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### **Brine Impact on Water Quality in Seminole County, Oklahoma**

Seminole County, Oklahoma has been the site of extensive oil and gas production dating from the first decades of the last century. The impact of the produced formation waters has been reported to have adversely affected the water quality in the county. It is the goal of this project to determine the degree of current brine contamination, and its source. In this vein 318 surface and ground water samples have been analyzed for major ionic components. Stream samples have associated parameters such as velocity, dissolved oxygen, conductivity, pH, and salinity, while the ground water samples have additional variables such as static water depth, and height of casing.

All data has been entered into (Geographic Information System) GIS for spatial analysis. The current data as well as historical data supplied by the (United States Geological Survey) USGS were examined for any possible trends relating to legal legislation, proximity to wells, depth of wells, age of wells, proximity of wells to streams, and slope analysis.

In Oklahoma all Indian property falls under the jurisdiction of the (Bureau of Indian Affairs) BIA and non Indian land is regulated by the Oklahoma Corporation Commission. This division complicates any clean up efforts and preventative measures that might be enacted. In an effort to establish regulatory domain, a property map of the county was draped over the data. This allows regulatory ownership to be determined and may bring about faster and greater prevention and clean up of existing or future contamination.