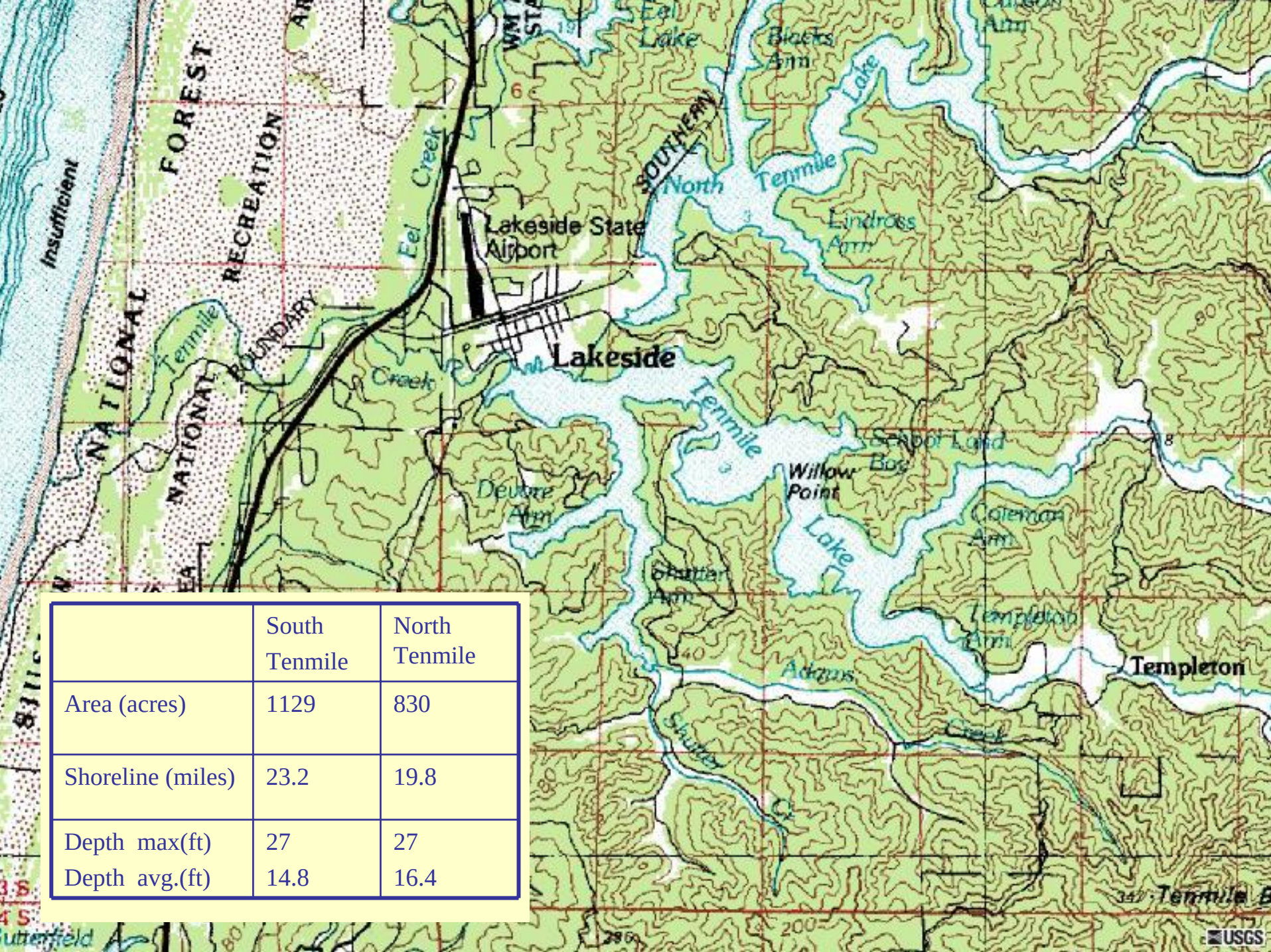
State of the Lakes

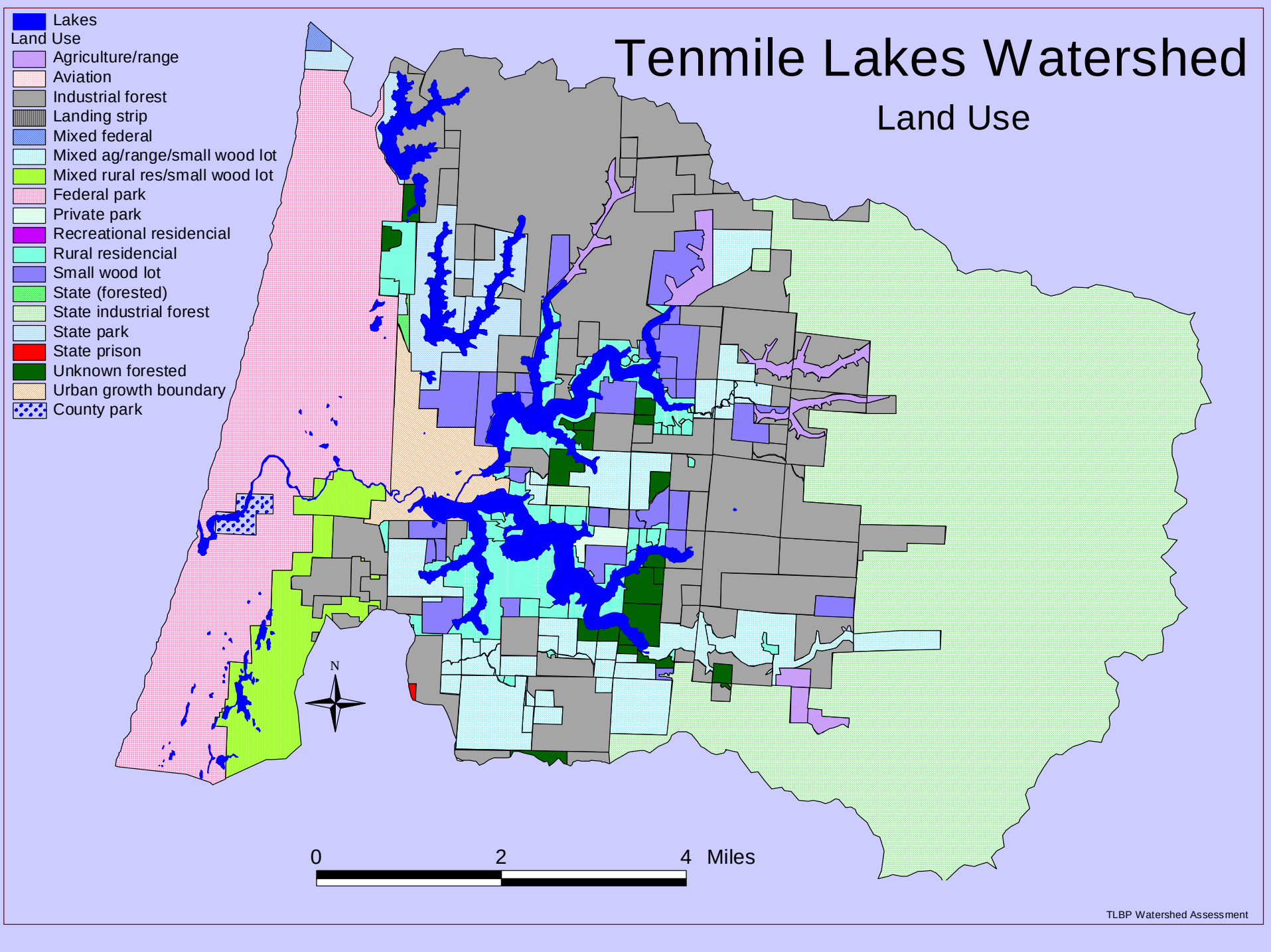
OVERVIEW

- BREIF LAKE HISTORY
- ALGAE SAMPLING
- NUTRIENT MONITORING
- SEDIMENTATION
- SHORELINE DEVELOPMENT
- SEPTIC TANKS
- WATER AVAILABILITY
- NON-NATIVE WEEDS & FISH
- VOLUNTEER OPPORTUNITIES


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

LAKESIDE ORE.
TEN MILE.

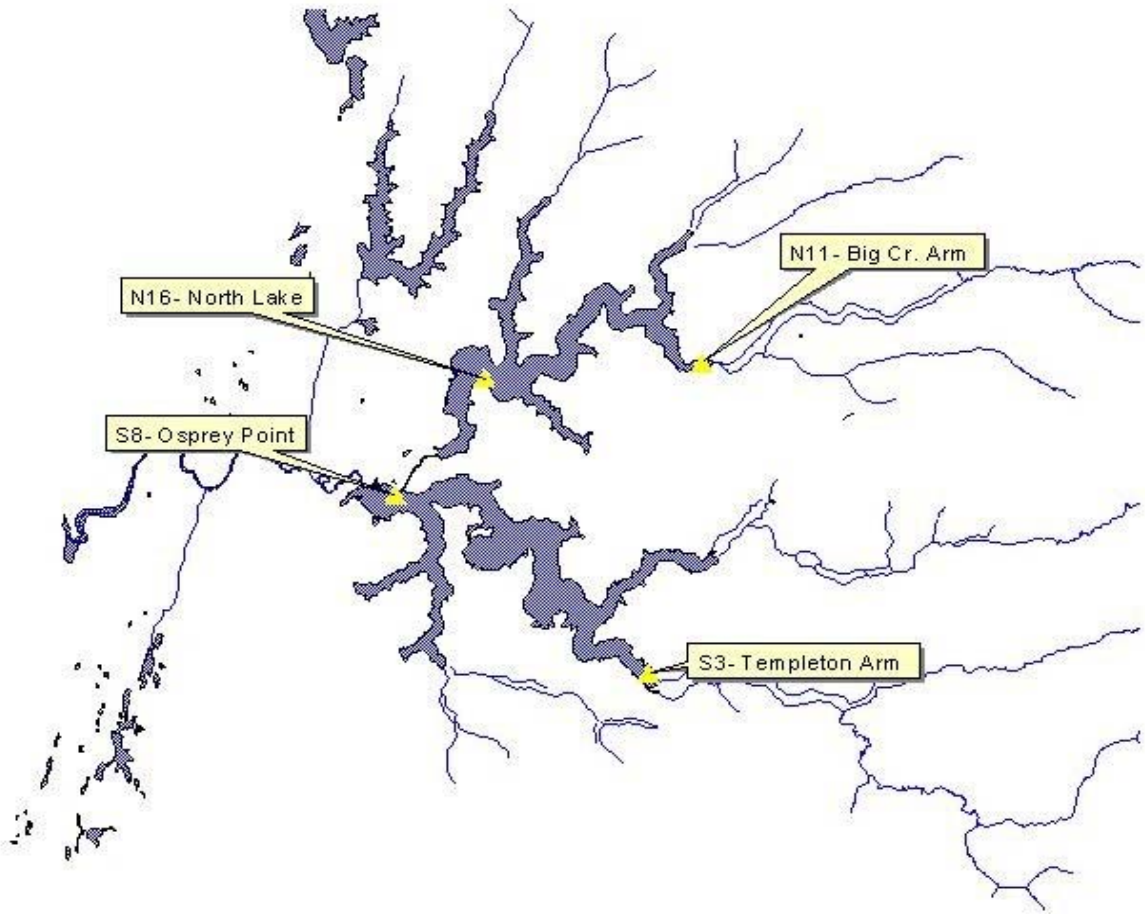

TEN MILE LAKE


S.M.94. R.T.
Airplane View of Lakeside and Currier's Village
Ten Mile Lake, Oregon Coast Highway


Lakeside, OR
Image © 2009 DigitalGlobe
©2009 Google


Algae Sampling Program

Algae



Algae Sampling Sites

Streams

L

M

S

Lakes

N

W

E

S

4 0 4 8 Miles


TAKE A FLYING LEAP
EAGLE
MENU UP
MENU DOWN
PWR CLR


NALGENE
BREWERY



Blue-Green Algae Alert Levels

For Drinking Water:

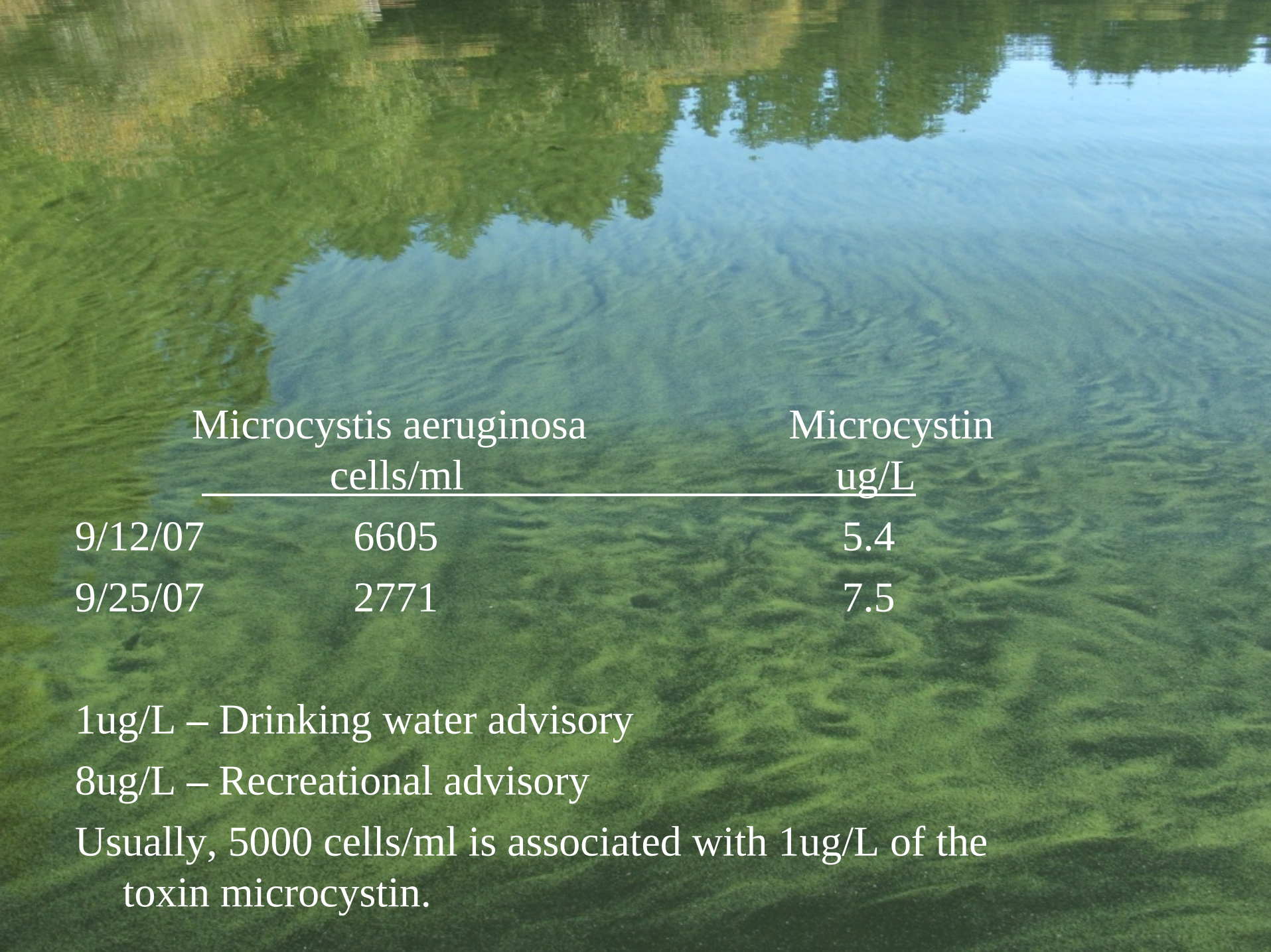
- Alert Level 1- Increased Vigilance Level (>500 cells/ml of potentially toxigenic species)
- Alert Level 2- Consultation with Health Authorities and Media release (2000 cells/ml of potentially toxigenic species)
- Alert Level 3- assessment by health authorities indicates the water may be unsafe and 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

Station	Date	Microcystis Cells/ml	Total Anabaena Cells/ml
S3	8/10/09	3719	5397
S8	8/10/09	1018	2699
N11	8/10/09	0	10966
N16	8/10/09	172	3536

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



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

1ug/L – Drinking water advisory

8ug/L – Recreational advisory

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: Laura Boswell (971) 673-0440

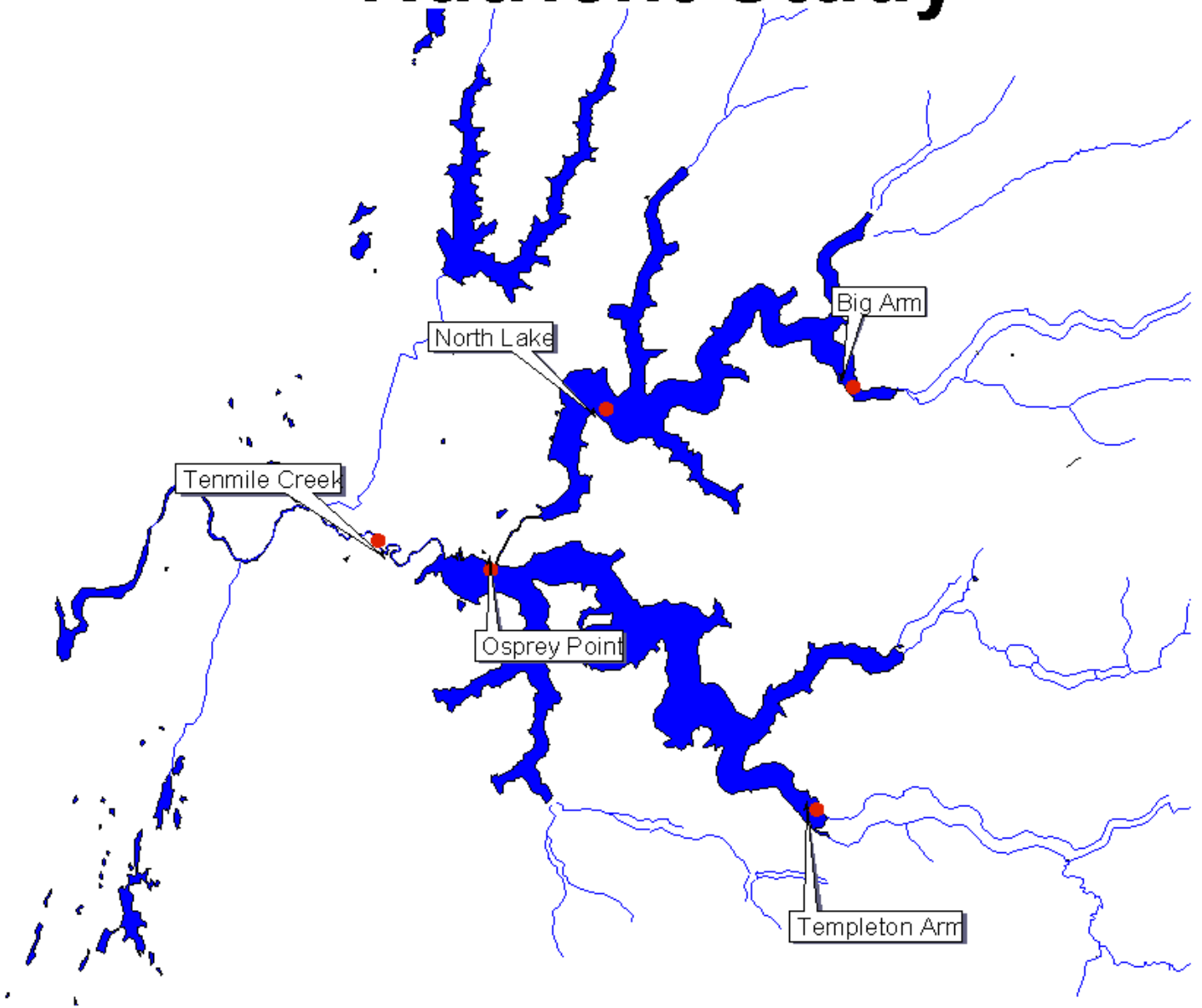
Lab Station ID	Description	Date	*Microcystis aeruginosa (cells/ml)*	*Anabaena flosaquae* (cells/ml)	*Anabaena planktonica* (cells/ml)	*Anabaena circinalis* (cells/ml)	*Anabaena sp.* (cells/ml)	*Total Anabaena* (cells/ml)	*Microcystin* (ug/ml)
L1	Tap	9/27/2006	0	326	41	0	0	367	
L2	intake	9/27/2006	735	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

Alterative water sources

NUTRIENTS

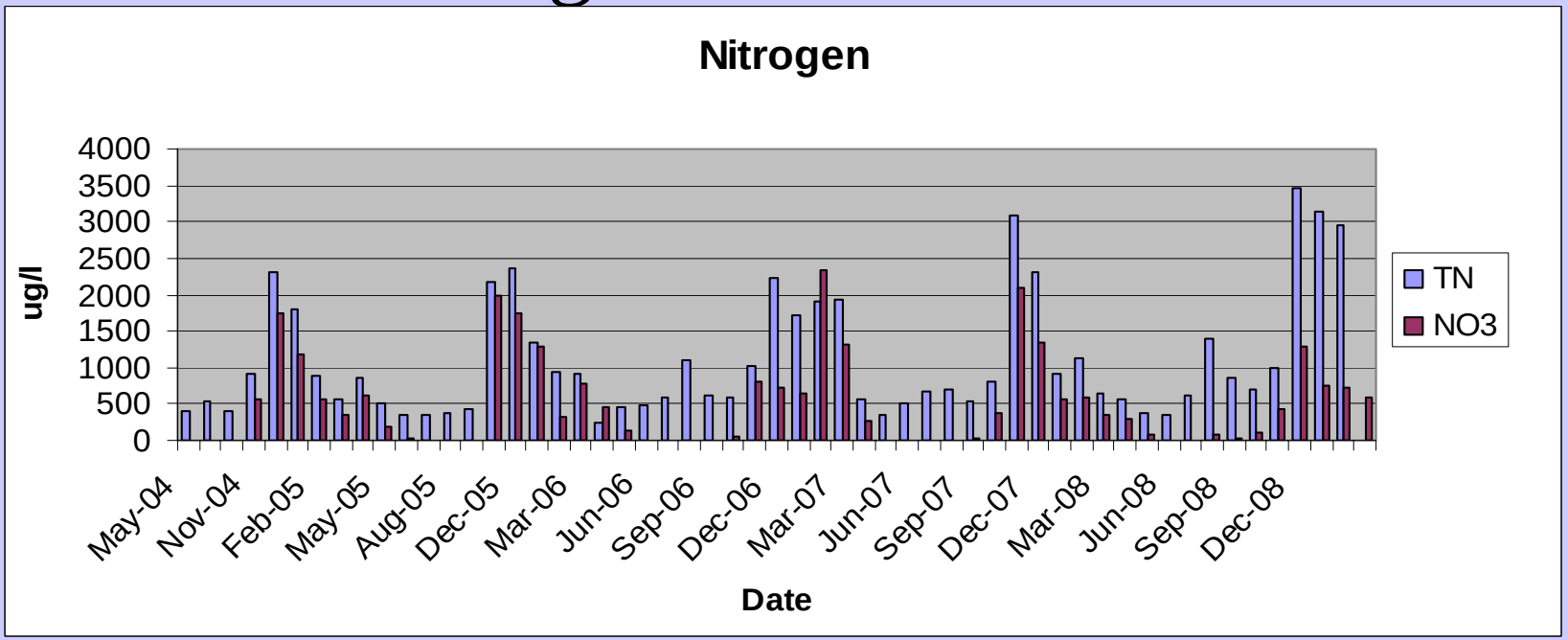
- LAKE SAMPLING
- STORM CHASING/ WINTER TRIB SAMPLING

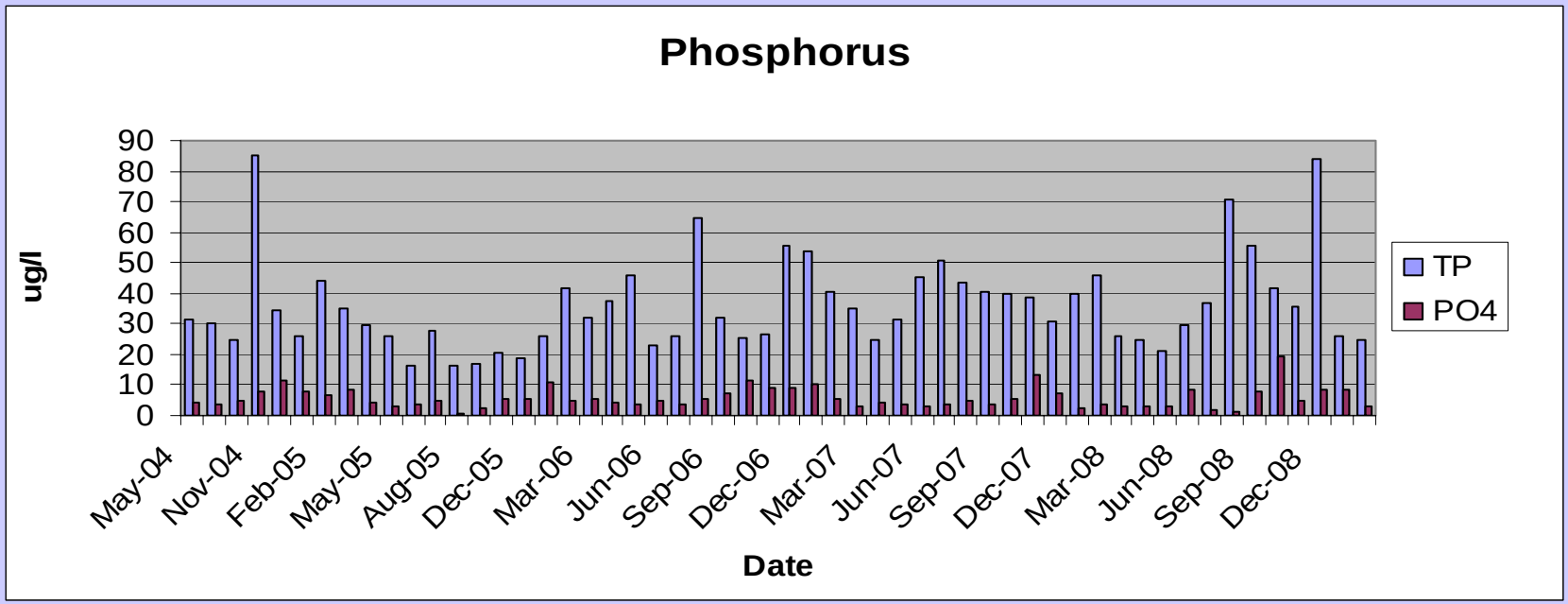
Nutrient Study



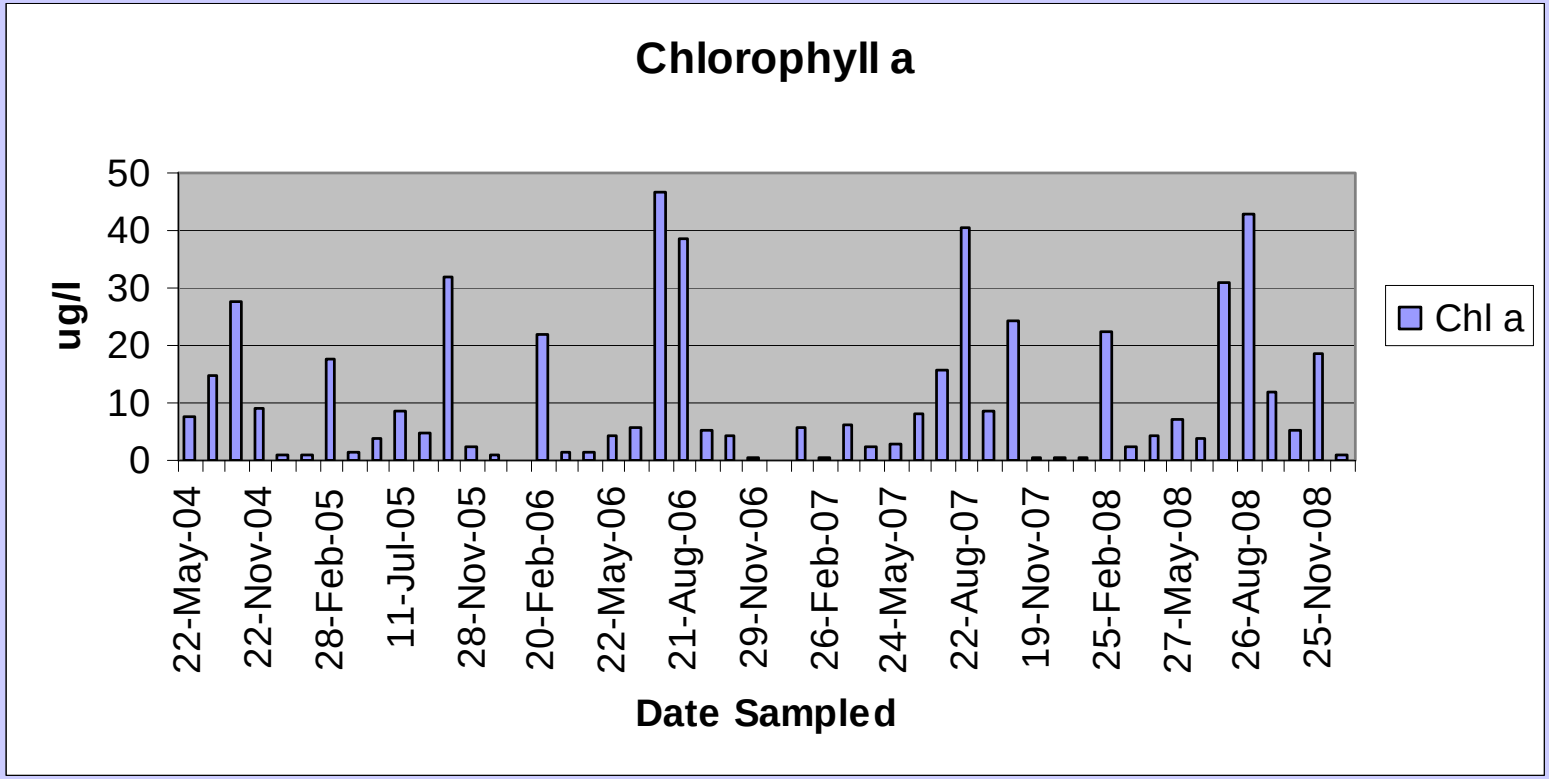



Big Cr. Arm


Nitrogen
ug/l
4000
3500
3000
2500
2000
1500
1000
500
0
May-04
Nov-04
Feb-05
May-05
Aug-05
Dec-05
Mar-06
Jun-06
Sep-06
Dec-06
Mar-07
Jun-07
Sep-07
Dec-07
Mar-08
Jun-08
Sep-08
Dec-08
Date
TN
NO3


Phosphorus
ug/l
90
80
70
60
50
40
30
20
10
0
May-04
Nov-04
Feb-05
May-05
Aug-05
Dec-05
Mar-06
Jun-06
Sep-06
Dec-06
Mar-07
Jun-07
Sep-07
Dec-07
Mar-08
Jun-08
Sep-08
Dec-08
Date
TP
PO4

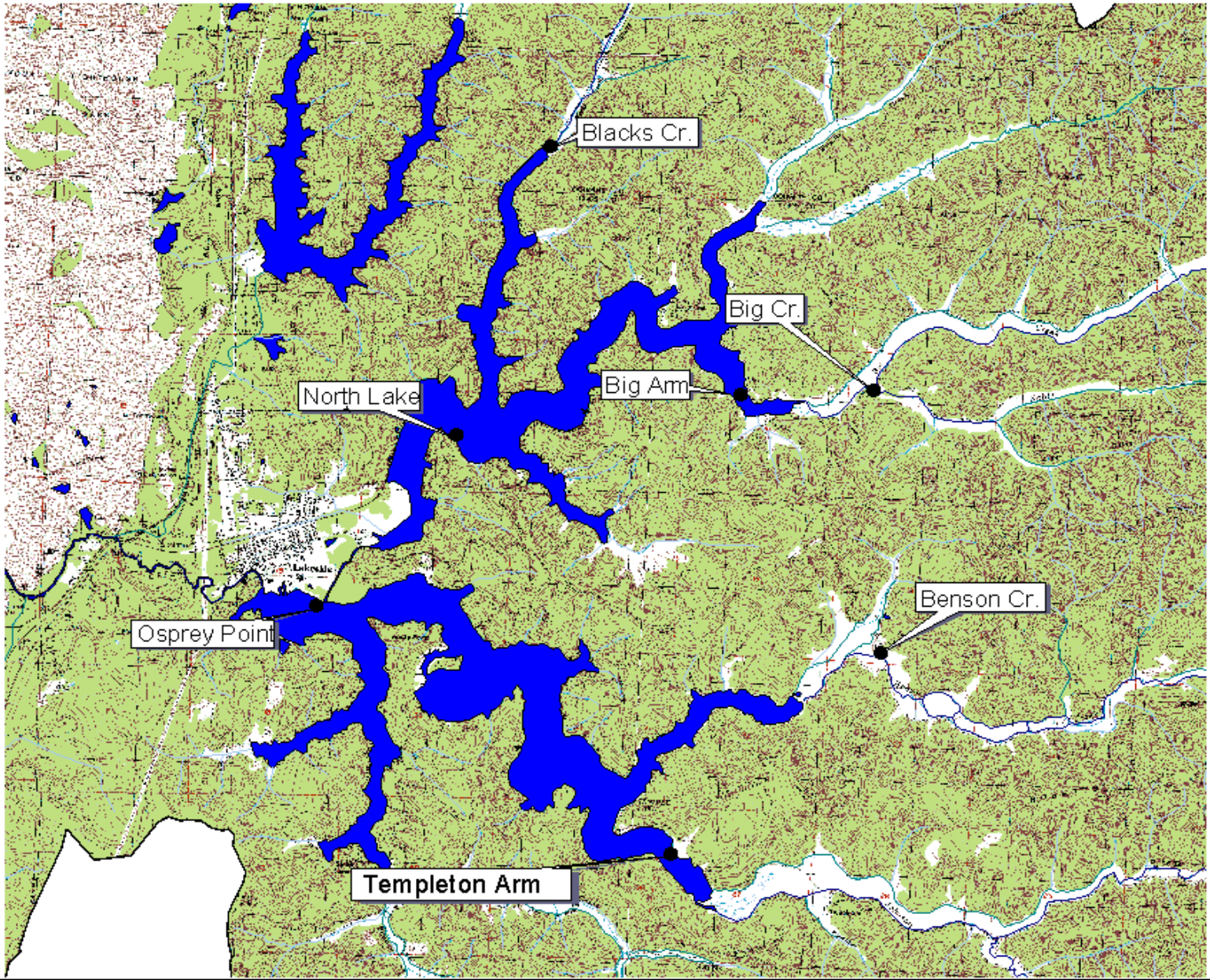
TEMPLETON ARM



Tenmile Nutrient Summary

Parameter	USEPA	Tenmile Lakes (4.5yr avg.)
$NO_{2-}+NO_{3-}$	20 (ug/L)	320-510 (ug/L)
TN	190 (ug/L)	785-1091 (ug/L)
TP	7.1 (ug/L)	36-44 (ug/L)
Chlorophyll a	2.3 (ug/L)	7-18 (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

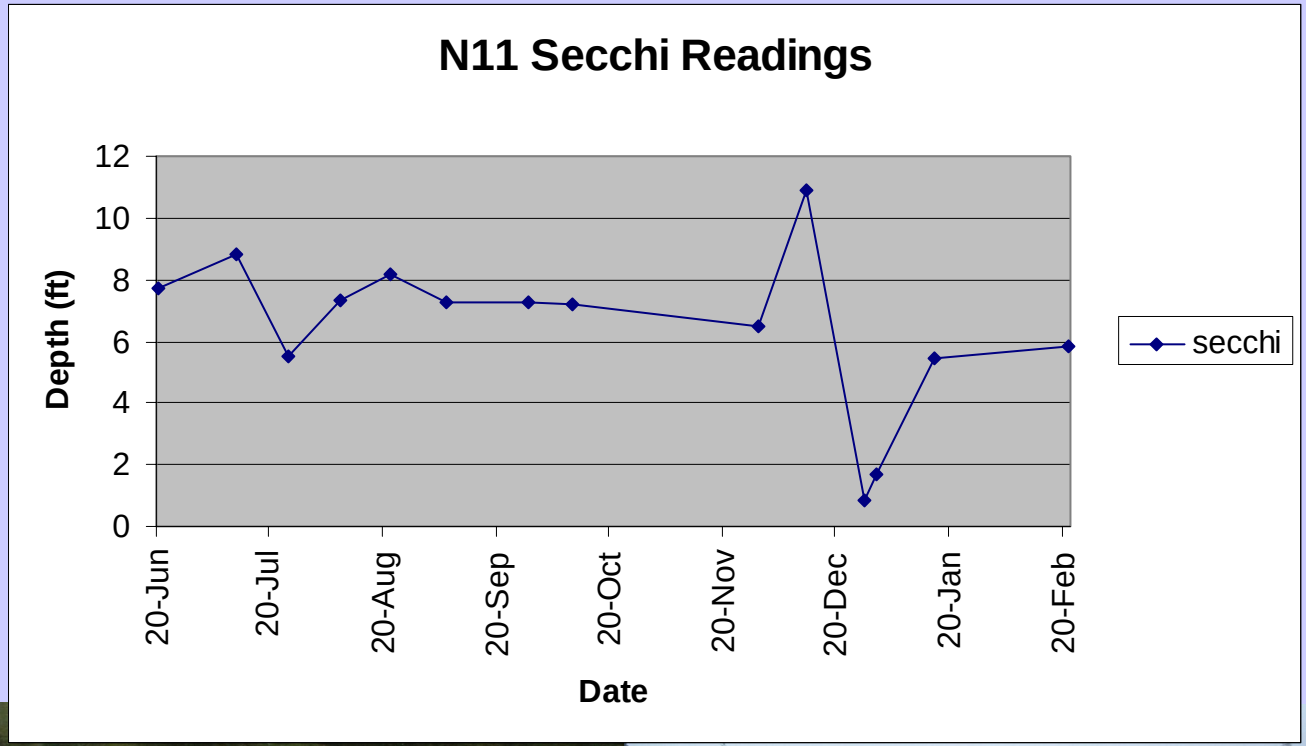
Big Cr. Auto Sampler

Benson Auto Sampler





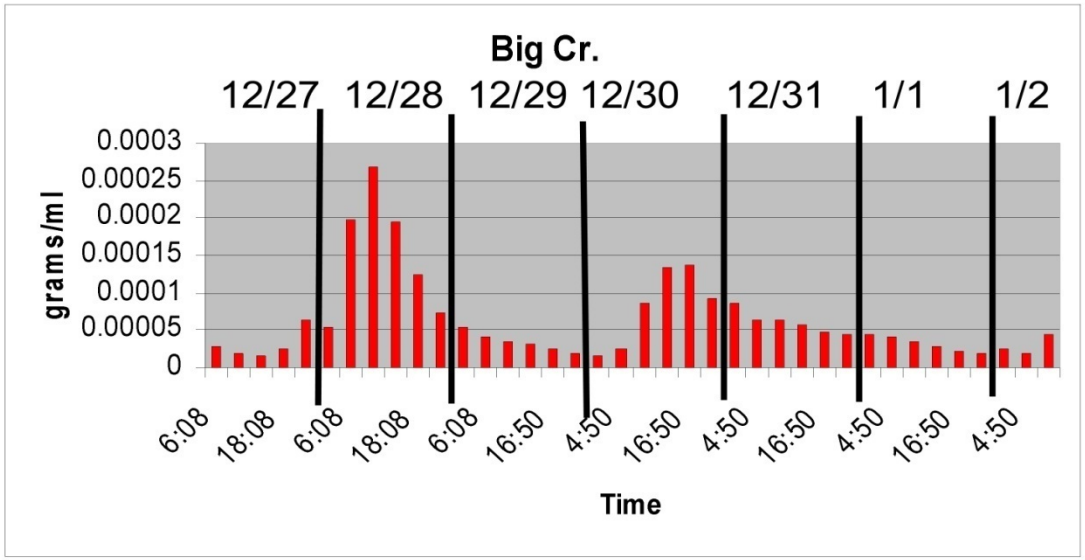


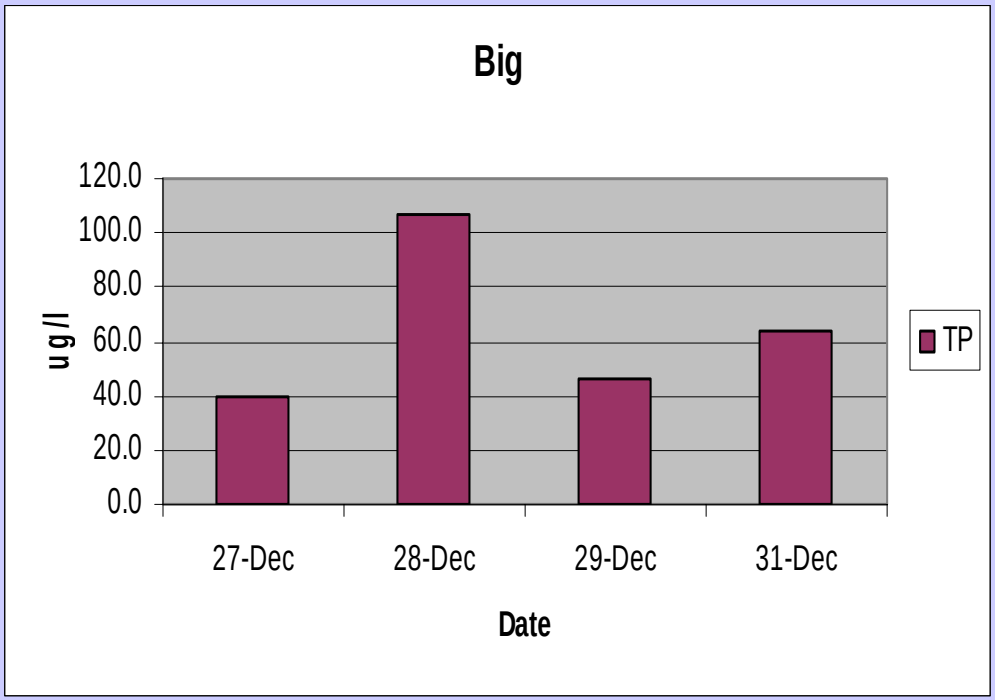

N11 Secchi Readings
Depth (ft)
12
10
8
6
4
2
0
20-Jun
20-Jul
20-Aug
20-Sep
20-Oct
20-Nov
20-Dec
20-Jan
20-Feb
Date
secchi

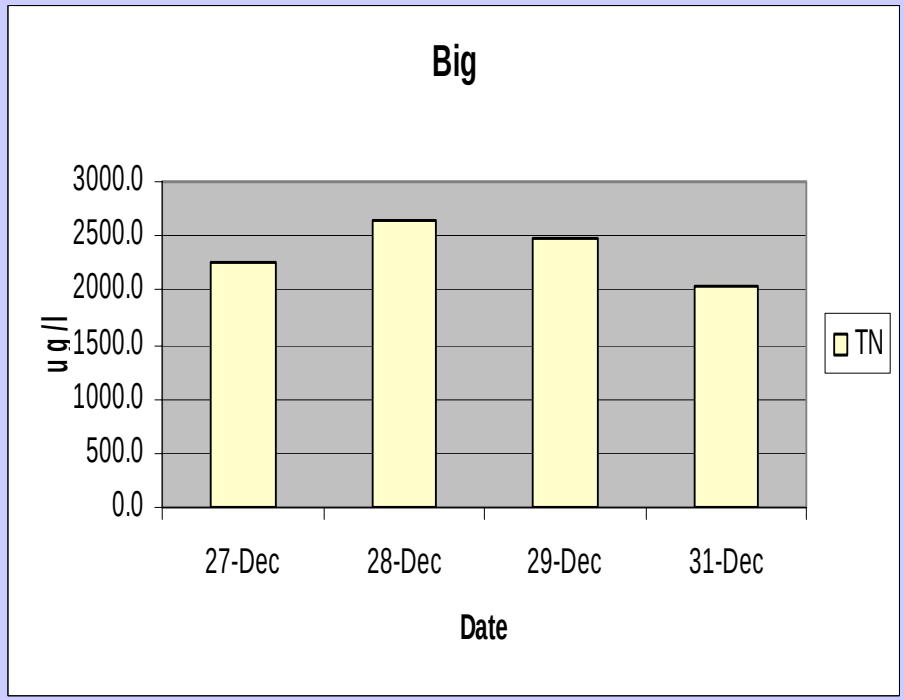
Data

Big Cr.

Avg. TSS- 64 mg/L



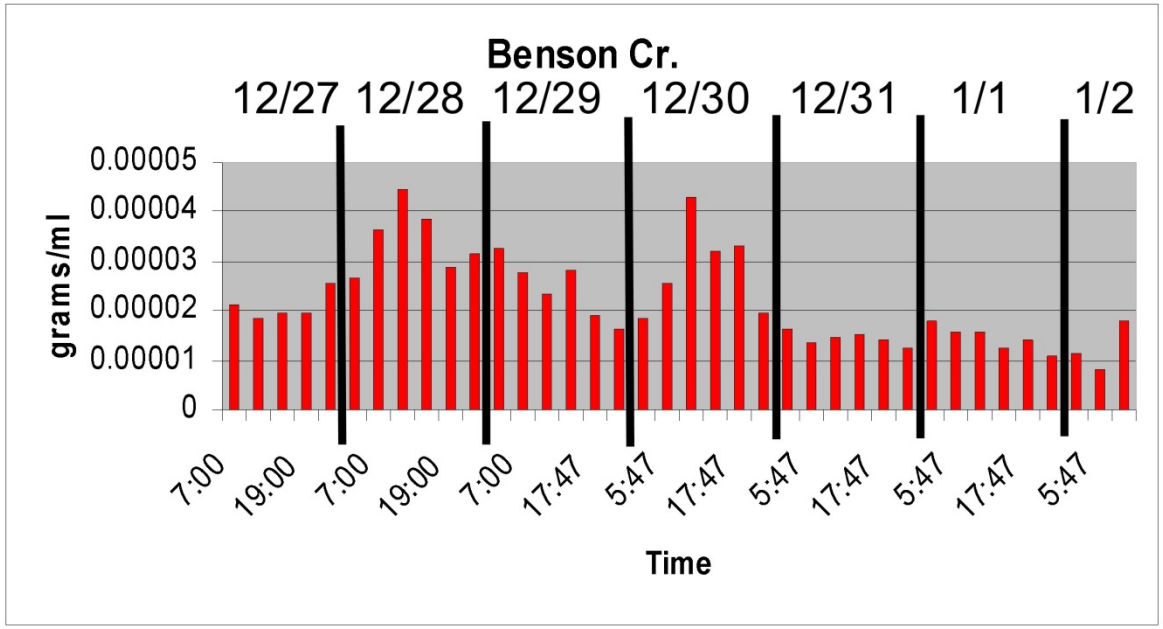


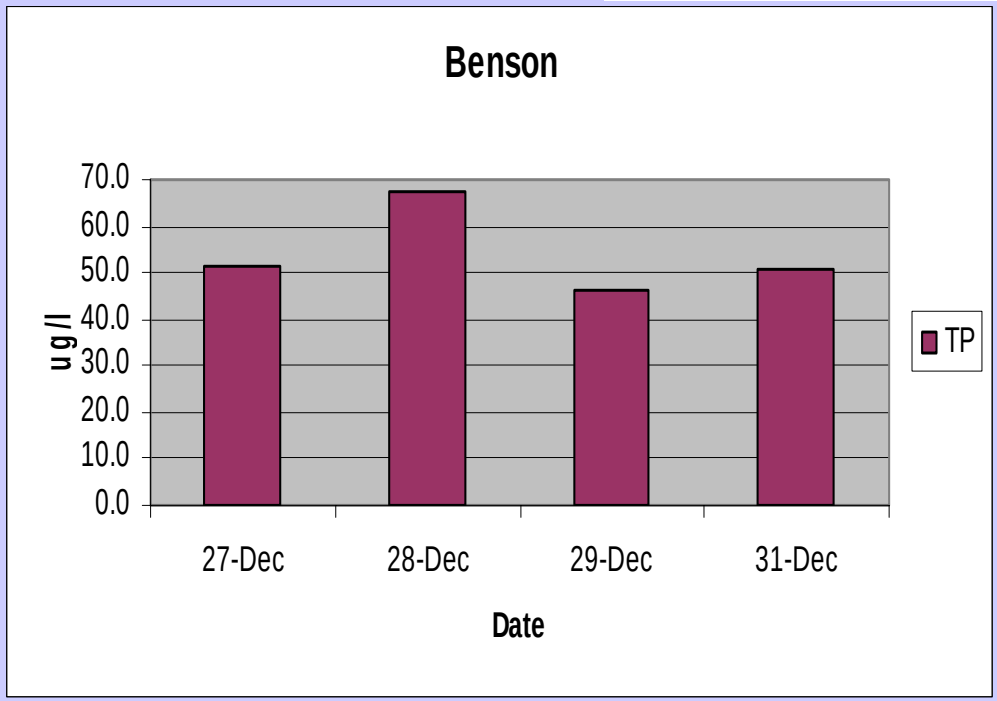


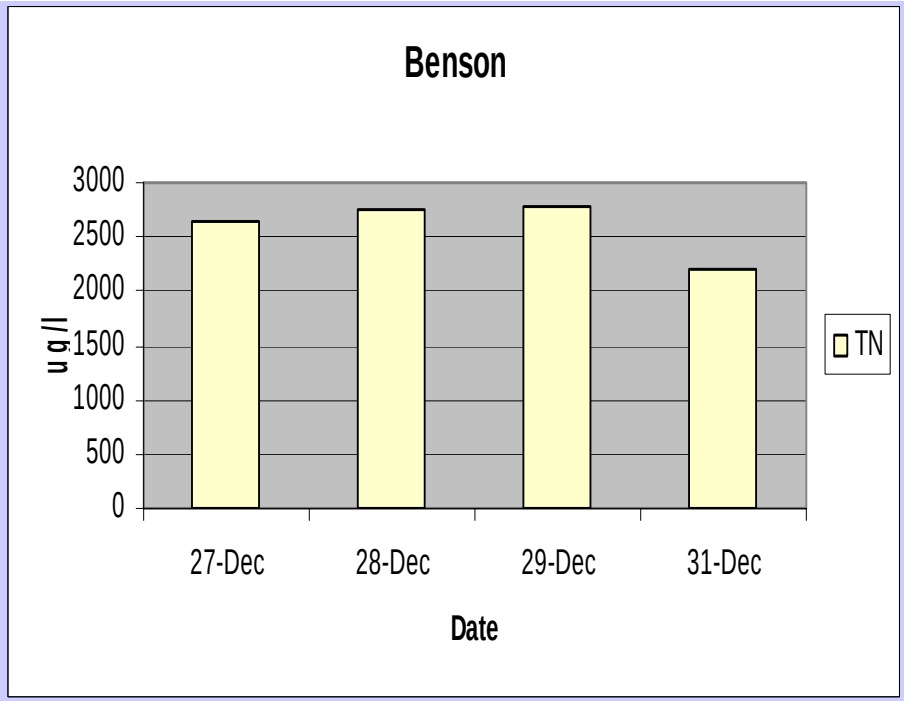
Data

Benson Cr.

Avg. TSS- 22.7 mg/L



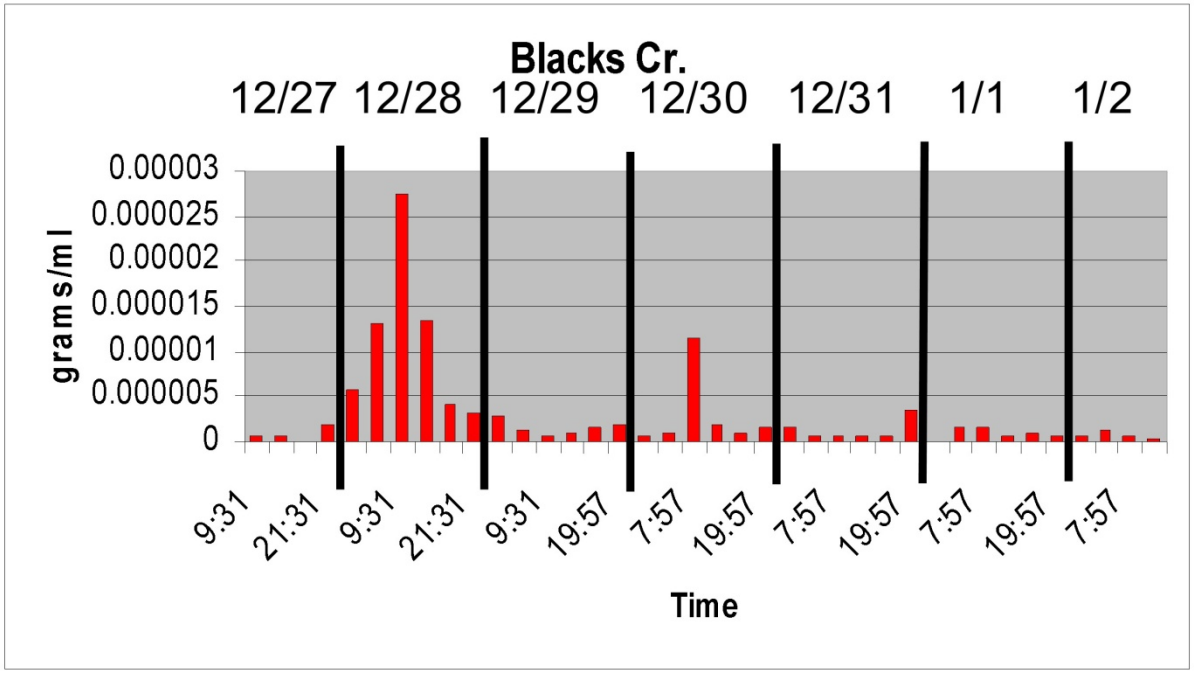


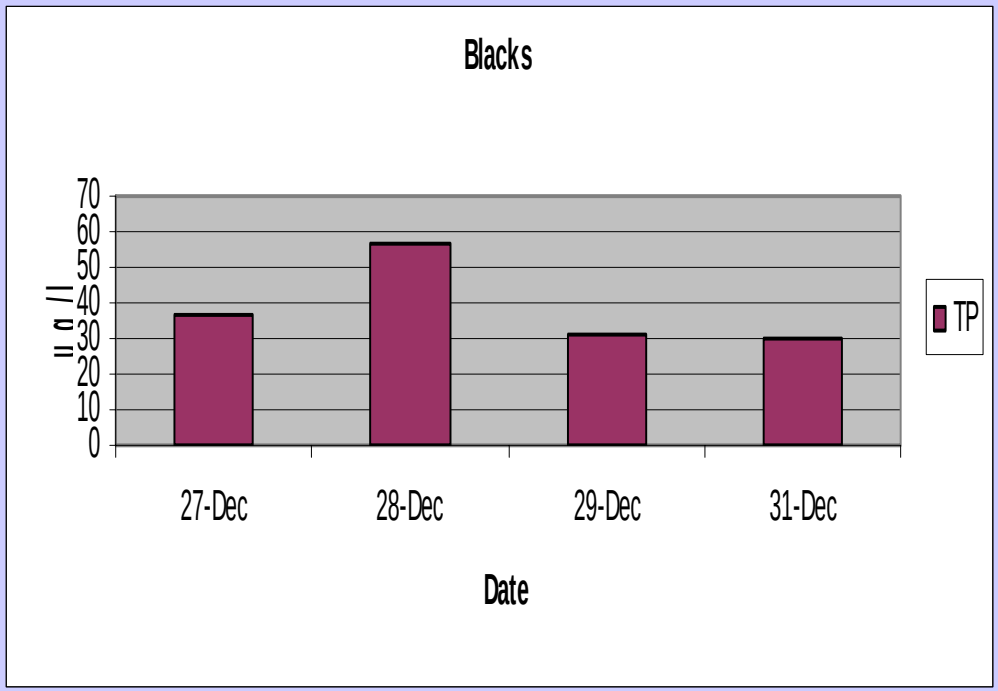


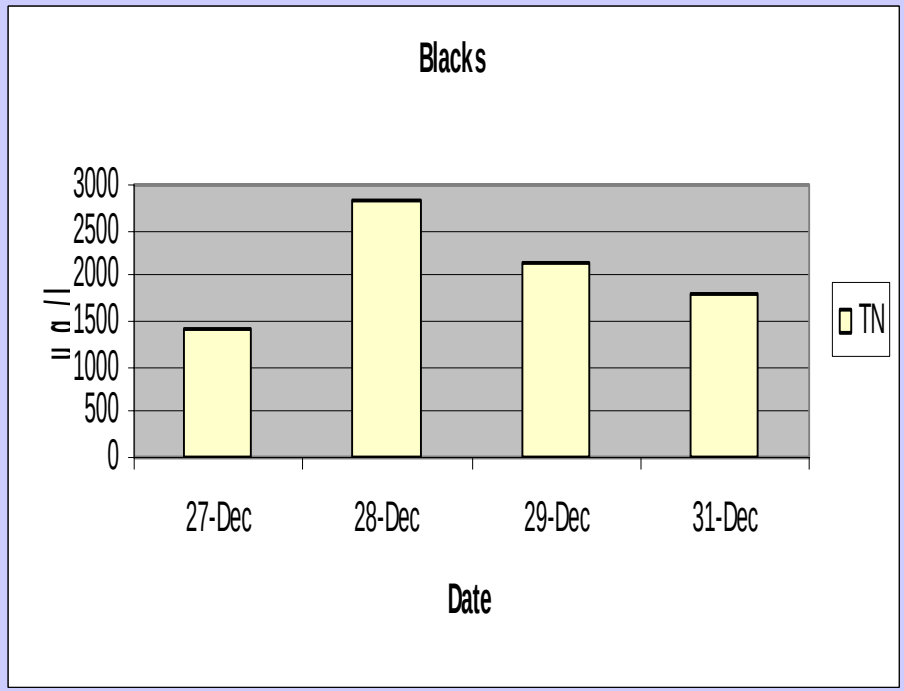
Data

Blacks Creek

Avg.TSS- 3.01mg/L

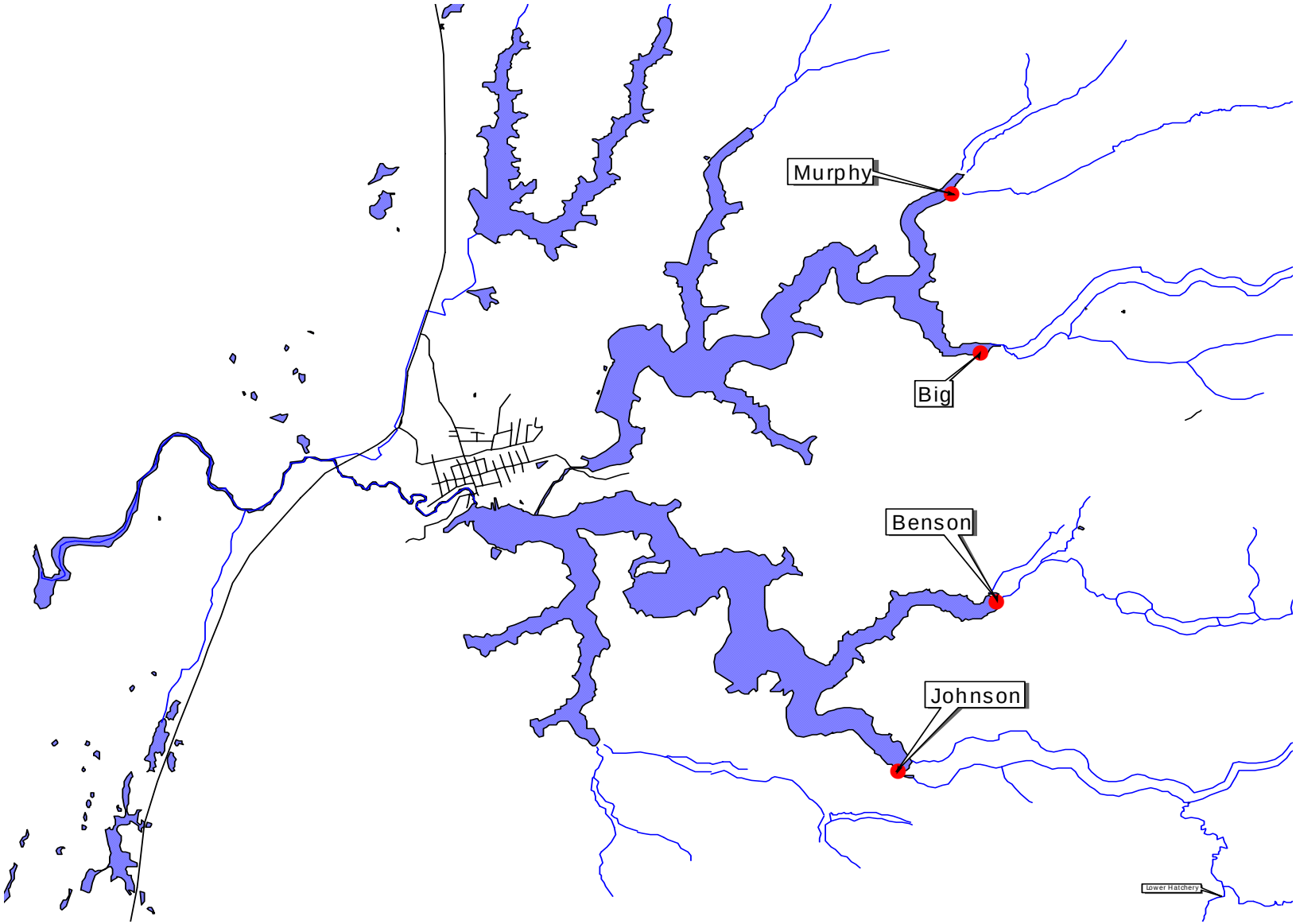






SEDIMENTATION

Delta Building Sites



Benson Cr.

2004

2009

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 & 2009- 6.43ft

2009

- total delta length-172’2”
- 1: width-38’7” **
- 2: width-43’4”*
- 3: width-39’*
- 4: width-30’6”*
- 5: width-32’1”*
- 6: width-63’4”**
- 7: width-78’2”**
- 8: width-55’7”*
- 9: width-24’9”**

*Survey gained 7”-1’ of sediment on top of survey marks

** 3-5” 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

Robertson Cr. Failed Culvert Replacement

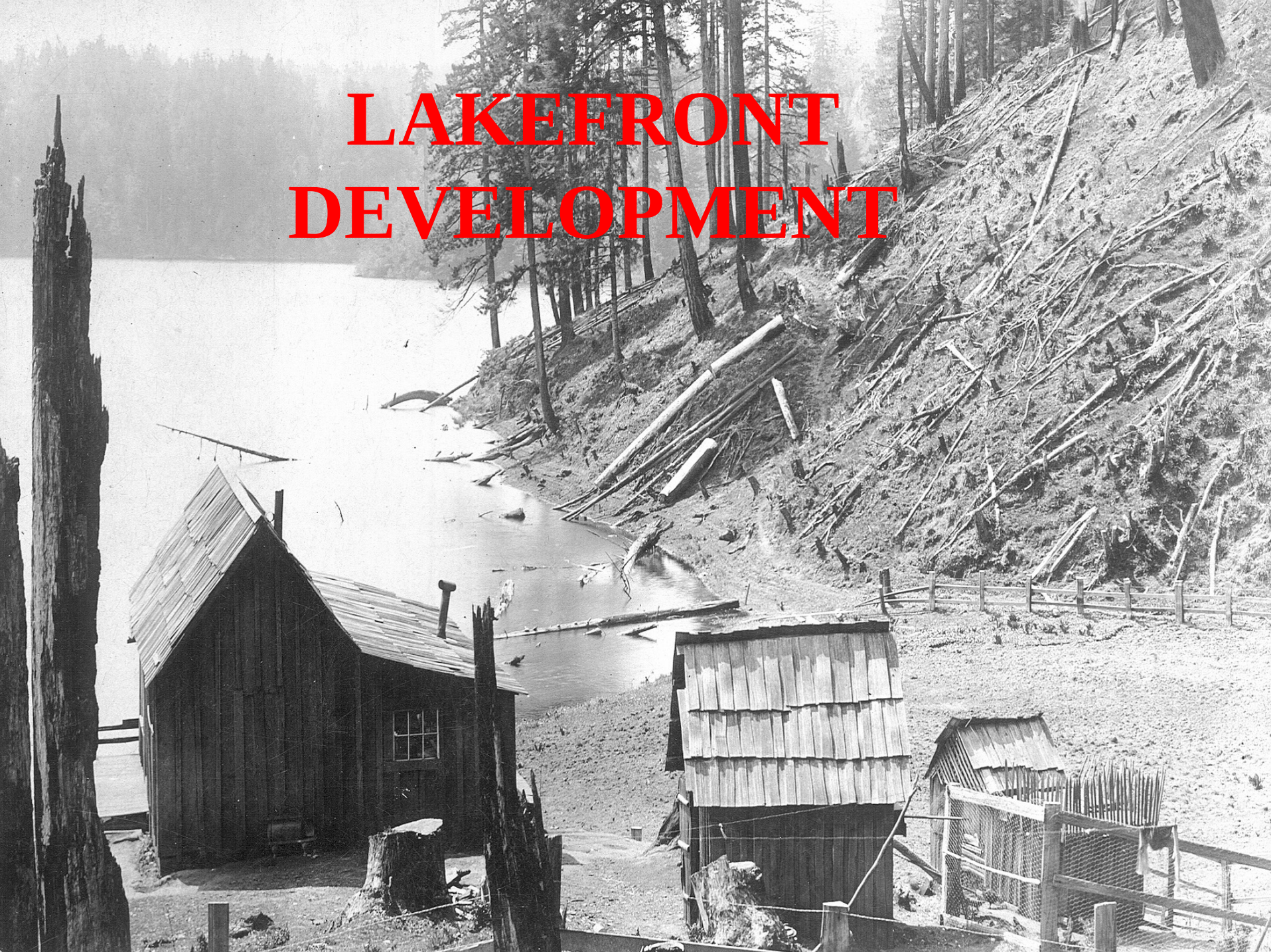
Robertson Cr. Culvert replaced with a log stringer bridge

Sunlake Dr.

May 13, 2000

Sunlake Dr.

February 20, 2007


LAKEFRONT
DEVELOPMENT


TEN MILE LAKE

2000

2007

2008

2009

2000

2009

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

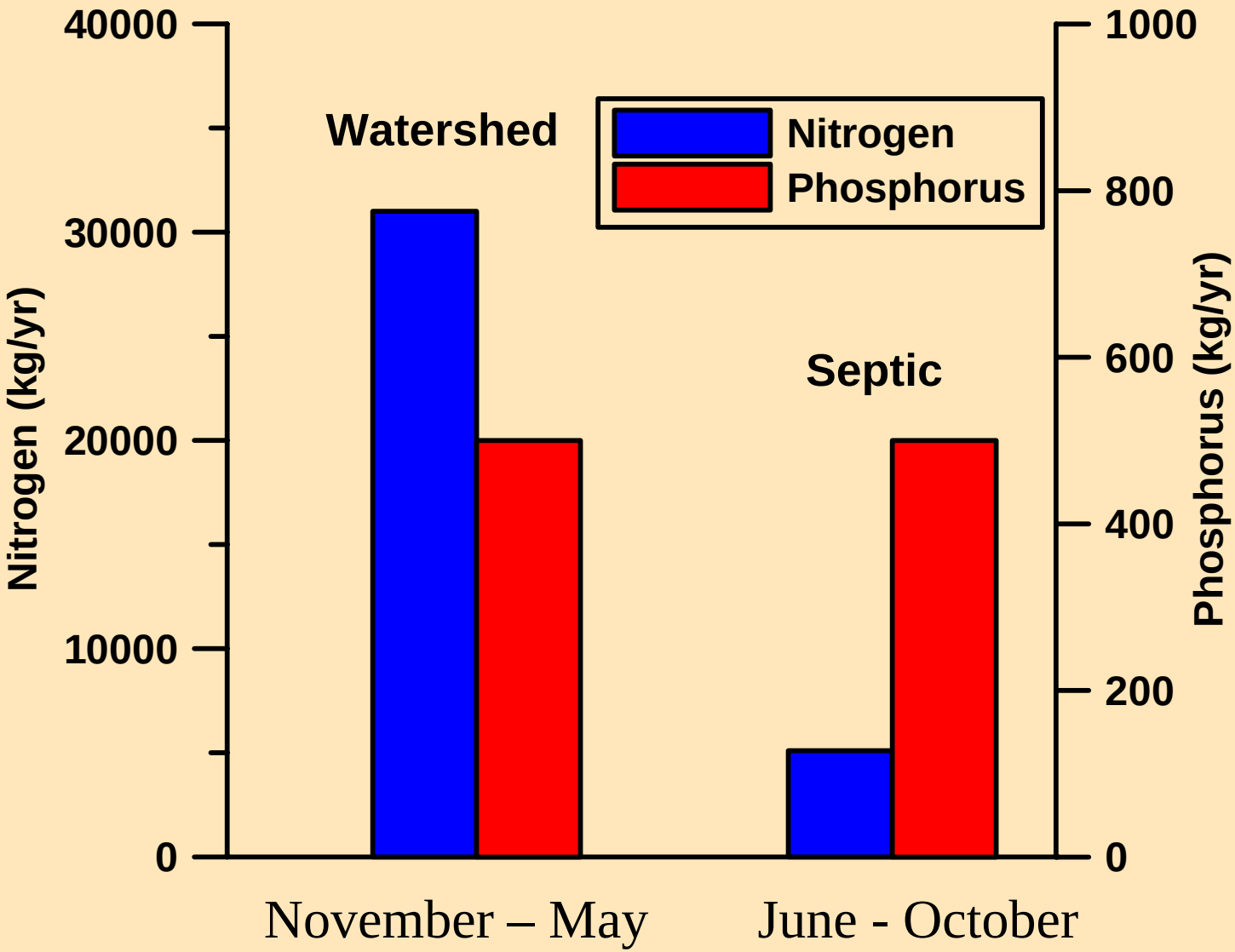
We sure are lucky! We own lakefront property along the shorelines of beautiful North and South Tenmile Lakes. With this ownership comes a responsibility to ourselves and other lake users to do what we can to maintain the quality of the lakes.

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

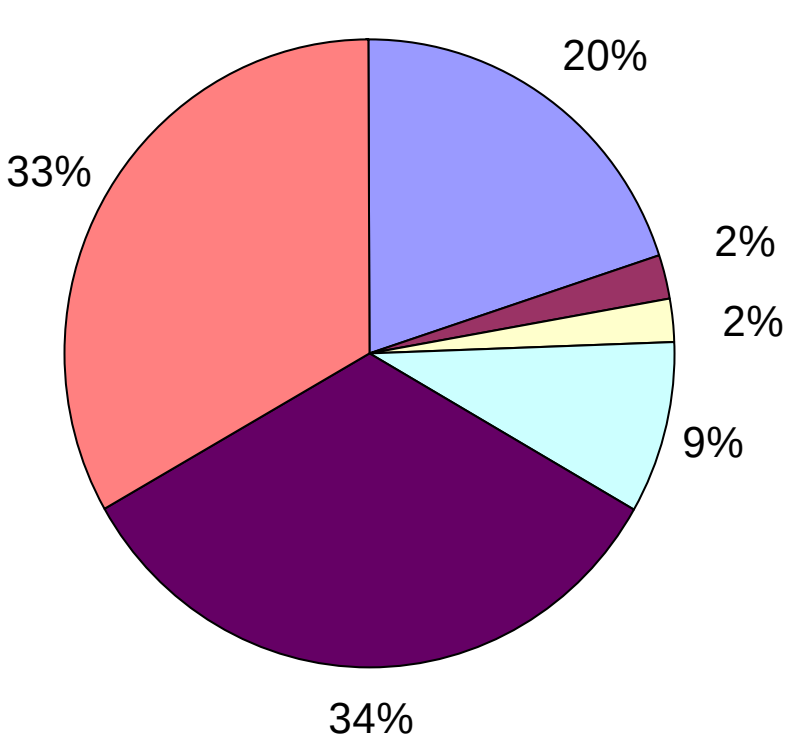
LAKE SOURCES OF N & P



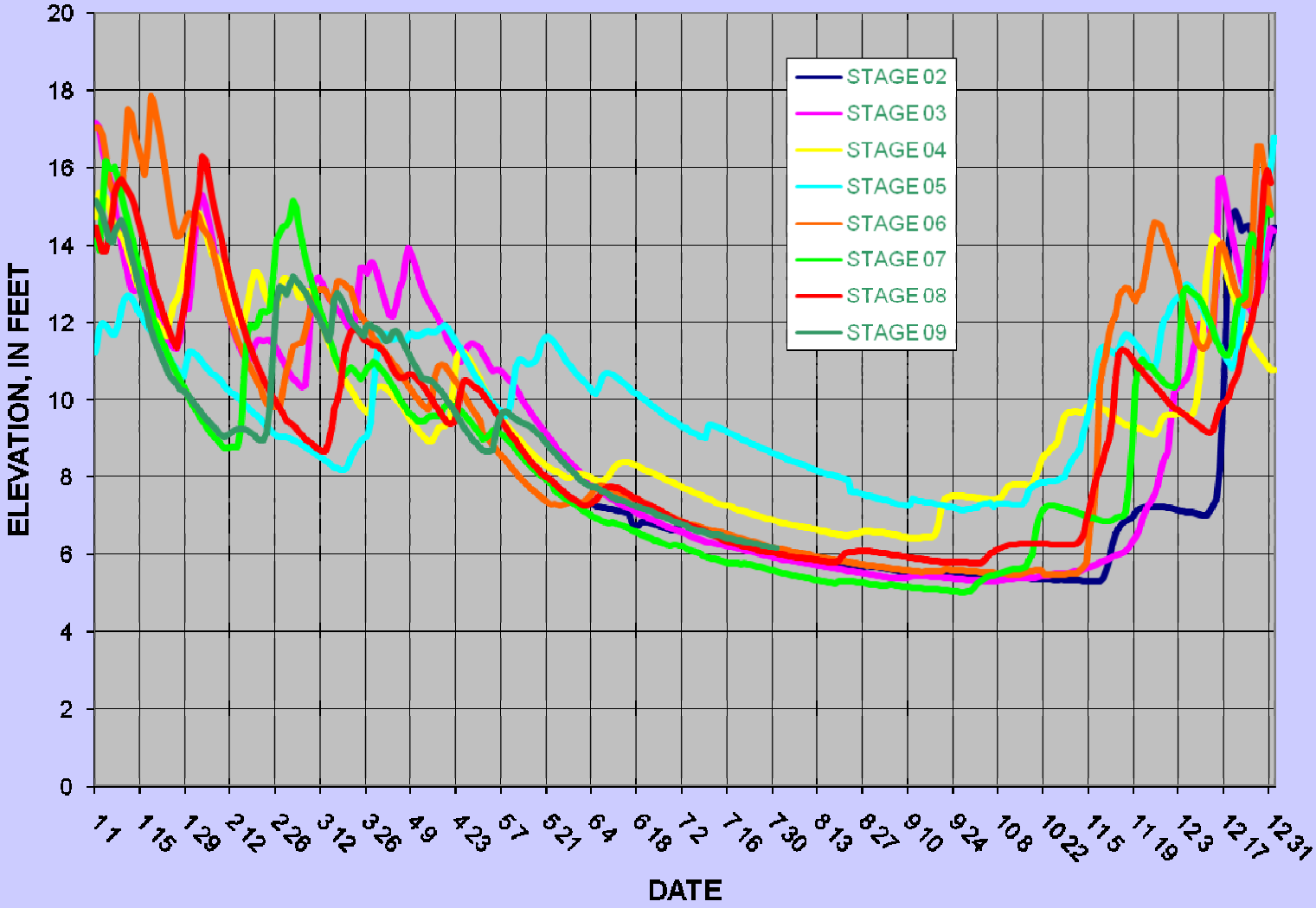
Pre-1974 Septic System Survey

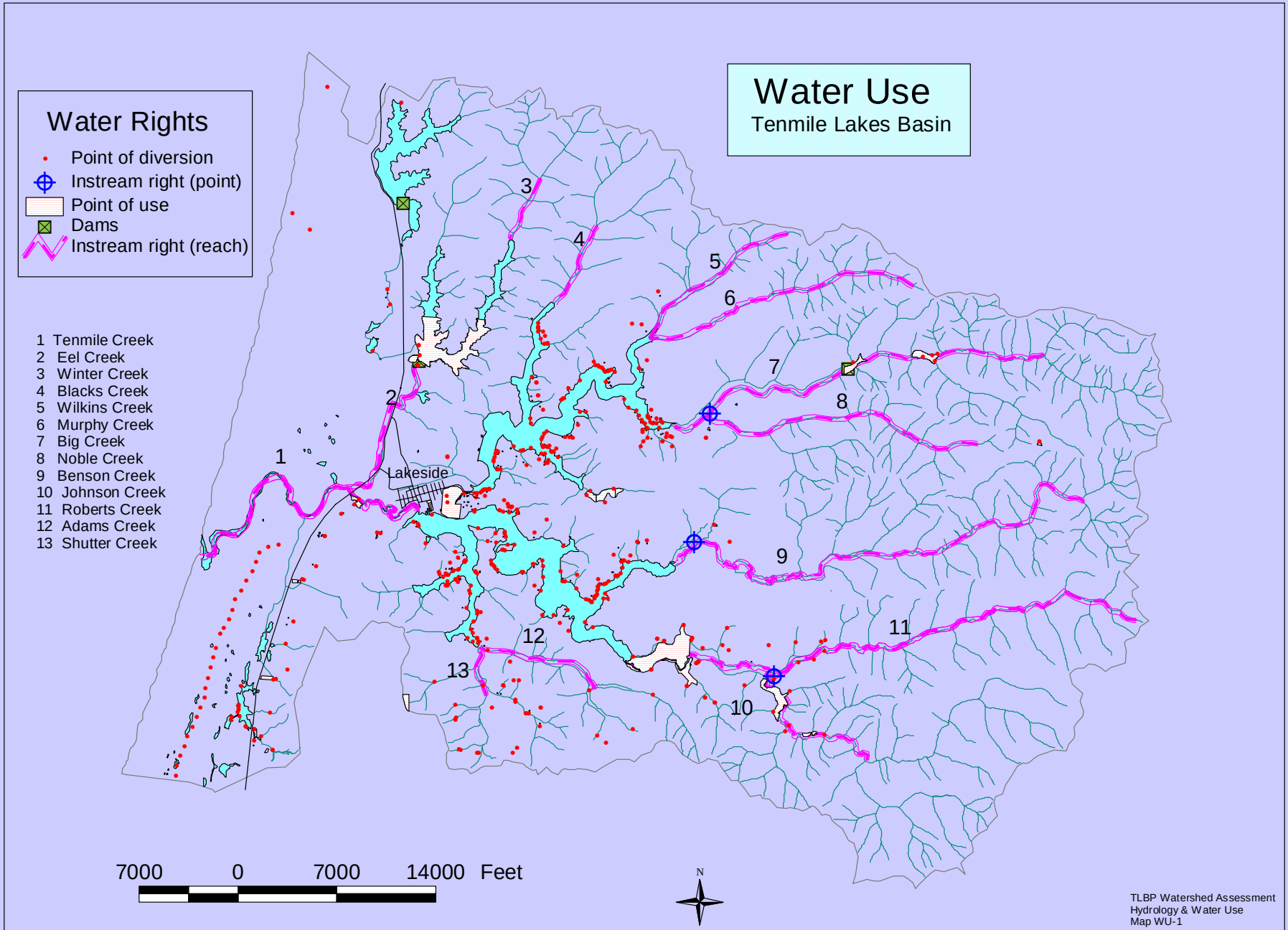
Worked with county health department to inspect 26 lakefront homes in 2006 and 2007.

Results of Tenmile Lakes Septic Survey

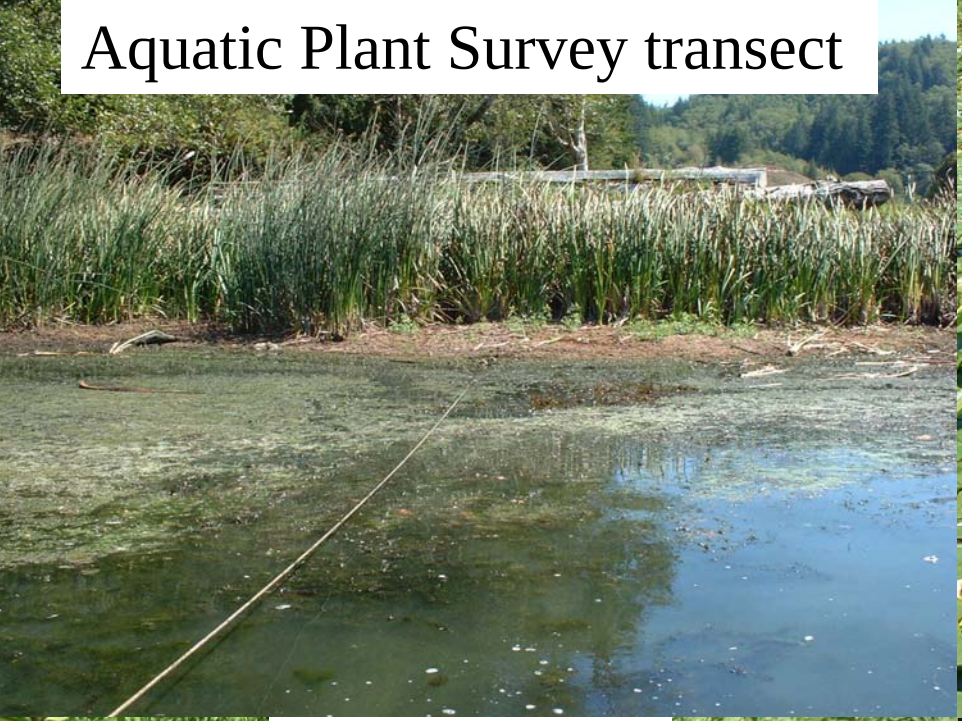


WATER AVAILABILITY


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
STAGE 09
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


Non-native weeds

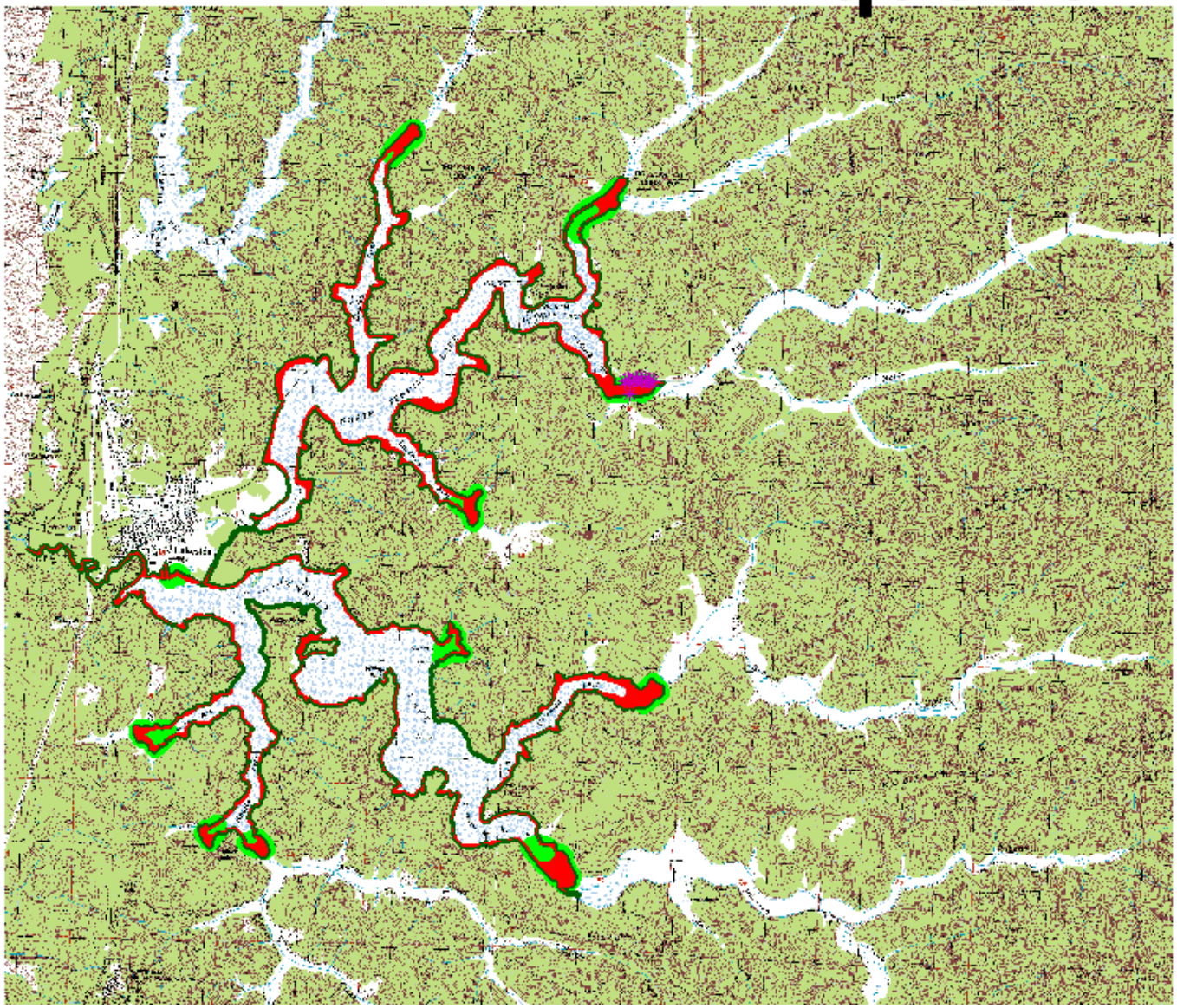

Aquatic Plant Survey transect


Non-native Water Lily


Parrot Feather


Brazilian Waterweed

Tenmile Lakes Aquatic Weeds



Purple loosestrife
Egeria densa
Lilies of various species
Pondweed

N
W
E

Tenmile Lakes Watershed

Aquatic Plants

Produced by:

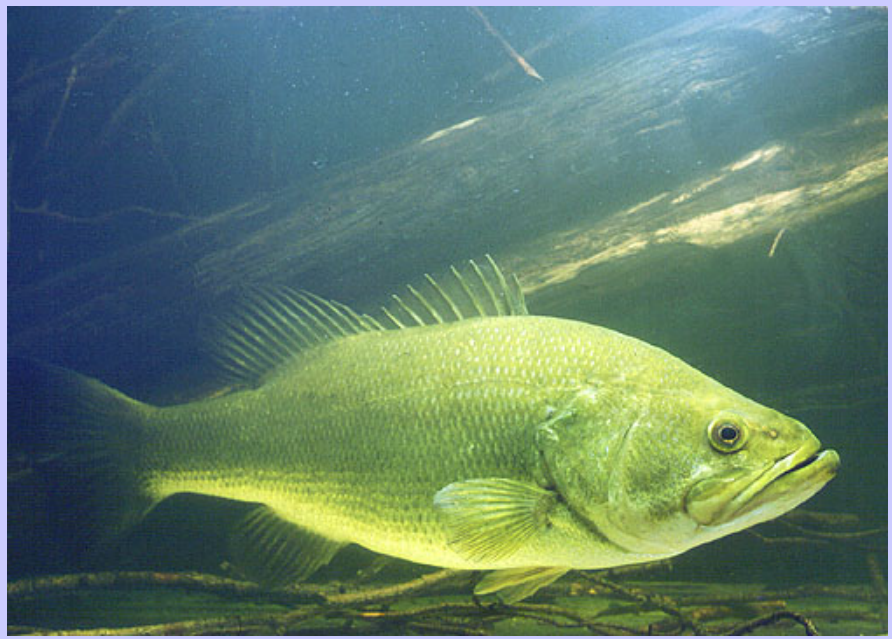
Tenmile Lakes Basin Partnership

Non-native fish

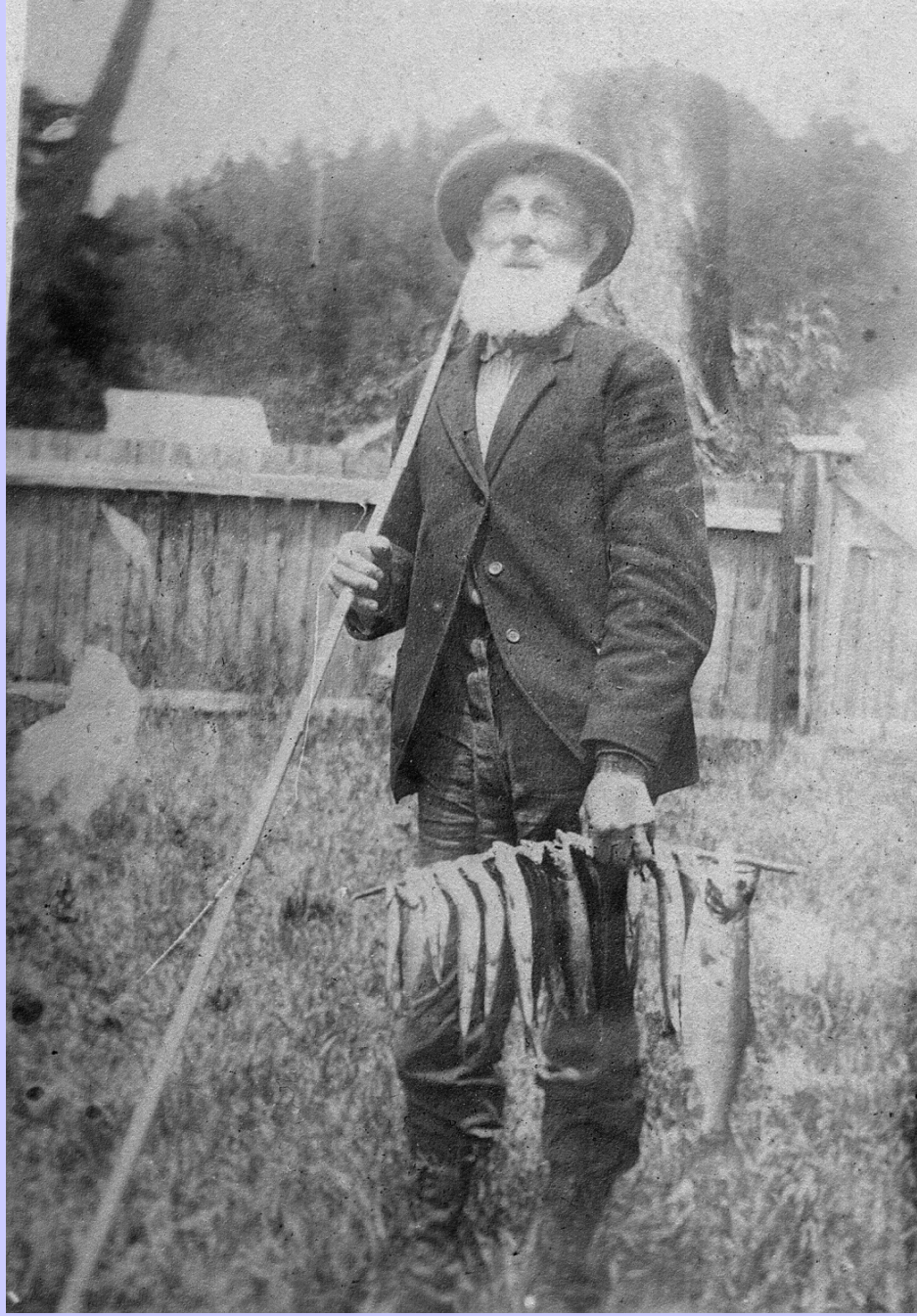
BLUEGILL

BLACK CRAPPIE

LARGEMOUTH BASS

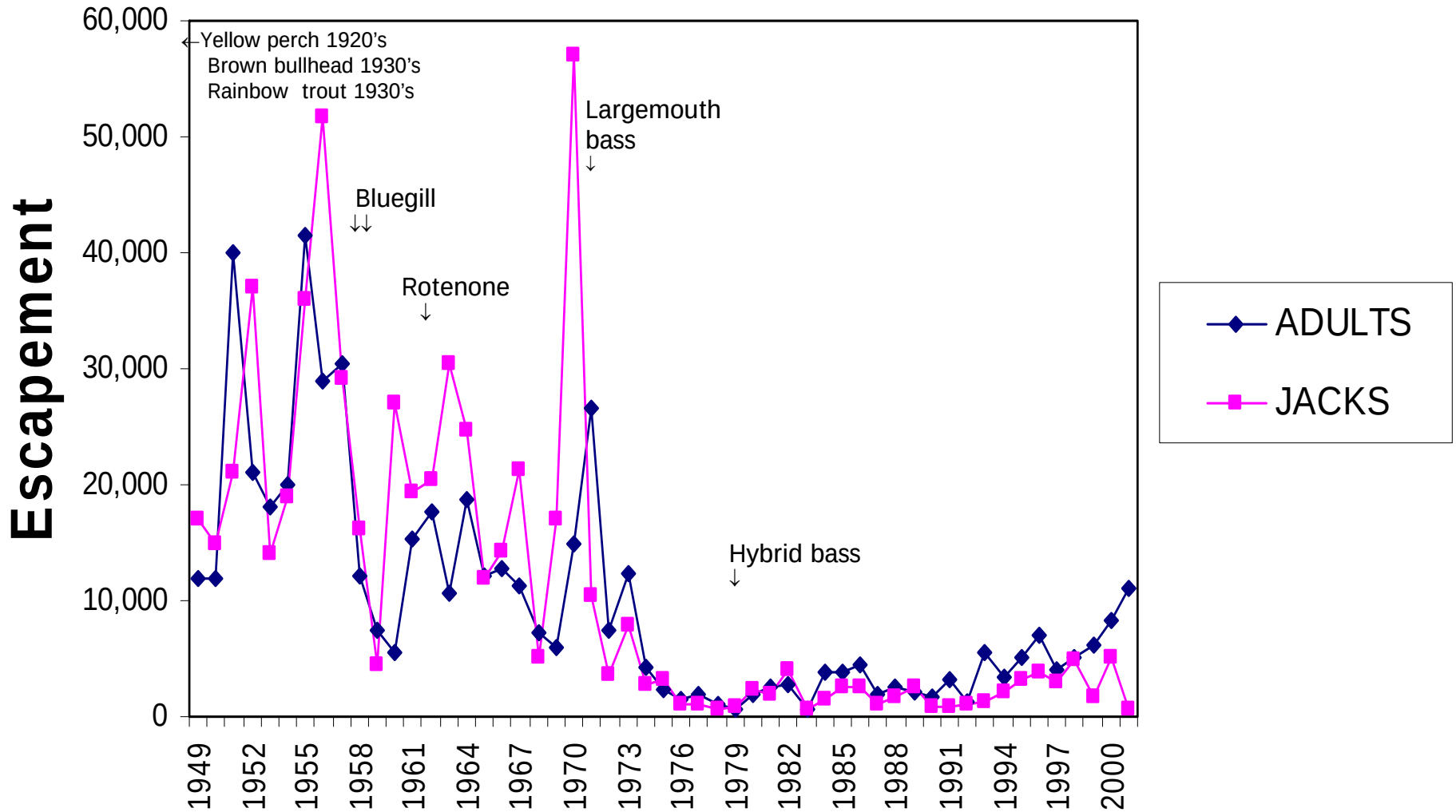



100 LBS. TROUT - ONE DAYS CATCH
AT TEN MILE LAKE
COOS CO. ORE. -264




BOATS
CAFE
BOATS BAIT MOTORS TACKLE
CONNIE'S
TACKLE SHOP
SALMON RUN
LAKESIDE ORE.
5M 62

Tenmile Lakes Coho Escapement Estimates



VOLUNTEER OPPORTUNITIES


41
40


20

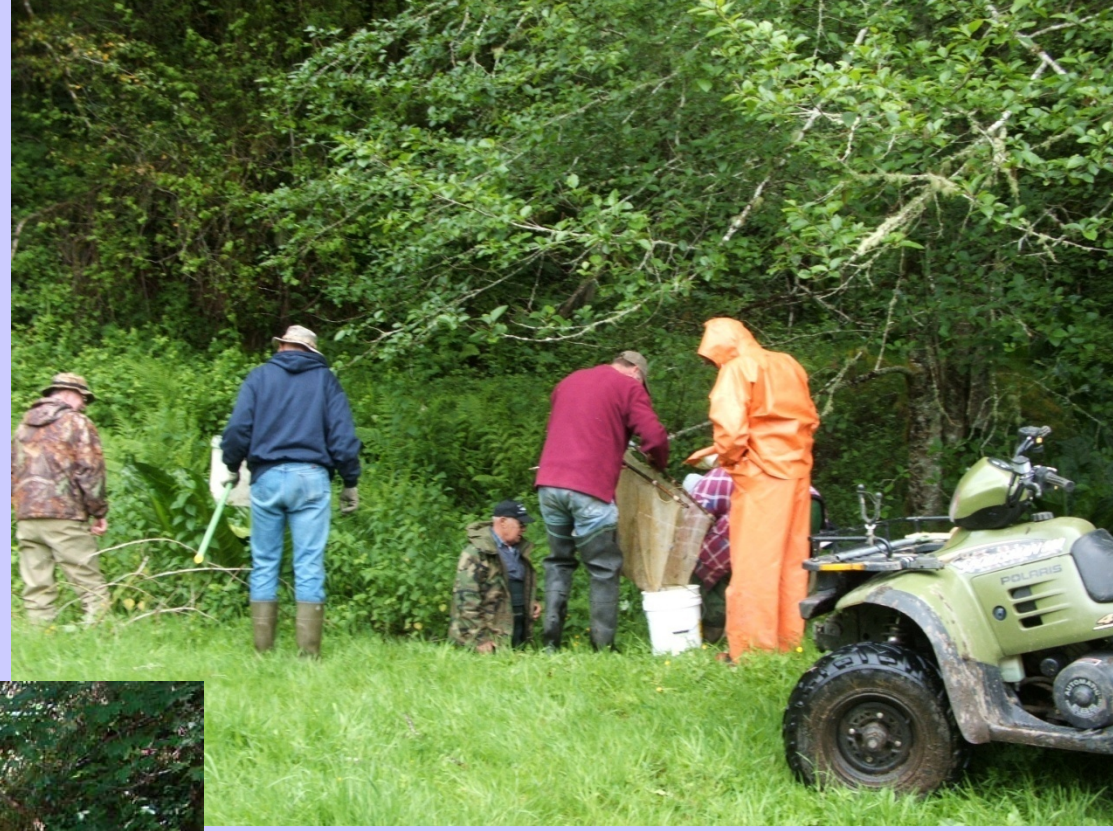

18
16
EAGLE

Eagle/ Osprey Nesting Surveys

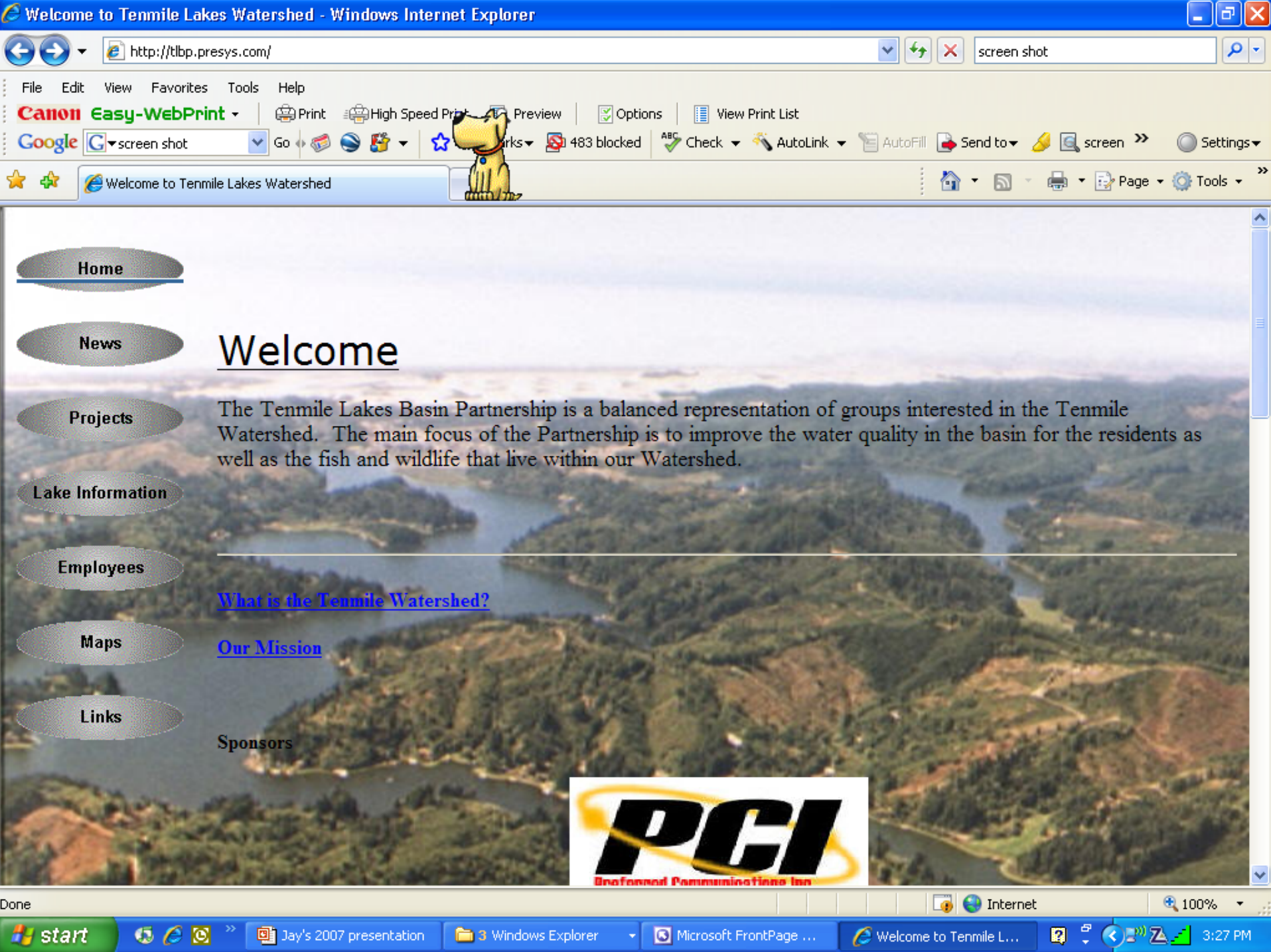
Purple Martin Nesting

Riparian Planting

Fry Salvage



Western Pond Turtle Surveys


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
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Welcome to Tenmile Lakes Watershed
Page
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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
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Welcome to Tenmile L...
3:27 PM

WATERSHED CHARACTERISTICS

WATERSHED SIZE: 96 SQ. MILES (61,440 ACRES)

TEN NAMED LAKES WITHIN THE WATERSHED WITH COMBINED SURFACE AREA OF 3,000 ACRES.

FOUR SUBBASINS: EEL LAKE, TENMILE, SAUNDERS LAKE, DUNES AQUIFER.

RESOURCE AREAS:

FORESTED UPLANDS = 56,302 ACRES
AGRICULTURAL LANDS = 1,800 ACRES
OPEN WATER = 3,000 ACRES
WETLANDS = 338 ACRES

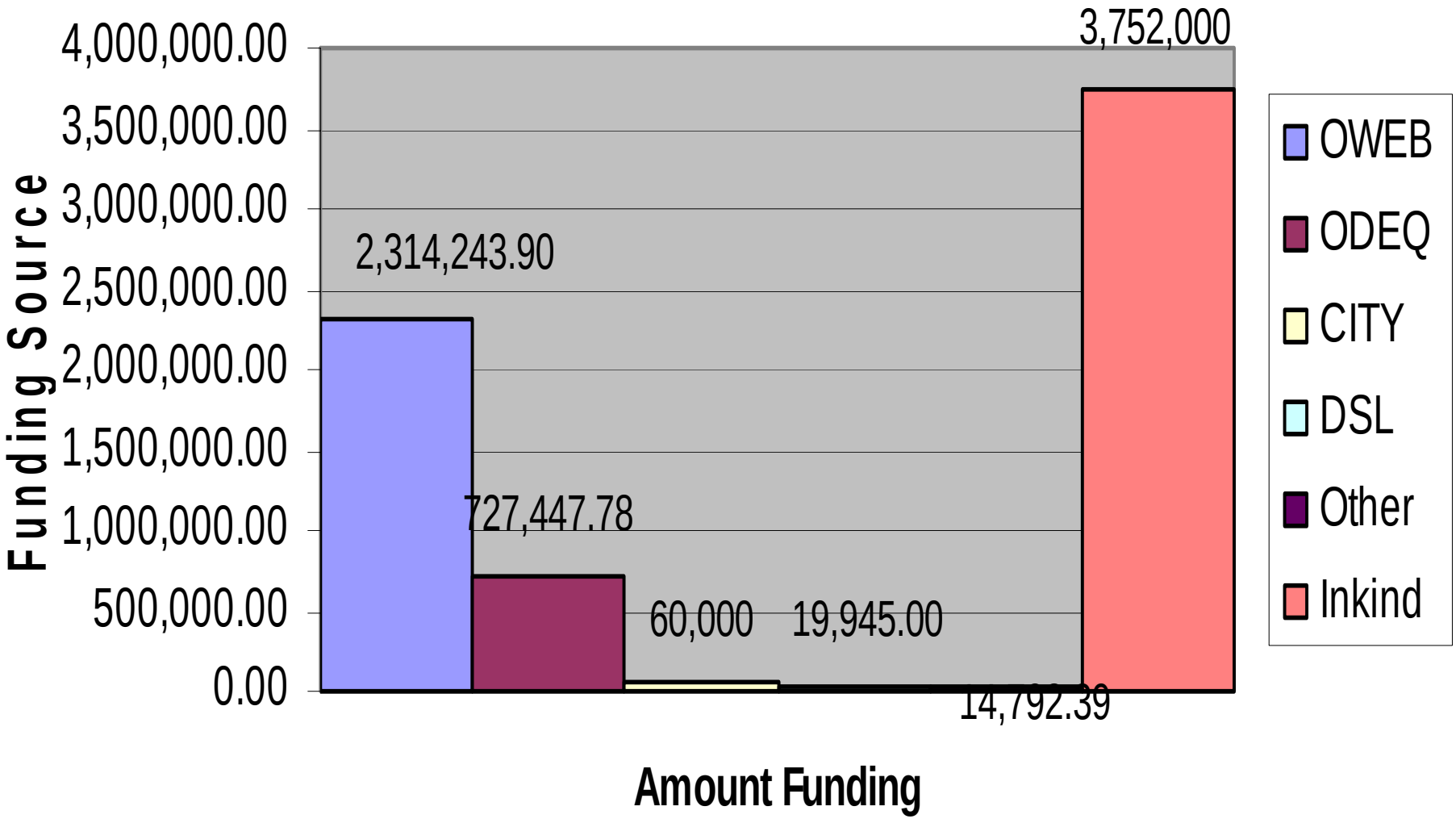
TENMILE WATERSHED

Oncorhynchus kisutch

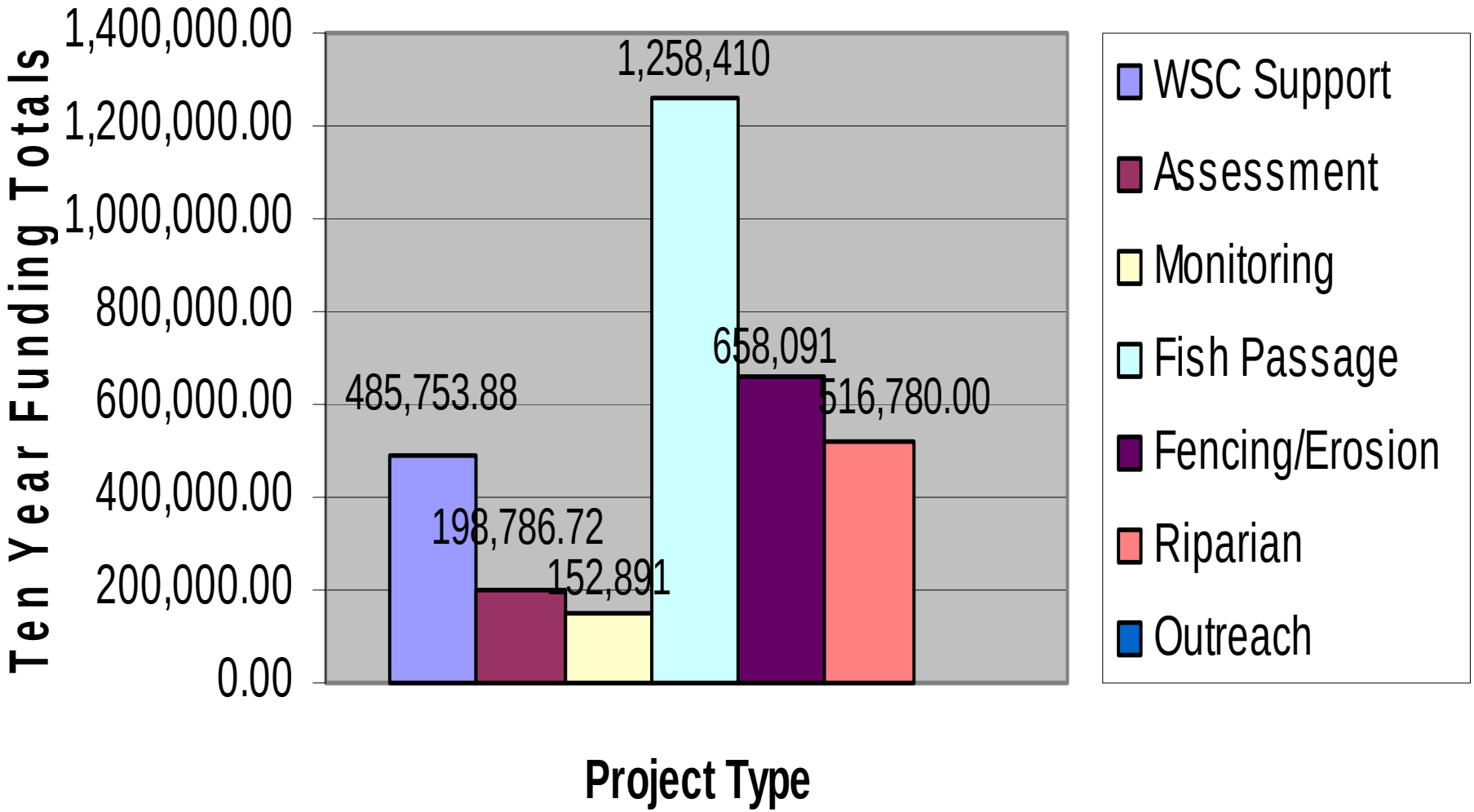
(Tenmile was historically Oregon's largest producer of Coho salmon.

TENMILE LAKES BASIN PARTNERSHIP BOARD POSITIONS 08/09	
INDUSTRIAL TIMBER MENASHA CAMPBELL	**SPORT FISHING** EEL~TENMILE S.T.E.P. TENMILE BASS CLUB
SMALL WOODLOT OWNERS	**ENVIRONMENTAL** AUUDOBON DUCKS UNLIMITED
STATE/TIMBER · ELLIOTT STATE FOREST	**STATE AGENCIES** ODFW ODEQ
LOCAL GOVERNMENT CITY OF LAKESIDE	**LAKEFRONT HOMEOWNERS** TLOA INDEPENTDANT
TRIBAL CONFEDERATED TRIBES	**INDEPENDENT SCIENTISTS**
AGRICUTLRUAL LANDOWNERS	**COMMERCIAL BUSINESS**
COMMERCIAL FISHING	**FEDERAL AGENCIES** ODNRA

TLBP Funding Sources



Funding per Project Type



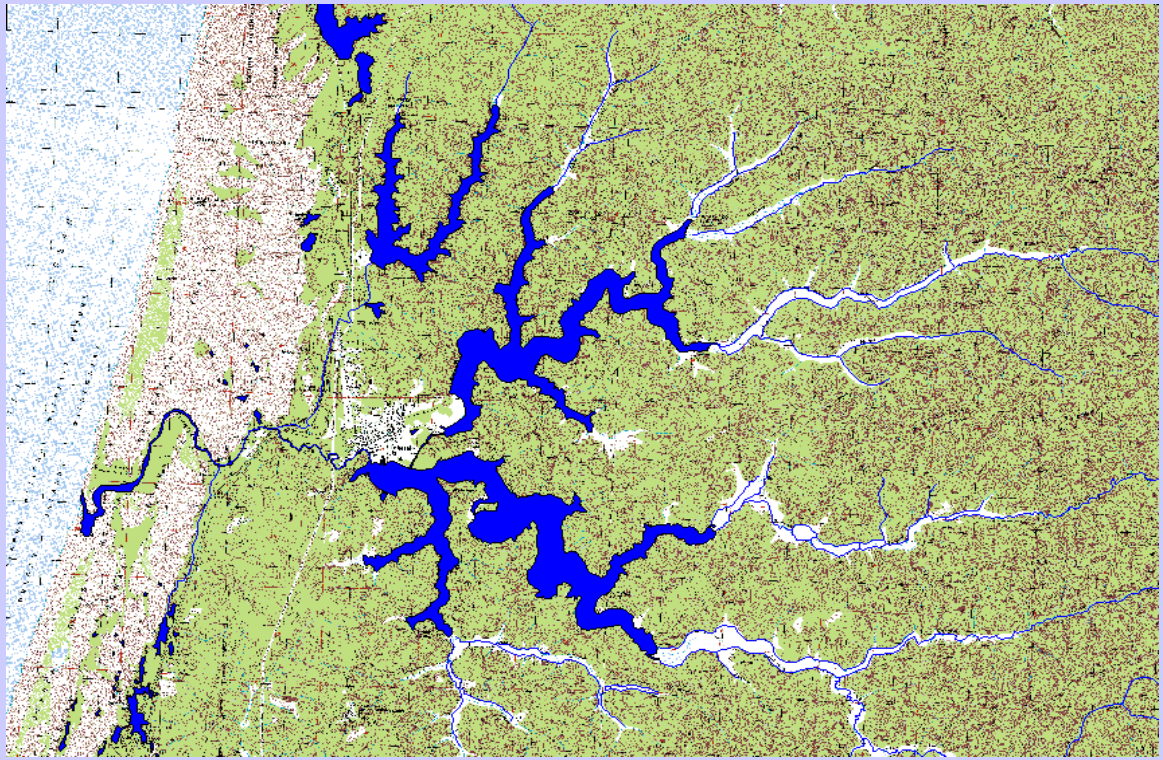
Where Do We Go From Here

- Invasive Species
- Lakefront Septic Systems
- Lakefront Riparian Conditions
- Lake Water Quality Monitoring
- Coho Population Study
- Sediment Abatement


Meeting
Communication Rules
1. One Person speak at a time!
2. Treat others with Respect and dignity!
3. Listen to what others are saying!
4. No throwing of Large Objects!
5. Be kind-smile: this can be fun!
6. Try not to take yourself so seriously!

DRAFT
Tenmile Lakes Watershed
Coordinated
Water Quality Management Plan

Prepared by: Tenmile Lakes Watershed Designated Management Agencies
July 2009



Submissions by:

Oregon Department of State Lands
Oregon Department of Fish and Wildlife
Oregon Department of Environmental Quality
City of Lakeside

TENMILE LAKES RESORT and MARINA
INVASIVE SPECIES BOAT and TRAILER GUEST INSPECTION QUESTIONAIRE #____

DATE:_____

RESORT/MARINA: _____

1) **ARE YOU TRAVELING WITH A BOAT and TRAILER?: YES NO**
2) **WHAT STATE ARE YOU FROM?:**
3) **LAST STATE BOAT and TRAILER WERE IN?:_____**
4) **LAST WATERBODY BOAT and TRAILER WERE IN?: _____**
5) **LAST TIME and LOCATION BOAT and TRAILER WERE INSPECTED?: _____**
   _____
6) **IS BOAT and TRAILER FROM STATE or WATERBODY WITH PRESENT INFESTATIONS?:**
   YES NO (Refer to Map and Literature)
7) **CONDITION OF BOAT and TRAILER: CLEAN UNCLEAN**
8) **IS BOAT OWNER WILLING TO VOLUNTARY CONDUCT BOAT and TRAILER INSPECTION?: YES NO**
9) **ON CURSORY VISUAL INSPECTION, DOES BOAT and TRAILER LOOK UNCLEAN: (DIRTY FILM, VEGETATION HANGING) YES NO**

Taking all aspects of this report into account, If you suspect the presence of QUAGGA or ZEBRA MUSSELLS or invasive aquatic plant species, strongly suggest to Owner that you jointly Inspect boat and trailer.

If you find invasive species, <u>DO NOT ALLOW BOAT TO BE LAUNCHED! CALL FOR ASSISSTANCE.</u>

For Report and Assistance:

Public Reporting Number 1-800-437-2744 (24-7) or

The City of Lakeside at 541-759-2414

Tenmile Lakes Integrated Aquatic Plant Management Plan

BRAZILIAN ELODEA TREATMENTS

LAKE AREAS	RECOMMENDED TREATMENTS
SHORELINE (< 12FT DEPTHS)	
· W/OUT DOCKS	PHYSICAL · Hand –pulling · Hand-cutting · Bottom barriers · Alfalfa bales · No treatment CHEMICAL · NOT A RECOMMENDED TREATMENT AT PRESENT TIME BIOLOGICAL · Future prospect
· WITH DOCKS	PHYSICAL · Hand –pulling · Hand-cutting · Bottom barriers · Alfalfa bales · Mechanical Harvester CHEMICAL · NOT A RECOMMENDED TREATMENT AT PRESENT TIME BIOLOGICAL · Future prospect

Thank You

City of Lakeside

ODEQ

ODFW

Preferred Systems

Dr. Jacob Kann

Project Site Landowners

Lakeside Lions

Lakeside McKays

TLOA

Lakeside Womens Club

OWEB

Milo Crumrine

Lakeside Marina

BLM

ODSL

Osprey Point Resort

Eel/ Tenmile STEP

8th Street Grill

Cakes by Jonie

Mike Knips