Second Milestone Part 2 Report

Course Information:

Course code	:	CSE 6331
Course Section	:	002
Course Name	:	Adv topics in Database systems
Course focus	:	Spatial, Temporal, and spatial-temporal databases

Project Team Information:

Team member 1	:	Sai Venkata Krishnaveni, Devarakonda
Team member 2	:	Kumar, Niraj

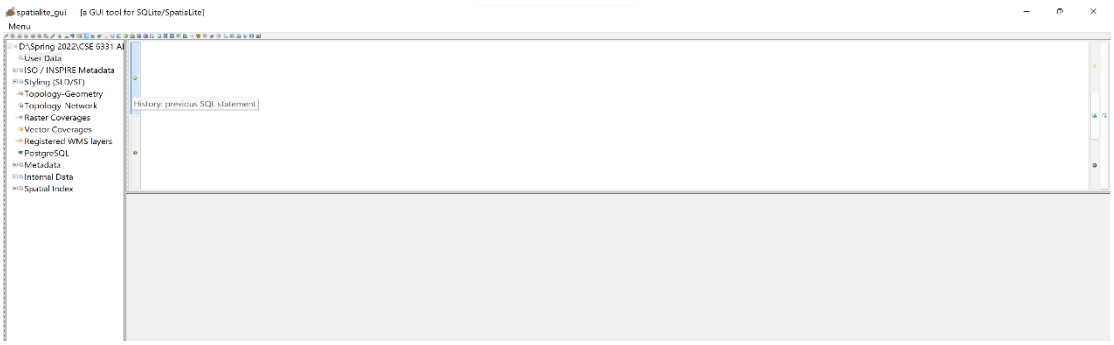
Description:

The requirement of this milestone is to display the maps of different areas by using GIS visualization tools (QGIS). The pre-requisites to display the maps is to install QGIS and load the database (contains the shape files of all tables) on to the QGIS. Once the pre-requisites are fulfilled then follow specific steps mentioned in this document which are required by the query to display the maps with specific areas mentioned in query.

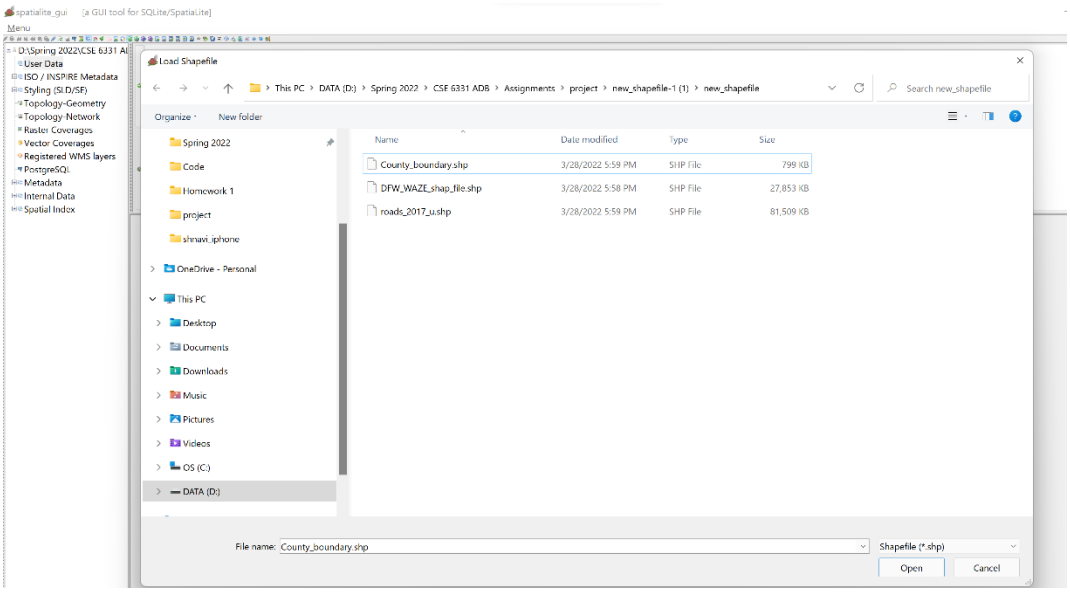
Pre-requisite steps:

i) Add county_boundary, dfw_waze_shap_file and roads_2017_u Shapefile in Spatialite gui using steps below

a. Open spatial GUI app

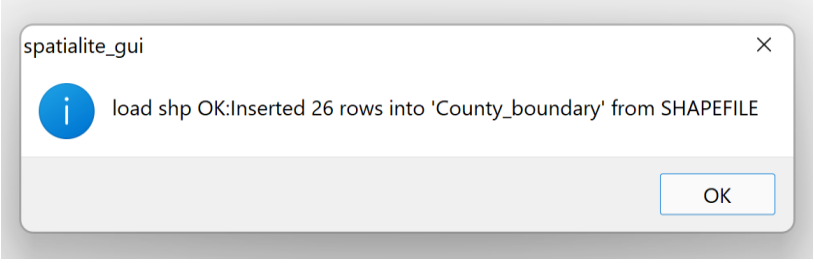


b. Click on Load Shapefile icon located on the top

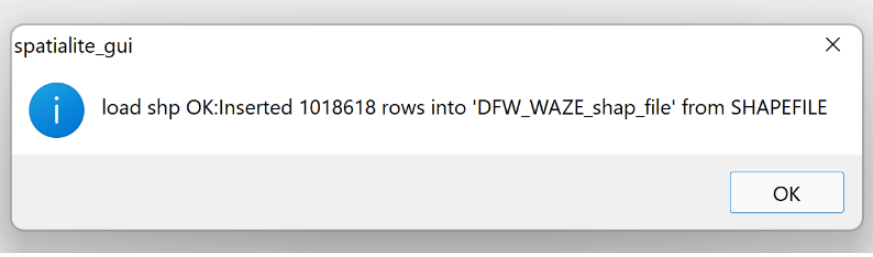


c. Select the shape file to be uploaded

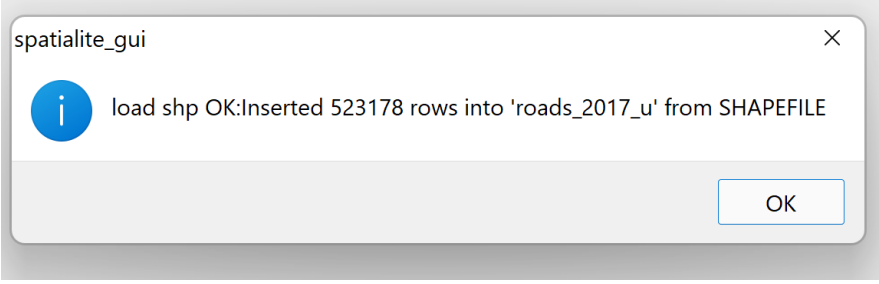
i. For county_boundary shape file:



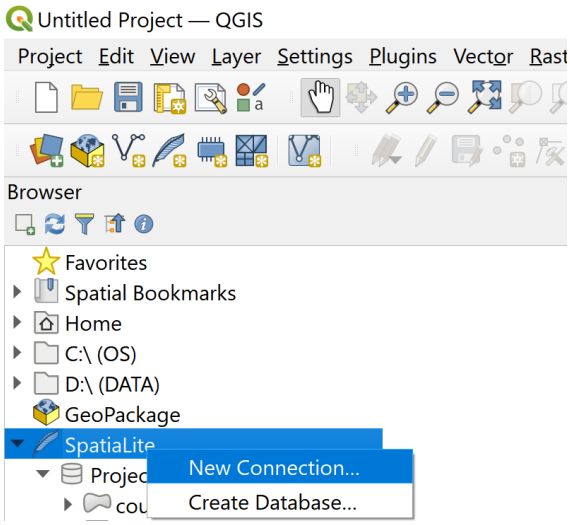
ii. For DFW_WAZE_shap_file shape file:



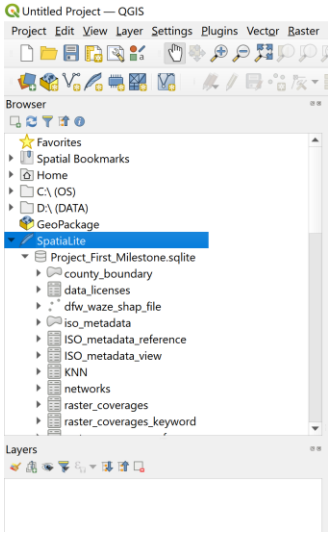
iii. For roads_2017_u shape file:



ii) Connect spatialite database with QGIS using New Connection



iii) Select the spatialite database location and click open. The Spatialite Database will be loaded on the QGIS as shown below

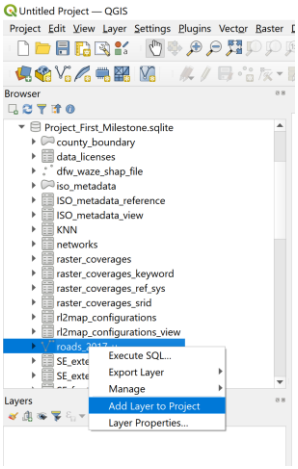


Questions and queries for the second milestone:

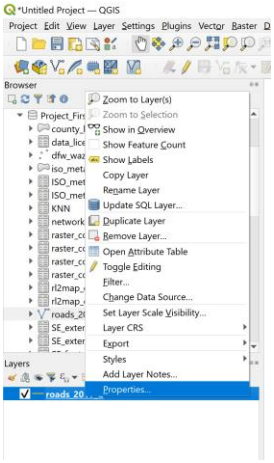
1. Display the roads that are located in Collin county in Red color and in Tarrant county in Black color and in Dallas County in Blue color. The rest of the counties, display the roads in Yellow color. The example below shows Tarrant roads in red and Dallas roads in black – your query is slightly different.

   Steps:

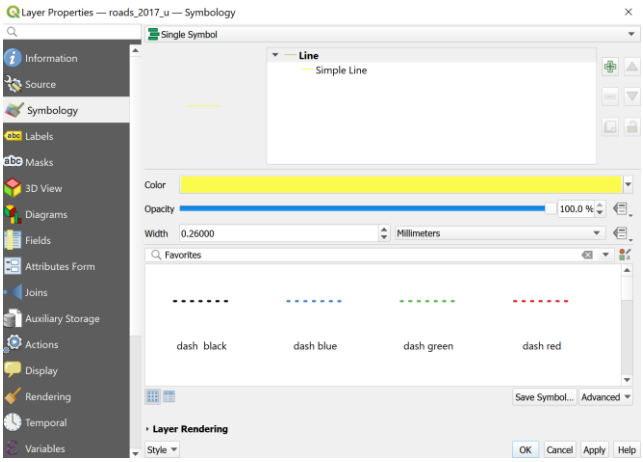
   i) Add roads_2017_u layer



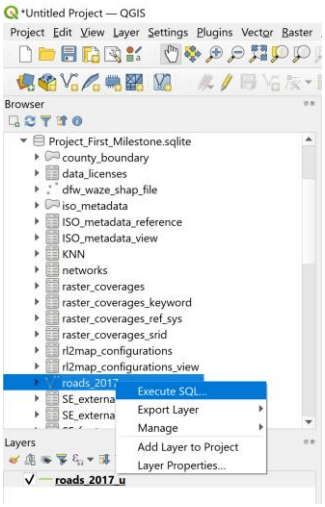
ii) Right click on roads_2017_u and select properties



iii) Choose Symbology and select color option as yellow → click on Apply → click on OK

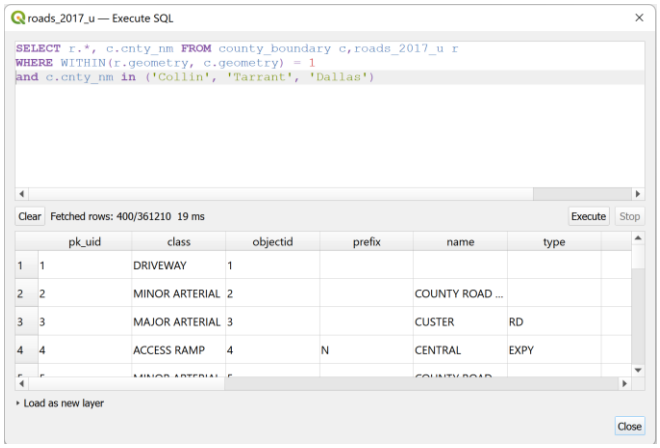


iv) Right click on roads_2017_u and select Execute SQL

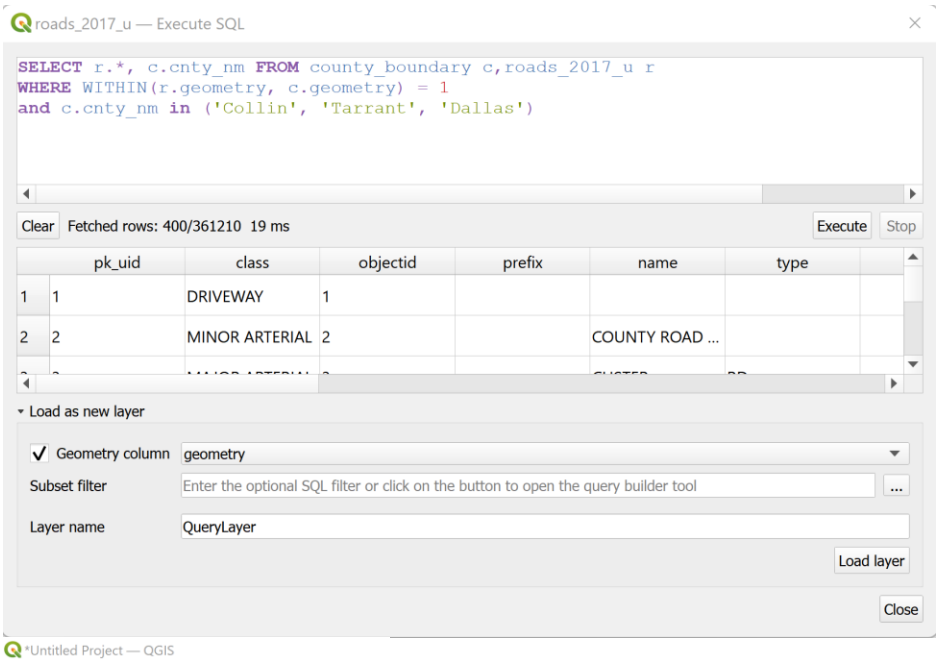


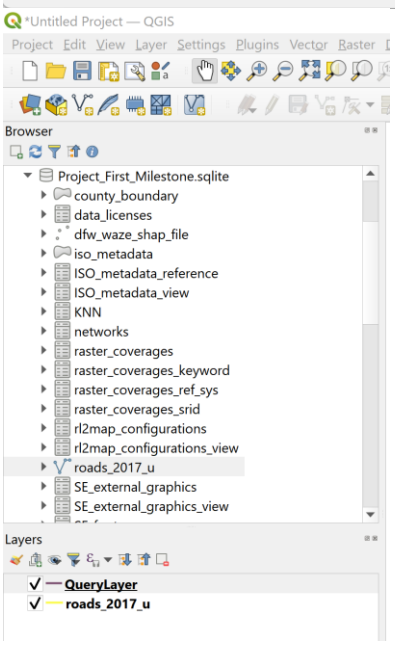
v) Execute the query below:

SELECT r.*, c.cnty_nm FROM county_boundary c,roads_2017_u r
WHERE WITHIN(r.geometry, c.geometry) = 1 and c.cnty_nm in ('Collin', 'Tarrant', 'Dallas')

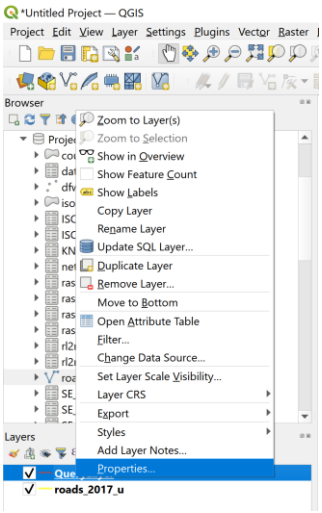


vi) Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’

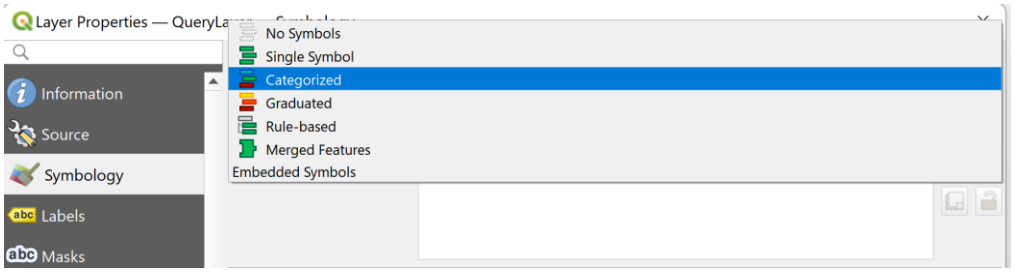




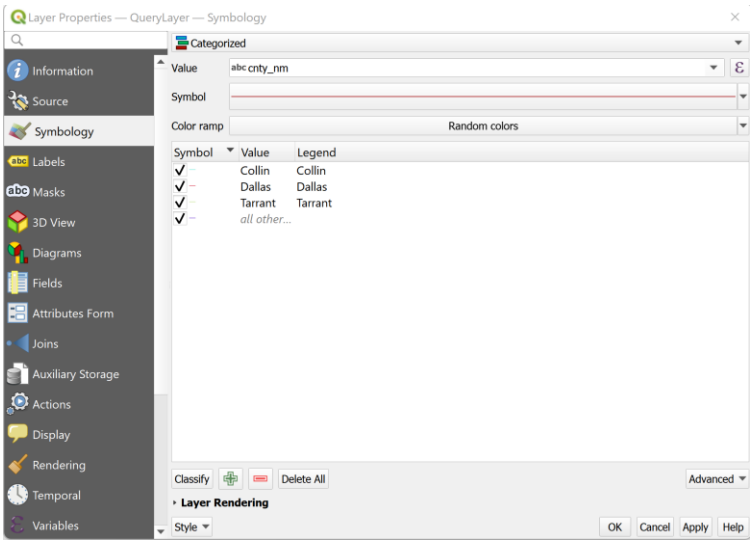
vii) Right click on QueryLayer → Click on Properties



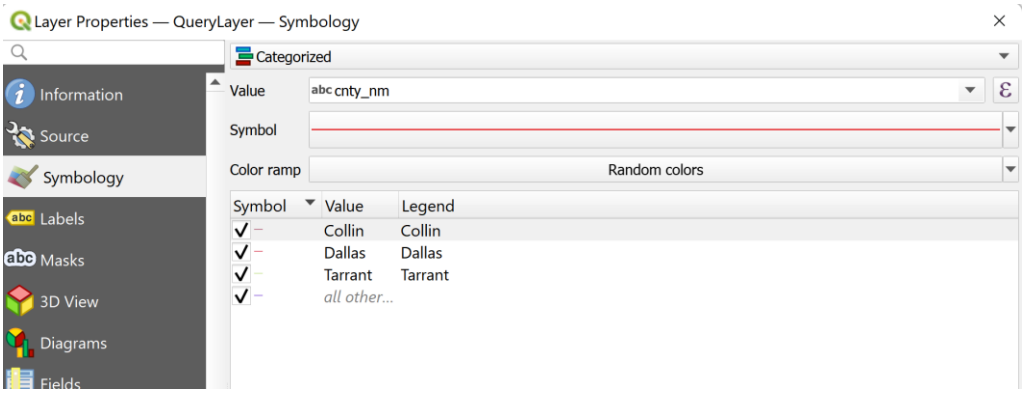
viii) Select Symbology → Select Categorized as shown below



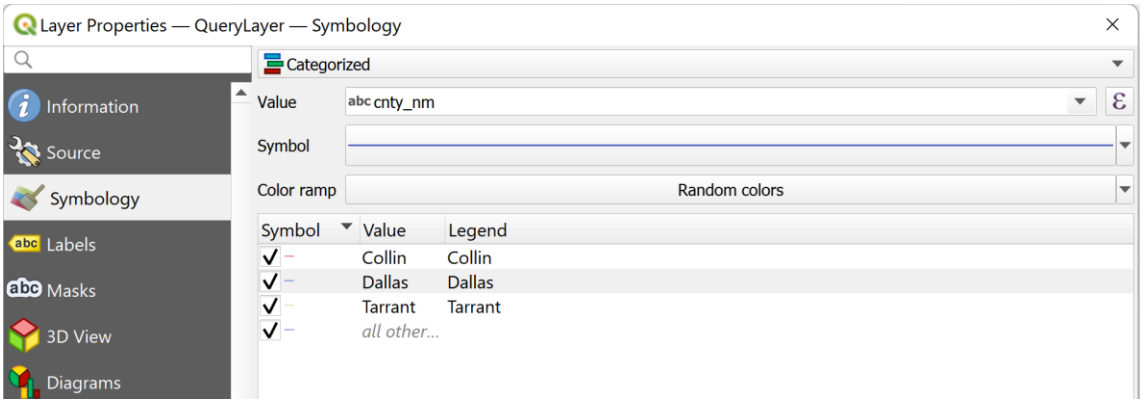
ix) Select Value as cnty_nm → click on Classify in left bottom of the panel



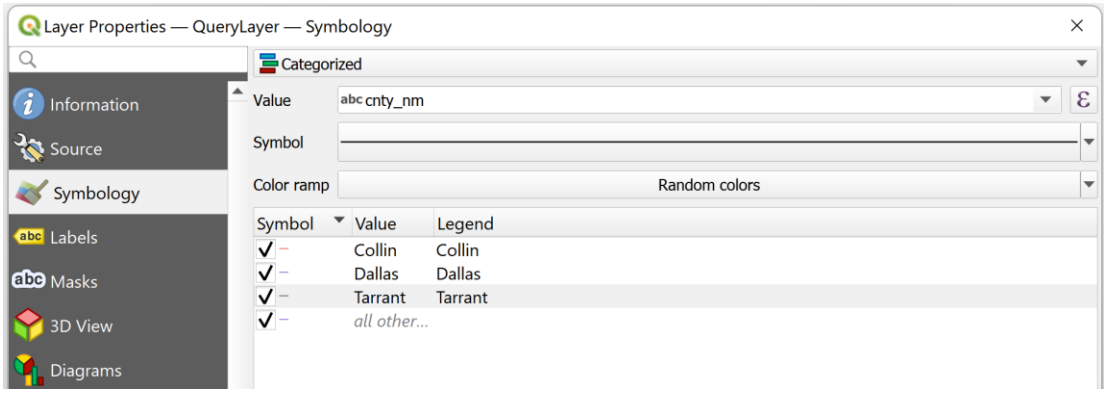
x) Select ‘Collin’ value and change symbol color to ‘Red’



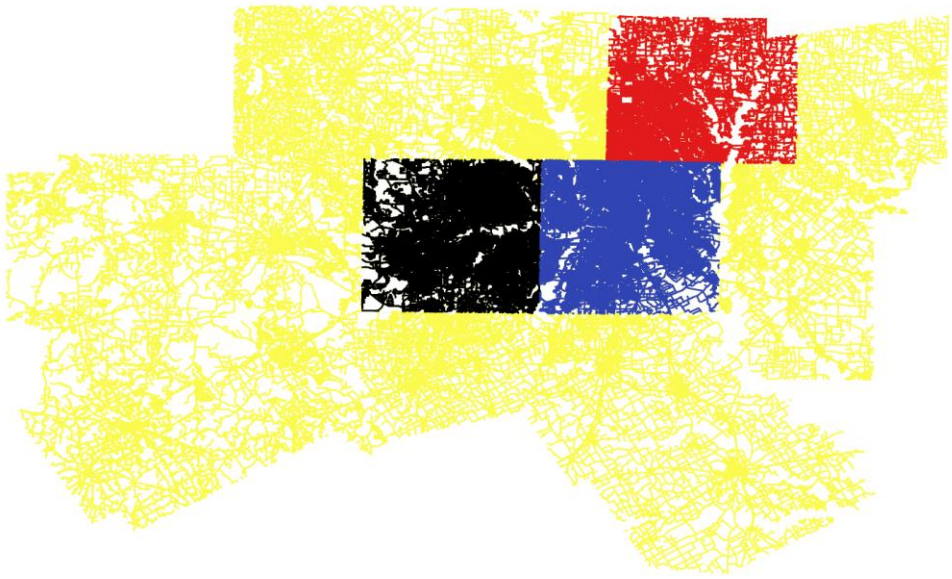
xi) Select ‘Dallas’ value and change symbol color to ‘Blue’



xii) Select ‘Tarrant’ value and change symbol color to ‘Black’



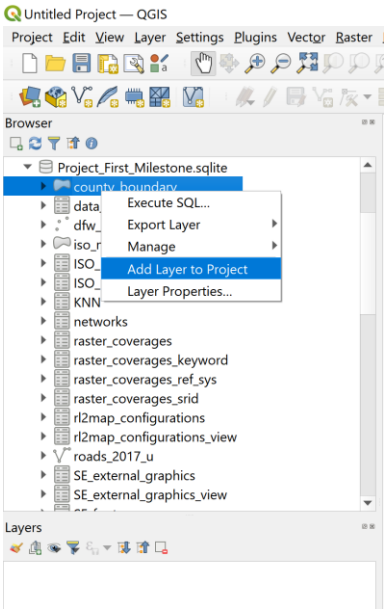
xiii) Click on Apply → Click on Ok



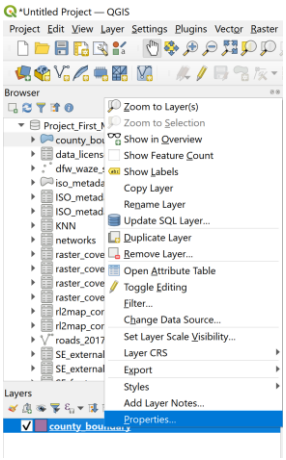
2. Display the roads that are in the class: 'PRIMARY HIGHWAY' in black with the county in the background. Here they are shown in green.

Steps:

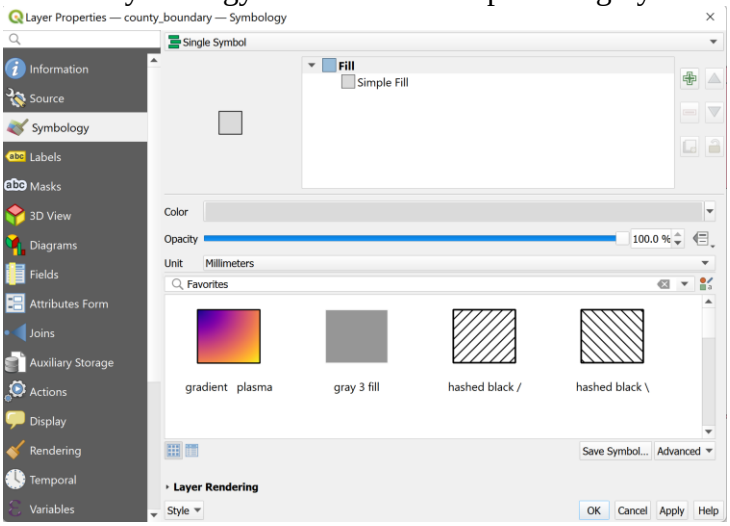
I. Add County_boundary layer



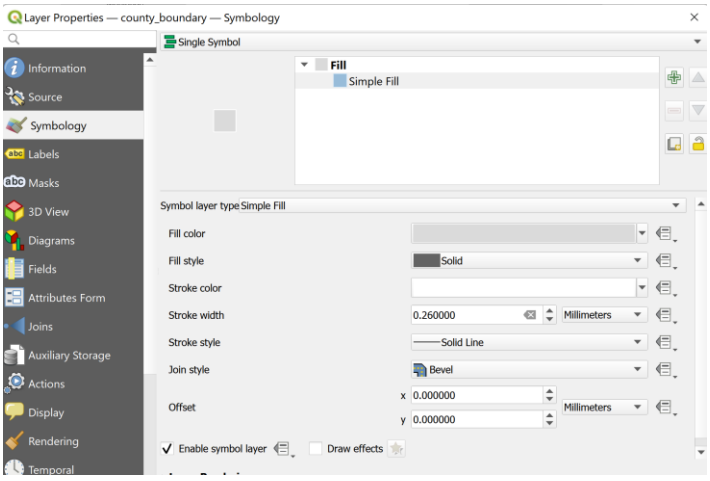
II. Right click on county_boundary layer and select properties



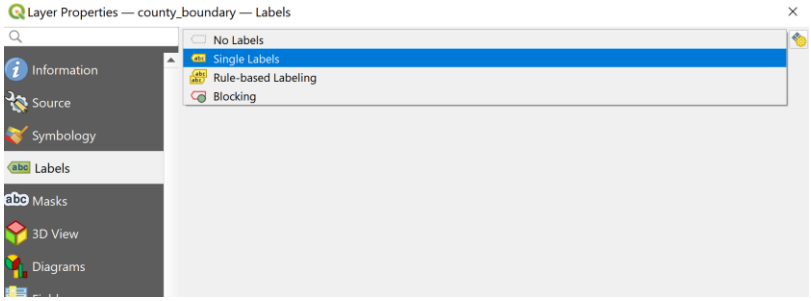
III. Choose Symbology and select color option as gray



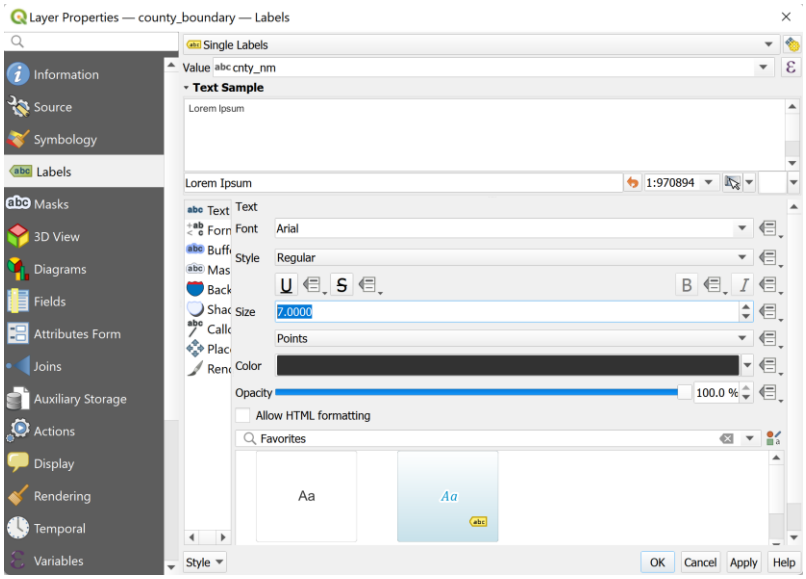
IV. Select simple Fill → select stroke color as 'White'



V. Choose labels and select ‘single labels’ from dropdown

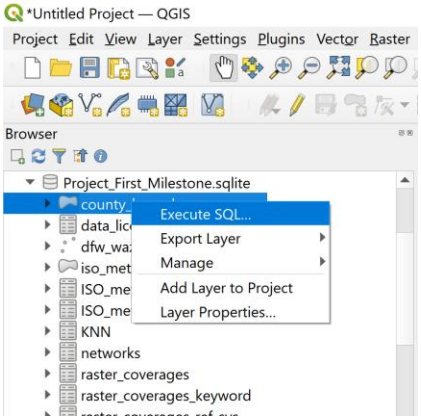


VI. Select value as ‘cnty_nm’ and size as 7.0000



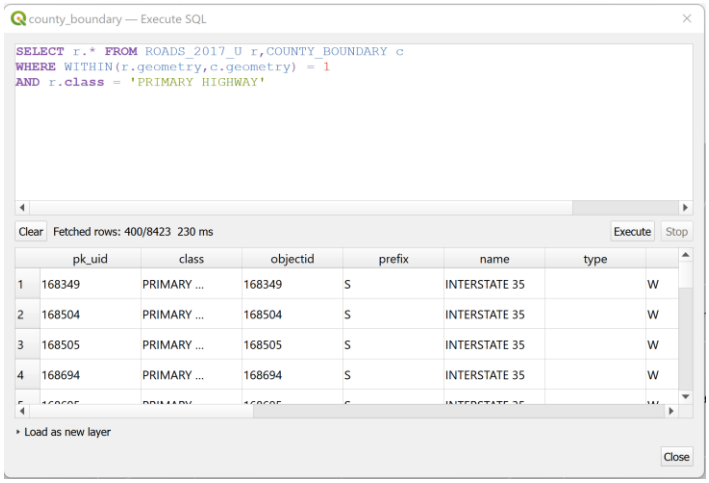
VII. Click on Apply →click on ok

VIII. Right click on county_boundary and select Execute SQL

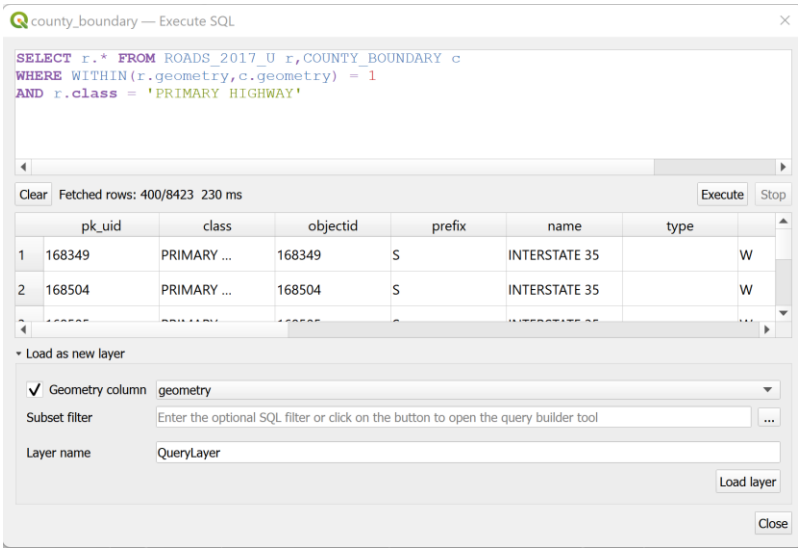


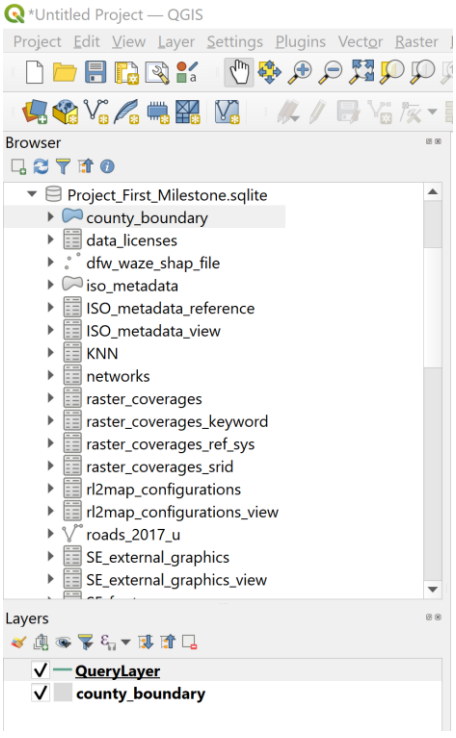
IX. Execute the query below:

```
SELECT r.* FROM ROADS_2017_U r,COUNTY_BOUNDARY c
WHERE WITHIN(r.geometry,c.geometry) = 1
AND r.class = 'PRIMARY HIGHWAY'
```

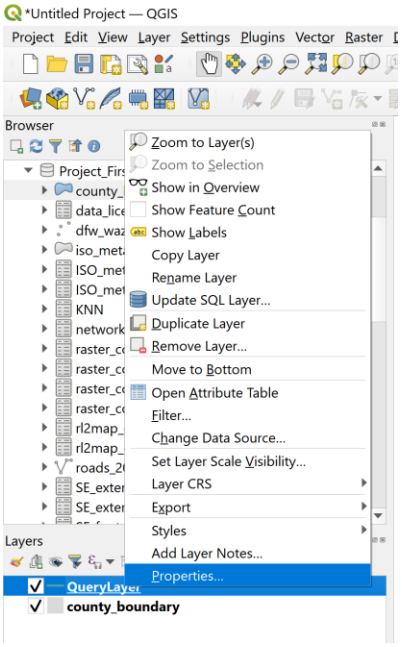


X. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’

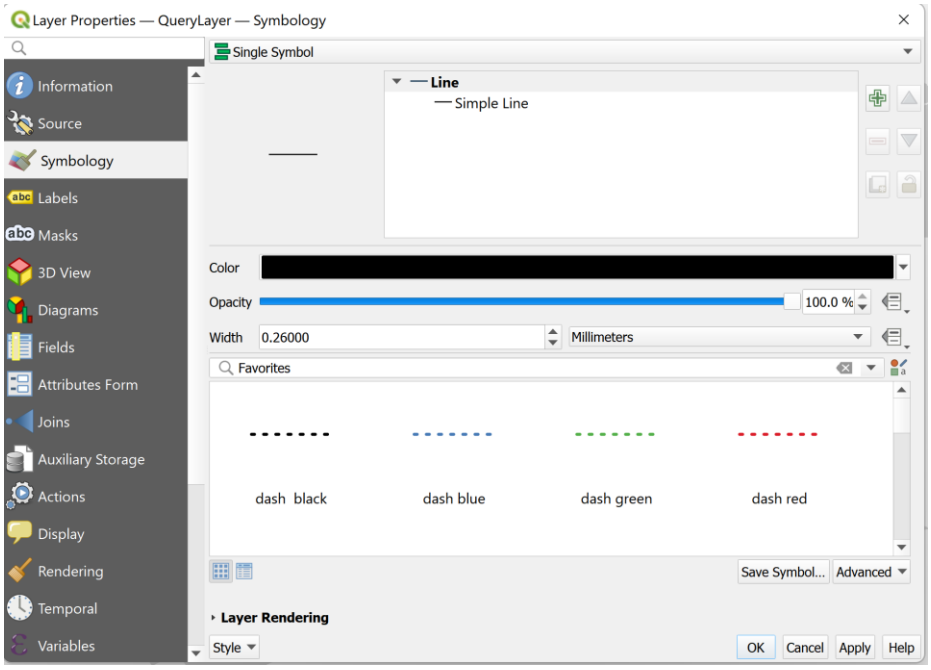




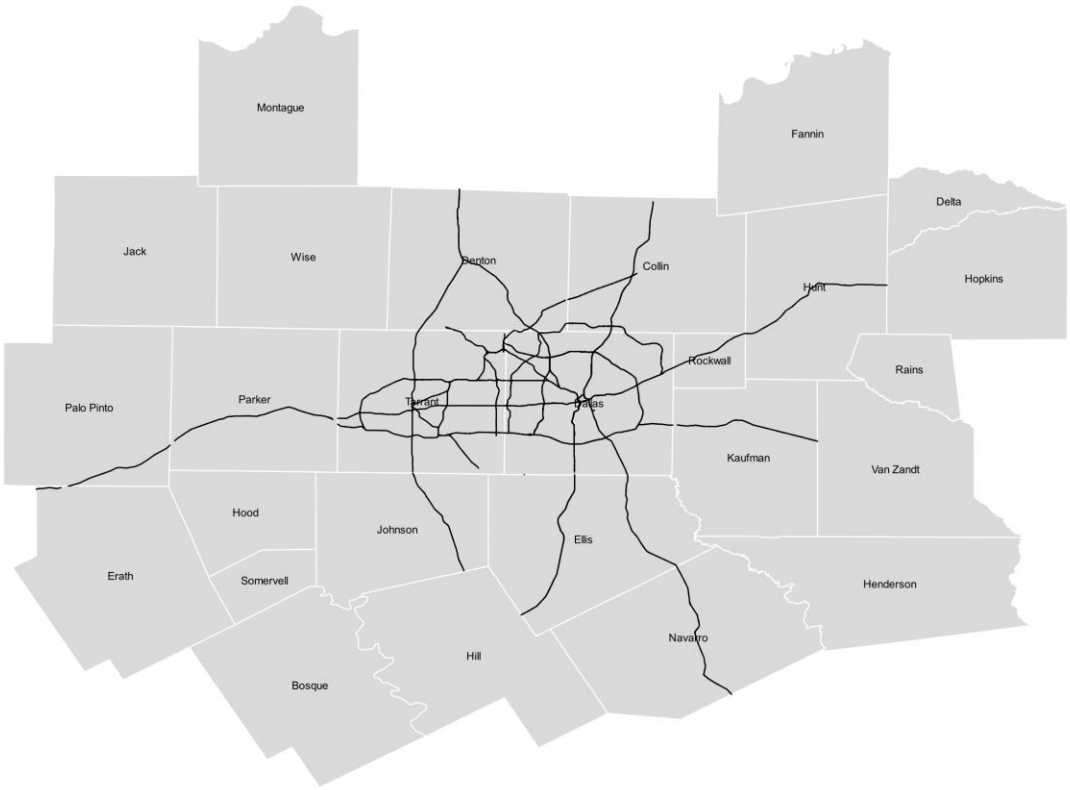
xiv) Right click on QueryLayer → Click on Properties



xv) Select Symbology and change color to black



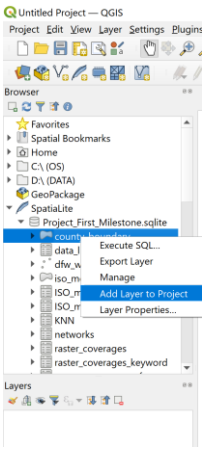
xvi) Click on Apply → Click on Ok



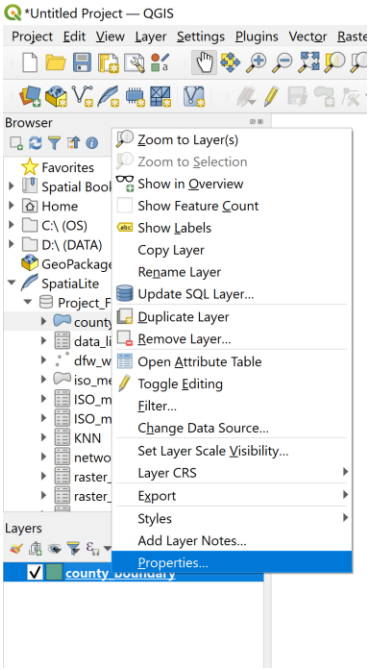
3. Display the roads only with class ‘PRIMARY HIGHWAY’ and class ‘SECONDARY HIGHWAY’. Each class should be in a different color with the county in the background.

Steps:

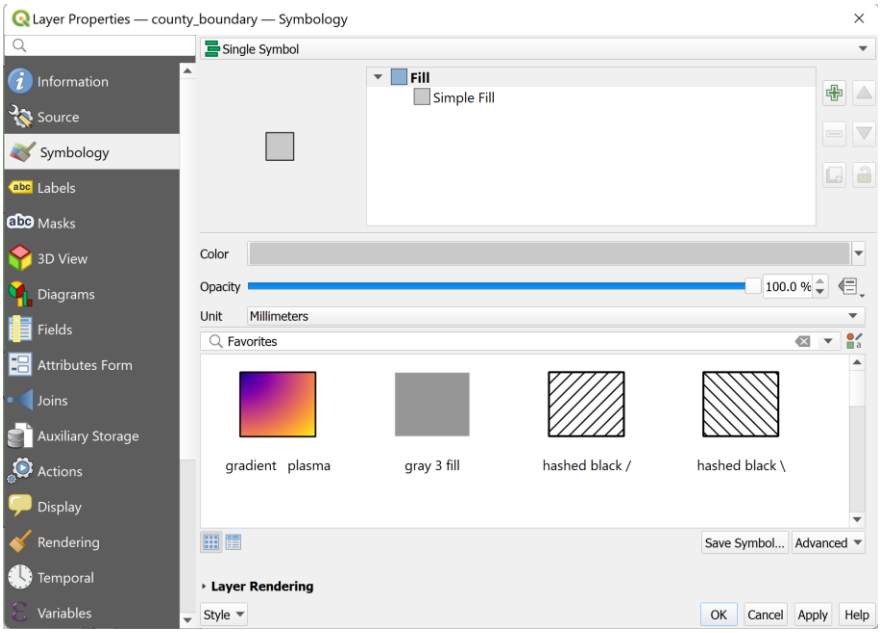
i. Add County_boundary layer



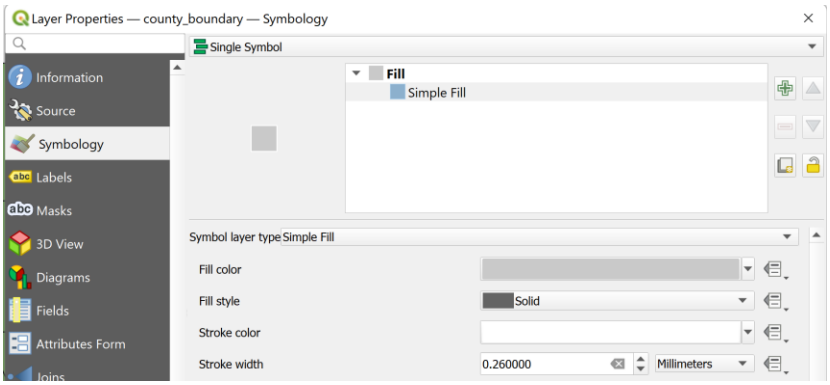
ii. Right click on county_boundary layer and select properties



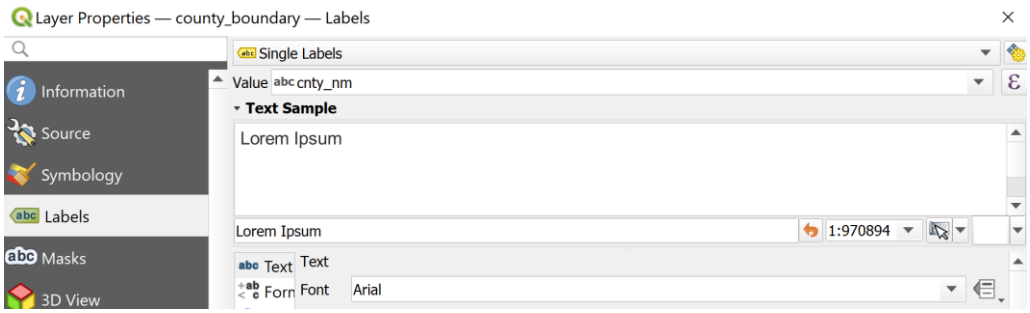
iii. Choose Symbology and select color option as gray



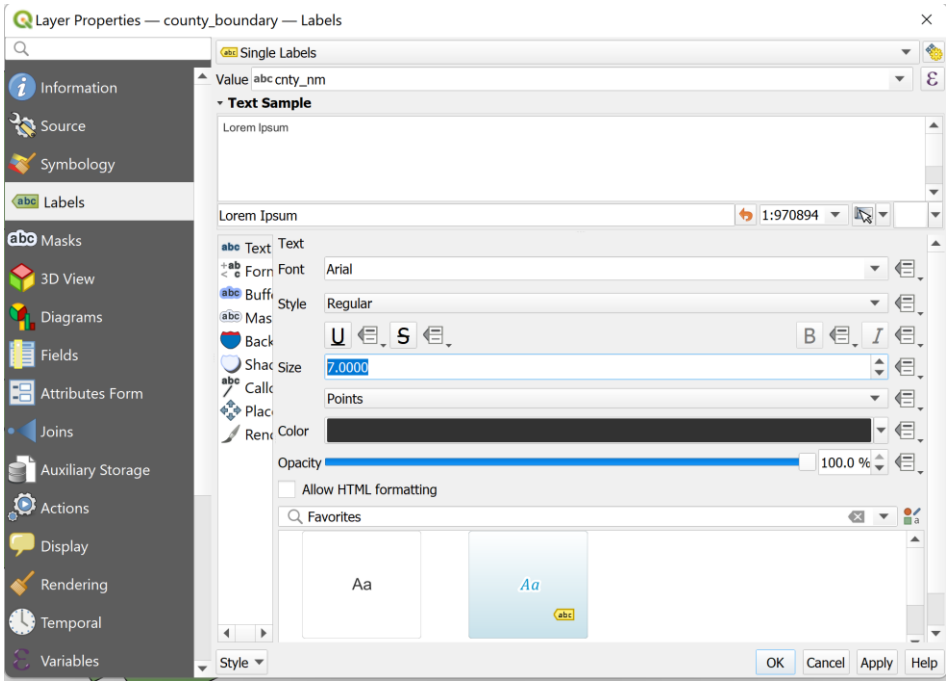
iv. Select simple Fill → select stroke color as ‘White’



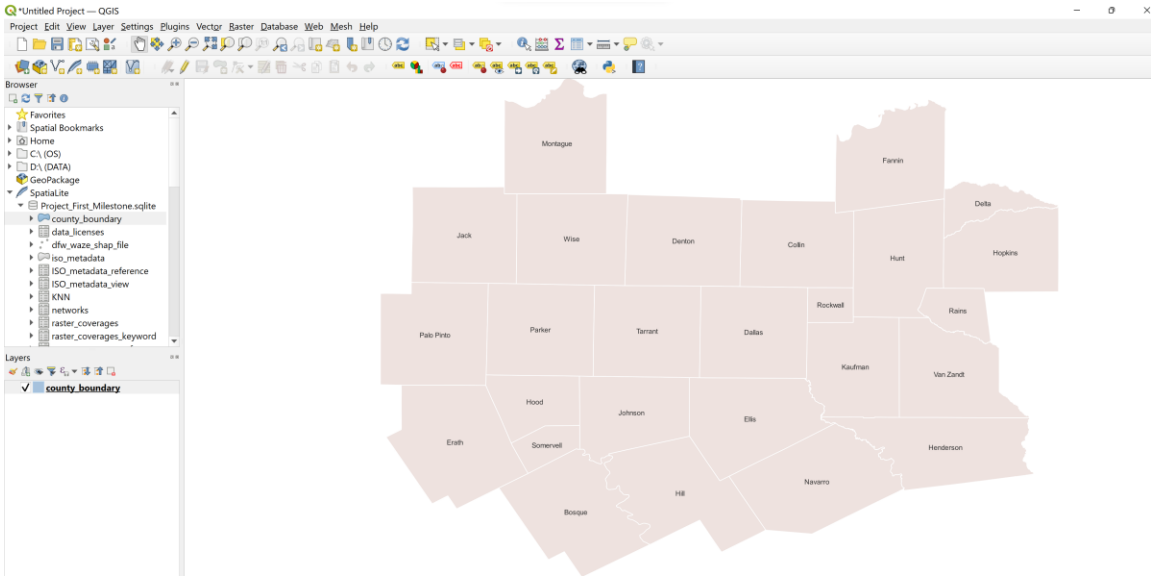
v. Choose labels and select ‘single labels’ from dropdown



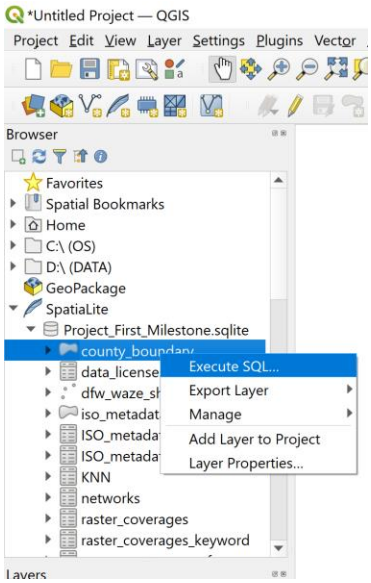
vi. Select value as ‘cnty_nm’ and size as 7.0000



vii. Click on Apply →click on ok

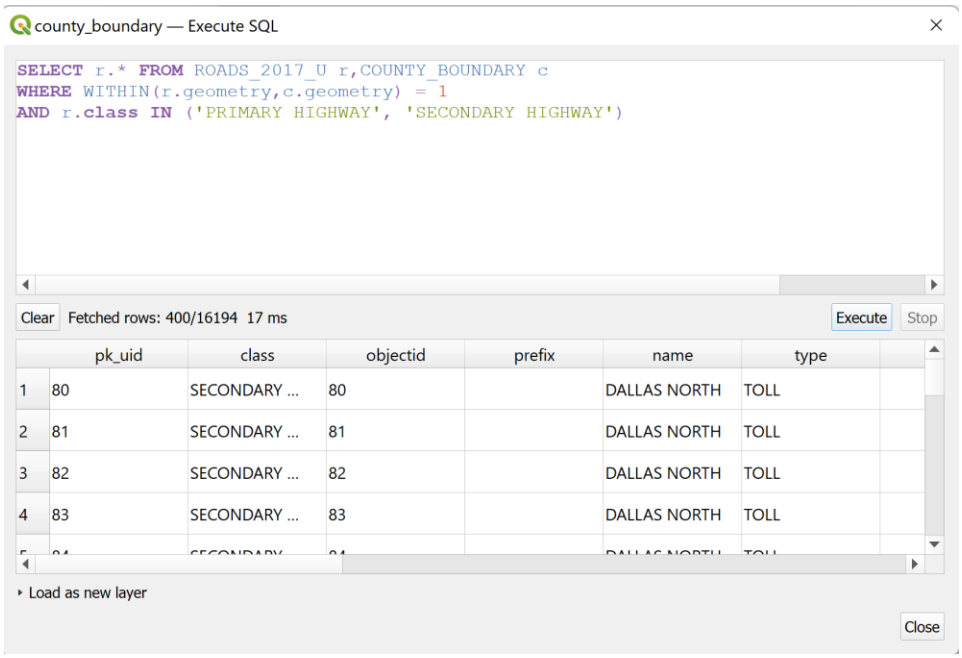


viii. Right click on county_boundary and select Execute SQL

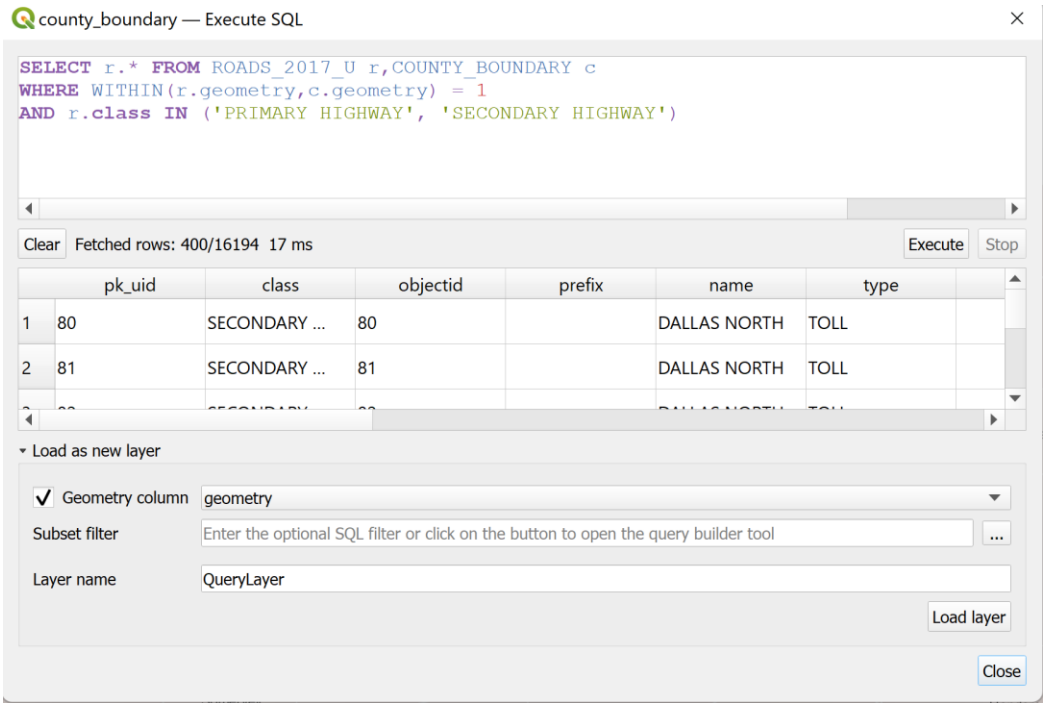


ix. Execute the query below:

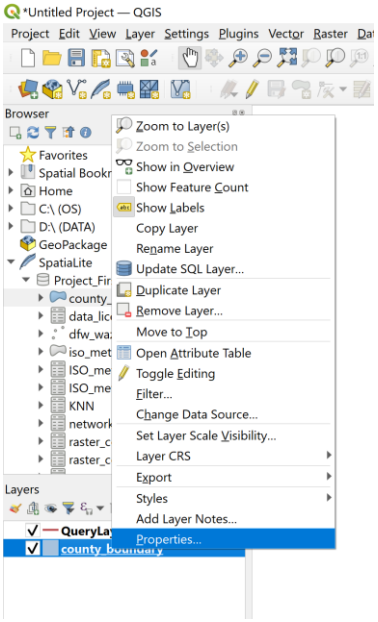
```
SELECT r.* FROM ROADS_2017_U r,COUNTY_BOUNDARY c
WHERE WITHIN(r.geometry,c.geometry) = 1
AND r.class IN ('PRIMARY HIGHWAY', 'SECONDARY HIGHWAY')
```



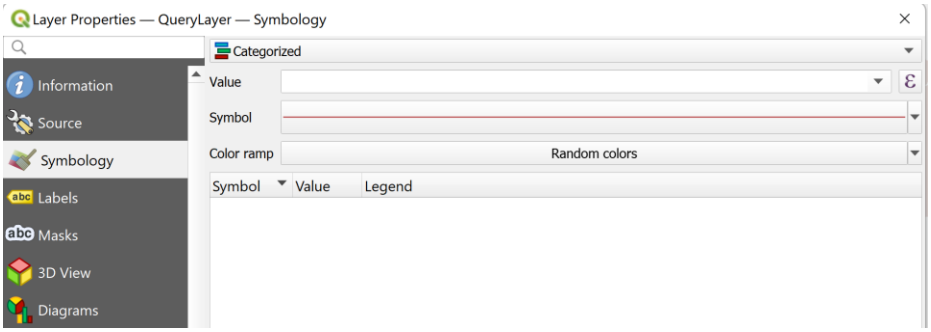
x. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’



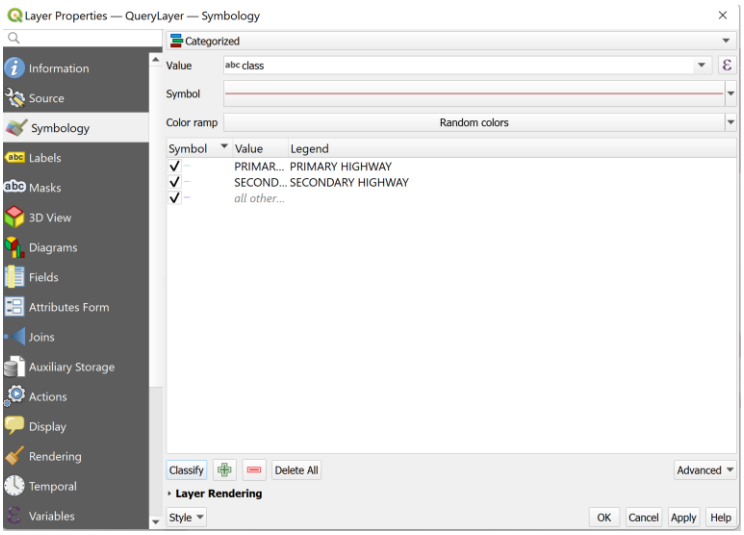
xi. Right click on QueryLayer → Click on Properties



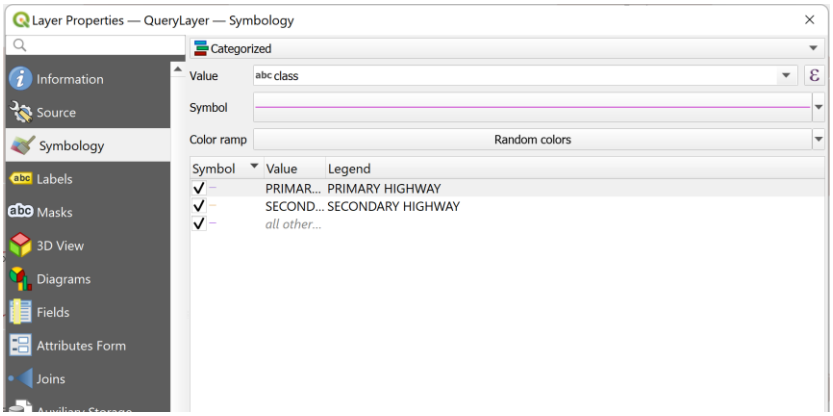
xii. Select Symbology → Select Categorized as shown below



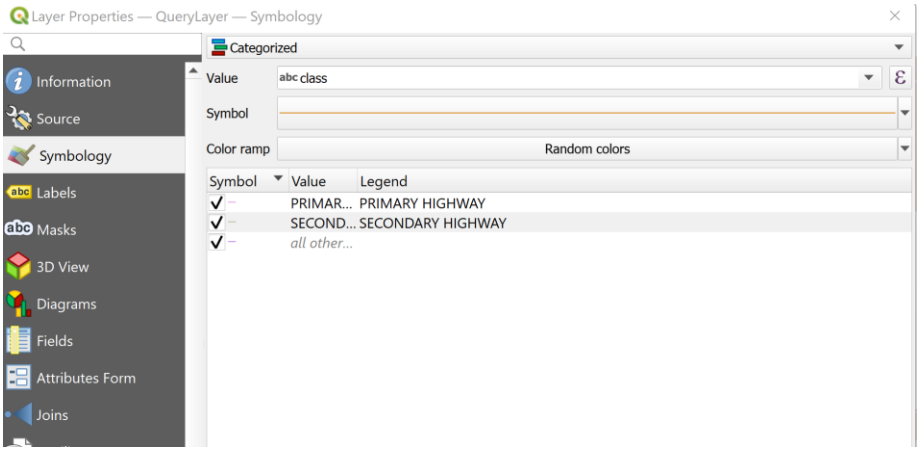
xiii. Select Value as class→ click on Classify in left bottom of the panel



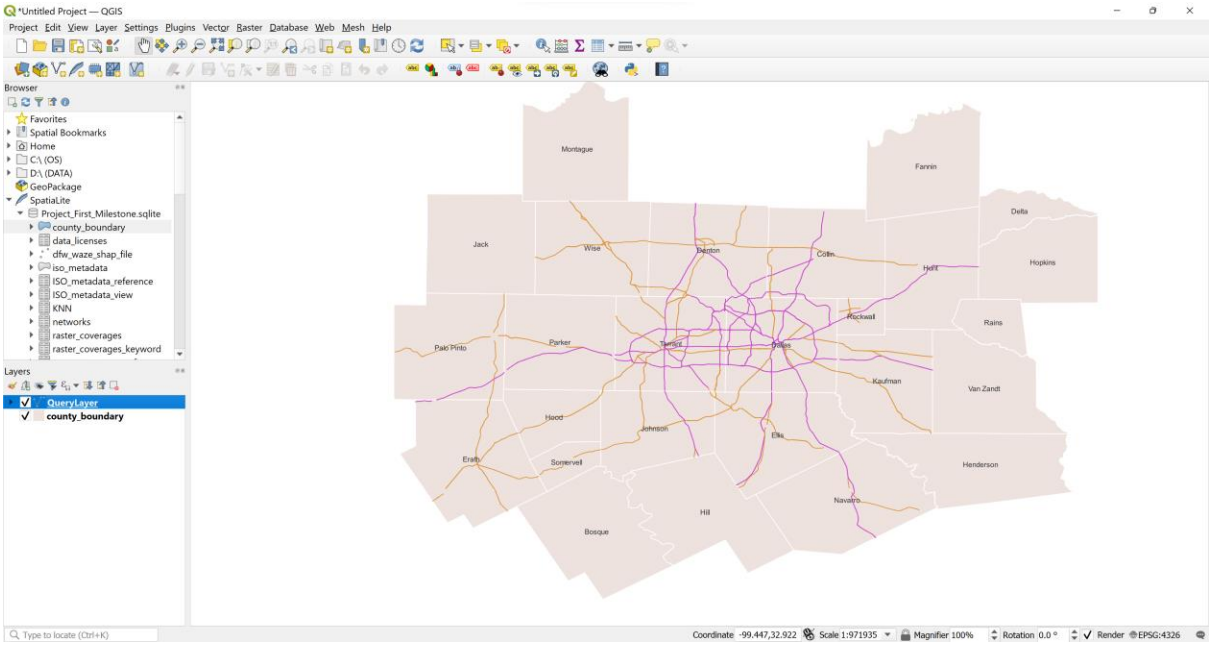
xiv. Select ‘Primary highway’ value and change symbol to purple color



xv. Select ‘Secondary highway’ value and change symbol to mustard color



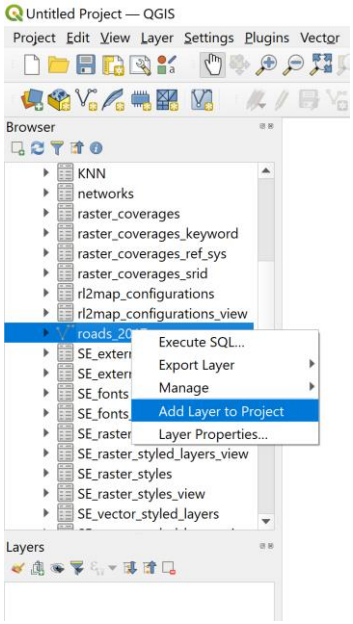
xvi. Click on Apply and then click on Ok



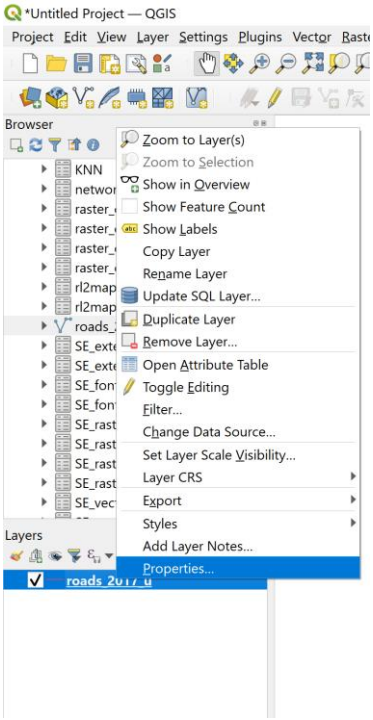
4. Display all the events (From DFW_WAZE) that happened in Arlington form 6 am to 12 pm on 12/1/2018. Each event should be displayed with different color and thebackground should be the roads.

Steps:

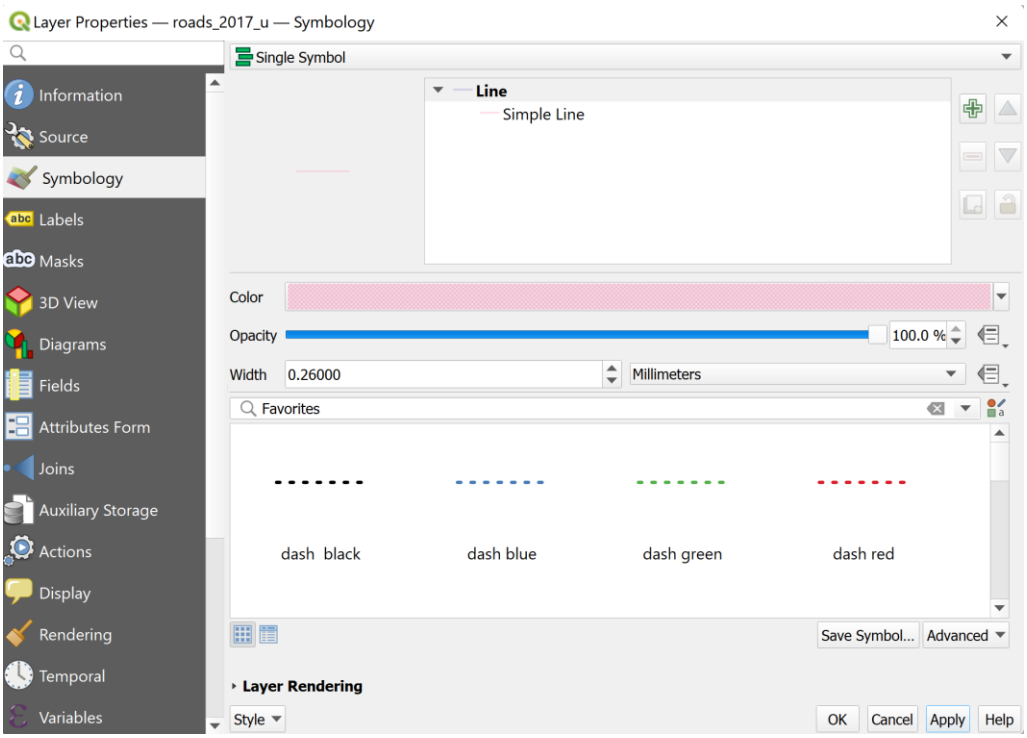
i. Add road_2017_u layer



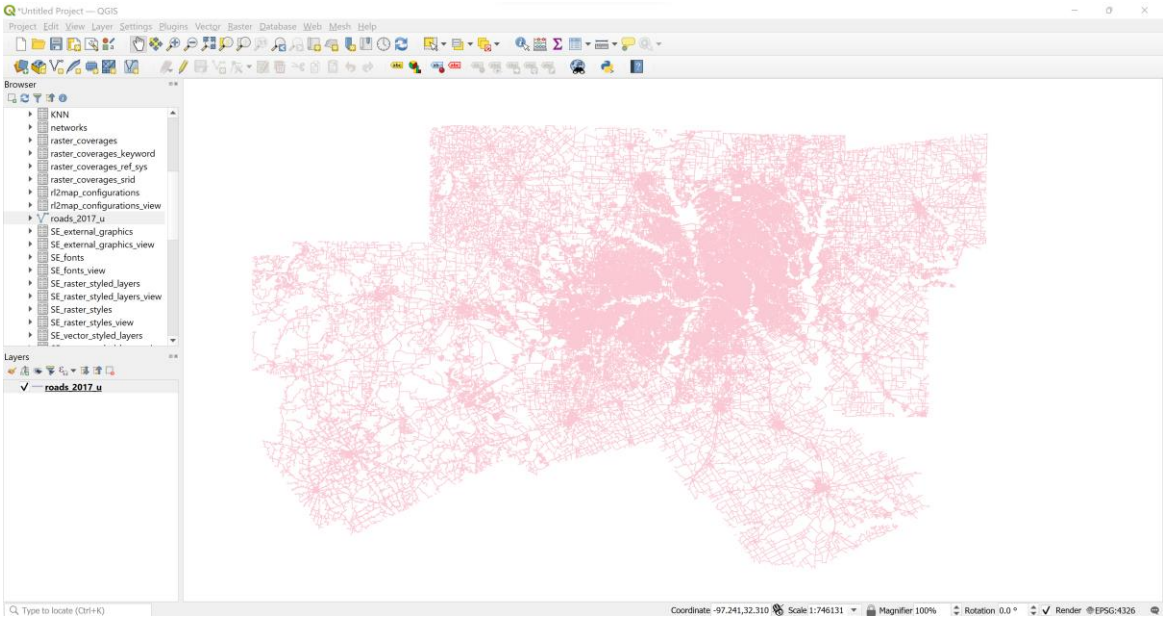
ii. Right click on road_2017_u layer and select properties



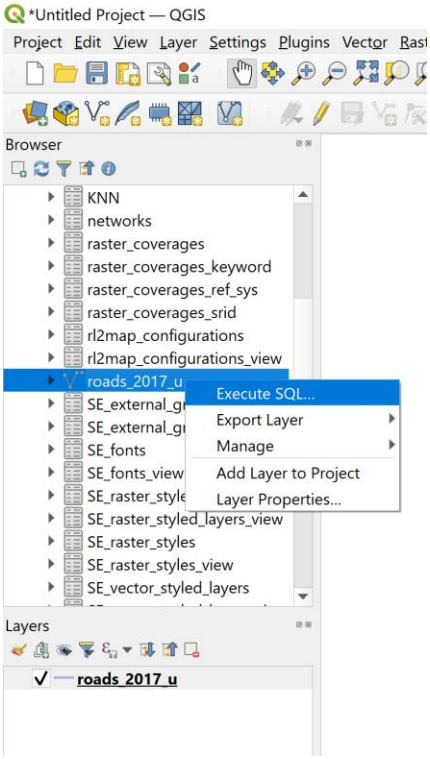
iii. Choose Symbology and select color option as pink



iv. Click on Apply and then click on Ok

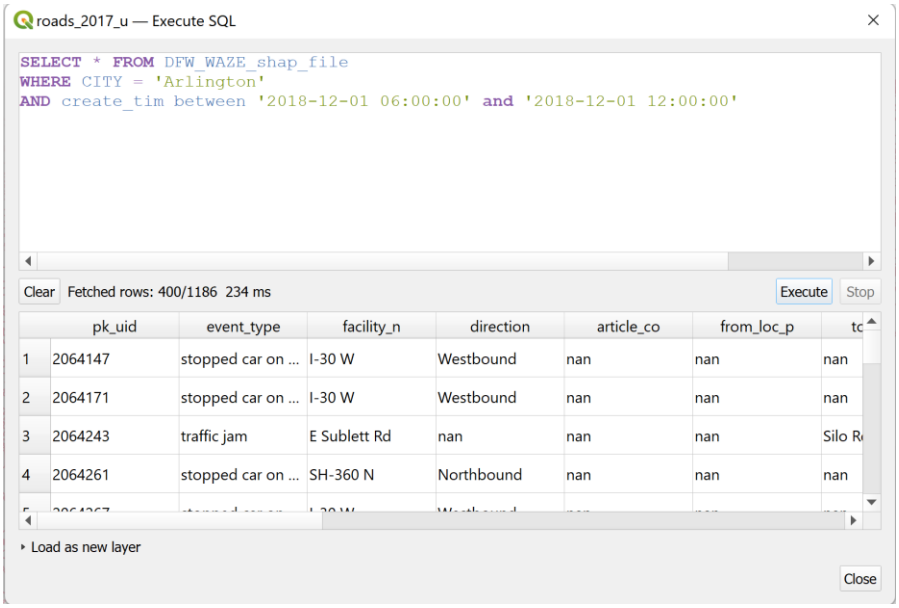


v. Right click on roads_2017_u and select Execute SQL

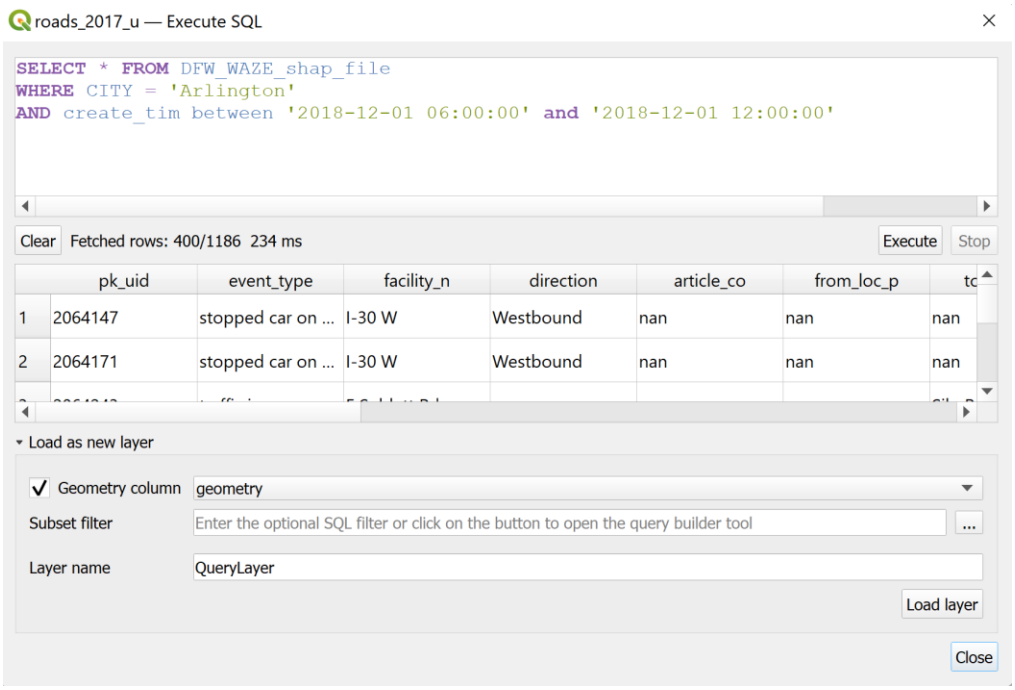


vi. Execute the query below:

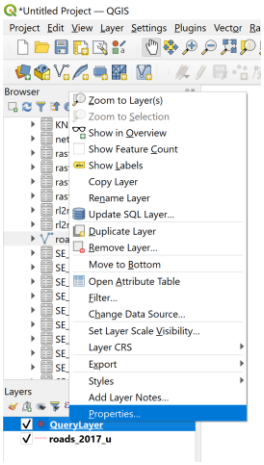
```
SELECT * FROM DFW_WAZE_shap_file
WHERE CITY = 'Arlington'
AND create_tim between '2018-12-01 06:00:00' and '2018-12-01
12:00:00'
```



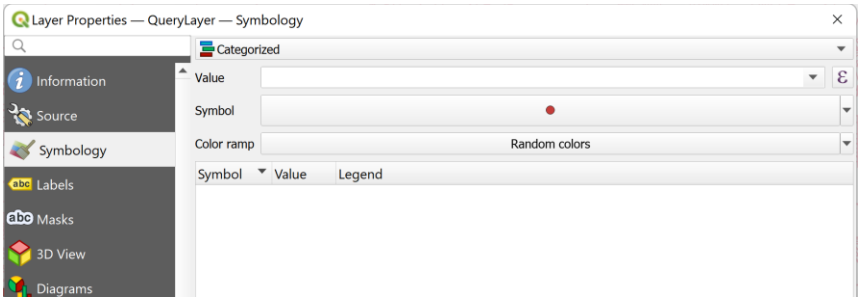
vii. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’



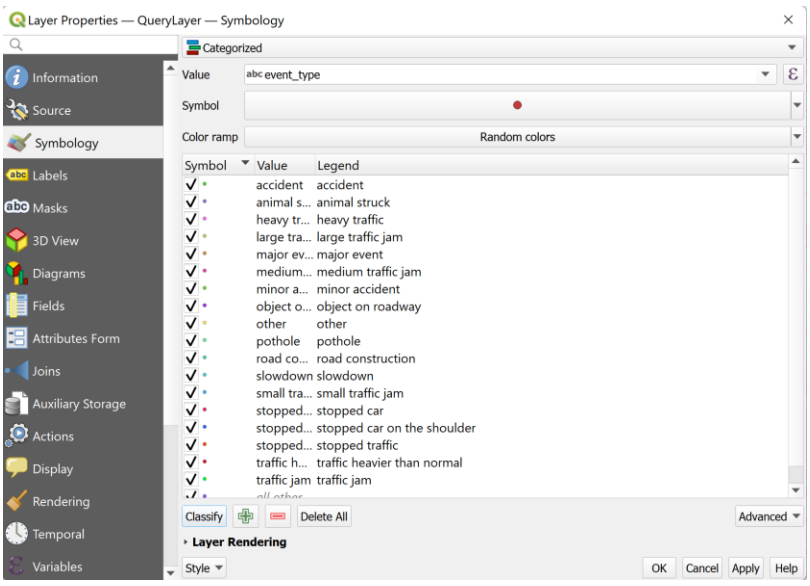
viii. Right click on QueryLayer → Click on Properties



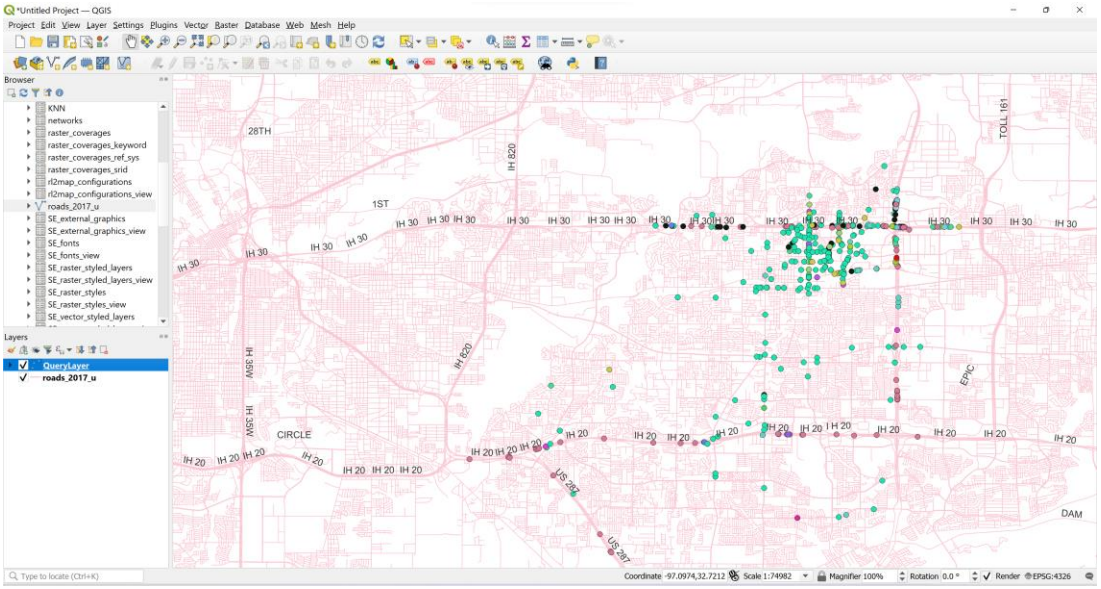
ix. Select Symbology → Select Categorized as shown below



x. Select Value as event_type→ click on Classify in left bottom of the panel



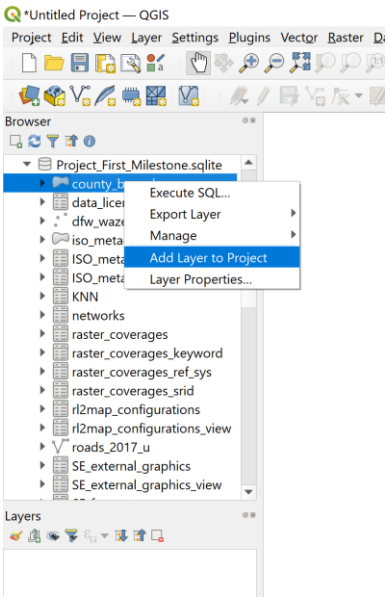
xi. Click on Apply and then click on Ok



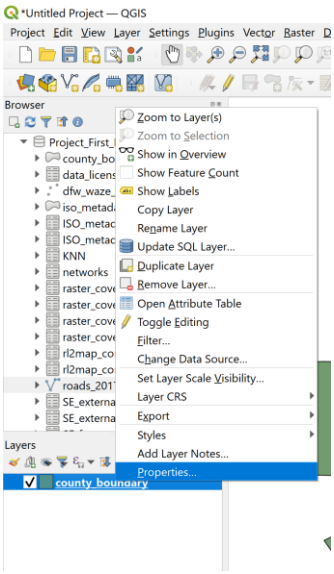
5.Display the accidents that happened in Arlington, Dallas, Denton. Each city event in a different color and the background are the roads and county

Steps:

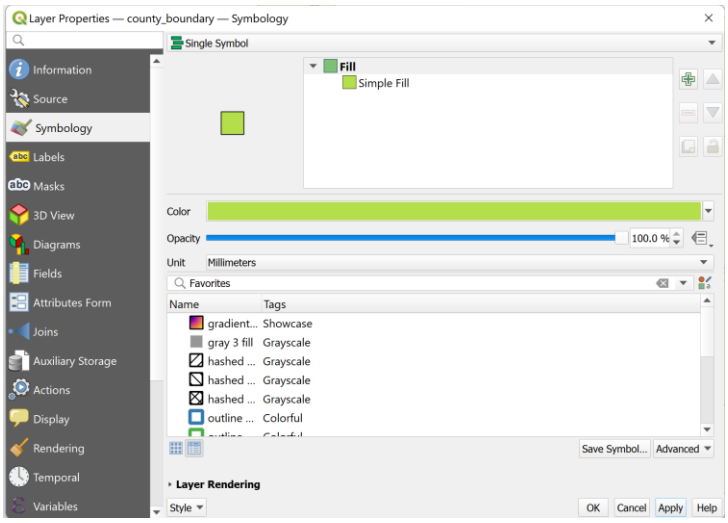
i. Add county_boundary layer



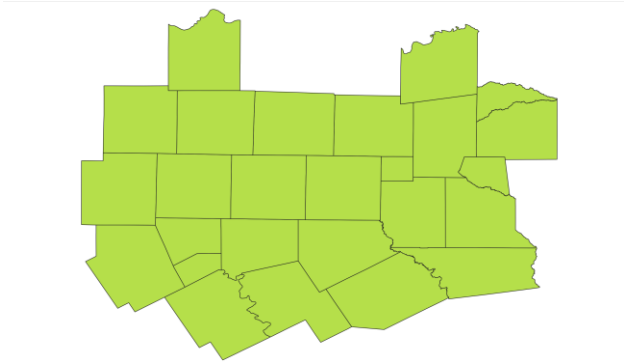
ii. Right click on county_boundary layer and select properties



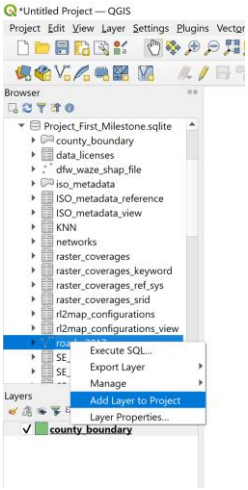
iii. Choose Symbology and select color option as light green



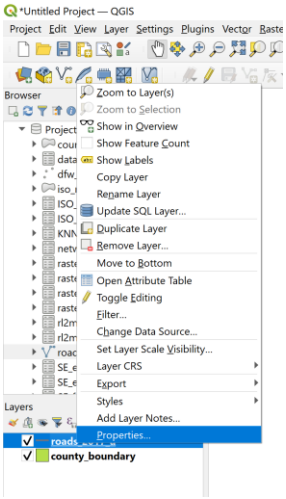
iv. Click on Apply and then click on Ok



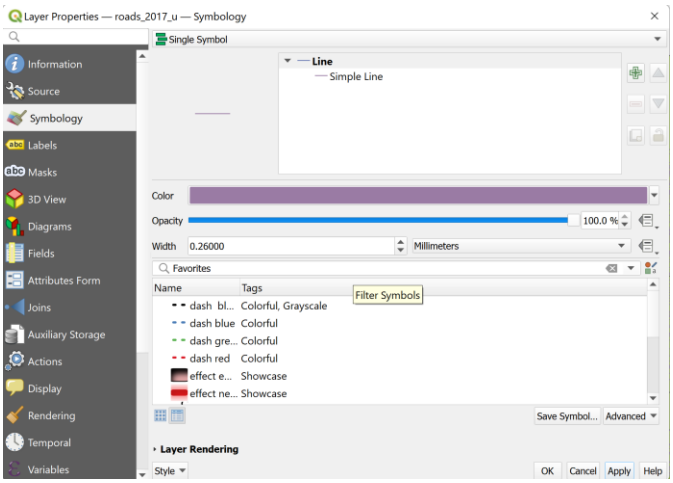
v. Add roads_2017_u layer



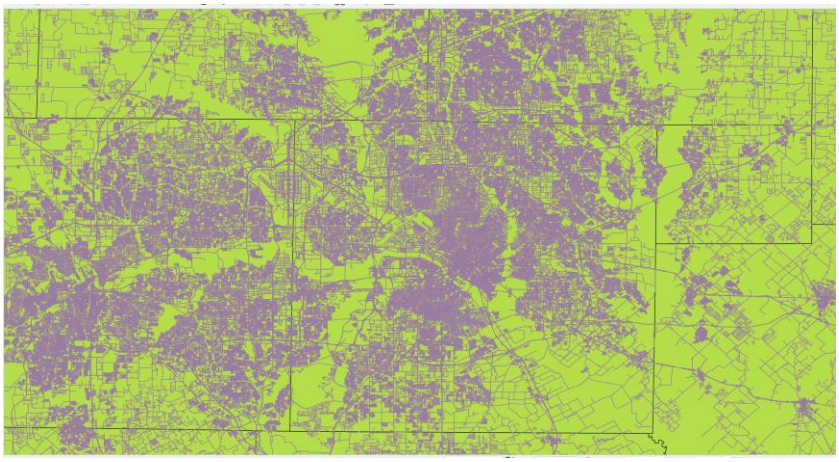
vi. Right click on roads_2017_u layer and select properties



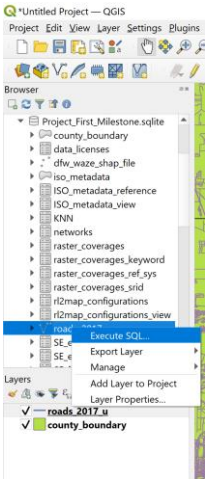
vii. Choose Symbology and select color option as purple



viii. Click on Apply and then click on Ok

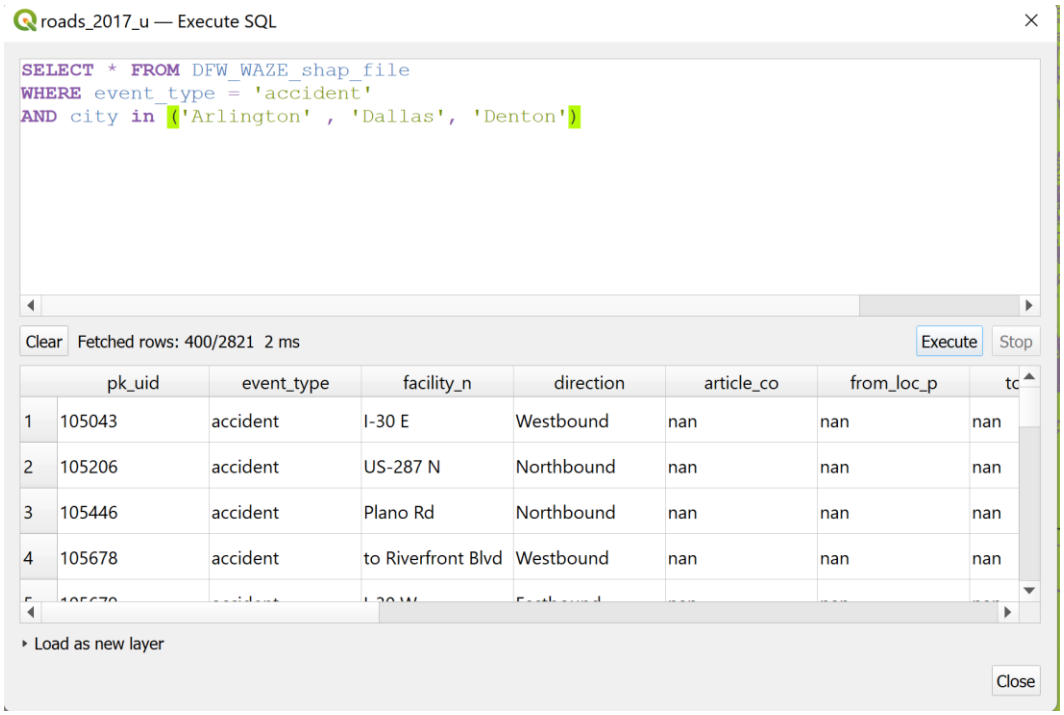


ix. Right click on roads_2017_u and select Execute SQL



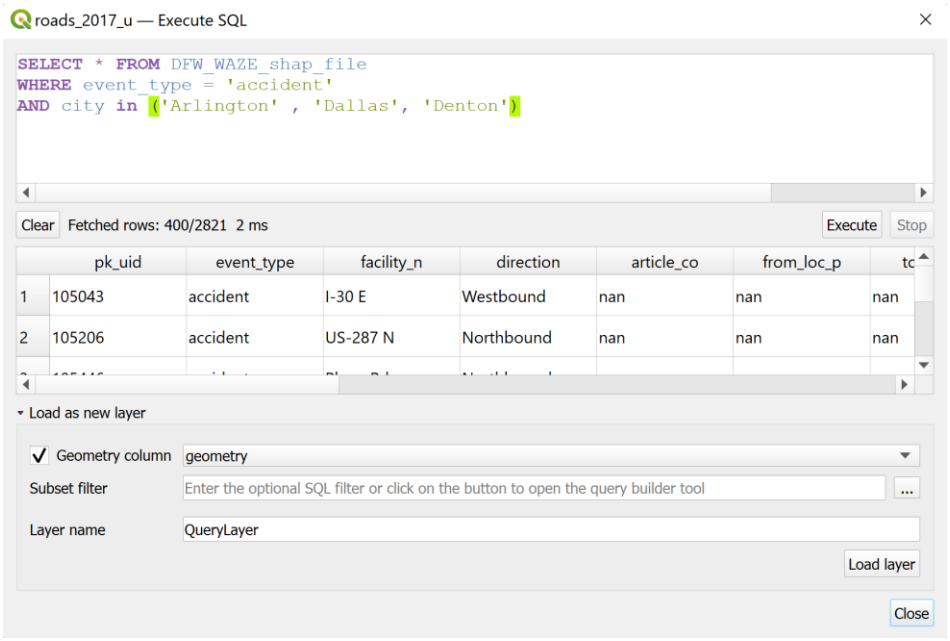
x. Execute the query below:

```
SELECT * FROM DFW_WAZE_shap_file
WHERE event_type = 'accident'
AND city in ('Arlington' , 'Dallas', 'Denton')
```



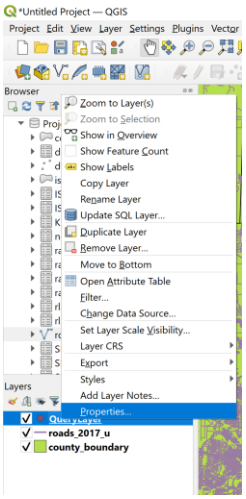
	pk_uid	event_type	facility_n	direction	article_co	from_loc_p	tc
1	105043	accident	I-30 E	Westbound	nan	nan	nan
2	105206	accident	US-287 N	Northbound	nan	nan	nan
3	105446	accident	Plano Rd	Northbound	nan	nan	nan
4	105678	accident	to Riverfront Blvd	Westbound	nan	nan	nan

xi. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’

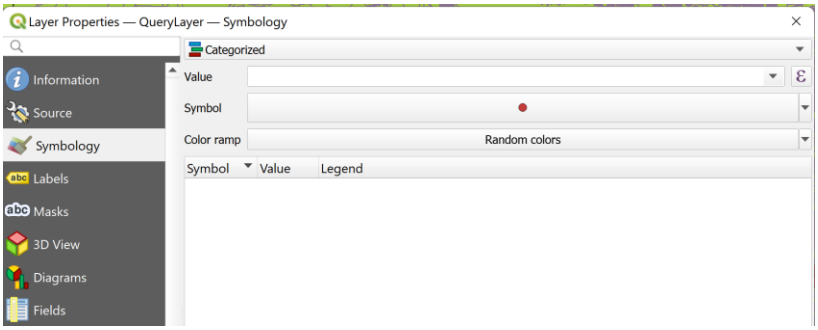


	pk_uid	event_type	facility_n	direction	article_co	from_loc_p	tc
1	105043	accident	I-30 E	Westbound	nan	nan	nan
2	105206	accident	US-287 N	Northbound	nan	nan	nan

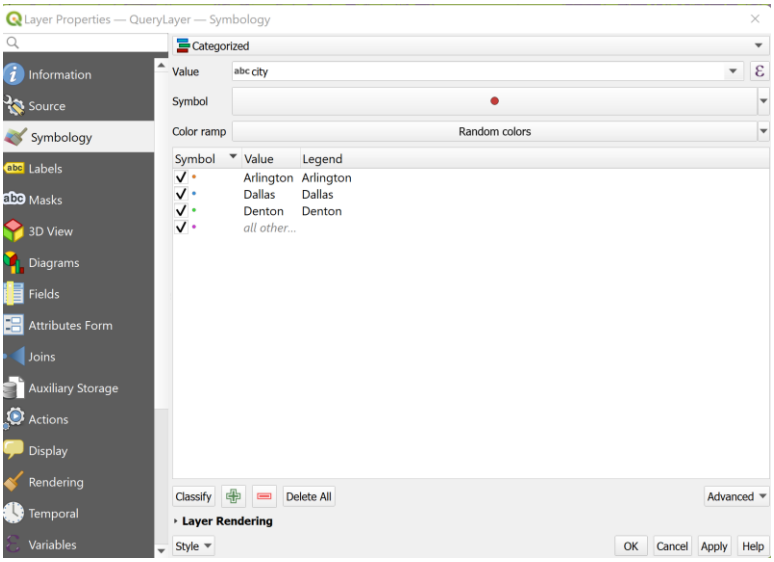
xii. Right click on QueryLayer → Click on Properties



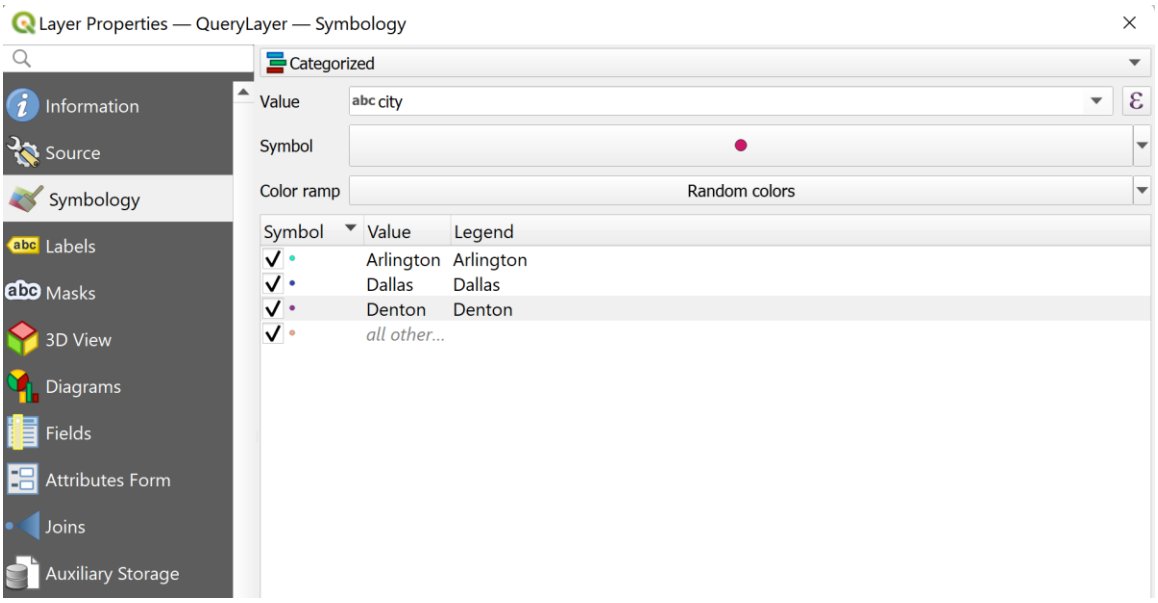
xiii. Select Symbology → Select Categorized as shown below



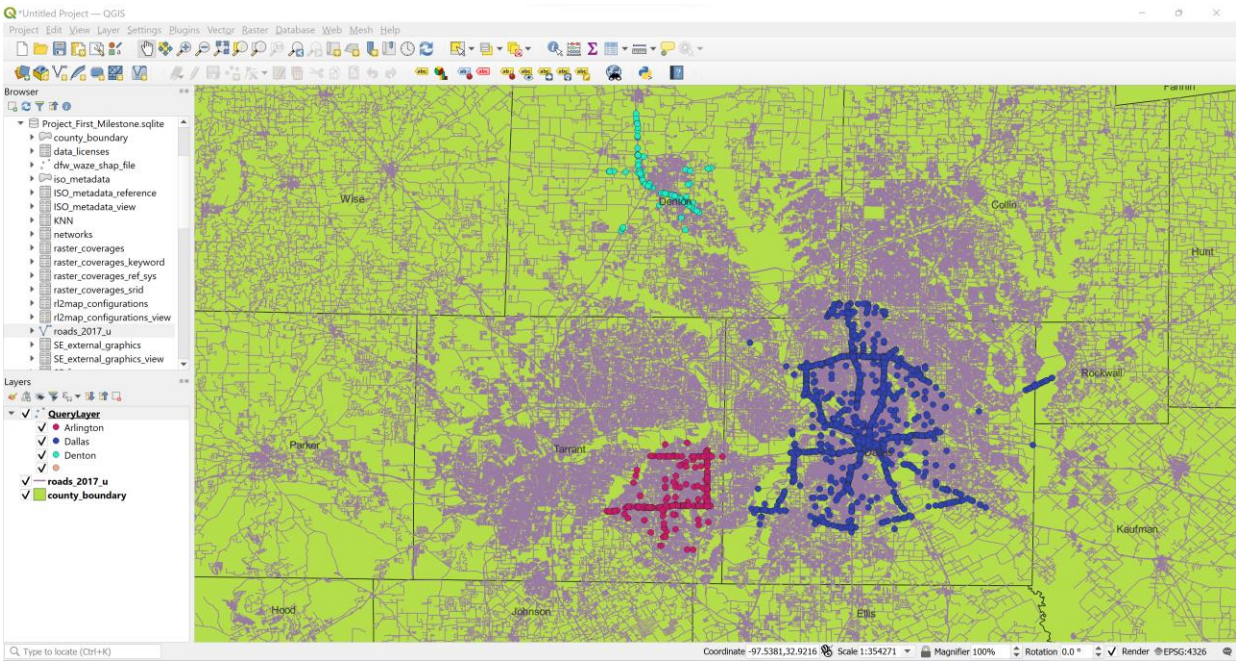
xiv. Select Value as city → click on Classify in left bottom of the panel



xv. Change Arlington color to ‘Red’, Denton color to ‘Green’ and Dallas color to ‘Blue’



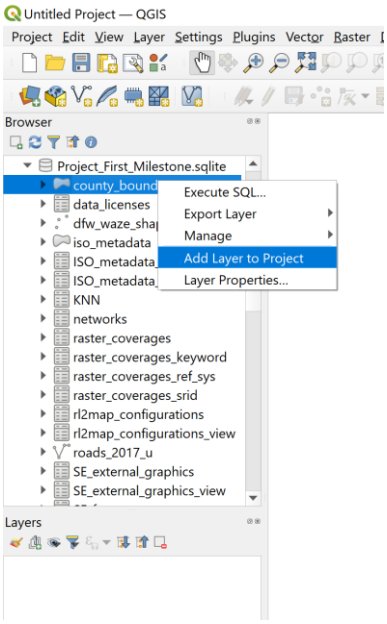
xvi. Click on Apply and then click on Ok



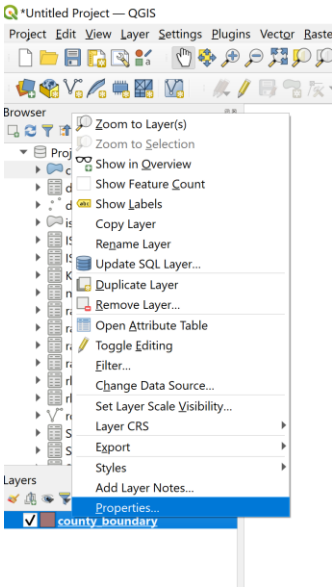
6. Display the event type “accident” that happened in Tarrant County on 12/09/2018 between 6:00 and 19:00 where each city accidents are displayed with different color. Roads and counties need to be in the background.

Steps:

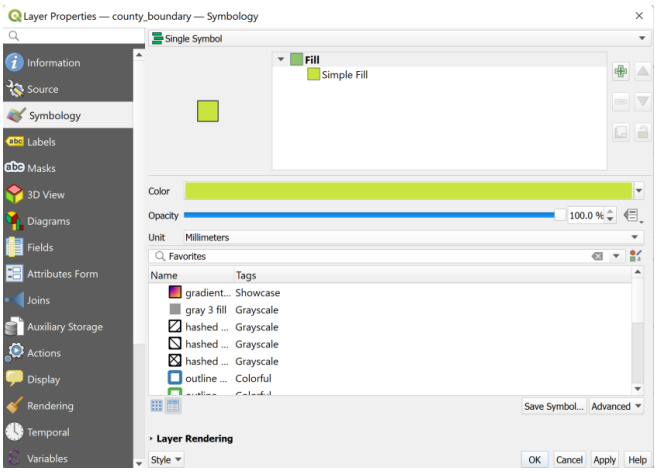
i. Add county_boundary layer



ii. Right click on county_boundary layer and select properties

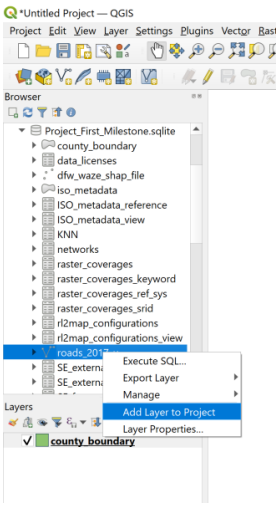


iii. Choose Symbology and select color option as light green

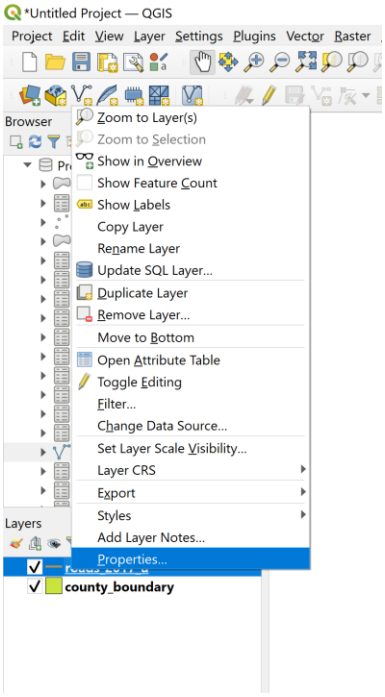


iv. Click on Apply and then click on Ok

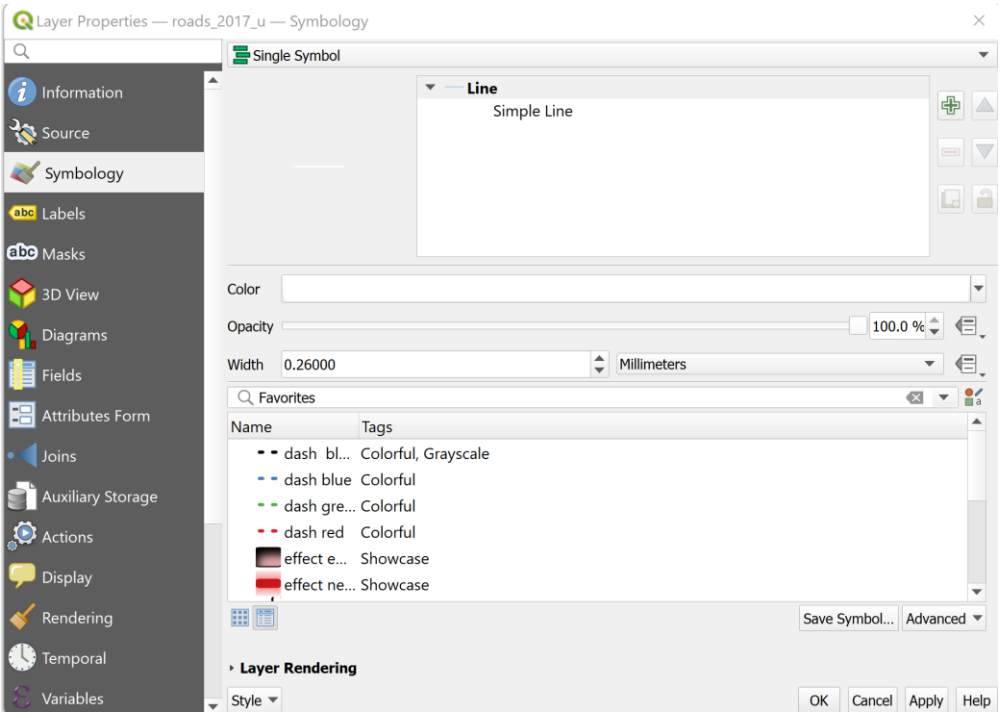
v. Add roads_2017_u layer



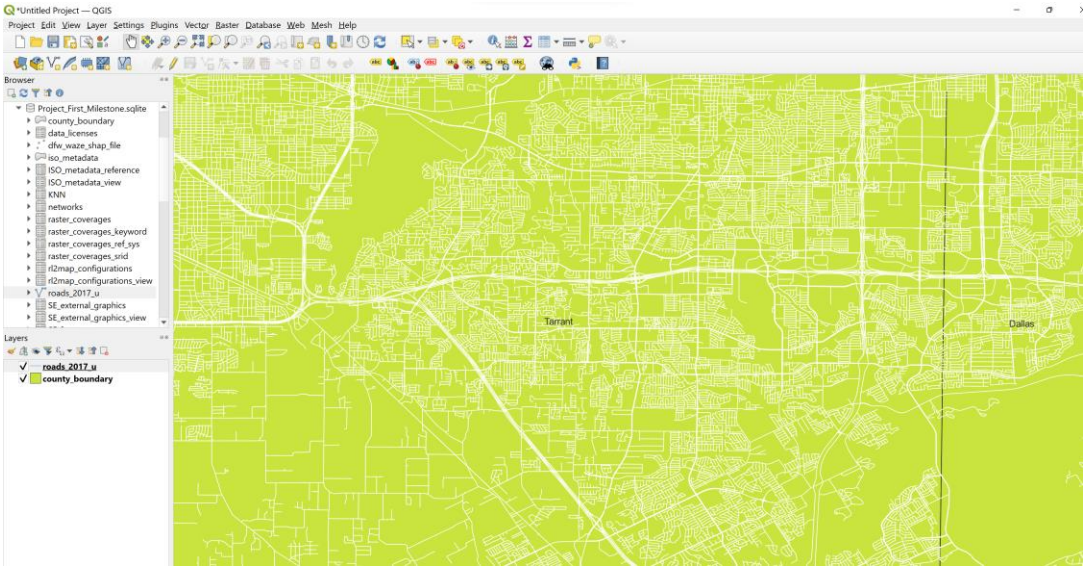
vi. Right click on roads_2017_u layer and select properties



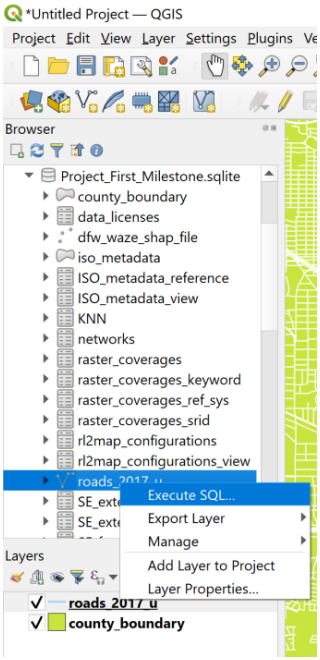
vii. Choose Symbology and select color option as white



viii. Click on Apply and then click on Ok

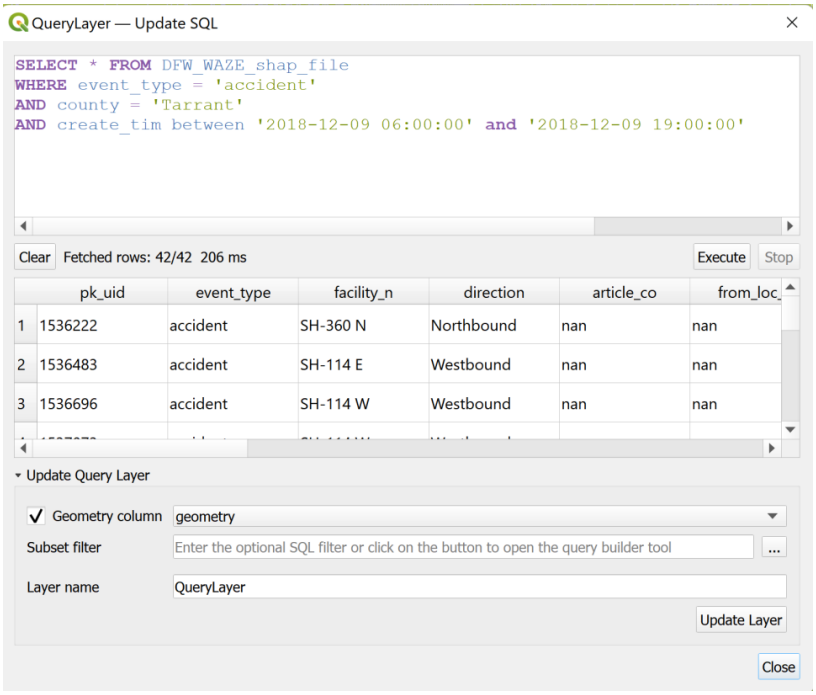


ix. Right click on roads_2017_u and select Execute SQL

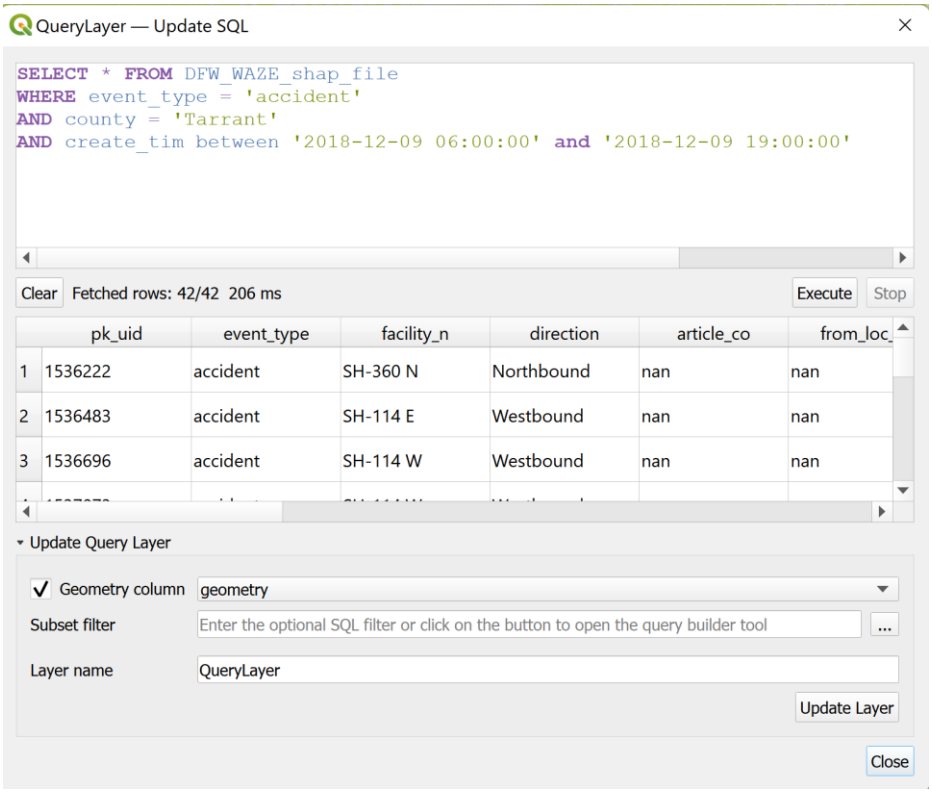


x. Execute the query below:

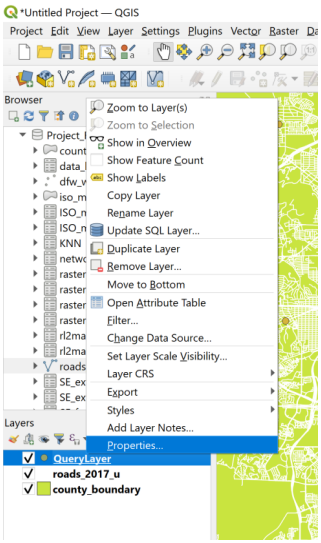
```
SELECT * FROM DFW_WAZE_shap_file
WHERE event_type = 'accident'
AND county = 'Tarrant'
AND create_tim between '2018-12-09 06:00:00' and '2018-12-09
19:00:00'
```



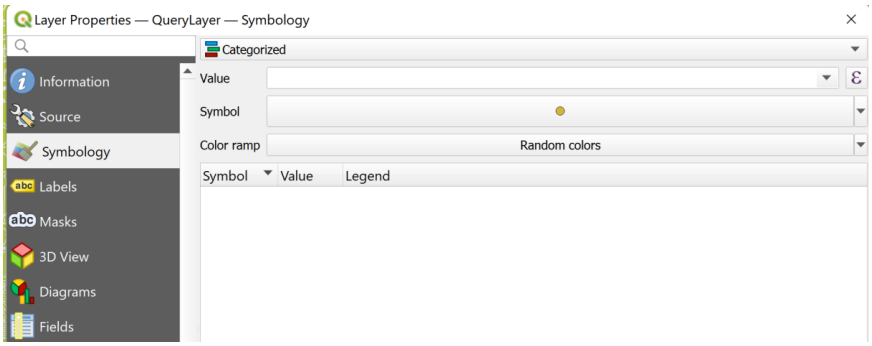
xi. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’



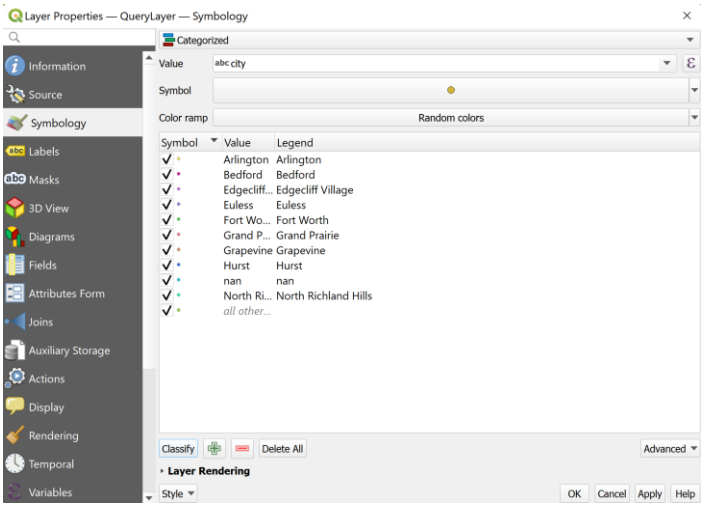
xii. Right click on QueryLayer → Click on Properties



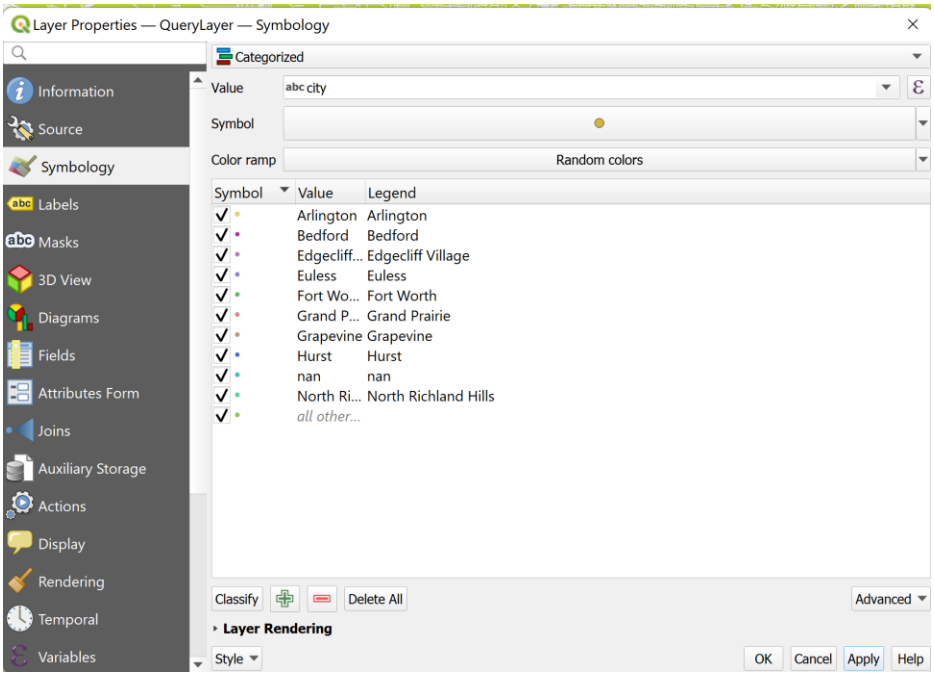
xiii. Select Symbology → Select Categorized as shown below



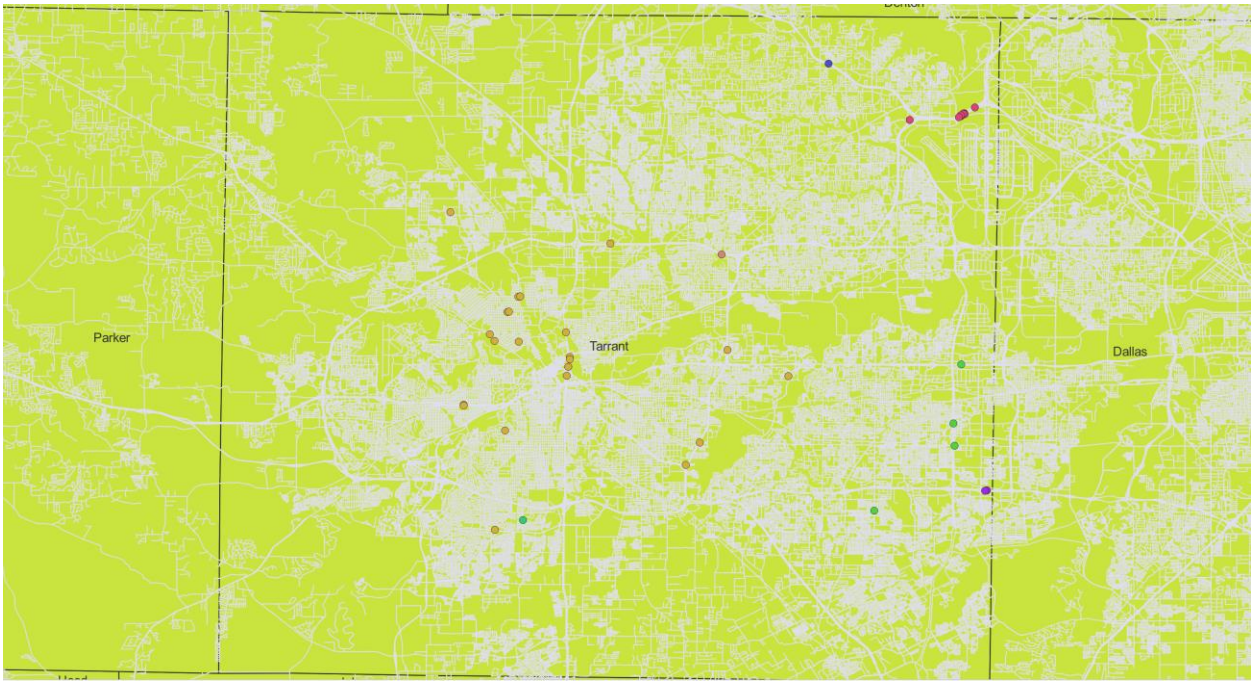
xiv. Select Value as city → click on Classify in left bottom of the panel



xvii. Select different color for every city



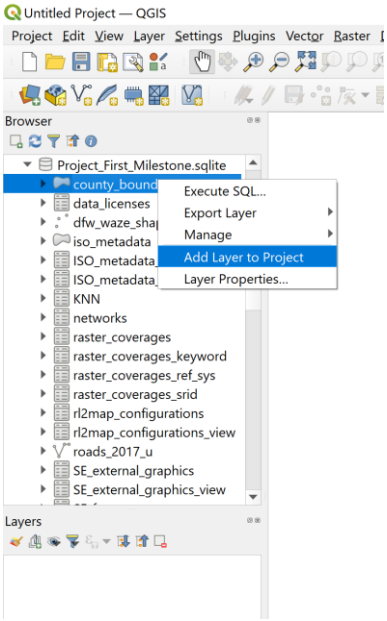
xviii. Click on Apply and then click on Ok



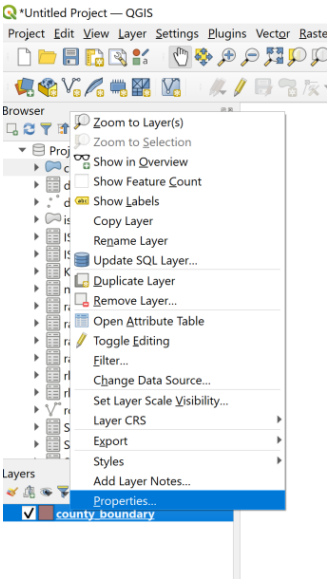
7. Display the “traffic jam” in Collin county on 12/27/2018 between 7:00:00 and 15:00:00 and the background is the roads with county.

Steps:

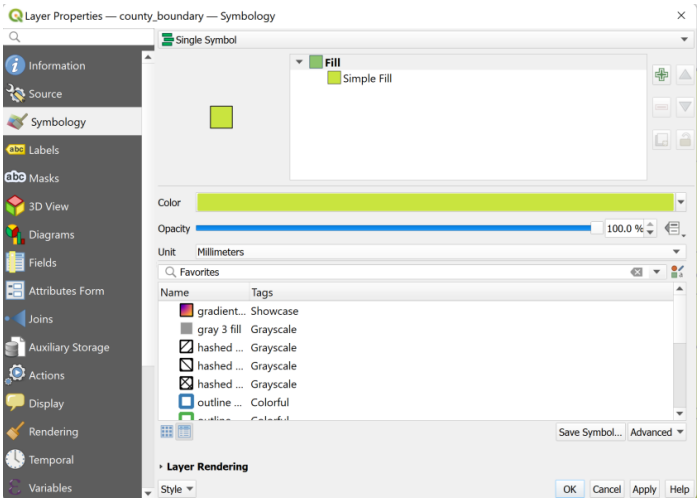
i. Add county_boundary layer



ii. Right click on county_boundary layer and select properties

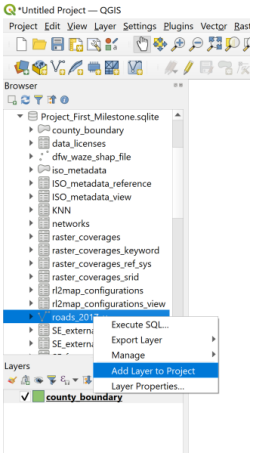


iii. Choose Symbology and select color option as light green

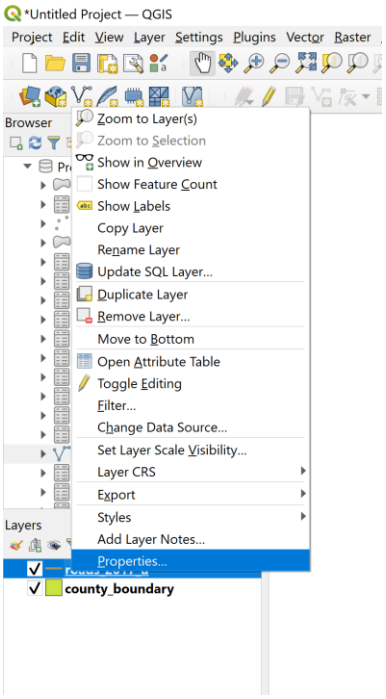


iv. Click on Apply and then click on Ok

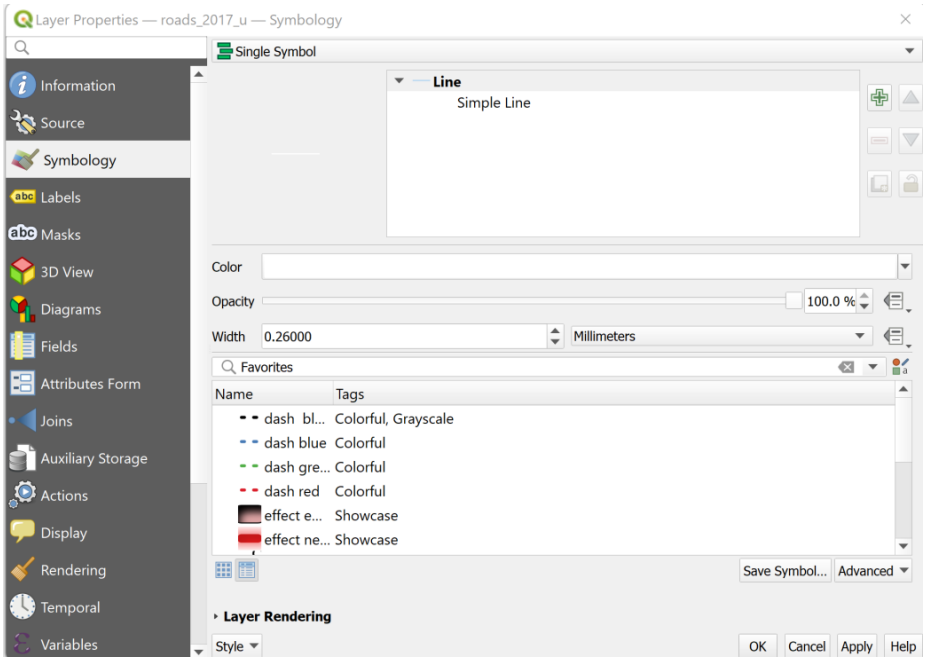
v. Add roads_2017_u layer



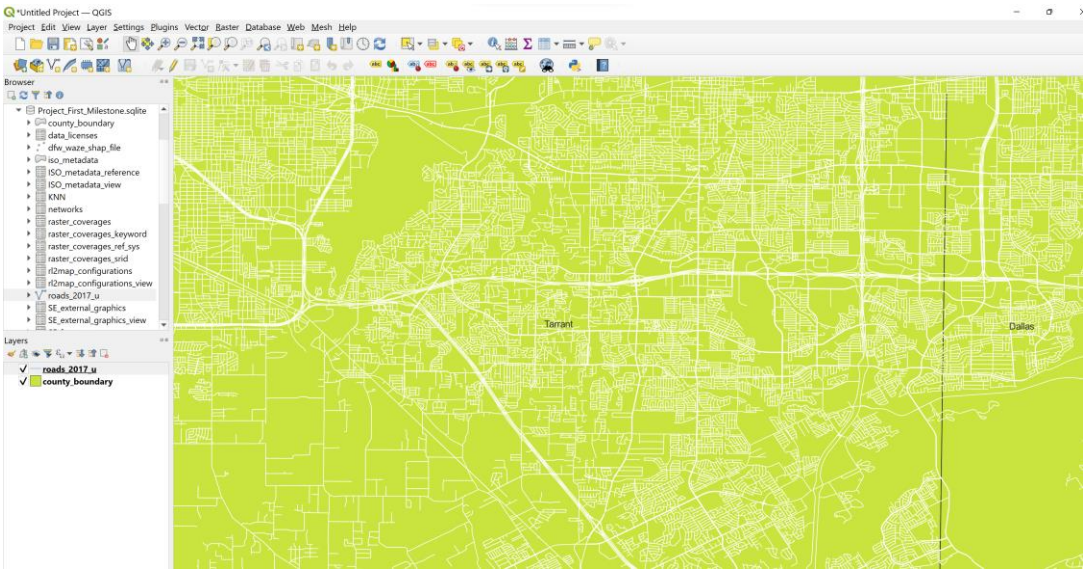
vi. Right click on roads_2017_u layer and select properties



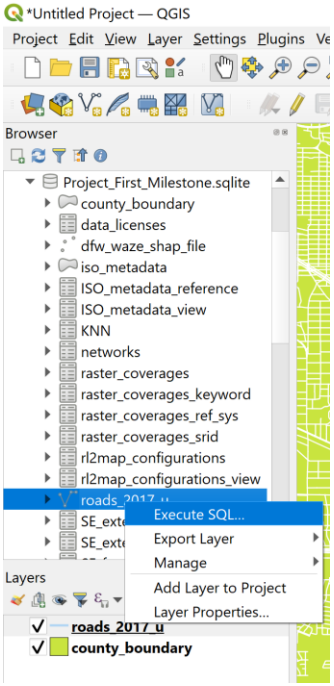
vii. Choose Symbology and select color option as white



viii. Click on Apply and then click on Ok

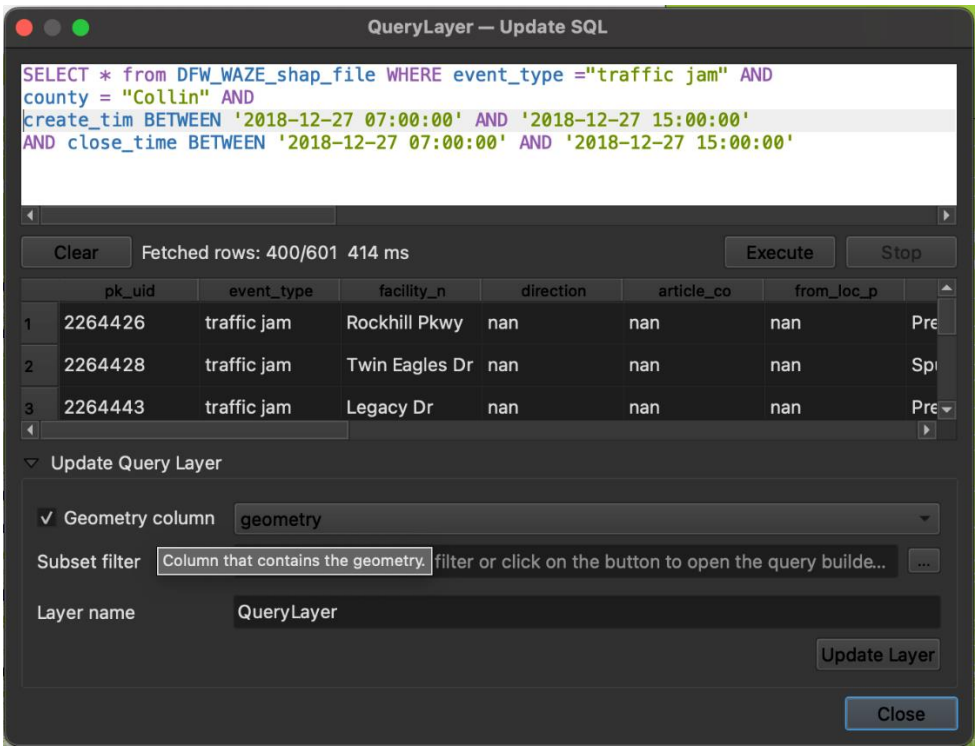


ix. Right click on roads_2017_u and select Execute SQL

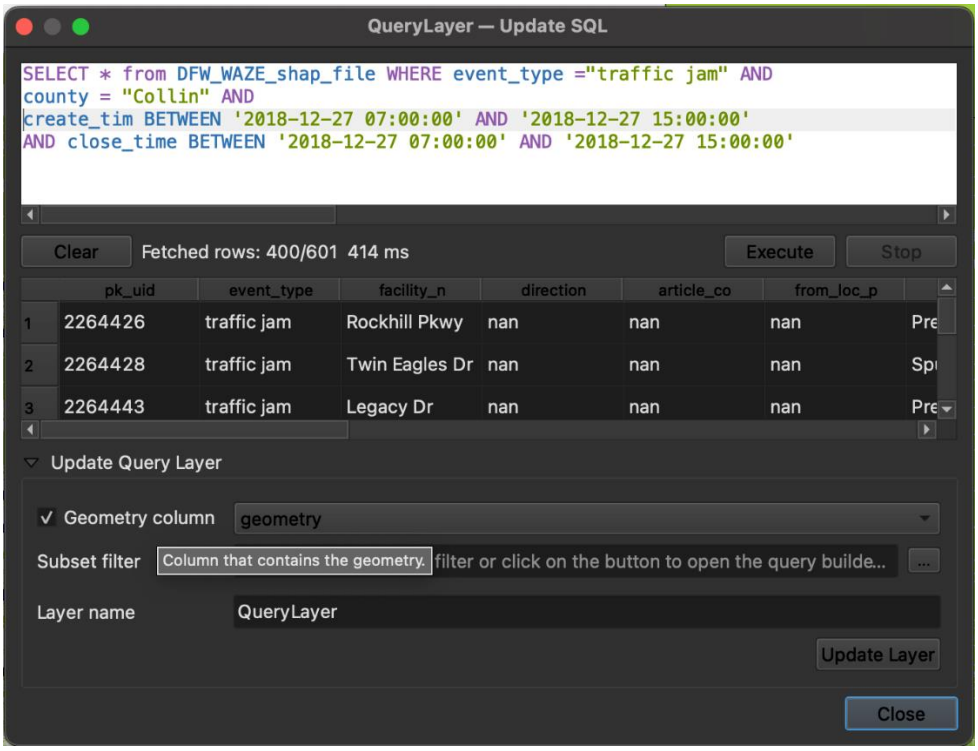


x. Execute the query below:

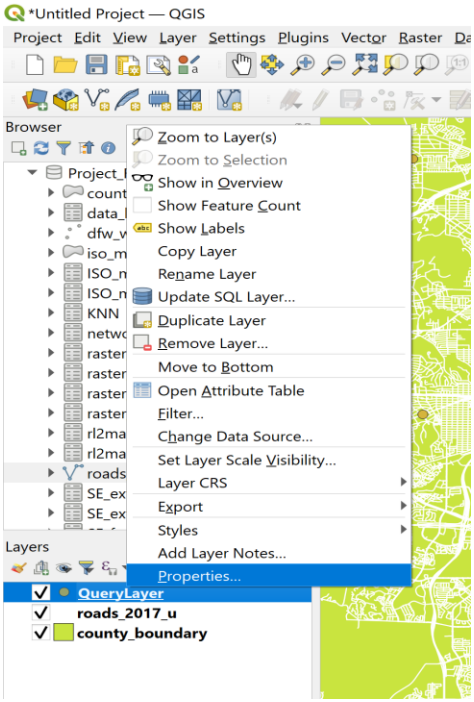
```
SELECT * from DFW_WAZE_shap_file WHERE event_type ="traffic jam"
AND county = "Collin"
AND create_tim BETWEEN '2018-12-27 07:00:00' AND '2018-12-27 15:00:00'
AND close_time BETWEEN '2018-12-27 07:00:00' AND '2018-12-27 15:00:00'
```



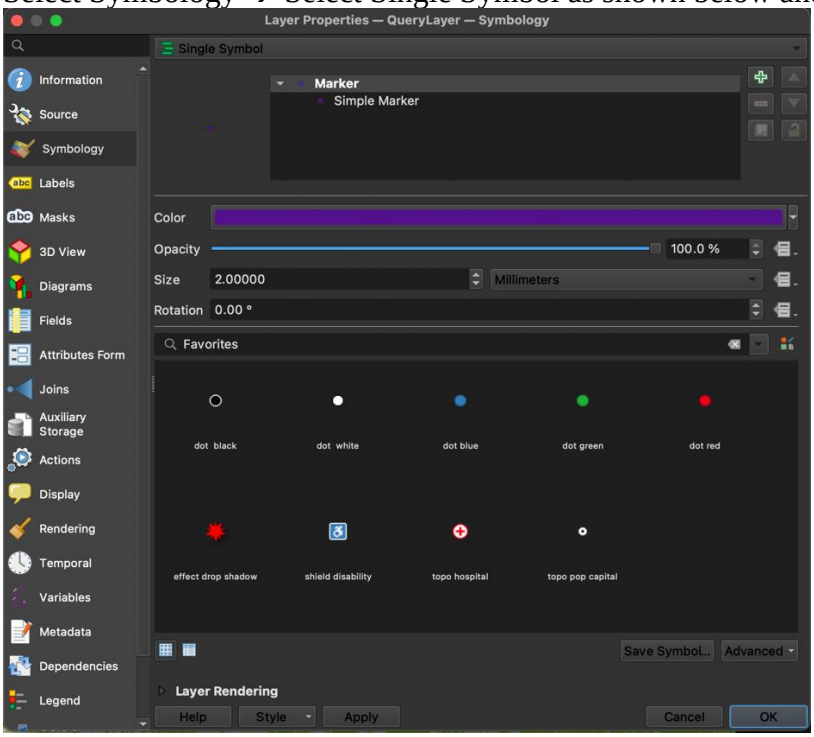
xi. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’



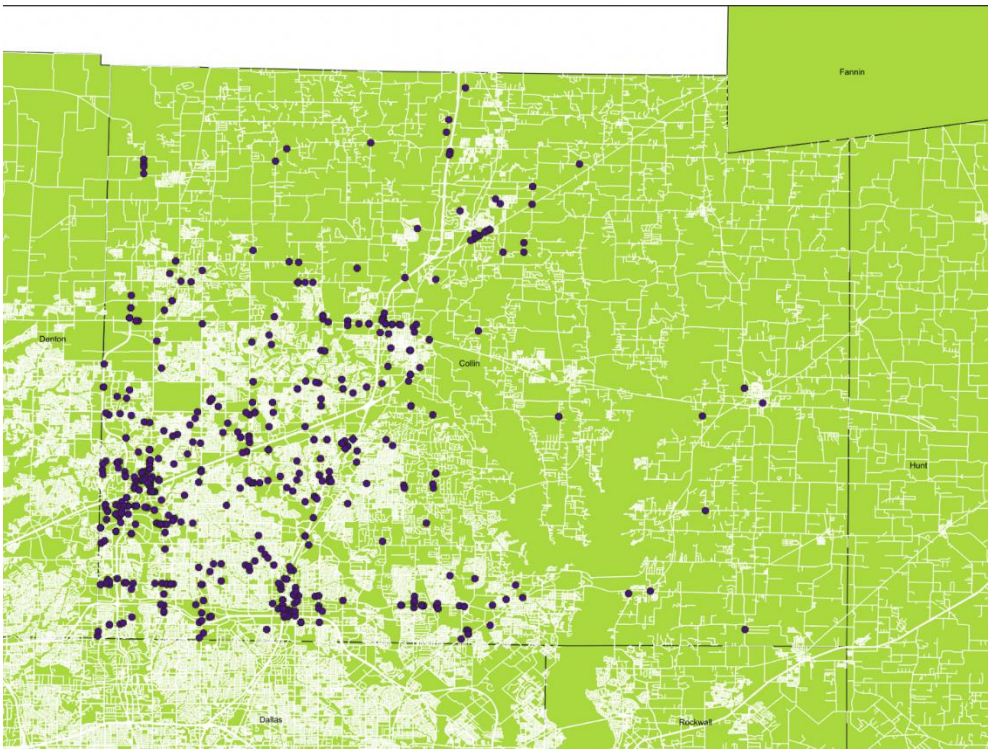
xii. Right click on QueryLayer → Click on Properties



xiii. Select Symbology → Select Single Symbol as shown below and select color as purple.



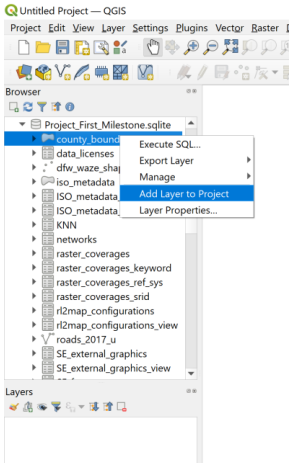
xiv. Click on Apply and then click on Ok



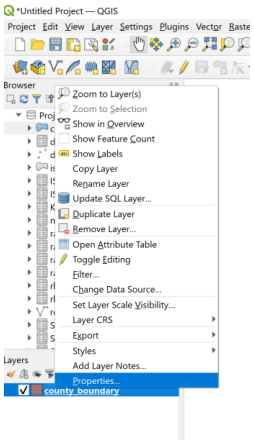
8.For each county, display the event type ‘traffic jam’ on 12/24/2018. Each county with different color.

Steps:

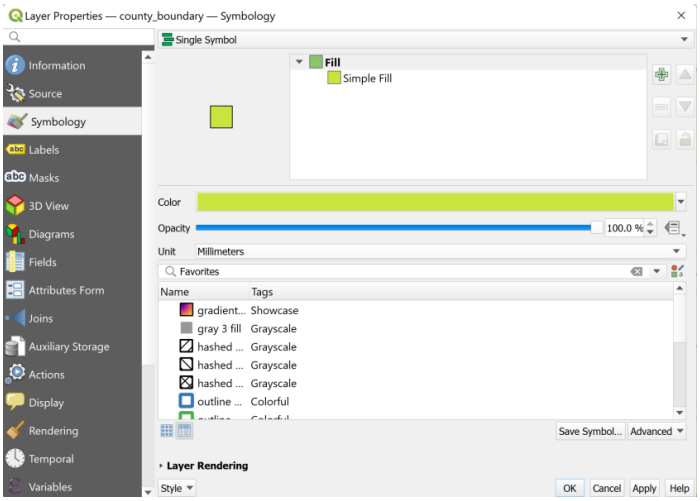
i. Add county_boundary layer



ii. Right click on county_boundary layer and select properties

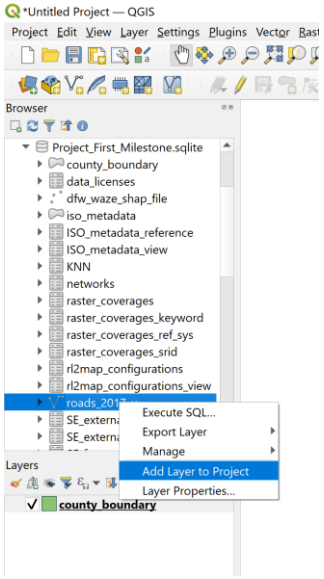


iii. Choose Symbology and select color option as light green

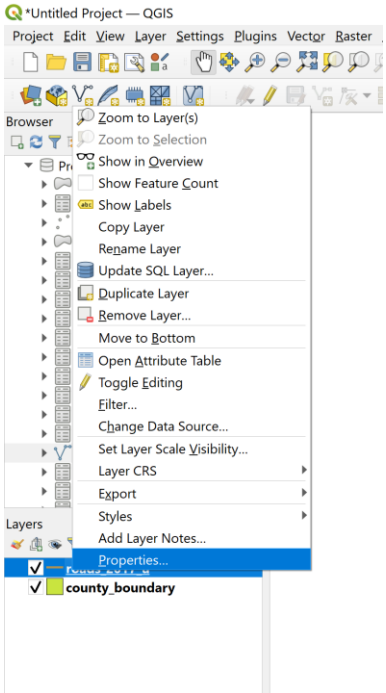


iv. Click on Apply and then click on Ok

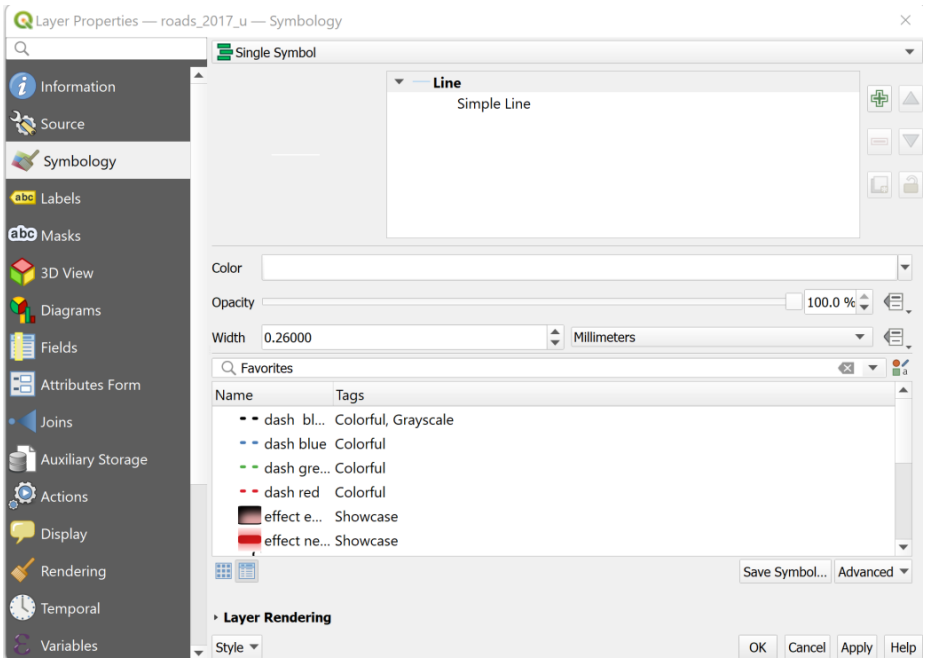
v. Add roads_2017_u layer

i. 

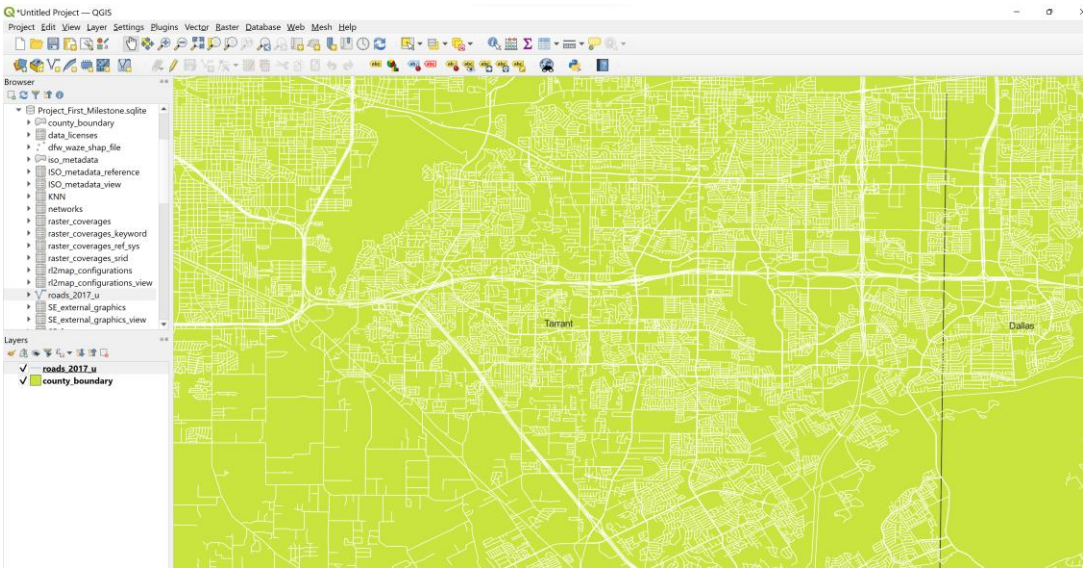
vi. Right click on roads_2017_u layer and select properties



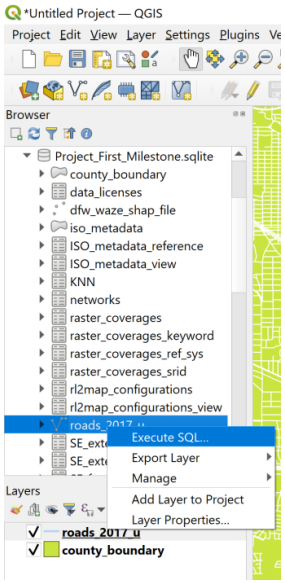
vii. Choose Symbology and select color option as white



viii. Click on Apply and then click on Ok

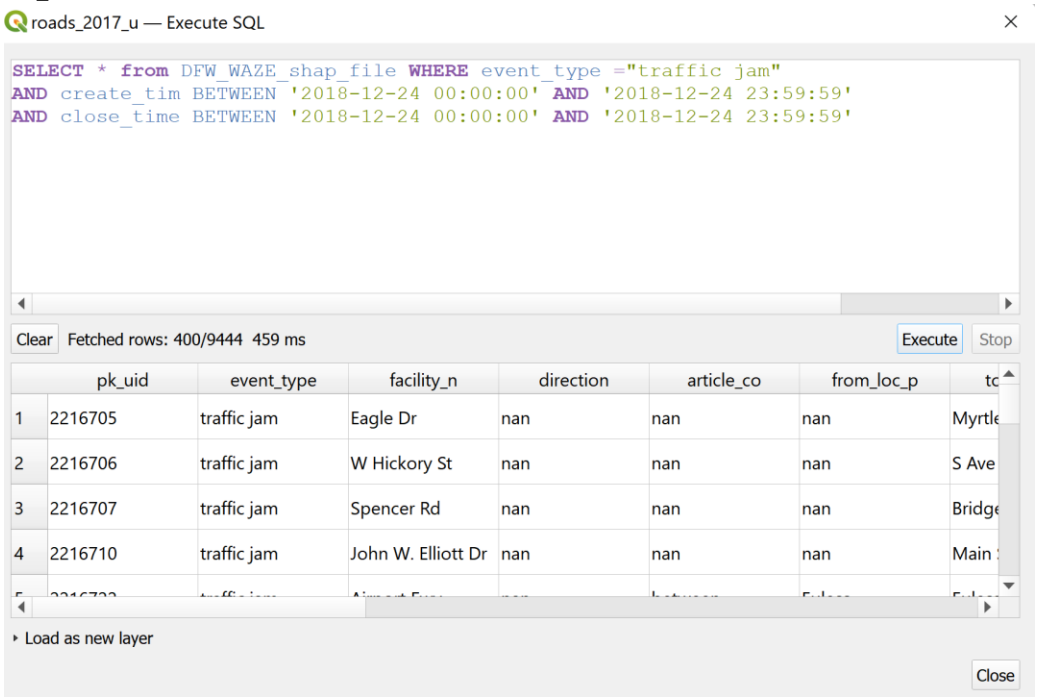


ix. Right click on roads_2017_u and select Execute SQL

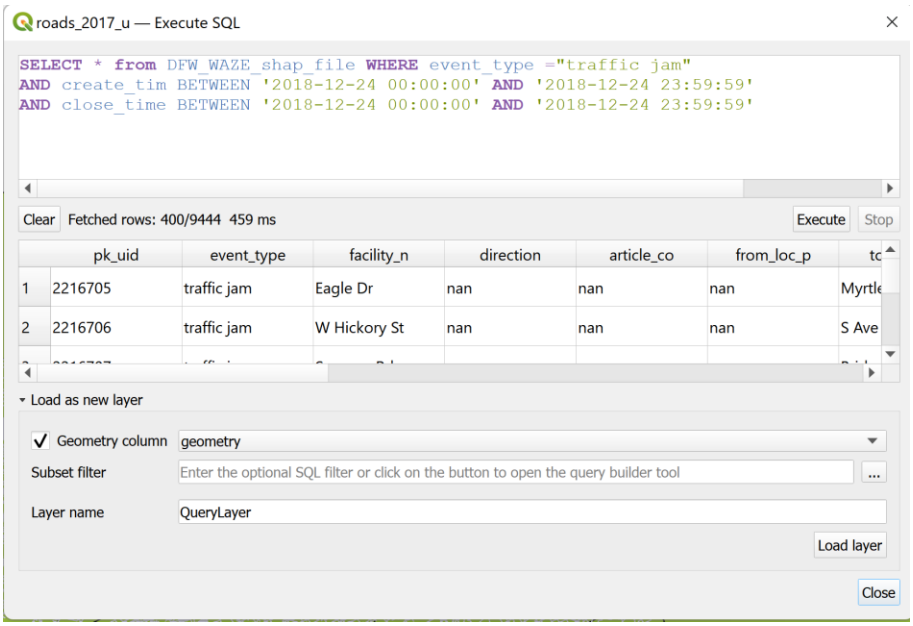


x. Execute the query below:

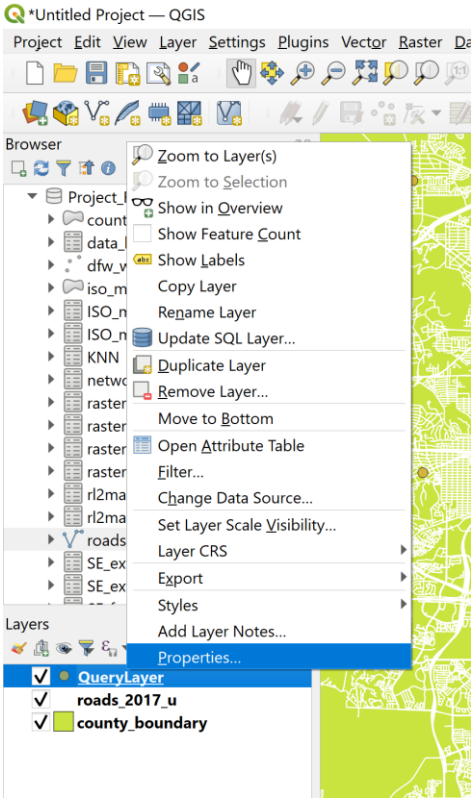
```
SELECT * from DFW_WAZE_shap_file WHERE event_type ="traffic jam"
AND create_tim BETWEEN '2018-12-24 00:00:00' AND '2018-12-24 23:59:59'
AND close_time BETWEEN '2018-12-24 00:00:00' AND '2018-12-24 23:59:59'
```



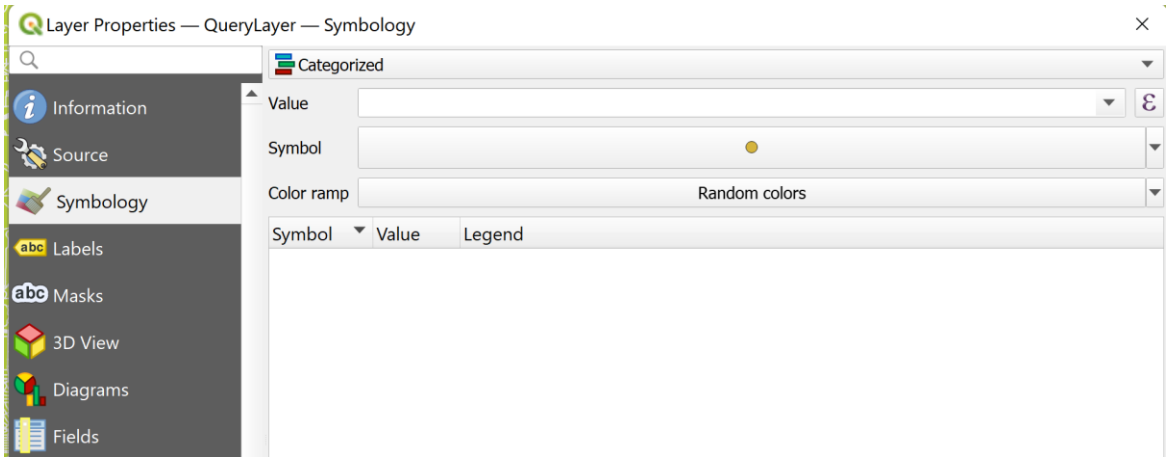
xi. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’



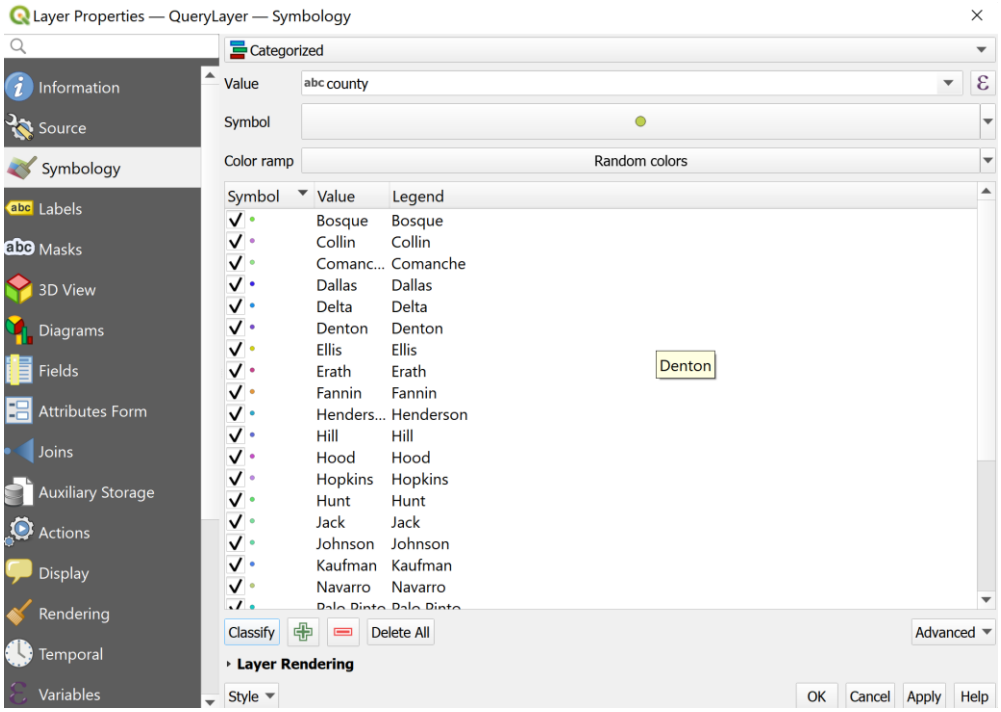
xii. Right click on QueryLayer → Click on Properties



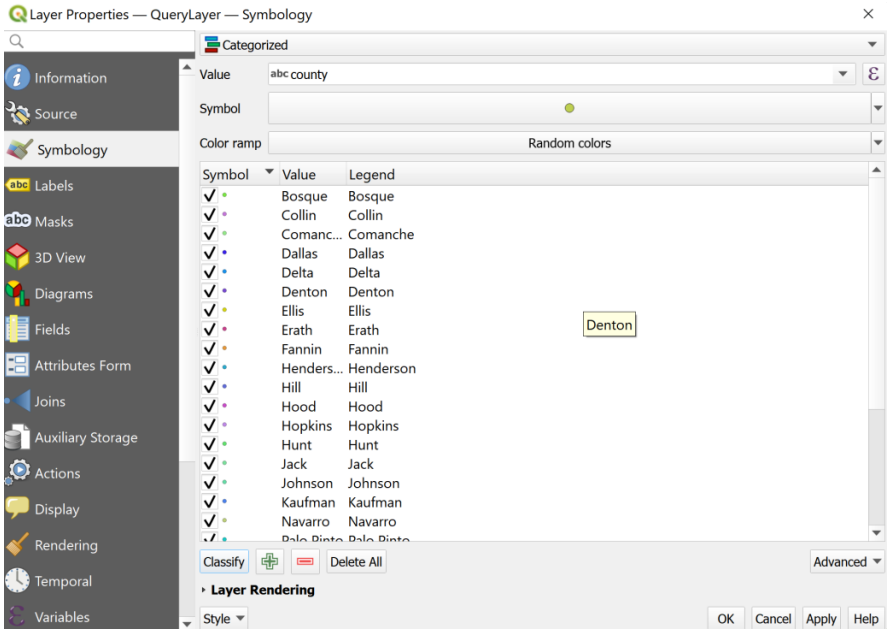
xiii. Select Symbology → Select Categorized as shown below



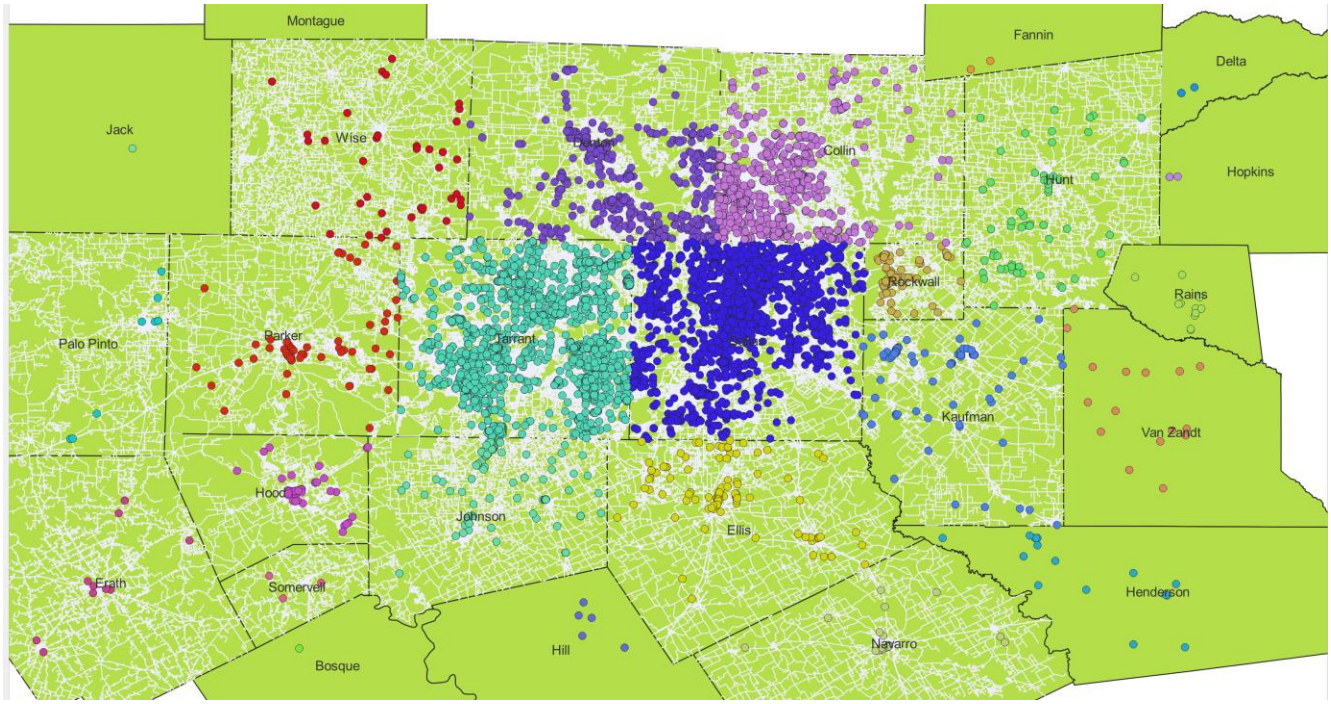
xiv. Select Value as County → click on Classify in left bottom of the panel



xv. Select different color for every county



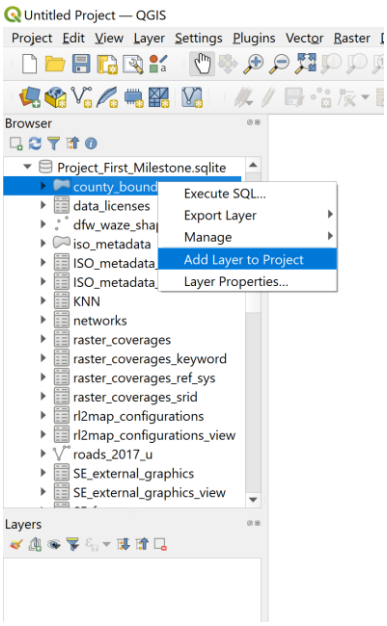
xvi. Click on Apply and then click on Ok



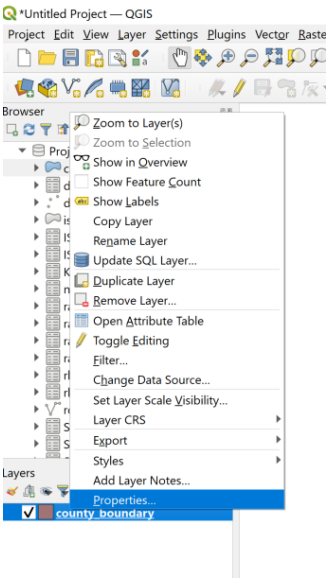
9.Display all the events on the road ‘I-20 E’ and ‘I-30 E’ on 12/9/2018 from 9 am to 12 pm. Events on ‘I-20 E’ should be in different color than event in ‘I-30 E’.

Steps:

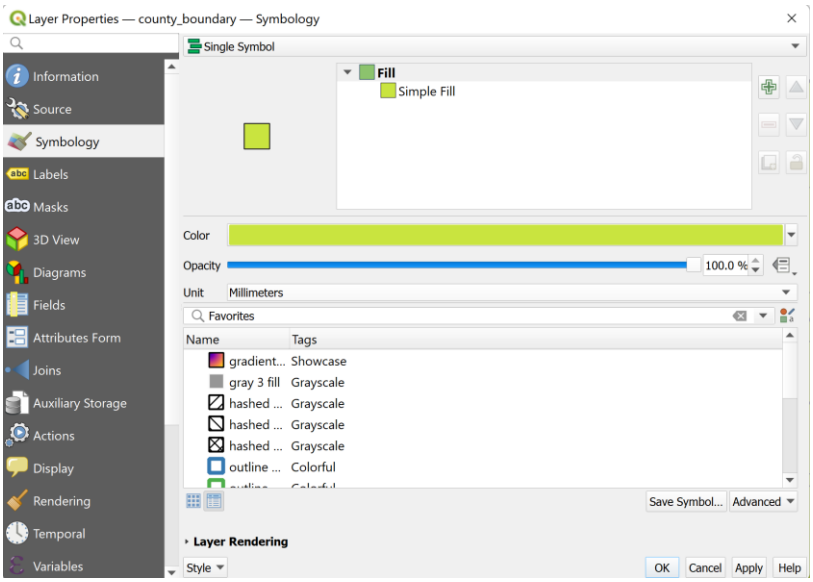
i. Add county_boundary layer



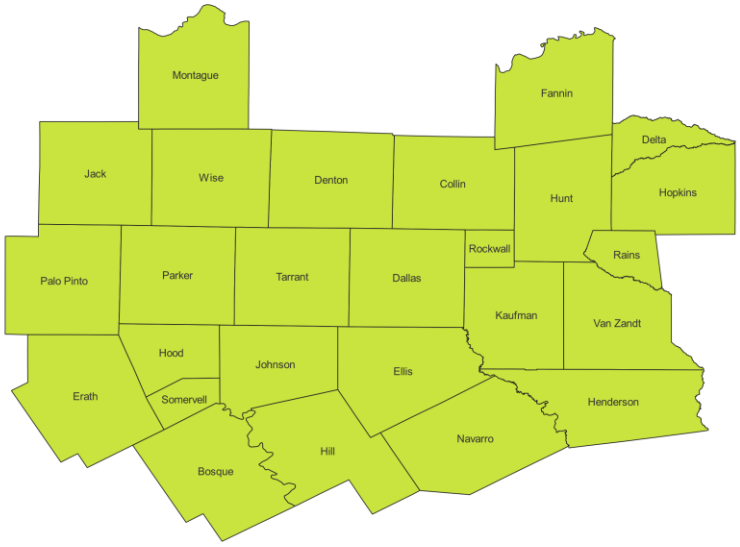
ii. Right click on county_boundary layer and select properties



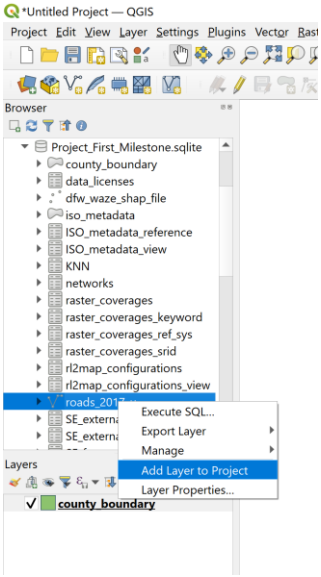
iii. Choose Symbology and select color option as light green



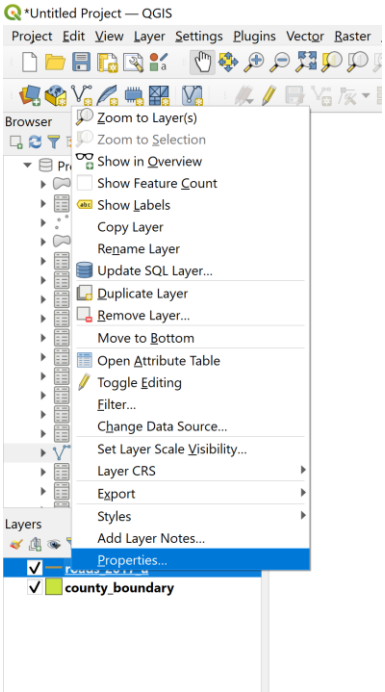
iv. Click on Apply and then click on Ok



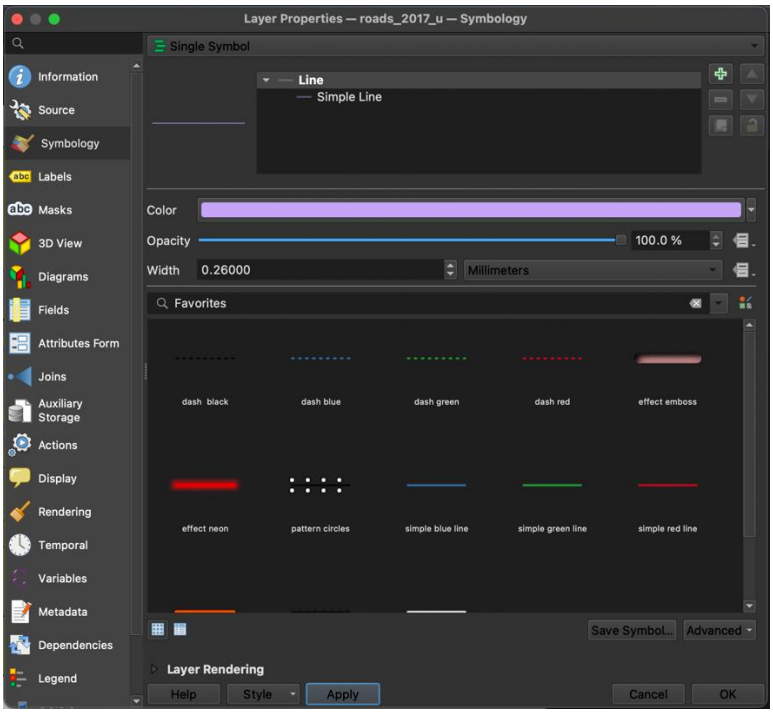
v. Add roads_2017_u layer



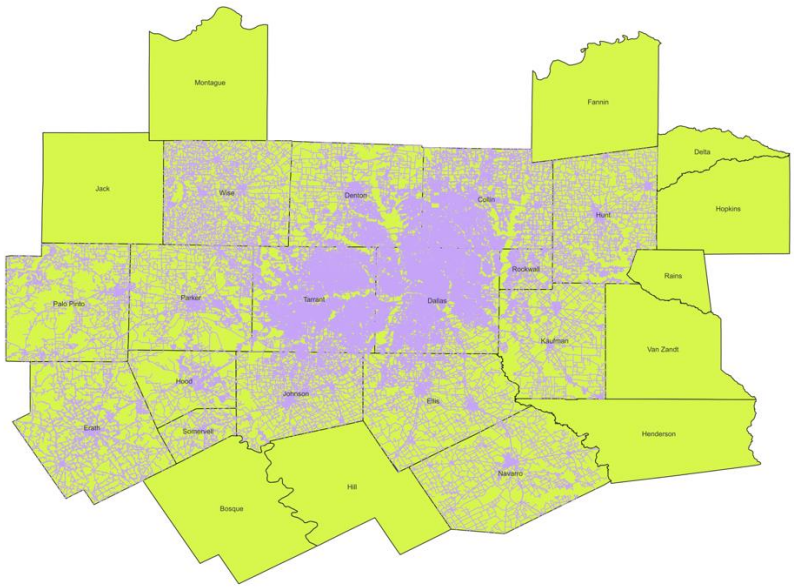
vi. Right click on roads_2017_u layer and select properties



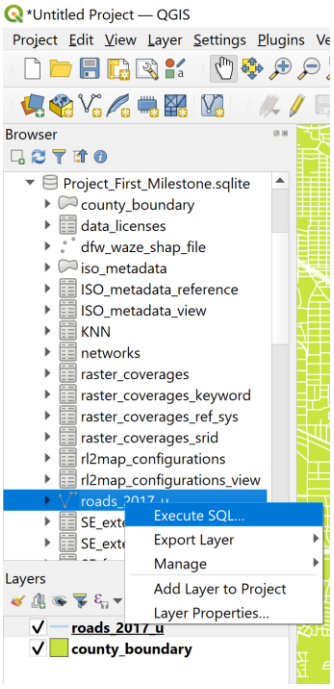
vii. Choose Symbology and select color option as purple



viii. Click on Apply and then click on Ok

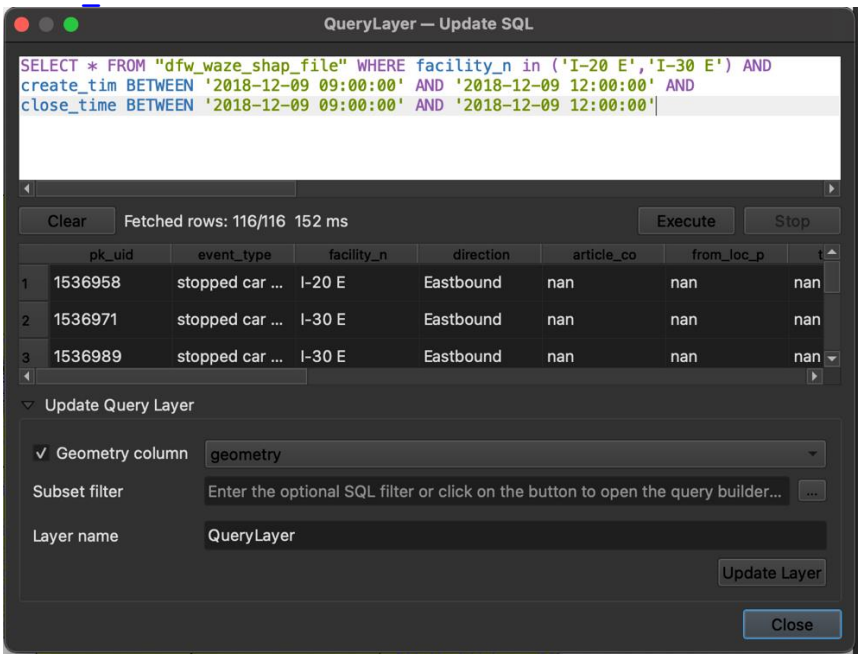


ix. Right click on roads_2017_u and select Execute SQL

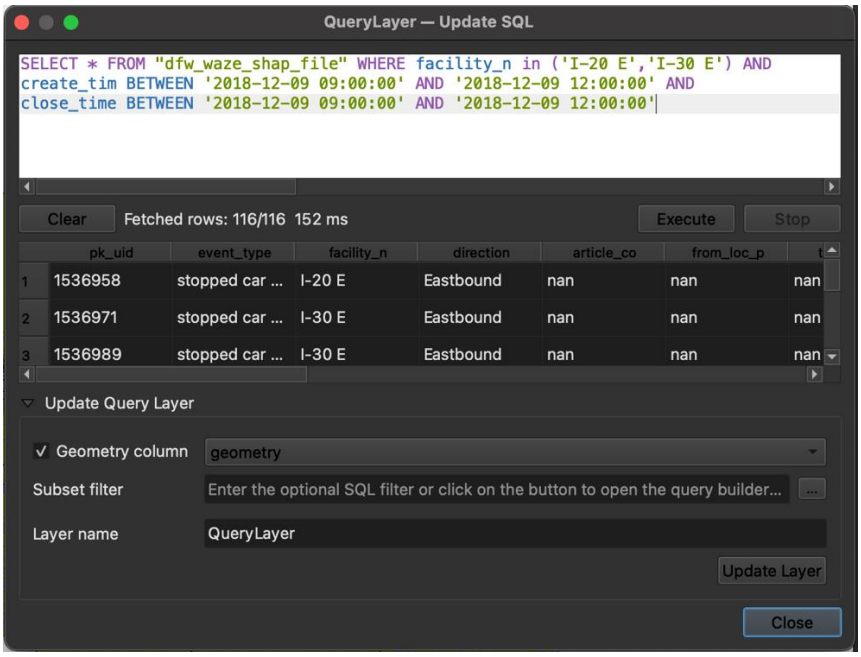


x. Execute the query below:

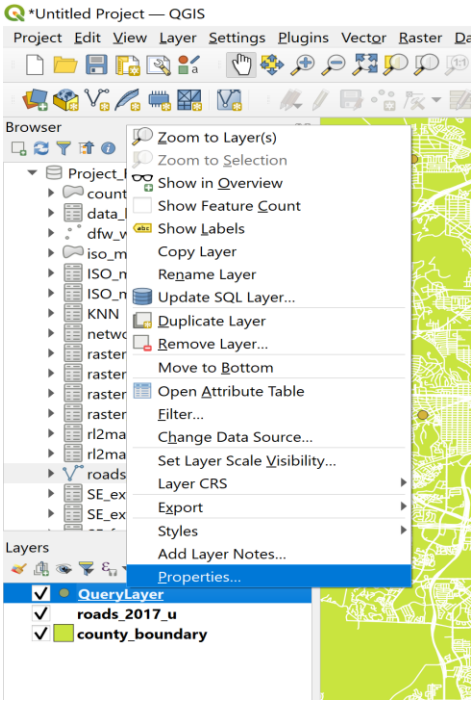
```
SELECT * FROM "dfw_waze_shap_file" WHERE facility_n in ('I-20 E','I-30
E') AND
create_tim BETWEEN '2018-12-09 09:00:00' AND '2018-12-09 12:00:00' AND
close_time BETWEEN '2018-12-09 09:00:00' AND '2018-12-09 12:00:00'
```



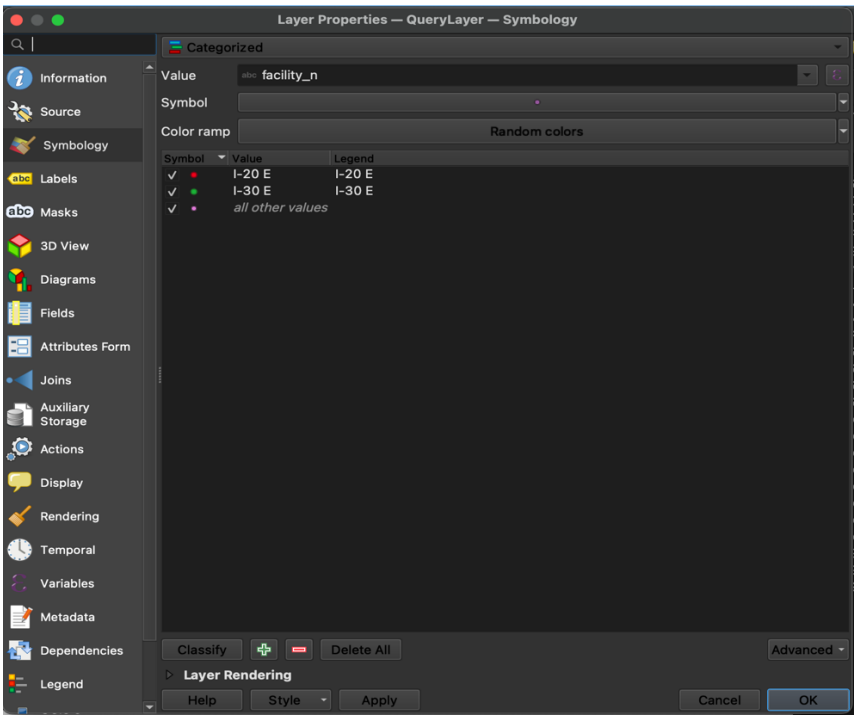
xi. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’



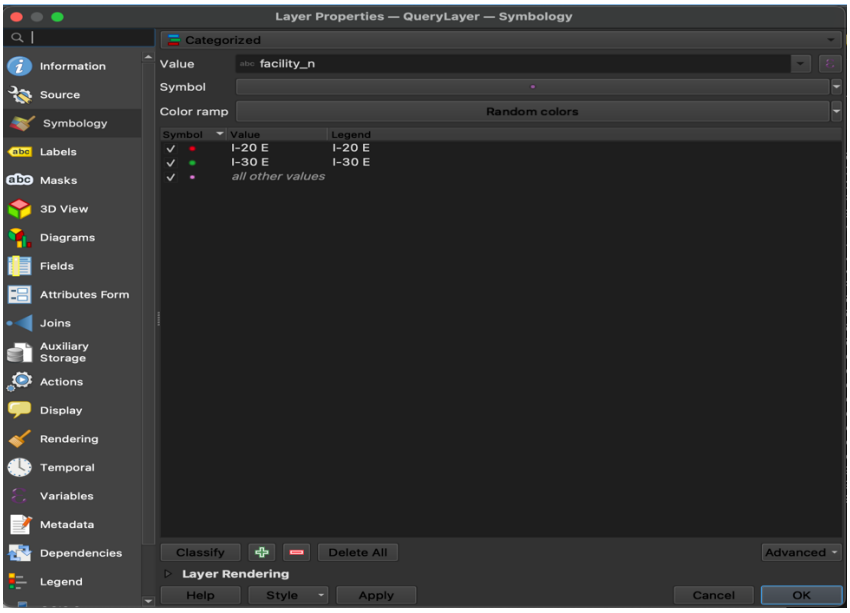
xii. Right click on QueryLayer → Click on Properties



xiii. Select Symbology → Select categorized as shown below.



xiv. Select Value as city → click on Classify in left bottom of the panel



xv. Click on Apply and then click on Ok