

COWLITZ COUNTY WATER QUALITY TESTING

Supported by Department of Ecology
and local funds

GRANT OBJECTIVES

- Evaluate lake water quality
- Engage the public
- Plan for improvement actions



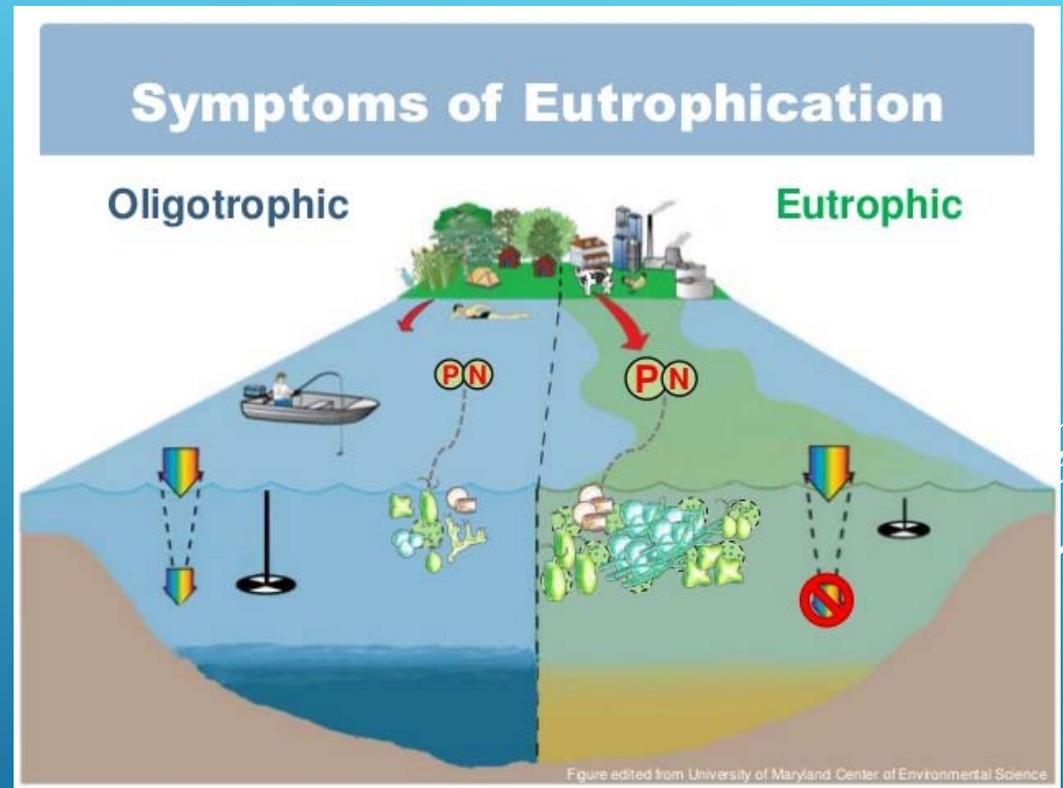
WATER QUALITY TESTING & IMPROVEMENT AT TWO COWLITZ COUNTY LAKES



- Total Project Cost= \$143,000
- Grant Funding from Ecology: \$107,000
- Matching Funds from Cowlitz County and SLWAC: \$36,000

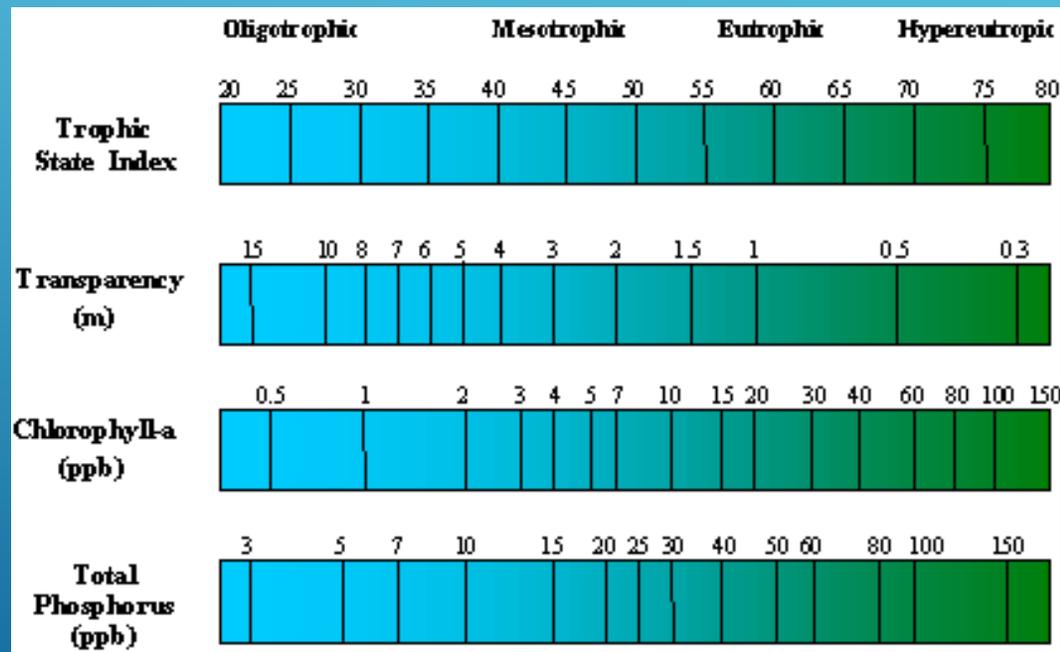
TROPHIC CLASSIFICATION

- Oligotrophic
- Mesotrophic
- Eutrophic
- Hypereutrophic



Eutrophication

is movement along the continuum



Trophic State Relationships

Trophic Index (not yet calculated)	Chlorophyll a (mg/L)	Phosphorus ($\mu\text{g/L}$)	Secch Depth (meters)	Trophic Class
<30—40	0—2.6	0—12	>8—4	Oligotrophic
40—50	2.6—20	12—24	4—2	Mesotrophic
50—70	20—56	24—96	2—0.5	Eutrophic
70—100+	56—155+	96—384+	0.5—<0.25	Hyper- eutrophic

Relationships between Trophic Index (TI), chlorophyll (Chl), phosphorus (P, both micrograms per liter), Secchi depth (SD, meters), and Trophic Class (Carlson, 1996)

Eutrophication

excess fertility leading to excess plant growth



open – water algae



Silver Lake 2015



attached algae



(Stock photo)



aquatic plants



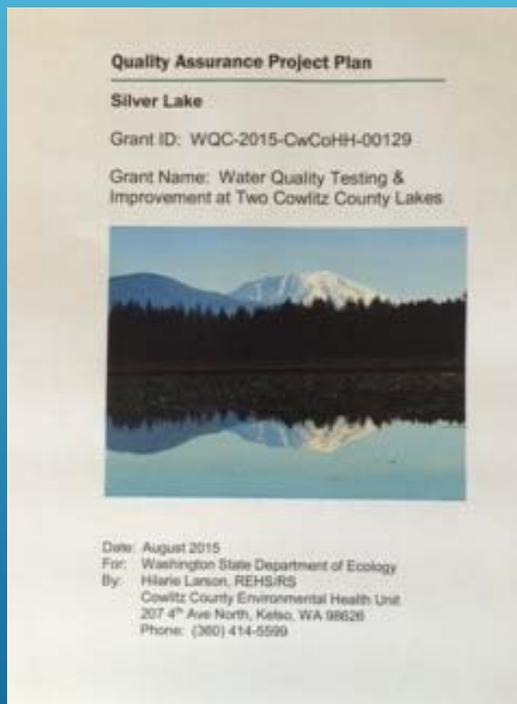
Horseshoe Lake 2006

CHOSEN WATER QUALITY PARAMETERS

- ▶ Manual: **Secchi Depth**
- ▶ Probe: Temperature
- ▶ Probe: pH
- ▶ Probe: DO
- ▶ Probe: Turbidity
- ▶ Lab: **Total Phosphorous**
- ▶ Lab: **Chlorophyll *a***
- ▶ Lab: Escherichia coli
- ▶ Lab: algae testing up to 12 times a year



STATE REQUIRED PLANNING DOCUMENTS



SECCHI DISK TESTING

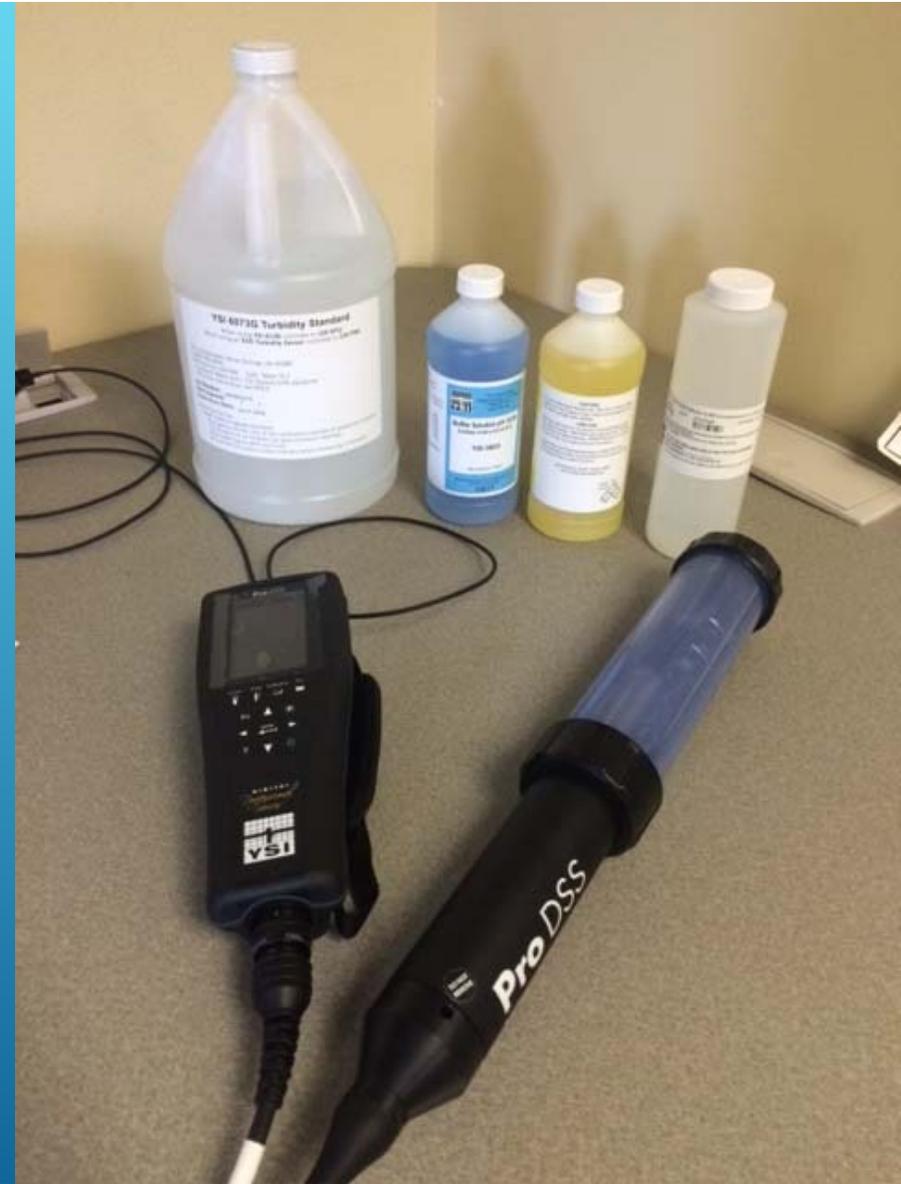
- ▶ Observed secchi disk depth
- ▶ Will be used to calculate a supporting trophic state index.
- ▶ Is completed two times by the same individual and averaged.



Water Quality Probe

YSI Pro DSS 4 probe sonde with GPS

Continually calibrate



PROBE MEASURES AND RECORDS:

- ▶ Temperature
- ▶ pH
- ▶ DO
- ▶ Turbidity

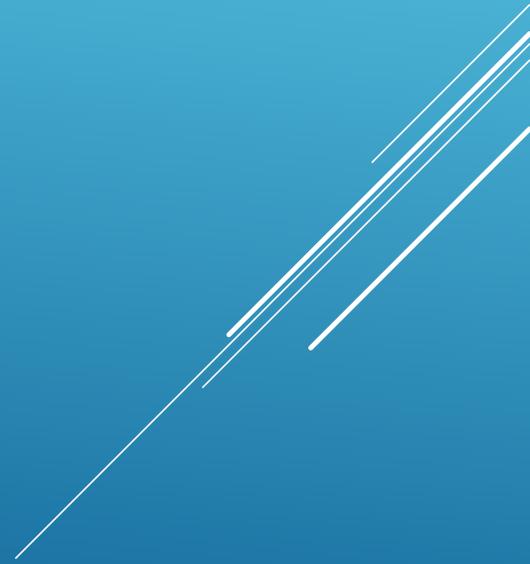


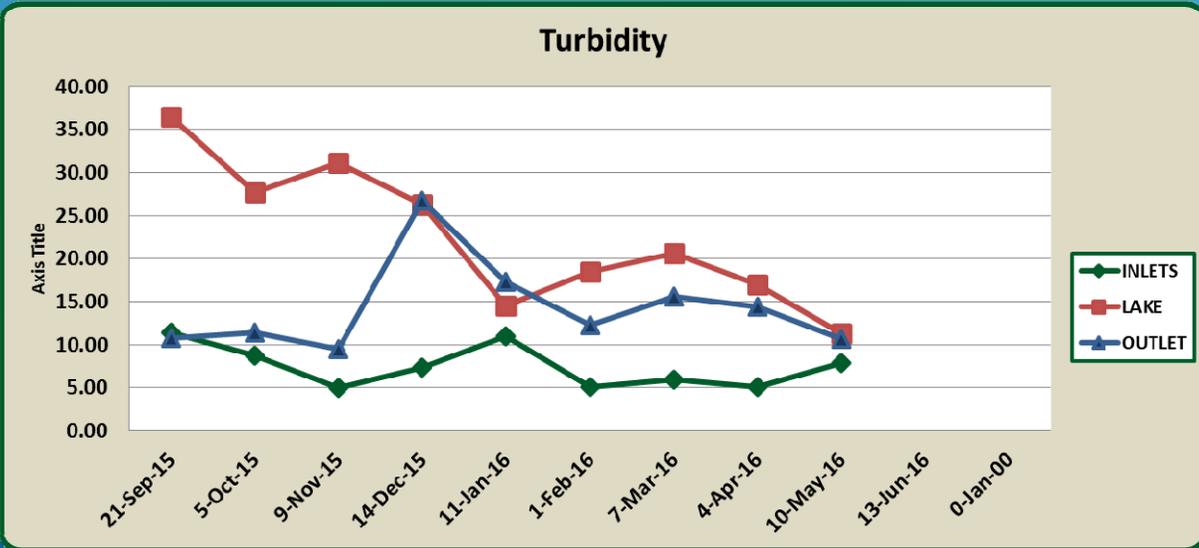
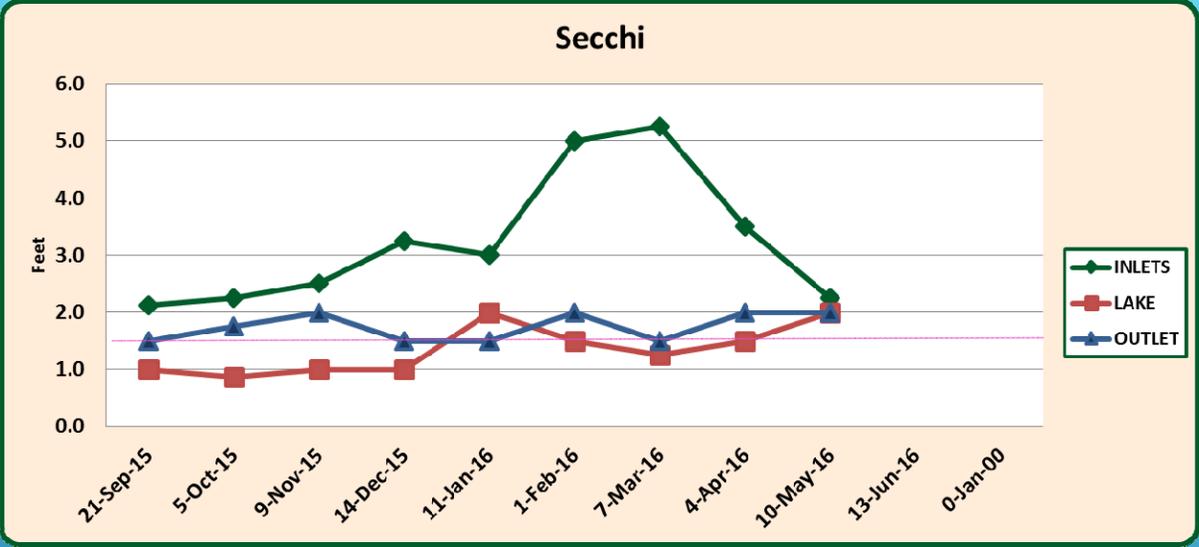




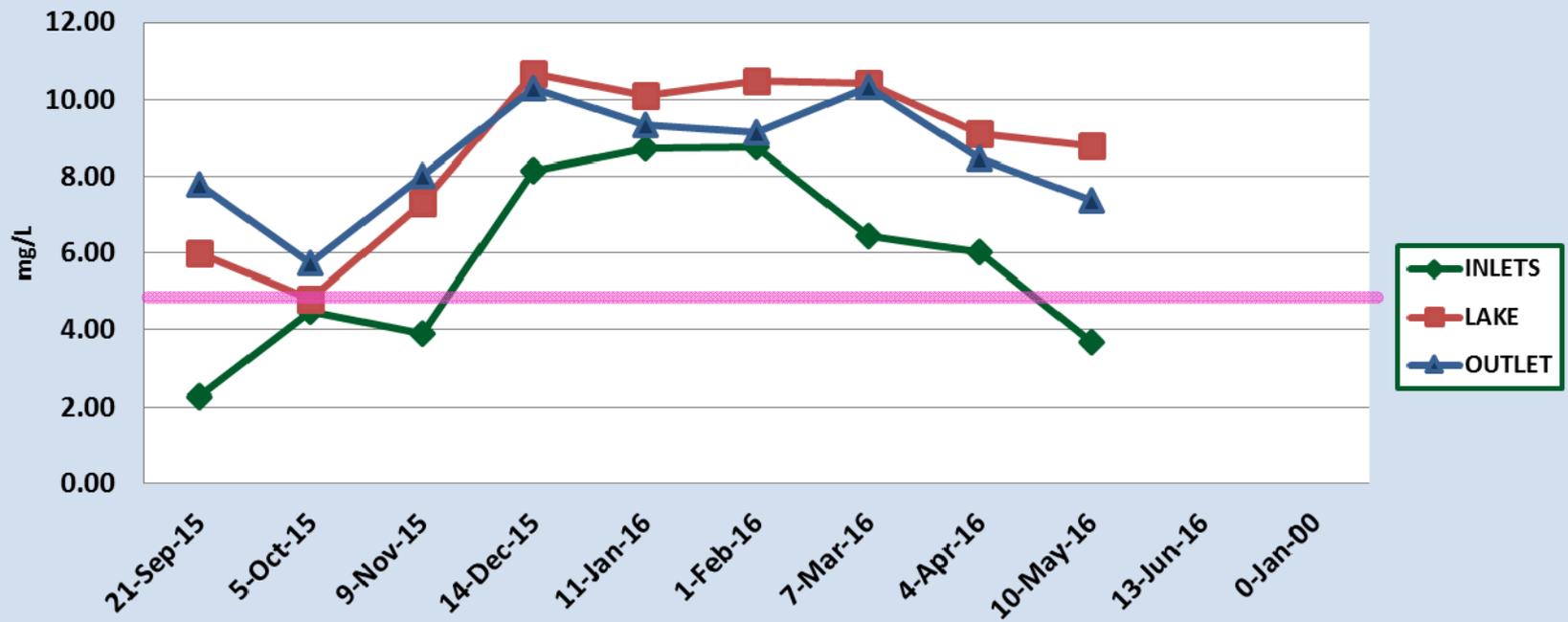


Preliminary Results – Silver Lake

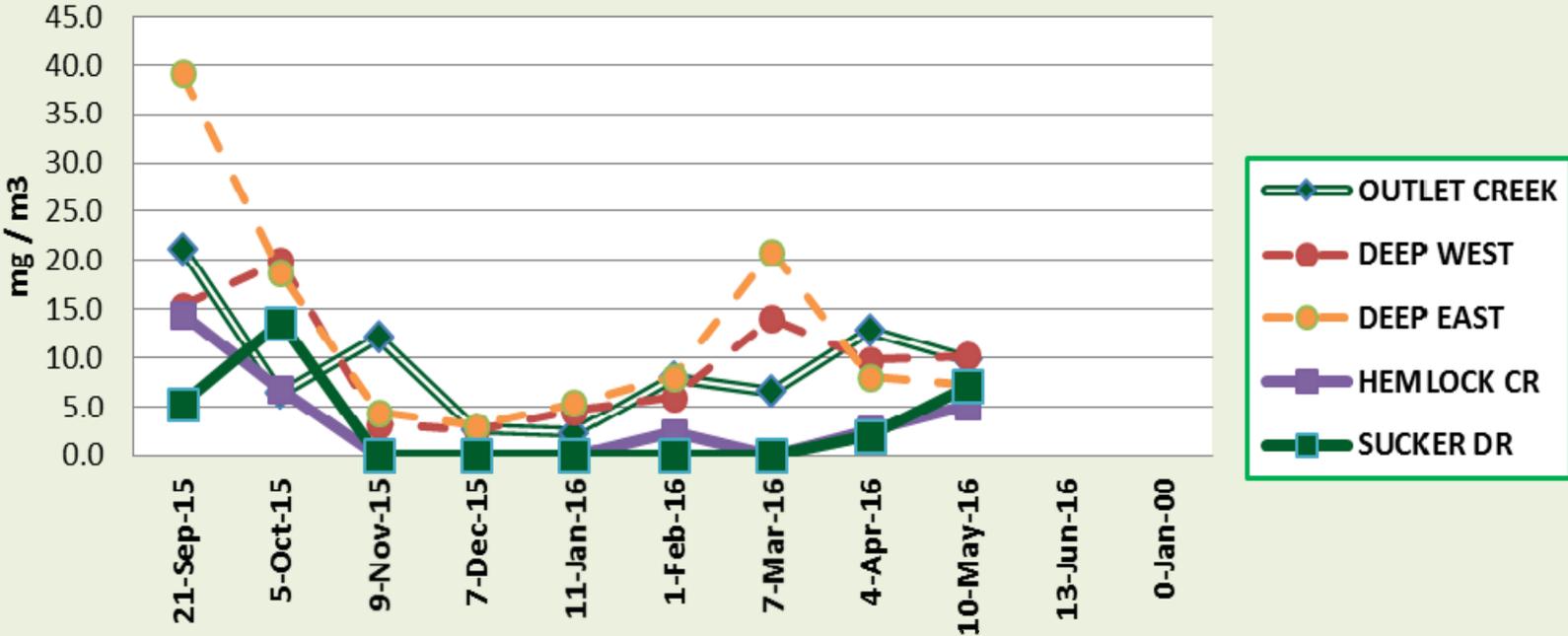




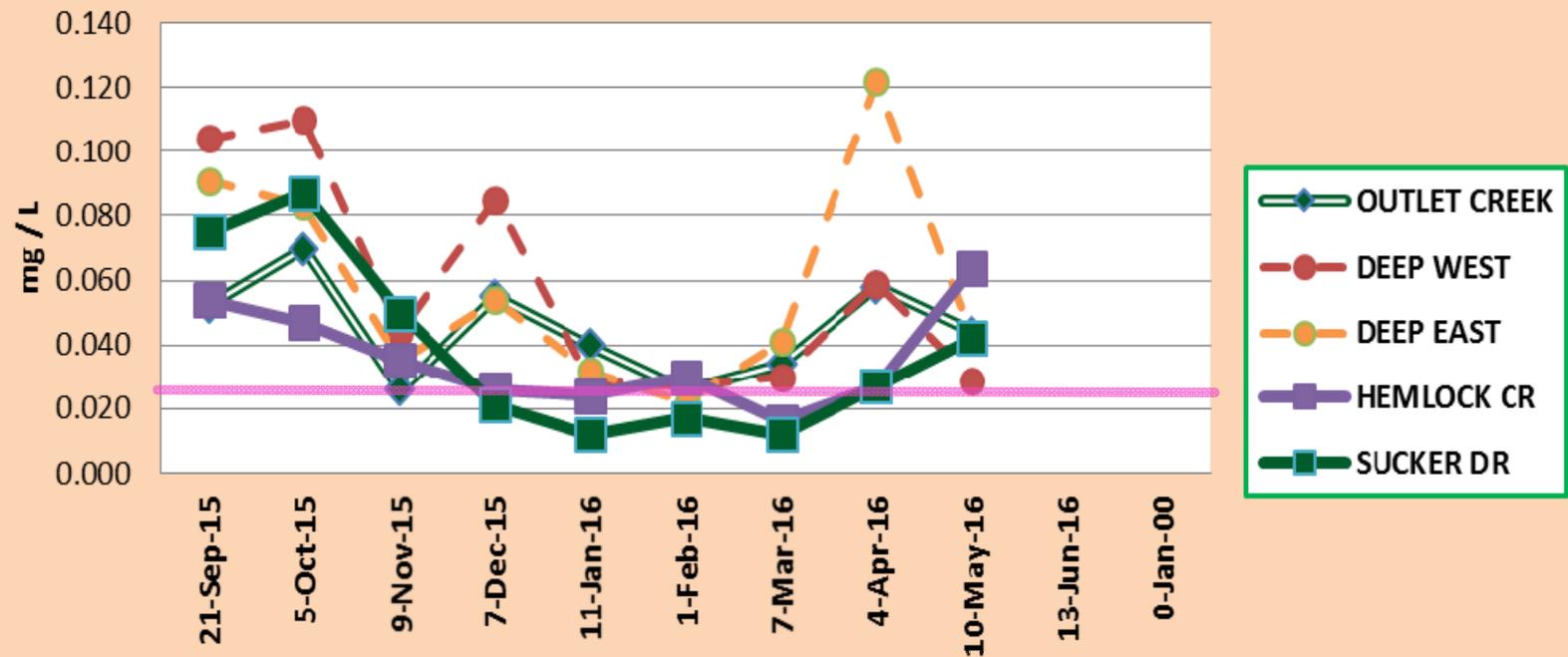
Dissolved Oxygen



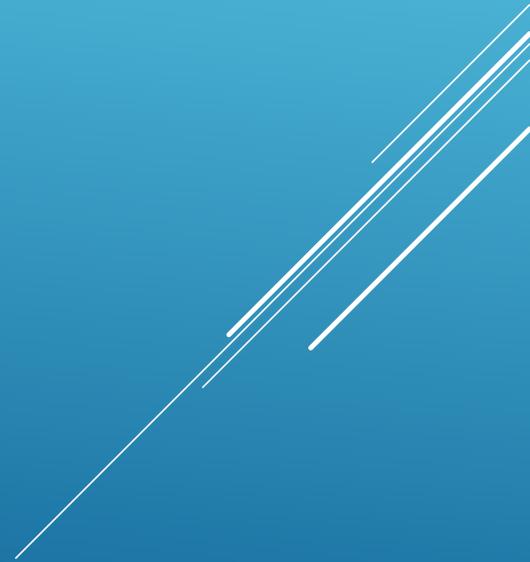
Silver Lake Chlorophyll A



Silver Lake Phosphorus



Preliminary Results – Horseshoe Lake



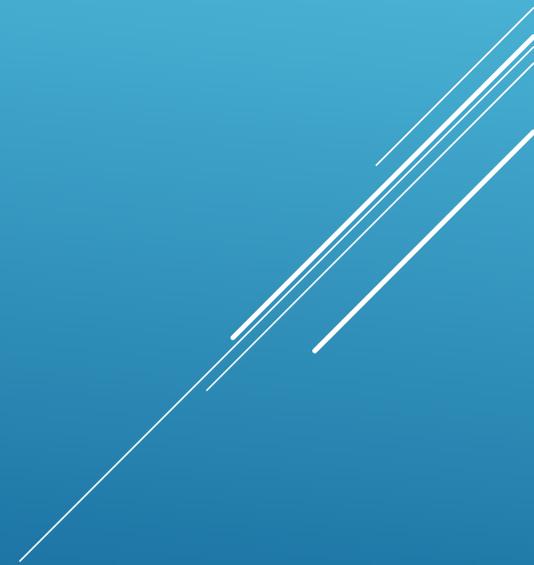
Lake Committees

Horseshoe Lake Management Committee (HSLMC)



Lake Committees

Silver Lake Watershed Advisory Council (SLWAC)





QUESTIONS?

<http://www.co.cowlitz.wa.us/index.aspx?nid=130>