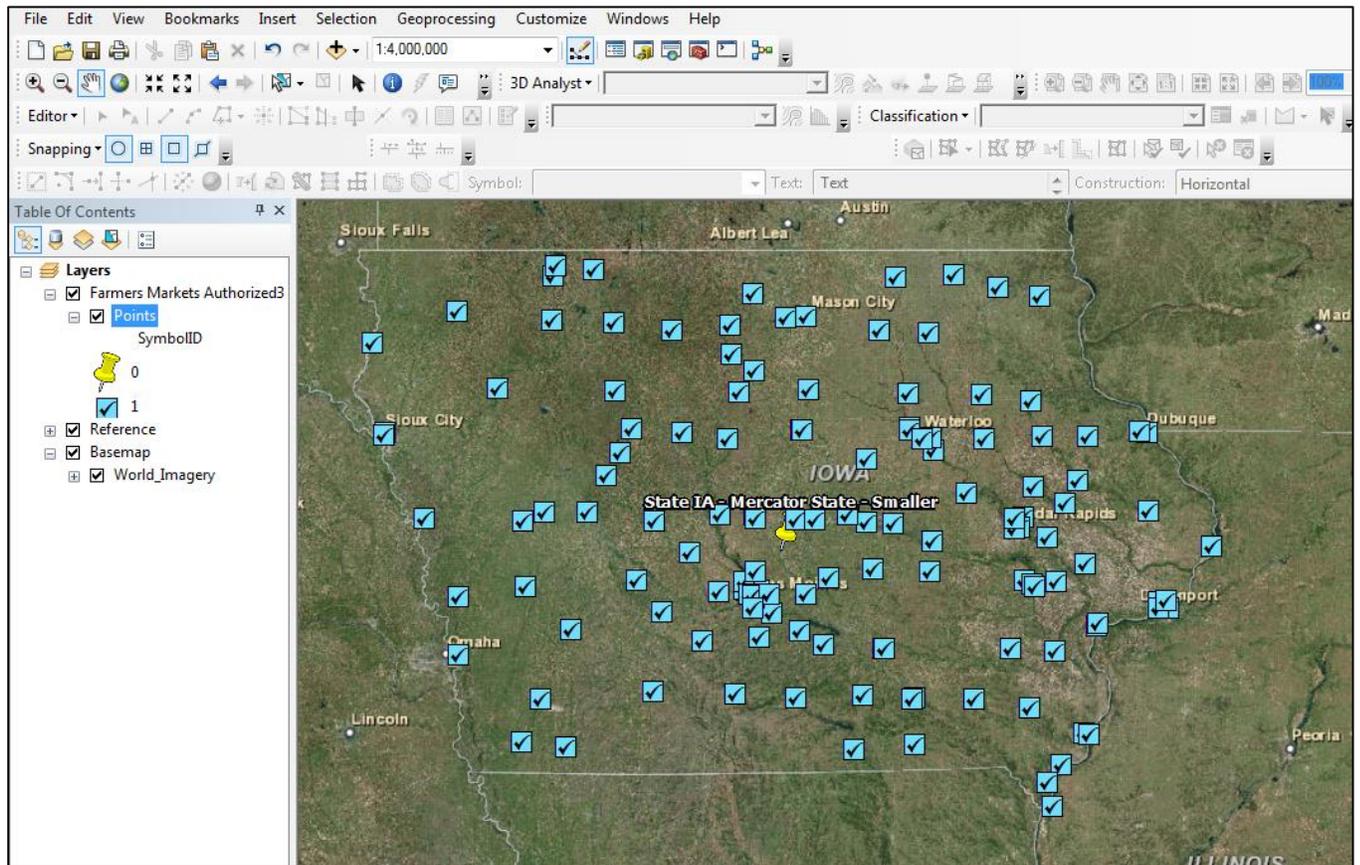
For this example, we will be using agricultural data from the Iowa Legislative Services Agency (<https://gis.legis.iowa.gov/arcgis/rest/services/AG/FarmMarketsStands/MapServer>). First we will retrieve the KMZ file by scrolling to the bottom of the page and clicking on **Generate KML**. The Generate KML window will open. We will name the document **Authorized Farmers Markets**, check the box next to *Farmers Markets(0)*, and choose *Vector layers as vectors and raster layers as images*. Now click the button **Generate KML**. You will be given the option to open the file in Google Earth or save the KMZ. If you choose to open the file in Google Earth, it should look like the image below.



If you would like to work with the file in your ArcMap desktop, the file will need to be converted to a shapefile. KML files are not natively accepted in ArcMap, so the file must be run through the KML to Layer conversion tool which can be found in the Toolbox – Conversion Tools – From KML – KML To Layer.



Once the KMZ has been converted, the points should appear on the map.



If you have any additional questions, please contact the ISU GIS Facility, <http://www.gis.iastate.edu/>, 515-294-8451.