



State of the Lakes 2015

I'm Richard Litts Watershed Monitoring Coordinator



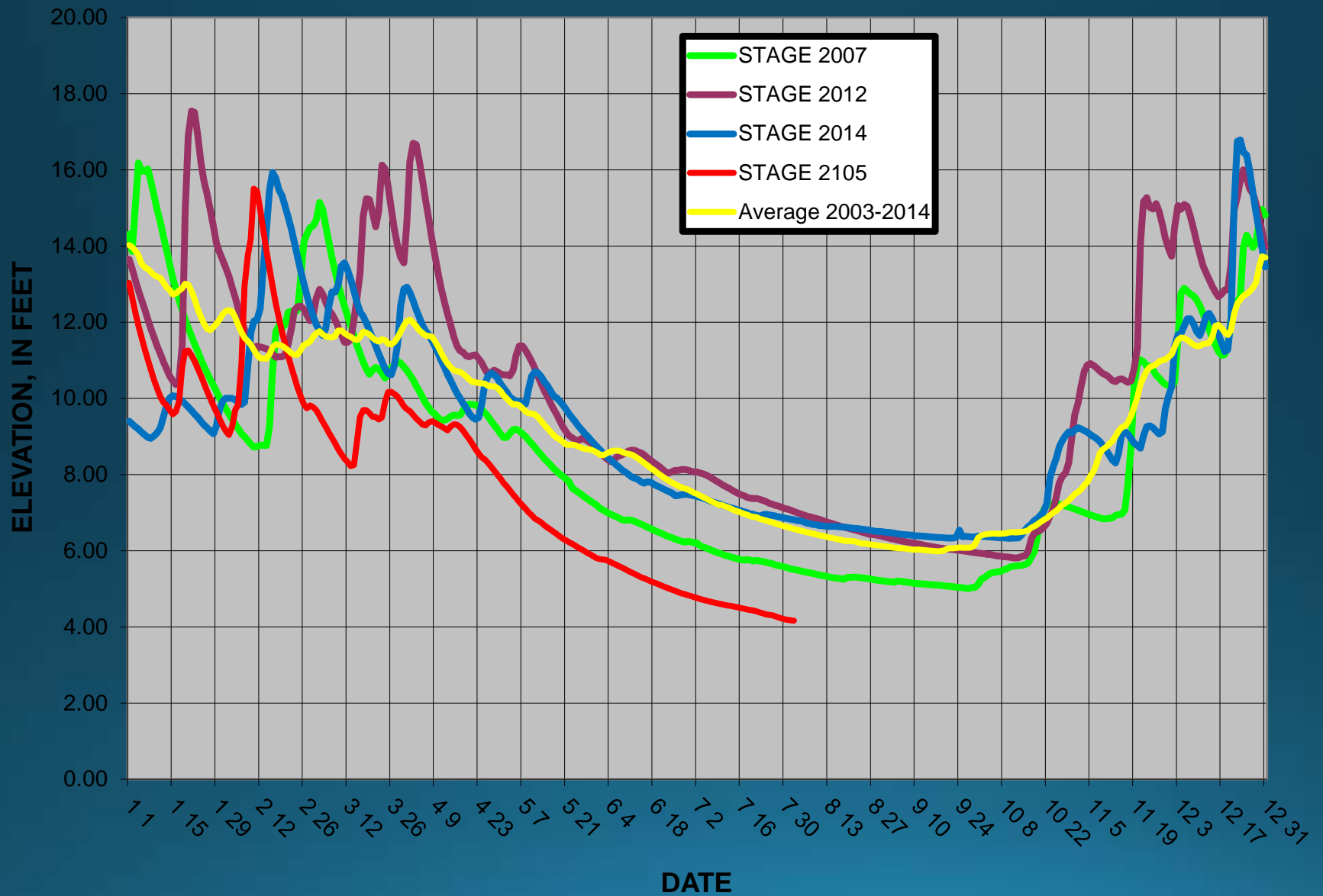
Agenda



- SCIENCE LESSON
- SEPTIC SYSTEM ISSUES
- ALGAE / TOXIN MONITORING
- WHAT WE CAN DO TO HELP

Where's the water?

- Appears to be a record low –water year.
 - Current level: 3.9ft
 - Dropping at about 7 inches/month
- Temperature: Average: ~72°F
 - Normally 70 - 71°F With previous highs of ~73°F
- The situation presents both problems & opportunities:
 - Docks are grounding
 - Ramps are falling off docks
 - Water intakes are going dry
 - Low streams are stranding fish fry
 - County Boat Launch had to be extended
 - Canal is shallow
 - Weeds are dying
 - Great opportunity to rake weeds away from docks & remove logs

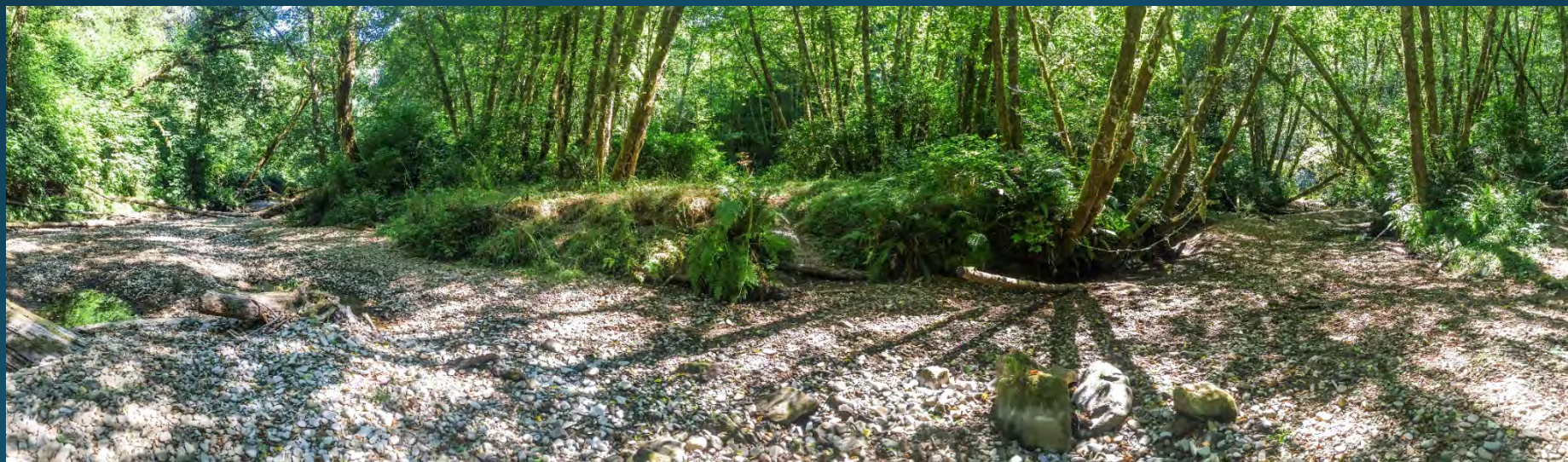








Johnson Cr: June 2015 & July 2015



Emergency County Boat Ramp Extension



N Lake Resort helping to keep canal open



Good opportunity to remove weeds

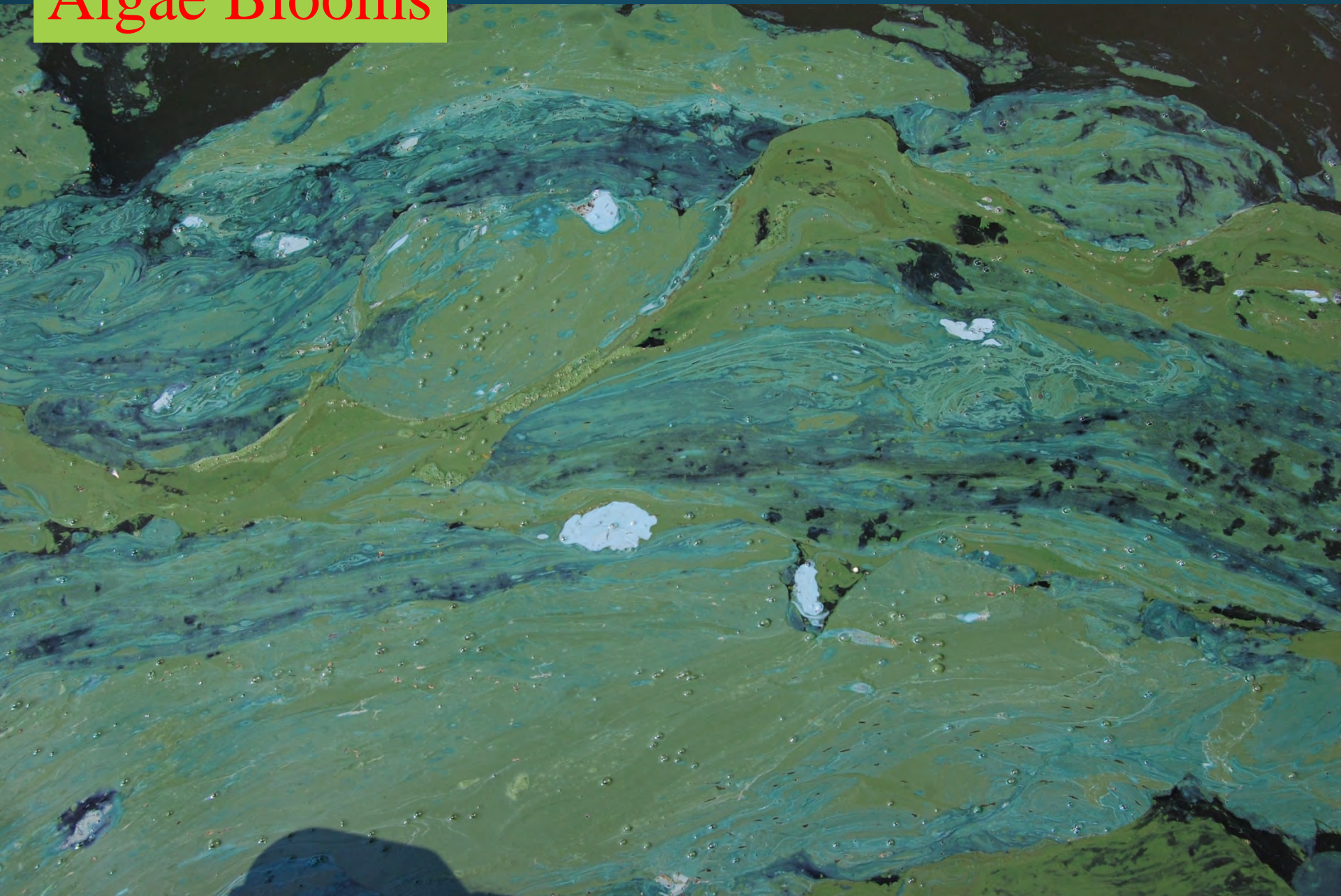


Problems in Tenmile Lakes:

Invasive Species / Weeds



Algae Blooms



Three Main Concerns:

Nitrogen

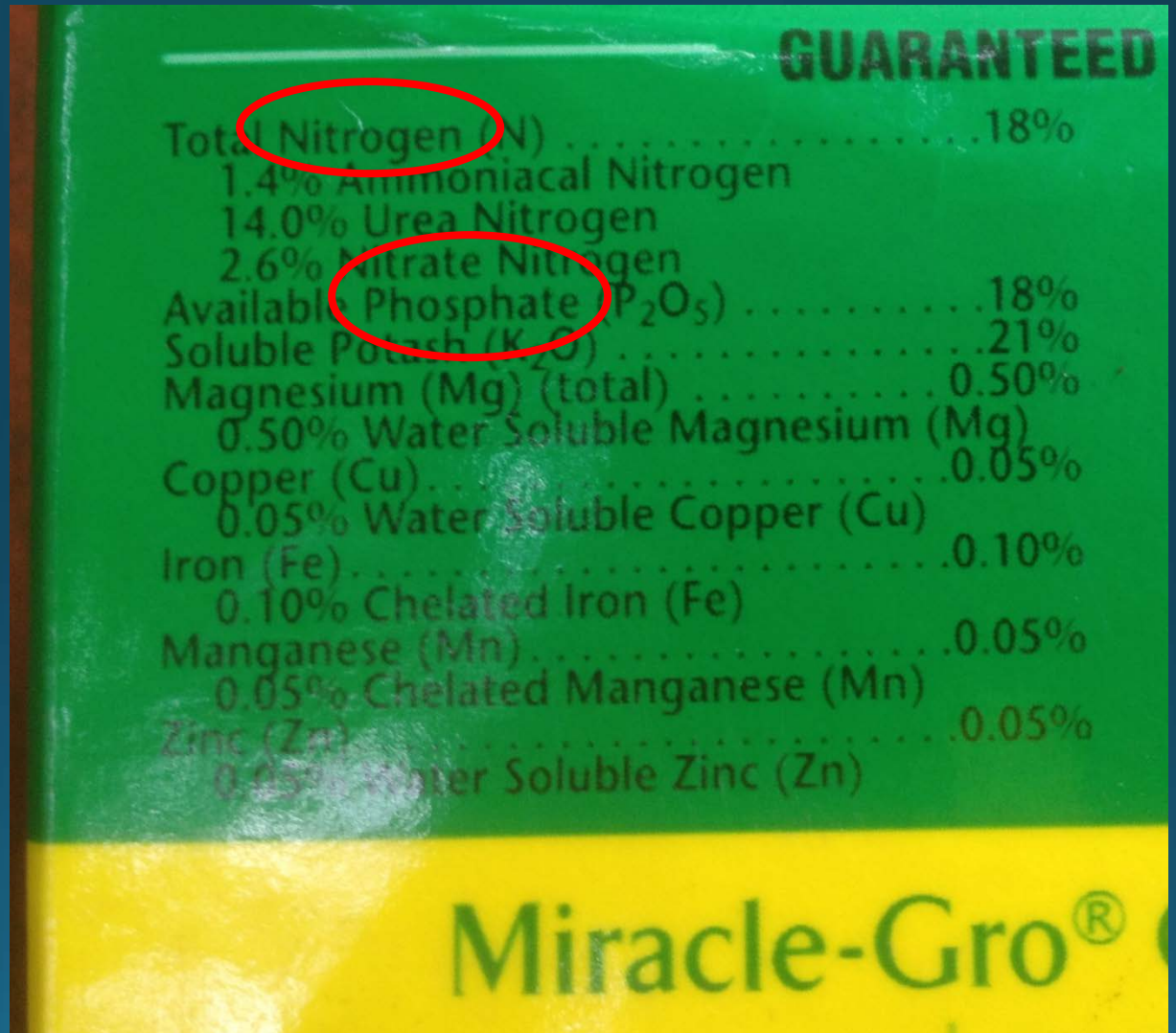
Phosphorus

Sediment

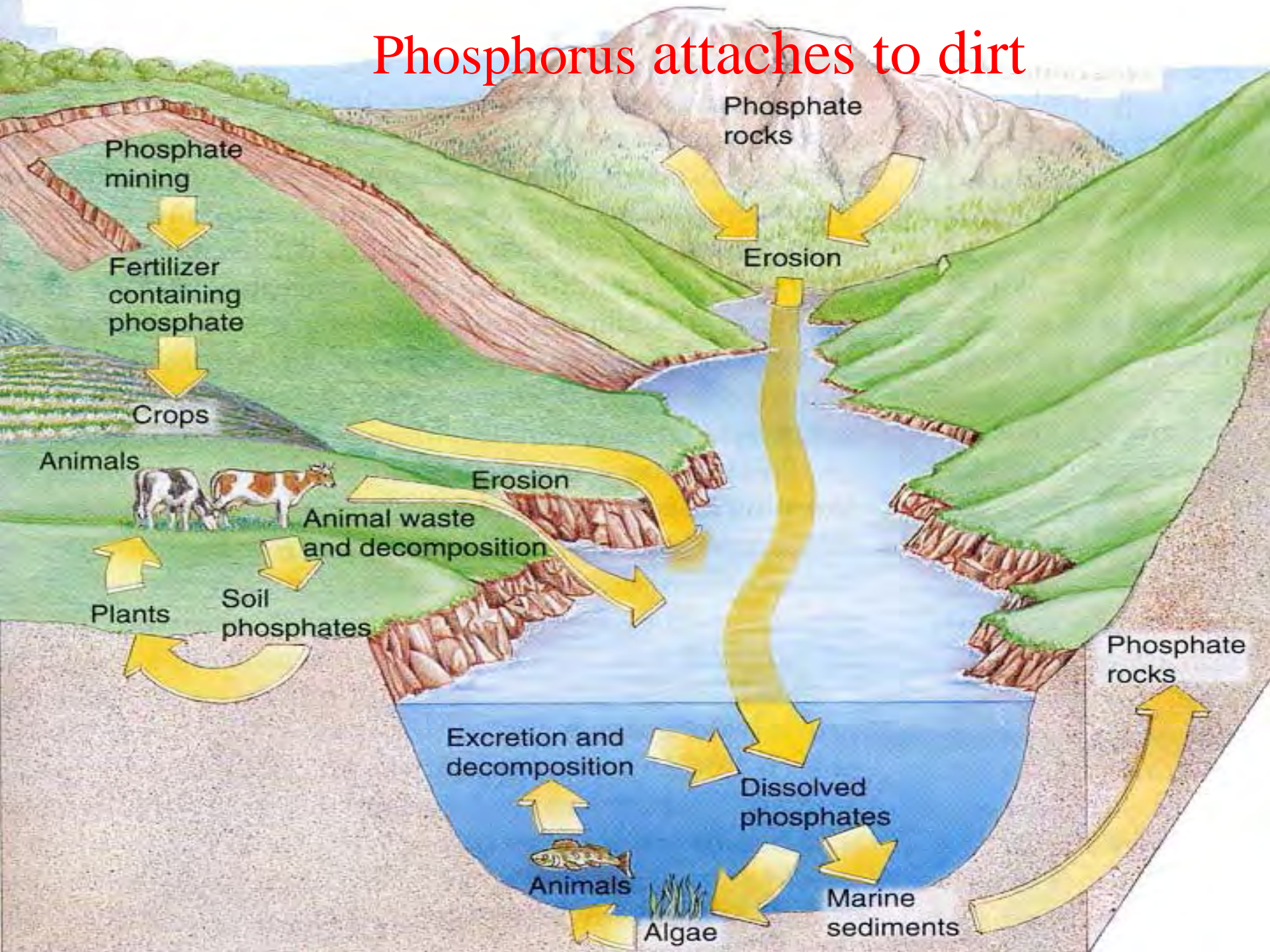
Nitrogen + Phosphorus = “Nutrients”

Fertilizer

When in high concentrations in our lake, it fertilizes the algae and **causes algae blooms**, and enables the weeds in the lake to grow faster.



Phosphorus attaches to dirt



Sampling Site Selection

- Started with 26 sites
- Reduced to 4 sites
 - 2 in each lake
 - 1 deep site
 - 1 shallow site
- Grab samples taken at any site for algae blooms

Standard Sites Map

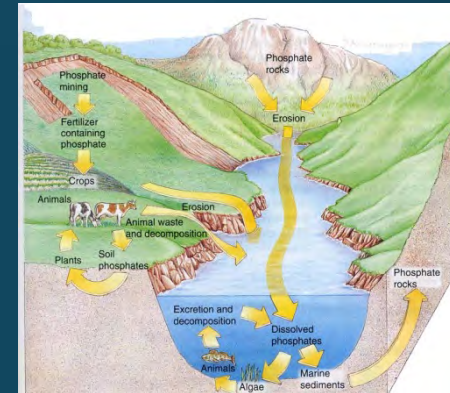
N11 - Big Cr Arm

N16 - North Lake

S8 - Osprey Pt.

S3 - Templeton Arm

Total Nitrogen ($\mu\text{g/L}$) Monthly Average 2006-2013

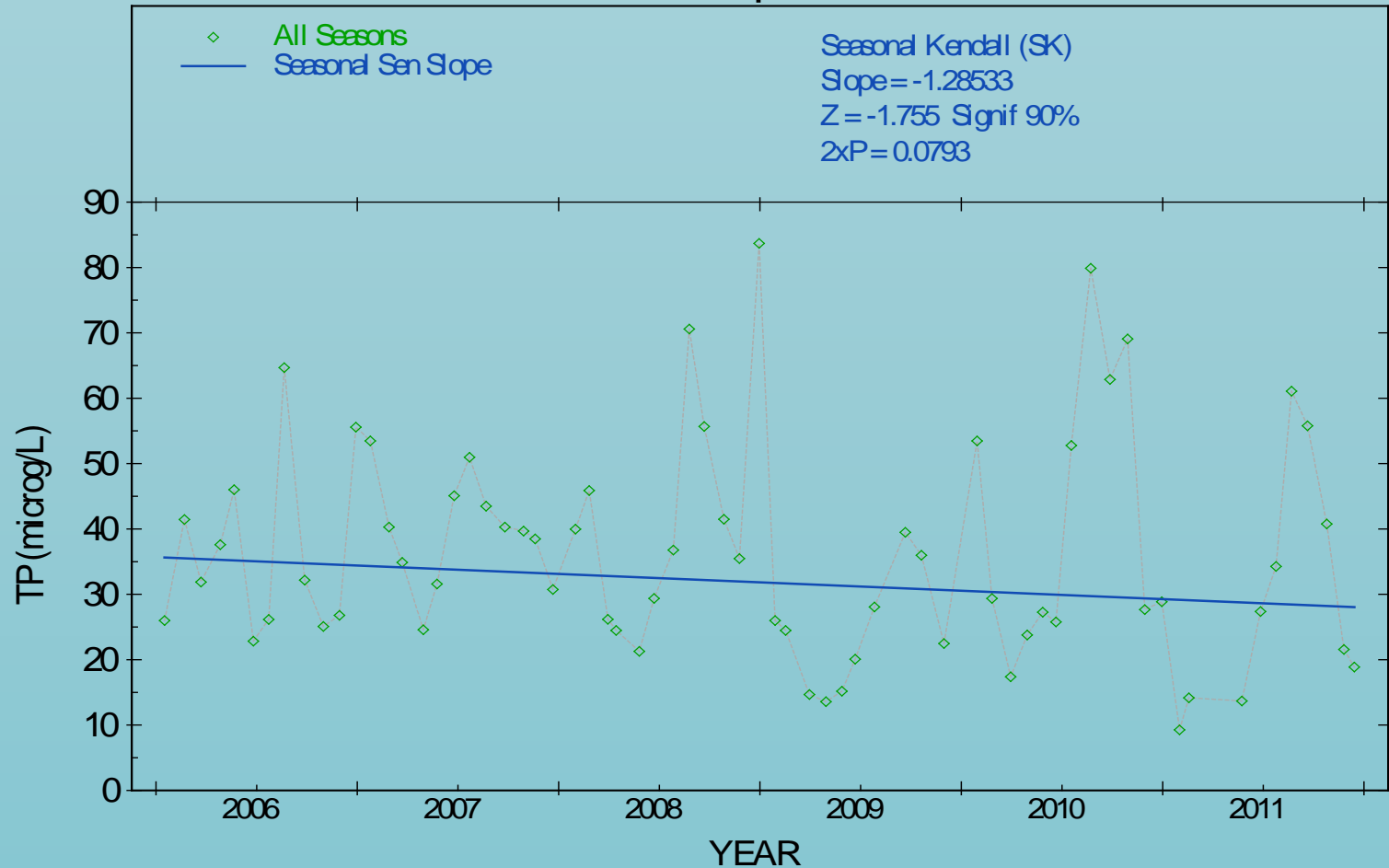


Total Phosphorus ($\mu\text{g/L}$) Monthly Average 2006-2013

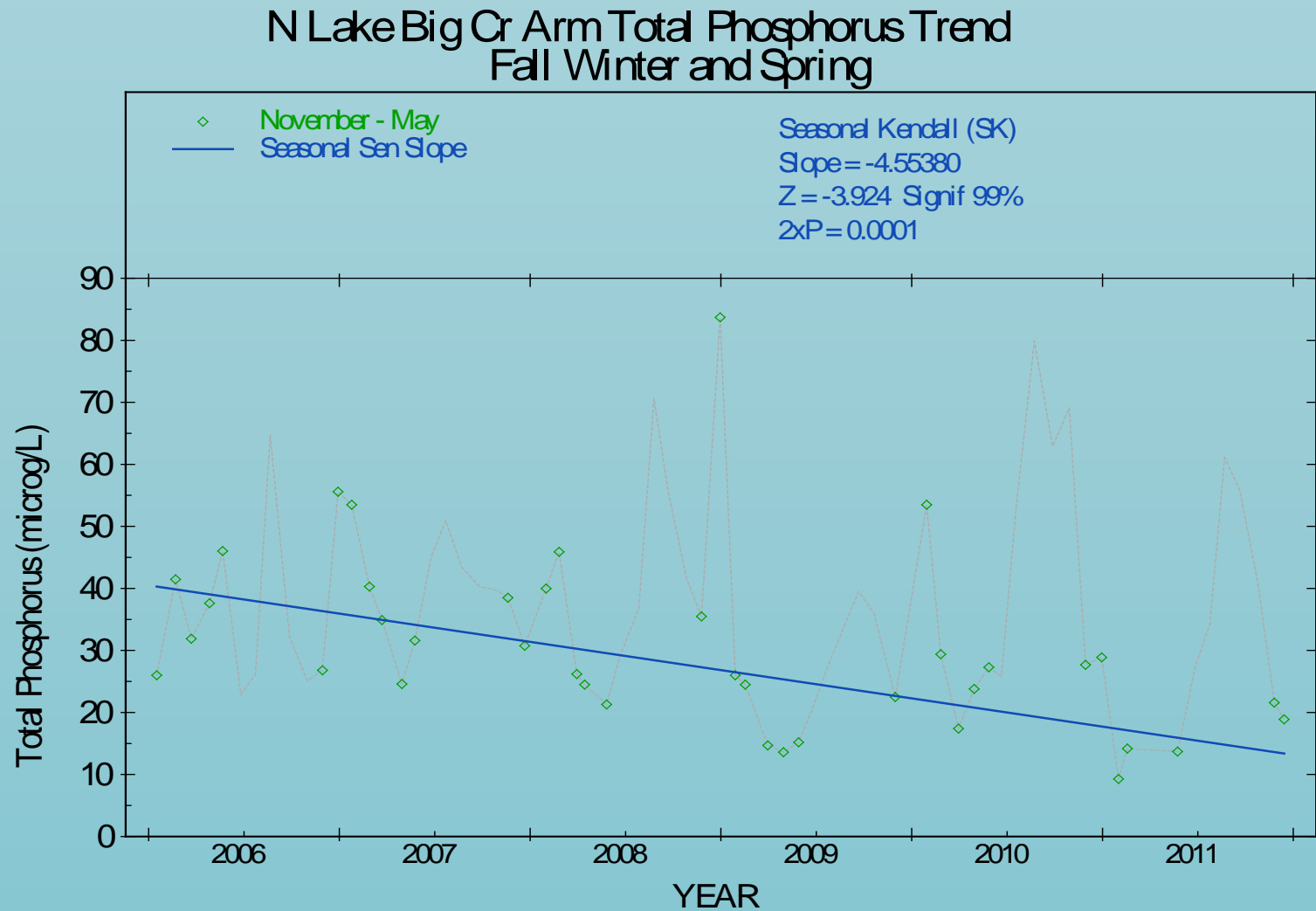


Total Phosphorus Trend 2006 - 2011

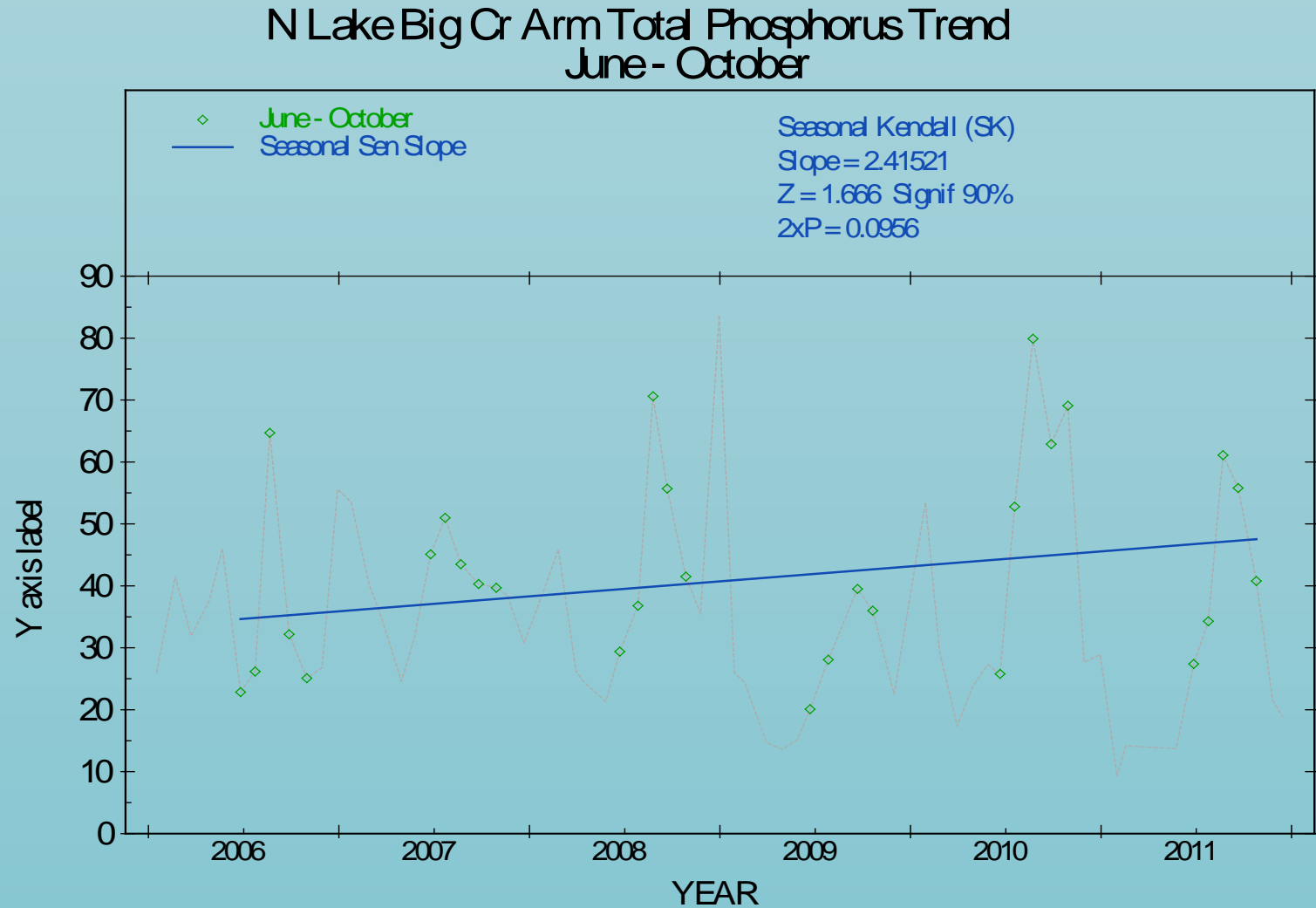
N Lake Big Cr Arm Total Phosphorus



Fall, Winter & Spring have good downward trend



Summer Phosphorus trend is getting worse



Several potential sources of Summer Phosphorous

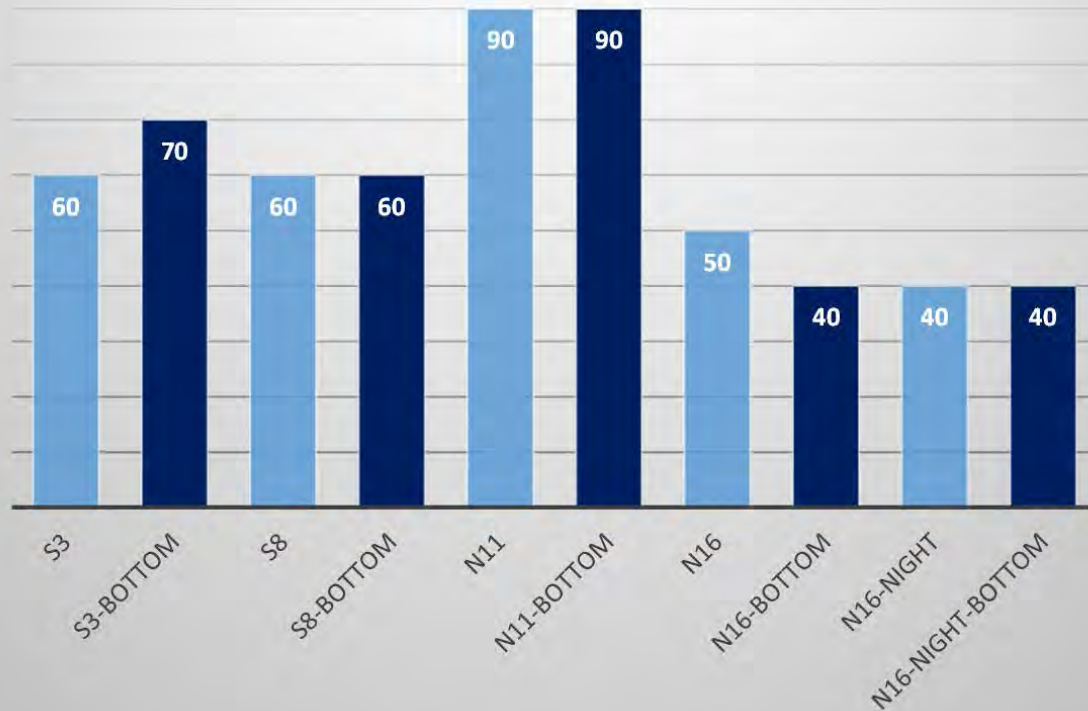
Summertime source?

Can we improve it?

- Boat wakes eroding the shore
- Fertilizer run-off from lawns around the Lakes
- Water run-off from gutters and driveways and away from septic drain fields
- Fish stocking, wildlife, and pet waste
- Phosphorous from the bottom of the lake recycling back into the water column
- Septic problems from increased summertime use of vacation homes

Benthic Phosphorous

TP ($\mu\text{g/L}$) Tenmile Lakes Summer 2014



Agenda



- SCIENCE LESSON

- SEPTIC SYSTEM ISSUES**

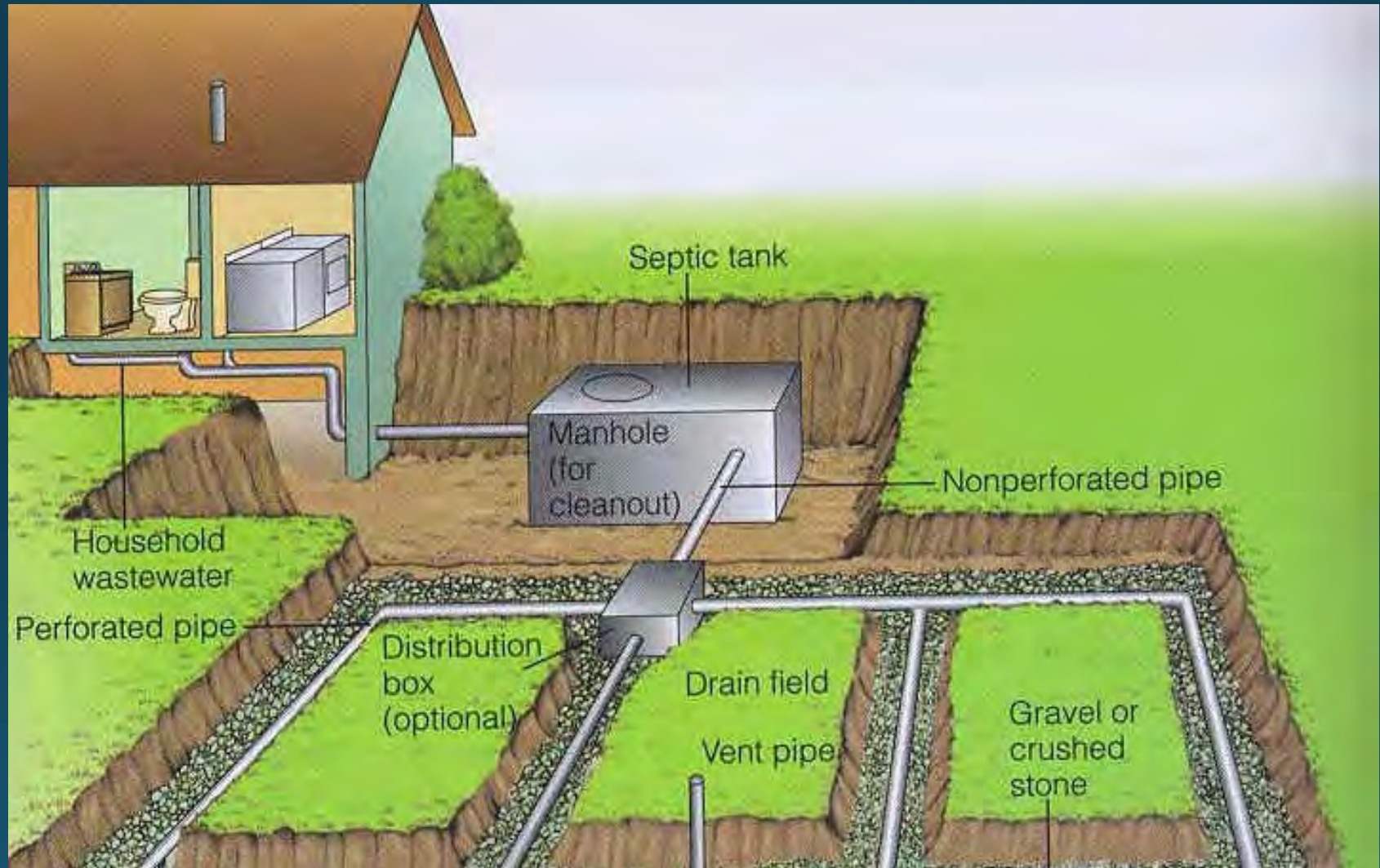
- ALGAE /TOXIN MONITORING

- WHAT WE CAN DO TO HELP



Septic Systems

Need to educate ourselves on how septic systems function



How much wastewater is there?

- EPA lists average household water usage: 400 gals/day
- Average household water for toilets: 108 gals/day
- Homes on Tenmile Lakes: 400
-
- Assume $\frac{1}{2}$ of those houses are in use on any given summer day: 200 homes
-
- 400 gals/day X 200 homes = 80,000 gals/day going into our septic systems and eventually into the lake
- 21,600 gals of that is from toilets.
 - A typical swimming pool holds around 20,000 gals
- June –August has 92 days X 80,000 gals/day = 7.3 Million gals/summer going through our septic systems.

Agenda

A photograph of a seal resting on a wooden pier by the water. The pier is made of dark, weathered wood and has some green grass growing on it. The water is calm and reflects the pier and the seal. The seal is lying down, looking towards the camera.

- SCIENCE LESSON
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- **ALGAE / TOXIN MONITORING**
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Toxin Alert Levels

1ug/L – Drinking water advisory

Recreational Advisories

Table 2. Health advisory guideline values for cyanotoxins in Oregon recreational waters ($\mu\text{g/L}$)

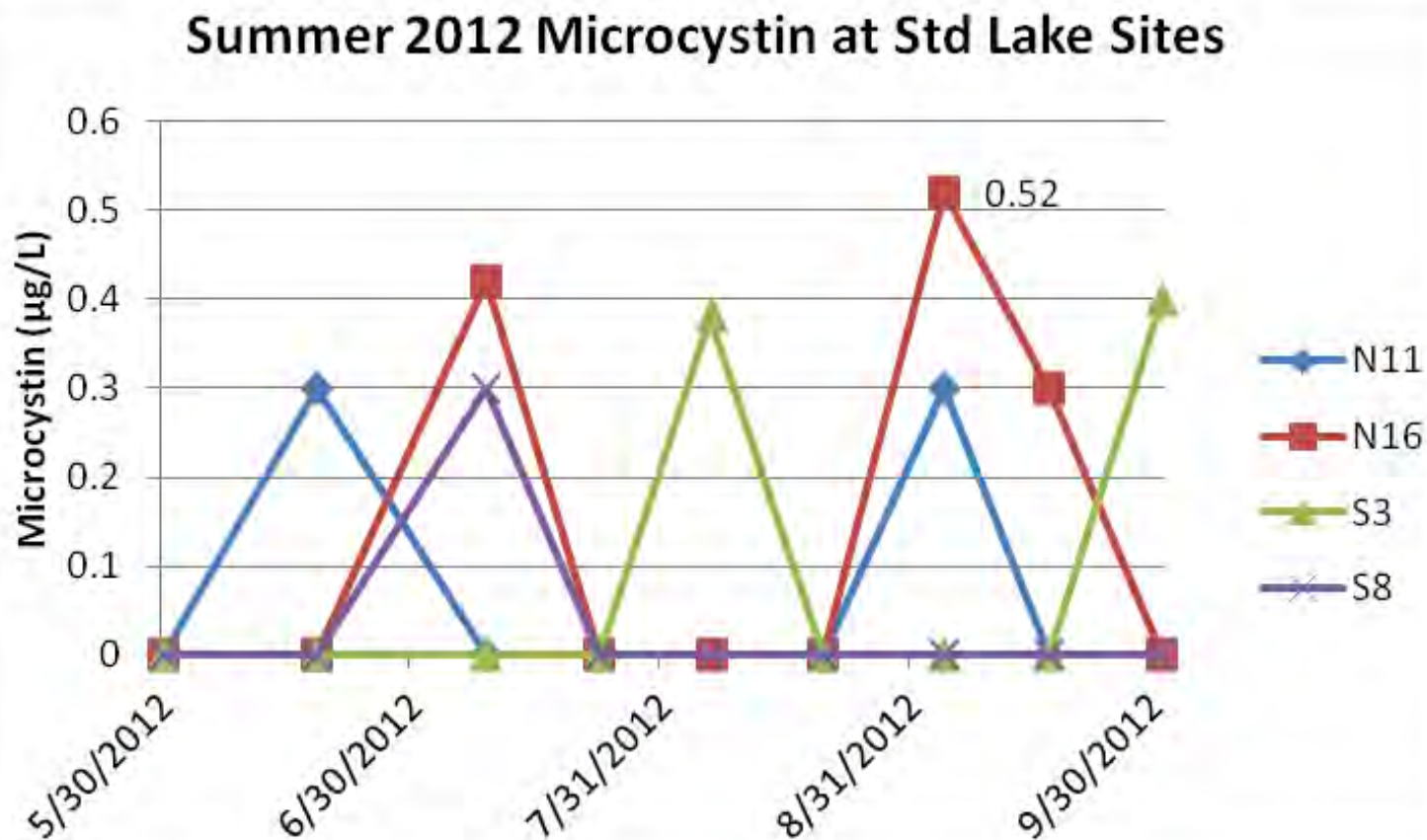
<i>Guideline Value:</i>	<i>Anatoxin-A</i>	<i>Cylindrospermopsin</i>	<i>Saxitoxin</i>	<i>Microcystin</i>
	20	6	10*	10

2014 Recreational Advisory on the lakes:
118 $\mu\text{g/L}$

Toxin Summary 2012

Standard Sites

Potential Chronic Health Issues



Pet Toxin Guidelines

Risk to Animals

Animals are also sensitive to cyanotoxins. The main route of exposure occurs through ingestion when pets and wildlife drink water from a harmful algae-filled lake or pond and by licking their fur after swimming. If toxins are being produced at the time animals drink the water, the animals can become very ill and even die.

Because dogs are a sensitive companion animal and there have been confirmed dog deaths due to cyanoHABs, OPHD has developed dog-specific guideline values for cyanotoxins in recreational water (Table C-3).

Table C-3. Dog-specific guideline values for cyanotoxins in recreational waters

Cyanotoxin	Anatoxin-a	Cylindrospermopsin	Microcystin	Saxitoxin
Dog Guidance Value (µg/L)	0.6	0.2	0.2	3

OPHD does not intend to use these dog-specific guideline as the basis for public health advisories. Rather, they are offered as a resource to veterinarians and veterinary associations to use as they deem appropriate. OPHD may use these values to aid discussions with individual veterinarians or pet owners. Contact OPHD for details about the derivation of these dog-specific values.

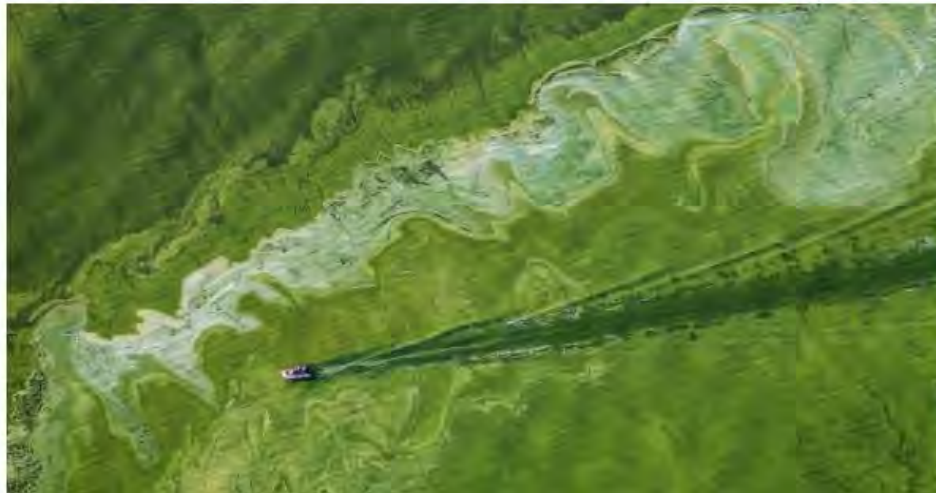
HAB's aren't just in Tenmile Lakes

Driven by Climate Change, Algae Blooms Behind Ohio Water Scare Are New Normal

Climate change and increased runoff are triggering more potentially toxic blooms.

By **Jane J. Lee**, [National Geographic](#)

PUBLISHED AUGUST 06, 2014



PROGRESS IS EVERYONE'S BUSINESS
See how Goldman Sachs is helping the Brooklyn Navy Yard grow.

[▶ WATCH THE VIDEO](#)

Agenda



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What Does the Watershed Do?

- Assess
 - Plan
- Implement
 - Monitor

Assess

Tenmile Lakes Paleolimnology Study (Eliers, 1996)

Lakeside Local Wetland Inventory (City 1999)

Nutrient Budget (Eliers, et al, 2001)

Nutrient Budget Phase II (Eliers, et al, 2003)

Tenmile Lakes Riparian Assessment Phase I and II (TLBP 2003)

Tenmile Lakes Watershed Assessment (TLBP 2003)

Tenmile Lakes Aquatic Plant Surveys (TLBP 2004)

Tenmile Lakes Sanitary Survey (Coos County 2007)

Tenmile Lakes TMDL (ODEQ 2007)

Tenmile Lake Lakefront Photo Surveys (TLBP 2008)

Plan

- Tenmile Lakes Fish Passage and Sediment Abatement Plan (TLBP 2009)
- Tenmile Lakes Integrated Aquatic Plant Management Plan (TLBP 2004)
- Tenmile Lakes Voluntary Water Quality Implementation Plan (TLBP 2005)
- Tenmile Lakes Water Quality Assurance Project Plan (TLBP 2014)
- Tenmile Lakes Water Quality Management Plan (ODEQ 2007)
- DSL Water Quality Implementation Plan (ODSL 2009)
- ODFW Water Quality Implementation Plan (ODFW 2009)
- City Of Lakeside Water Quality Implementation Plan (City 2009)

Implementation: Watershed projects

- Fencing
 - Keeps livestock out of riparian zone and away from streambanks
 - Protects Riparian plants – Allows them to grow larger
 - Protects streambanks from getting damaged by hooves
- Riparian zones
 - Stabilize soil with roots to reduce erosion
 - Roots absorb nutrients before they can get to water
 - Grass is better than nothing, but shallow roots don't provide adequate protection
 - Mature riparian zones provide shade to keep streams cool
 - Trees provide wildlife habitat
- Bridges
 - Replace culverts that block fish passage and cause erosion
 - Allows livestock and farm equipment to cross stream w/o damage
- Large Wood Debris
 - Slows water down in winter – Less erosion
 - Velocity shelters for fish during fast run-off
 - Creates cool water pools in summer.
 - Creates food habitat















Monitoring Projects

- Tenmile Lake Monitoring
- Weeds – County Weed Board
- Storm Chasing
- Saunders & Eel Lake Baseline
- Macroinvertebrate
- Continuous Stream Temperature Monitoring
- Raptor Nesting Surveys
- Eel Lake Fish Trap



Clipboard with a pen and a pipette.



White metal rack containing several glass bottles and a graduated cylinder, all containing yellow liquid.



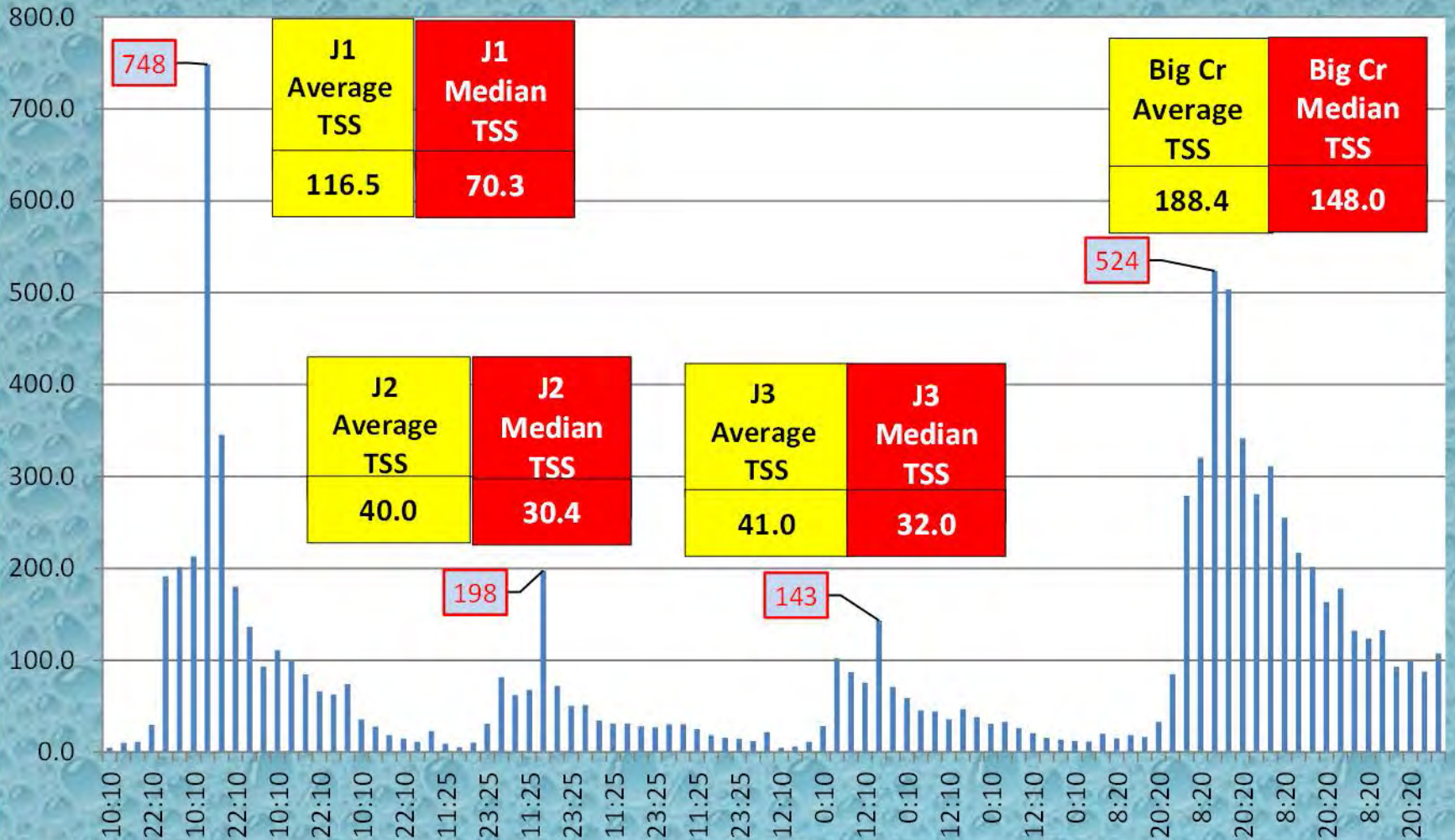




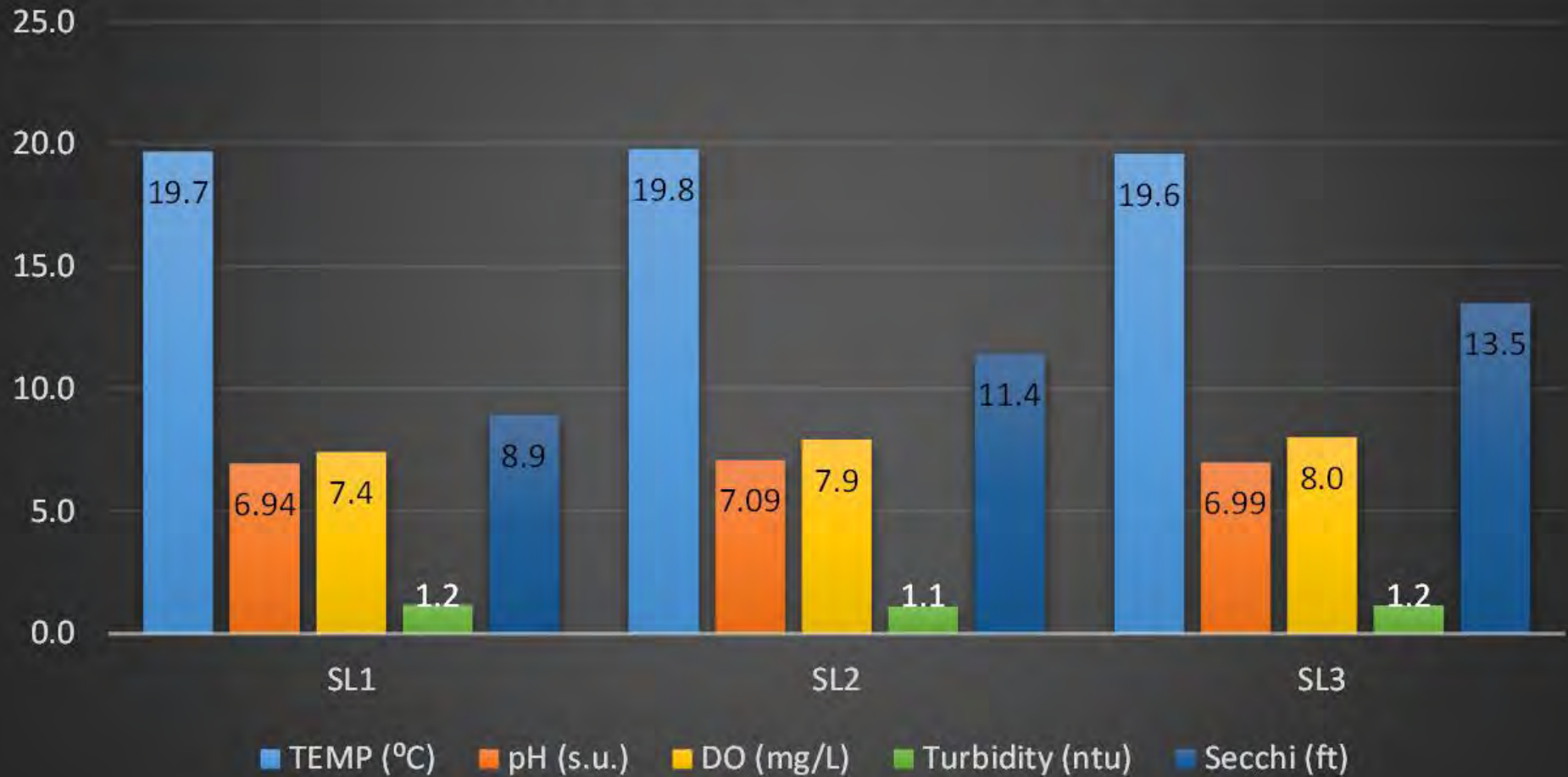


J1, J2, J3, Big Cr 2/05 - 2/09/2015

TSS (mg/L)



Saunders Lake 9/11/2014

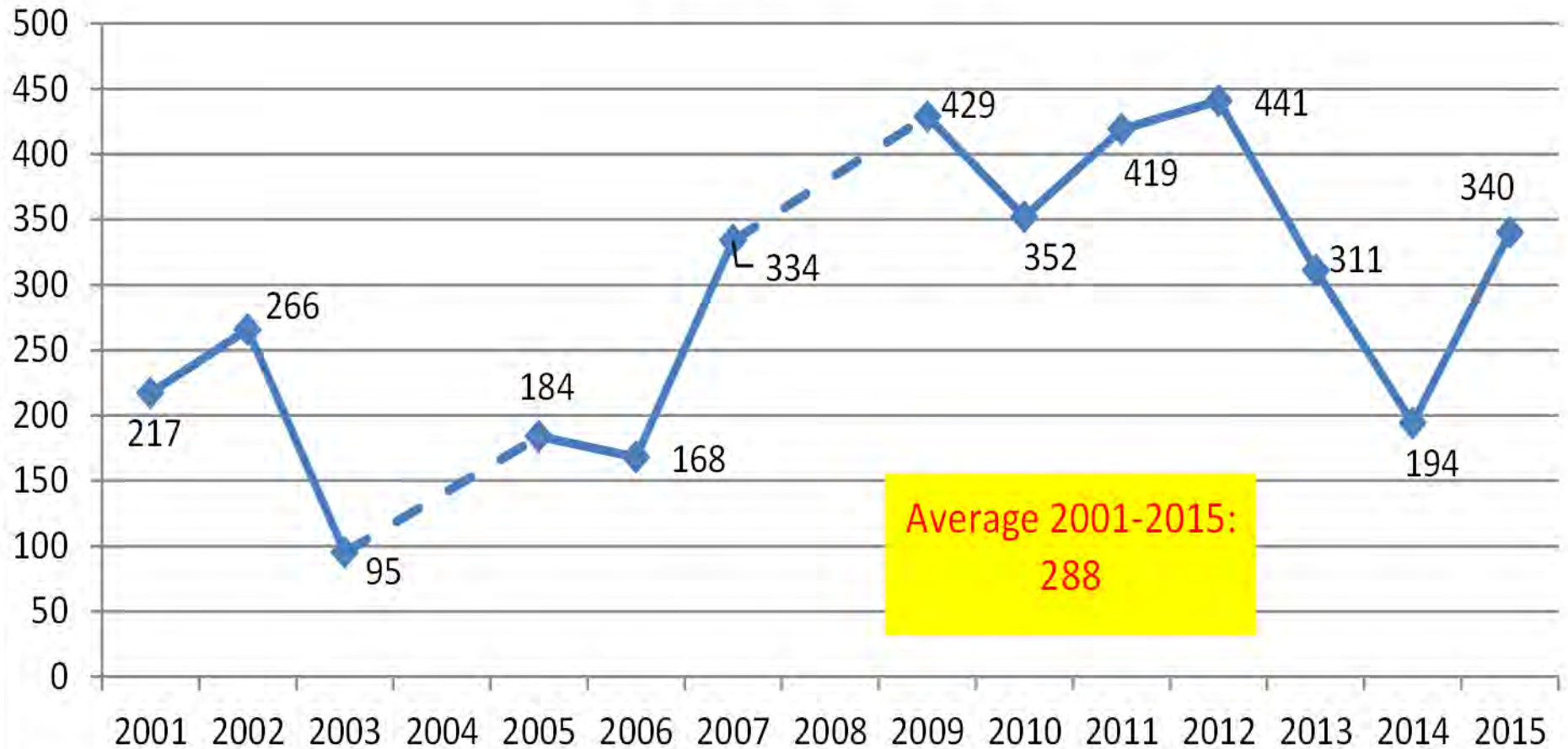




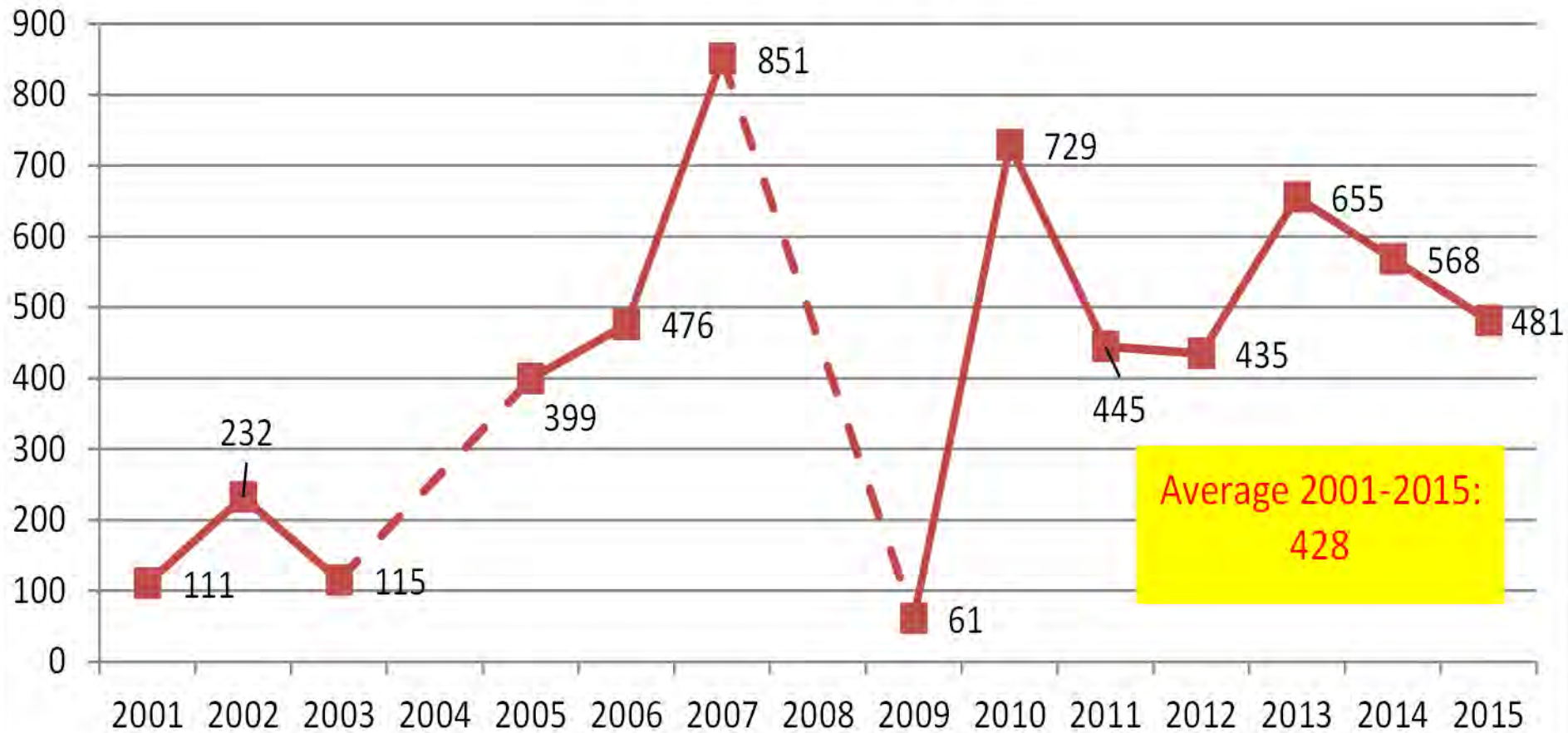




Coho Counts at Eel Lake Trap



Steelhead Counts at Eel Lake Trap



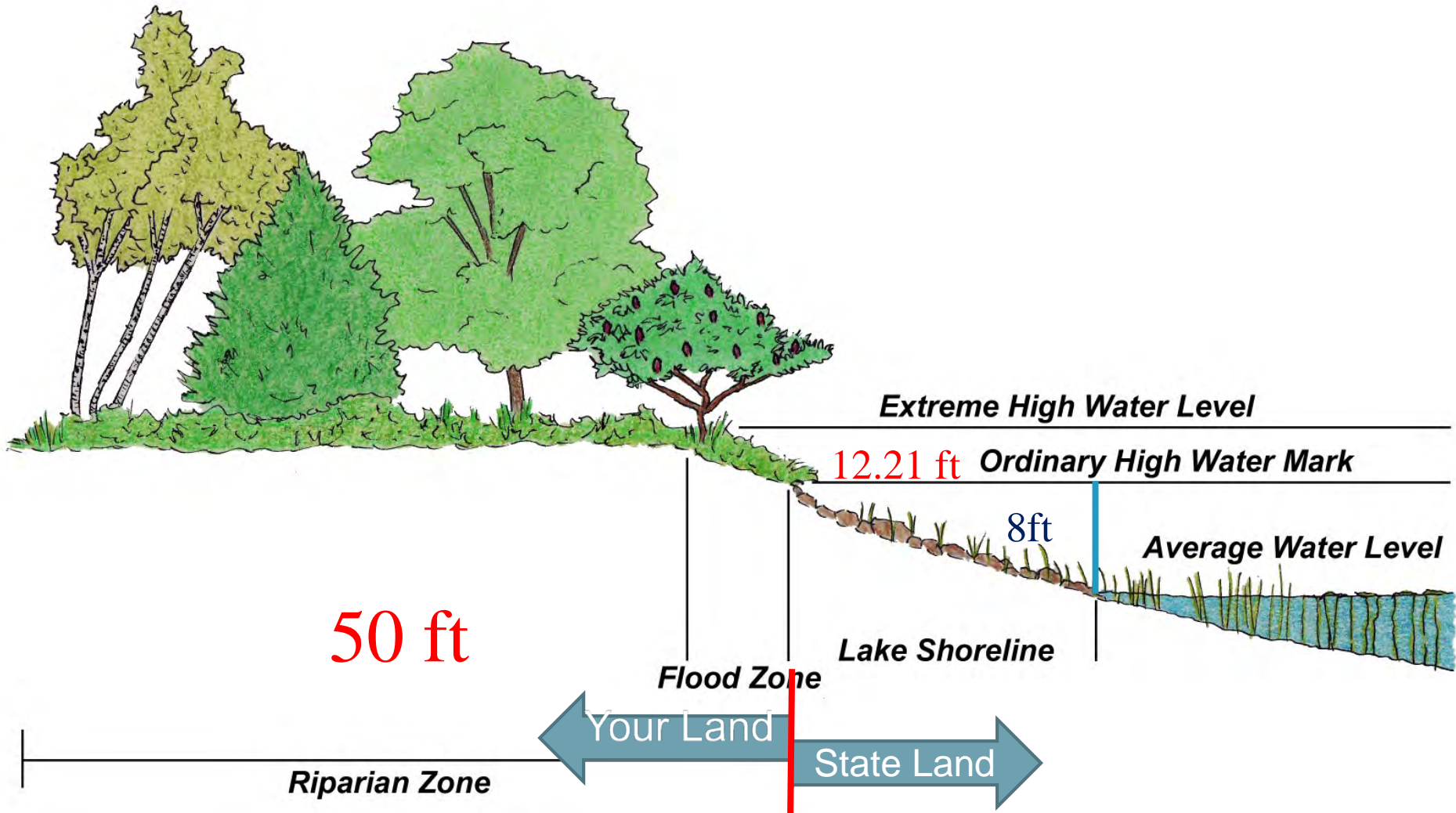
So with all this effort, why isn't the lake clean?

- Damage occurred over a long period. It will take time to recover.
- Sediment still coming in high from forest. Need to find out why and continue addressing Ag land sedimentation.
- Sediment already at bottom of lake is difficult and very expensive to remove.
- Invasive aquatic weeds are very difficult to eliminate. Experimenting with solutions that can be implemented by landowners.
- Still need mandatory septic inspections to address summertime Phosphorous spike and toxic algae.

What homeowners can do to help...

- Join Tenmile Lakes Association (TLA) and be an active and helpful member. Recruit your neighbors. We need to do this together. There is power in numbers.
- Practice good boating techniques to reduce wake erosion.
- Take responsibility for the weeds in front of your property.
- Control the water runoff from your property.
- Inspect and/or pump your septic system approximately every 6 years and promptly make any necessary repairs.
- Encourage your neighbors to do the same. Form local groups and work together to solve common problems.
- Plant or maintain the 50ft riparian zone.

If you own lakefront property, the law requires you to maintain the Riparian Zone.



Thank You

TLA

OWEB

ODEQ

Milo Crumrine

ODFW

Ringo's Lakeside Marina

PCINW Internet

BLM

Dr. Jacob Kann

ODSL

Project Site Landowners

Osprey Point Resort

Lakeside Lions

Eel/ Tenmile STEP

Lakeside McKays

Jeff Fletcher

City of Lakeside

North Lake Resort

Coos County Commissioners

USFS



Thank You
for your interest in Tenmile Lakes!

