Seattle's Open Reservoirs

Wylie Harper

Seattle Public Utilities

April 24, 2012

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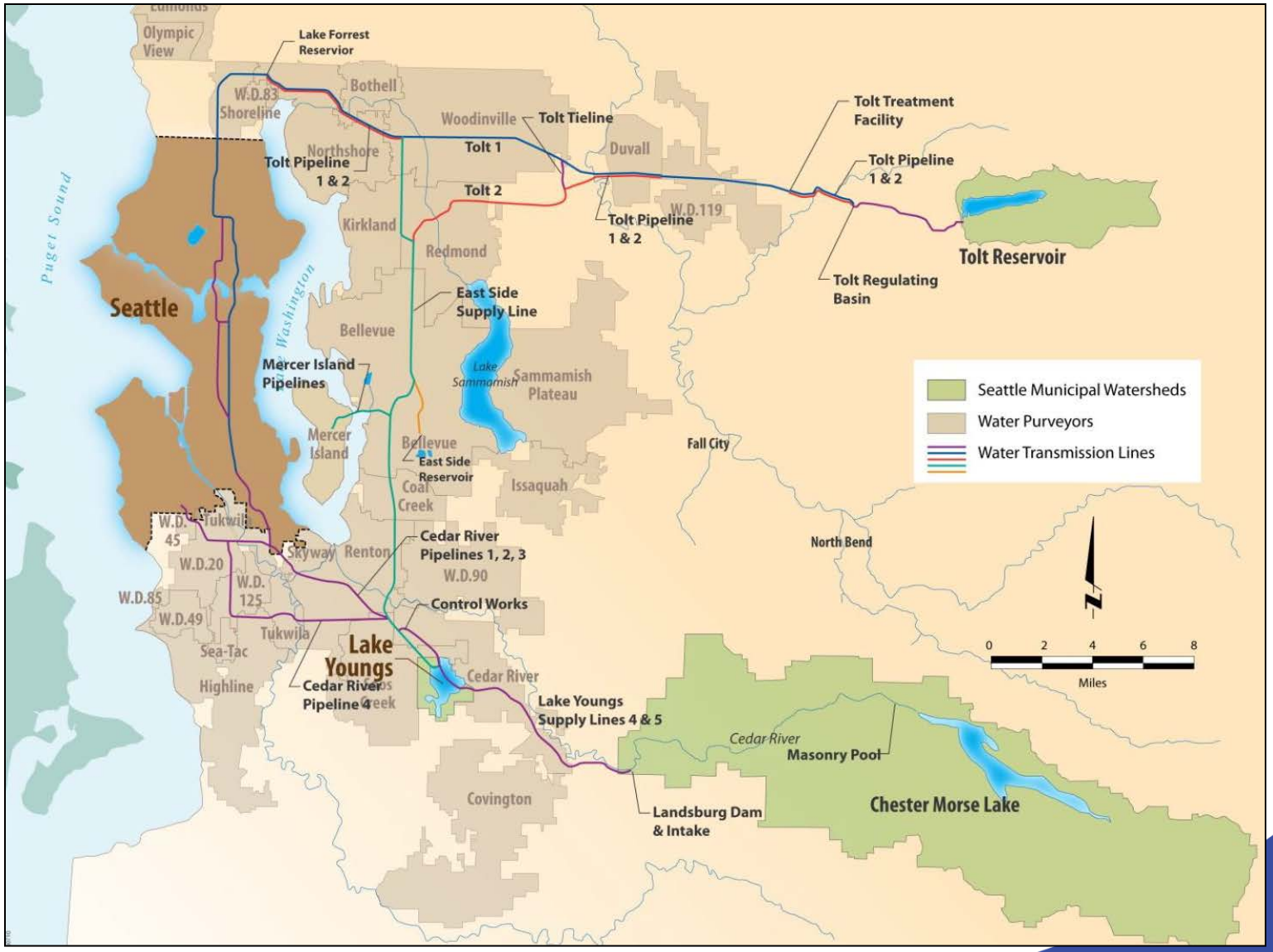
SPU Drinking Water System



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Lake Youngs

- 11 billion gallons
- Can avoid turbidity events through shut down of Cedar River diversion
- Seasonal algae blooms
- Can by-pass Lake Youngs if needed

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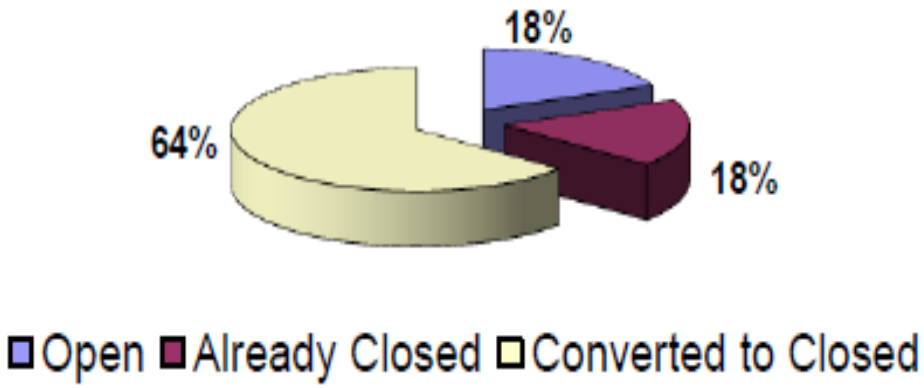
Seattle's Open Reservoirs

- 2000 - 9 reservoirs held 90% of dist. Storage
- 2004 - 6 reservoirs, 60%
- 2006 - 4 reservoirs, 40%
- 2012 - 2 reservoirs, 18%



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Open Reservoir Covering

Reservoir	Open Reservoir Size (MG)	Covered Reservoir Size (MG)	Yr. Original Construction	Completion
Bitter Lake	21	21	1956	2001
Lake Forest	60	60	1961	2003
Lincoln	20	13	1901	2006
Myrtle	7	5	1946	2008
Beacon	61	50	1911	2009
West Seattle	68	30	1932	2010
Maple Leaf	60	60	1910	2012
Volunteer	20	0 or 10	1901	2015
Roosevelt	50	0	1910	2015
Total	367	239 (or 249)		

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Before and After…

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Open Reservoir Protection Program Elements

- Security
- Patrol
- Bird Control
- Reservoir Cleaning
- Outlet Disinfection
- Surface Water Control
- WQ Monitoring
- Reservoir Operations
- Staffing & Training
- Recordkeeping & Reporting
- Emergency Response

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Water Quality Monitoring

- Microbiology analysis (weekly)
  - Fecal & total coliform
  - HPC
  - *Pseudomonas*
- Chemistry (bi-weekly)
- Bird population and estimated nutrient loading
- Algae (bi-weekly)
- T&O analysis (weekly in summer)

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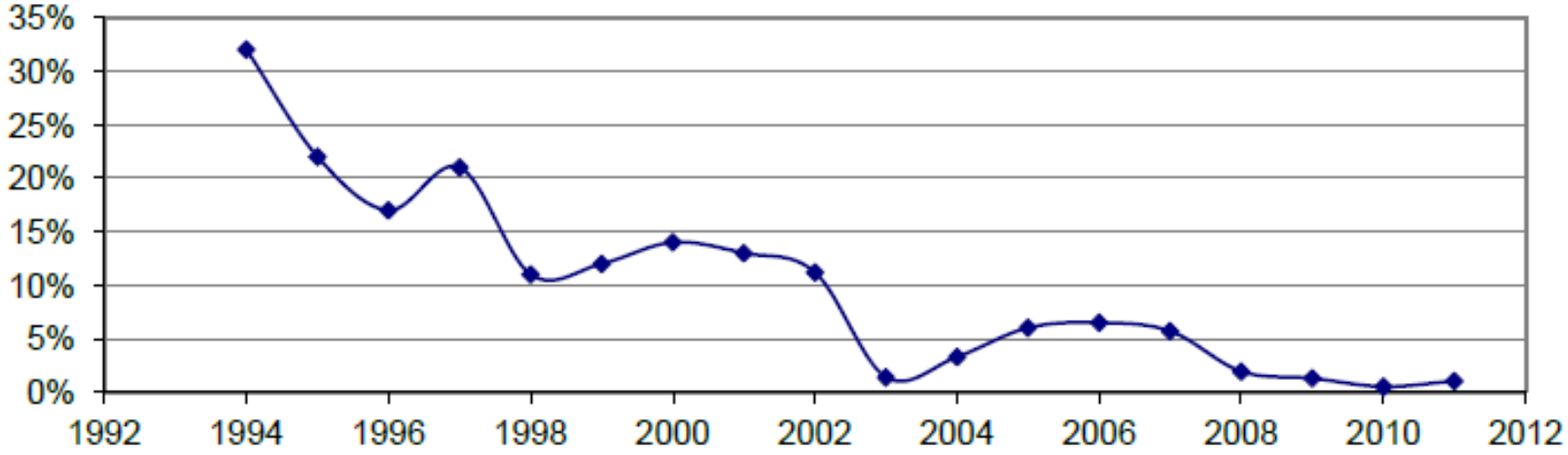
Historical Percent Fecal Positives (pre-chlorination)



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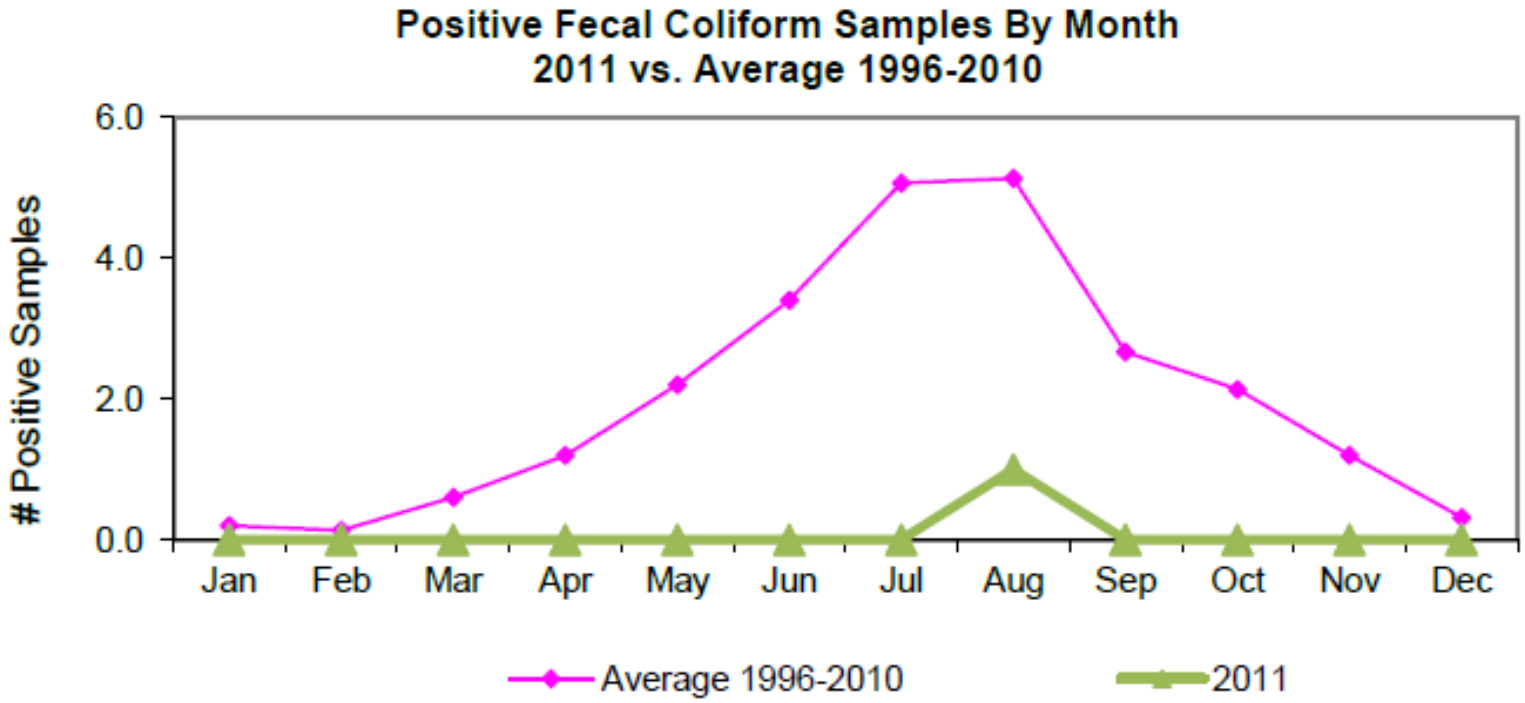
Number of Fecal Positives (pre-chlorination)



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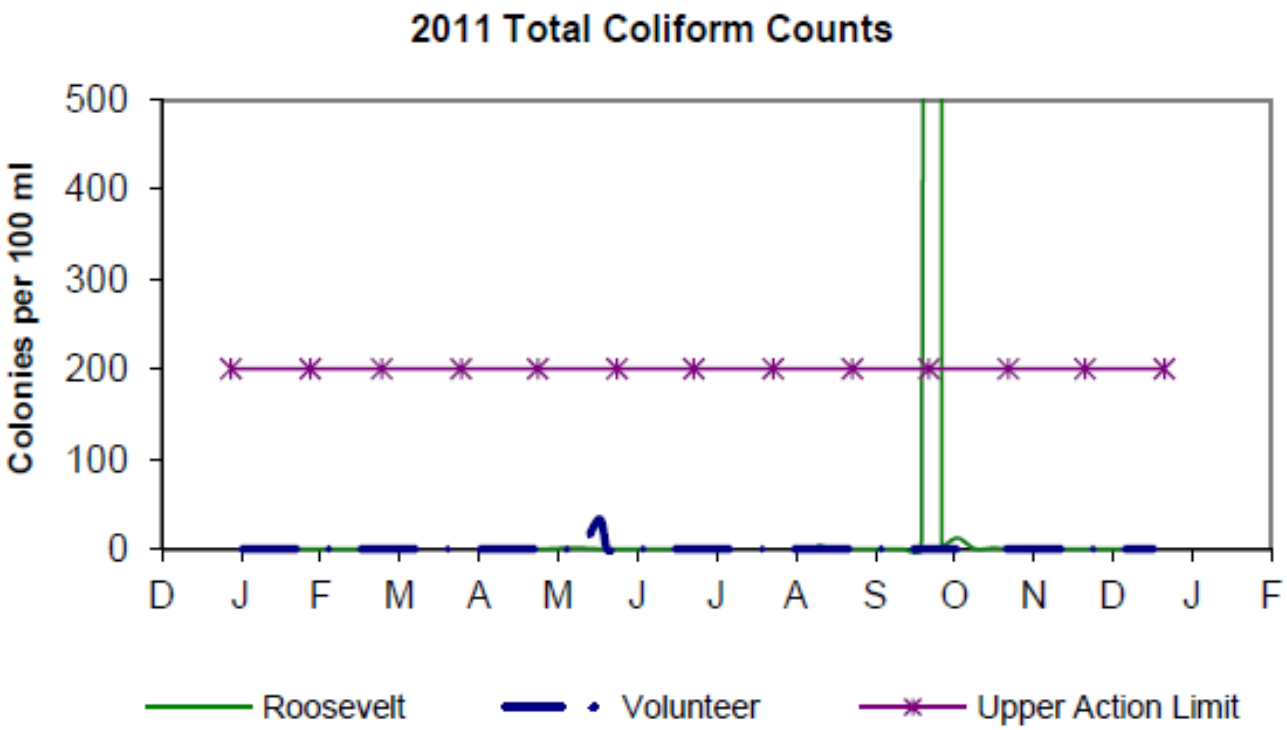
2011 Total Coliform Count (pre-chlorination)



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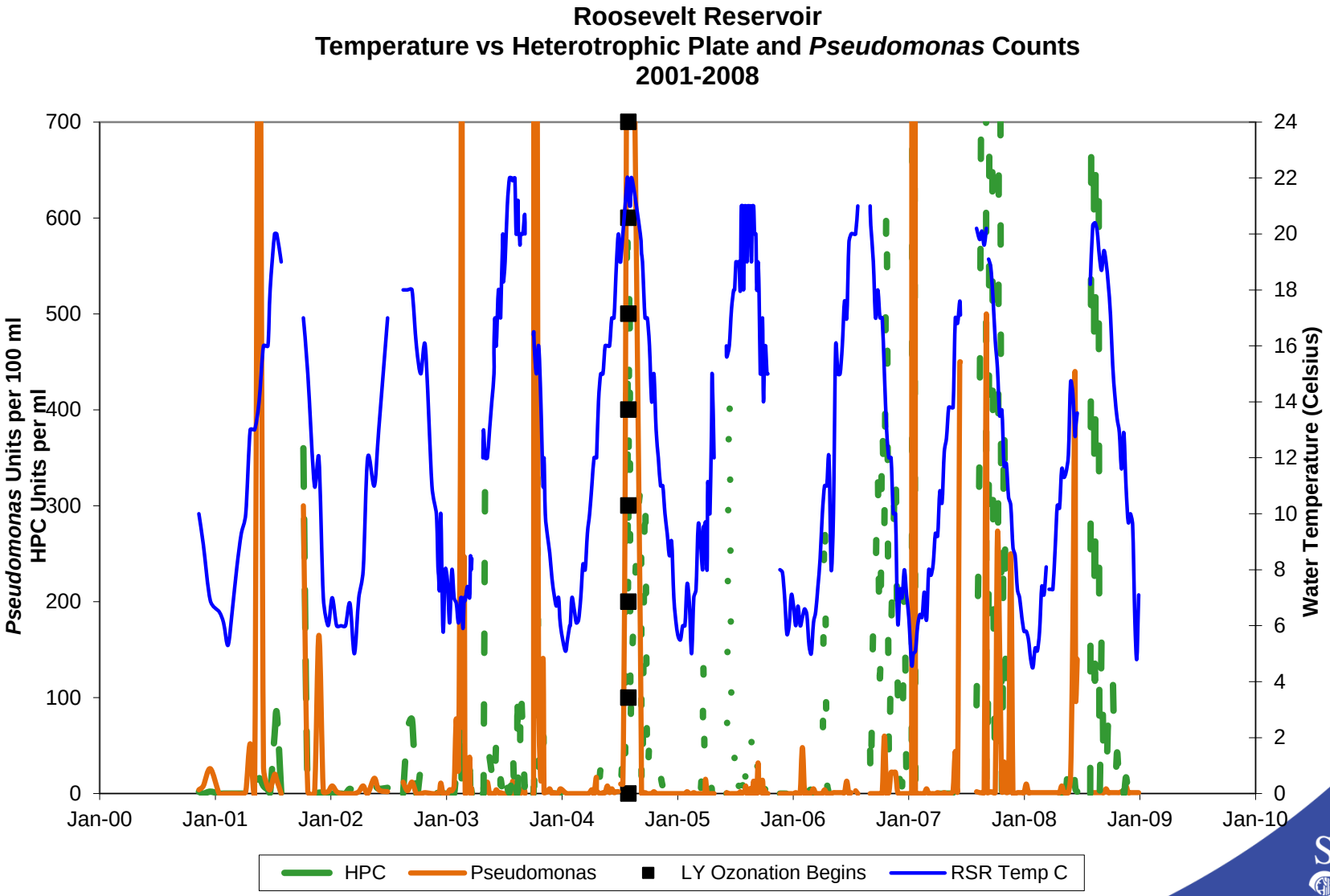
Historical HPC & *Pseudomonas*



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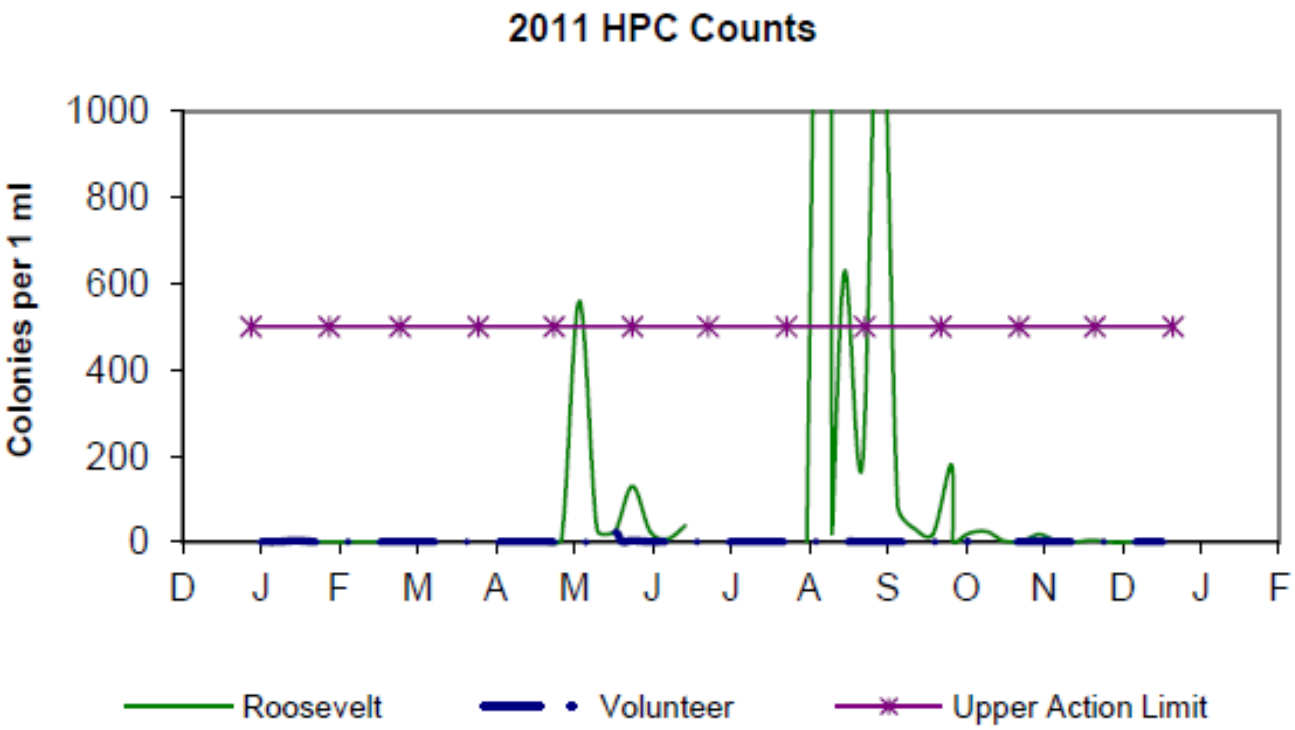
2011 Heterotrophic bacteria



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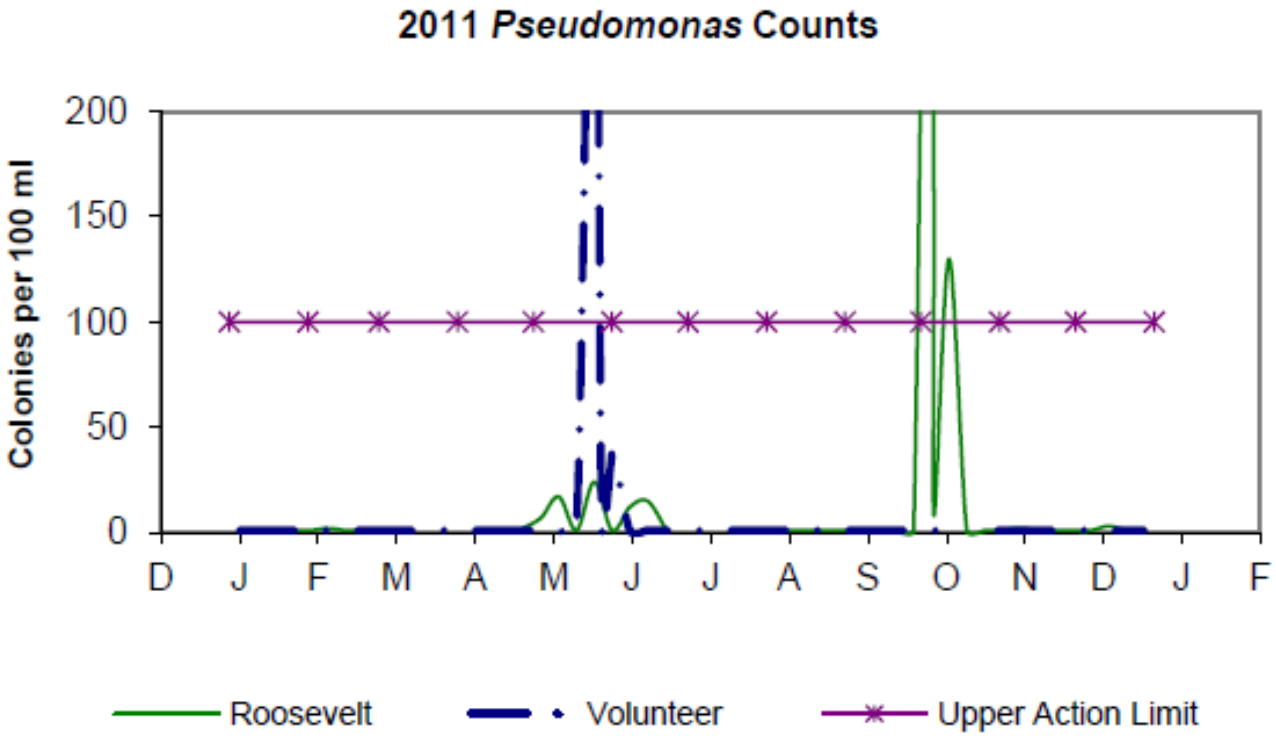
2011 *Pseudomonas*



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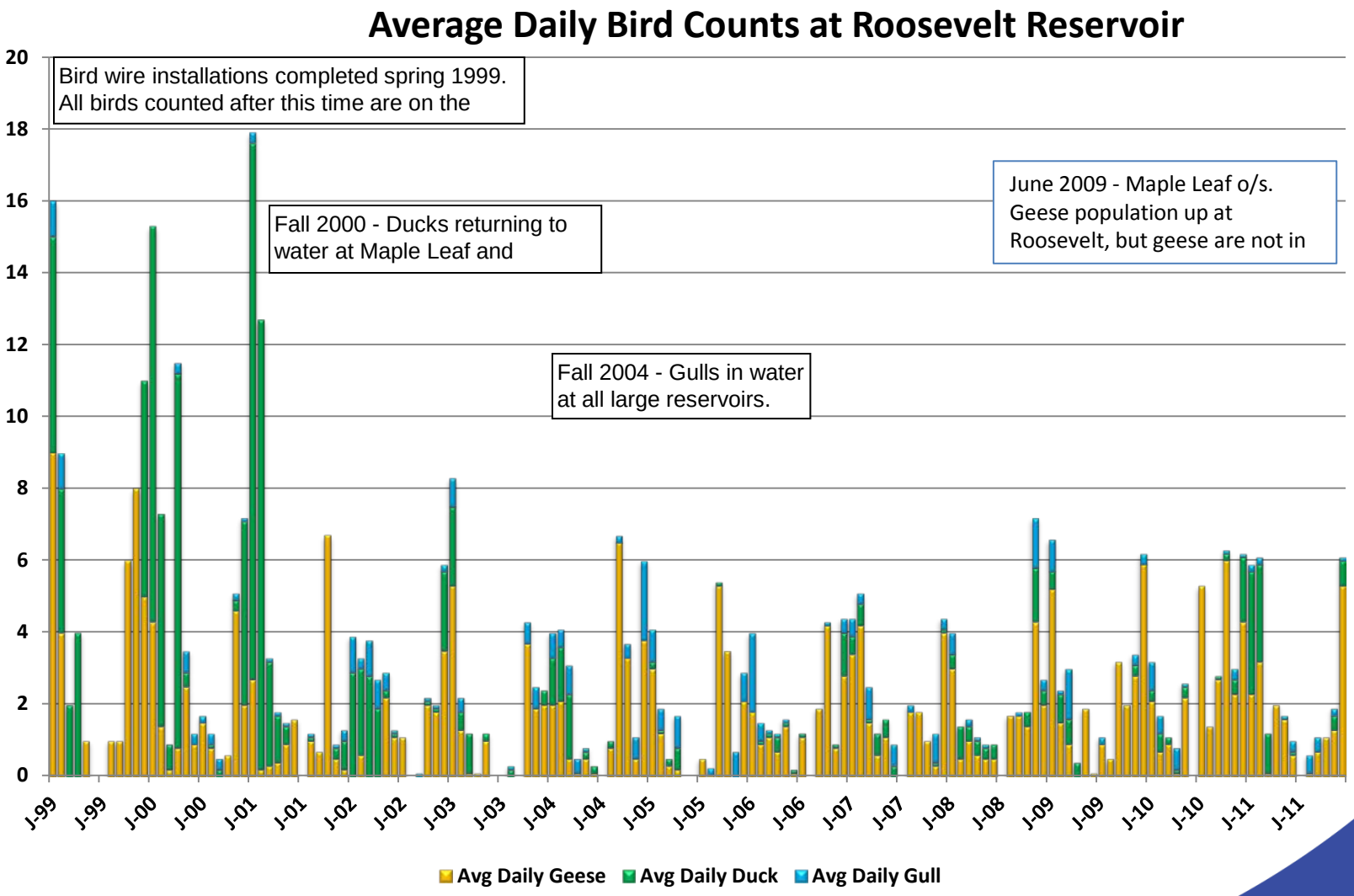
Historical Bird Population



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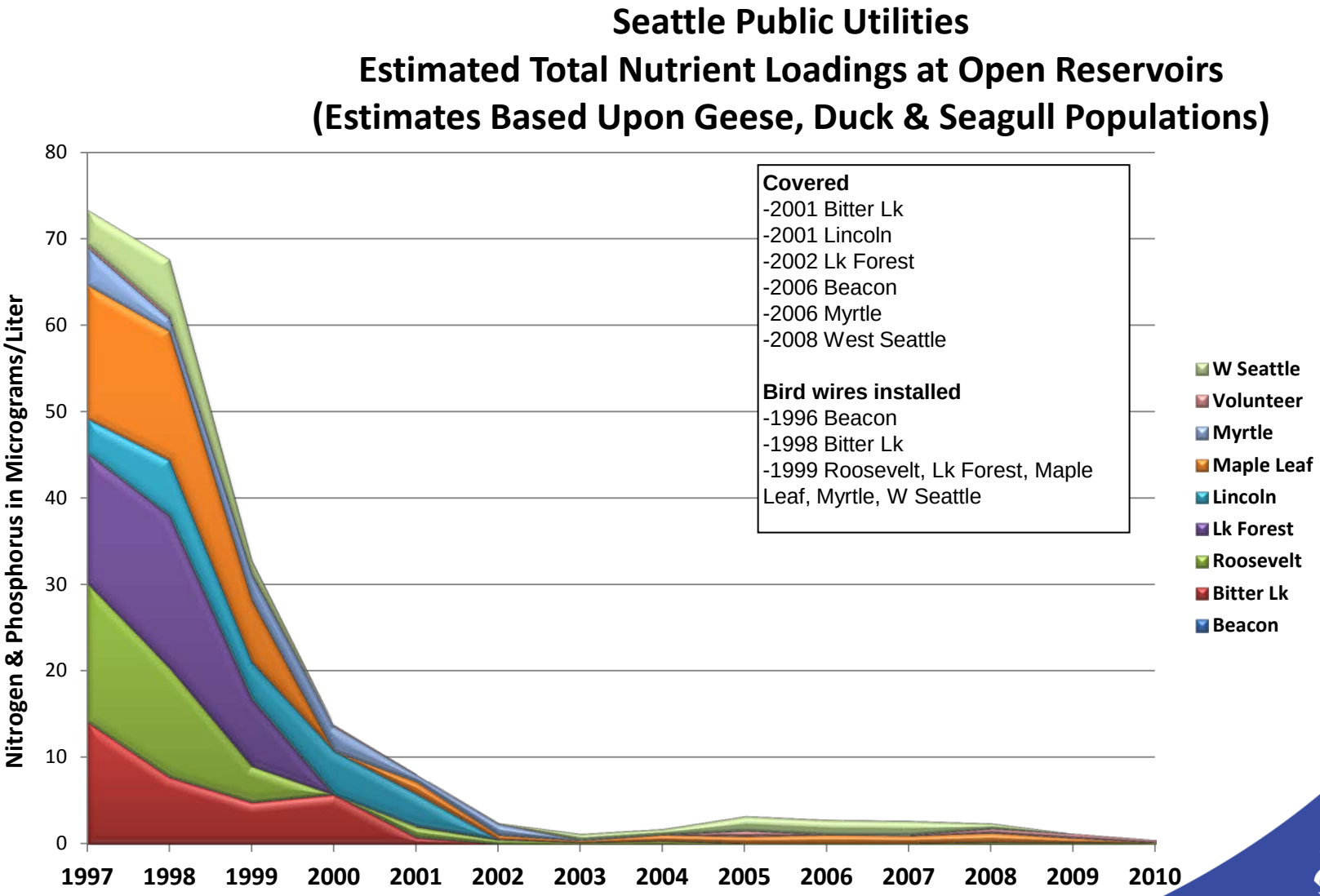
Estimated Nutrient Loading



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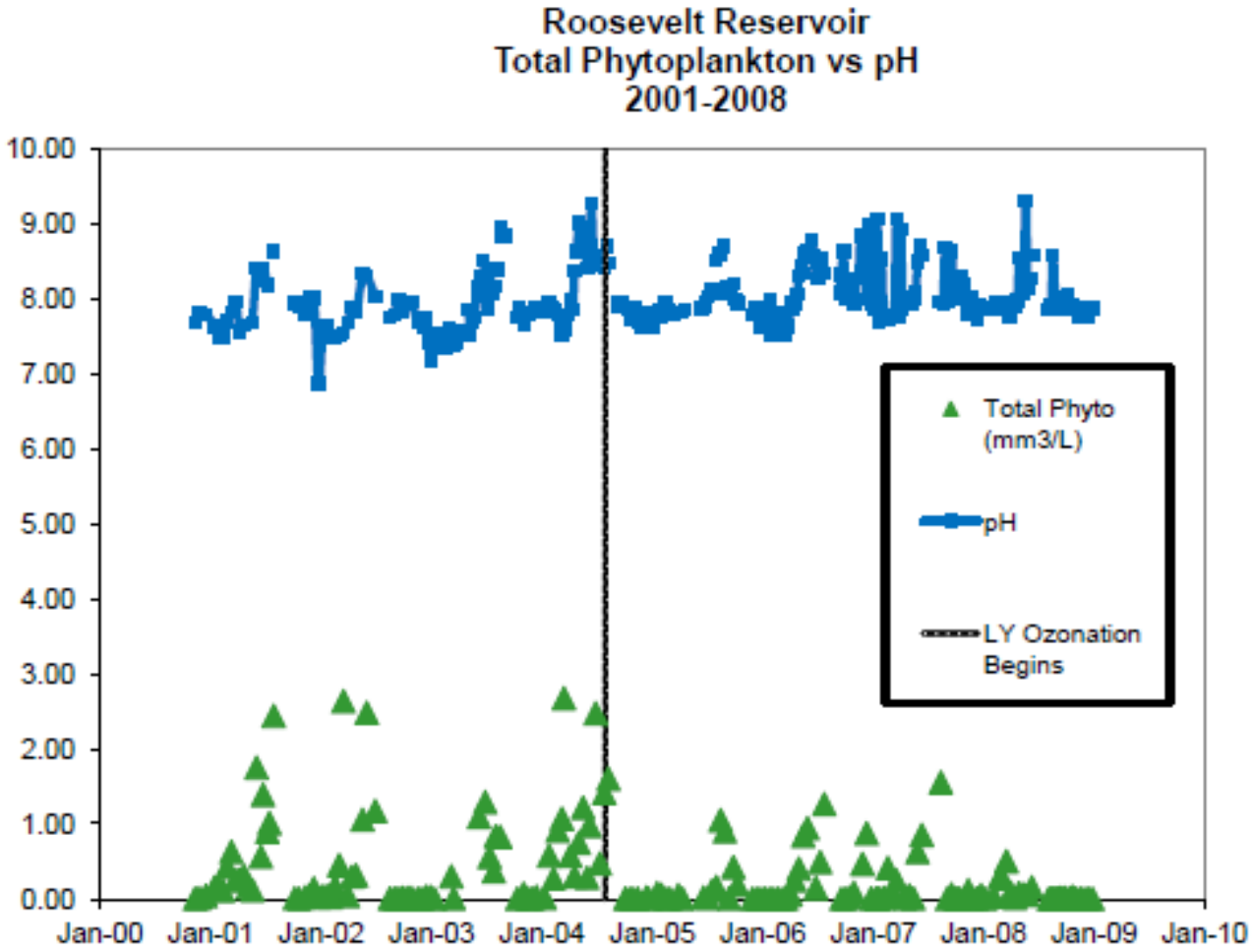
Historical Algae



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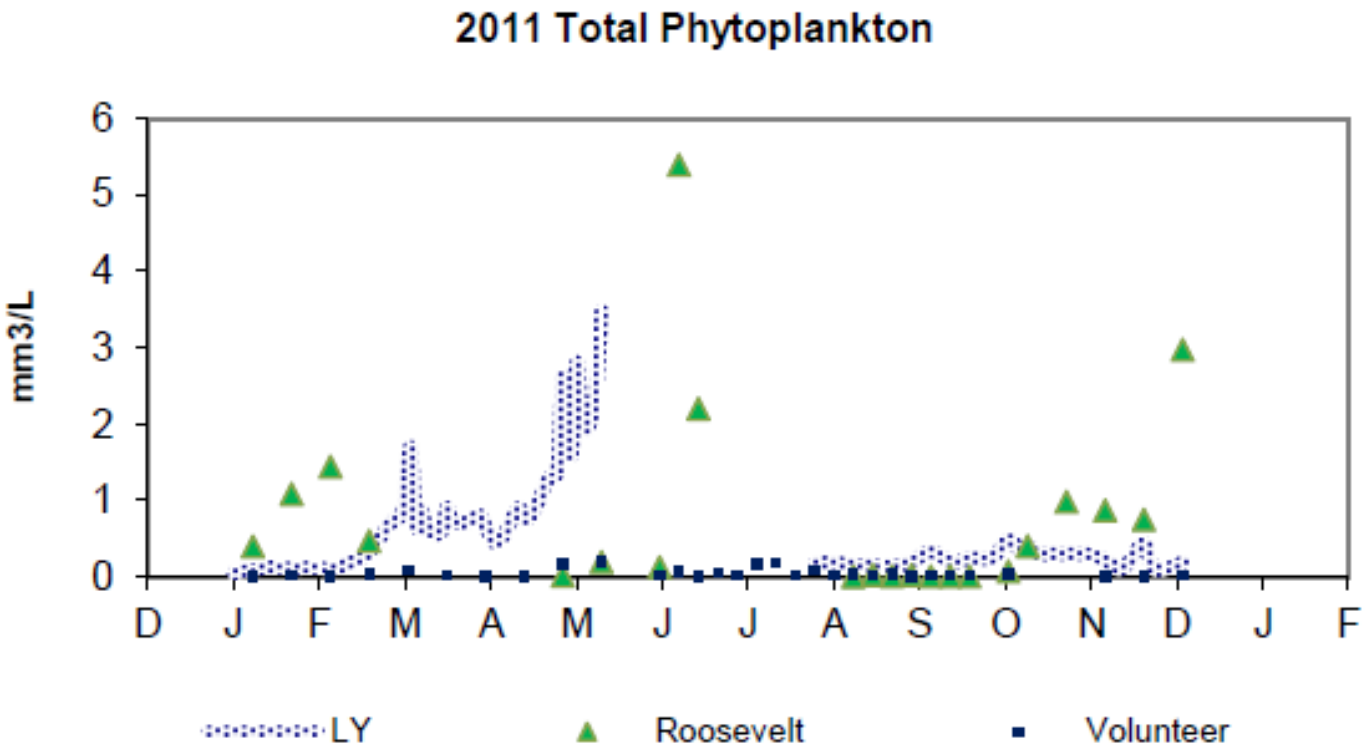
2011 Algae



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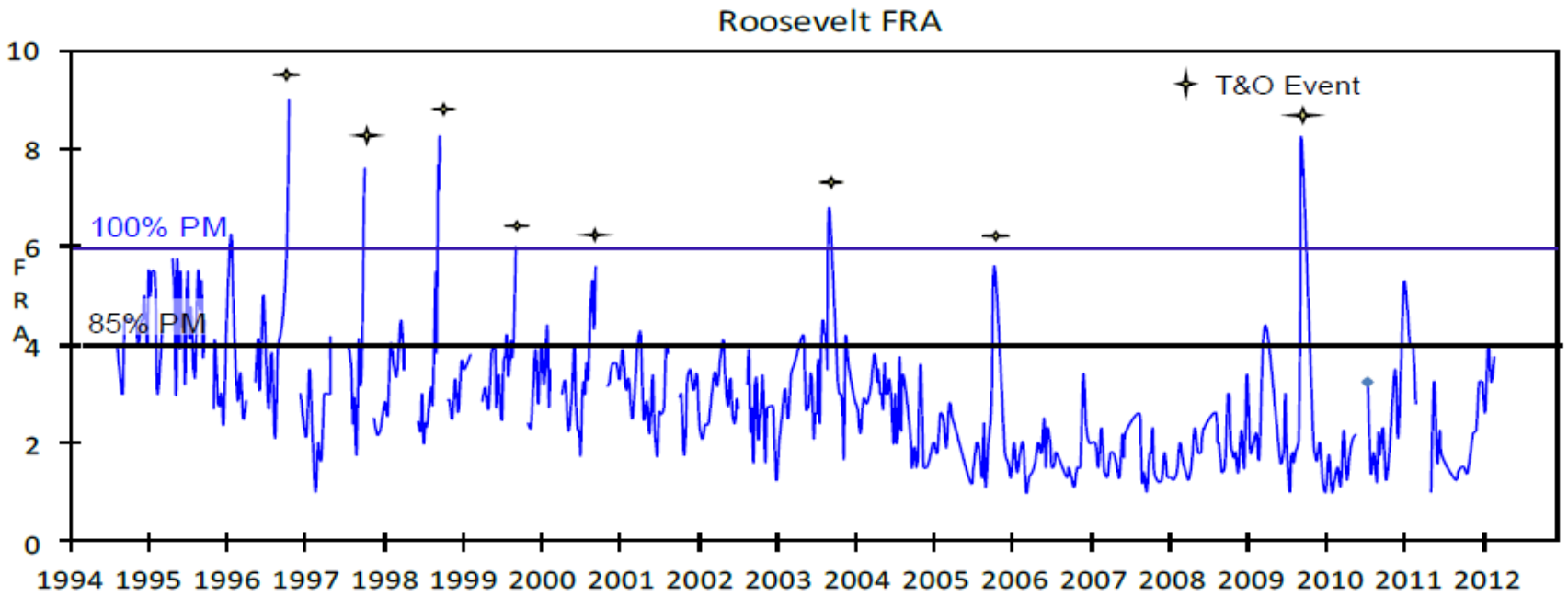
T&O Analysis



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Questions?

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