



**2011 Spill Season  
Year-end Review  
November 16, 2011**

# **TOTAL DISSOLVED GAS Monitoring**

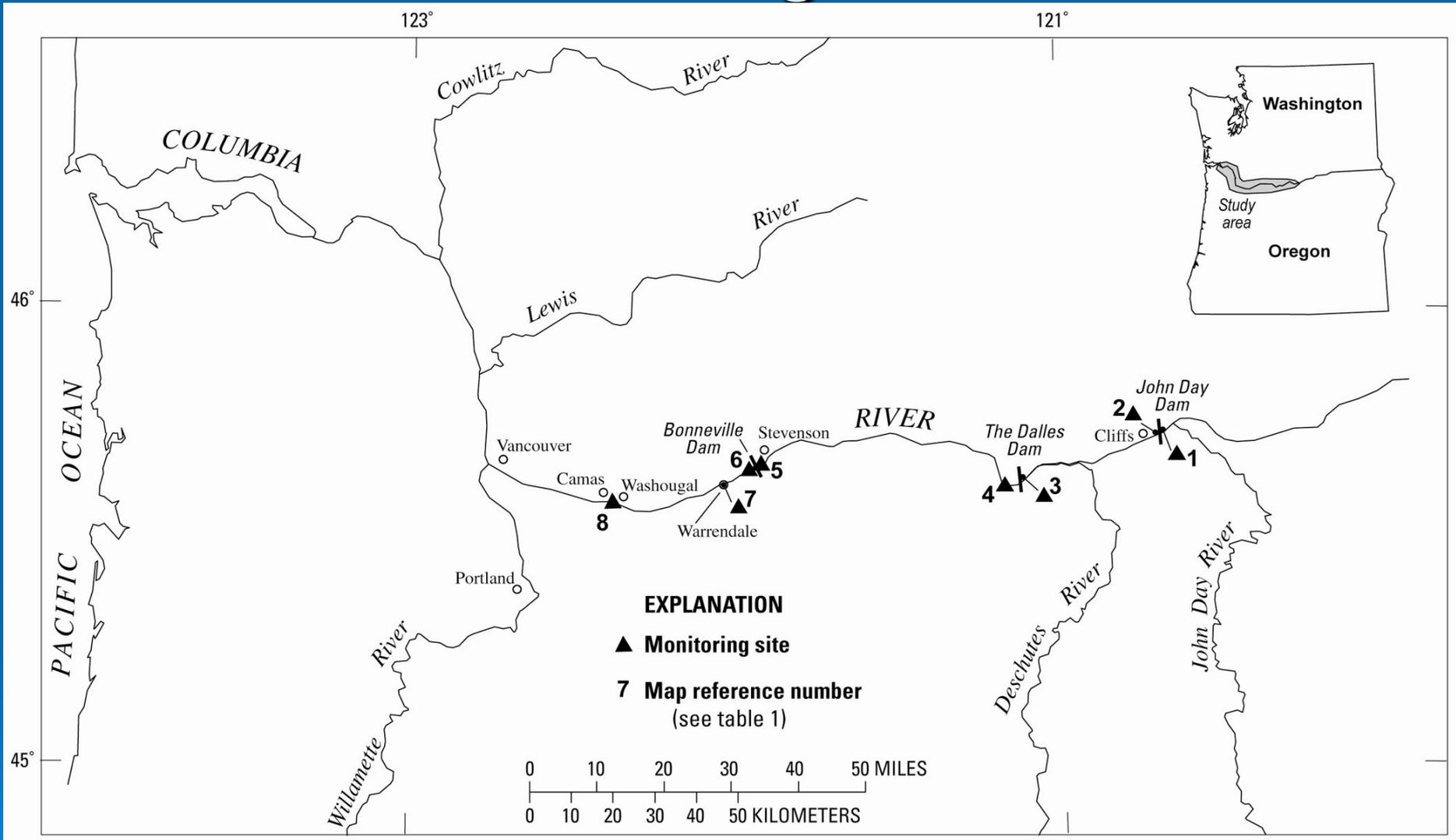
## **Lower Columbia River**

U.S. Department of the Interior  
U.S. Geological Survey

# Overview

- 8 monitoring sites; 4 year-round and 4 only during spill season
- High flows, spills, and TDG during May and June
- Cascade Island site below Bonneville Dam destroyed by high water May 18, 2011
- John Day tailwater site was inaccessible at times, but remained functional

# Monitoring Sites



# Field and lab equipment – no changes

- Hydrolab Minisondes
- Vaisala analog barometers at sites
- Sutron Satlink 2 high-data-rate DCPs (data collection platforms)
- Surveyor 4 and PDA for field display
- NovaLynx hand-held digital barometer
- For lab, Digimano pressure gage

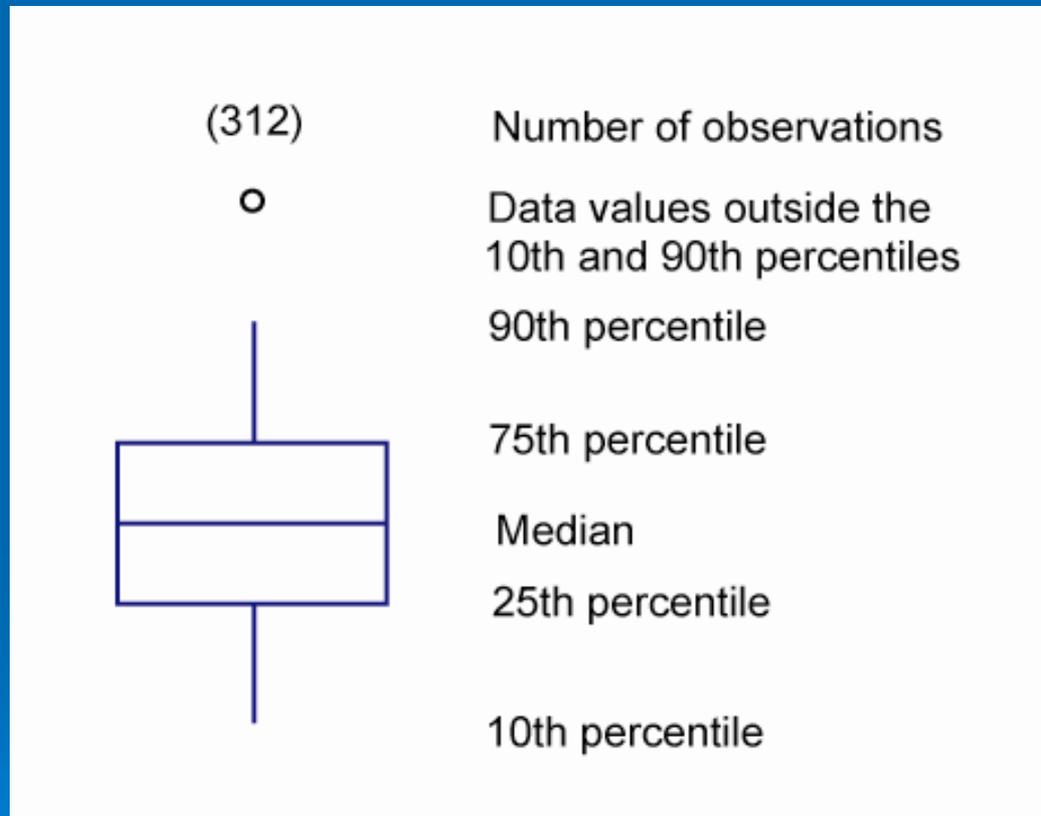
# Season summary

- During the spill season, hourly values of TDG were often larger than 115% saturation for the forebay sites and larger than 120% for the tailwater sites.
- All except four of the field checks of TDG sensors were within  $\pm 1\%$  saturation after 3 to 4 weeks of deployment in the river.
- Field checks of barometric pressure were within  $\pm 1$  mm Hg, and water-temperature field checks were within  $\pm 0.2^\circ\text{C}$ .
- Of the 79 laboratory TDG checks that were performed on instruments after field deployment, all were within 0.5-percent saturation.
- For the eight monitoring sites, an average of 93.5% of the TDG data were received in real time and passed QA checks.

# Data Completeness for 2011

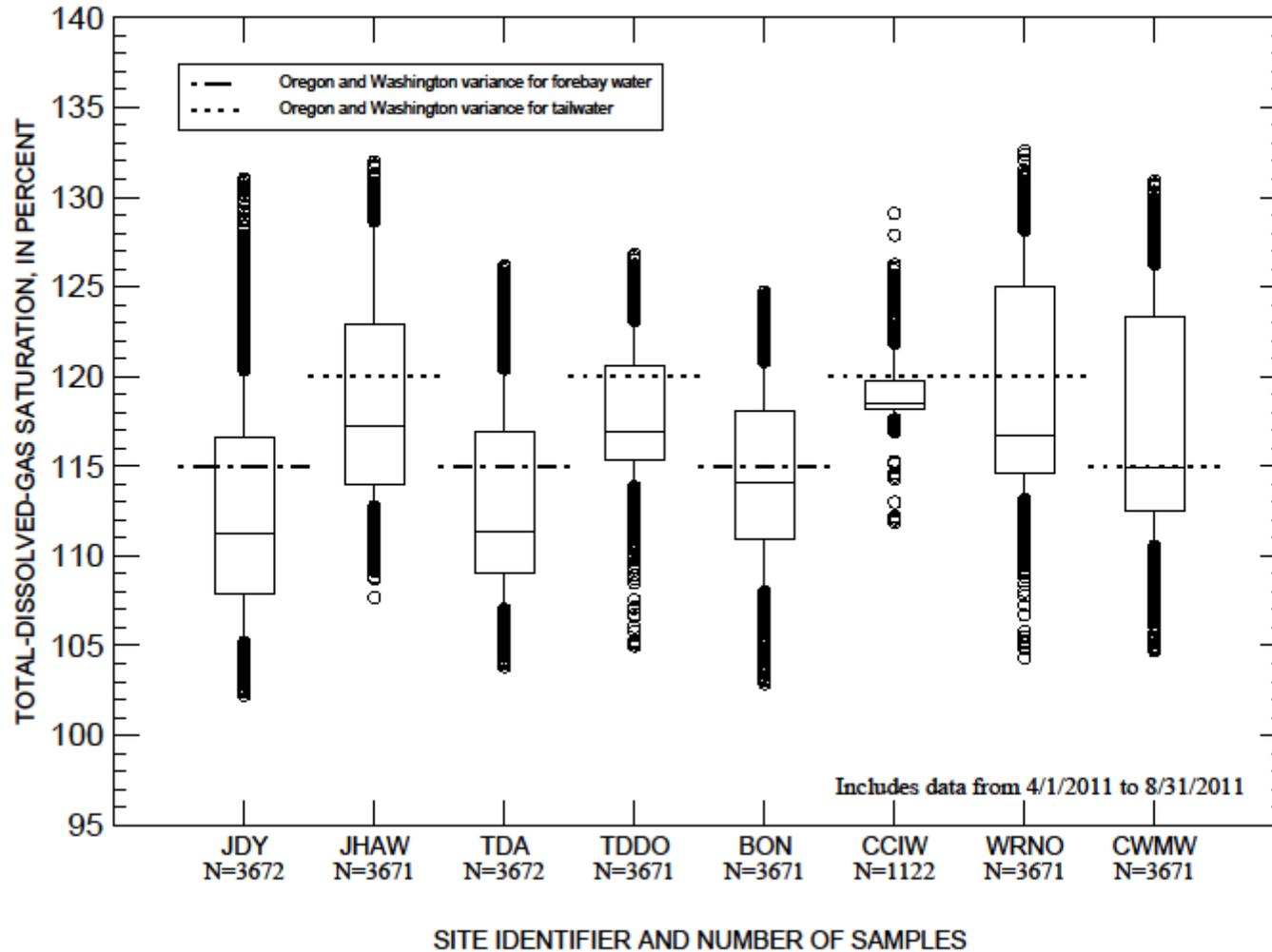
Station name	Number of missing or deleted hourly values	Percentage of real-time data passing quality assurance
John Day navigation lock	0	100.0%
John Day tailwater	29	99.7
The Dalles forebay	14	99.7
The Dalles tailwater	1	100.0
Bonneville forebay	0	100.0
Cascade Island	3,103	34.9
Warrendale	37	99.6
Camas	1	100.0
<b>Average</b>		<b>93.5 %</b>

# Explanation of a Boxplot



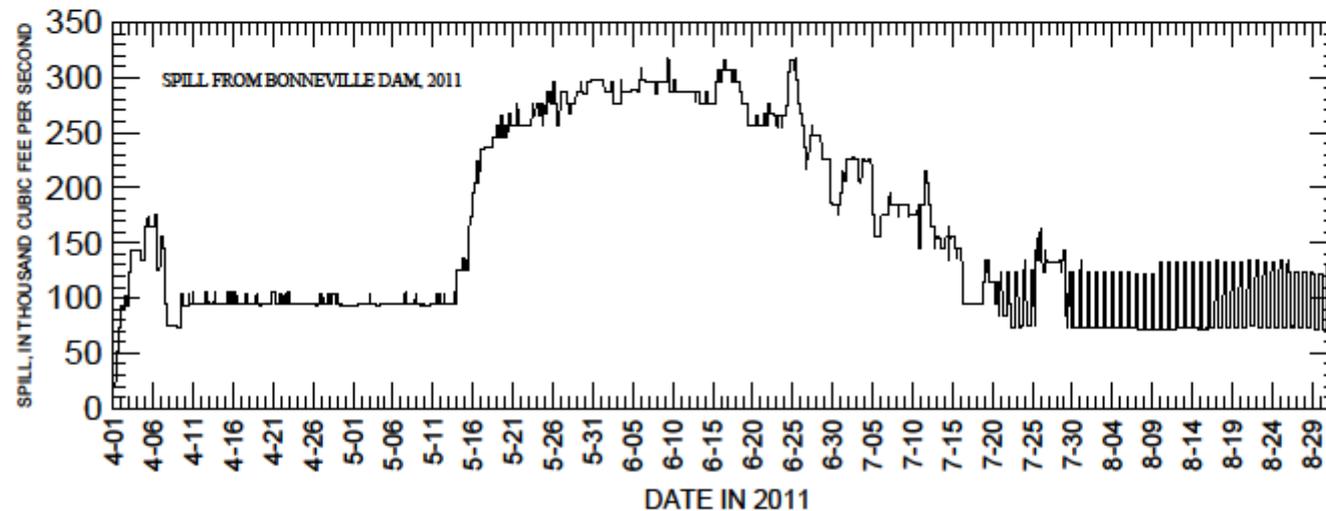
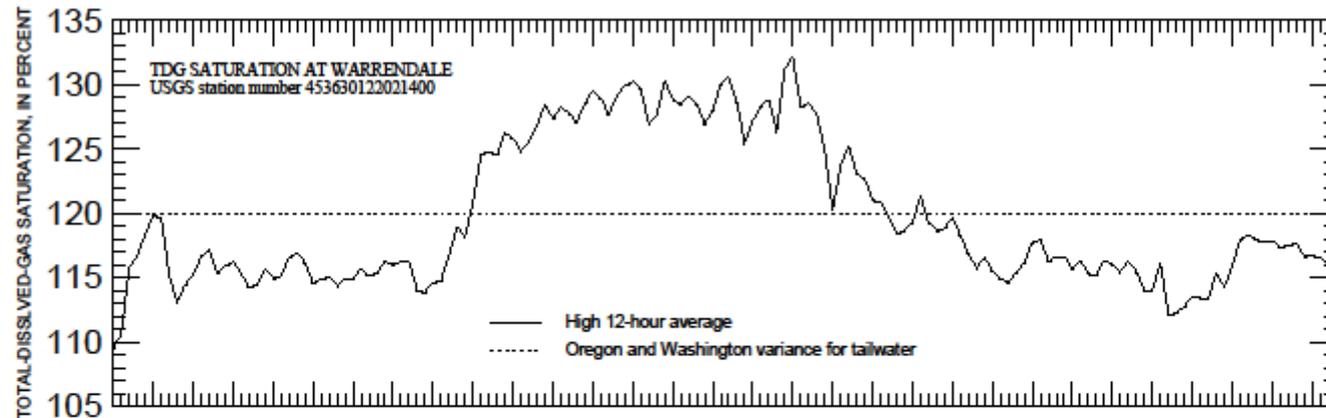
# TDG distribution at 8 sites-spill season

Figure 10



# TDG and spill below Bonneville Dam

Figure\_17



# Cascade Island site before high water



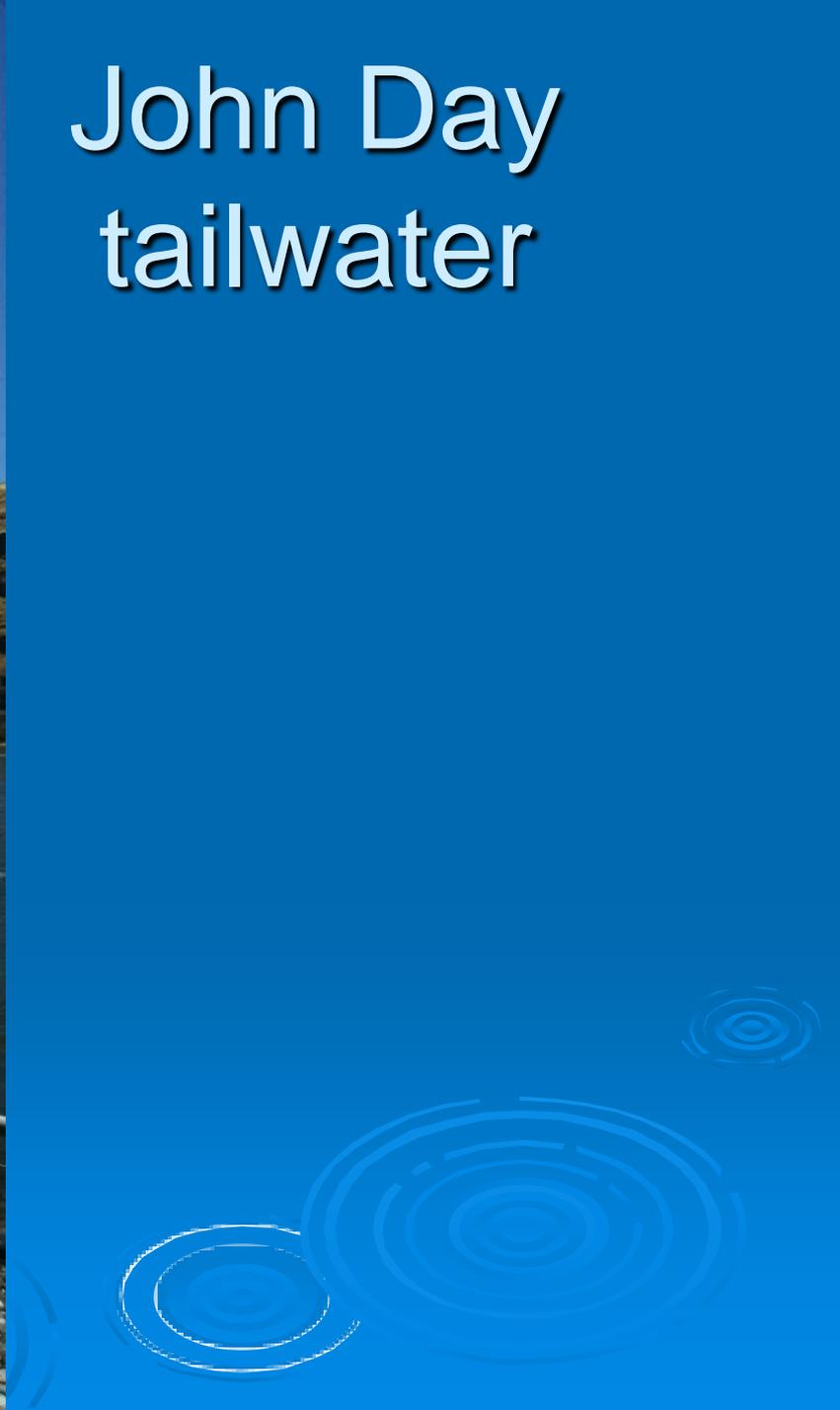
May 24, spill = 270,000 cfs







# John Day tailwater



HIGH WATER LEVEL →





# Two site installations are being rebuilt

- At Cascade Island, a new instrument hutch has been built well up the bank from the previous location. A longer instrument cable will be needed, but at least the new site should withstand high water. The site will be ready for spring spill.
- At John Day tailwater, a new box has also been built on higher ground. The site is operating currently at old location – it will be moved to the new location.





# Future Plans

- Cascade Island and John Day tailwater – finish the moves to new housings
- Winter monitoring continues below John Day, The Dalles, and Bonneville Dams (Warrendale site); calibration at 4 week intervals.
- USGS will publish an on-line report covering the material in this talk.

Warrendale site Sept. 14

