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Downstream Geomorphic Impacts of Large American Dams

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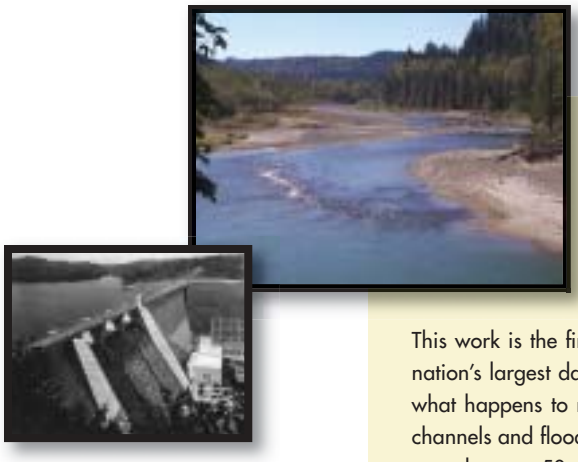

Downstream Geomorphic Impacts of Large Dams on American Rivers, William L. Graf, University of South Carolina. The many economic benefits from dams (including flood control, water supply, and hydroelectric power production) are products of the ability of dams to change the natural flow of rivers to better serve society's needs. However, the installation and operation of large dams can cause radical changes in aquatic habitats, riparian forests, and river landscapes for many miles downstream. This work is the first nation-wide assessment of fundamental changes to environmental processes near the nation's largest dams. Using aerial photography, computer mapping, and field investigations we can map what happens to rivers when dams are installed. In many plains and desert rivers, wholesale changes in channels and flood plains downstream from dams have resulted in a dramatic expansion of riparian forests over the past 50 years. These forests provide valuable habitat for birds, including game and endangered species. In eastern rivers, channels have lost their sand bars and many of their mid-channel islands so that the aquatic habitats for fishes have changed, sometimes to the detriment of native species. This information is being increasingly used by decision-makers who intend to remove dams. Working through the Heinz Center for Science, Economics, and the Environment, this work has been used to create a guide that government agencies and citizens can use for assessing the potential outcomes of dam removal (*Dam Removal: Science and Decision-Making*, Heinz Center, Washington, 221 pages). Top: Despite its name, the Sandy River (Oregon) in this reach is a gravel-bed stream because all the fine sediments are trapped by dams. Bottom: The Norris Dam on the Clinch River is part of the Tennessee River system and is an example of a large dam that strongly influences downstream river reaches and their ecosystems. NSF grant BCS-9708240.