



News Release

April 18, 2016

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Community Flood Protection May Also Help Endangered Salmon to Thrive

TACOMA, Wash. — Building a river setback levee to reduce the risk of flood for a community may also help endangered fish species to thrive, according to the results of a new computer model developed by the U.S. Geological Survey.

For the White River in King County, a proposed setback levee would also help reduce flood risks. A setback levee is relocated farther away than typical from a river channel in order to reduce the risk of flooding by creating a wider riverbed with increased floodwater capacity. Setback levees also allow river flows to spread out and slow down.

“For this setback levee engineering feature, which will provide flood risk reduction, our model shows that it also could minimize environmental impacts and provide increased habitat for federally listed species of salmon,” said Bob Black with the USGS Washington Water Science Center.

In cooperation with the King County Flood Control District and King County’s Water and Land Resources Division, USGS scientists studied a 2-mile reach of the White River near the city of Pacific, at the site of a proposed setback levee, about 68 miles downstream of Mount Rainier. The proposed project would increase the levee-to-levee distance across the river from the current 195 to 295 feet, to as wide as about 1,300 feet.

Traditional river-restoration computer models that simulate the effects on fish species have relied on preferred habitats determined primarily by river depth, velocity and riverbed materials, often ignoring the role of food supply and foraging behavior in habitat quality. USGS scientists took the novel approach of having their model “follow the fish food” and simulate how river insects—food for salmon—are carried downstream by varying river flows and at varying river temperatures. In high river flows, for example, salmon can use up a lot of energy as they struggle to hold their position, while their food insects are swept quickly downstream.

Results of the USGS computer model indicate that the proposed setback levee project would likely help endangered salmon thrive as they develop and mature, based on their increased energy intake (more river insects) and reduced energy expenditure (due to lower river flows).

The report, “Effect of a levee setback on aquatic resources using two-dimensional flow and bioenergetics models,” by R.W. Black, C.R. Czuba, C.S. Magirl, Sarah McCarthy, Hans Berge and Kyle Comanor, is published as U.S. Geological Survey Scientific Investigations Report 2016-5025, available [online](#). More information about the USGS study can be found [here](#).

For over 100 years, the [USGS Washington Water Science Center](#) has been investigating the water resources of the state. The data we collect are essential for a reliable supply of safe drinking water, protection from floods and other natural disasters, hydroelectric power, agriculture, manufacturing, recreation and the environment.

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