

Operational and Structural Changes at Two Hydroelectric Dams to Aid in Downstream Juvenile Salmonid Passage Survival on the Mid-Columbia River



Y
145th Annual Meeting of the American Fisheries Society, Portland, Oregon

Wanapum and Priest Rapids Dams C₂ Chief Joseph **Grand** Coulee THURHING Wel IDAH MID-**COLUMBIA** Rocky Reach Lower Rock Islan Monumental Lower Gran Wanapum Little Goose **Dworshak** WASHINGTON Priest Ranids **SNAKE** LOWER ehoe COLUMBIA McNary Bonneville The Dalles John Day Hel Oxbow Brownlee 22229 **JOHN** DAY OREGON RIVER 2

Performance Standards Required of Grant County PUD by FERC



Acoustic Tags for Tracking









Juvenile Fish Bypasses:

• Wanapum Fish Bypass



Downstream View





Agencies & Tribes (PRCC) in Iowa



Construction on the Wanapum Fish Bypass







Acoustic Tags for Tracking









Results:

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Fish Passage Efficiency		Fish Survival
	<u>2010</u>	<u>2010</u>
Steelhead:	77%	99%
Sockeye:	78%	98%
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Priest Rapids Fish Bypass (PRFB)













Acoustic Tags for Tracking









Results - Downstream Detection

Prototype Top-			
Year	Spill/Fish Bypass	Powerhouse	
2014	99.6%	93.8%	
2010	97.5%	94.9%	
2009	98.9%	91.0%	
2008	98.0%	91.3%	

Benefits from the Wanapum & Priest Rapids Fish Bypasses

- Increased survival rates for juvenile salmon past Wanapum & PR Dam
- Fulfils requirements of the FERC License and its associated mandates & obligations
- Lower TDG levels when fish spill is taking place
- More water available for power generation during the salmonid smolt out-migration

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Test the Turbines





Existing (Unit 9) - AHTS (Unit 8)



Fish Survival vs. Turbine Efficiency – i.e. "Fish Mode"

WANAPUM DAM TURBINE - FISH SURVIVAL 75 FT HEAD



Nadir Locations



Original Turbine



MGR Turbine

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Priest Rapids Hydroelectric Project (FERC No. 2114), 2009 Wanapum Dam Avian Zones Wanapum Dam Tailrace, Columbia River, WA









Priest Rapids Hydroelectric Project (FERC No. 2114), 2009 Priest Rapids Dam Avian Zones Priest Rapids Dam Tailrace, Columbia River, WA





Northern Pike Minnow Removal Program



- Set-lines
- Traps
- Angling
- Beach seine
- Electrofishing
- Ladder traps



This is a quick overview of the juvenile passage program at Grant PUD

Thank You