



# GST 103: Data Acquisition & Management Lab Series

## Lab 07: Data Sources

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## Introduction

This lab is part of a series of lab exercises designed through a grant initiative by the National Information, Security & Geospatial Technologies Consortium (NISGTC), funded by the United States Department of Labor in partnership with the Department of Education under the Trade Adjustment Assistance Community College and Career Training Grant Program (TAACCCT).

Your instructor may require that you provide screen captures and/or exported files. Please check with your instructor for the requirements specific to your class.

Data collection is an important task in the creation of a GIS. Data can come from several sources such as GPS data collectors in the form of text files, or from the internet as shapefiles. There is an abundant amount of GIS data available at no charge. Datasets that contain private information or information that is costly to collect may require a fee for use.

Data may be stored in a *coverage*, a data model for storing geographic features. We may receive data with an address that we want to display on a map. We can geolocate items using an address. The *geolocator* is a tool which helps us take point features from a text file and tie it to an address.

This lab includes the following tasks:

1. Geocoding
2. Building a Map

## Objective: Data Sources

The objective of this lab is to learn how to geocode and use the geolocator in ArcGIS. Additionally, we will practice creating a map from various data sources.

## Lab Settings

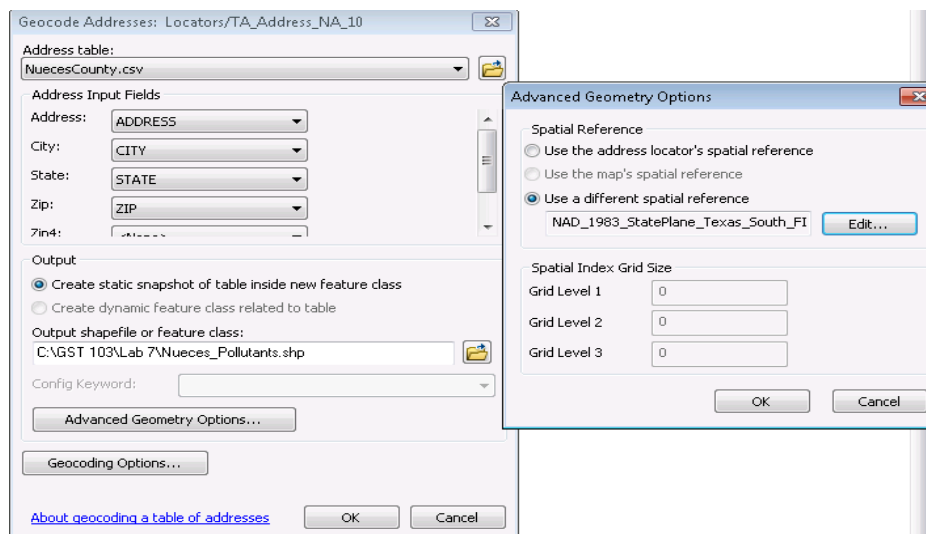
### Required Virtual Machines and Applications

Windows Machine User Account	Train
Windows Machine User Password	Train1ng\$

## 1 Geocoding

Using a geolocator, we can convert address data into point data. This allows us to visualize the addresses and makes it possible to tie them to a parcel of land. This can have applications in cadastral information systems, which show the boundaries and ownership of land parcels. The data we receive may need to undergo editing to ensure it has all the fields required, such as street address, city, state, zip code and country. This level of detail will allow the geolocator to locate the object to the left or the right side of a street.

1. Log into the computer using the settings provided in the Lab Settings section of this lab.
2. Click **Start->all Programs->ArcGIS->ArcMap 10.1** to a blank map.
3. Open ArcCatalog within ArcMap and connect to the *Lab 7* folder.
4. In the ArcCatalog window, open the Lab 7 folder and find the **NuecesCounty.csv** file. Right-click on the file and click on **Geocode Addresses**.
5. A window will pop up asking which address locator you would like to use. Use the selected **10.0 North America Geocode Service** and click **OK**.
6. Set the Address Input Fields. Set the output location to your Lab 7 folder and name it **Nueces\_Pollutants**. Click on the Advanced Geometry options and click the radio button marked **Use a Different Spatial Reference** and click **Edit**. Select **NAD\_1983\_StatePlane\_Texas\_South\_FIPS\_4205\_Feet** from the projections. Click **OK** and click **OK** to geocode those points. When it is completed, click **Close**.



7. **Nueces\_Pollutants.shp** is successfully created and is already in the correct coordinate system.

## 2 Building a Map

After completing data collection of GIS data, it is often a project requirement to create a finished product representative of the data, typically a map.

For this task, you will use data from several data sources that have been downloaded and resides in your *Lab 7 folder* to create a map, using ArcMap.

1. Open **ArcMap** if not already open.
2. There are several layers of shapefiles in the *Lab 7 folder*. These layers contain data pertaining to Texas and some to the United States. Use these shapefiles to compose a map representing the pollutants in Nueces County using the geocoded file you created in Task 1.
3. Create a definition query to show only data pertaining to your region. Remember that the Query Builder tool is available in the Definition Query tab of the layer Properties in ArcMap.
4. Symbolize various items accordingly such as airports and rivers.
5. Be sure to look at the coordinate systems to ensure that they are all the same for each layer.

## Conclusion

In this lab, we looked at the geocoding of addresses using the geolocators provided with ESRI's ArcGIS software. Maps are the typical output or final product when working on a GIS project. Data can come from various sources and may require manipulation to meet project requirements. GIS data is often available free of charge and there is a wealth of it on the Internet. Use it with caution and check the accuracy of the data, when possible.

## Discussion Questions

1. What are the advantages and disadvantages of having data available on the Internet?
2. How can geocoding of addresses help in industry?
3. Is historic data useful in a GIS environment?