Citizen Lake Monitoring Network

Wisconsin Lakes Partnership

Science

Citizens

Education

Our goals are to:

- Collect high quality data,
- Educate and empower volunteers, and
- Share this data and knowledge.

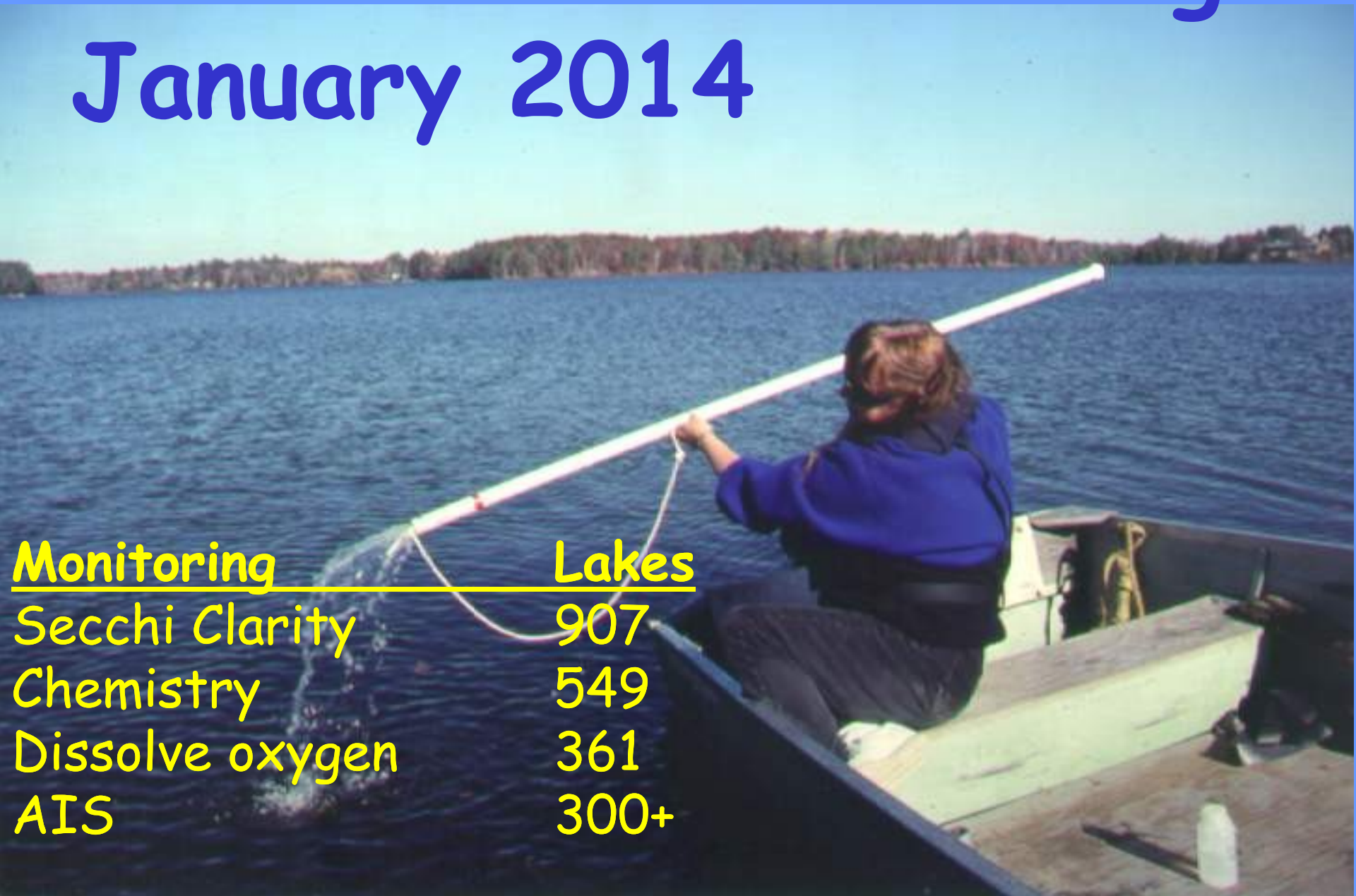
Recruitment

- If you build it they will come…
  - Love of Lakes
  - Want to know more about “their” lakes
  - Affects on property values

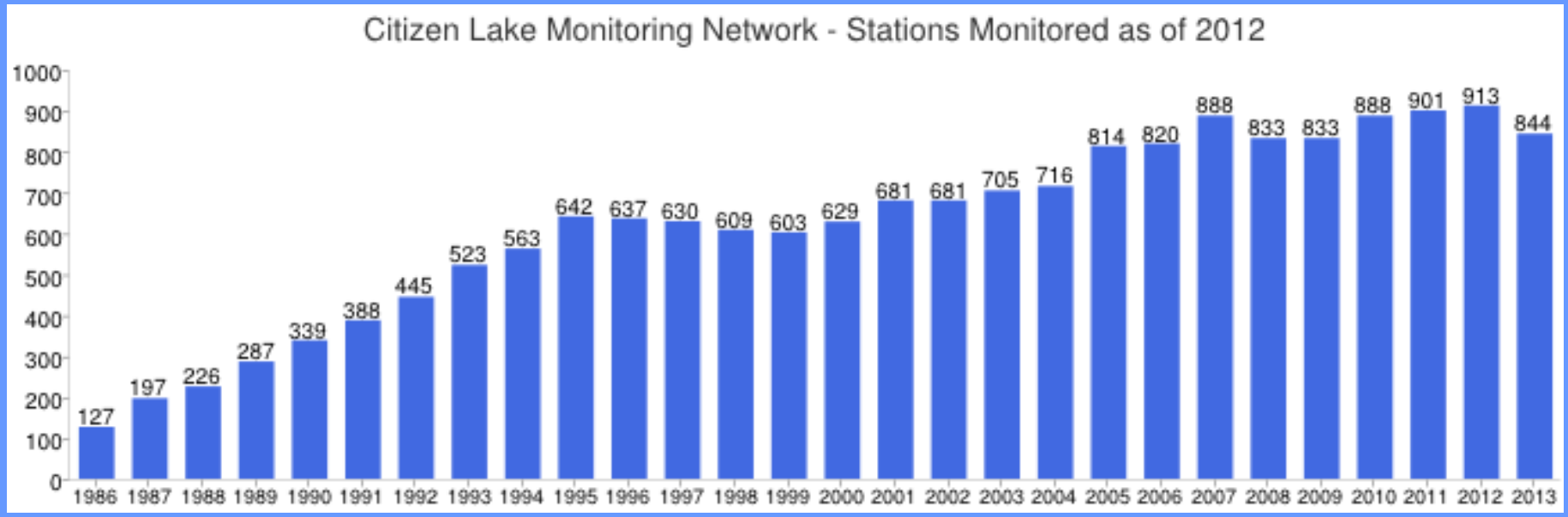
Citizen Lake Monitoring Network

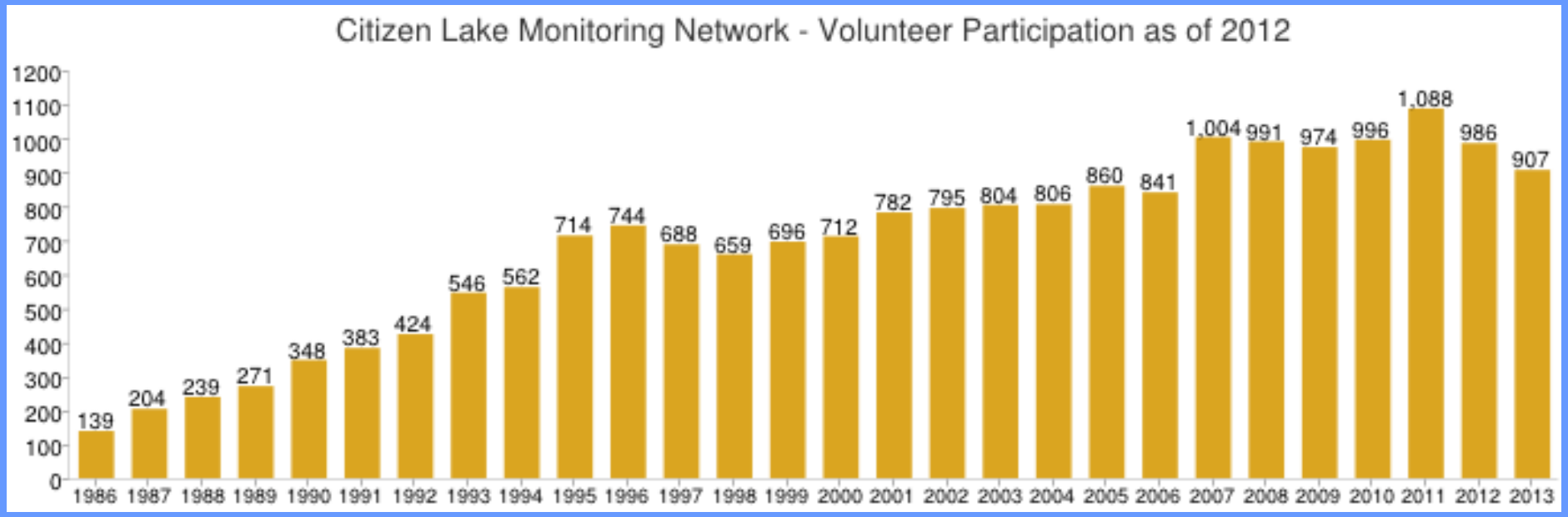
- 1986 – 126 volunteers collecting secchi data on 113 Lakes
- 1990 – pilot expansion – 25 lakes
  - Secchi, total phosphorus, chlorophyll, temperature & dissolved oxygen
- 1991 – 2005
  - Secchi, total phosphorus, chlorophyll, temperature, & dissolved oxygen
  - Some regions use volunteers to collect data on Aquatic Invasive Species
- 2006 – Aquatic Invasive Species Statewide effort initiated
- 2007 –Trainers teaching Secchi and AIS monitoring
- 2009 – Additional AIS added. Online data entry
- Future – Add species and methods as the need

Citizen Lake Monitoring January 2014

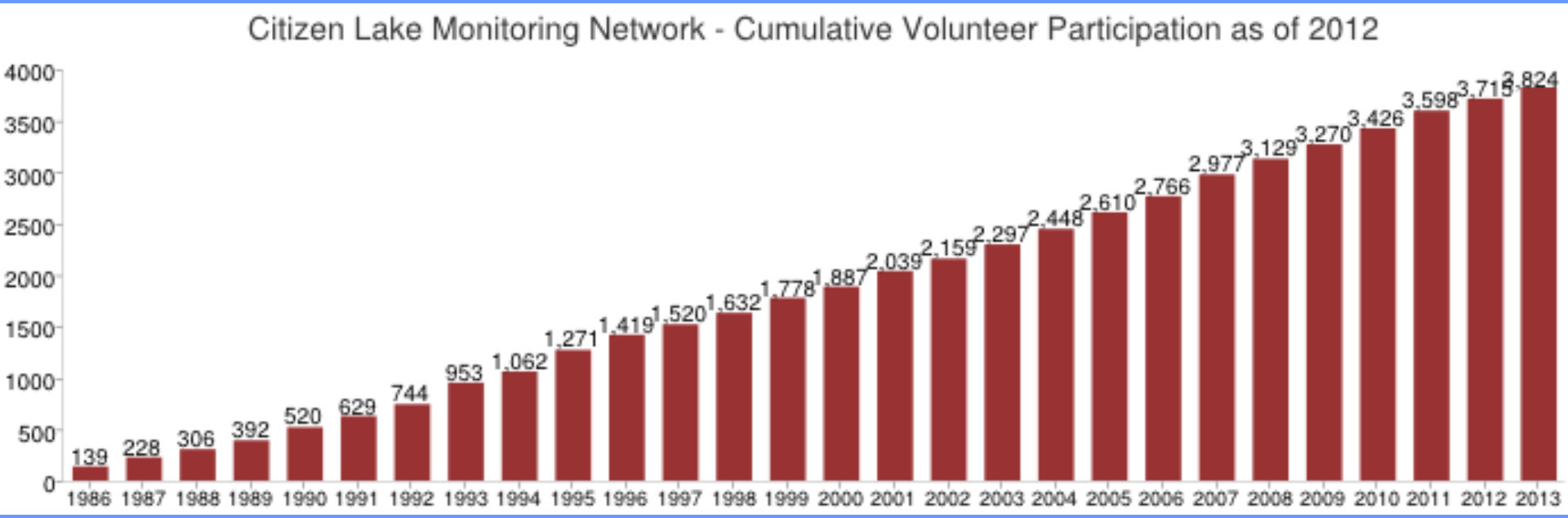


Monitoring	Lakes
Secchi Clarity	907
Chemistry	549
Dissolve oxygen	361
AIS	300+


Citizen Lake Monitoring Network - Stations Monitored as of 2012
1000
900
800
700
600
500
400
300
200
100
0
127
197
226
287
339
388
445
523
563
642
637
630
609
603
629
681
681
705
716
814
820
888
833
833
888
901
913
844
1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013

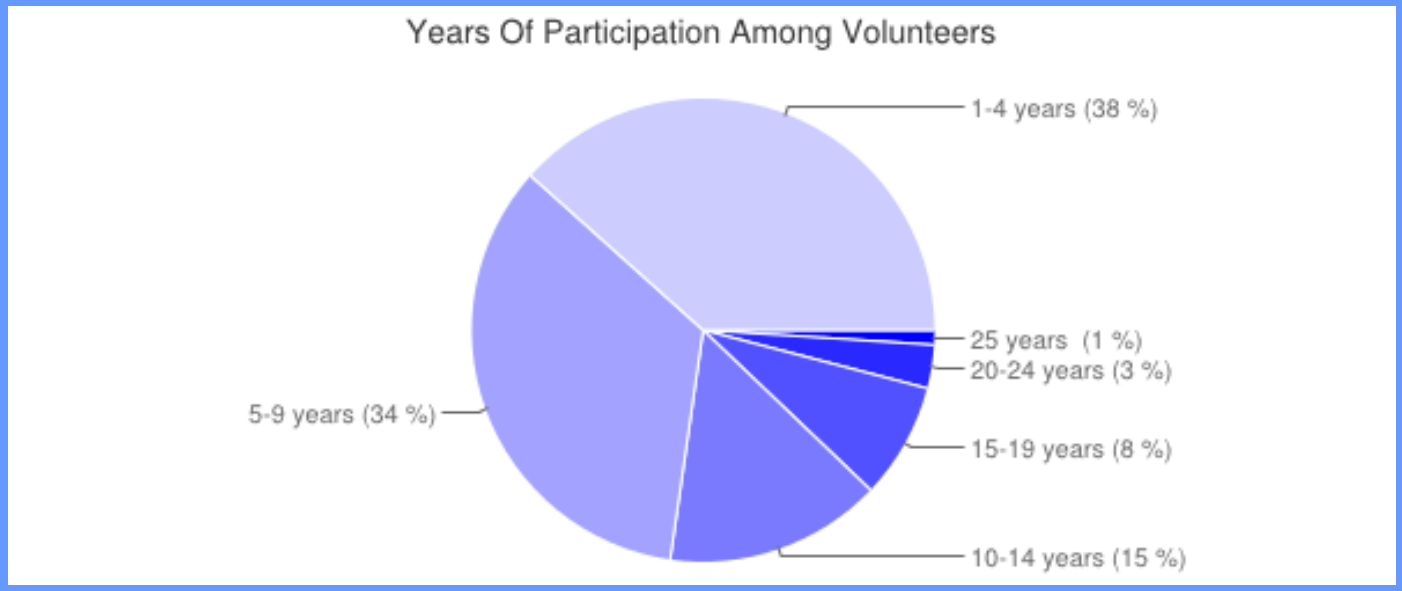

Citizen Lake Monitoring Network - Volunteer Participation as of 2012
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
139
204
239
271
348
383
424
546
562
714
744
688
659
696
712
782
795
804
806
860
841
1,004
991
974
996
1,088
986
907
1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013

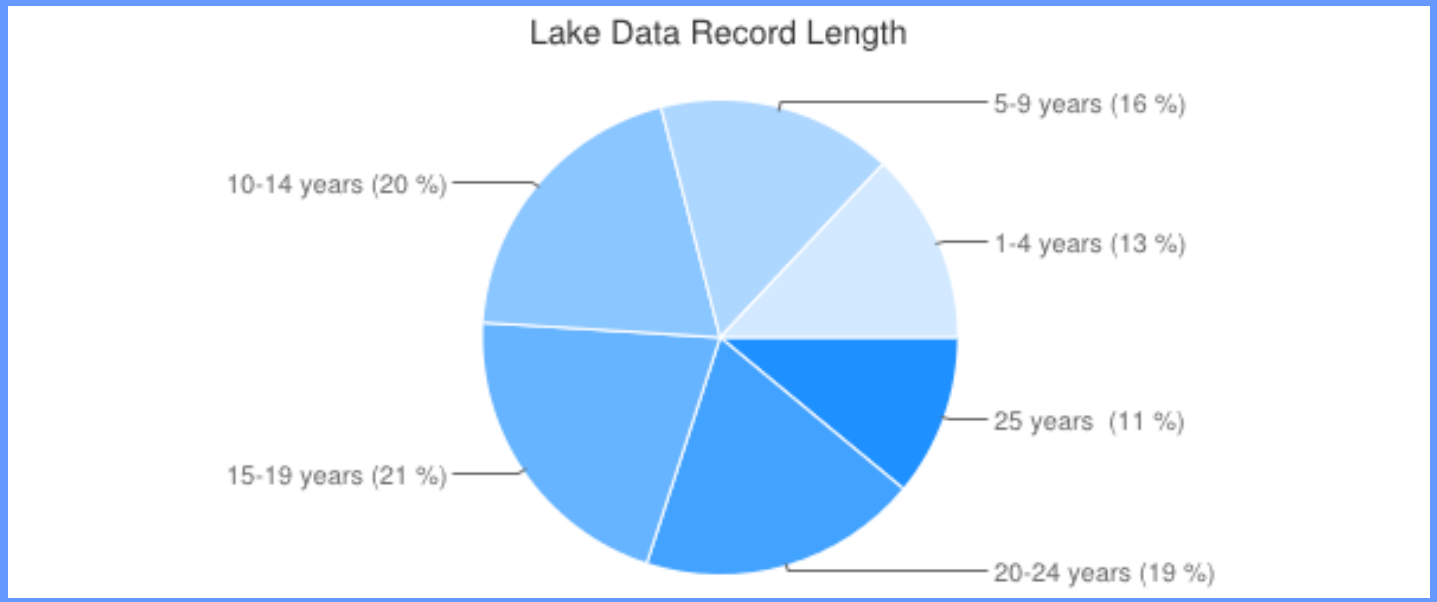
3,824 CLMN Volunteers have monitored Wisconsin Lakes

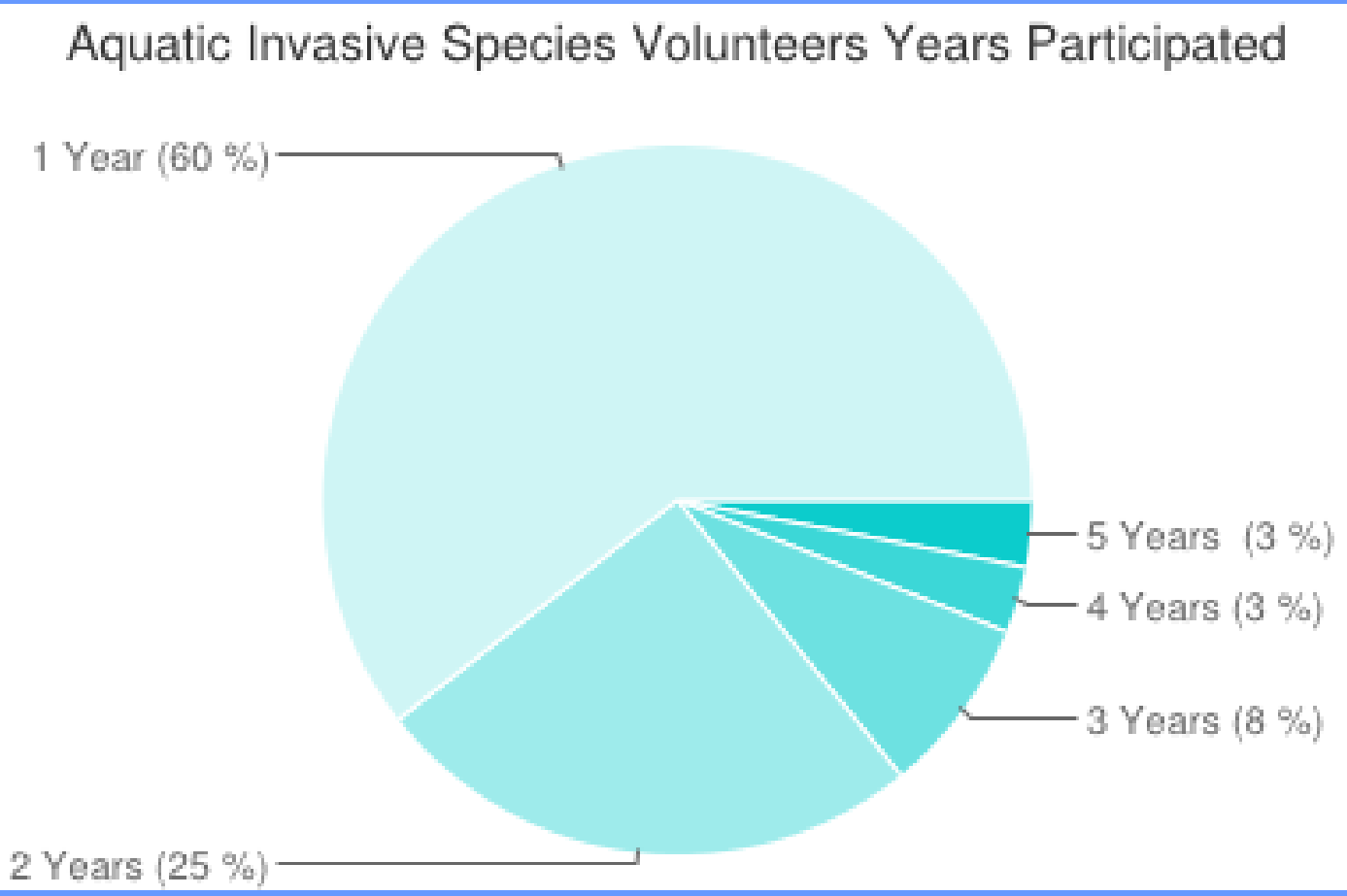


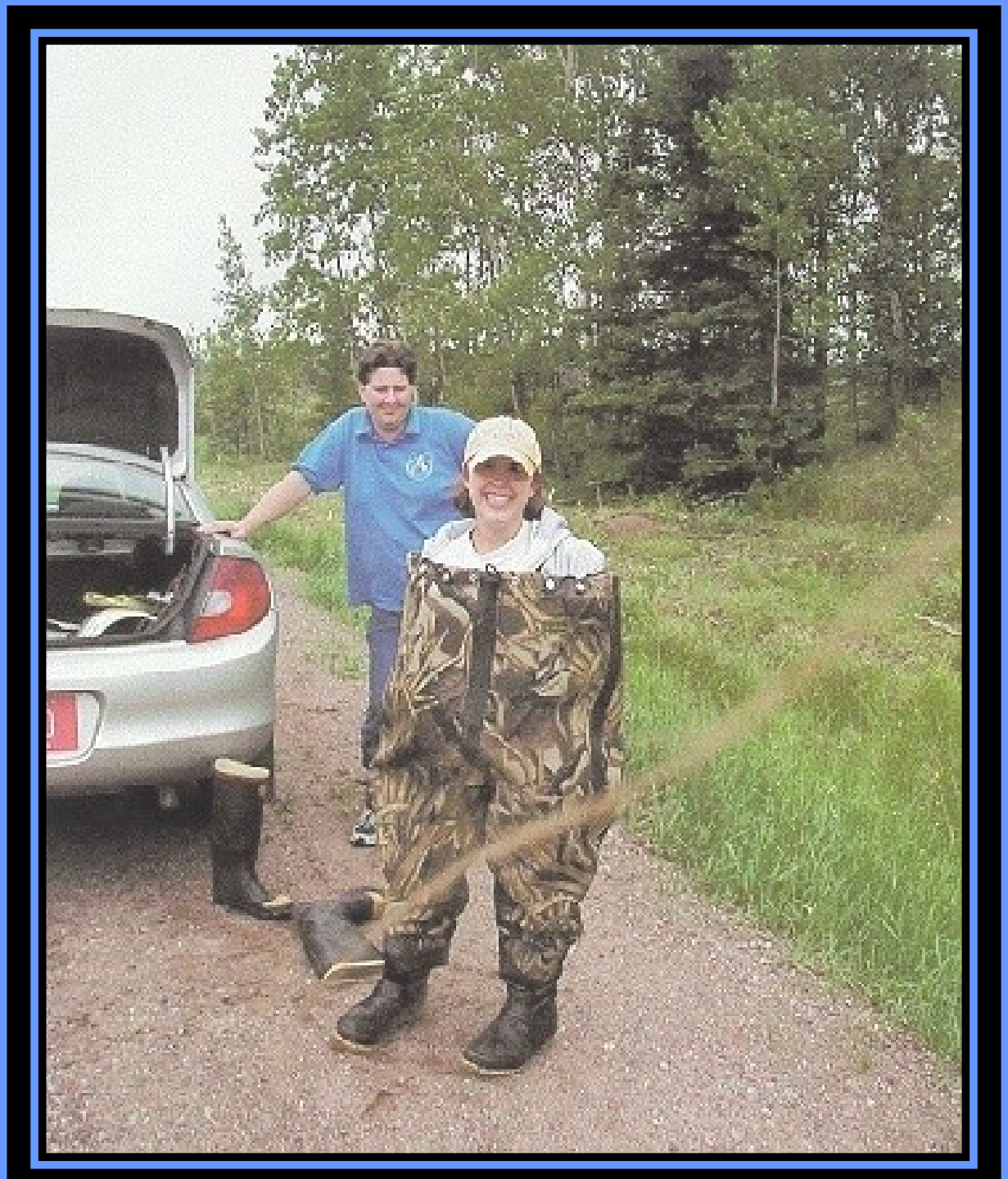
Based upon $12.00/hour:

- Our secchi volunteers have saved us $1,585,272
- Our chemistry volunteers have saved us $312,816


Years Of Participation Among Volunteers
1-4 years (38 %)
25 years (1 %)
20-24 years (3 %)
15-19 years (8 %)
10-14 years (15 %)
5-9 years (34 %)


Lake Data Record Length
5-9 years (16 %)
1-4 years (13 %)
25 years (11 %)
20-24 years (19 %)
15-19 years (21 %)
10-14 years (20 %)


Aquatic Invasive Species Volunteers Years Participated
1 Year (60 %)
5 Years (3 %)
4 Years (3 %)
3 Years (8 %)
2 Years (25 %)



Why are we successful?

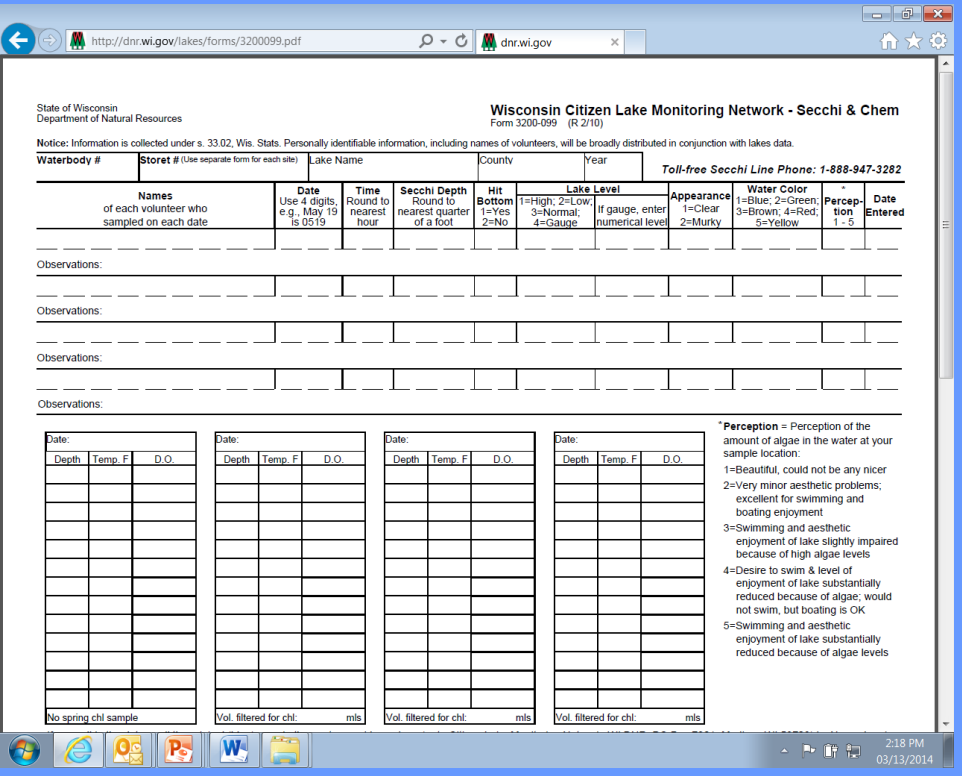
We tailor the program for the volunteers.

Monitoring Schedule

- Secchi every 10-14 days.
- Chemistry 4 times / year
- Temperature & dissolved Oxygen profiles
- Native Plant – once every three years
- Aquatic Invasives – once a month during open water season
- Lake Level 10-14 days

Data Entry & Retrieval

- http://dnr.wi.gov/lakes/clmn/



http://dnr.wi.gov/lakes/forms/3200099.pdf

dnr.wi.gov

State of Wisconsin
Department of Natural Resources

Wisconsin Citizen Lake Monitoring Network - Secchi & Chem
Form 3200-099 (R 2/10)

Notice: Information is collected under s. 33.02, Wis. Stats. Personally identifiable information, including names of volunteers, will be broadly distributed in conjunction with lakes data.

Waterbody # | **Storet #** (Use separate form for each site) | Lake Name | County | Year

Toll-free Secchi Line Phone: 1-888-947-3282

Names of each volunteer who sampled on each date	Date Use 4 digits, e.g., May 19 is 0519	Time Round to nearest hour	Secchi Depth Round to nearest quarter of a foot	Hit Bottom 1=Yes 2=No	Lake Level 1=High; 2=Low; 3=Normal; 4=Gauge	Lake Level If gauge, enter numerical level	Appearance 1=Clear 2=Murky	Water Color 1=Blue; 2=Green; 3=Brown; 4=Red; 5=Yellow	*Perception - 1 - 5	Date Entered

Observations:

Observations:

Observations:

Observations:

Date: Depth	Temp. F	D.O.

No spring chl sample

Date: Depth	Temp. F	D.O.

Vol. filtered for chl: mls

Date: Depth	Temp. F	D.O.

Vol. filtered for chl: mls

Date: Depth	Temp. F	D.O.

Vol. filtered for chl: mls

***Perception** = Perception of the amount of algae in the water at your sample location:

1=Beautiful, could not be any nicer

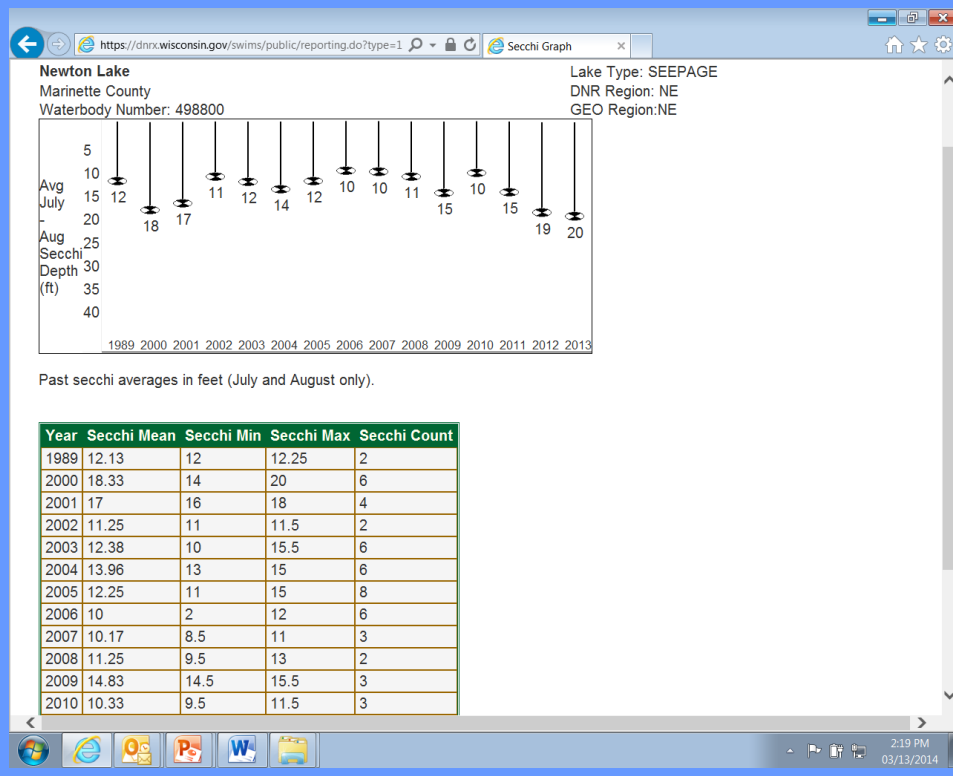
2=Very minor aesthetic problems; excellent for swimming and boating enjoyment

3=Swimming and aesthetic enjoyment of lake slightly impaired because of high algae levels

4=Desire to swim & level of enjoyment of lake substantially reduced because of algae; would not swim, but boating is OK

5=Swimming and aesthetic enjoyment of lake substantially reduced because of algae levels

2:18 PM
03/13/2014



https://dnrx.wisconsin.gov/swims/public/reporting.do?type=1

Secchi Graph

Newton Lake
Marinette County
Waterbody Number: 498800

Lake Type: SEEPAGE
DNR Region: NE
GEO Region:NE

Past secchi averages in feet (July and August only).

Year	Secchi Mean	Secchi Min	Secchi Max	Secchi Count
1989	12.13	12	12.25	2
2000	18.33	14	20	6
2001	17	16	18	4
2002	11.25	11	11.5	2
2003	12.38	10	15.5	6
2004	13.96	13	15	6
2005	12.25	11	15	8
2006	10	2	12	6
2007	10.17	8.5	11	3
2008	11.25	9.5	13	2
2009	14.83	14.5	15.5	3
2010	10.33	9.5	11.5	3

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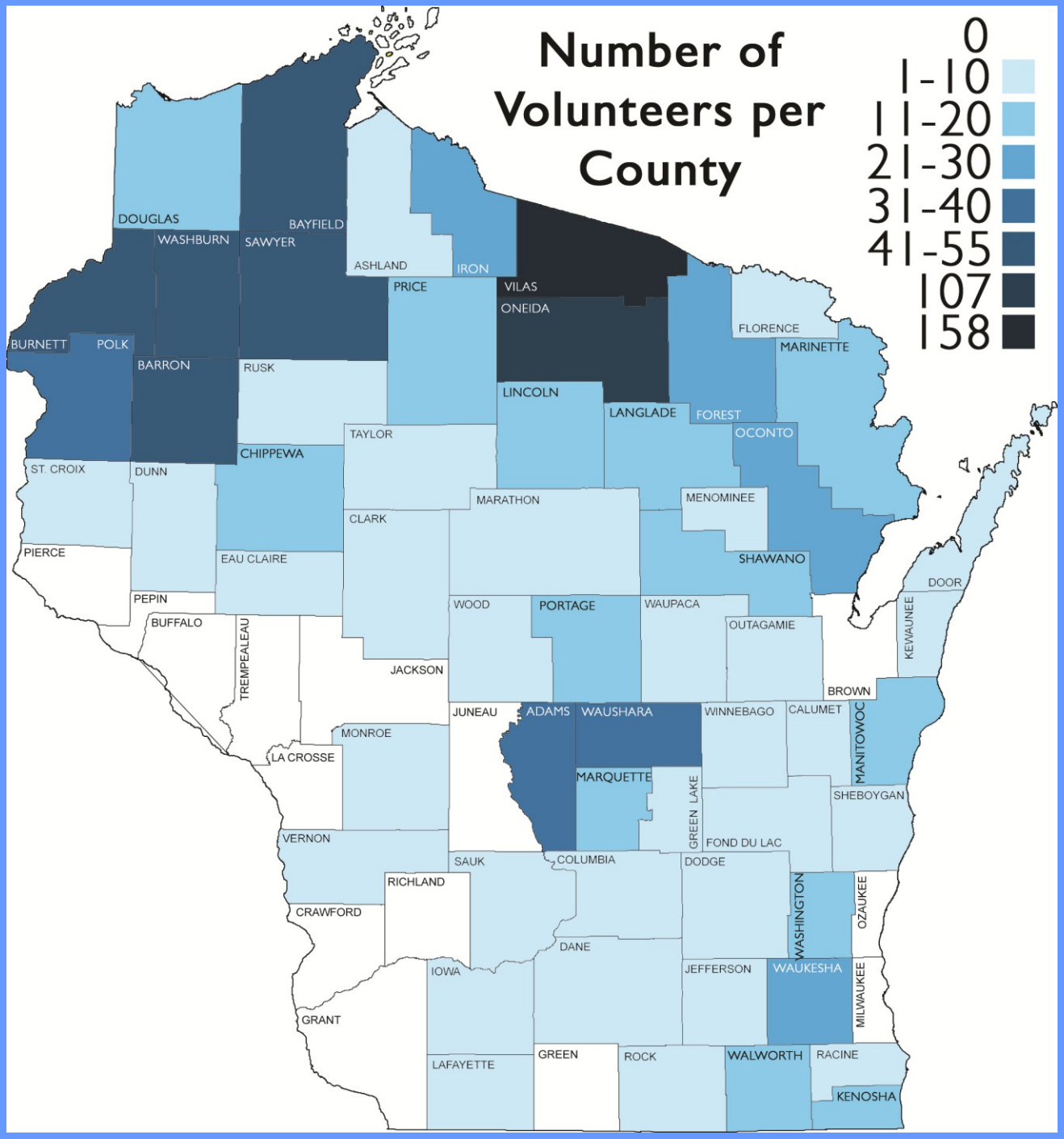
03/13/2014

QA/QC

- Trainer refreshers
- Volunteer Annual refreshers
- Shadowing
- Water Sample QA/QC (replicates & blanks)
- Reports, email, letters, phone calls, etc.


Number of Volunteers per County
0
1-10
11-20
21-30
31-40
41-55
107
158
DOUGLAS
BAYFIELD
WASHBURN
SAWYER
ASHLAND
IRON
VILAS
PRICE
ONEIDA
FLORENCE
MARINETTE
BURNETT
POLK
BARRON
RUSK
LINCOLN
LANGLADE
FOREST
OCONTO
TAYLOR
CHIPPEWA
ST. CROIX
DUNN
MARATHON
MENOMINEE
CLARK
PIERCE
EAU CLAIRE
SHAWANO
DOOR
PEPIN
WOOD
PORTAGE
WAUPACA
OUTAGAMIE
KEWAUNEE
BUFFALO
TREMPEALEAU
JACKSON
BROWN
JUNEAU
ADAMS
WAUSHARA
WINNEBAGO
CALUMET
MANITOWOC
MONROE
LA CROSSE
MARQUETTE
GREEN LAKE
SHEBOYGAN
VERNON
FOND DU LAC
SAUK
COLUMBIA
DODGE
RICHLAND
WASHINGTON
OZAUKEE
CRAWFORD
DANE
IOWA
JEFFERSON
WAUKESHA
MILWAUKEE
GRANT
LAFAYETTE
GREEN
ROCK
WALWORTH
RACINE
KENOSHA

New Volunteer Costs

Type of Monitoring	Startup Cost Per Volunteer	Number of new Volunteer per year	Annual startup costs
Secchi	$50	100*	$5,000
Chemistry	$375	20	$7,500
Native Plant	$100	5	$500
Aquatic Invasive Species	$65	Up to 200	$13,000**
Temp profile	$130	20	$2,600
Dissolved Oxygen	$60	20	$1,200

Maintenance Costs for 2013

Type of Monitoring	Annual Maintenance Cost per volunteer, site or lake	2013 counts: volunteers, sites or lakes	Approx. annual cost to Maintain Volunteers
Secchi	$5 per volunteer	1124 volunteers	$5,620
Chemistry (lab, postage, replacement equipment, etc.)	$200 per site	549 sites	$110,000
Native Plant	$25 per lake	30 lakes	$750
Aquatic Invasive Species* **	$5 per lake	300 lakes	$1,500
Temp profile	$5 per lake	523 lakes	$2,615
Dissolved Oxygen	$30 per lake	361 lakes	$10,830

Secchi Changes / Updates

- Protocols stayed the same since 1986
- Equipment updates (safer, longer lasting…)
- Satellite imagery

http://dnr.wi.gov/lakes/clmn/remotesensing/Default.aspx

Chemistry Changes / Updates

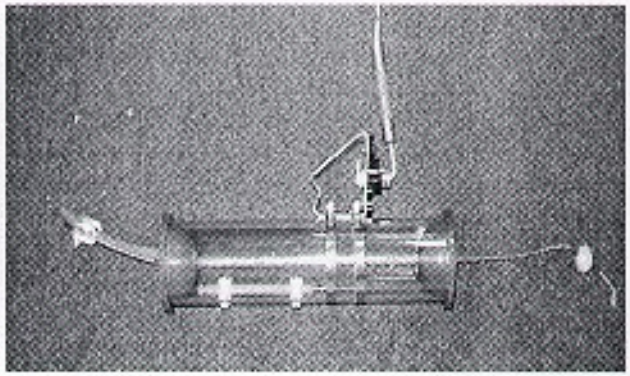
Research and update equipment

- Data analysis and modify protocols and timing
- Top & bottom samples;
- Number of samples/year

Volunteers collect “additional” samples as needed for DNR WQ modeling

1.

2.



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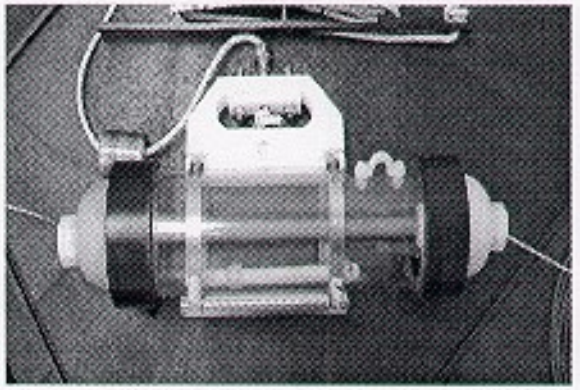

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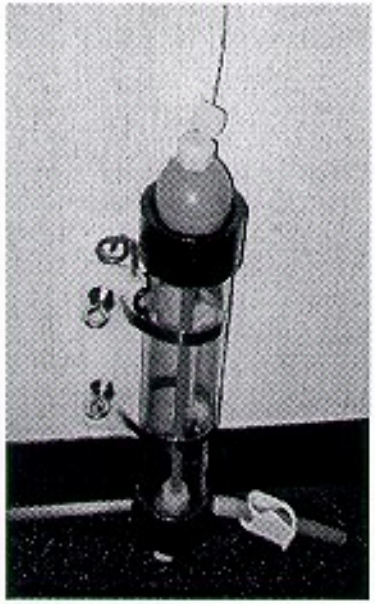

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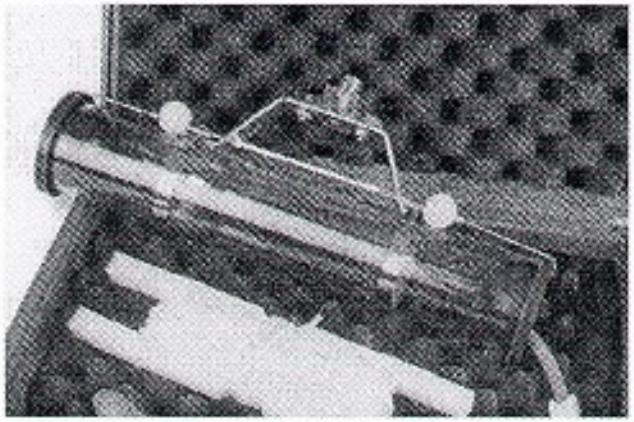
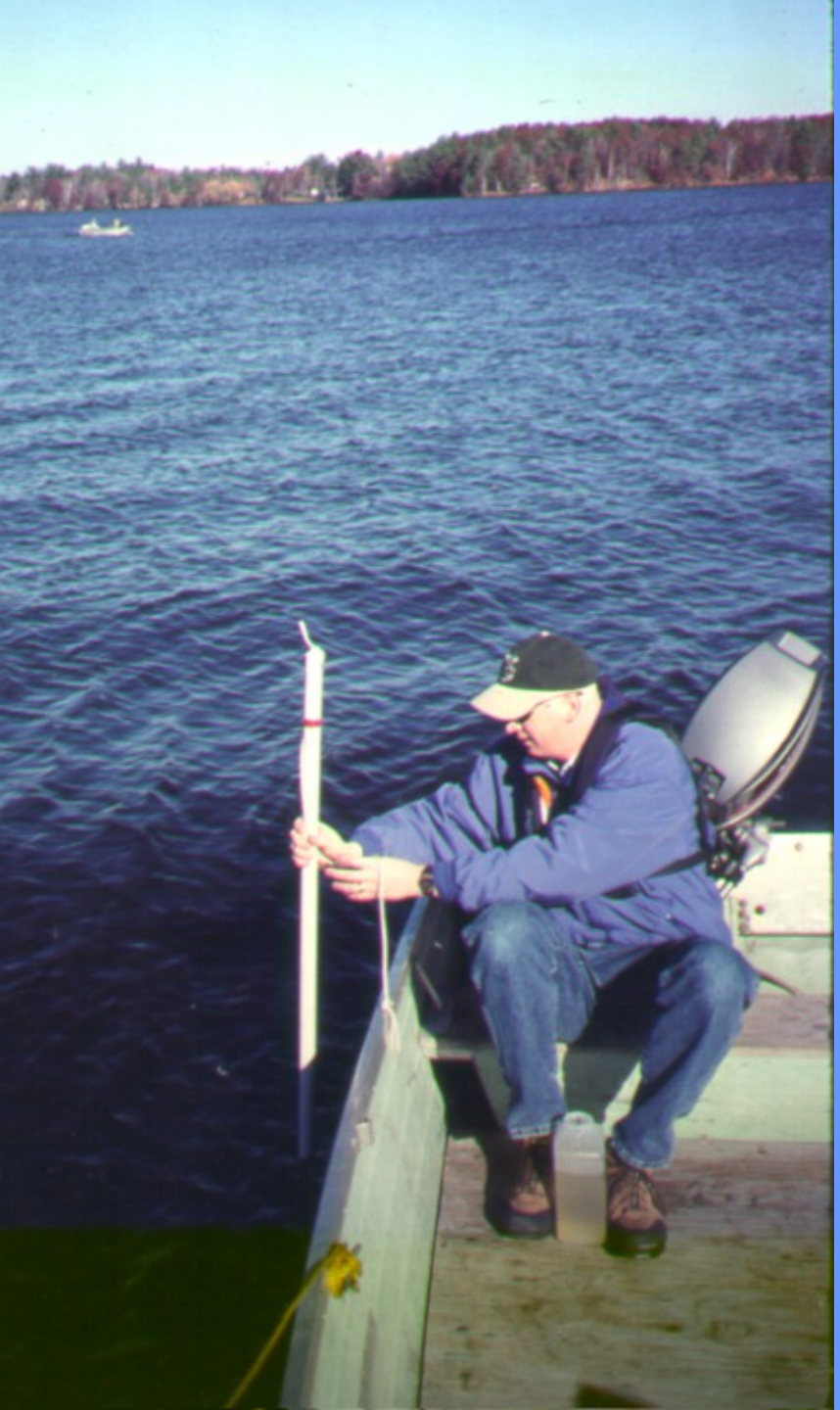


6.

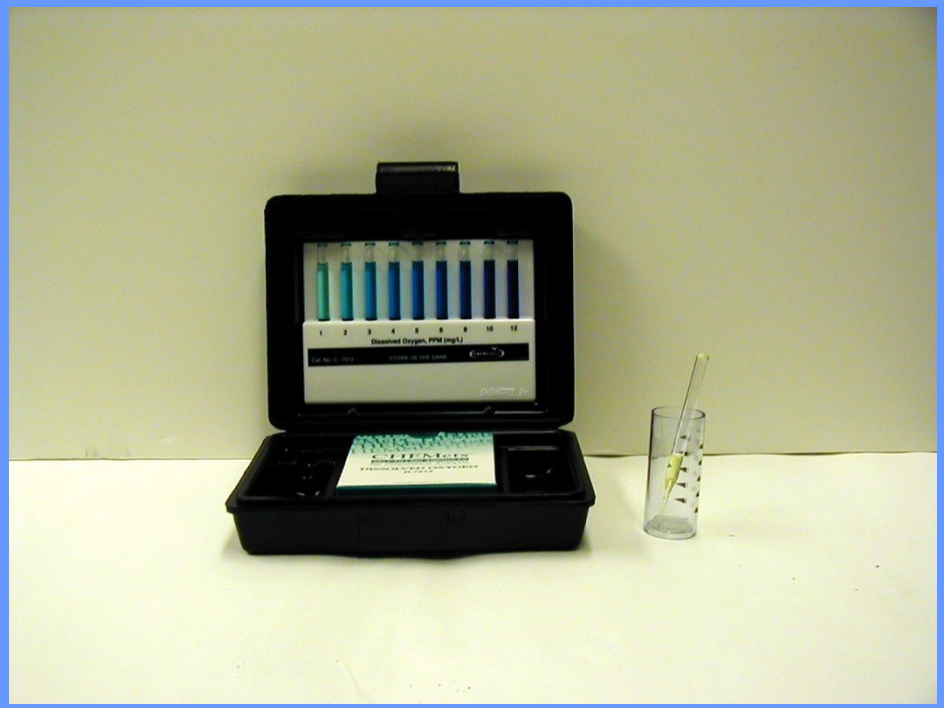
OTHER

Your Self-Help Coordinator will discuss your method with with you.



Integrated water sampler. Pilot study conducted in 2000. This sampler is now used for collecting water samples for chlorophyll and total phosphorus.

Dissolved Oxygen Monitoring



Temperature meters tried in 2000. We selected the center meter for future use in our program.


69.8
°F
Wisconsin Self-Help
Lake Monitoring Program

Data Submittal

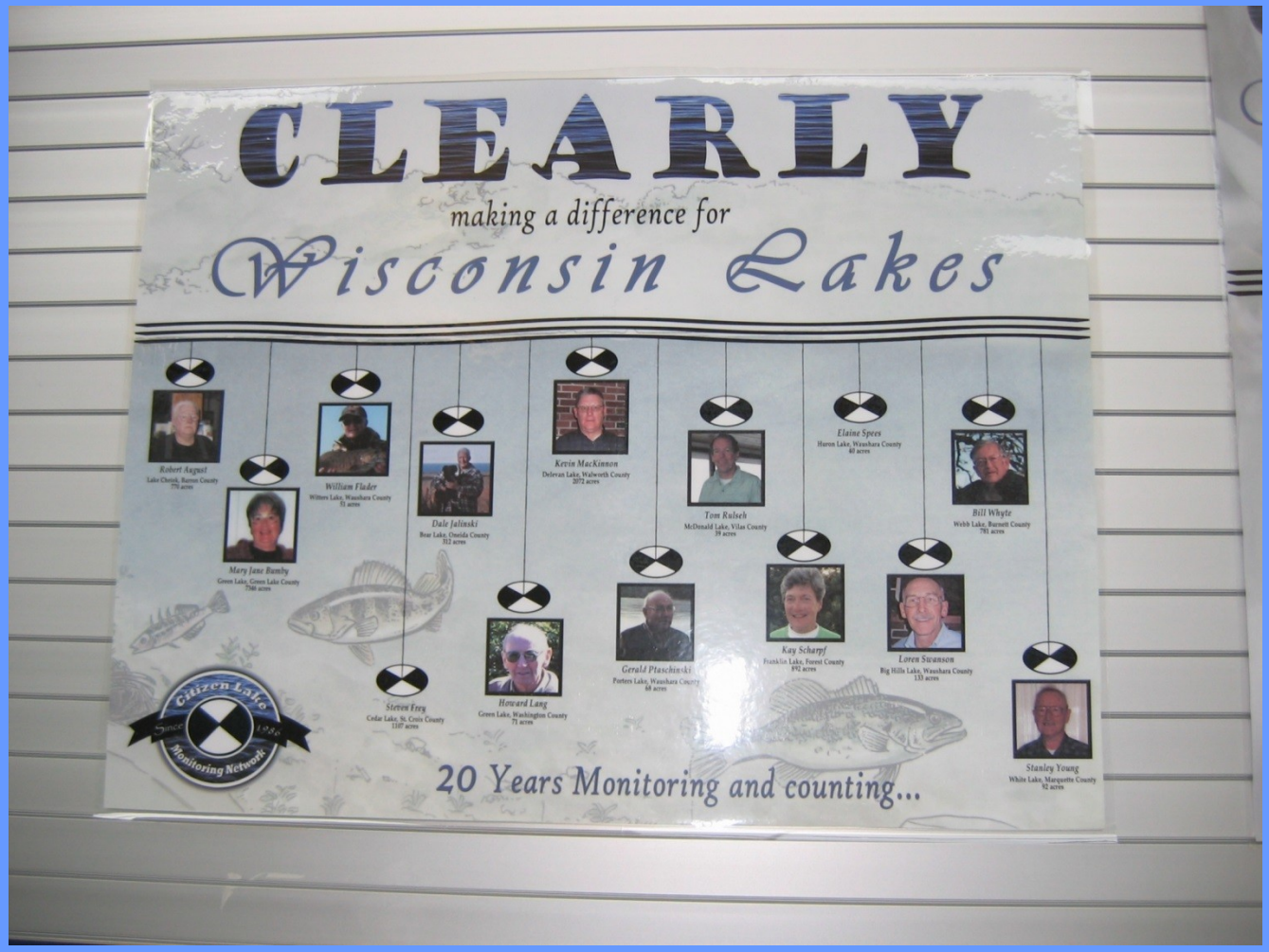
- Post Cards
  - One per sample period – DNR entered data
- Seasonal Data Sheet
  - One per season – DNR entered data
- Phone in system
  - As you collect data. DNR enters misc. data
- On-Line Data Entry!

Anyone can use the data

CLMN Recognition

Citizen Lake Monitoring Network Lakes Convention Display

Citizen Lake Monitoring Network
20-year posters go to the volunteers



Citizen Lake Monitoring Network Retirement (10+years) or special events

CLMN Key Players

- Volunteers – do the work ☺
- DNR – Technical Expertise, data analysis, Storage, reports, maps…
- UWEX-Lakes/UWSP – Teaching aspects (manual development, trainer trainings, etc.)
- Wisconsin Lakes – advocates for funding
- WI State Lab of Hygiene – analysis
- Research – modify techniques, review monitoring, etc.

Laura Herman
Lakes Education Specialist
Wisconsin Citizen Lake Monitoring Network
107 Sutliff Ave.
Rhinelander, WI 54501
(715) 365-8998
laura.herman@uwsp.edu
Laura.herman@wisconsin.gov
http://www.uwsp.edu/cnr/uwexlakes/