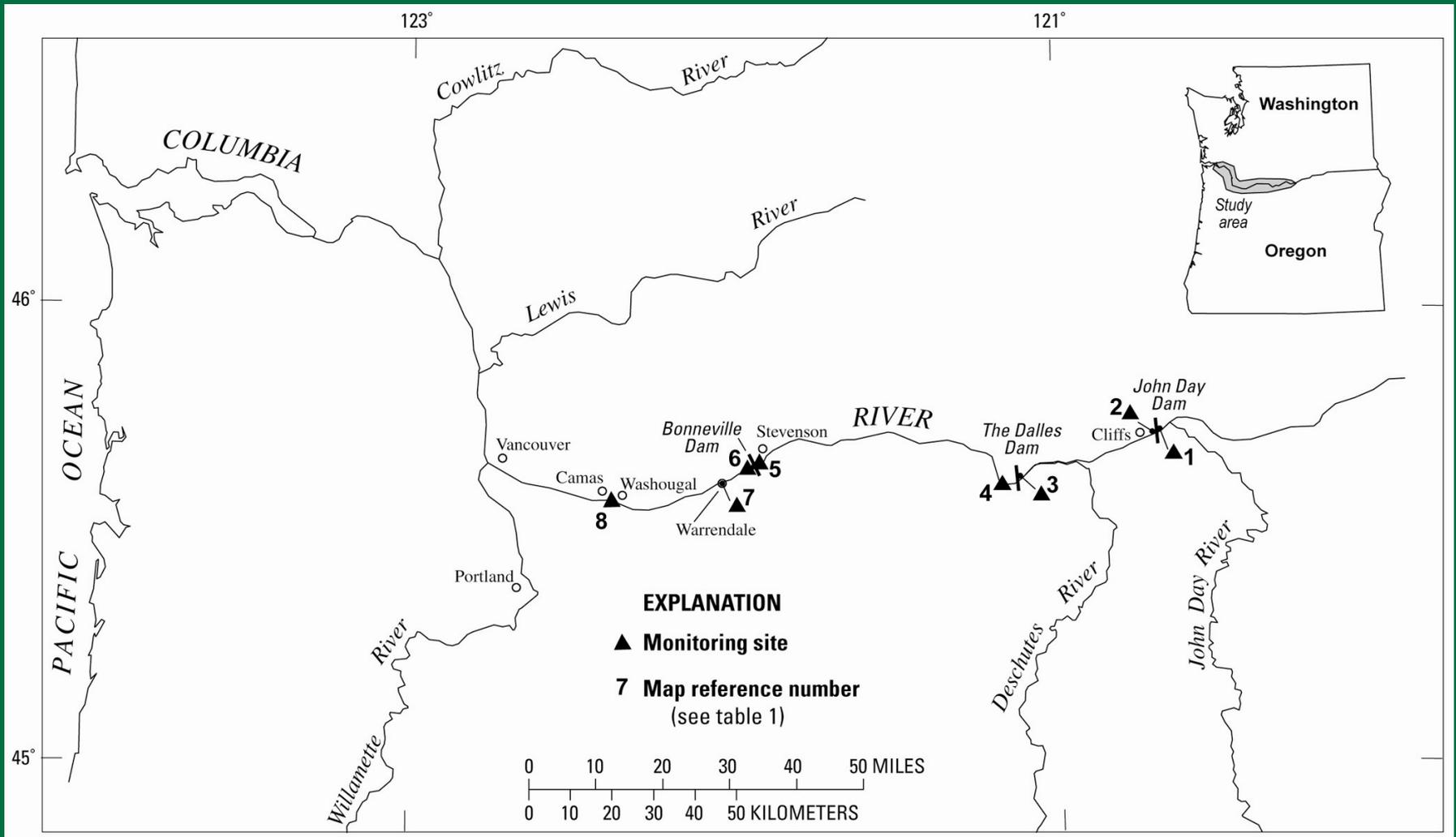




TOTAL DISSOLVED GAS MONITORING Lower Columbia River

**2013 Annual Review Meeting
December 11, 2013**

Monitoring Stations



Monitoring stations

Station Code	Station name	Monitoring period
JDY	John Day forebay	March - September
JHAW	John Day tailwater	Year-round
TDA	The Dalles forebay	March - September
TDDO	The Dalles tailwater	Year-round
BON	Bonneville forebay	March - September
CCIW	Cascade Island	March – September *
WRNO	Warrendale	Year-round
CWMW	Camas	March - September

Field Equipment

- Hydrolab Minisonde(s)
- Vaisala analog barometer
- Sutron Satlink2 DCP
- Solar panels installed for backup power

Lab Equipment

- NovaLynx digital barometer
- Digimano pressure gage
- Club soda

Data completeness

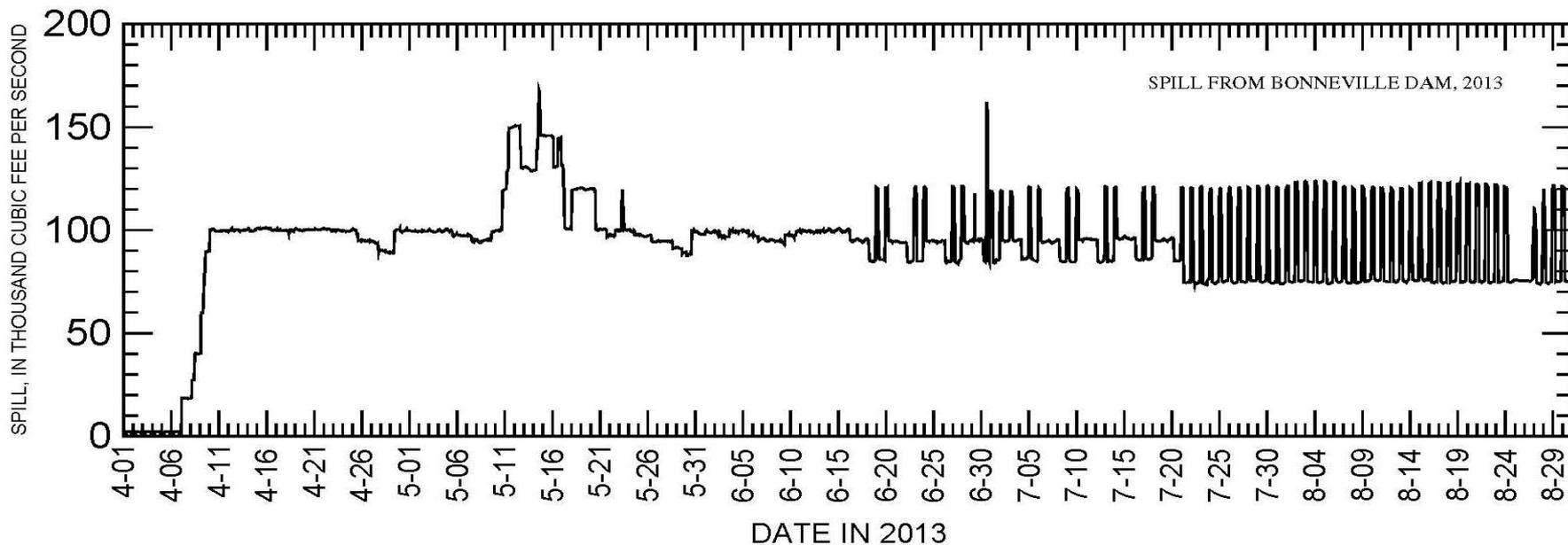
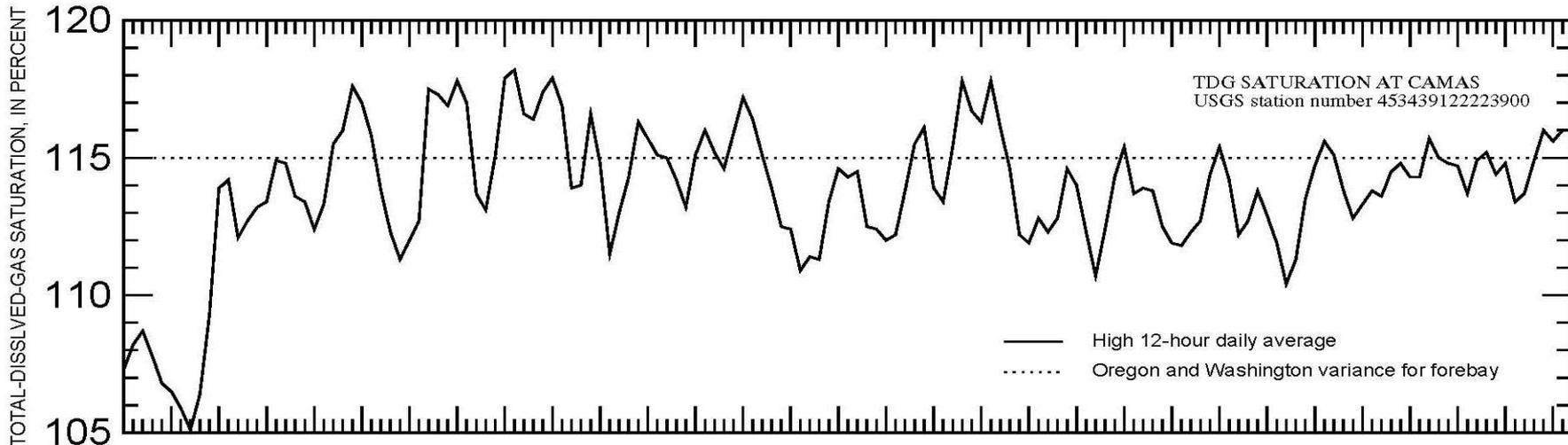
Site code	Number of missing hours	Reason(s)	Percent complete
JDY	4	Routine site visits	99.9%
JHAW	81	Failed transmissions (weather) Ruptured membrane	99.1%
TDA	49	Failed transmissions (battery)	98.9%
TDDO	103	Failed transmissions (weather) Failed transmissions (battery)	98.8%
BON	1	Routine site visit	100%
CCIW	94	Erroneous data (unknown cause) Deployment pipe damaged	97.7%
WRNO	17	Failed transmissions (weather)	99.8%
CWMW	23	Ruptured membrane	99.5%
TOTAL	372		99.2%

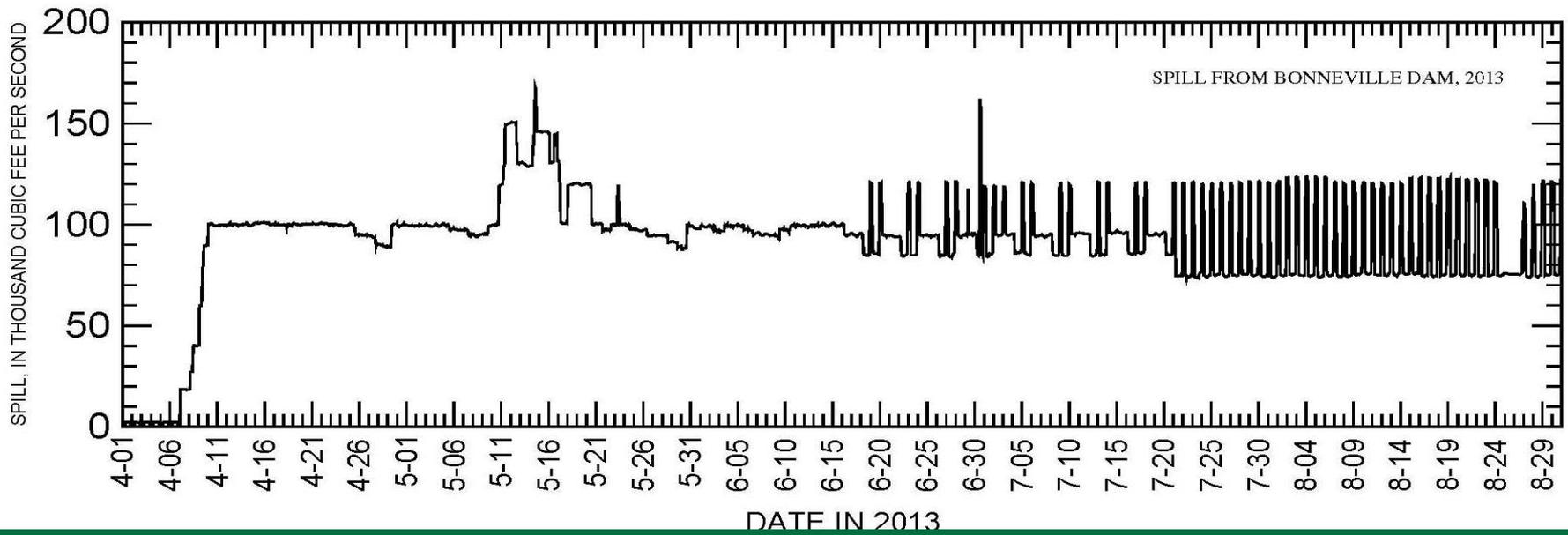
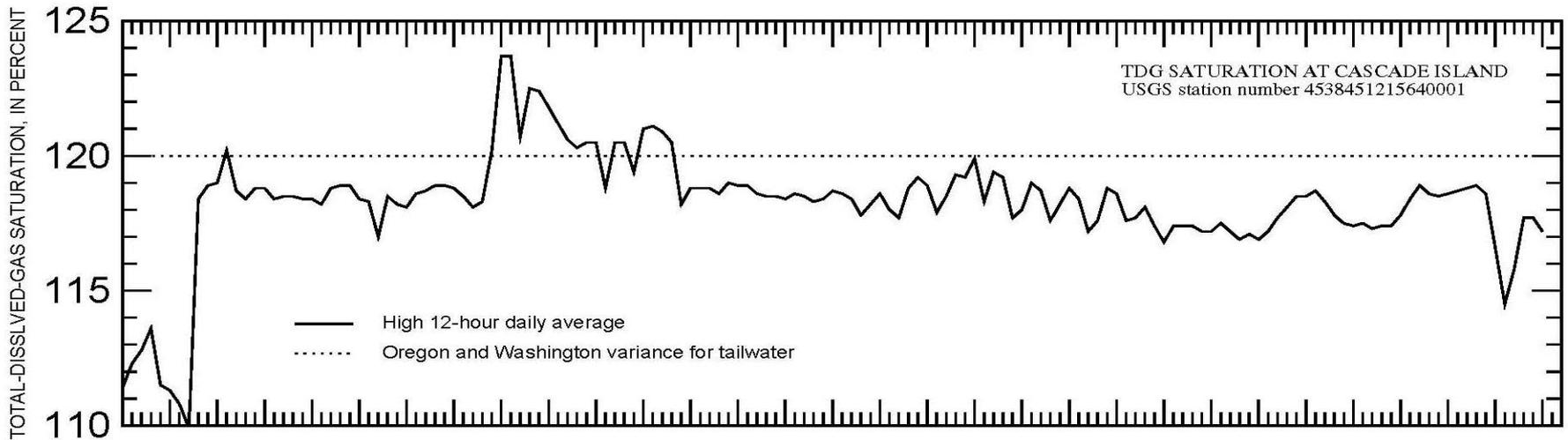
Data Issues

- **CCIW deployment pipe damaged**
 - Data lost August 29 to end of spill season
 - New pipe to be installed 2014?
- **JHAW erroneous data**
 - Formerly dual-sensor Hydrolabs
 - Replaced with new single-sensor Hydrolabs
 - Schedule pipe flushing more frequently?

TDG Conditions

- April 1 thru August 31
- Average of 12 highest values per day
- Forebay stations greater than 115% saturation
 - JDY, TDA, BON during May, June, July
 - CWMW at times during all months
- Tailwater stations greater than 120% saturation
 - Only CCIW at times during April and May



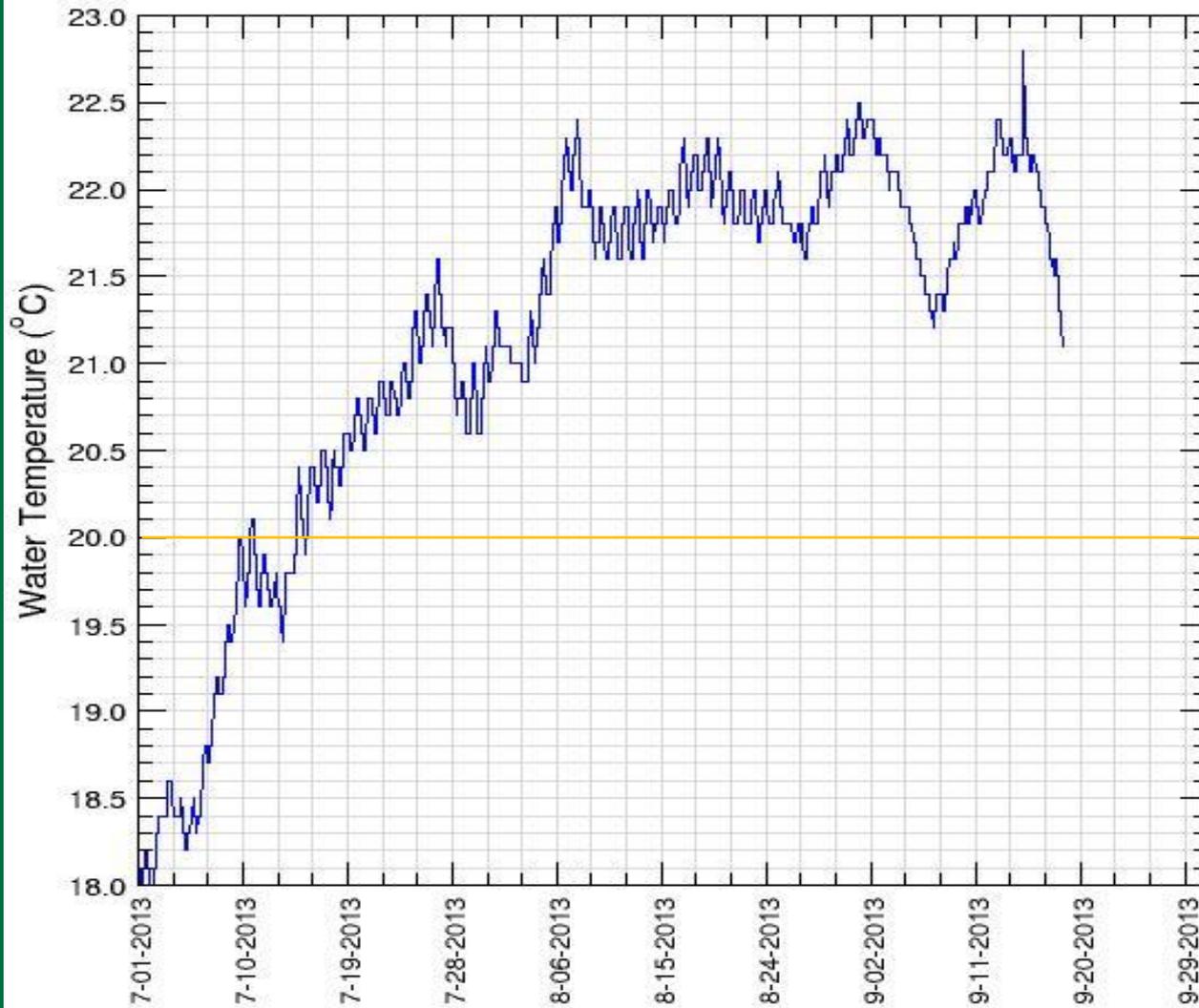


Water Temperature Conditions

- Hourly values
- All stations exceeded 20°C mid-July through late September
- BON removed while temperature data was being referenced
- Station will remain operational until temperature is less than 20°C

Columbia River at Bonneville Dam forebay, WA (453845121562000)

Data from U.S. Geological Survey



Questions?

