

# SHOWCASE

## New fish screen passes the test in Oregon

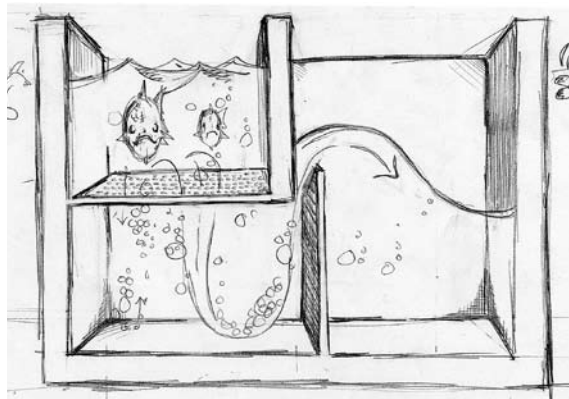
**B** iologists from the US Geological Survey performed hydraulic and biological tests last summer on a new fish screening technology called the Farmers Screen. The tests took place at the Oregon Department of Fish and Wildlife's Oxbow National Fish Hatchery in Cascade Locks, Oregon.

The Farmers Screen is a horizontal, flat plate fish and debris screen, designed to be installed in an off-stream channel. It has no moving parts and is substantially self-cleaning under normal operating conditions, potentially providing significant cost-savings to hatcheries utilizing diverted surface water for hatchery operations.

The purpose of the study was to evaluate the hydraulic and biological performance of the smaller Farmers Screens (0.014-.453 m<sup>3</sup>/s or 0.5-16cfs). A large Farmers Screen (2.3m<sup>3</sup>/s or 80 cfs) had been tested earlier, but the smaller screens had not yet been tested. The trial assessed the Farmers Screen's hydraulic performance under different operational conditions and the effects of passage over the screen on salmonid injury and delayed mortality.

The screen at Oxbow Fish Hatchery was installed into an existing concrete structure to minimize costs. Water enters the diversion through a headgate located on the stream bank and flows down a concrete flume to the screen. From there it moves directly to the rearing ponds while the cleaning water enters a pipe that delivers the water, fish (including present Endangered Species), and debris to a point below the hatchery ponds.

Hatchery manager Duane Banks describes the changes he saw in hatchery operations; "It was like night and day – actually quite a dramatic change with things being a lot less labor-



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intensive. During the first big rain storm after the install, I actually woke up a couple of times in the night because I thought our alarm system must have been broken."

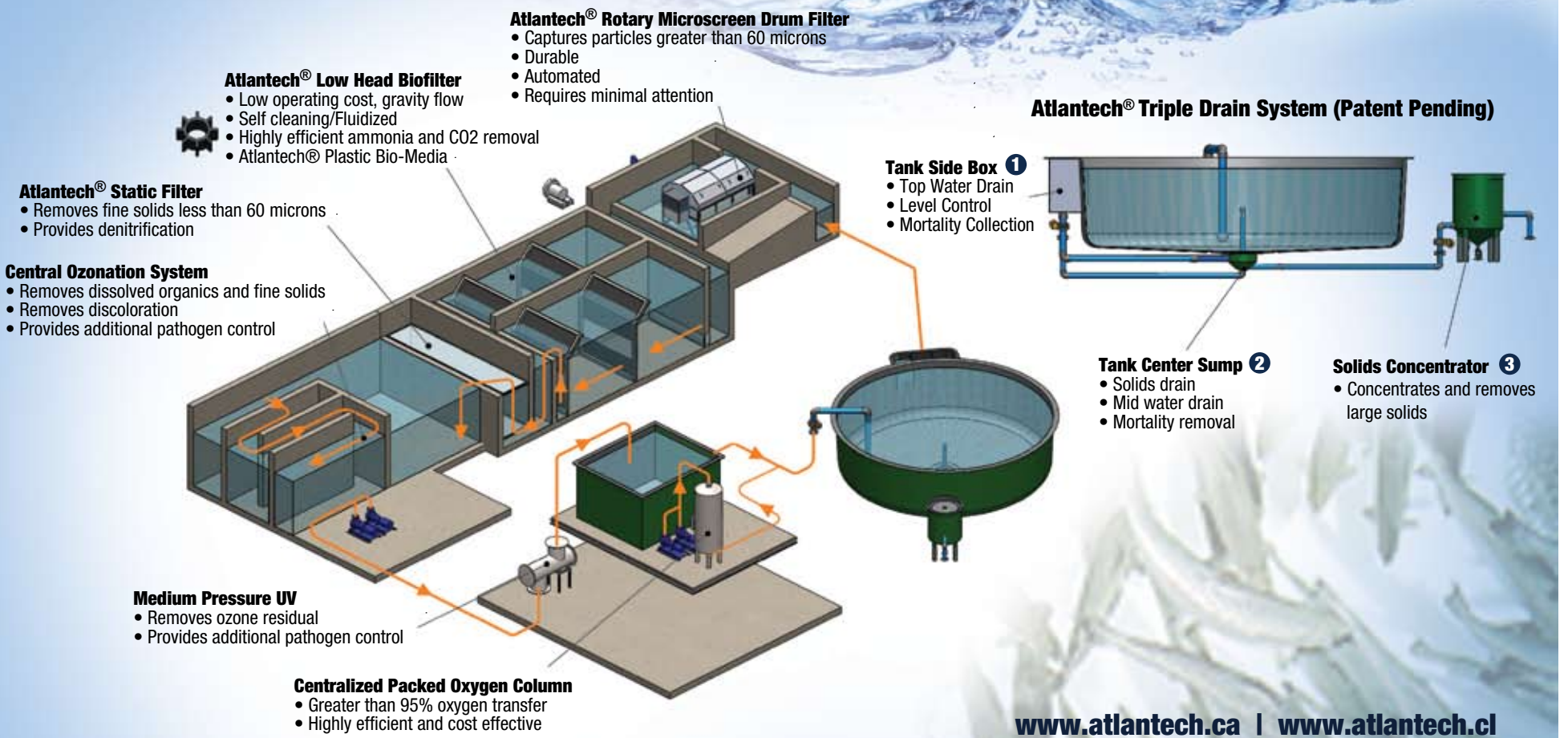
The Farmers Screen utilizes the dynamics of water movement to screen water while safely sweeping fish and debris back to the river or stream. Diverted water enters the screen at a high velocity while water moves very slowly through the screen vertically. These differing velocities sweep the fish and debris across the screen while keeping impingement from occurring.

In the final draft of the biological evaluation study report, USGS biologists Matt Mesa, Brien Rose, and Elizabeth Copeland note that, "Our results indicate that passage of juvenile coho salmon over the Herman Creek screen under a variety of hydraulic conditions did not severely injure them or cause delayed mortality." Addressing Farmers Screen cleaning performance they added, "The screen showed good self-cleaning function and never had problems with debris loading."

"The only special challenge for hatcheries that I can see," says Duane Banks, "is that it requires a lot of water for bypass flow." The screen serving Oxbow National Fish Hatchery has a volumetric flow of .28 m<sup>3</sup>/s (10 cfs).

Farmers Screens are available in sizes from .007 m<sup>3</sup>/s (.25 cfs) up, with no upper limit. They are available throughout the United States and Canada. Call 541.716.6085 for more information, or visit FCA online at [FarmerScreen.org](http://FarmerScreen.org). A video of the Farmer's Screen in action can be seen at: <http://farmerscreen.org/video>

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