Introduction to Geographic Information Systems

Lab 01- Sachin Mohan Sujir

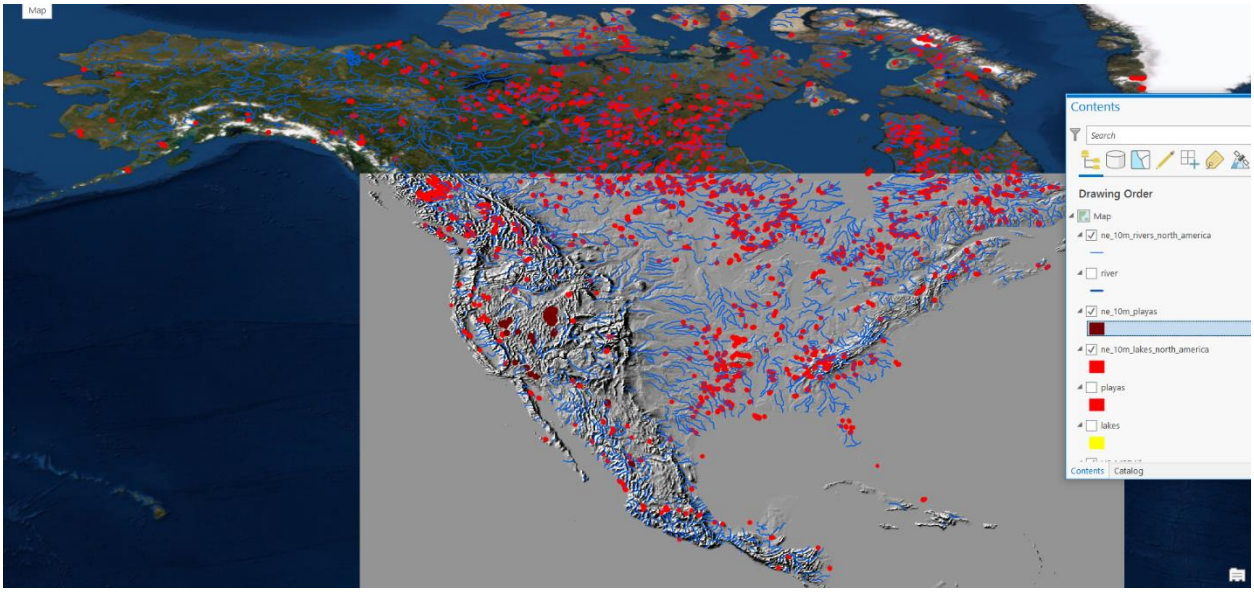
GIS data acquisition and creation

Lab 01 is about geodata acquisition and the creating of geodatabase for our data. I chose North American water bodies data from https://www.naturalearthdata.com/. Natural Earth Data is a GIS data site that has a range of Geographic open-source data set- open to the public. It provides both vector and raster datasets for building/analyzing geographic information systems. It also has a forum section to discuss issues or information regarding the datasets. It also has metadata for the data and these data are on different scales. The site provides very good data for GIS. The source to vector and raster dataset is given below:

Vector Data: https://www.naturalearthdata.com/downloads/10m-physical-vectors/

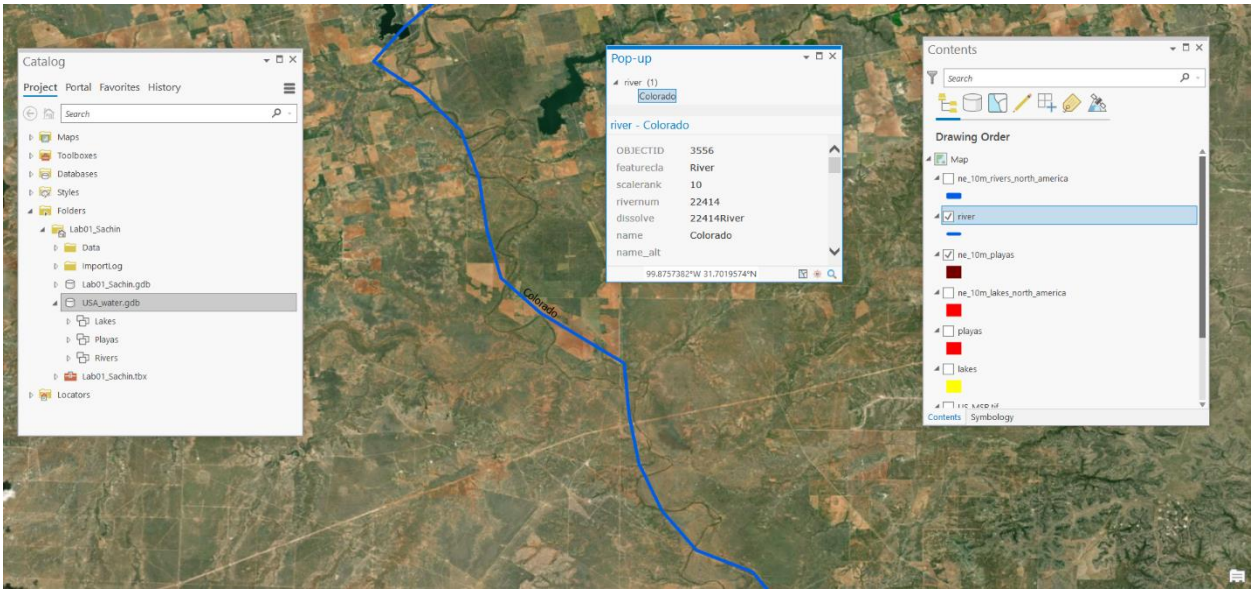
Raster Data: https://www.naturalearthdata.com/downloads/10m-raster-data/

Vector and Raster Datasets are shown on the map:



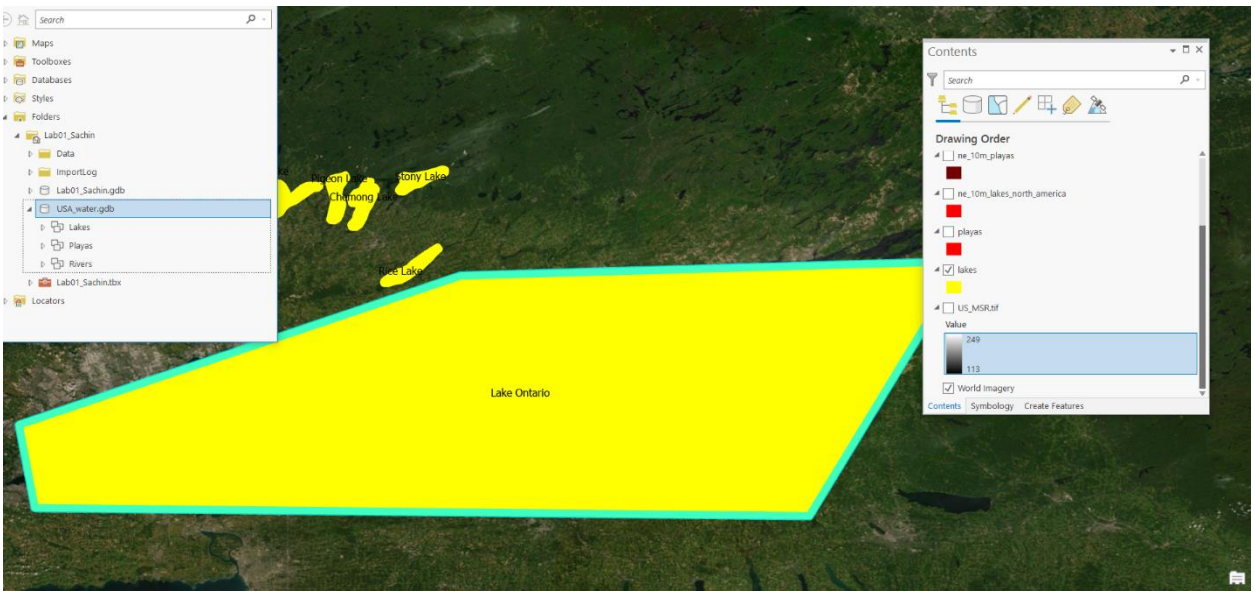
The red polygons are the lakes, blue lines are the rivers and the maroon polygons are the playas- dried-up river/lake. Playas are usually found in deserts.

A Vector Point:



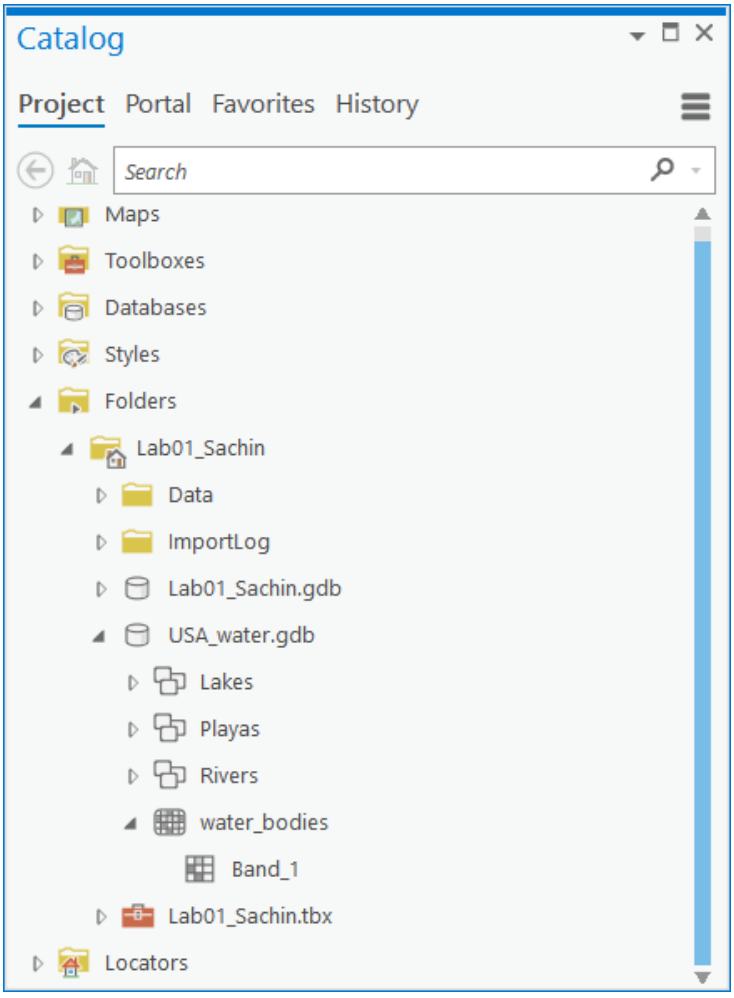
Colorado River seen from the vector dataset- is a line that runs across a few co-ordinates.

Digitized a lake:



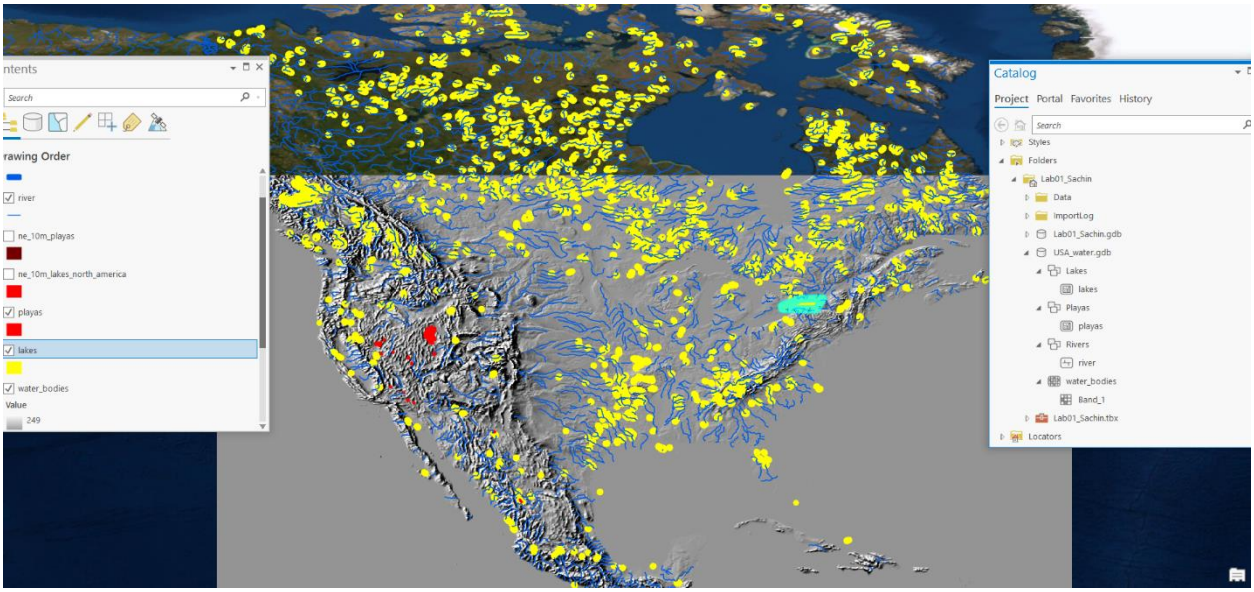
As we see Lake Ontario has been digitized using feature class-lakes. It was digitized using the raster data which shows water bodies using a shade of tint grey color.

File GeoDatabase:



Here, I have created a file Geodatabase- USA_water that has different water bodies like lakes, playas and rivers. The raster data also exists in the file geodatabase.

Screenshot of all layers together:



A screenshot showing all the layers-lakes, rivers and playas of the file geodatabase along with the digitized lake in one frame.

Conclusion: This was a very good practice lab exercise as I got a deeper insight into the subject and the software. ArcGIS Pro is a good software and it has a lot of functionalities to learn about to do deeper research on GIS data. The problem I faced was finding a good raster dataset for my waterbody data. Then I could figure out what I wanted. I chose this dataset because in India a lot of water bodies are disappearing due to human actions and I wanted to digitally see how the US has and is maintaining their water bodies. This lab has given me a small thought about the final project about the analysis of water bodies in the US. If I successfully research on the water bodies in the US, I could know what is wrong and what should be done to preserve it in my country.