

Ecology lab report assignment



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For example, reservoirs associated with “run-of-the-river” dams typically have small hydraulic head, limited storage area and short retention times and are less likely to be susceptible to conditions that can lead to transportation or promote excessive algal growth. In contrast, reservoirs associated with larger dams, such as storage or hydroelectric dams, are more likely to have longer retention times, providing a greater potential for incoming nutrients to stimulate increased algal production.

Increased algal biomass can potentially deplete dissolved oxygen levels within the reservoir through bacterial decomposition and photosynthetic respiration. A study by Dry. Payne examined the relationship between reservoir water retention times and phytoplankton algae production in the summer. Dry. Payne, along with Auburn University professor Dry. Mike Machine, assessed the potential water quality effects on Weiss Lake of the draft Cooks River water-sharing agreement between Alabama and Georgia.

Their study showed that reservoirs with typically short retention times, such as reservoirs on the Cooks River, are more susceptible to hyperthyroid effects and higher chlorophyll a concentrations when retention times are increased even moderately. Historical data shows that higher chlorophyll a concentrations in Weiss Lake have consistently corresponded to longer retention times.

Hydrological models in their study indicated that longer retention times in the reservoir would likely increase phytoplankton algae production and algal biomass accumulation, assuming that other factors remain unchanged. This result is particularly evident during drought periods, such as occurred in

2000 and in 2006. In addition, the nutrient criteria were developed to reflect downstream transport of nutrients and the processes by which nutrient uptake occurs in streams. Nutrient concentrations generally tend to decrease as they move downstream.

This attenuation occurs as nutrients are absorbed by microorganisms and plants (biotic uptake) or as they adsorb onto sediment particles (biotic uptake) and settle out of the water column.