

**Larson, Douglas W. "Reservoir Limnology in the Pacific NW: Willamette River Basin, OR."**  
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This paper discusses the reservoir system of the Willamette River basin that was put in place by the Army Corp of Engineers in response to the Flood Control Acts of 1938, 1950 and 1962. The first dam began operating in 1941 and the last in 1968. According to the author these dams have provided economic and flood damage improvements, yet they also represent some serious environmental problem which are discussed in the paper. Larson outlines the geography and placement of the reservoirs and their construction techniques. For example, six of the thirteen reservoirs (Detroit, Green Peter, Blue River, Cougar, Hills Creek and Lookout Point) have hydropower generating capacity while the rest are used only as flood storage. The bulk of the paper delves into the limnology of the reservoirs and the reservoir water quality problems.

These reservoirs are classified as warm monomictic, meaning that they have one mixing period per year (in the winter). Larson outlines basic water chemistry of the reservoirs before getting into problems with water quality and the impacts these have on the wildlife, the surrounding environment and human health. The problems discussed are turbidity and sedimentation, effect of release flow temperatures on salmon migrations upstream, and mercury contamination in fish due to abandoned mine sites. It is interesting to note that before the dams were in place, the water quality of the Willamette river basin during the summer months was extremely poor, while after their construction the flow of the Willamette during the summer and fall was greatly increased. Still, the paper remarks that the river has seen increasing pollution in recent times due to pesticides, herbicides, fertilizers, toxic metals, solvents and untreated sewage. In conclusion the paper assesses the changes that the reservoir system has had on the physical, chemical and biological features of the river and has helped and harmed in various ways.

## **Critique**

This paper does a great job of taking the reservoir issue and explaining both pros and cons of their implementation as well as all the background info that is needed to understand the science involved. The charts, graphs, and photographs are relevant and informative. For example, the graph on reservoir, flow-augmentation on Willamette River flows from 1910 to 1970 shows clearly the significant changes that the reservoirs have had on the Willamette River pollution. The references are mainly from the Army Corp of Engineers data and from other papers that Larson has published in past scientific journals. The author is a professor of Biology at Portland State University and was previously an employee of the Army Corp of Engineers.

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