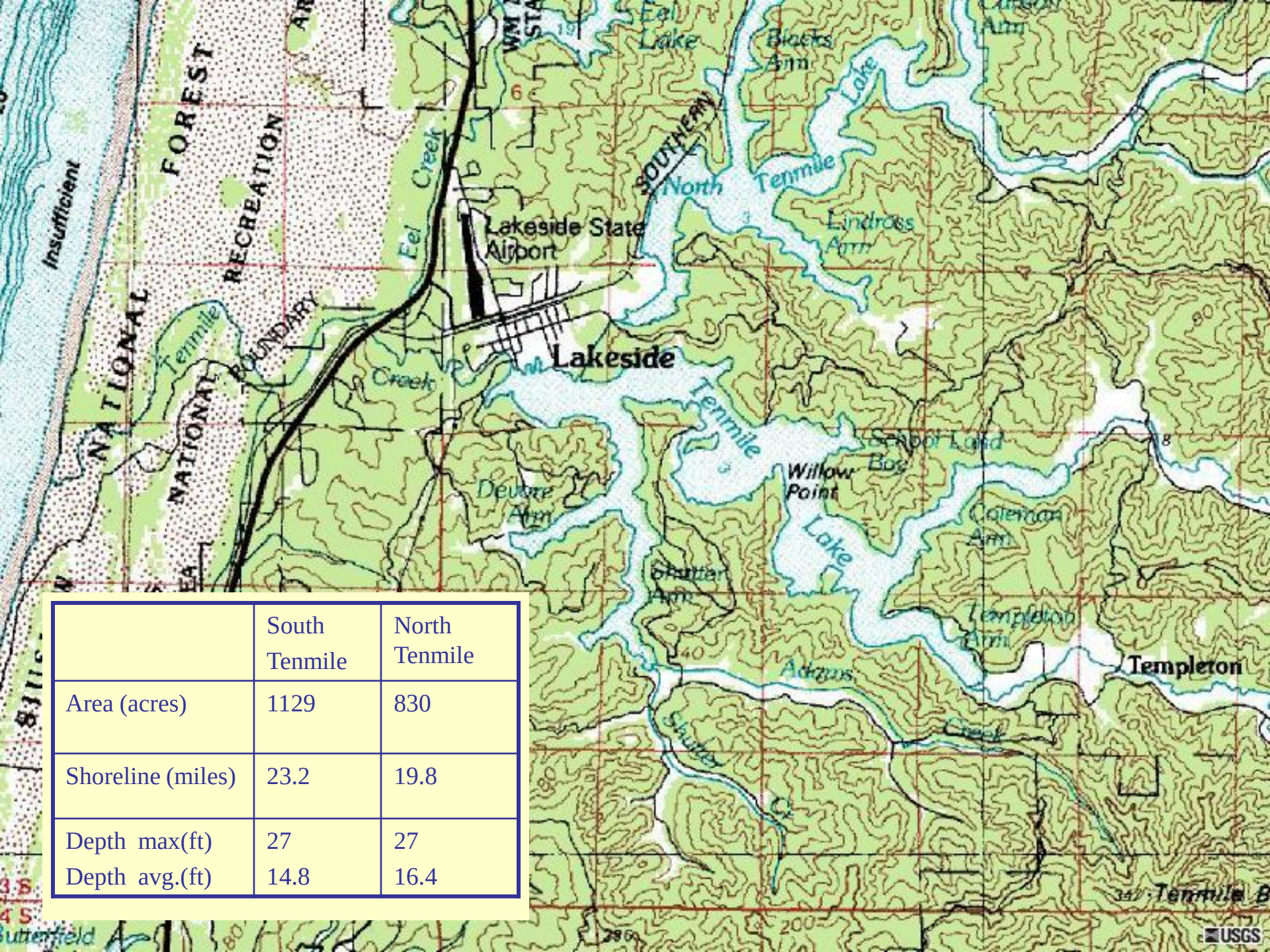
State of the Lakes

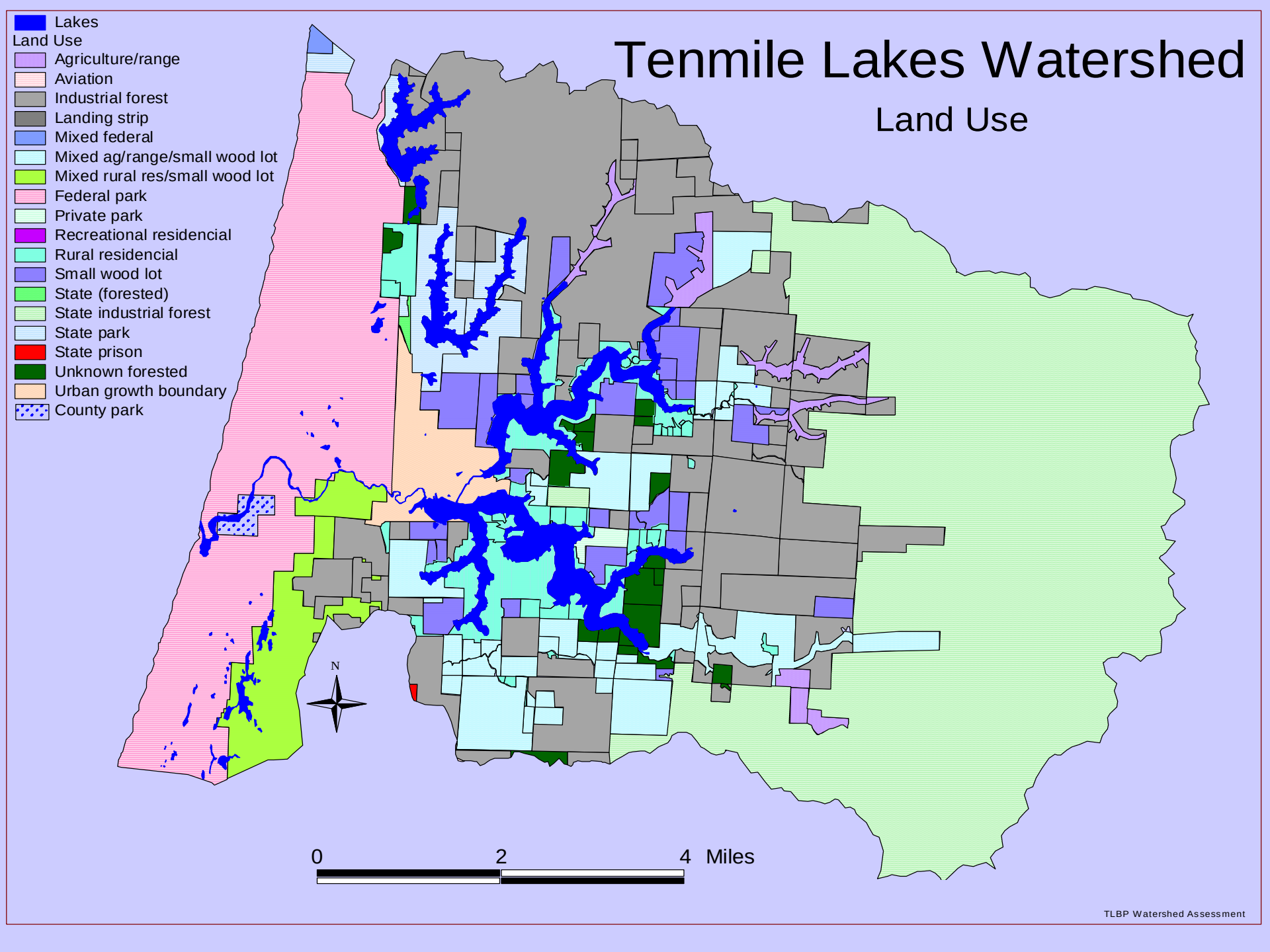
OVERVIEW

- ALGAE SAMPLING
- NON-NATIVE WEEDS & FISH
- NUTRIENT MONITORING
- SEDIMENTATION
- SHORELINE DEVELOPMENT
- SEPTIC TANKS
- WATER AVAILABILITY


Image State of Oregon
©2008 Google™



	South Tenmile	North Tenmile
Area (acres)	1129	830
Shoreline (miles)	23.2	19.8
Depth max(ft) Depth avg.(ft)	27 14.8	27 16.4


Lakes
Land Use
Agriculture/range
Aviation
Industrial forest
Landing strip
Mixed federal
Mixed ag/range/small wood lot
Mixed rural res/small wood lot
Federal park
Private park
Recreational residencial
Rural residencial
Small wood lot
State (forested)
State industrial forest
State park
State prison
Unknown forested
Urban growth boundary
County park
Tenmile Lakes Watershed
Land Use
N
0
2
4 Miles
TLBP Watershed Assessment

What is TLBP?


Tenmile Lakes Basin Partnership
2006 Project Presentation

Projects Completed

5100 Road Decom.
Adams Bridge
Adams Culverts (1-4)
Adams Riparian
Benson Bridge
Benson Rip
Big Cr. Culverts(1,2,3,5,6,7,10,11,16,18)
Big Cr. Fence
Big Cr. Rip. I
Big Cr. Rip. II
Big Cr. Rip. III
Big Cr. Rip. IV
Big Cr. Riparian(Lower)
Big Cr. Riparian(mid)
Big Cr. Riparian(upper)
Big Cr. Tree Plot 1-4
Bowron Bridge
Clear Cr. Culverts (1-4)
Eel Cr. Culvert South
Eel Cr. Erosion Mat
Eel Cr. Retrofit
Freelund Bridge #1
Freelund Bridge #2
Goose Cr. Bridge
Goose Cr. Rip
Goose Cr.Trib. A Bridge
Hatchery Cr. Bridge
House Gulch Bridge
House Gulch Fence
House Gulch Riparian
Johnson Cr. Bridge
Johnson Cr. Fence
Johnson Cr. Riparian (left fork)
Johnson Cr. Riparian (mainstem)
Johnson Riparian I
Johnson Riparian III
Kellogg Bridge
Maria Gulch Fencing
Noble Cr. Bridge (Lower)
Noble Cr. Bridge (Upper)
Noble Cr. Erosion Control
Noble Cr. Fence (Lower)
Noble Cr. Fence (Upper)
Noble Erosion
Noble Riparian
Noble/Alder Bridge
Noble/Alder Fence
Northlake Ext. Culvert #3
Northlake ext. Culvert #4
Plum Gulch Fence
Plum Gulch Fjord
Robertson Bridge
Robertson Bridge II
Robertson Fence
Robertson Lg. Woods
Robertson Riparian
Saunders Lake Rip
Shutters Bridge #3
Shutters Bridge #4
Shutters Bridge I
Shutters Bridge II
Shutters Culverts (1-4)
Sunlake Boulder Cluster
Sunlake Bridge
Sunlake Culvert excavation
Sunlake Culverts (1-4)
Sunlake Lg. Woods
Sunlake Riparian
Swanson Bridge
Swanson Bridge II
Swanson Bridge III
Upper Big Cr. Watering Source
Upper Noble Cr. Bridge
Wilkins Bridge
Wilkins Riparian
Willow Cr. Bridge

A culvert in Robertson Cr. Identified in 1999 as juvenile fish barrier and high risk sediment source

Robertson Cr. Bridge and Fencing project implemented in 2000.

House Gulch Fencing

Before

House Gulch Fencing

After

Completed Lake Projects

Paleolimnological Study 1995

Limnological Study 1995

Nutrient Study Phase I & II 1999/2000

Watershed Assessment 2003

Aquatic Plant Survey 2003

Bi-annual Osprey/Eagle Nesting Surveys

Purple Martin Nest Box Program

Algae Sampling Program

Nutrient Sampling

Delta Building Surveys

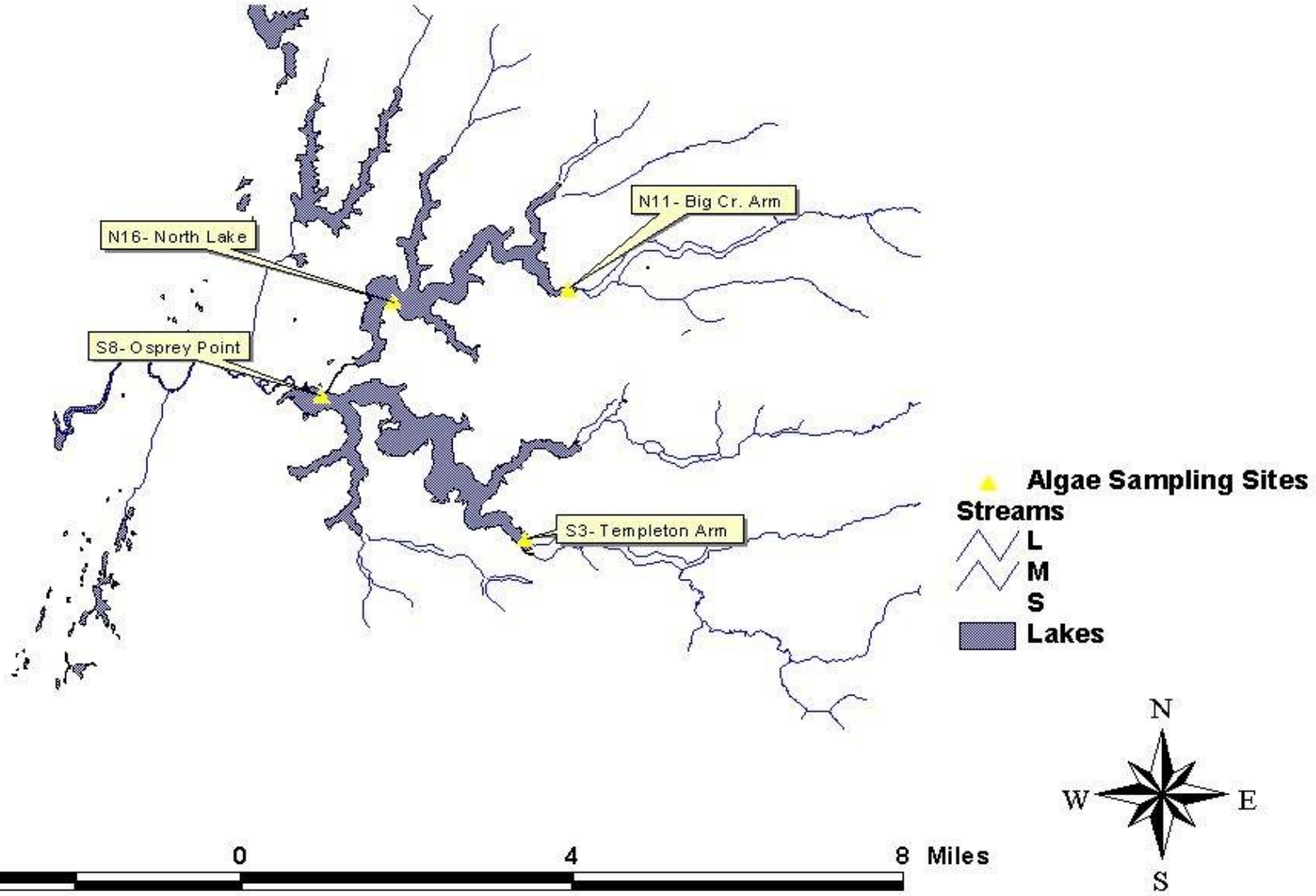
Western Pond Turtle Population Study

Lakefront Homeowner Erosion projects

Lakefront Volunteer Compliance Coordination


Algae Sampling Program

Algae


N16- North Lake
N11- Big Cr. Arm
S8- Osprey Point
S3- Templeton Arm
Algae Sampling Sites
Streams
L
M
S
Lakes
N
W
E
S
4
0
4
8 Miles


NIKE


NIKE


60




Blue-Green Algae Alert Levels

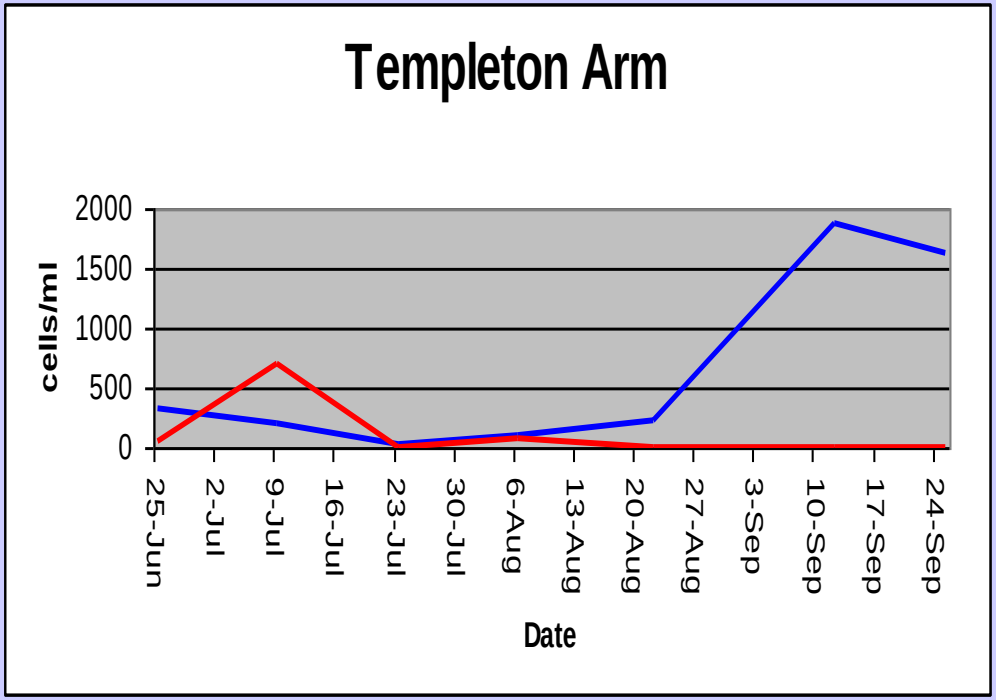
For Drinking Water:

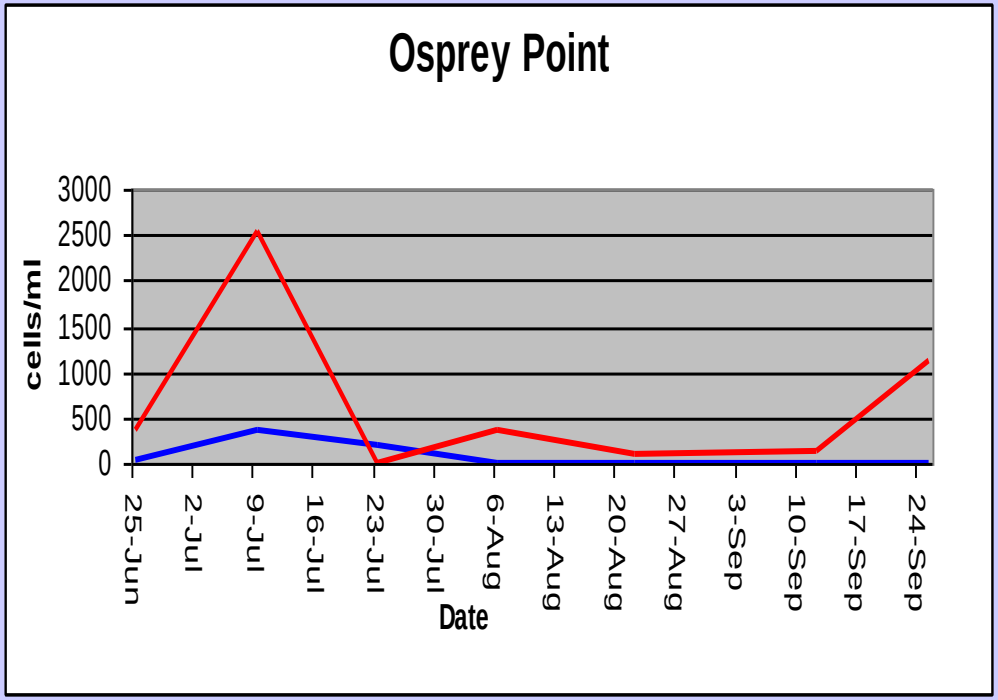
- Alert Level 1- Increased Vigilance Level (>500 cells/ml of potentially toxigenic species)
- Alert Level 2- Consultation with Health Authorities and Media release (2000 cells/ml of potentially toxigenic species)
- Alert Level 3- assessment by health authorities indicates the water may be unsafe and is unacceptable for supply without treatment to remove toxins. (>15,000cells/ml)

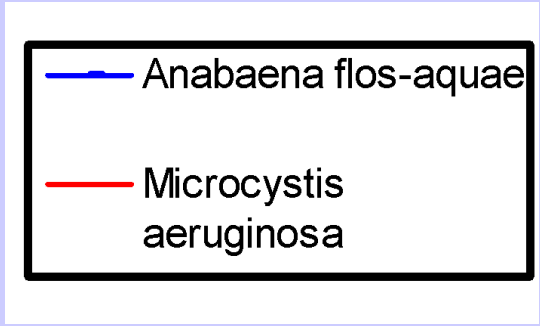
For recreation:

- Recreational postings occur when microcystis exceeds 40,000 cells/ml or when species such as anabaena exceed 100,000 cells/ml

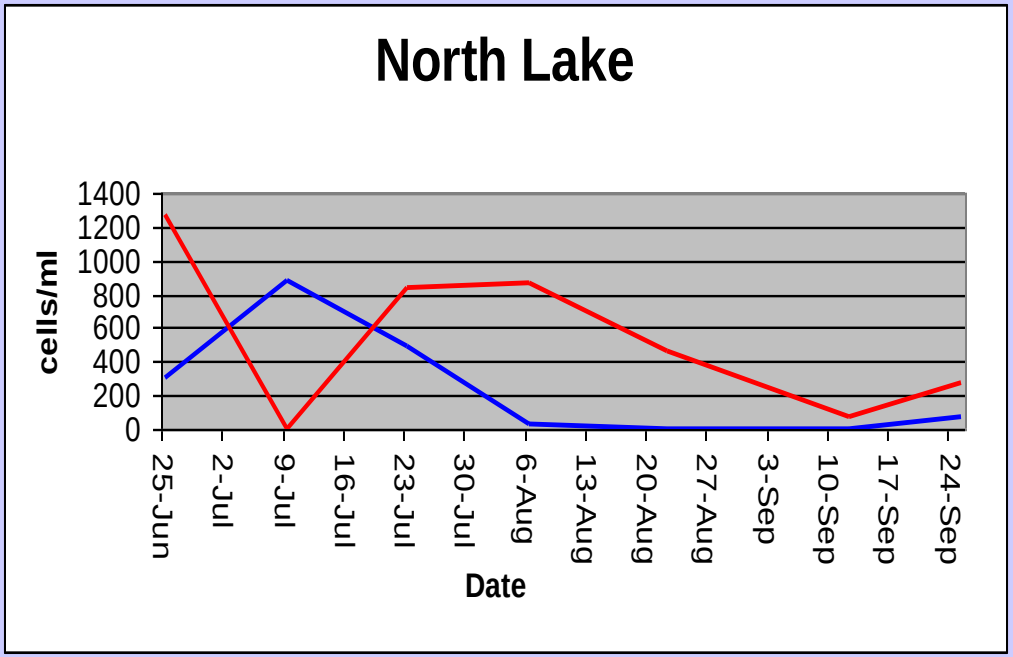
SOUTH LAKE SITES

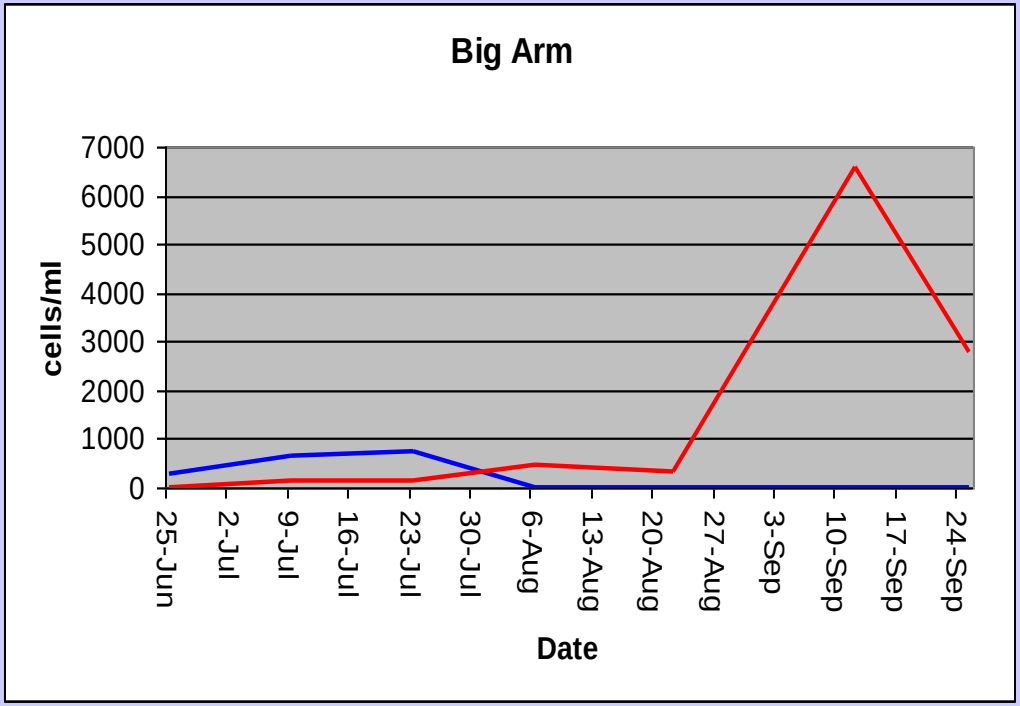


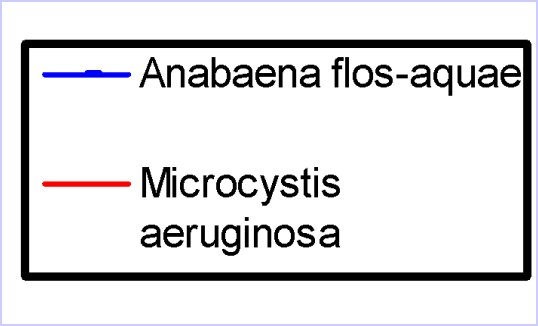




NORTH LAKE SITES







	Microcystis aeruginosa cells/ml	Microcystin ug/L
9/12/07	6605	5.4
9/25/07	2771	7.5

1ug/L – Drinking water standard

8ug/L – Recreational standard

Usually, 5000 cells/ml is associated with 1ug/L of the toxin microcystin.

Oregon Health Division

Drinking water treatment guidance

1. Treatment systems should consist of sand filtration followed by chlorination, followed by activated charcoal filtration. It is essential that sand filtration be done before disinfection to remove as many algal cells as possible without killing or rupturing them.

2. Chlorination systems should be capable of maintaining at least 1 ppm of chlorine residual for at least 20 minutes contact time before the water enters the activated charcoal system.

3. The final step in the process should be effective activated charcoal treatment to remove toxin remaining after the sand filtration and disinfection processes.

4. All treatment equipment used should meet NSF standard 53, and should be adequately sized to treat the maximum amount of water that you use. Treatment equipment needs regular monitoring and servicing to assure that it functions properly.

5. Ideally all water entering your home should be treated as recommended. It is possible to treat only water used in the kitchen, but this increases chances that animals or pets would inadvertently drink untreated water.

As more monitoring is done and toxin levels are measured this advisory may be altered. The advisory is to remain in effect until specifically changed or lifted by county and state health officials.

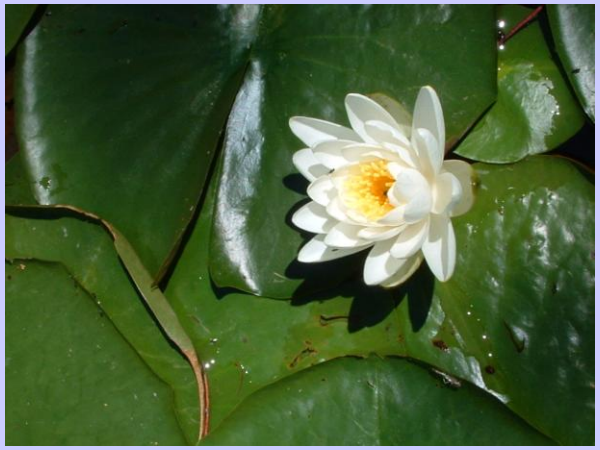
Contact Person: Ken Kauffman -503-731-4015

Lab Station ID	Description	Date	*Microcystis aeruginosa (cells/ml)*	*Anabaena flosaquae* (cells/ml)	*Anabaena planktonica* (cells/ml)	*Anabaena circinalis* (cells/ml)	*Anabaena sp.* (cells/ml)	*Total Anabaena* (cells/ml)	*Microcystin* (ug/ml)
L1	Tap	9/27/2006	0	326	41	0	0	367	
L2	intake	9/27/2006	735	392	221	0	0	613	
L1	Tap	10/11/2006	0	580	232	0	0	812	
L2	intake	10/11/2006	0	756	571	33	0	1360	
L1	Tap	8/7/2007	0	0	742	0	0	742	
L2	intake	8/7/2007	323	3839	23517	264	0	27620	
L1	Tap	10/27/2007	0	35	0	0	0	35	non-detect
L2	intake	10/27/2007	4271	0	0	0	0	0	0.7


Non-native weeds

Tenmile Lakes Watershed

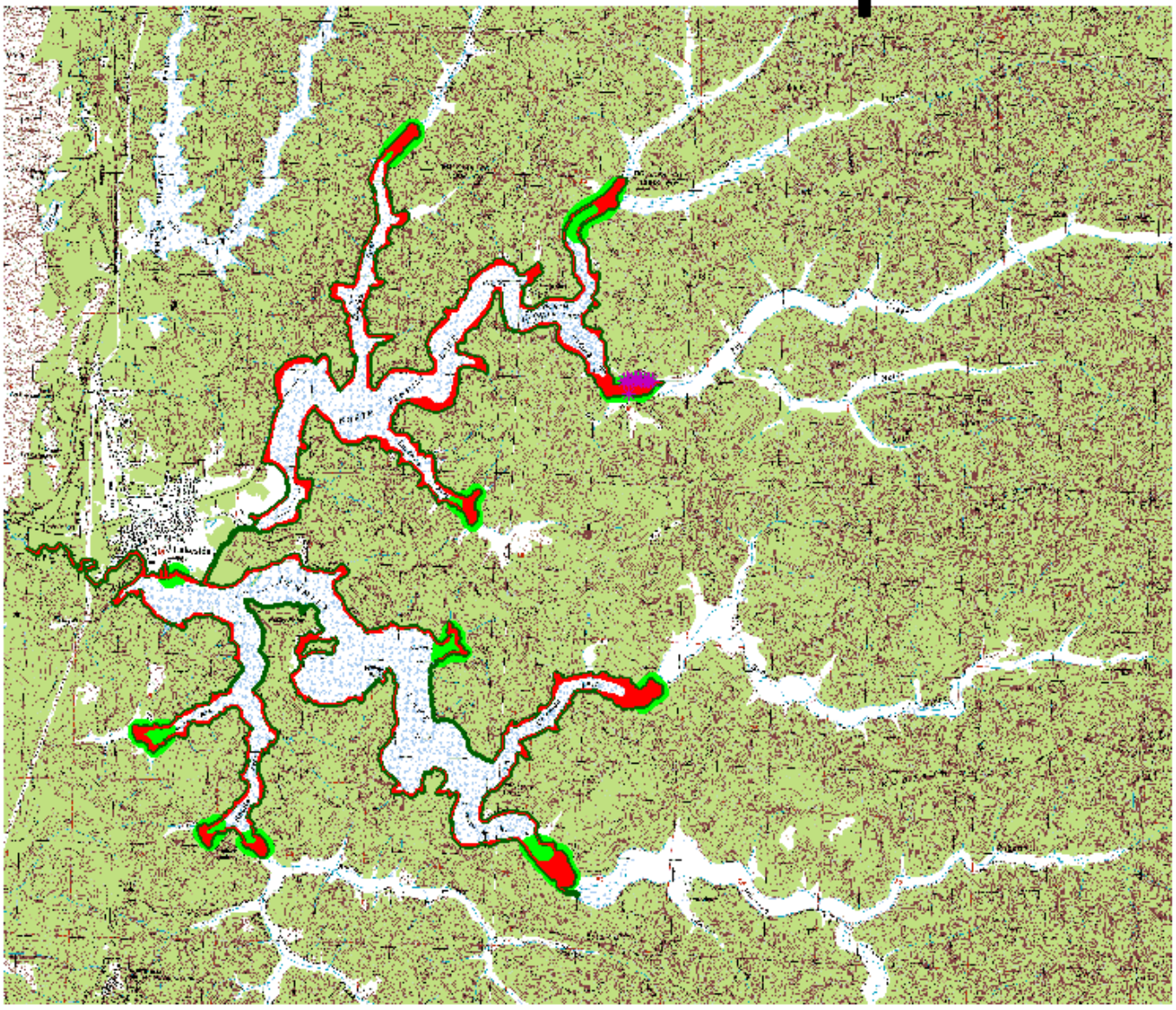
Aquatic Plants



Produced by:

Tenmile Lakes Basin Partnership

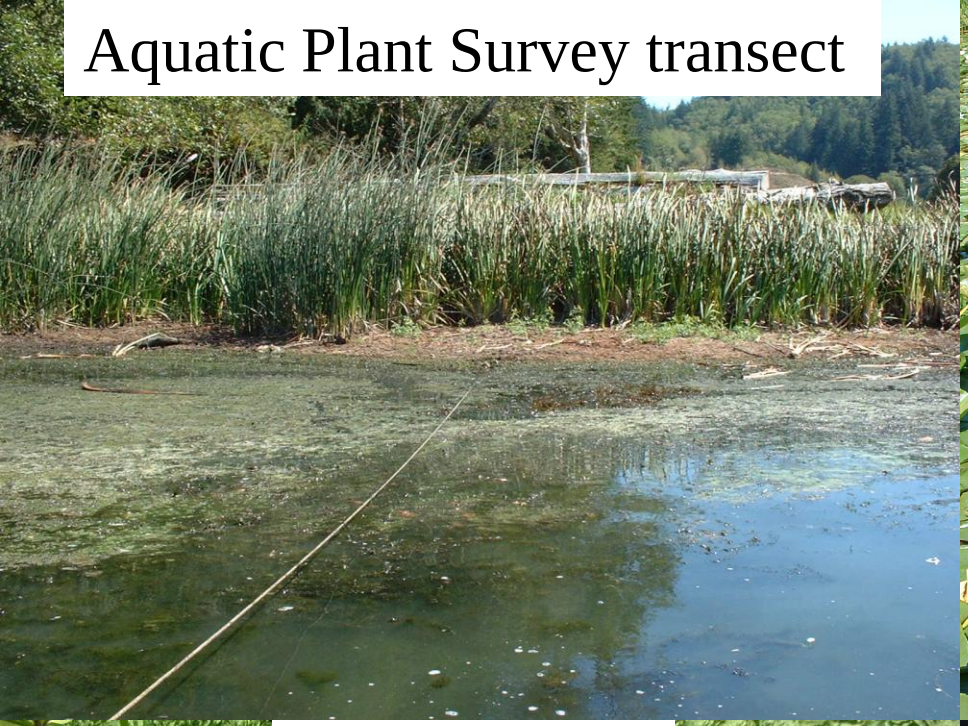
Tenmile Lakes Aquatic Weeds



Purple loosestrife
Egeria densa
Lilies of various species
Pondweed

N
W
E
S

Aquatic Plant Survey transect



Non-native Water Lily

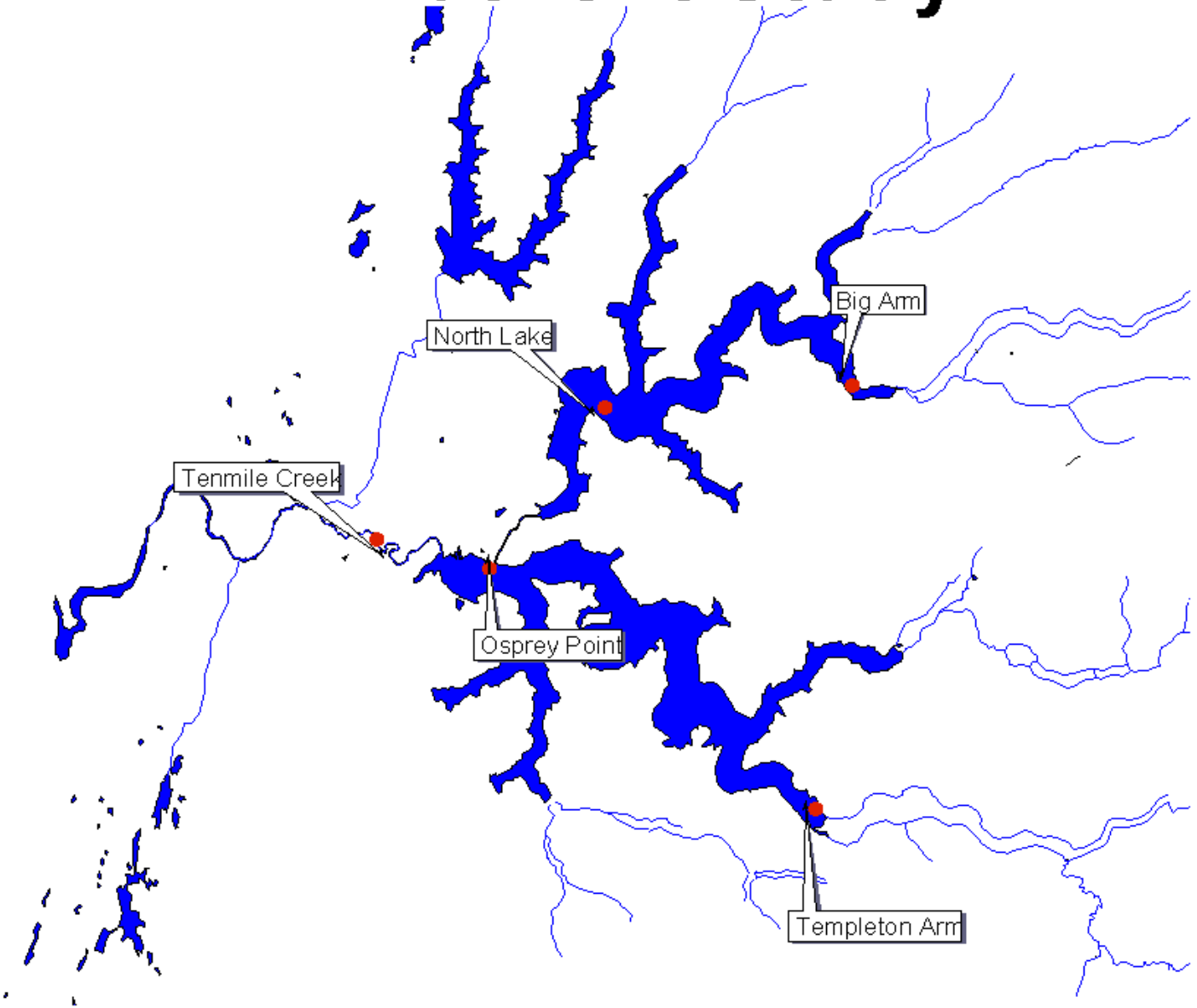
Parrot Feather

Brazilian Waterweed

NUTRIENTS

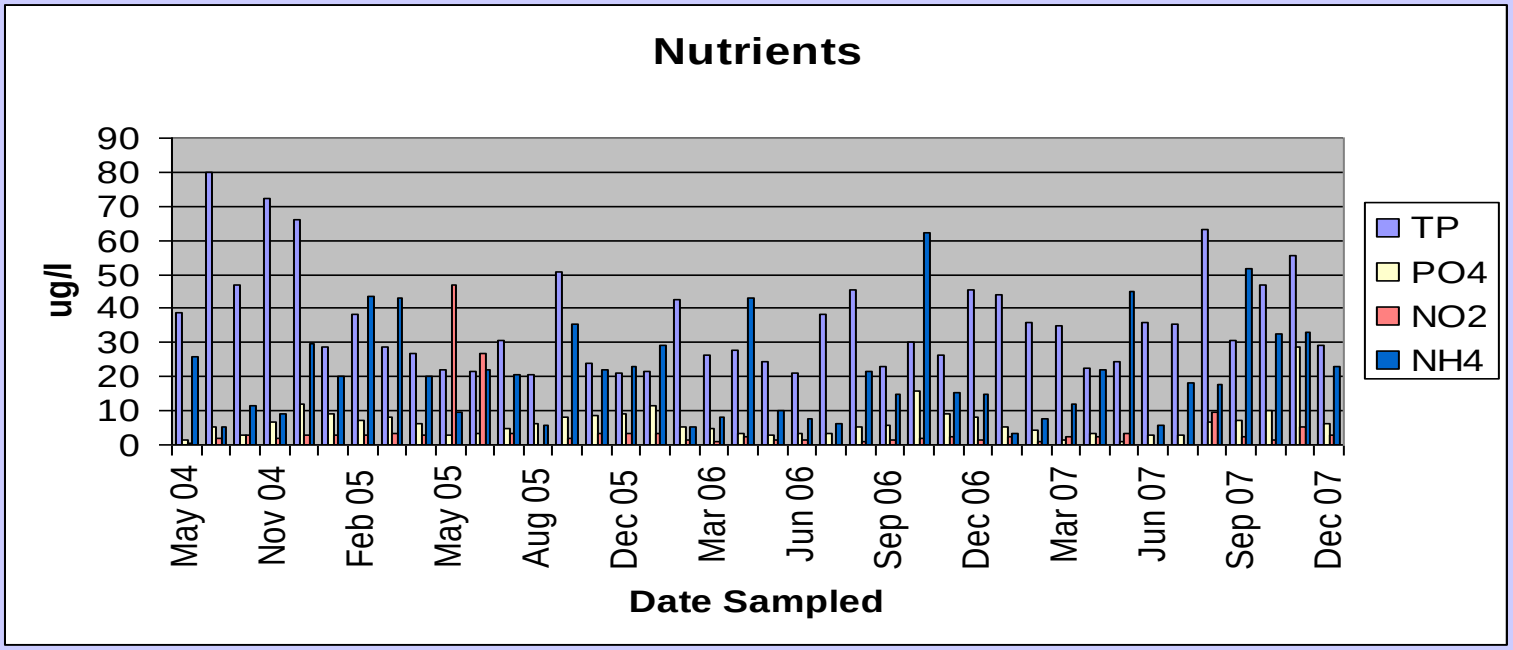
- LAKE SAMPLING
- STORM CHASING/ WINTER TRIB SAMPLING

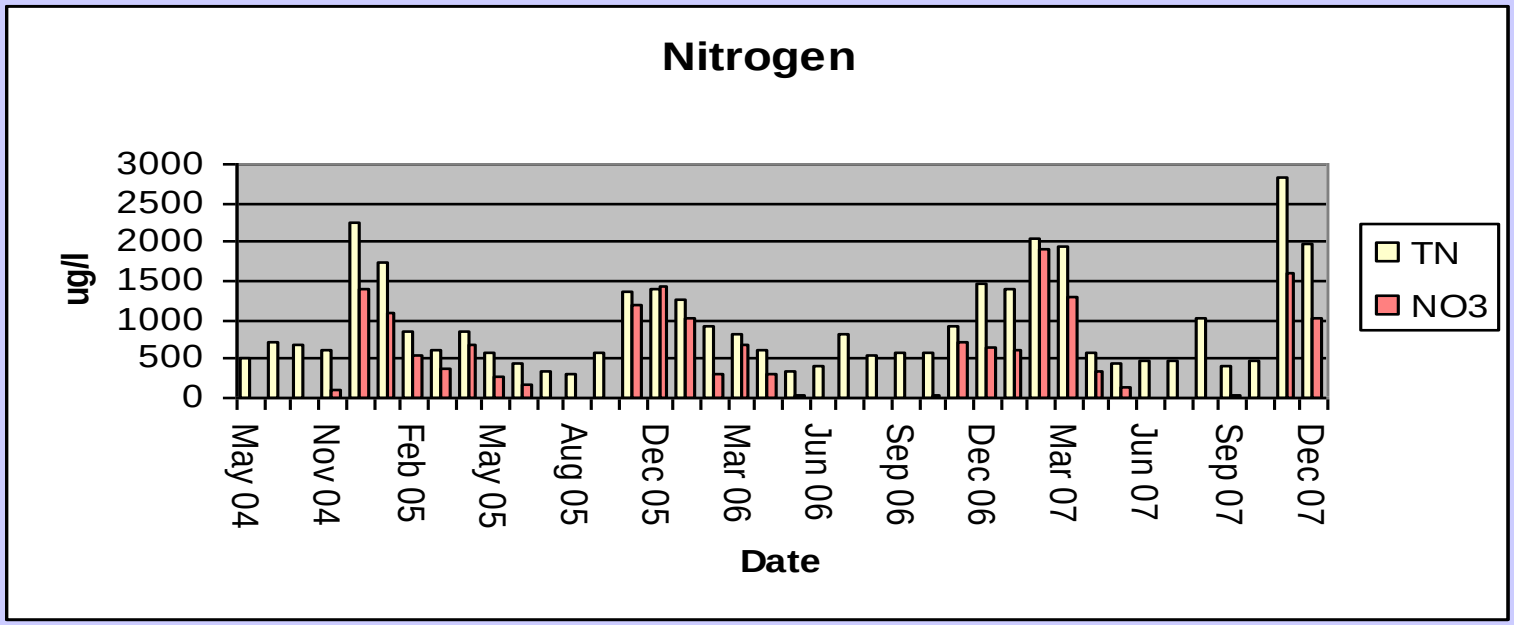
Nutrient Study



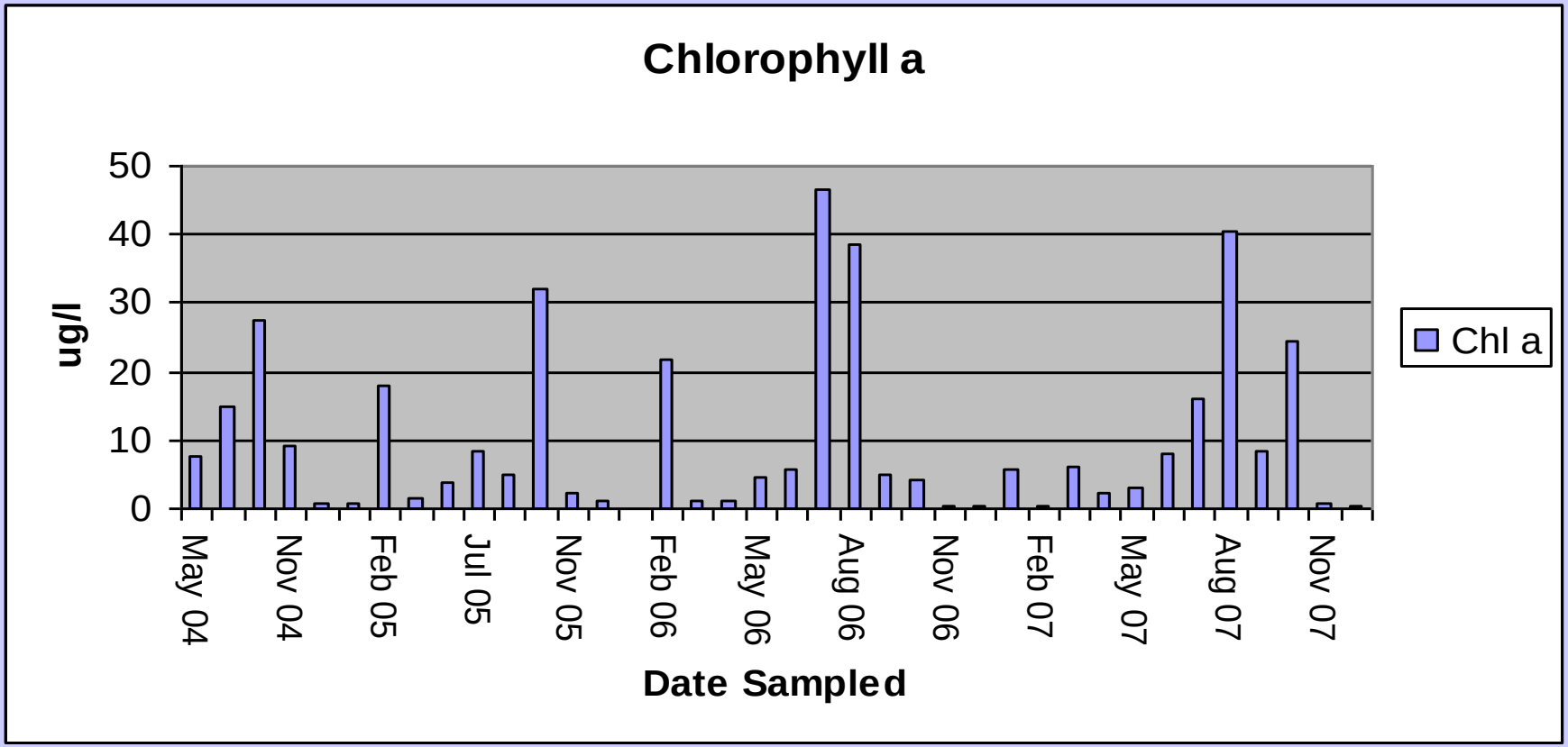



TEMPLETON ARM

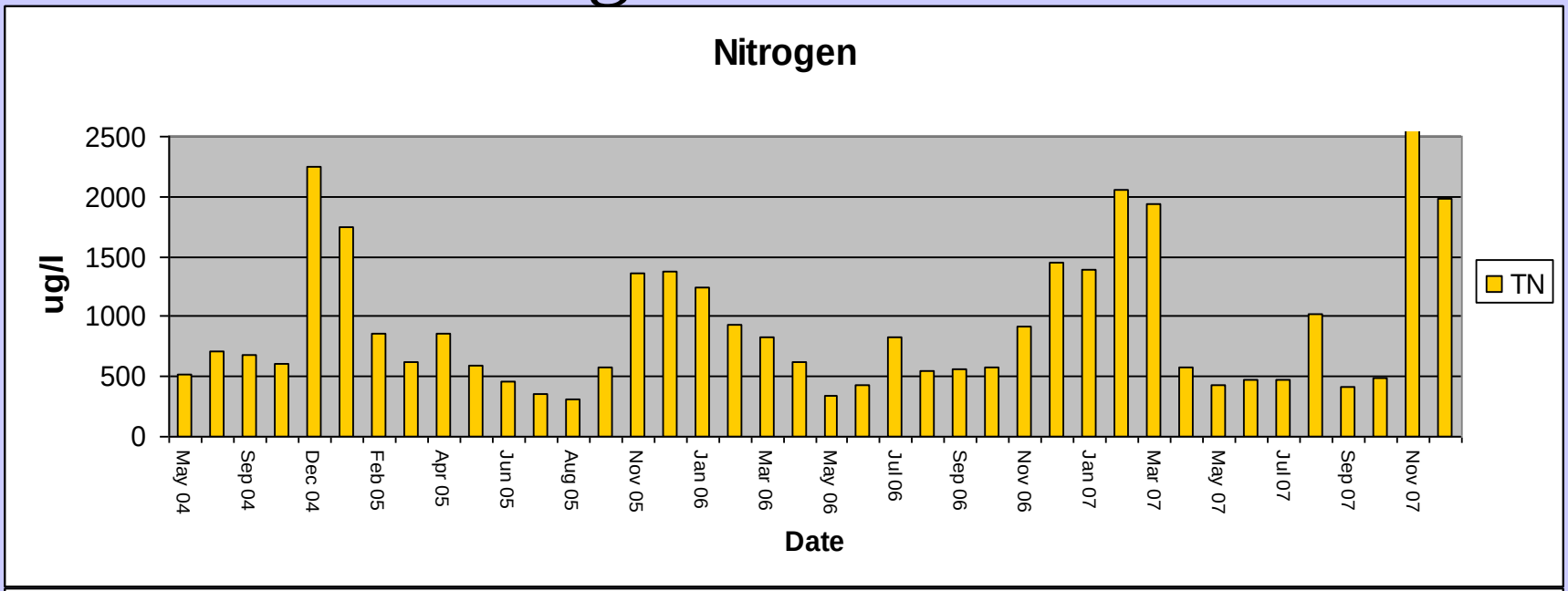


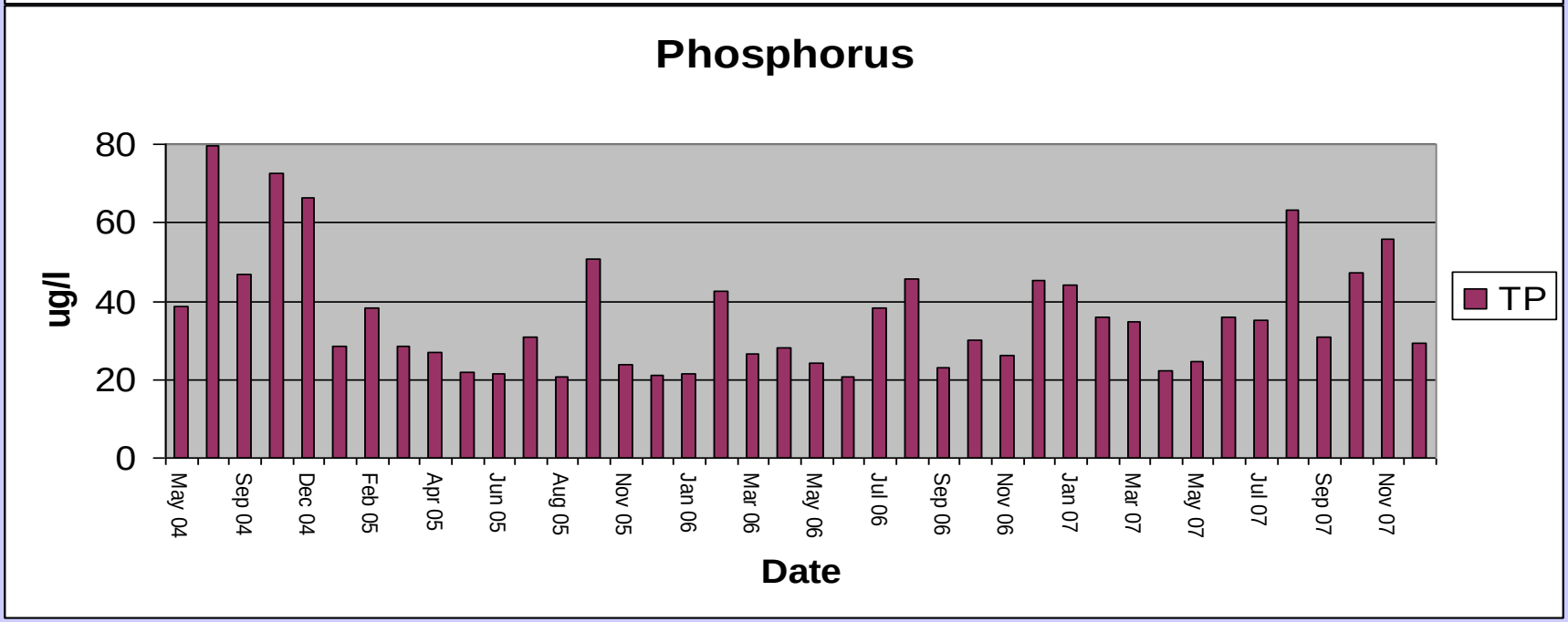


TEMPLETON ARM



Big Cr. Arm

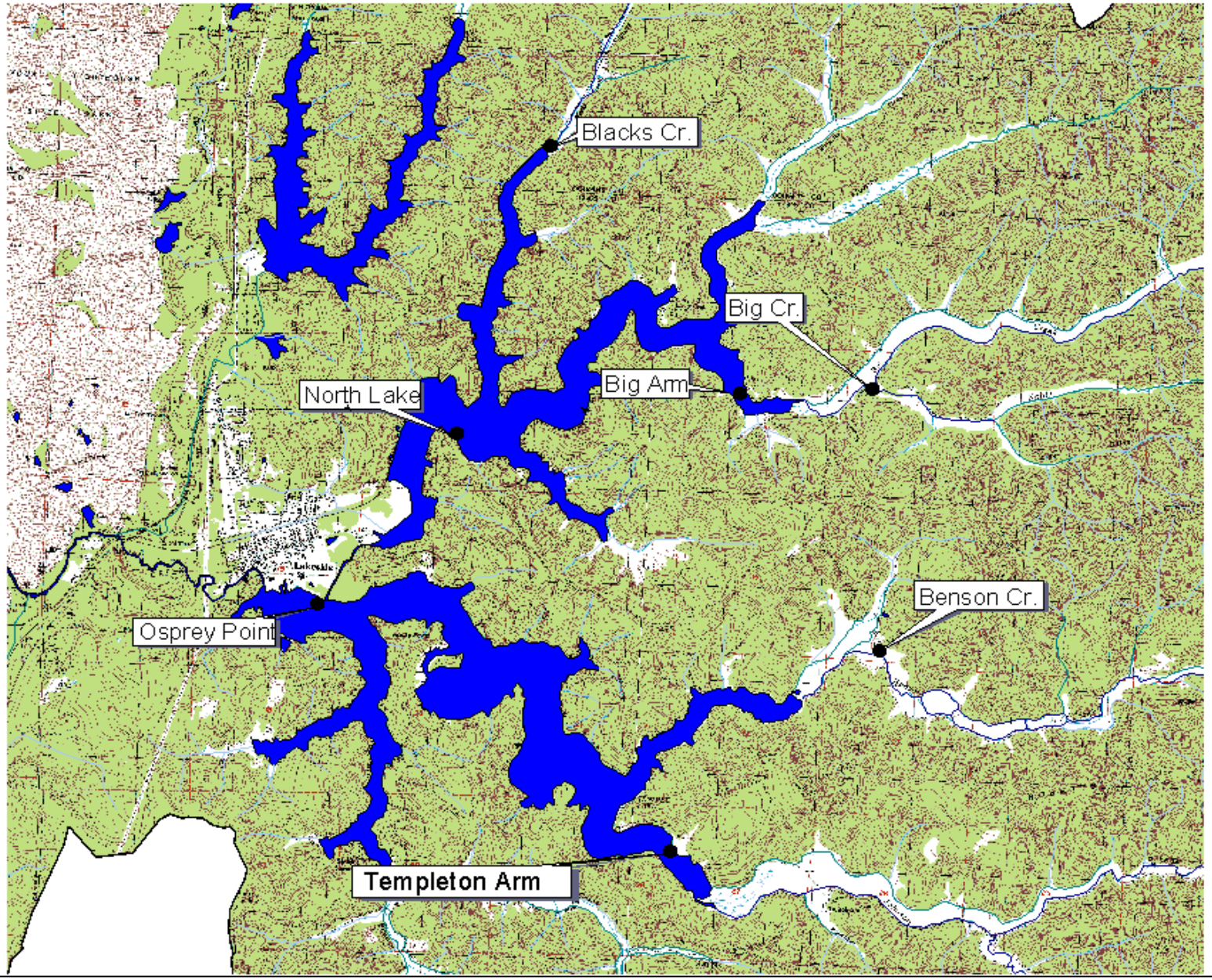

Nitrogen
ug/l
2500
2000
1500
1000
500
0
May 04
Sep 04
Dec 04
Feb 05
Apr 05
Jun 05
Aug 05
Nov 05
Jan 06
Mar 06
May 06
Jul 06
Sep 06
Nov 06
Jan 07
Mar 07
May 07
Jul 07
Sep 07
Nov 07
Date
TN


Phosphorus
ug/l
80
60
40
20
0
May 04
Sep 04
Dec 04
Feb 05
Apr 05
Jun 05
Aug 05
Nov 05
Jan 06
Mar 06
May 06
Jul 06
Sep 06
Nov 06
Jan 07
Mar 07
May 07
Jul 07
Sep 07
Nov 07
Date
TP

Tenmile Nutrient Summary

Parameter	USEPA	Tenmile Lakes (3.5yr avg.)
$NO_{2-}+NO_{3-}$	.02 (mg/L)	.33-.55 (mg/L)
TN	.19 (mg/L)	.78-1 (mg/L)
TP	7.1 (ug/L)	36-51 (ug/L)
Chlorophyll a	2.3 (ug/L)	7-17 (ug/L)

Storm Chasing



Rainfall Triggers

Return Periods for Daily Precipitation

North Bend

2 year Storm Event

Hours:	24	48	72	96	120
Inches:	2.68	4.1	5.15	5.95	6.73

5 year Storm Event

Hours:	24	48	72	96	120
Inches:	3.81	5.51	6.6	7.57	8.41

10 year Storm Event

Hours:	24	48	72	96	120
Inches:	4.87	6.49	7.51	8.57	9.45

25 year Storm Event

Hours:	24	48	72	96	120
Inches:	6.43	7.74	8.59	9.74	10.66

Blacks Creek Auto Sampler

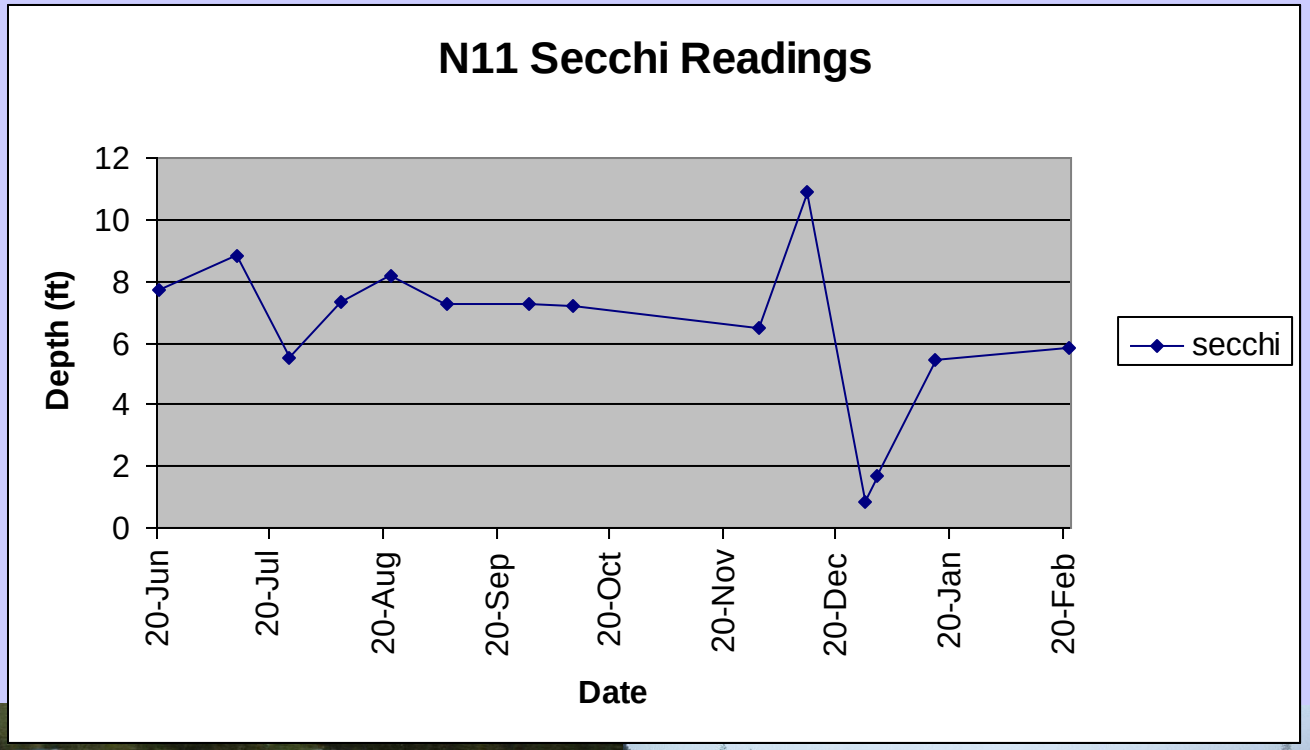
Big Cr. Auto Sampler

Benson Auto Sampler





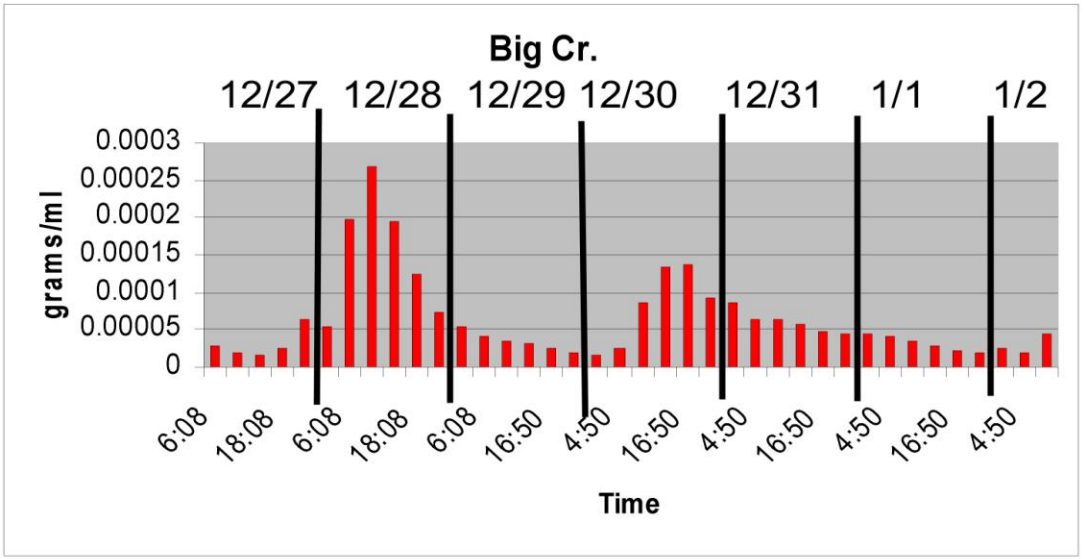


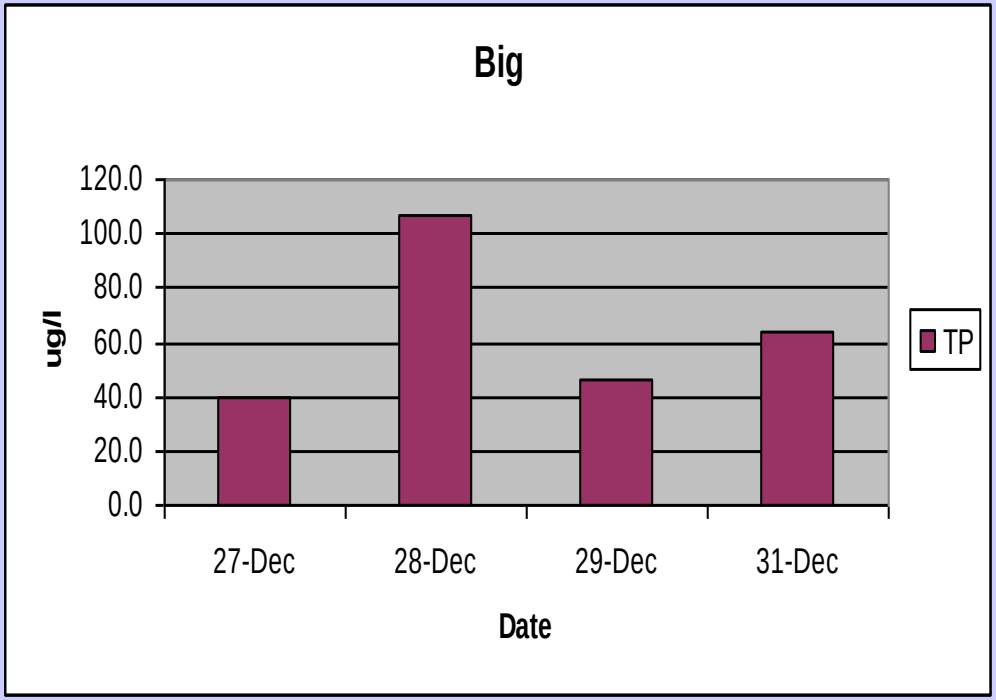

N11 Secchi Readings
Depth (ft)
12
10
8
6
4
2
0
20-Jun
20-Jul
20-Aug
20-Sep
20-Oct
20-Nov
20-Dec
20-Jan
20-Feb
Date
secchi

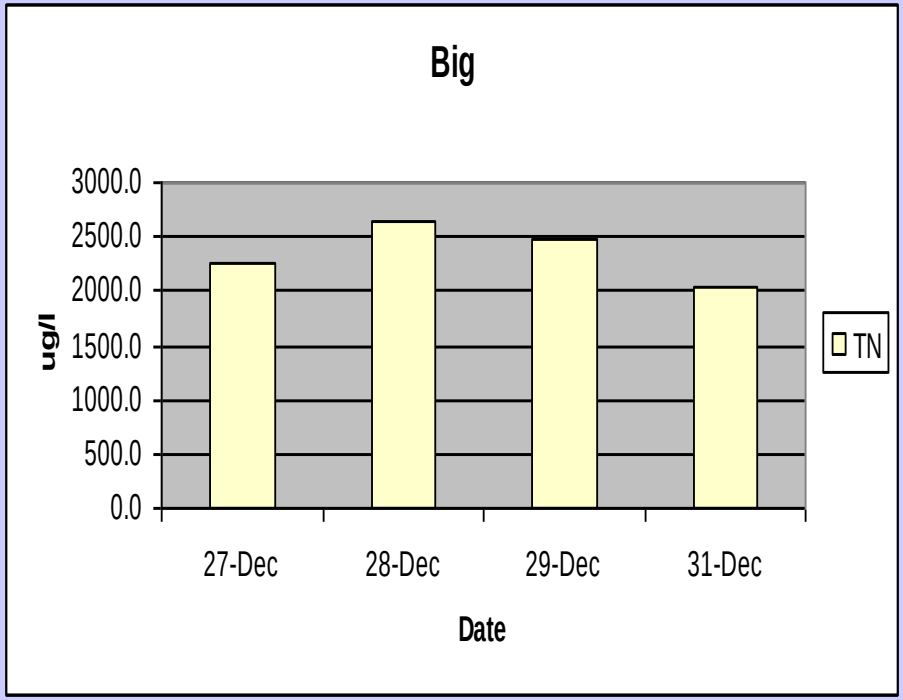
Data

Big Cr.

Avg. TSS- 64 mg/L



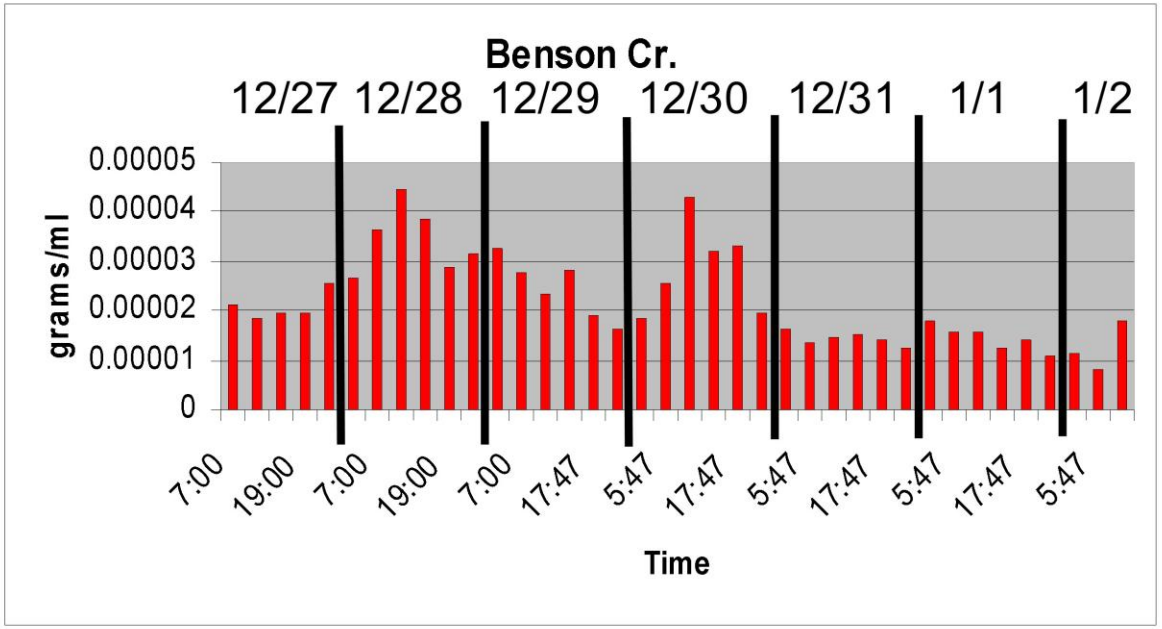


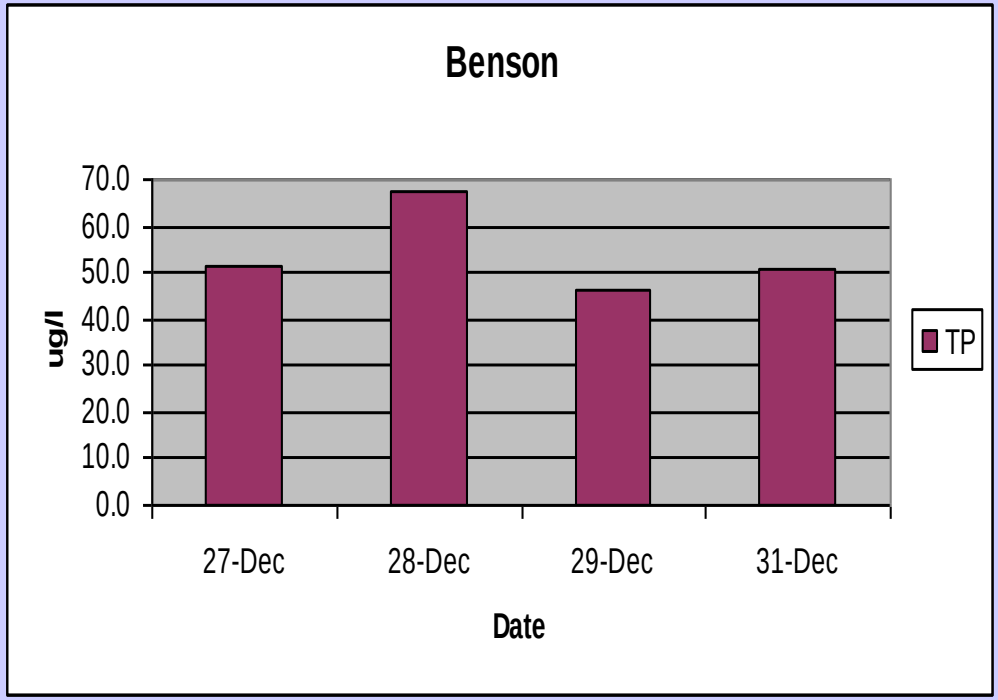


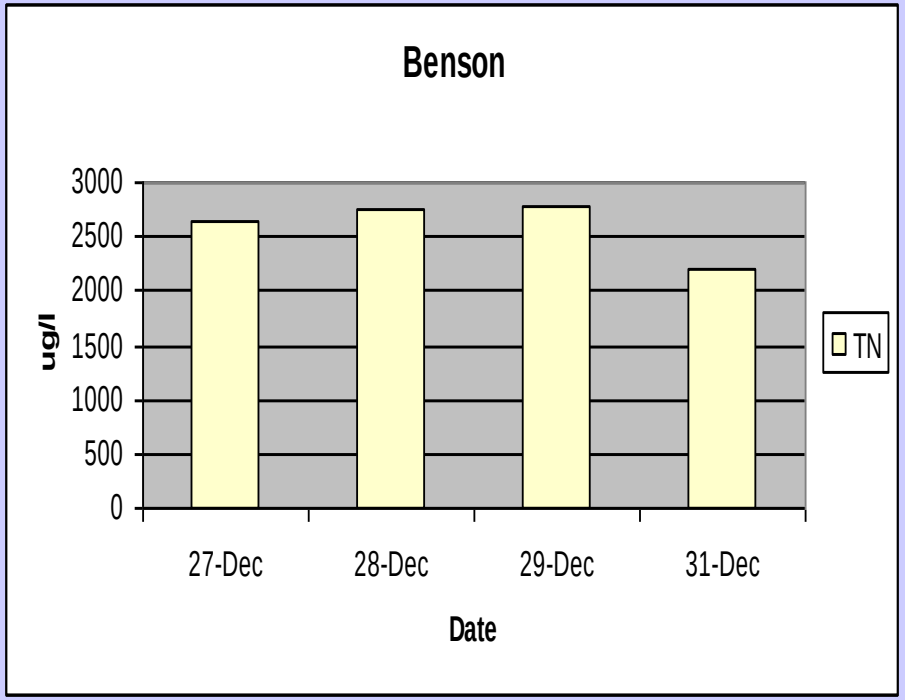
Data

Benson Cr.

Avg. TSS- 22.7 mg/L



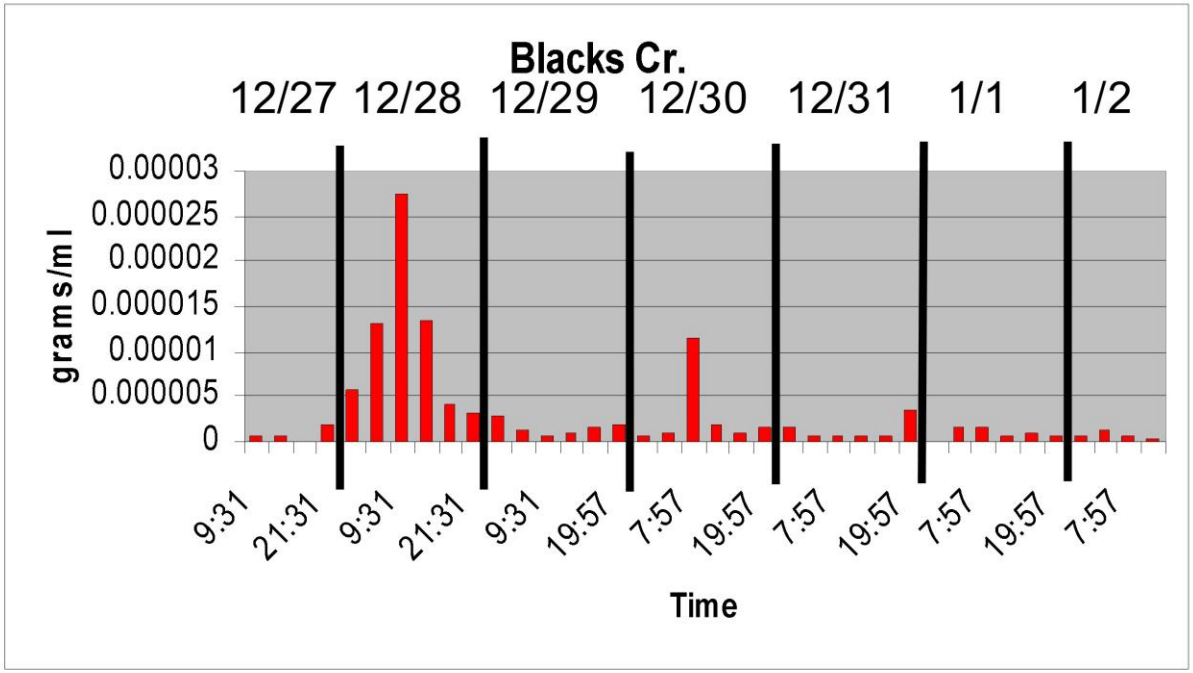


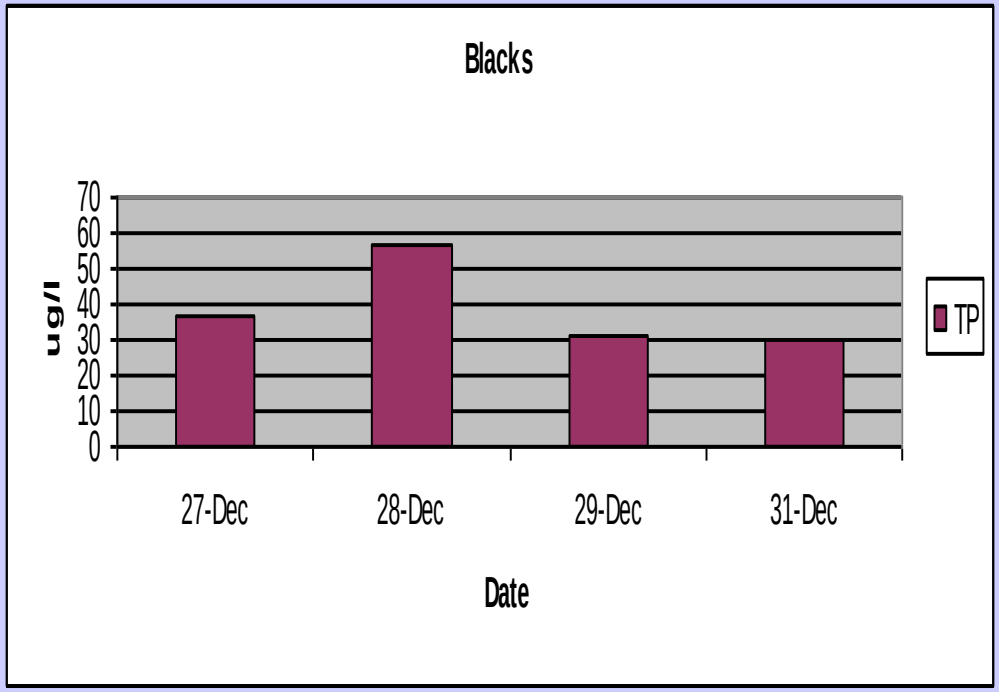


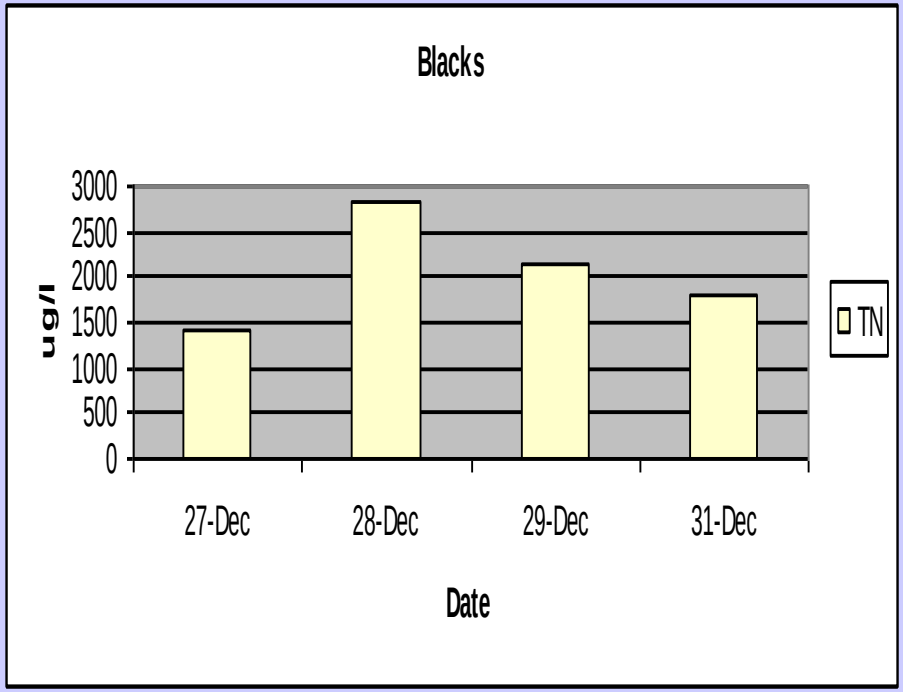
Data

Blacks Creek

Avg.TSS- 3.01mg/L

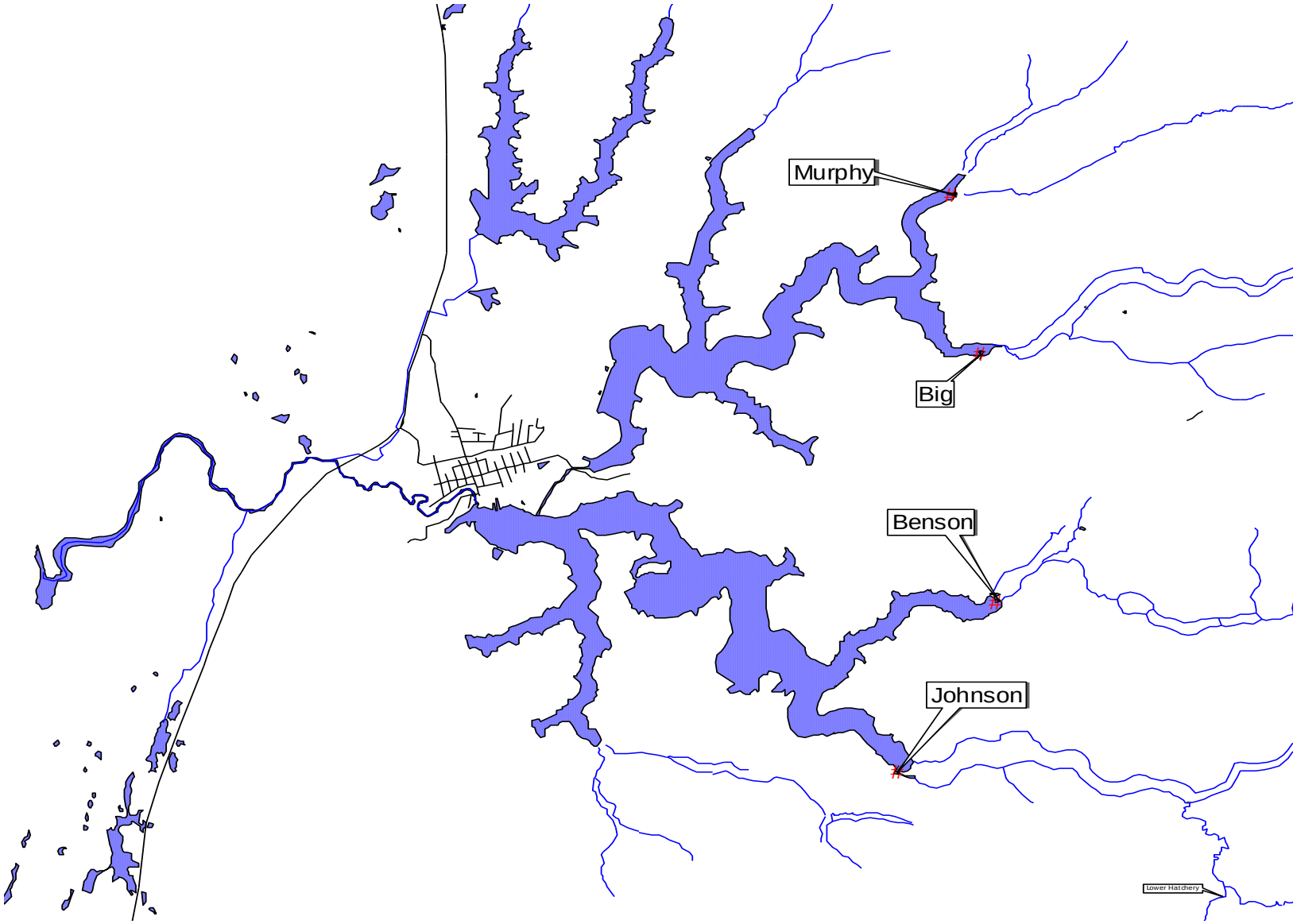






SEDIMENTATION

Delta Building Sites



Benson Cr.

2004 **2008**

Coleman Arm

2004

- Length- 74’ 11”
- 1: Width: 20’ 7”
- 2: Width: 10’ 2”
- 3: Width: 17’ 19”
- 4: no width

Lake Height for 2004 & 2008- 6.43ft

2008

- total delta length-172’2”
- 1: width-29’
- 2: width-33’*
- 3: width-32’*
- 4: width-57’*
- 5: width-57’
- 6: width-64’
- 7: width-59’
- 8: width-40’
- 9: width-0’

*Survey gained 8” of sediment on top of survey marks

Murphy

2004

2007


2004
No land mass to measure
Lake Height- 6.43ft
2007
Length-63’ 2”
•1:width- 17’5”
•2:width- 14’6
•3:width- 9’
•4:width- 4’ 10’
•5: no width
Lake Height- 5.74ft

3/6/07
Johnson/Hatchery
Fencing


6/14/07
Plum Gulch
Riparian

Sunlake Dr.

May 13, 2000

Sunlake Dr.

February 20, 2007


LAKEFRONT
DEVELOPMENT

June 2007

January 2008

June 2008

May 2007

October 2007

Reducing your impacts to this area will keep your shoreline stable and minimize negative impacts to the lakes. Viewing the lakes from your property often seems to conflict with maintaining

healthy riparian zones. But with help lakefront owners can often find a compromise in planning lakefront landscaping that protects the lakes as well as providing beautiful views. Impacts to these areas below 12.21 msl requires contacting DSL for authorization and falling of trees may require a permit from the Oregon Department of Forestry. When developing or improving your property some riparian friendly solutions include: **1)** Minimize use of non-native shrubs, **2)** Develop a filter strip of native plants above the high water mark. **3)** Minimize use of fertilizers and herbicides. For more information and assistance please contact:

Coos Bay ODF	**541.269.4136**
Department of State Lands	**541.378.3805**
Tenmile Lakes Basin Partnership	**541.759.2414**

LAKEFRONT EROSION

Whether building a new three bedroom on Lindross Arm or just adding an out building to an existing home on Big Creek Arm , this is where "lake friendly" planning should begin. The Tenmile Lakes are filling in with sediment 1000 times faster than before the Tenmile area was settled. Development of lakefront lots are contributing to this problem. With a little common sense and basic understanding of your property, new homes and additions may be completed with minimal impacts to the lakes while achieving your goals for your lakefront property. Some common "lake friendly" recommendations include: **1)** Ensure you have all permits. **2)** If not doing the work yourself, hire a qualified contractor familiar with Tenmile issues like steep ground and drainage issues. **3)** Have and implement an **Erosion Control Plan** that includes silt fences and seeding exposed soils with grass mix. For more information and assistance please contact:

Coos Bay ODEQ	**541.269.2721**
Tenmile Lakes Basin Partnership	**541.759.2414**
Department of State Lands	**541.378.3805**

TENMILE LAKES STEWARDSHIP

A GUIDE FOR LAKEFRONT PROPERTY OWNERS

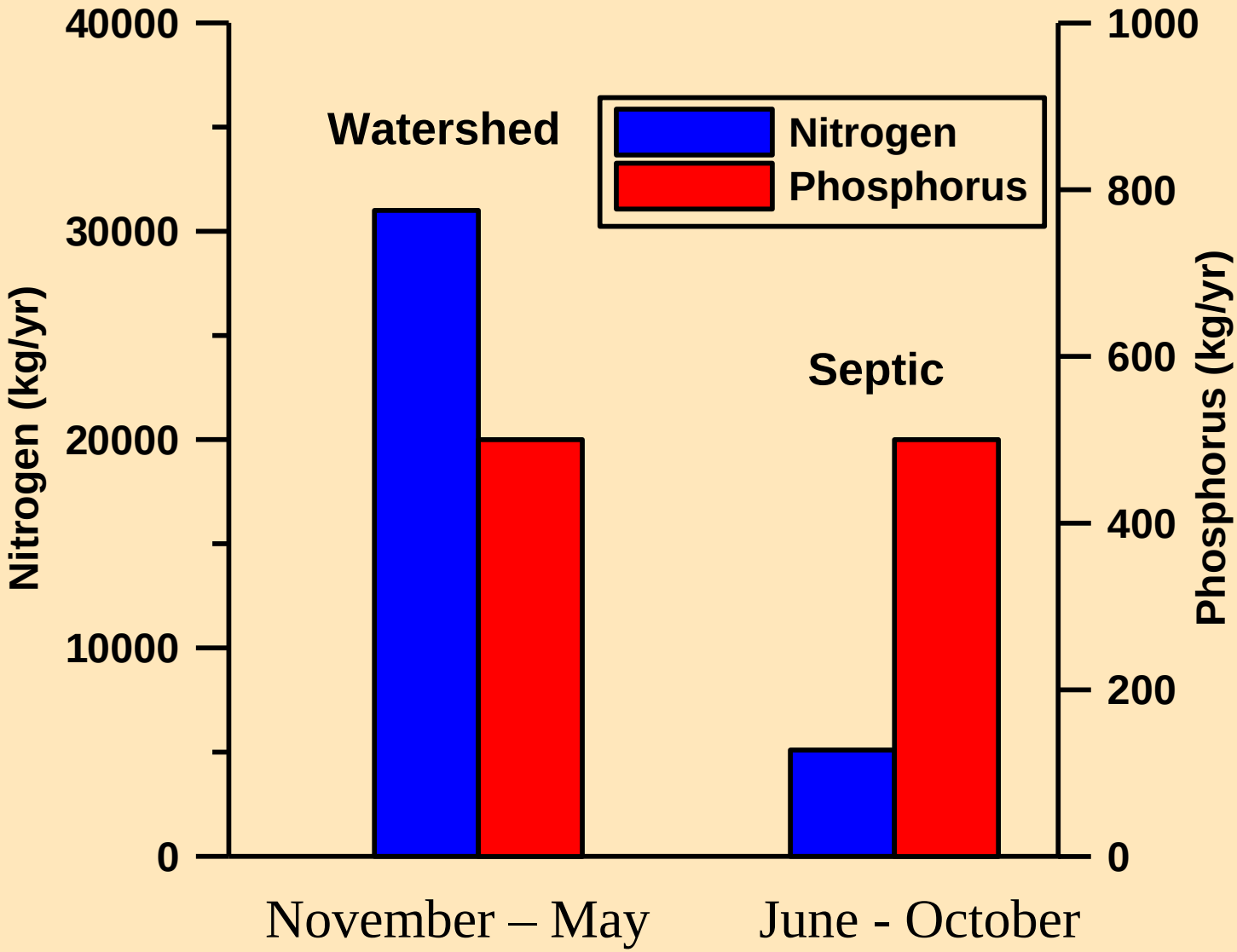
We sure are lucky! We own lakefront property along the shorelines of beautiful North and South Tenmile Lakes. With this ownership comes a responsibility to ourselves and other lake users to do what we can to maintain the quality of the lakes.

Sometimes this is a tough compromise. For example, clearing shoreline vegetation to increase the view can impact slope stability and damage the filter strip that is important in reducing sediment inputs into the lakes which in turn, affects weed and algae growth.

This brochure is your guide to taking proper care of your lakefront property and the Lakes. It will give you some general information about Tenmile, discuss important issues with owning lakefront property, describe actions that need authorization or permits, and provide specific information that you need to protect our Lakes so we can continue to enjoy them in the future.

SEPTIC TANKS

LAKE SOURCES OF N & P



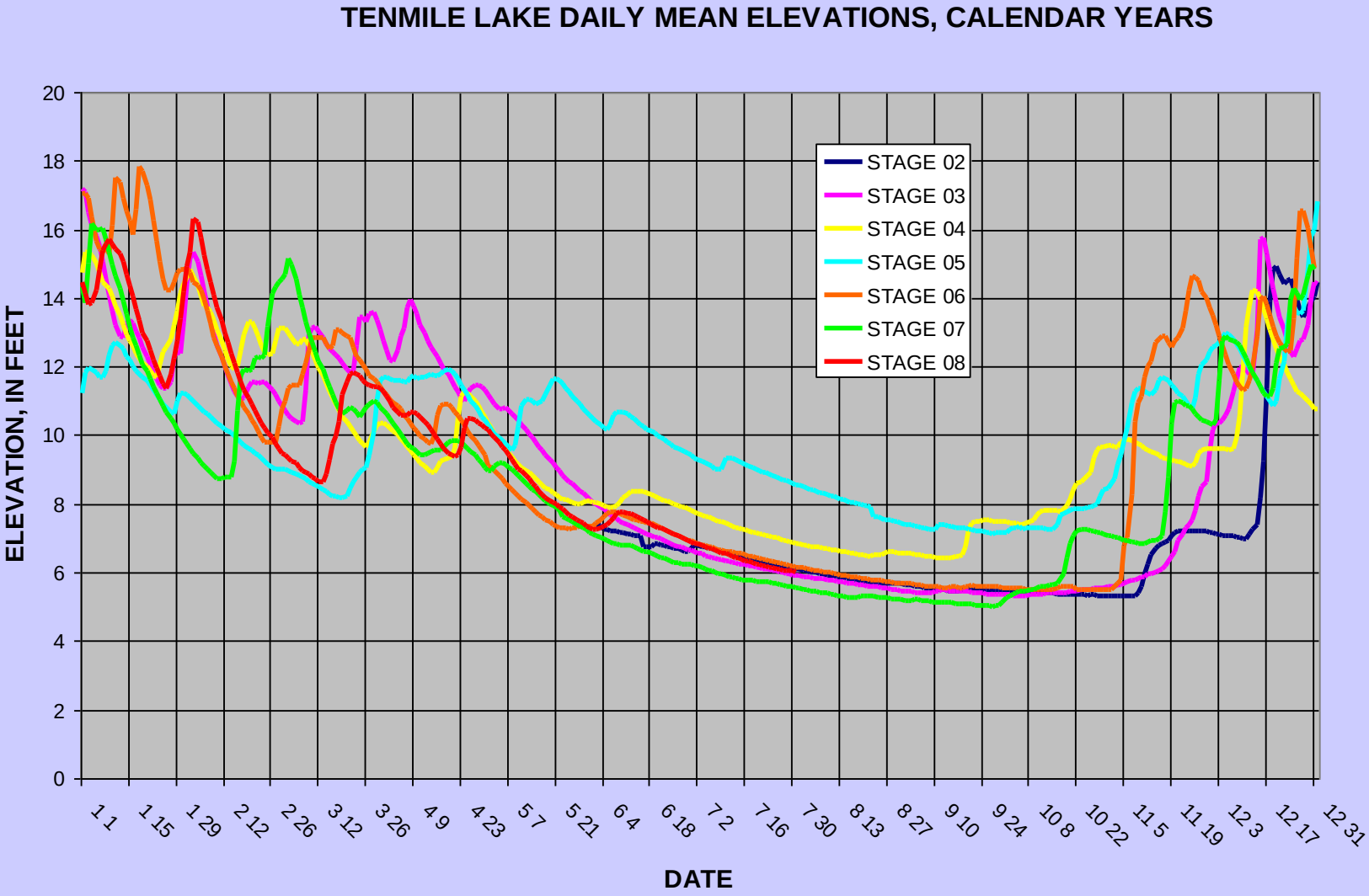
Pre-1974 Septic System Survey

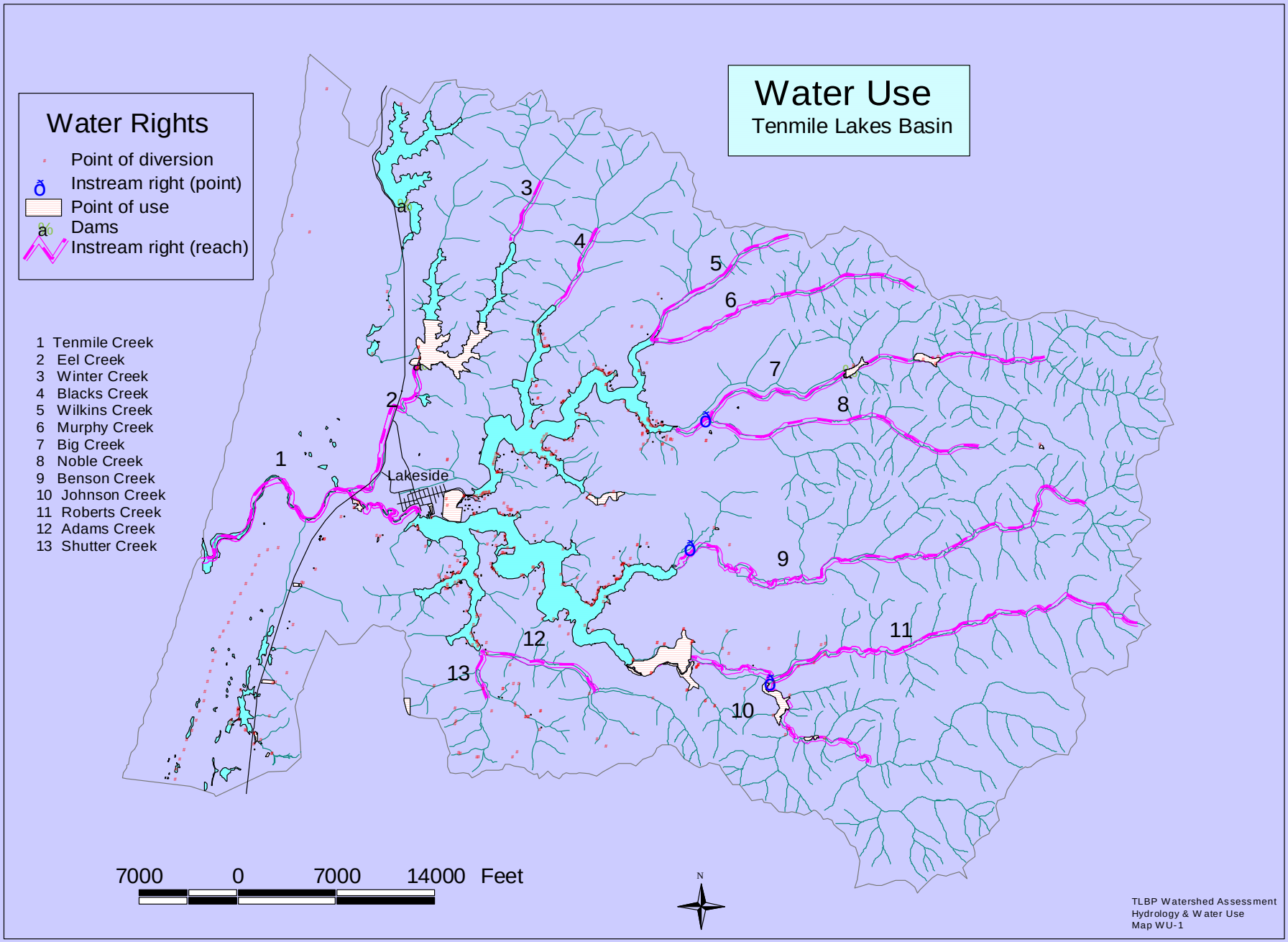
Worked with county health department to inspect 60 lakefront Homes in 2006 and 2007.

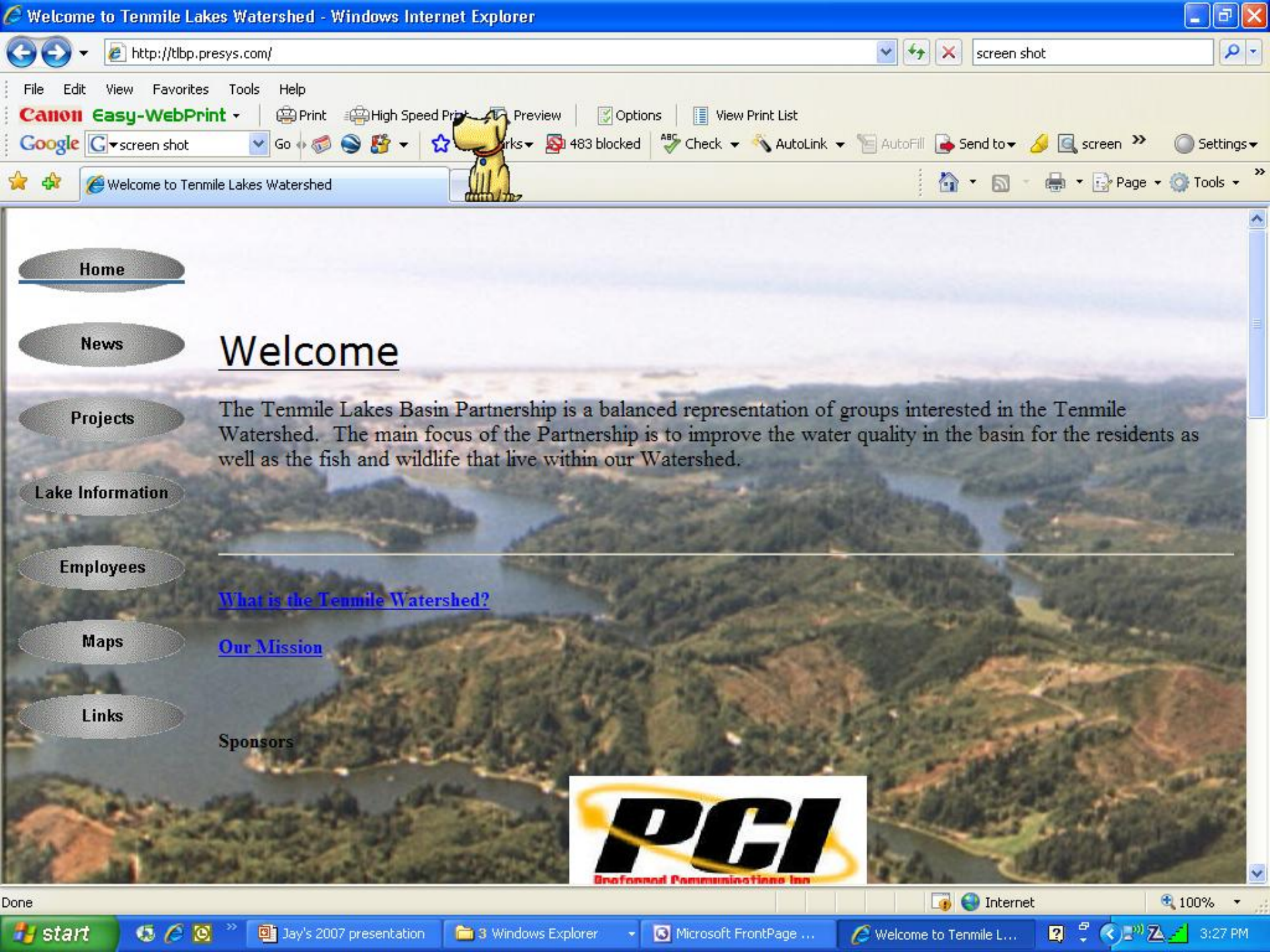
Some Results of Pre-1974 Septic Systems

- 5 Homes had indoor plumbing with no sewage treatment components identified
- 10 Homeowners expressed interest in adhering to a septic system maintenance plan
- 11 Homeowners had systems needing repairs, and were interested in adhering to a system maintenance schedule
- 20 Homeowners interested in scheduling tank pumping with neighbors to reduce costs
- 26 Landowners didn't want to fix failing systems because they did not trust the government
- 4 did not want to fix their failing system because it might disrupt the natural beauty of their land

WATER AVAILABILITY


TENMILE LAKE DAILY MEAN ELEVATIONS, CALENDAR YEARS
ELEVATION, IN FEET
20
18
16
14
12
10
8
6
4
2
0
STAGE 02
STAGE 03
STAGE 04
STAGE 05
STAGE 06
STAGE 07
STAGE 08
1 1
1 15
1 29
2 12
2 26
3 12
3 26
4 9
4 23
5 7
5 21
6 4
6 18
7 2
7 16
7 30
8 13
8 27
9 10
9 24
10 8
10 22
11 5
11 19
12 3
12 17
12 31
DATE


Water Use
Tenmile Lakes Basin
Water Rights
Point of diversion
Instream right (point)
Point of use
Dams
Instream right (reach)
1 Tenmile Creek
2 Eel Creek
3 Winter Creek
4 Blacks Creek
5 Wilkins Creek
6 Murphy Creek
7 Big Creek
8 Noble Creek
9 Benson Creek
10 Johnson Creek
11 Roberts Creek
12 Adams Creek
13 Shutter Creek
Lakeside
7000 0 7000 14000 Feet
N
TLBP Watershed Assessment
Hydrology & Water Use
Map WU-1

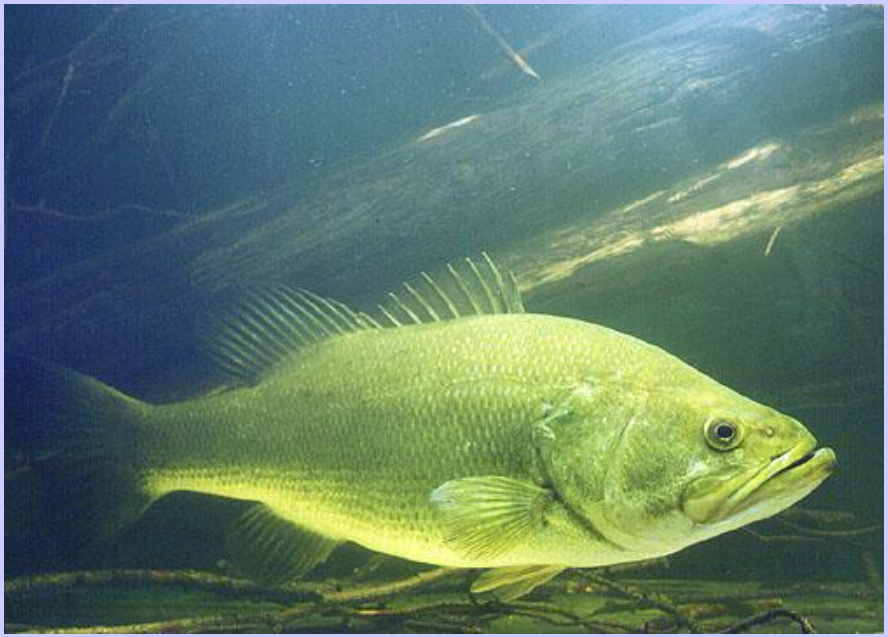

Welcome to Tenmile Lakes Watershed - Windows Internet Explorer
http://tlbp.presys.com/
screen shot
File Edit View Favorites Tools Help
Canon Easy-WebPrint
Print
High Speed Print
Preview
Options
View Print List
Google
screen shot
Go
483 blocked
Check
AutoLink
AutoFill
Send to
screen
Settings
Welcome to Tenmile Lakes Watershed
Page
Tools
Home
News
Projects
Lake Information
Employees
Maps
Links
Welcome
The Tenmile Lakes Basin Partnership is a balanced representation of groups interested in the Tenmile Watershed. The main focus of the Partnership is to improve the water quality in the basin for the residents as well as the fish and wildlife that live within our Watershed.
What is the Tenmile Watershed?
Our Mission
Sponsors
PCI
Done
Internet
100%
start
Jay's 2007 presentation
3 Windows Explorer
Microsoft FrontPage ...
Welcome to Tenmile L...
3:27 PM

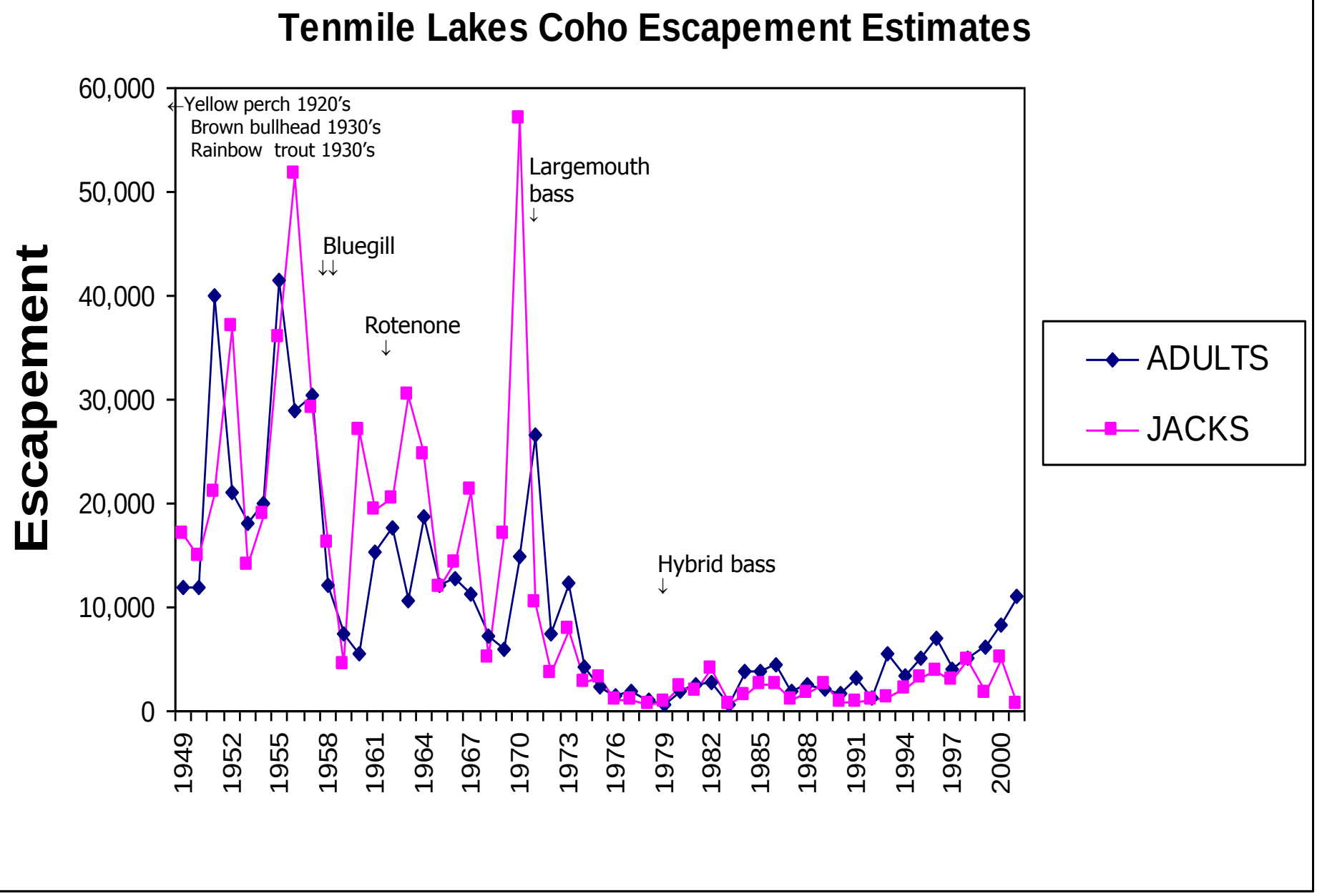
Non-native fish

BLUEGILL

BLACK CRAPPIE

LARGEMOUTH BASS




Tenmile Lakes Coho Escapement Estimates
Escapement
60,000
50,000
40,000
30,000
20,000
10,000
0
1949
1952
1955
1958
1961
1964
1967
1970
1973
1976
1979
1982
1985
1988
1991
1994
1997
2000
←Yellow perch 1920's
Brown bullhead 1930's
Rainbow trout 1930's
Bluegill
Rotenone
Largemouth bass
Hybrid bass
ADULTS
JACKS

Where Do We Go From Here

- Aquatic Weed Control Projects
- Land Use Planning & Permitting
- Biomanipulation Study
- Lake Water Quality Monitoring
- Lake Flow Study
- Non-native Fish Predation Study
- Coho Population Study
- Alternatives For Onsite Septic Systems
- Sediment Abatement

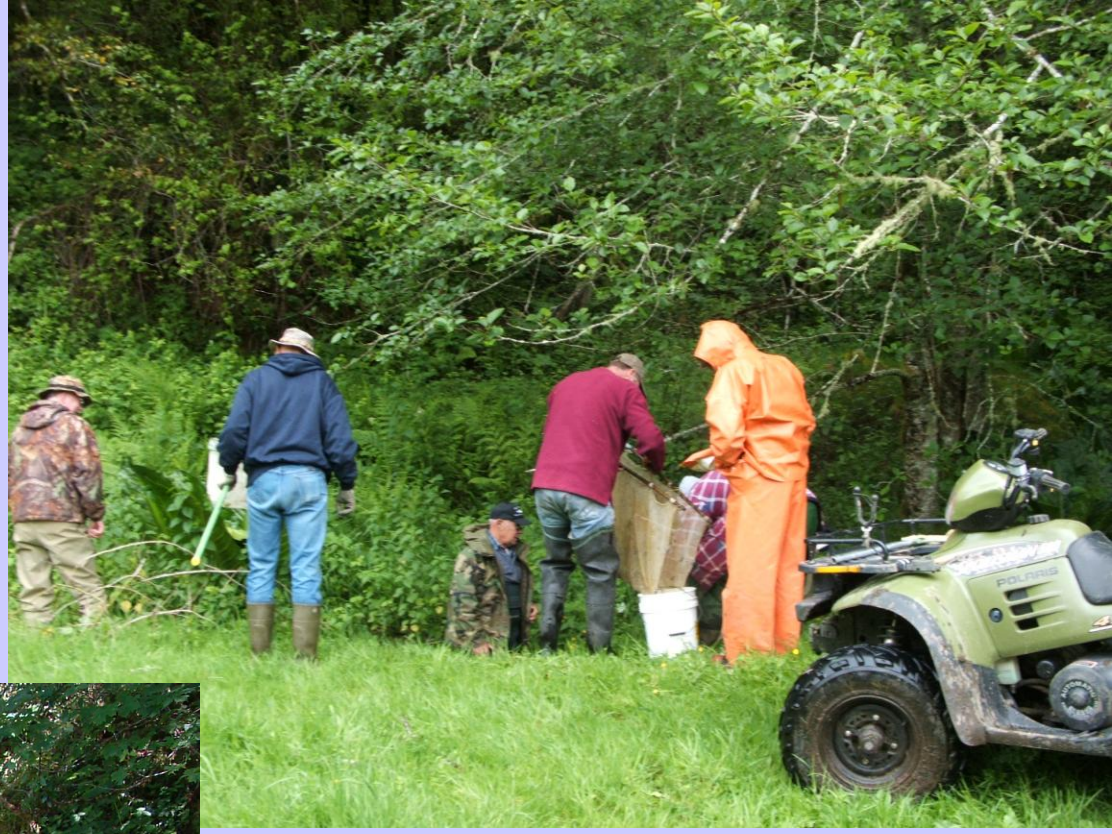
VOLUNTEER OPPORTUNITIES

Eagle/ Osprey Nesting Surveys

Purple Martin Nesting

Riparian Planting

Fry Salvage



Western Pond Turtle Surveys

Thank You

City of Lakeside

ODEQ

ODFW

Preferred Systems

Jacob Kann

Project Site Landowners

Lakeside Lions

Lakeside McKays

TLOA

OWEB

Milo Crumrine

Lakeside Marina

BLM

ODSL

Volunteers

Eel/ Tenmile STEP

Sunlake Marina