Water Quality and Quantity in the Colorado River within the Hill County

Term Project Proposal of GIS in water resources

Objective: The major objective of this project is to identify the properties that contribute to the water quality and quantity in the Colorado River in the Hill County. To obtain this goal, two steps are developed in detail. The first one is to determine the water quantity of this area, including mapping where the water is coming from, locating the springs, calculating runoff coefficient, and estimating of the discharges of this area. The other one target on what affects the water quality of this area. Those factors may include natural process, human activity, and land use type. Consequently, the two parts are combined to help make suggestion of the water protection of this area.

Date source:

a) The USGS has a wealth of information about water in the US. Stream gauges that measure flow at springs, surface water sites, and groundwater sites are available on the website. http://wdr.water.usgs.gov/nwisgmap/.
b) The Texas Water Development Board website has data available to public about the water and natural resource data. http://www.twdb.state.tx.us/data/data.asp
c) TNRIS has a lot of useful data such as the National Hydrography Dataset (surface water features) and Hydrologic Unit Code (watersheds). 12 digit and 8 digit HUCs are also available here. http://datagateway.nrcs.usda.gov/
d) Watershed Boundary Dataset can be obtained from http://www.ncgc.nrcs.usda.gov/products/datasets/watershed/
e) NHDPlus data is available on http://www.horizon-systems.com/NHDPlus/

Steps:

a) Data collection
b) Adding data in ArcMap and explore on these data
c) Selecting on the targeted area and determine its watershed, flow lines, and flow directions
d) Locating spring sources and labeling them
e) Statistic analysis on mean annual flows and precipitations of each subwatersheds
f) Finding out factors that affect the water quality of this area
g) Conclusion and suggestion