Texas Power Infrastructure and the Flood Risks to State Power Plants

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Introduction: Texas in recent years has had a lot of issues of severe rain and flooding events. For my research question I wanted to see which power plants in the state of Texas were at the greatest risk of being affected by severe flooding events. If this important infrastructure were to fail, it could affect the lives of many people and animals in the state. Power is very important to keeping many things alive nowadays. By figuring out which plants are the most at risk, it could help these plants avoid flood damage by allowing them time to build up anti-flood infrastructure like levies and something akin to sea walls around the properties.

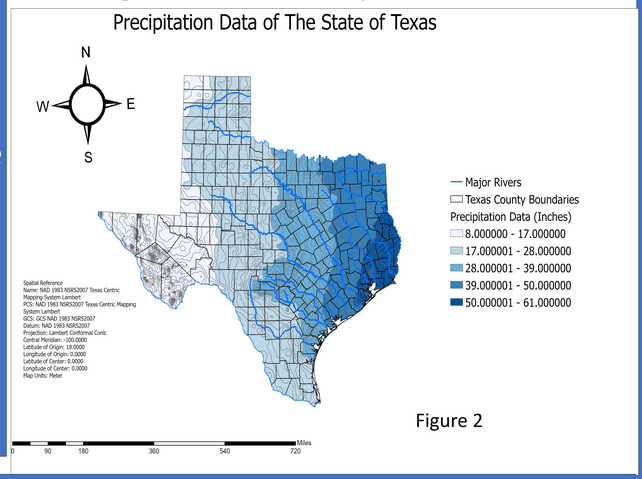

Figure 2

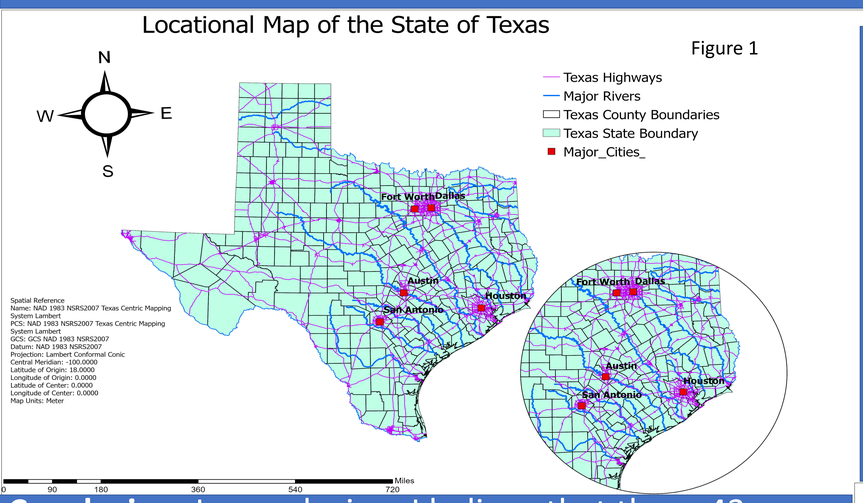

Figure 1

Study Area: The study area is the state of Texas. It has a population of 29.2 million people. It is home to 3 cities with populations above 1 million. They are Houston, San Antonio, and Dallas. There are 14 major rivers that run through the state. There is also about 3,233.45 miles of highways running through the state. It is one of the largest states in the Union and home to a very large population that could be affected by my research.

Conclusion: In conclusion, I believe that these 43 power plants are the most at risk in the state of Texas of suffering damages from severe flooding events. The top 3 plants that are at the most risk are, the Bosque County Peaking plant with 748 MW, Wolf Hollow I LP plant with 673.3 MW, and the ExxonMobil Beaumont Refinery with 610.6 MW. As severe weather events get worse due to the effects of the climate crisis, severe flooding events will most likely become more commonplace in Texas and many more places around the world. This promotes the importance of protecting power infrastructure in the future.

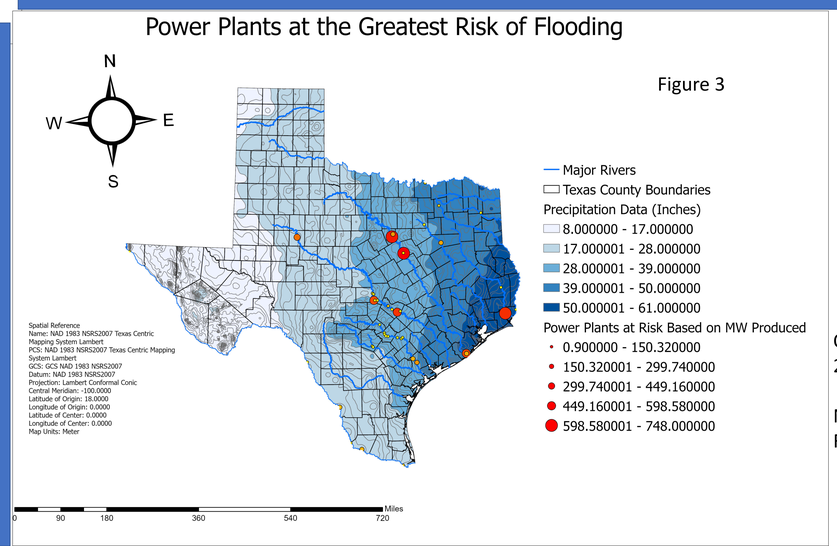

Figure 3

Methodology and Data: To narrow down the selections of power plants to the ones the most at risk, I had to use multiple different variables and each plant had to match all of them. I first and foremost checked if a plant was within 1 mile to a major river system. Buildings that are too close to rivers are usually prime targets for severe flooding. Second, I used precipitation data from the Texas Water Development Board. In areas where more rain falls, it is most likely to cause more flooding than dryer areas of the state. The final data that was used to determine priority was the MW produced by the power plants themselves. A power plant that produces more power is also supplying a larger area than one that is not. That is what was taken into account as well when determining which power plants were at risk.

Analysis: After inserting the proper data into my maps, I did my calculations and found 43 power plants at risk in the state. In Figure 3, the graduated symbol map shows the severity of the risk for each of the 43 plants marked for risk. The plants with greater MW produced are larger and darker in color than ones that do not produce as much MW. These larger plants are again more at risk because of the areas they serve are much larger than those of the smaller power plants.

Works Cited:

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