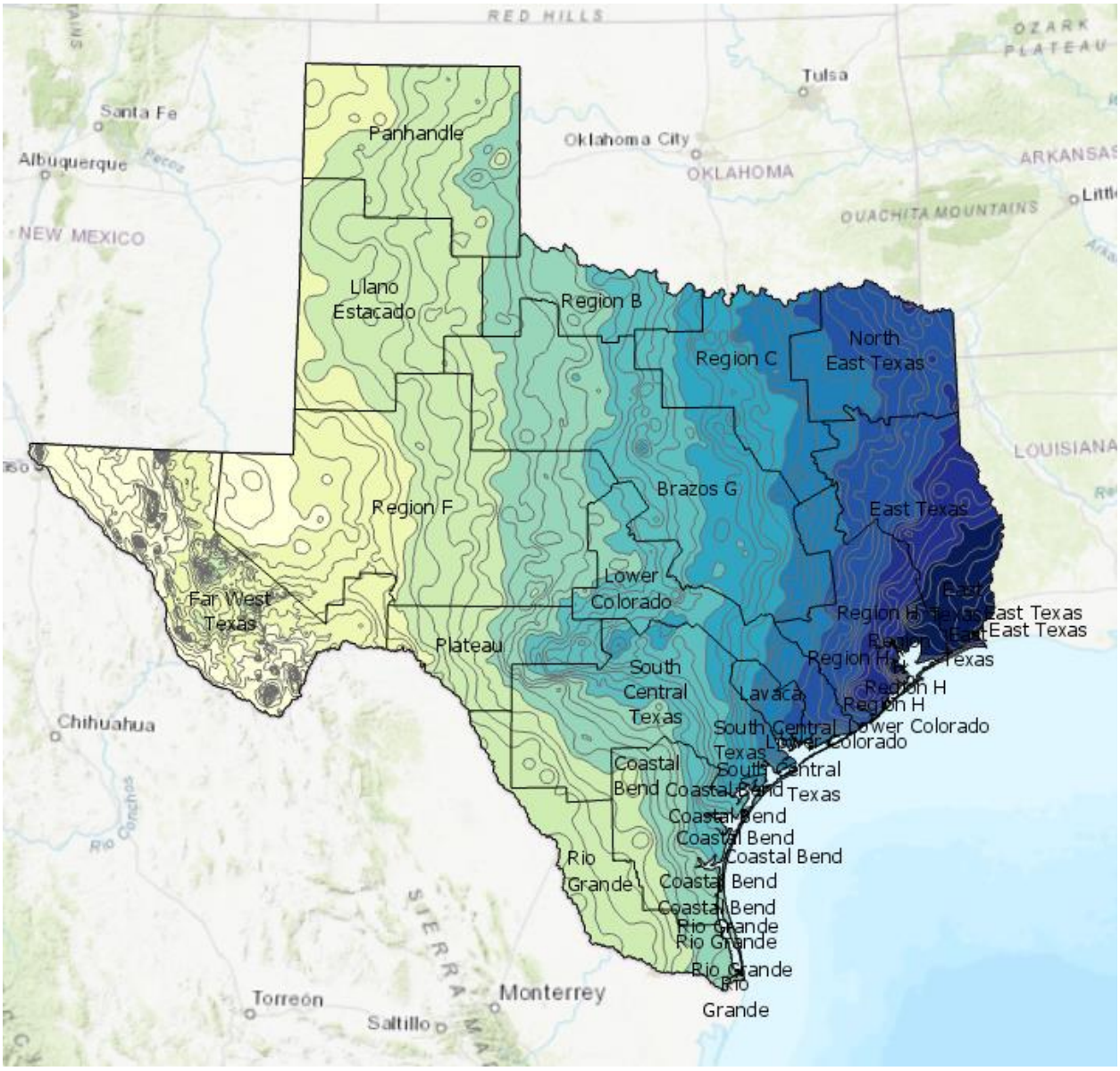
Some of the United States' fastest-growing and most populous states (e.i Texas) are located in the nation's most arid areas, while some other areas with abundant water are only sparsely populated. The title of my term project will be Texas Water Reuse. The goal of my project is to use ArcGIS pro to map the percentage of water that Texas's 16 Water Planning Regions reuse for water demand compared to their total water consumption. After this done I would like to compare to a map of annual precipitation in Texas. Water reuse is the use of treated wastewater for beneficial purposes, which increases a community's available water supply and makes it more reliable, especially in times of drought which are frequent in Texas.

What I have done so far is locate all 16 Regional Water Plans, download a shapefile that defines the 16 regions and put that into ArcGIS with a layer of average rainfall throughout Texas (below). I have calculated the percentage of reuse per region. This was done by finding data regional water consumption. Consumption from 2015 per region was found for Municipal use, Manufacturing, Mining, Power Plants, Irrigation and Livestock. Separately I found data on water reuse per region and divided it from the total demand and multiplied by 100 to get the percentage of water reuse from total consumption. What needs to be done next is give each region coordinates to be able to map the percentages of water reuse on top of the 16 Regional Planning Areas. After I incorporate all the data, what I'd like to see is if the most arid regions in Texas also have the highest water reuse.

Although it does not go into as much topographical detail as the assignments given in class, this project makes good use of GIS because it creates new data from old data and allow us to see/ analyze that data in a visual way. Water reuse offers an opportunity to significantly expand supplies of freshwater in communities facing water shortages. Reusing this water would directly augment the nation's total water supply.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