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# Term Project Proposal: Mapping Out Dams in the United States and Their Effect on Evaporation and Biodiversity

**Objective:** Starting with the year 1900, map out dams built in the U.S. as well as their accompanying reservoirs. Using evaporation data, I will attempt to determine how the water balance has changed due to the introduction of manmade reservoirs, as well as the effect of regulating river flows on natural surface lakes. A secondary objective considers looking at biodiversity loss due to changing the connectivity of rivers, such as preventing migration upstream. Basically, the benefits of hydroelectric power are well known, yet Marc Reisner's *Cadillac Desert* begins the conversation of the consequences of dams, and whether they are truly sustainable. Currently, there is a movement to deconstruct obsolete dams, such as the San Clemente Dam, due to their inherent risks and environmental effects.

**Plan:** Using data from the Nature Conservancy and other related organizations, information on when and where dams were built in the U.S. will be mapped on GIS. Using a sequence of maps, it will be shown how dams proliferated from 1900 to 2015. This demonstration is followed with the mapping of the accompanying reservoirs, focusing on the surface area and evaporation rates of them. On GIS, it can be shown how evaporation rates in watersheds containing reservoirs have assumedly increased, while decreased in areas where river flows are impeded by dams, thus establishing new water equilibrium.

Dams have also influenced biodiversity, and starting with research at the Texas Memorial Museum and Fishes of Texas organization, the effects of dams on river species populations will be analyzed, particularly those which has direct human benefits such as edible fish. From background reading, it's predicted that most rivers suffered significant population decreases due to dam building, especially when biological considerations were not given much attention. Therefore, GIS will serve as a visual tool representing population change from 1900 to 2015, depending on data availability. It would also be interesting to see how other species that stifle biodiversity, such as algae, have flourished as a result.