QGIS Workshop

1. Introduction to QGIS

QGIS is a free and open source Geographic Information System (GIS).

QGIS can help users create, edit, visualize, analyze, and publish geospatial information on various operating systems including Windows, Mac OS, Linux, BSD, etc.

2. QGIS vs. ArcGIS

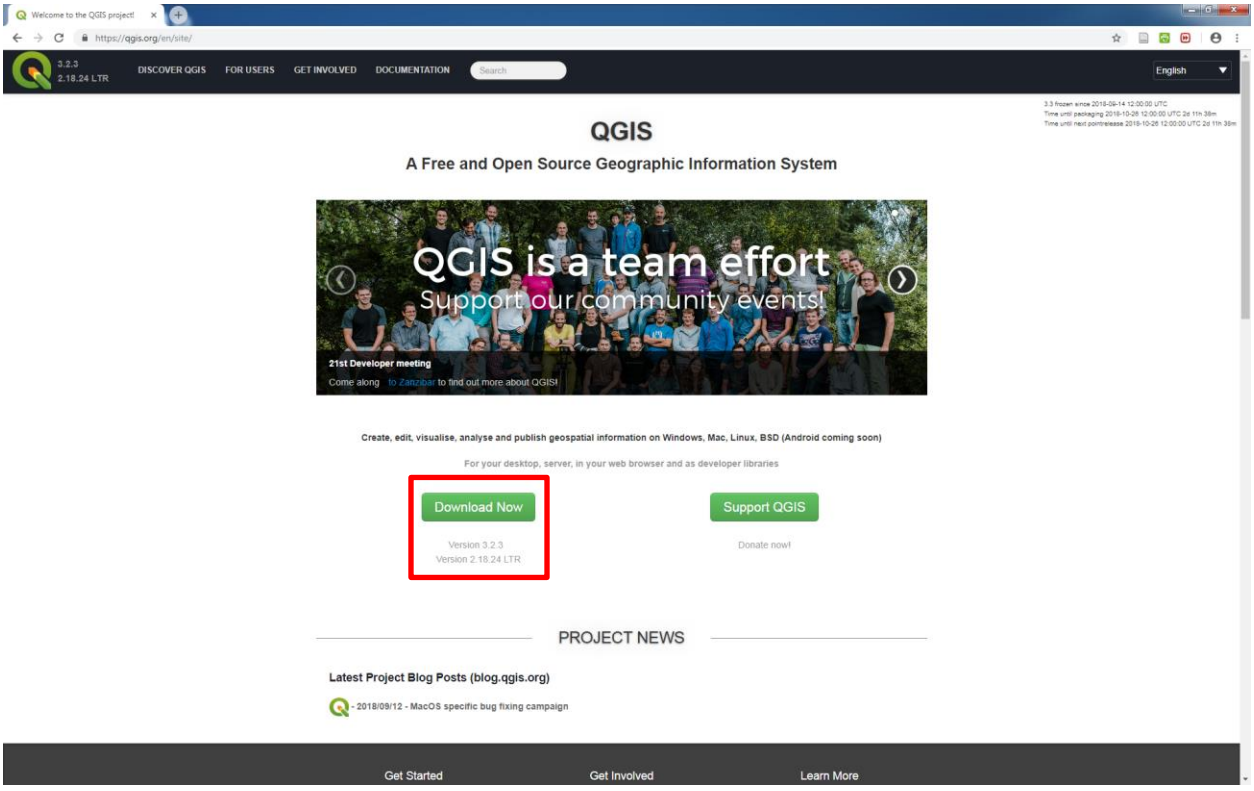
QGIS --- free and open source software package, more stable, less analysis tools, multi-platform

ArcGIS --- commercial software package, less stable, more analysis tools, single-platform

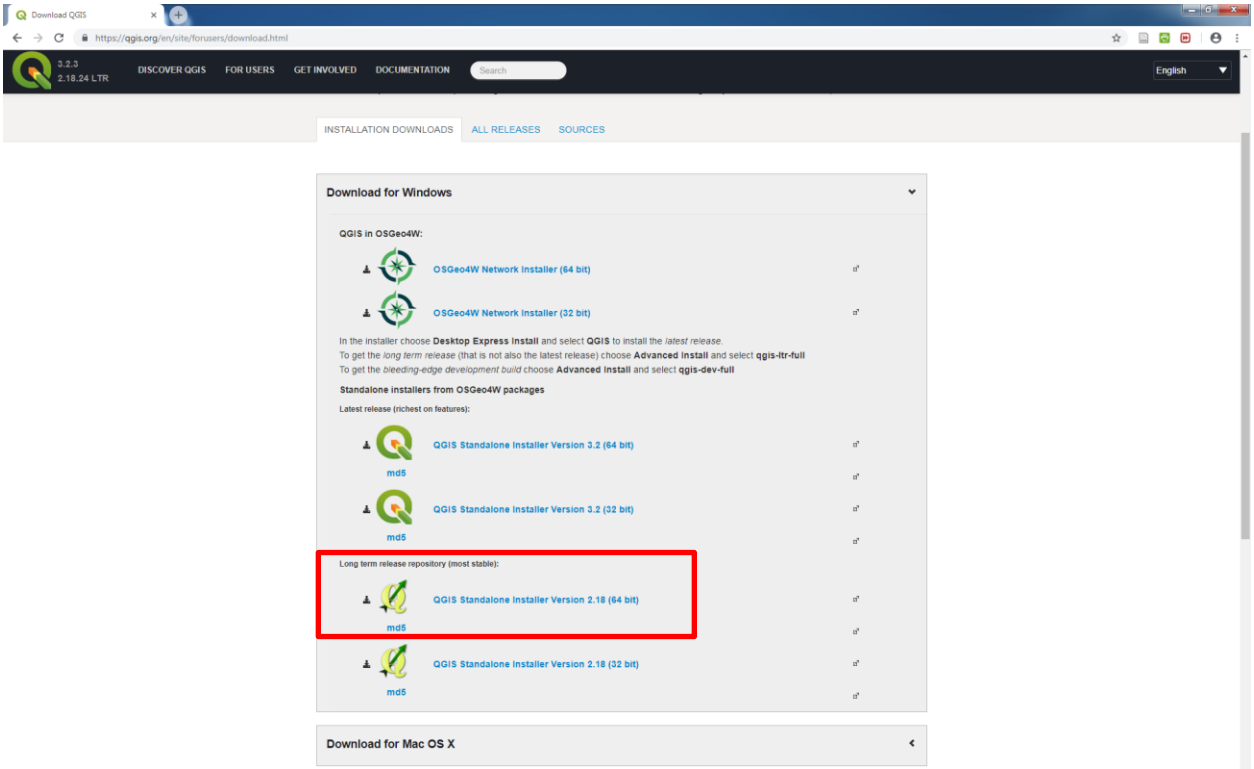
3. Download QGIS

1) Go to www.qgis.com

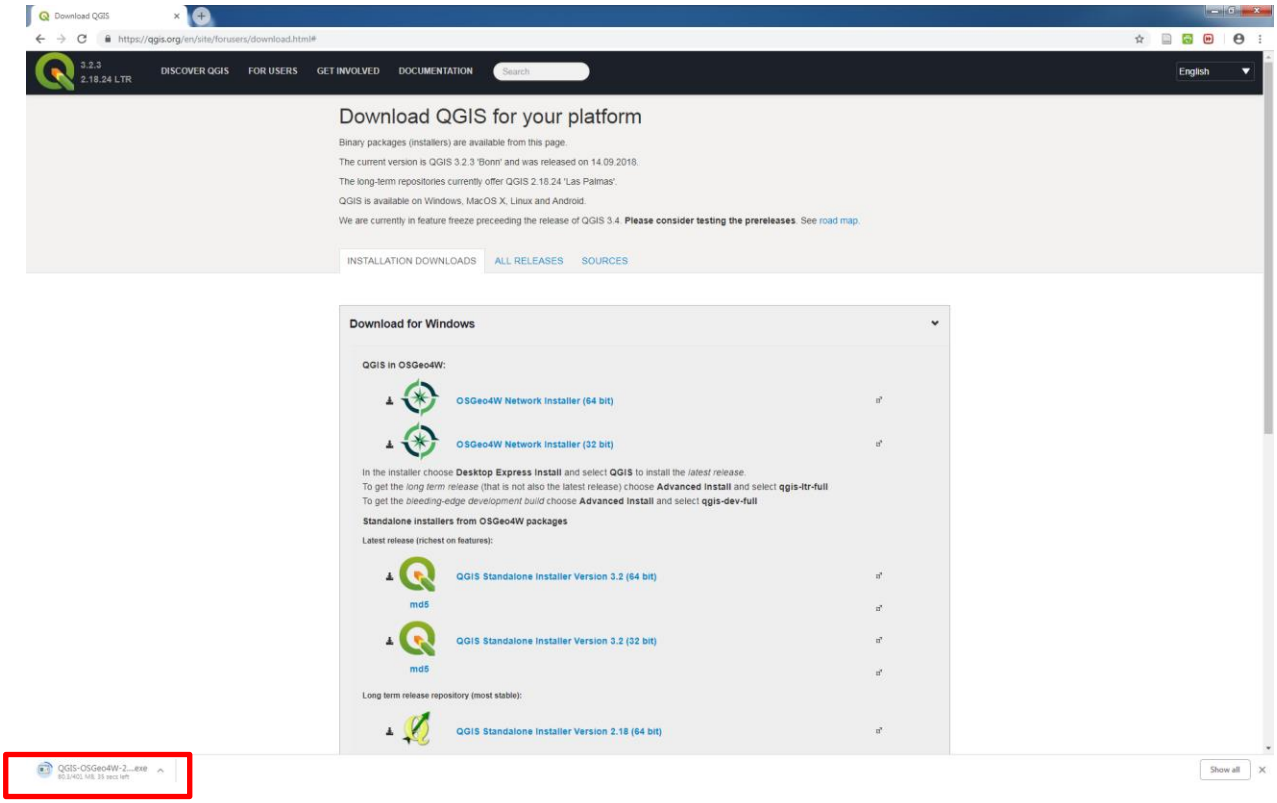
2) You will see a webpage looks like the one below; click on “Download Now” to go to the download page



3) Select the long term release that is compatible with your operating system to download; it is suggested to download the 64-bit version if it is compatible with your operating system



3) Click on the desired version, your browser will automatically download the QGIS installer



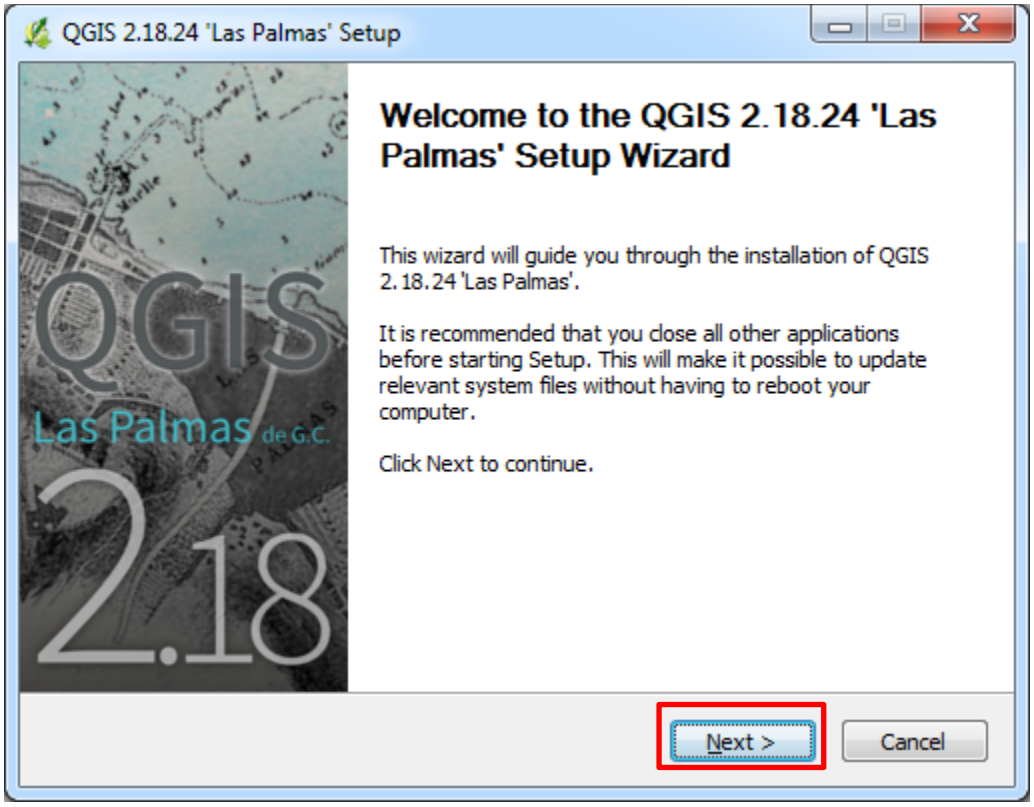
4. QGIS Installation

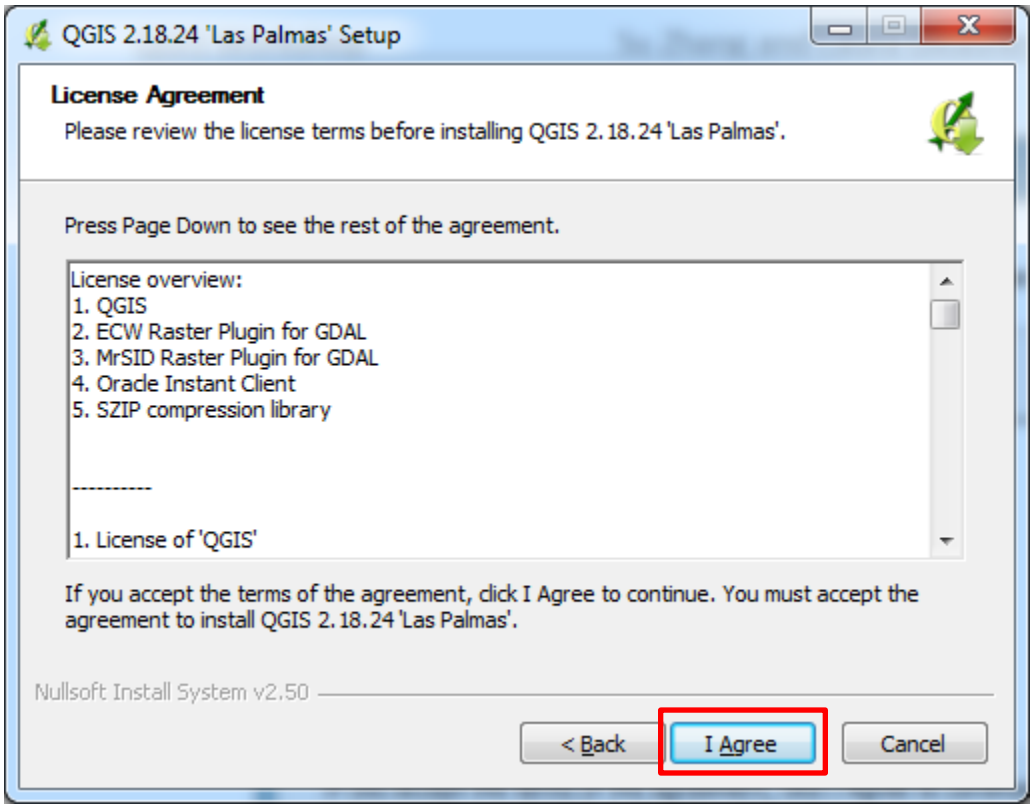
1) Double click the installer that you have downloaded

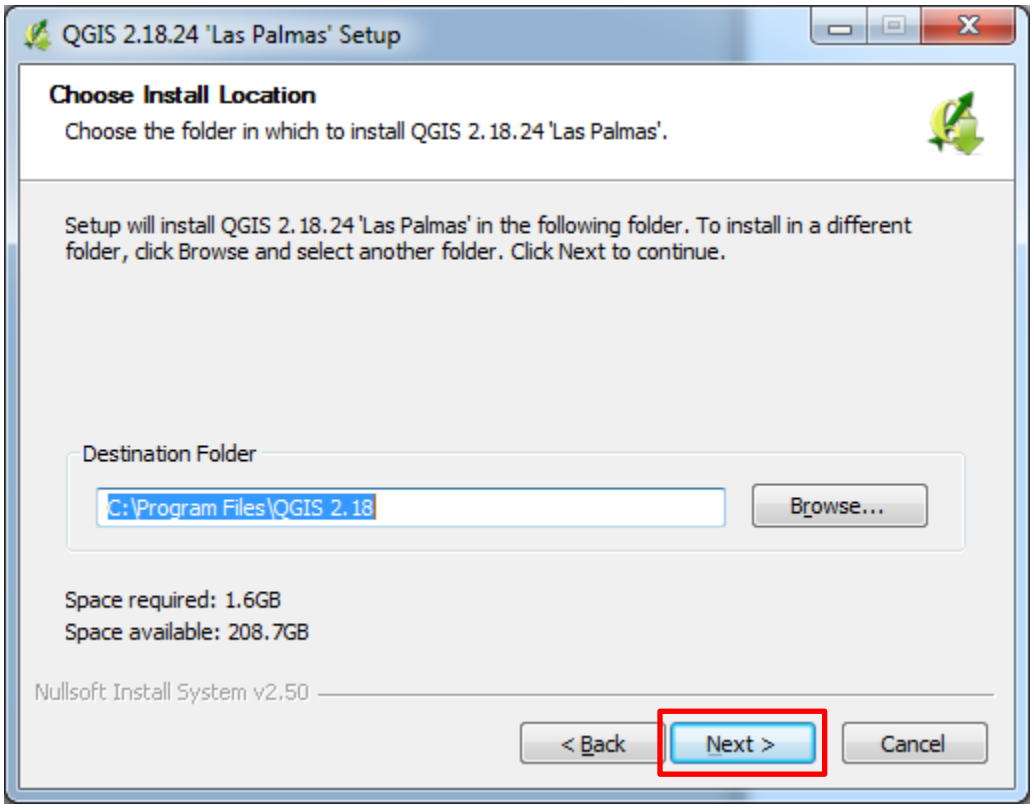
2) QGIS Setup Wizard will show up

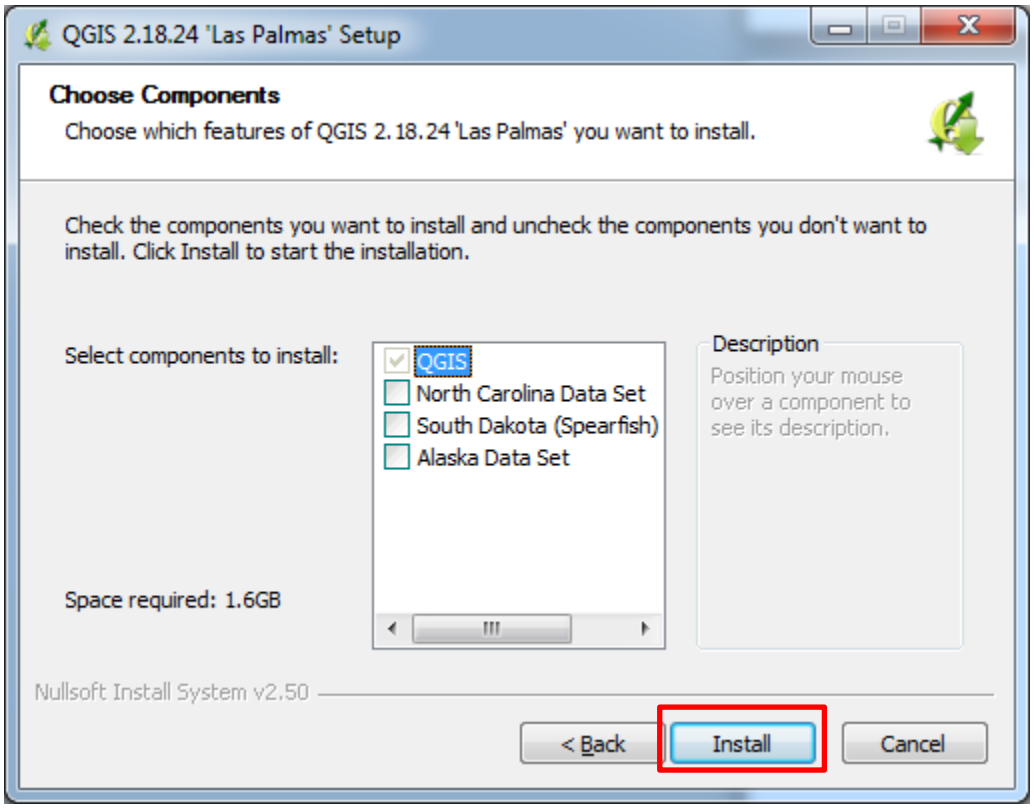
3) Click Next to start the installation process

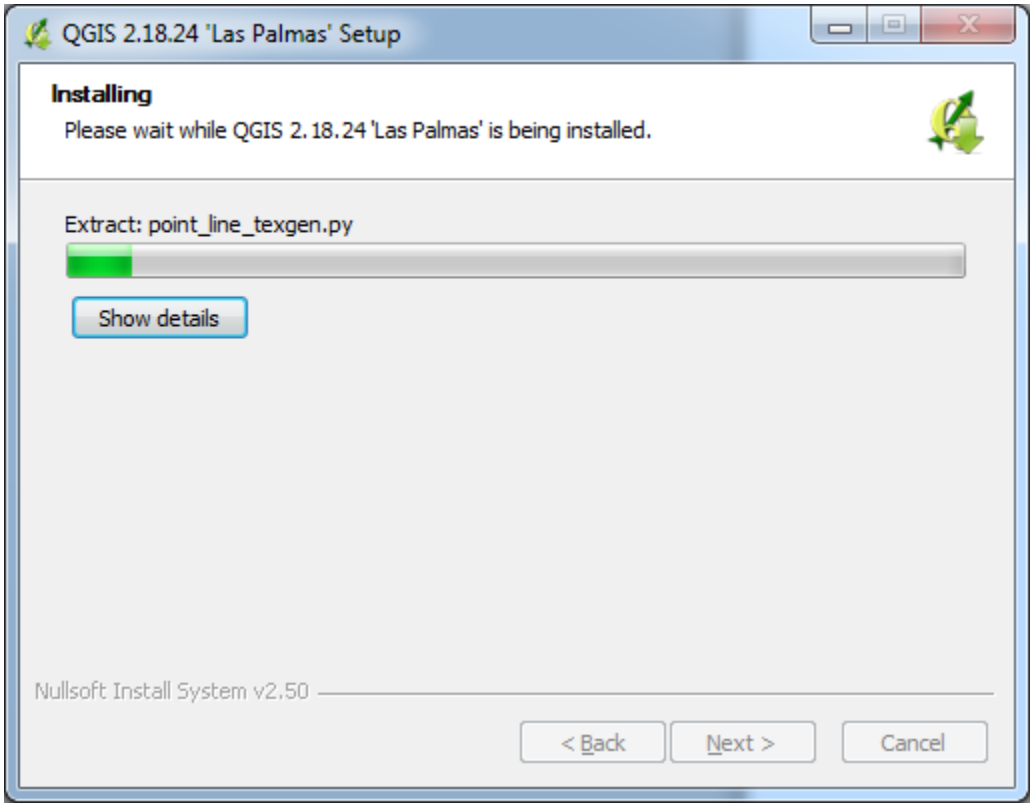
4) You will see the License Agreement, installation location, components to install, etc.



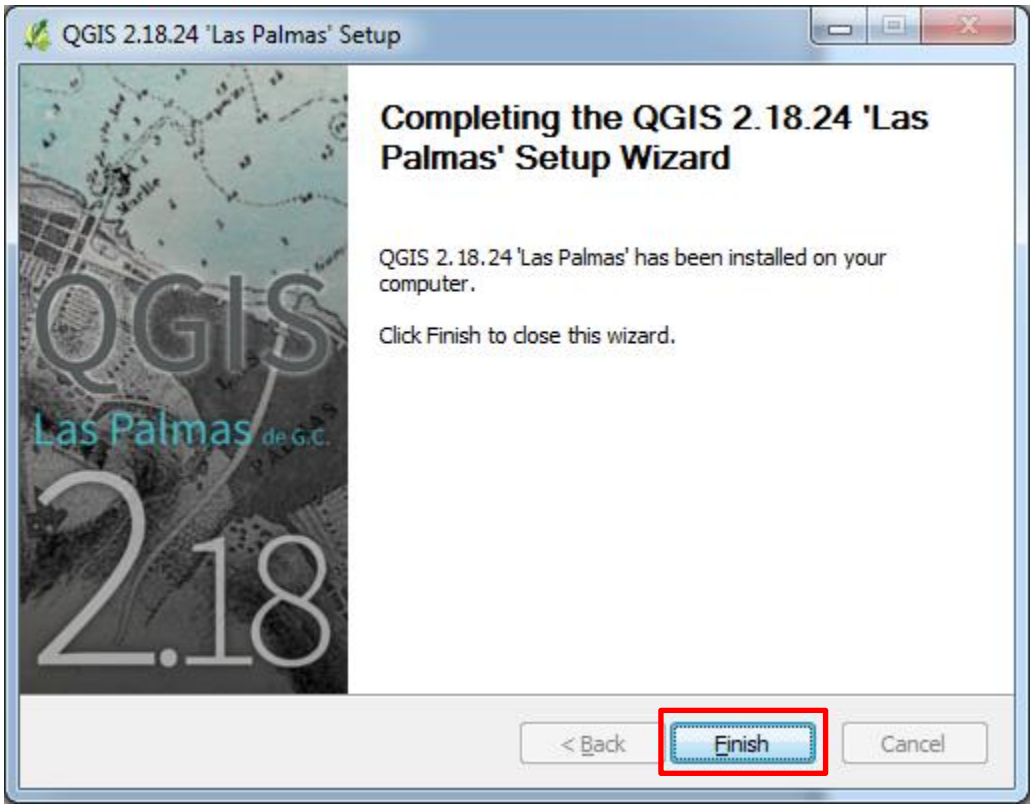

QGIS 2.18.24 'Las Palmas' Setup
License Agreement
Please review the license terms before installing QGIS 2.18.24 'Las Palmas'.
Press Page Down to see the rest of the agreement.
License overview:
1. QGIS
2. ECW Raster Plugin for GDAL
3. MrSID Raster Plugin for GDAL
4. Oracle Instant Client
5. SZIP compression library
---
1. License of 'QGIS'
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install QGIS 2.18.24 'Las Palmas'.
Nullsoft Install System v2.50
< Back
I Agree
Cancel


QGIS 2.18.24 'Las Palmas' Setup
Choose Install Location
Choose the folder in which to install QGIS 2.18.24 'Las Palmas'.
Setup will install QGIS 2.18.24 'Las Palmas' in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.
Destination Folder
C:\Program Files\QGIS 2.18
Browse...
Space required: 1.6GB
Space available: 208.7GB
Nullsoft Install System v2.50
< Back
Next >
Cancel


QGIS 2.18.24 'Las Palmas' Setup
Choose Components
Choose which features of QGIS 2.18.24 'Las Palmas' you want to install.
Check the components you want to install and uncheck the components you don't want to install. Click Install to start the installation.
Select components to install:
QGIS
North Carolina Data Set
South Dakota (Spearfish)
Alaska Data Set
Description
Position your mouse over a component to see its description.
Space required: 1.6GB
Nullsoft Install System v2.50
< Back
Install
Cancel


QGIS 2.18.24 'Las Palmas' Setup
Installing
Please wait while QGIS 2.18.24 'Las Palmas' is being installed.
Extract: point_line_texgen.py
Show details
Nullsoft Install System v2.50
< Back
Next >
Cancel

5) Click “Finish” to complete the installation

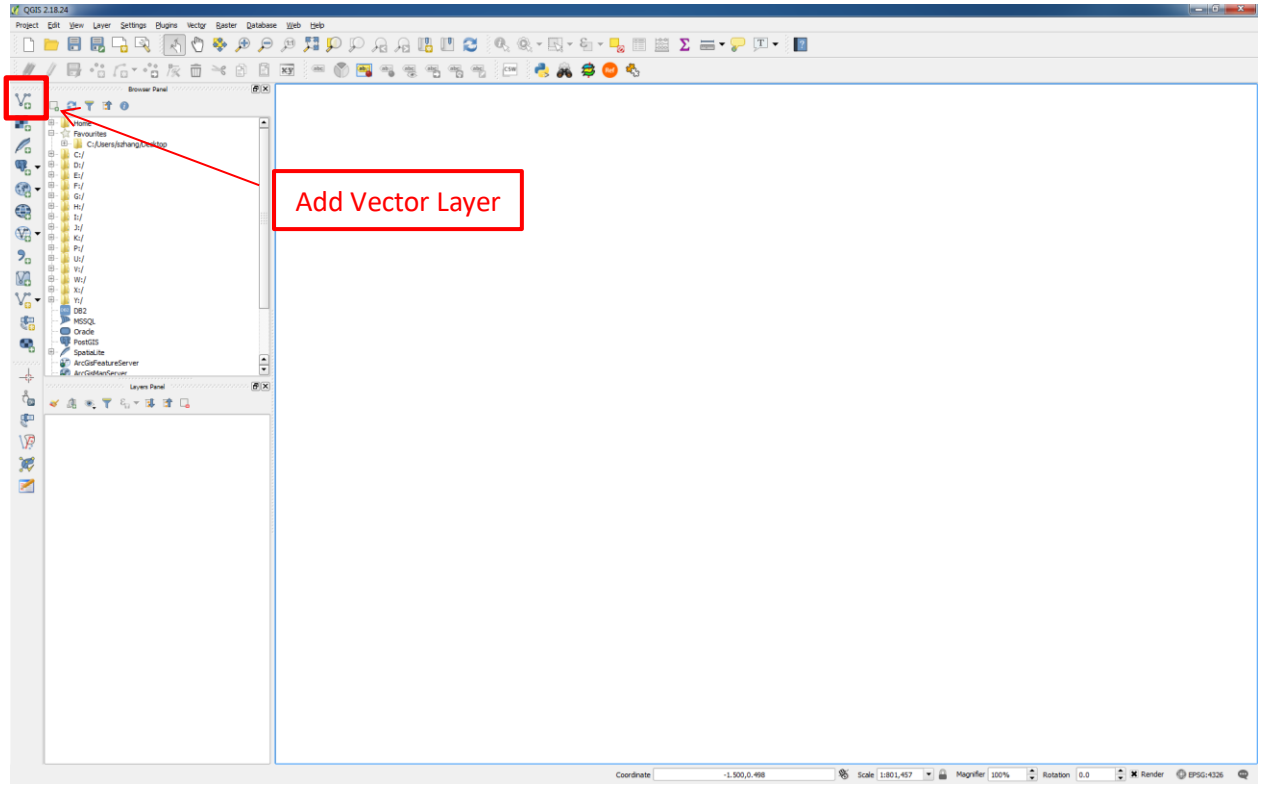


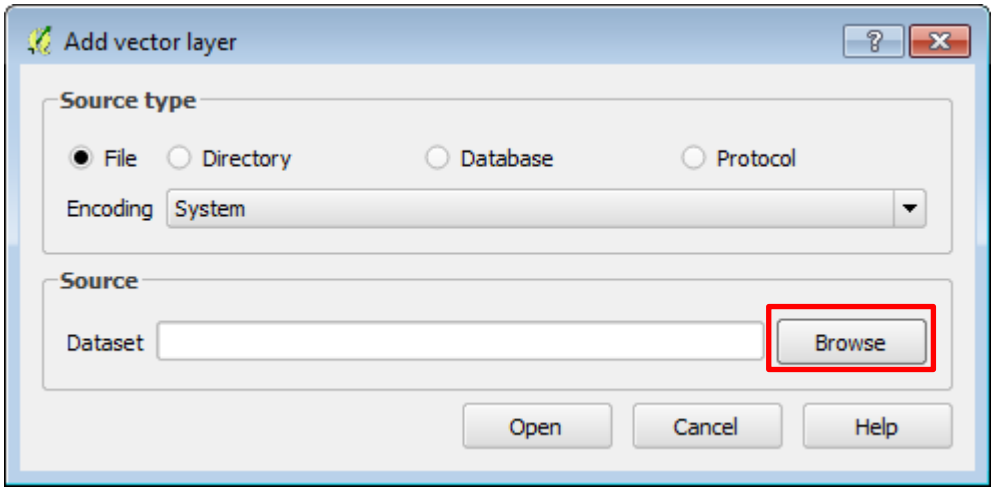
5. Start QGIS

Click on the "QGIS Desktop 2.18.24" application icon on your desktop or please go to my computer ---- all programs (all apps for Windows 10) --- QGIS Desktop 2.18.24.

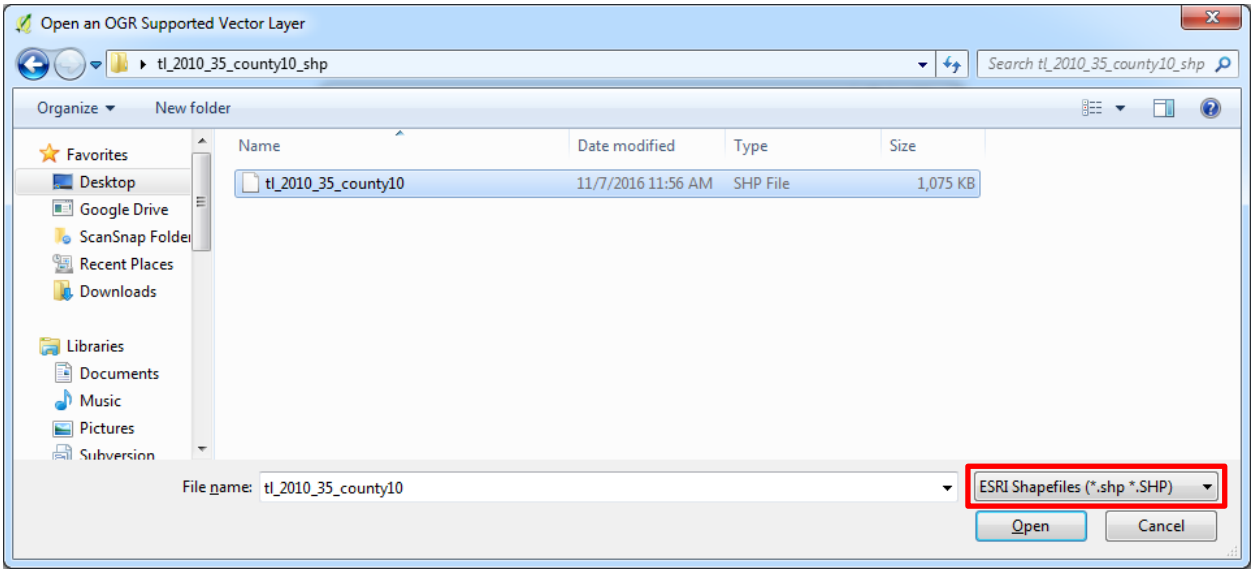
Note: The first time may take a few minutes to start. For this workshop, we will only focus on vector data (points, polylines, and polygons).

1) Add Vector Layer



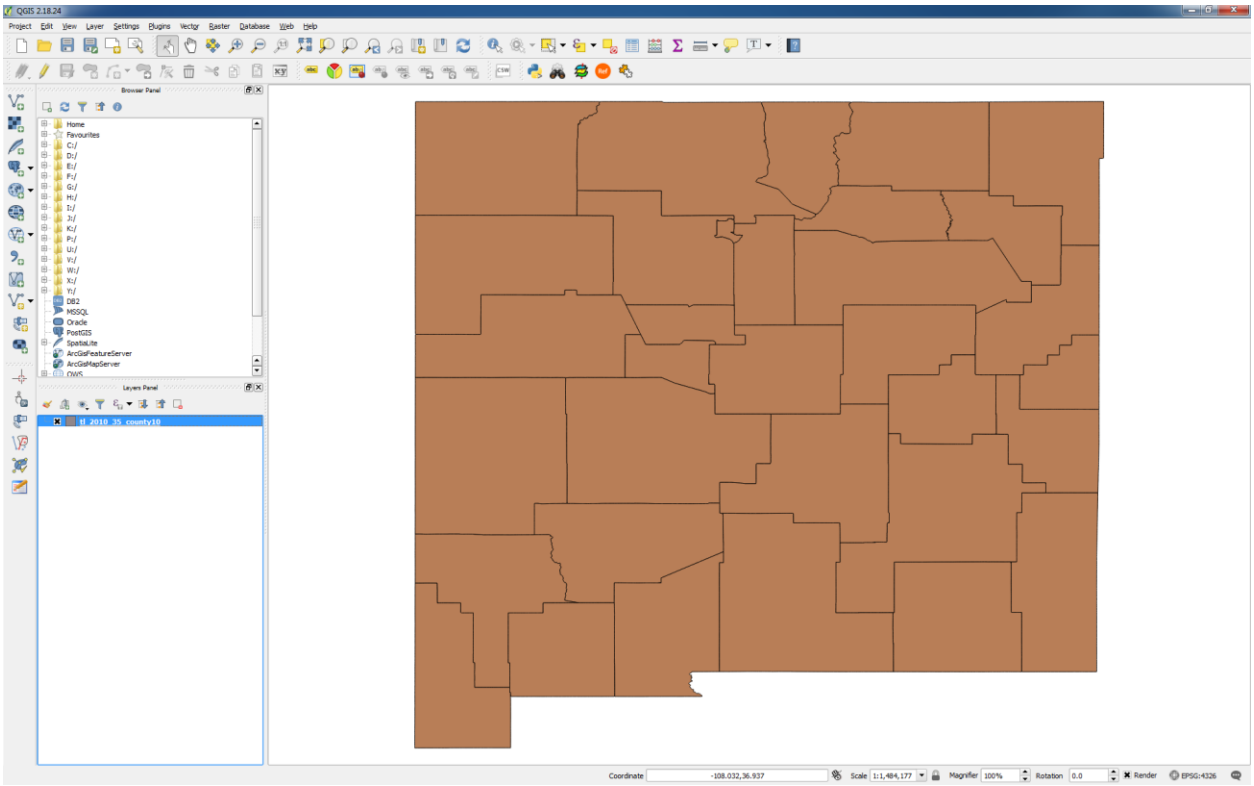


2) Browse to where you saved your data; make sure you choose the “ESRI Shapefiles (*.shp *.SHP)” file in Type to upload; load the New Mexico county boundary polygon shapefile

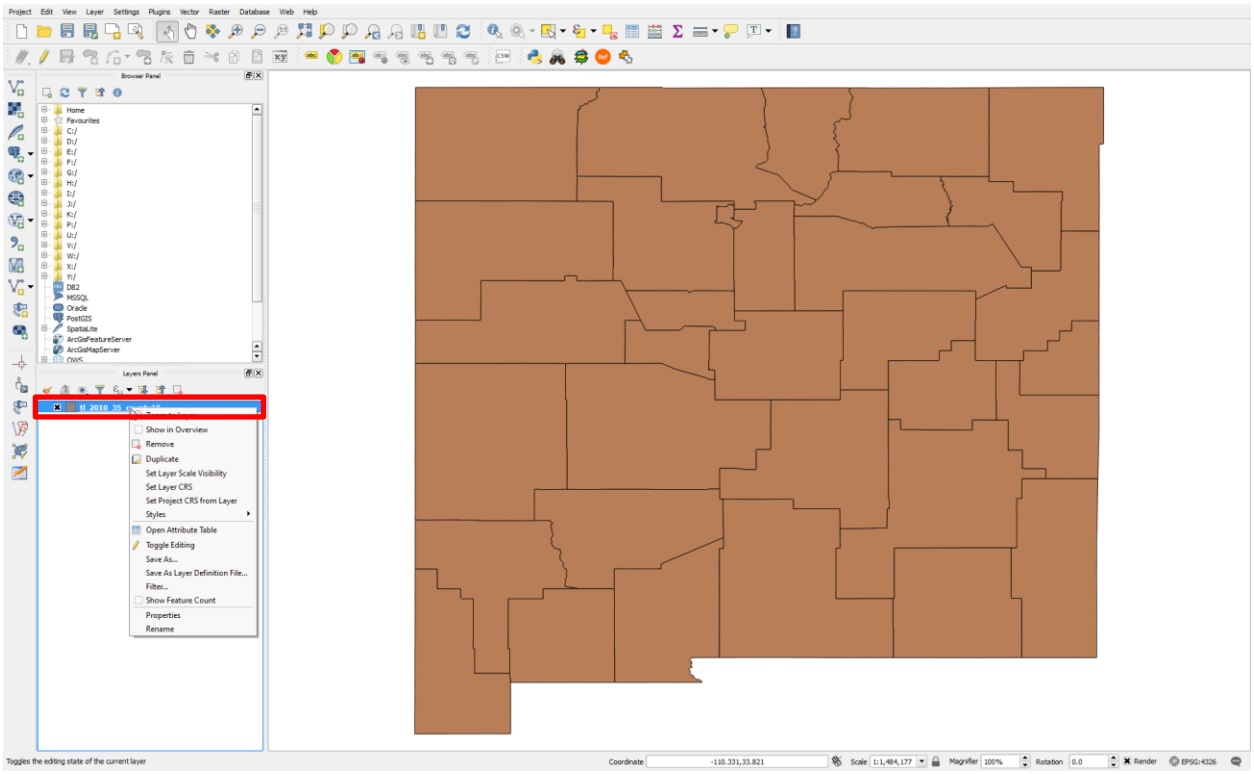


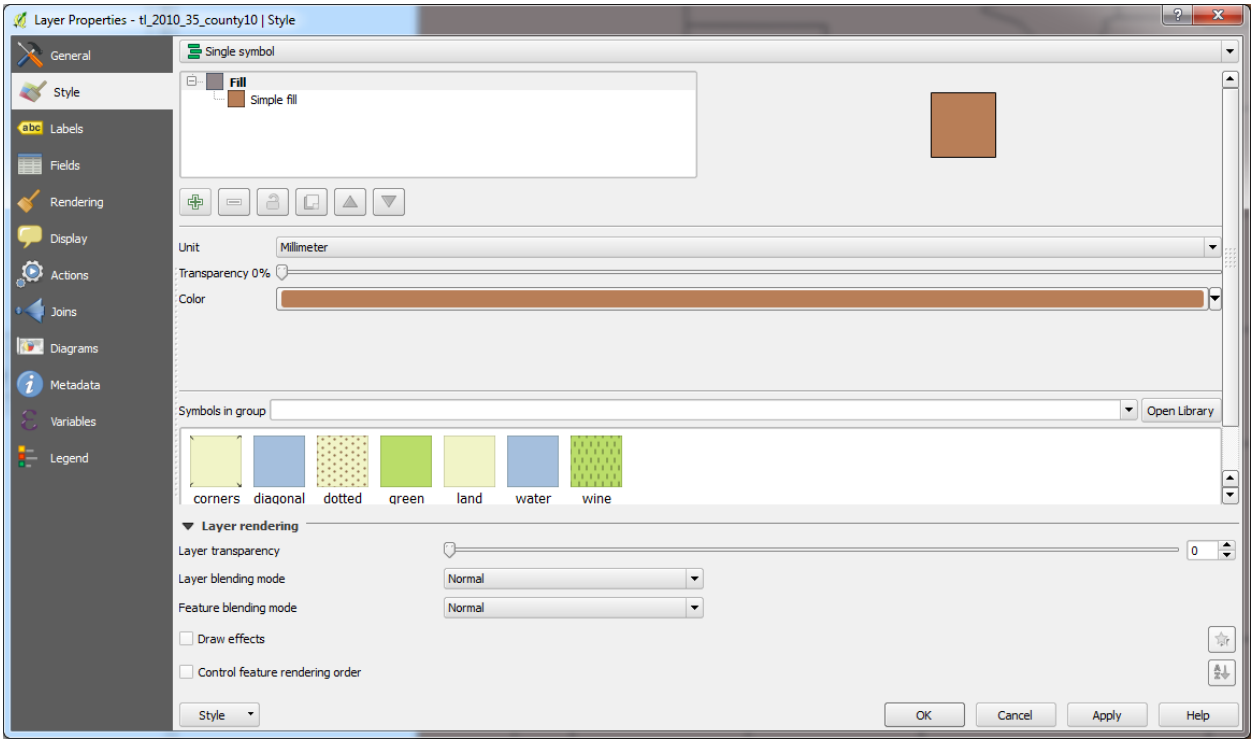
6. Basic Editing

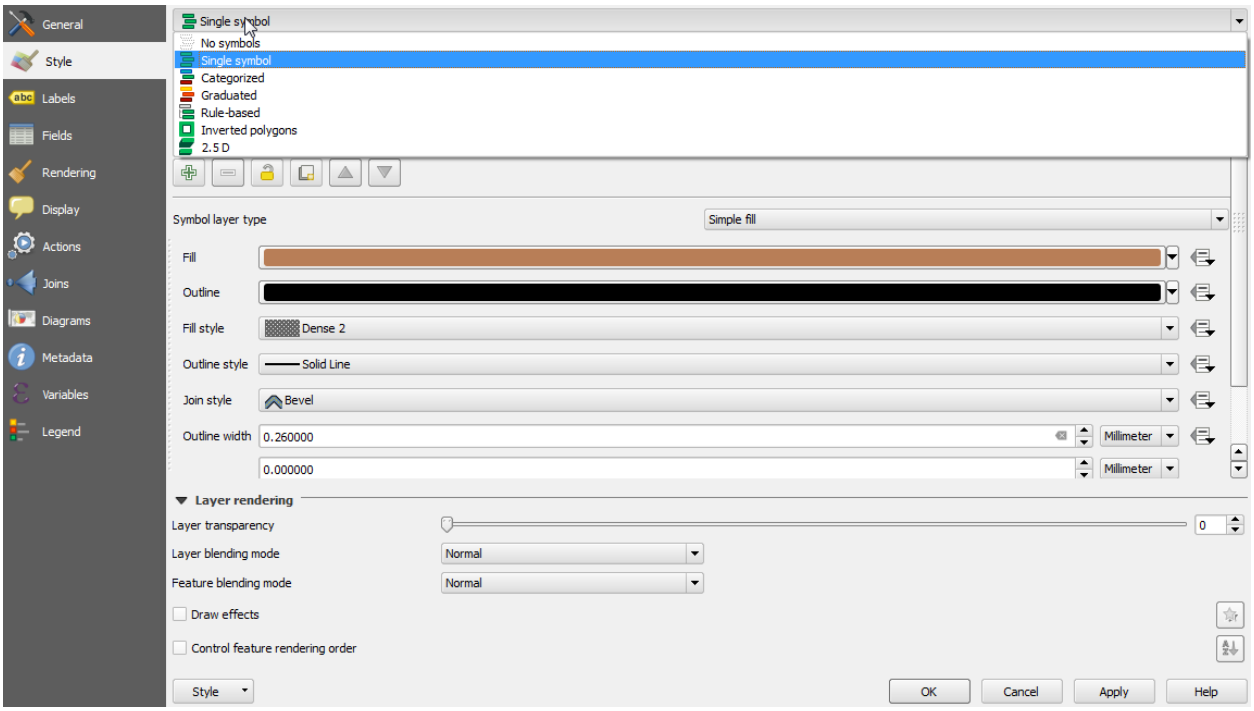
1) Now you should have already successfully added the New Mexico county boundary polygon shapefile, and it should look like this



2) Right click on the layer name (tl_2010_35_county10), and then click “Properties” for editing; you can change the color, transparency, fill style, outline style, outline width, etc. The default symbol type is “Single Symbol”, but you can choose among No Symbol, Single Symbol, Categorized, Graduated, Rule-based, Inverted Polygons, and 2.5 D



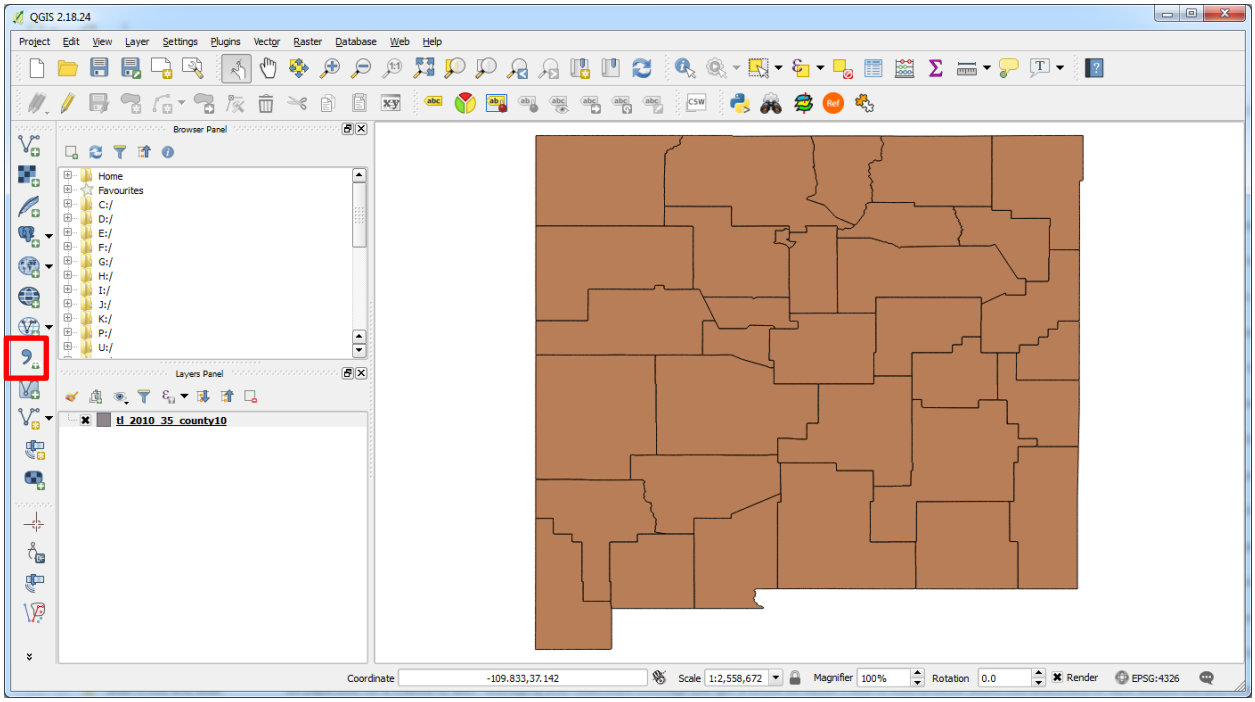




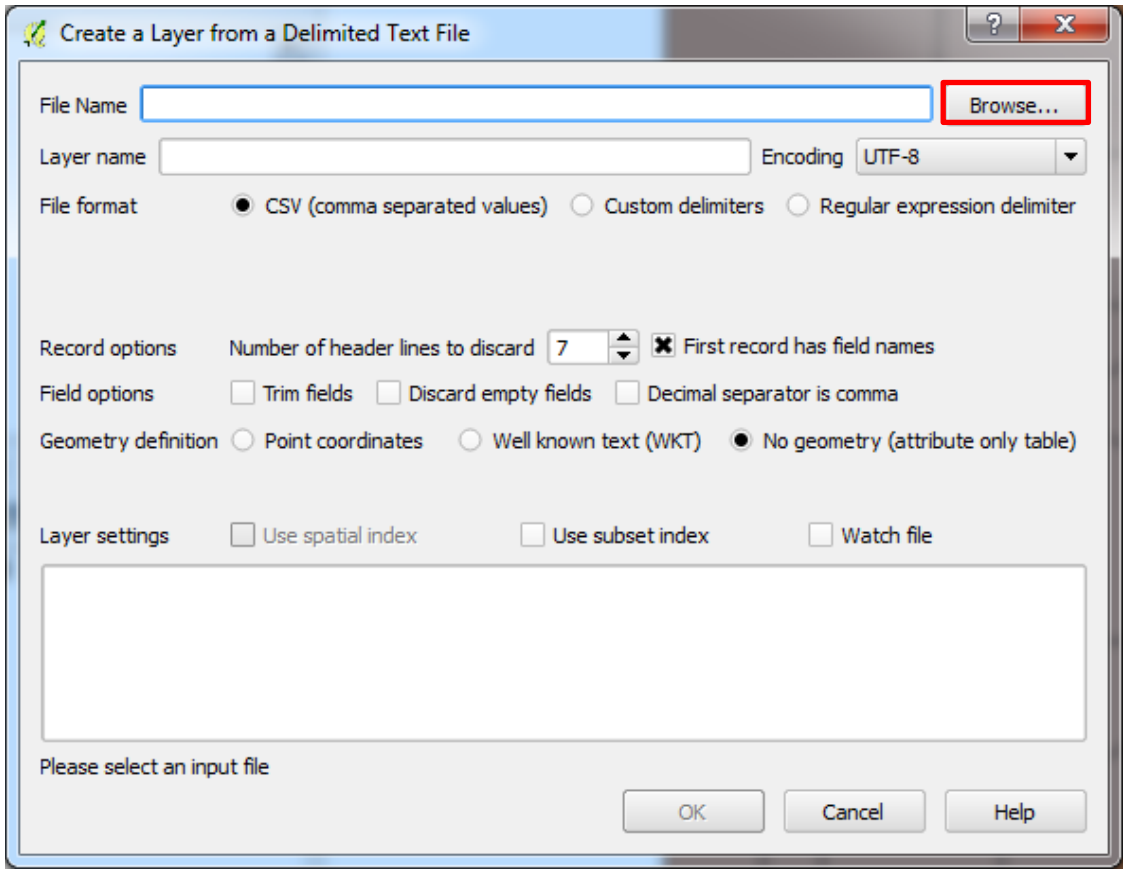
7. Table Join

Sometimes a single shapefile does not include all information that you want, which makes "Table Join" tool to be necessary and vert useful; Table Join is typically used to append the fields of one table to another through an attribute or field common to both tables

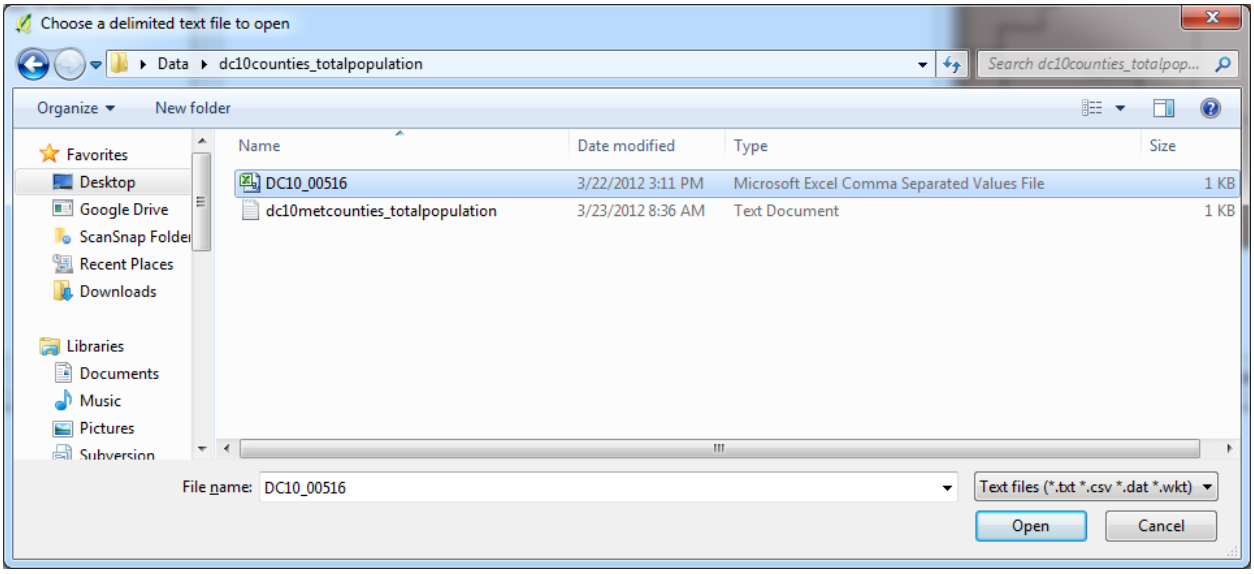
1) Click on the Add Delimited Text Layer button

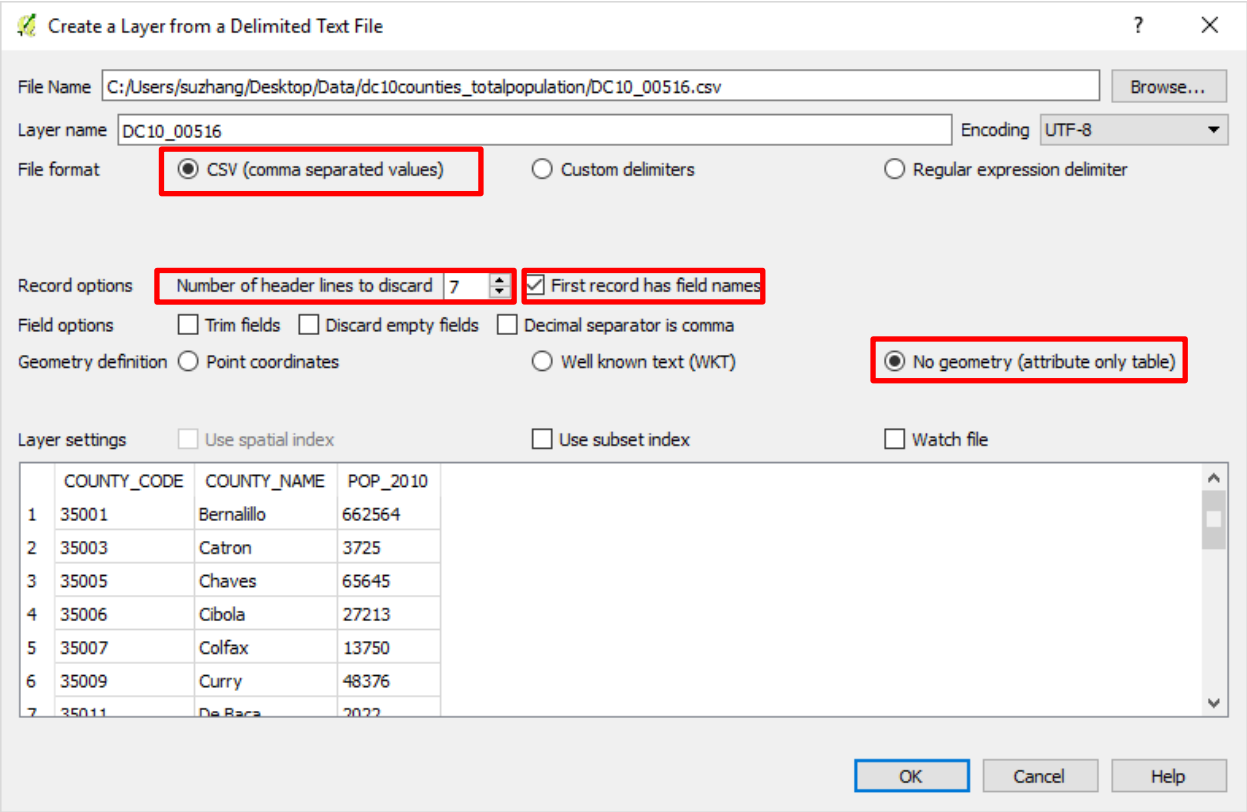


2) The “Create a Layer from Delimited Text File” will pop up

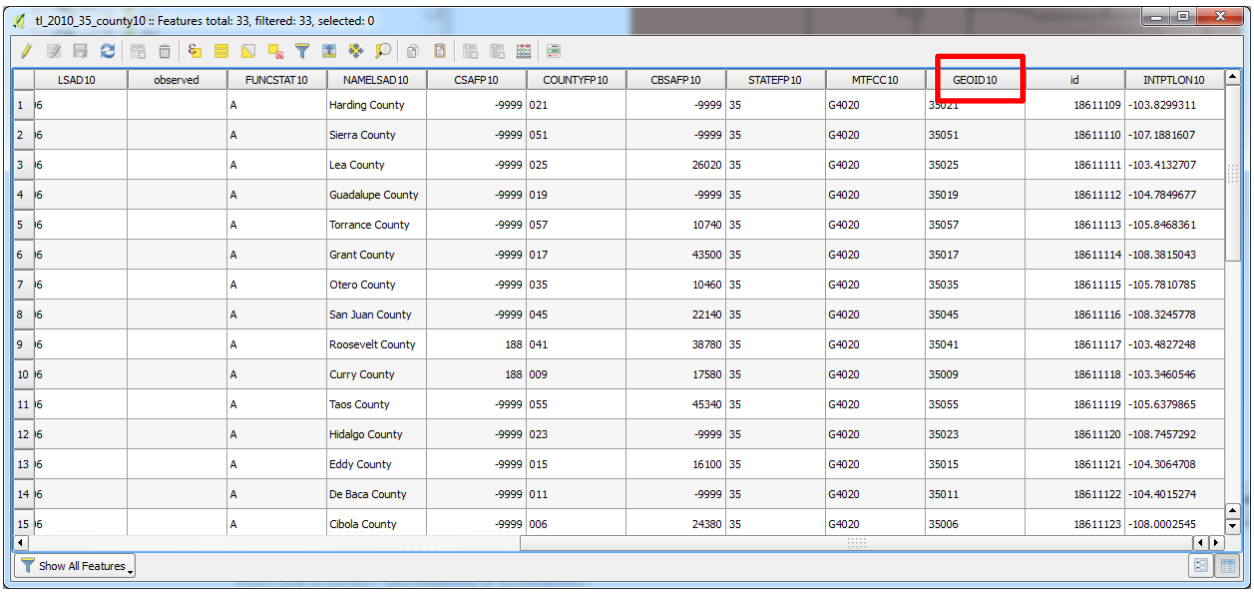


3) Browse to where you saved your population data, make sure you choose the file in “Microsoft Excel Comma Separated Values File” format, the number of header lines to discard should be 8, and the geometry definition should be no geometry (attribute only table)



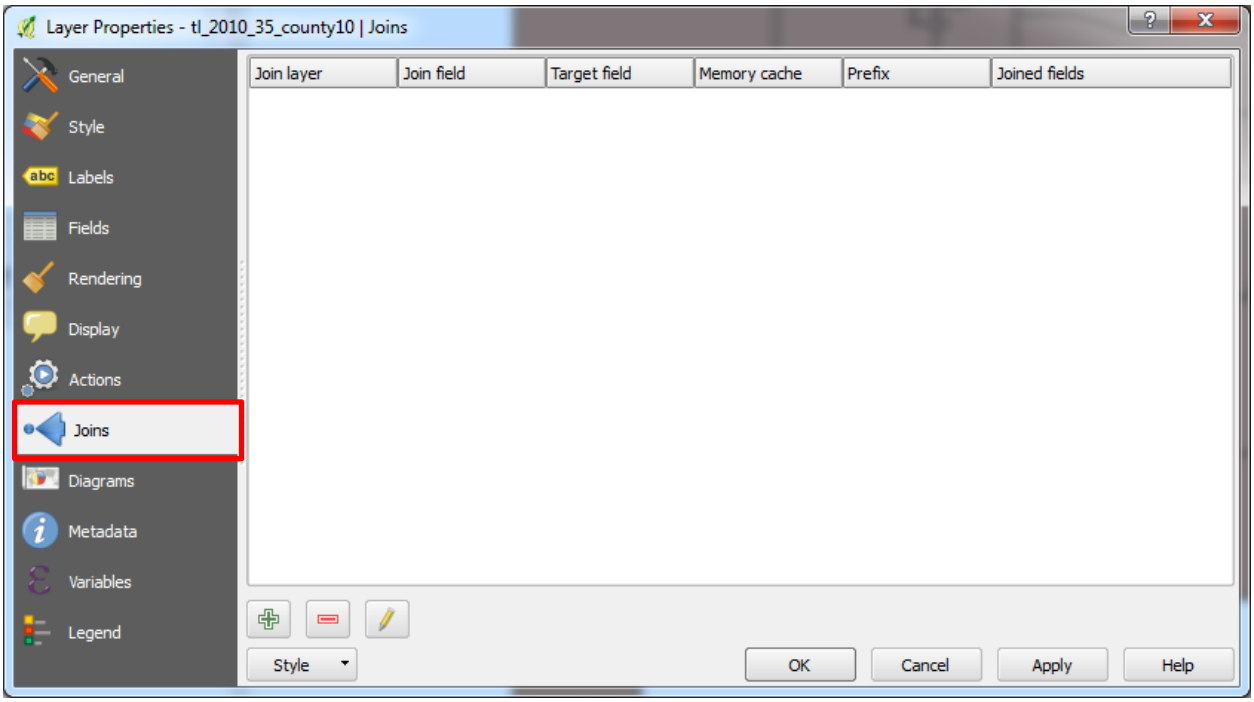


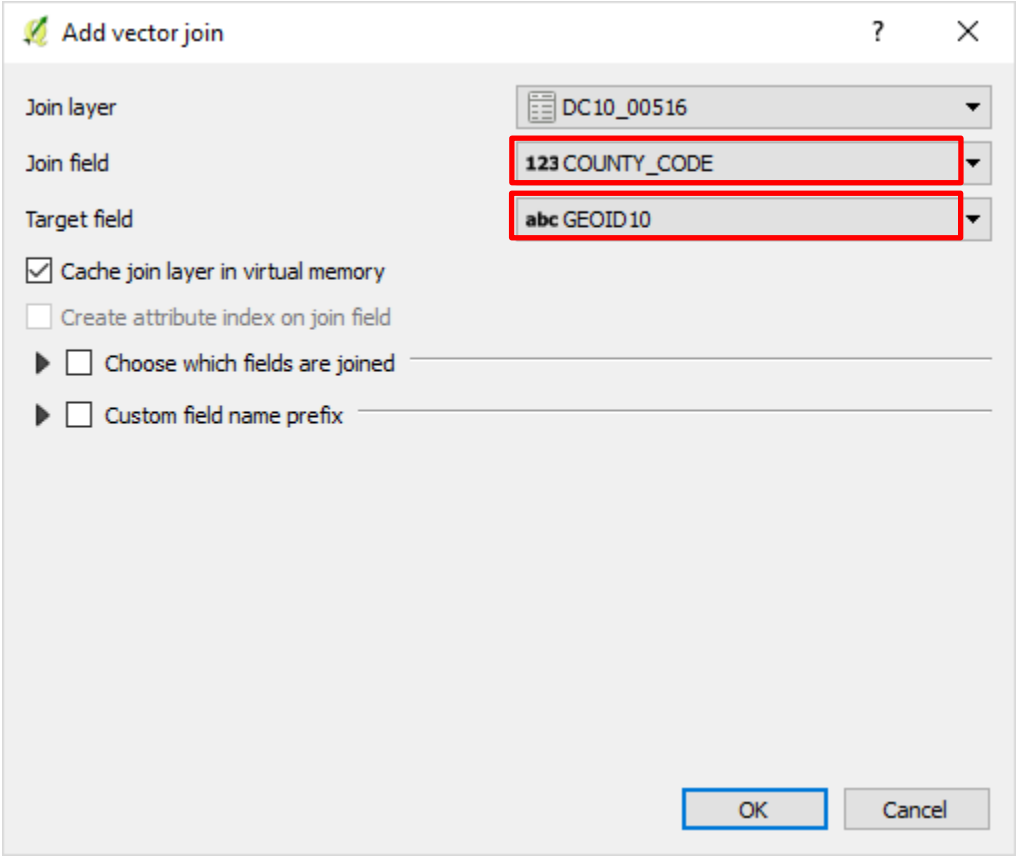
4) Right click on the layer name of the New Mexico county boundary (tl_2010_35_county10), and then click on Open Attribute Table; browse the table to find unique IDs (GEOID10) and examine it



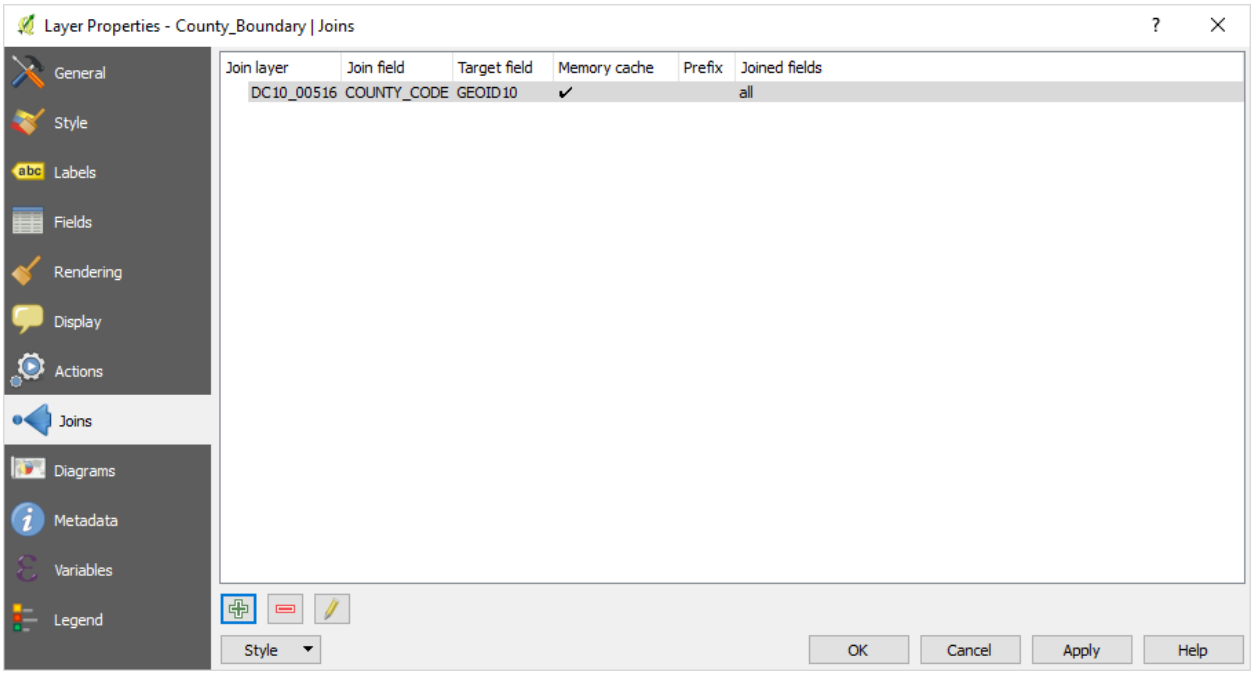
5) Right click on the layer name of the New Mexico county boundary (tl_2010_35_county10), and then click on Properties

6) Click on “Joins” and then click on the green plus sign and the following dialog should appear, the john field should be COUNTY_CODE and the target field should be GEOID 10, and then click OK

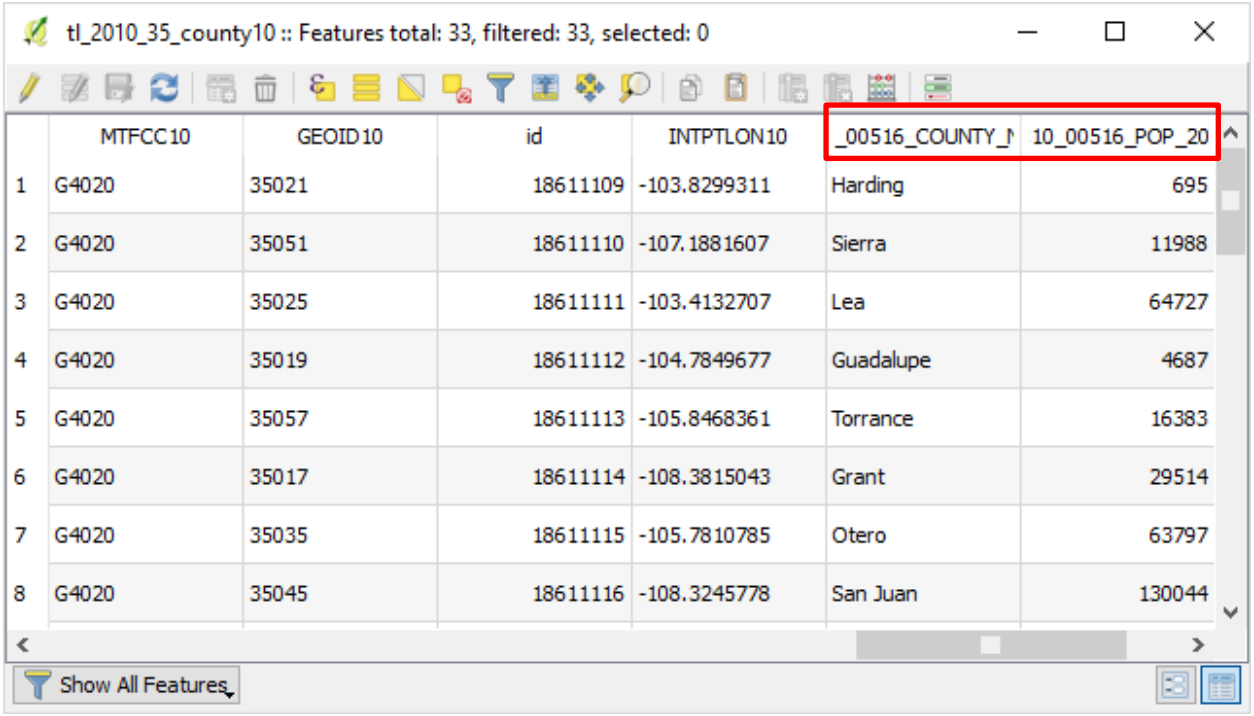




7) Successfully joined process should show the following dialogue, and please click OK

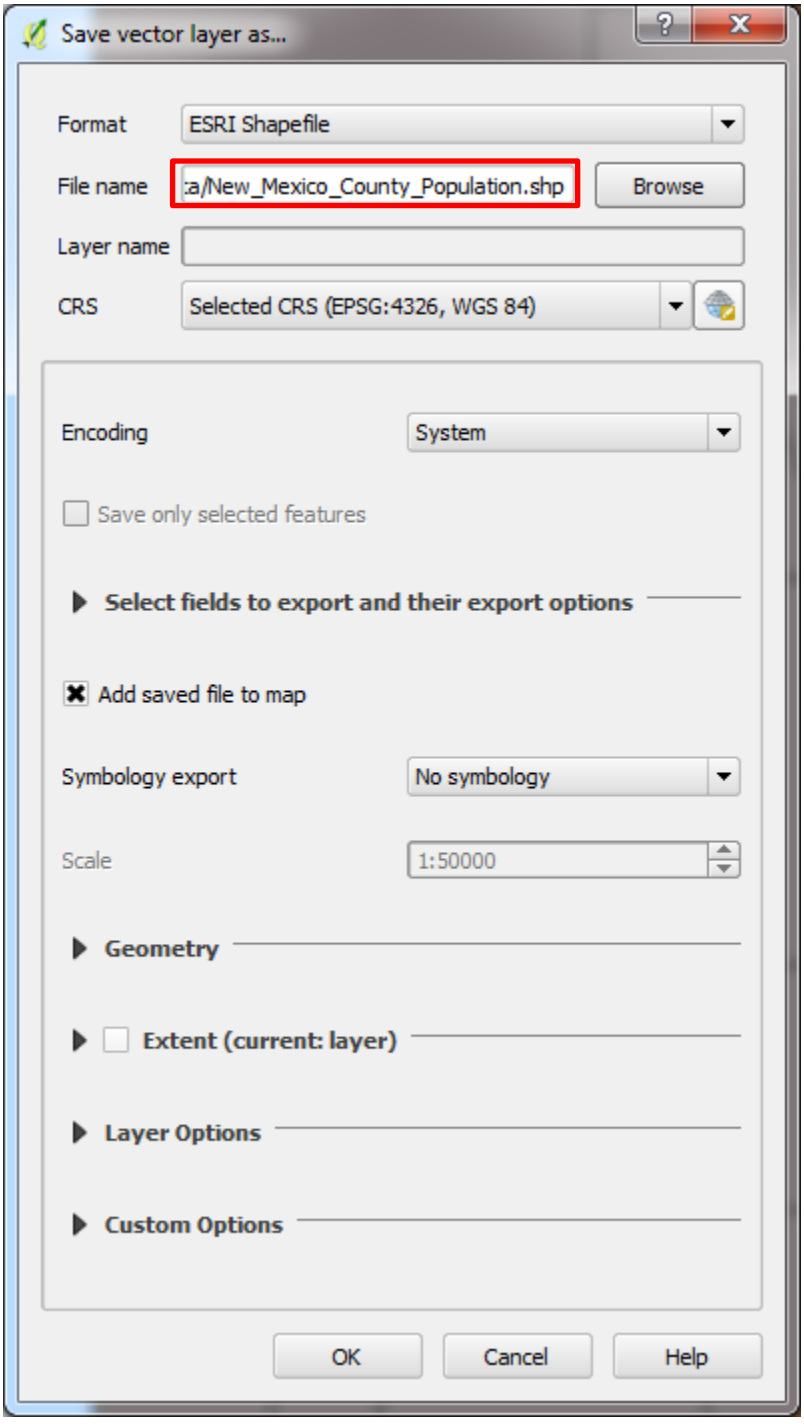


8) Your standalone table should be joined with your shapefile, now right click on your shapefile layer and then click on Open Attribute Table, you can find that the two new attribute fields associated with the standalone table is appended to the back of the attribute table



	MTFCC10	GEOID10	id	INTPTLON10	_00516_COUNTY_N	10_00516_POP_20
1	G4020	35021	18611109	-103.8299311	Harding	695
2	G4020	35051	18611110	-107.1881607	Sierra	11988
3	G4020	35025	18611111	-103.4132707	Lea	64727
4	G4020	35019	18611112	-104.7849677	Guadalupe	4687
5	G4020	35057	18611113	-105.8468361	Torrance	16383
6	G4020	35017	18611114	-108.3815043	Grant	29514
7	G4020	35035	18611115	-105.7810785	Otero	63797
8	G4020	35045	18611116	-108.3245778	San Juan	130044

9) It should be noted that this Join is temporary. In order to get a permanent joined layer, save your temporarily joined shapefile to a new shapefile; to do this, you need to right click on the joined shapefile and then click on Save As, a "Save vector layer as …" dialogue pops up; choose the path you want to save the layer and provide a file name to the new file, and then click OK.



8. Visualize your shapefile

1) Add the newly saved shapefile (table joined)

2) Right click on the layer name, and then click on Properties

3) Click on “Style”

4) Click Single Symbol

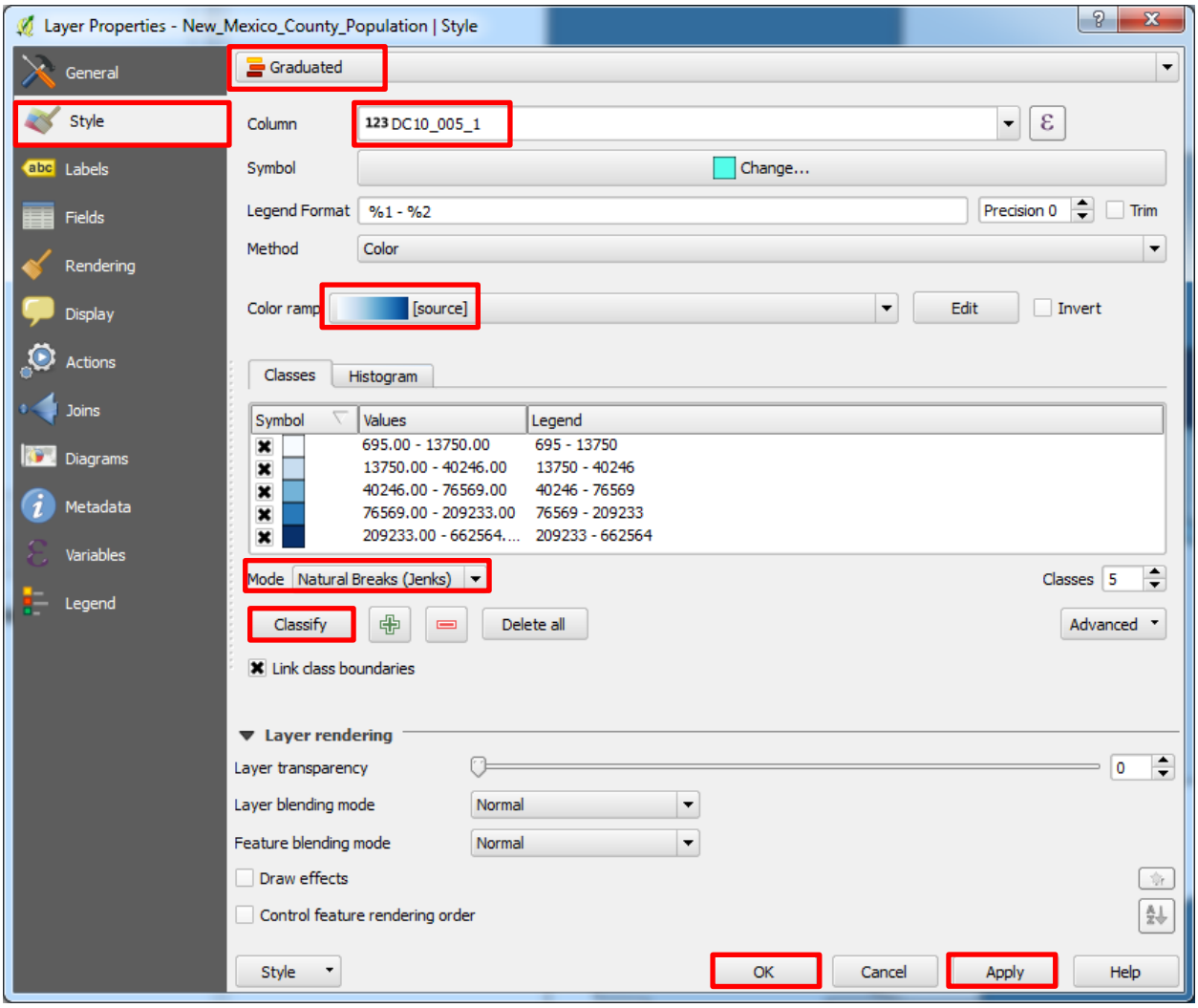
5) Choose Graduated

6) Column chooses your population attribute field

7) Choose the color ramp you like

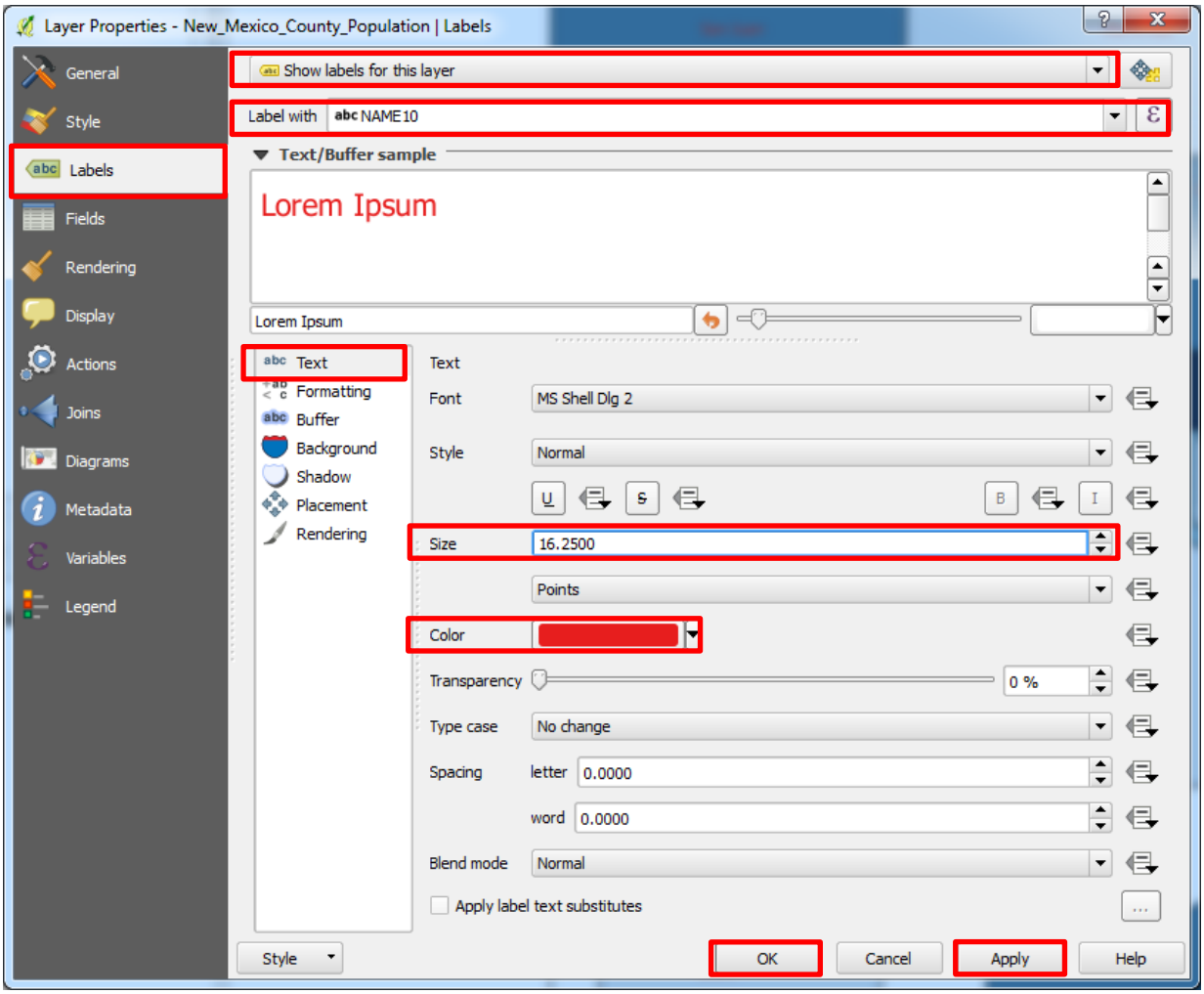
8) Choose mode of Natural Break (Jenks) for classes, and then click classify

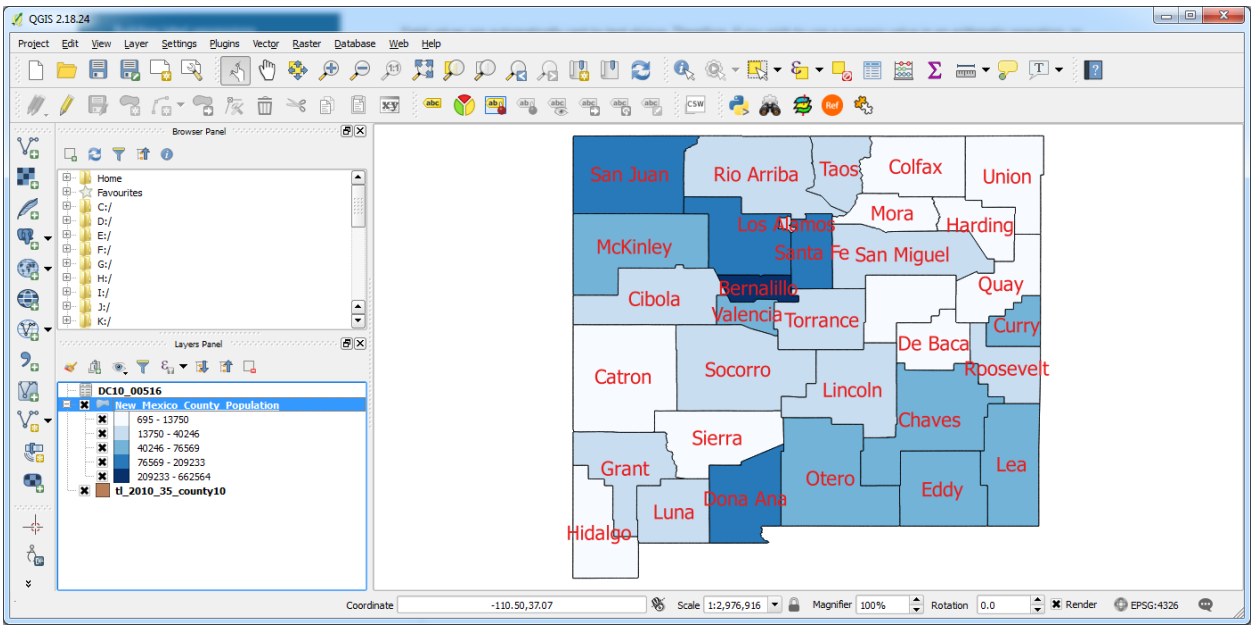
9) Apply and then click on OK.



10) Right click on the layer name again and click on Properties, choose the labels option and then start explore the settings

11) Please at least select red color for text and choose size 16.25.



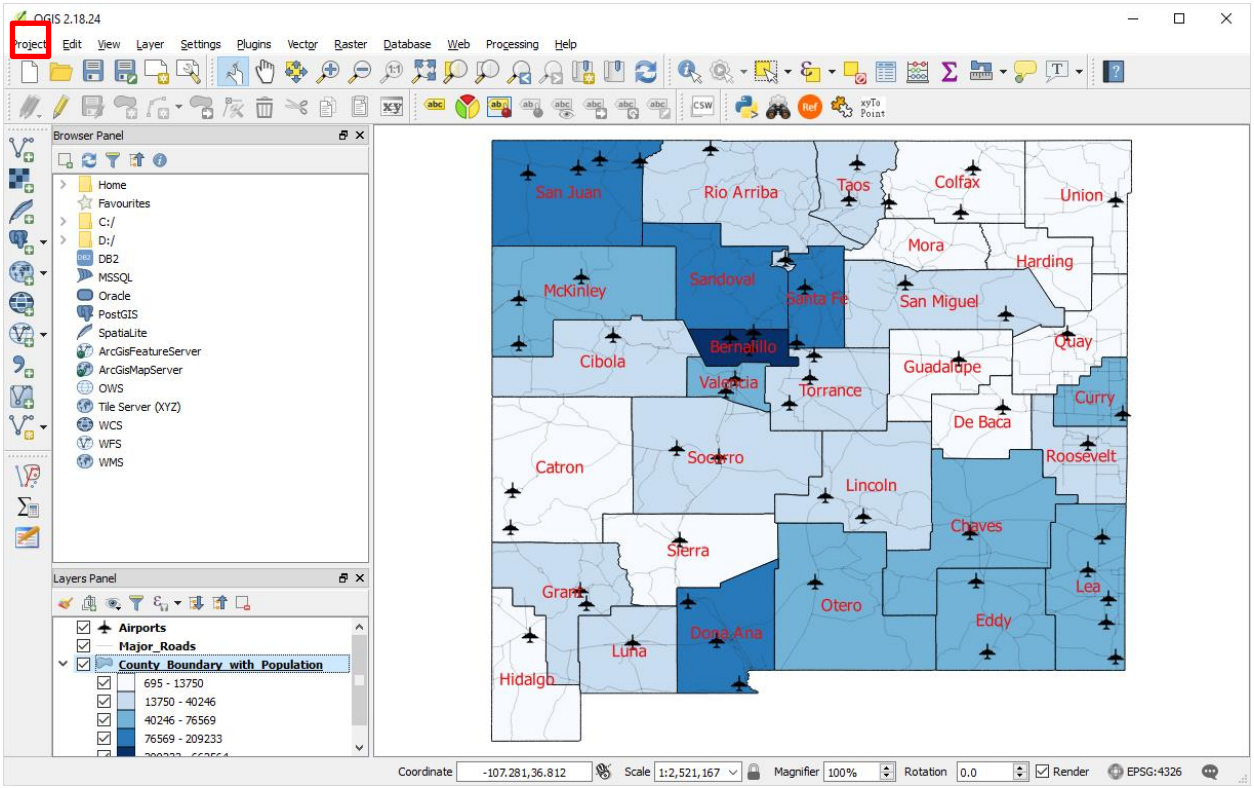


9. Creating Maps

1) Add more shapefiles, including airport data (tra2shp) and highway (tra3sh) data

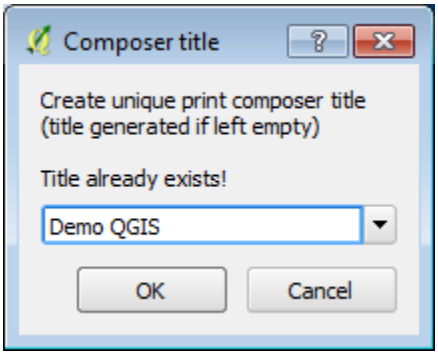
2) Explore the editing of these data

3) Click Project

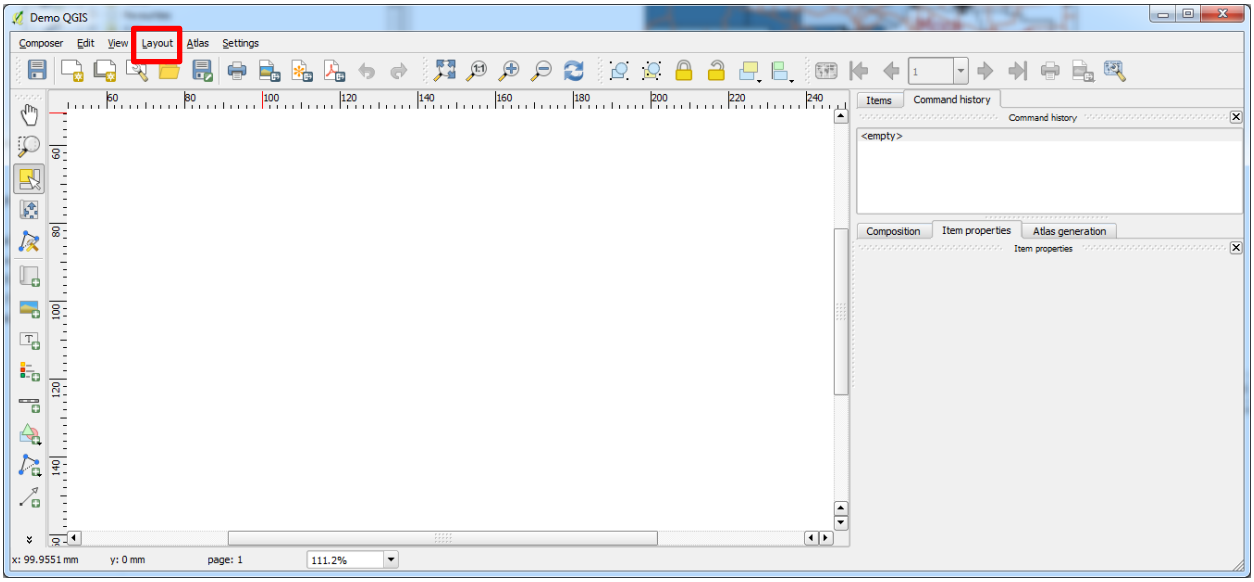


4) Click on New Print Composer

5) Type in a name for your composer



6) The composition panel should appear



7) Click Layout and then click add map

8) User your mouse pointer to select the area on the white canvas of the composer for adding the map

9) Click Layout and then click Add Scalebar, Add Legend, and Add Image (for north arrow)

10) Click Composer and then click Export as Image in JPEG format