CASE STUDY

Portland General Electric Clackamas River North Fork MultiFunction Boom Series

CLACKAMAS RIVER, OREGON

MULTIFUNCTION DEBRIS BOOM WITH A BOAT GATE

The floating surface collector (FSC) is a 2.5-million-pound floating structure, designed to collect and guide downstream migrating fish in order to improve fish passage efficiency. Guide nets on either side of the FSC direct fish towards the facility. A unique feature of this guide net is the top portion of the barrier. The unique hydraulics of the site required a non-permeable barrier made of XR5 fabric to optimize water flow. To provide strength to fabric, this barrier was placed in front of a Pacific Netting Products Dyneema® web and uses natural water currents for support.

To reduce debris loads for the efficient operations of the new floating surface collector and to lower costs of operations and maintenance related to debris removal at the dam, Portland General Electric (PGE) installed PNP's patented HDPE MultiFunction Boom. The boom was fitted with both a debris guidance skirt and a boat gate. The debris skirt, built of a nylon-reinforced heavy-duty material, guides downstream debris to a predetermined spot on the shore for easy handling. Since installation, almost no debris has been removed from the trash racks.

KEY FEATURES

Guide Net

- 500 ft long x 75 ft deep
- 1/4" knotless Dyneema
- In-line boat passage gate operates with loads up to 7 kip
- Custom design to allow for drafting and servicing of the FSC
- 20 ft raise/lower of FSC for service
- Dam, shore, and in-lake anchors
- Deployed year-round
- Anticipated lifespan: 10 years
- Float system with 18" x 24" hard shell foam-filled PE floats on 1" stainless cable

KEY FEATURES

MultiFunction Boom

- 1,400 ft long, built in 50 ft sections
- 3/4" galvanized bolts
- 20 ft wide boat gate
- Splash guard removes small debris to allow FSC to operate efficiently
- 4 ft deep debris skirt guides debris to shore for easy removal
- 50-year life span
- Design load is 75 kip with a 2:1 safety factor
- Lowest cost of ownership

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