



**US Army Corps
of Engineers®**
Engineer Research and
Development Center

Chief Joseph General Model Study

Description A three dimensional physical model was constructed to evaluate spillway flow deflector impacts on hydraulic conditions in and downstream of the spillway stilling basin of Chief Joseph Dam, Columbia River, Washington.

Issue Chief Joseph Dam (CJD) stretches over one mile across the rolling Columbia River at river mile 545.1. Behind the dam, lies Rufus Woods Lake, which extends 51 miles upstream to Grand Coulee Dam. CJD discharges into Lake Pateros, which extends 29.5 miles to Wells Dam. CJD is the Corps' largest power-producing dam.

Products At the request of the U.S. Army Engineer District, Seattle, a 1:80 scale physical model was designed and constructed at the U.S. Army Engineer Research and Development Center by the Coastal and Hydraulics Laboratory. The model reproduces the spillway and powerhouse of the Chief Joseph Dam, and sufficient upper pool and tailrace length to reproduce prototype flow conditions near the structure. The model was used to evaluate the spillway flow deflectors and stilling basin performance.



**Physical model of Chief Joseph Dam,
Columbia River, Washington**

Benefits Model results revealed that spillway deflectors installed at elevation 776 ft provides a broader range of discharges for optimum dissolved gas performance for expected tailwater elevations.

Sponsors US Army Engineer District, Seattle.

Point of Contact Mr. Winston (Glenn) Davis, U.S. Army Engineer Research and Development Center, ATTN: CEERD-HN-H, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199; e-mail: glenn.davis@erdc.usace.army.mil. Additional information can be found at <http://chl.erdc.usace.army.mil>.