

Project: The Dalles 1:25-scale Section Model

PI: Bill Preslan

Branch/Group: Inland Hydraulic Structures Branch, Environmental Hydraulics Group

Project Description/Activities/Capabilities:

1:25-scale section model of the Dalles Dam on the Columbia River. Investigating performance of deflectors, baffle blocks, stilling basin, endsill, walls, and tailrace for a broad range of discharge per spillbay.

Sponsor: Portland District. POC - Natalie Richards

CHL Personnel: Bill Preslan, John Ashley, Van Stewart

Project Location and Description:

The Dalles Dam is located 192 miles upstream from the mouth of the Columbia River, two miles east of the city of The Dalles, Oregon. The dam extends 1.5 miles from the Oregon shore to the navigation lock on the Washington shore. Because the boundary between the two states follows the old river channel, The Dalles Dam is almost entirely in the state of Washington. The Dalles project consists of a powerhouse with 22 hydroturbines with a combined discharge capacity of 2,290,000 cfs, a spillway, and navigation lock. The spillway at The Dalles is 1150 ft wide with 23 tainter gate-controlled bays. There are no spillway deflectors at The Dalles Dam. The horizontal apron-type stilling basin at The Dalles is about 190 ft long with an invert elevation of 55 ft. One row of 8-ft-high baffle blocks and a 12-ft-high end sill provide for energy dissipation in the stilling basin. Training walls, extending over two-thirds the length of the stilling basin, separate Bays 1 and 2, 2 and 3, and 22 and 23. The tailwater channel downstream of the stilling basin has a mean elevation of 68 ft with some irregularities, resulting in elevations less than 68 ft. The shallow shelf down-stream of the stilling basin is about 850 ft long downstream of the north end of the spillway but only half that long at the south end of the stilling basin. The navigation lock is located north of the spillway with its approach channel well downstream the spillway.

Facilities: Bldg. 7001

Related Topic Areas: Hydraulic structures, environmental studies, salmon survivability, deflectors, dissolved gas, baffle blocks, endsill, reservoirs, rivers, hydropower

