Pend Oreille Total Dissolved Gas
Total Maximum Daily Load

Presented to Pend Oreille River WAG
by Tyson Clyne
Idaho Department of Environmental Quality
Outline

• What is TDG?
• How is TDG produced?
• Gas Bubble Trauma or Gas Bubble Disease
• Idaho water quality standard
• TDG sources
• TMDL outcomes
What is Total Dissolved Gas?

• When the amount of gas in solution is greater than the saturation amount.

• The excess amount of gas is later returned to the atmosphere but until then the water is referred to as supersaturated.
How is it produced?

- Total dissolved gas is produced when atmospheric gasses are forced into solution due to increased pressure.

Air mixing with water
Gas Bubble Trauma or Gas Bubble Disease

- Gas that was dissolved in water enters the bloodstream and is released.
Idaho Water Quality Standard

• The Idaho numeric water quality criteria for TDG (IDAPA 58.01.02.211.01.b.) states:

“*The total concentration of dissolved gas not exceeding one hundred and ten percent (110%) of saturation at atmospheric pressure at the point of sample collection.*”
TDG in Idaho

Figure 16
Distribution of TDG Levels at a 5-m Depth in Lake Pend Oreille

- 100-120
- 120-130
- 130+

Scale: 1:135,000

From Parametrix 1997
Cabinet Gorge Dam

- TDG TMDL approved by EPA October 2007
- TMDL Target – 110% saturation
- No net increase in TDG from upstream waters to downstream waters
Albeni Falls Dam

- TMDL target – 110% saturation
- No net increase in TDG from upstream waters to downstream waters
TMDL Outcomes

- Three Assessment Unit – Pollutant combination addressed
- TMDL target set at 110% saturation
- Albeni Falls no net increase
Questions?