THE IMPORTANCE OF HANDS-ON FIELD EDUCATION AND EXPOSURE WITH REGARDS TO MONITORING DATA

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INTRODUCTIONS

Chris Mikolajczyk, CLM

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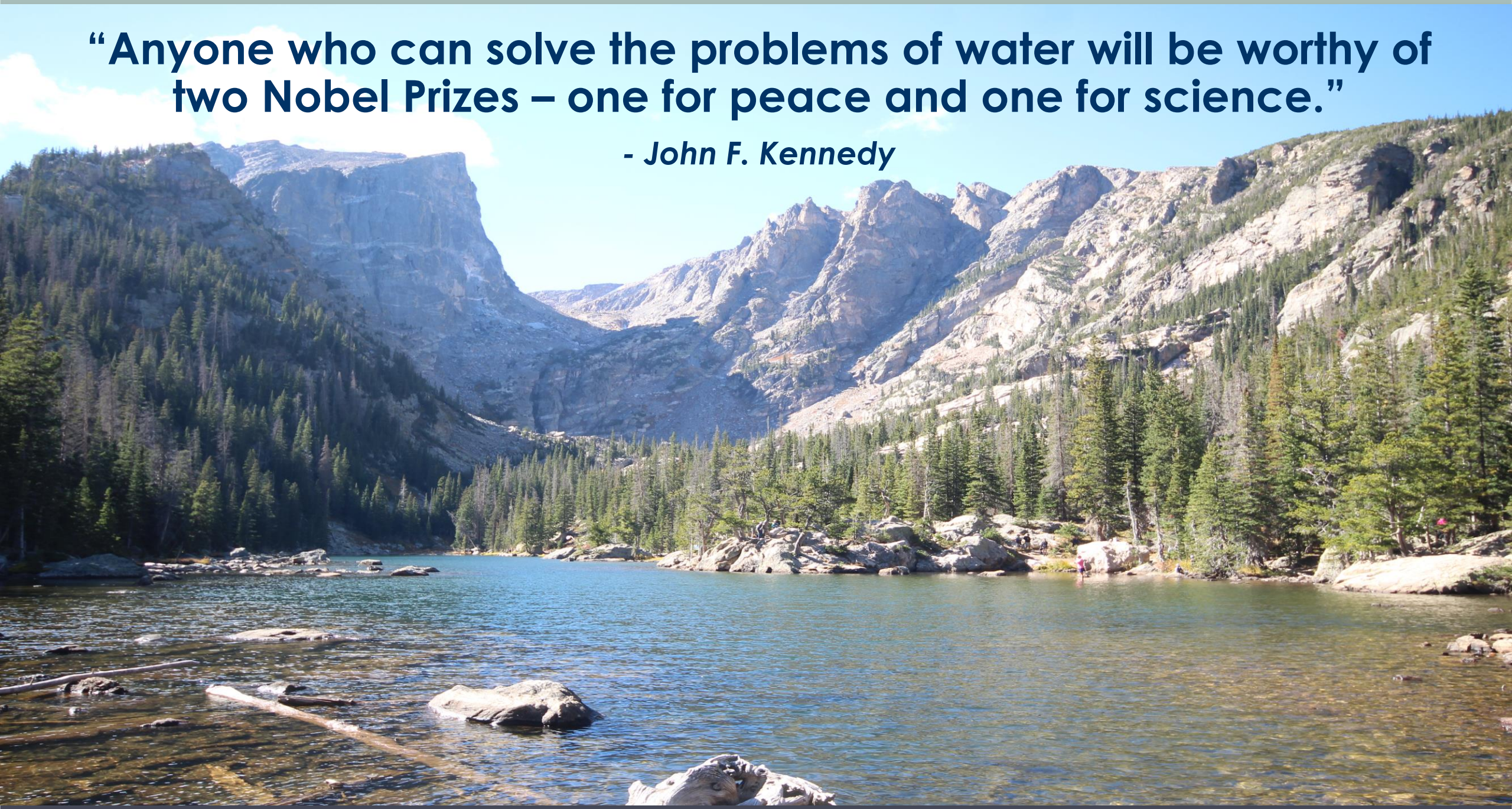
“Anyone who can solve the problems of water will be worthy of two Nobel Prizes – one for peace and one for science.”
- John F. Kennedy

MONITORING

verb
present participle: monitoring

1. *observe and check the progress or quality of (something) over a period of time; keep under systematic review.*

transitive verb

1. *to watch, keep track of, or check usually for a special purpose*

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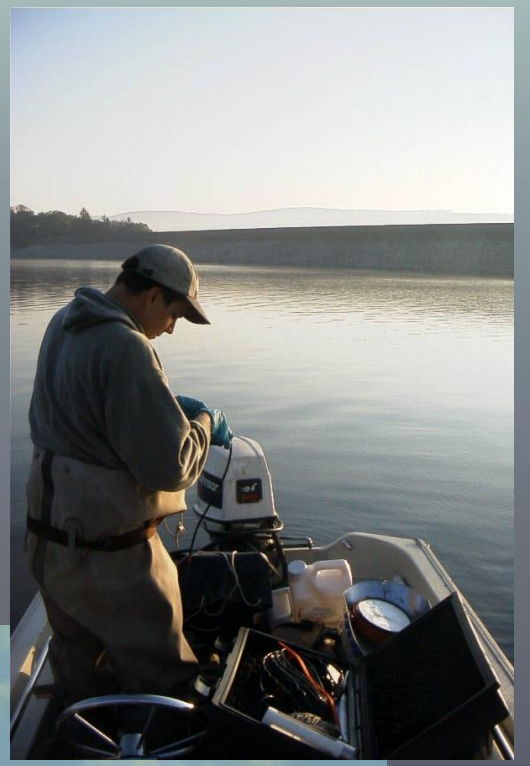
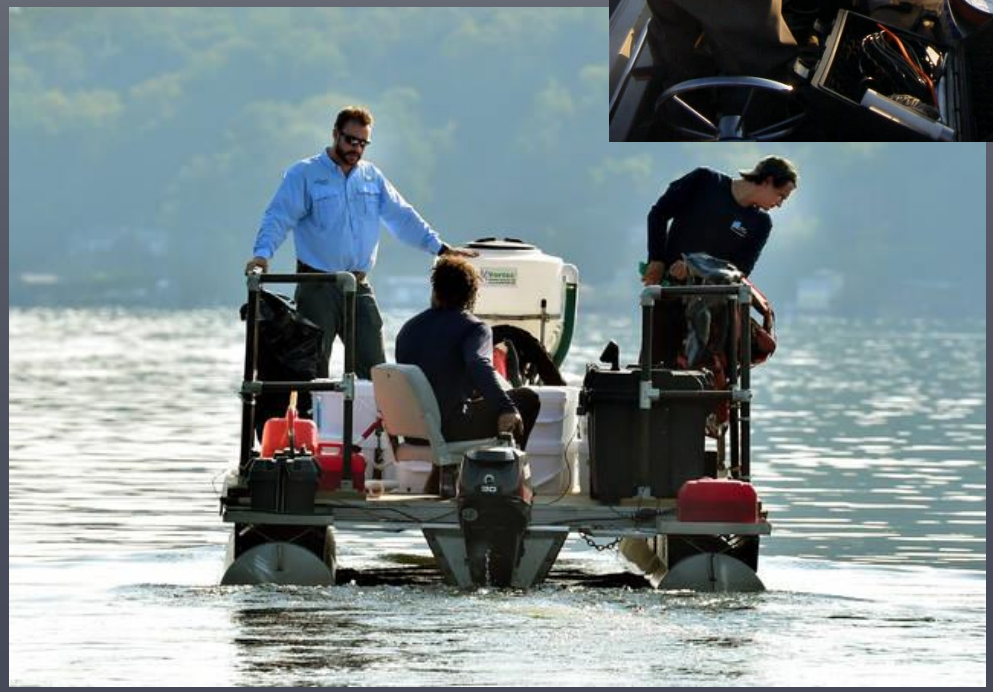
MONITORING – DIFFERING METHODS

- **Physical Observations** (Ice out, SAV, water levels)
- **Instrument-based** (pH, Temp, DO, Sp Cond, Turbidity)
- **Field Labs** (nutrients, turbidity, chloring, chlorides)
- **Laboratory analysis** (you name it!)
- **Clarity** (Secchi)





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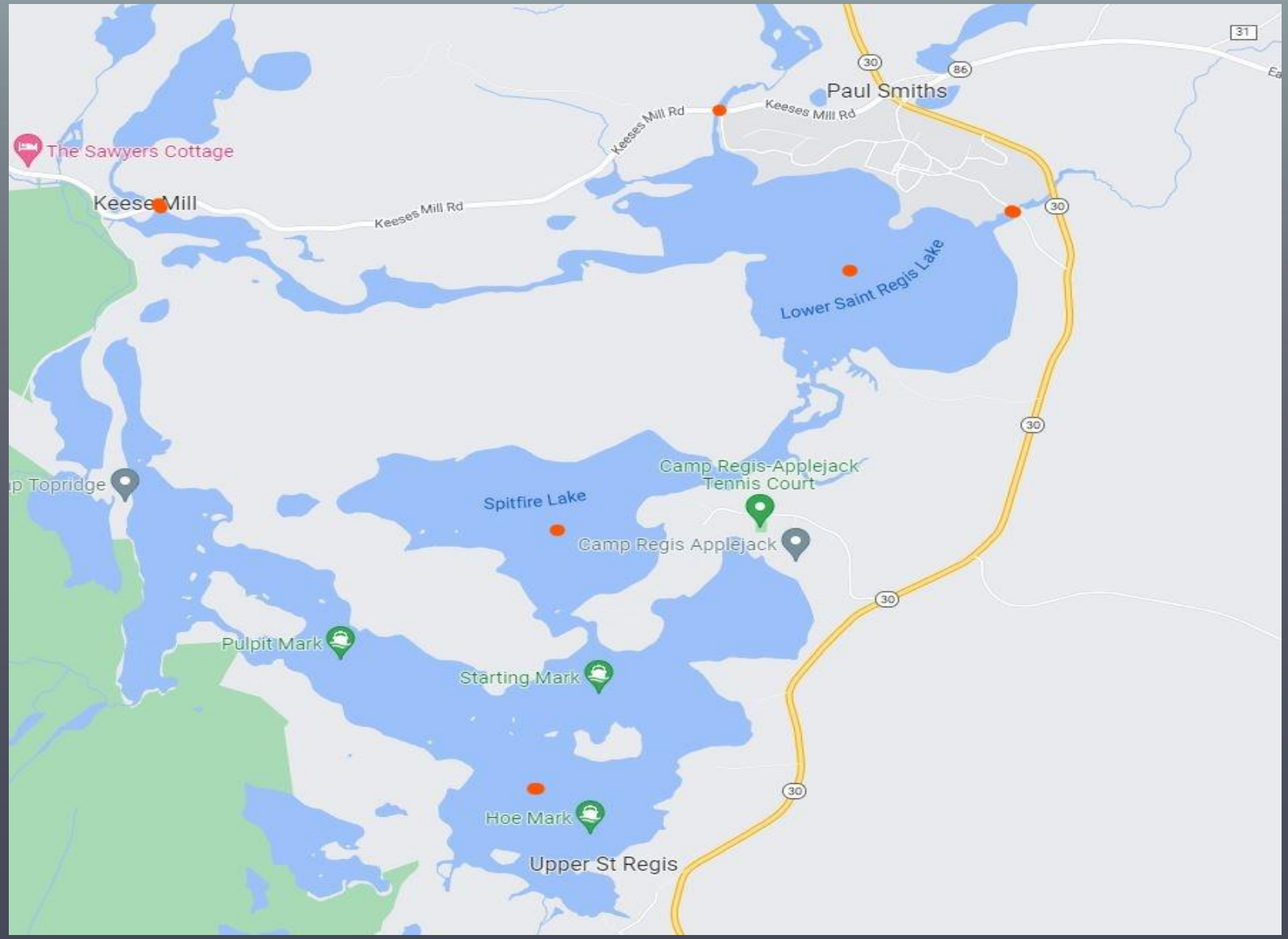
MONITORING – CONSISTENCY

- Field Sampling Procedures Manuals (EPA, State)
- Quality Assurance Project Plans (QAPPs – EPA, State)
- **Standard** Methods
- **Standardized** Training Protocols (EPA, State)
- **Standard** Operating Procedures (SOPs)

PAUL SMITHS COLLEGE

- Associates, Bachelors & Masters Degrees
- 14,000-acre campus
- Well known for its “hands-on” approach to environmental studies given its proximity to numerous lakes and forested locations
- Affectionately known to alumni as “PSC”

LOWER ST REGIS LAKE RESEARCH PROJECT



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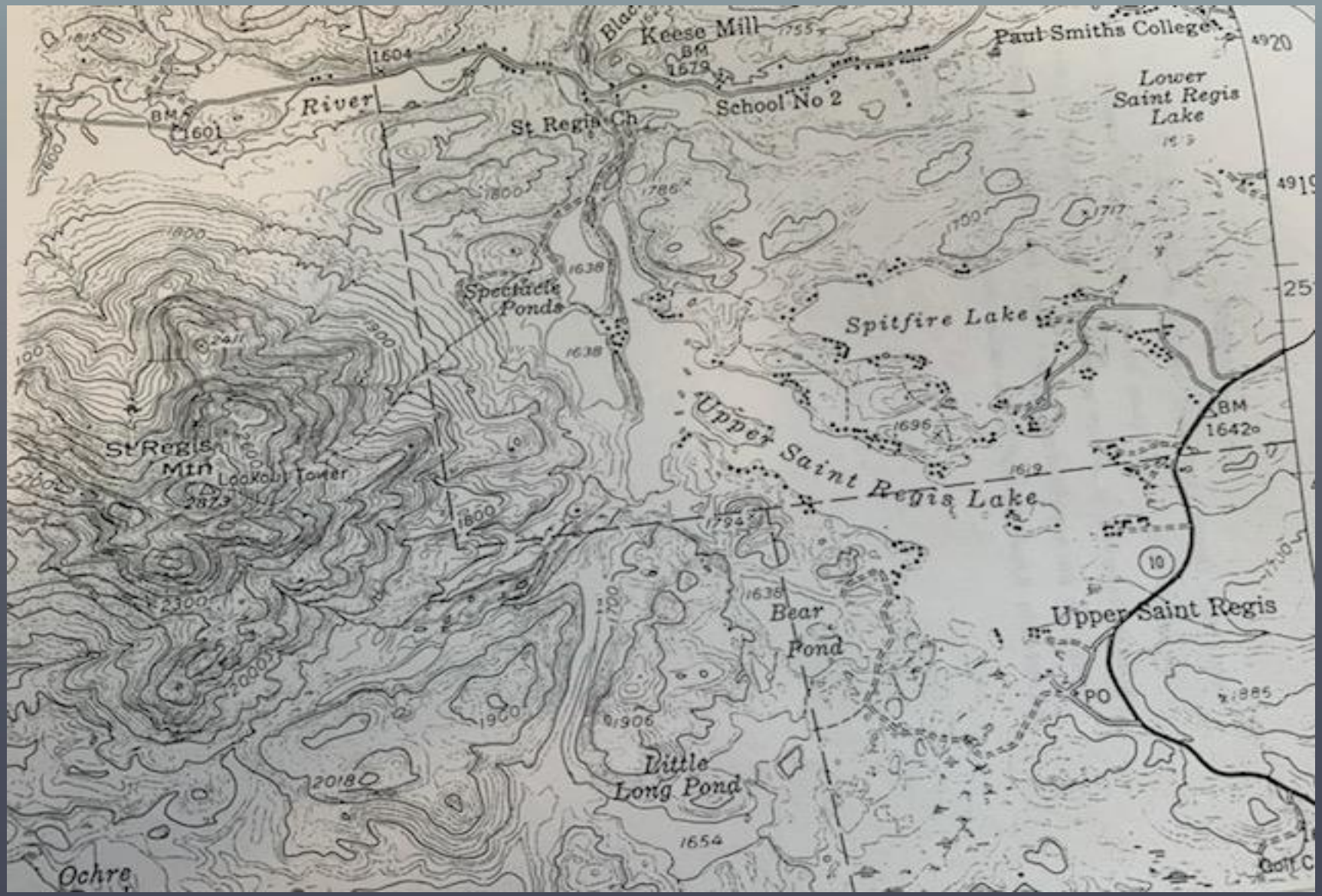
LOWER ST REGIS LAKE RESEARCH PROJECT



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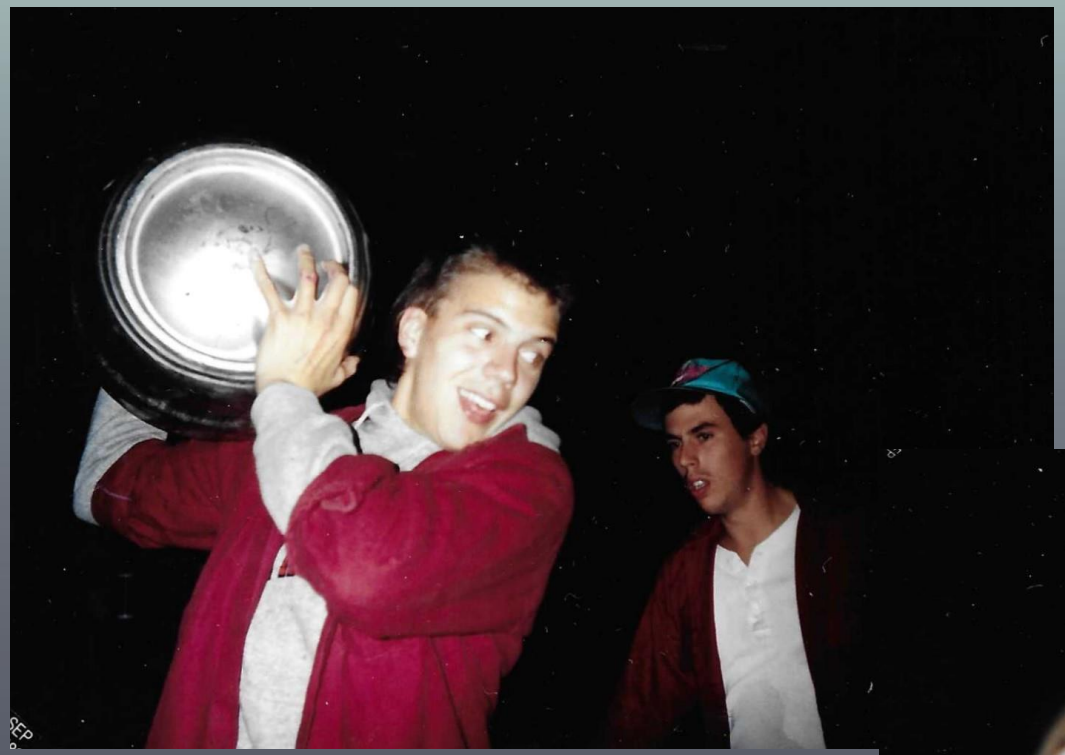
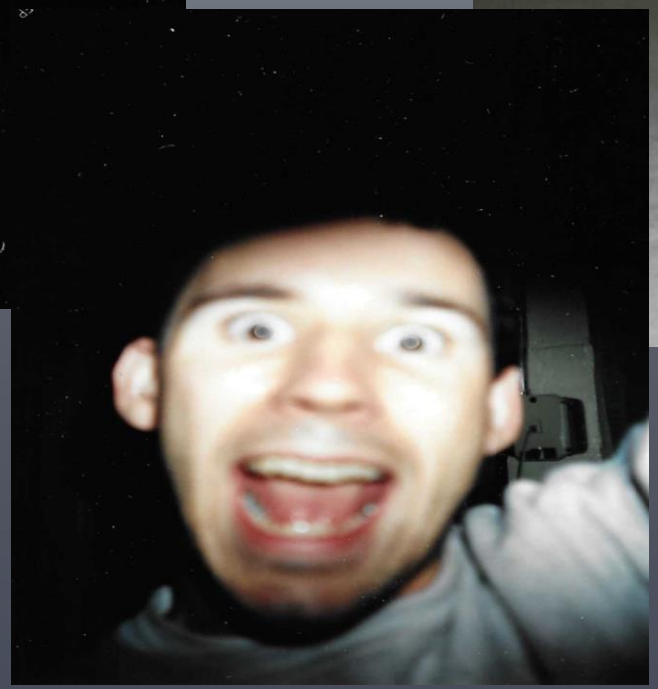
THE SWAMPIES (1989/90)





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THE SWAMPIES (1989/90)

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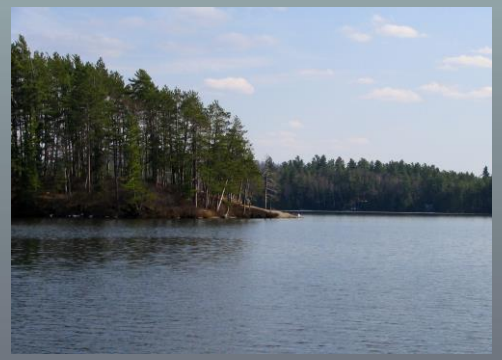
FIELD & LAB PARAMETERS (WEEKLY)

Weekly Rotation

Everyone learns everything!

- Temp
- DO
- Secchi
- PH
- Alkalinity
- SRP
- TP
- Fe (Total, Ferrous and Ferric)
- Conductivity
- Turbidity
- Aluminum
- Sulfate
- Chloride
- Hardness
- Chlorophyll
- Weather Trends

RESULTS (SUMMER 1989)



Lower St Regis Lake

- Increased stratification
- Increased P as the summer progressed
- Elevated Fe (past practice)
- Decreasing chlorides
- Varying hardness (low level pH Inlets)

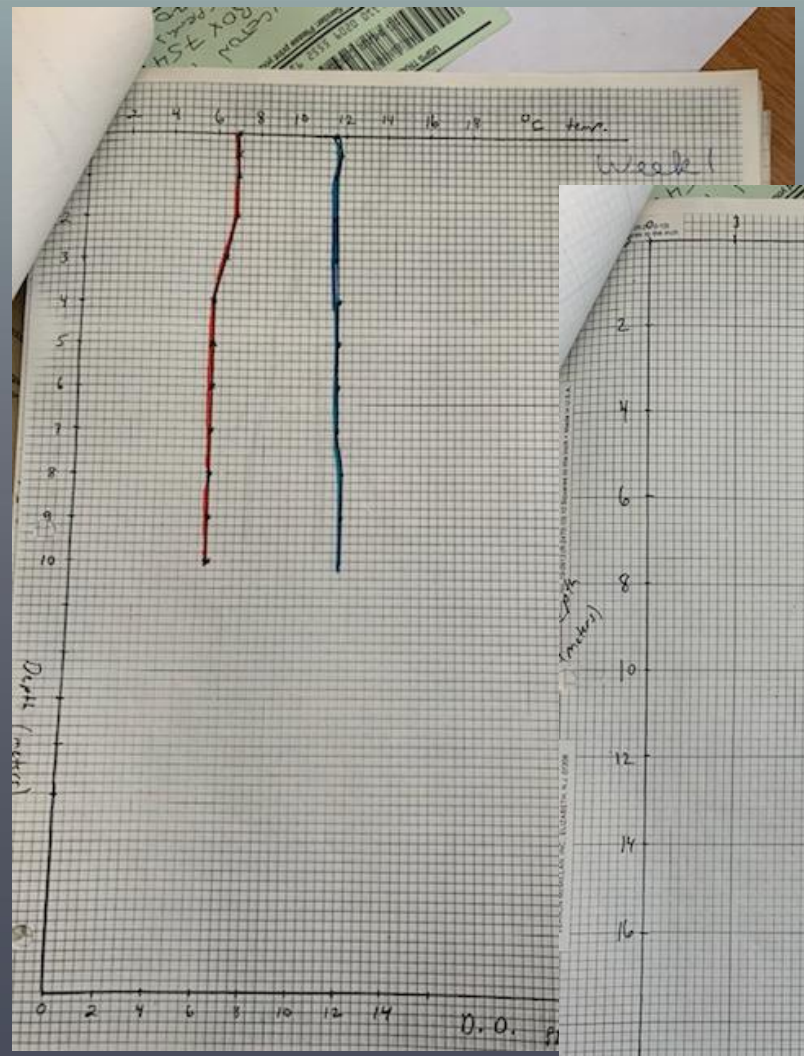
Spitfire Lake

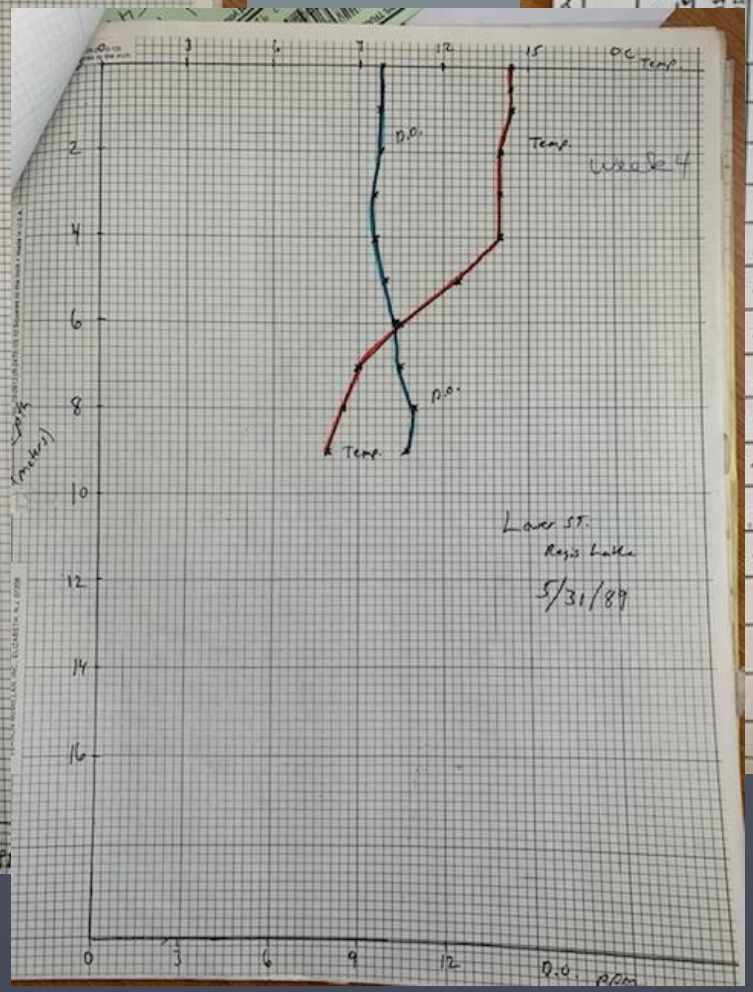
- Increased stratification
- Varying P as the summer progressed
- Varying Fe
- Steady, yet minimal chlorides
- Varying hardness (anaerobic decay)

Upper St Regis Lake

- Increased stratification
- Increasing P as the summer progressed
- Increasing Fe
- Decreasing chlorides
- Increasing hardness (higher pH/alkalinity)

RESULTS 1989/90





Location	Chlorophyll	Hardness ppm	Chloride ppm	Sulfate ppm	Aluminum ppb	Turbidity	Conductivity	Ferric iron ppm	Ferrous iron ppm	Total iron ppm	Total phosphate ppb	Ortho-phosphate ppb	Alkalinity	pH. after	pH. before Field
Eney St. Creek	–	32	[illegible]	7	3.24	0	75.0	56.8	0	56.8	70	120	10	6.28	–
Barnum Pond Outlet	–	28	3.5°	3	3.43	7	45.0	37.3	0	37.3	110	50	8	6.11	–
North Pasture "V"	–	32	2.5°	2	2.82	5	37.5	22.5	0	22.5	90	100	6	5.80	–
Lower ST. Regis Top	6.6082	30	6.5°	–	–	5.0	55	16.2	0	16.2	55	150	24	6.9	–
Lower ST. Regis Int.	2.0035	32	7.50	–	3.34	4.0	58	34.5	0	34.5	90	60	18	6.3	–
Lower ST. Regis Bottom	-2.8035	36	5.50	–	–	6.0	60	64.9	0	64.9	80	60	14	6.3	–
Spitfire Top	.801	26	1.00	–	–	2.5	42	12.7	0	12.7	50	250	19	6.7	–
Spitfire Int	4.4006	36	4.00	–	2.37	2.0	42	175.9	0	175.9	120	60	26	7.0	–
Spitfire Bottom	8.2013 8.2013	48	4.50	–	–	2.0	44	18.9	0	18.9	100	90	15	6.3	–
Upper ST. Regis Top	2.0025	30	4.50	–	–	3.0	45	12.7	0	12.7	120	90	18	6.5	–
Upper ST. Regis Int.	1.4108	30	6.50	–	4.17	3.0	42	9.6	0	9.6	100	50	16	6.5	–
Upper ST. Regis Bottom	1.0013	30	5.50	–	–	3.0	44	72.0	0	72.0	720	100	14	6.2	–

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BENEFITS OF SUCH A SCHOOL PROJECT?

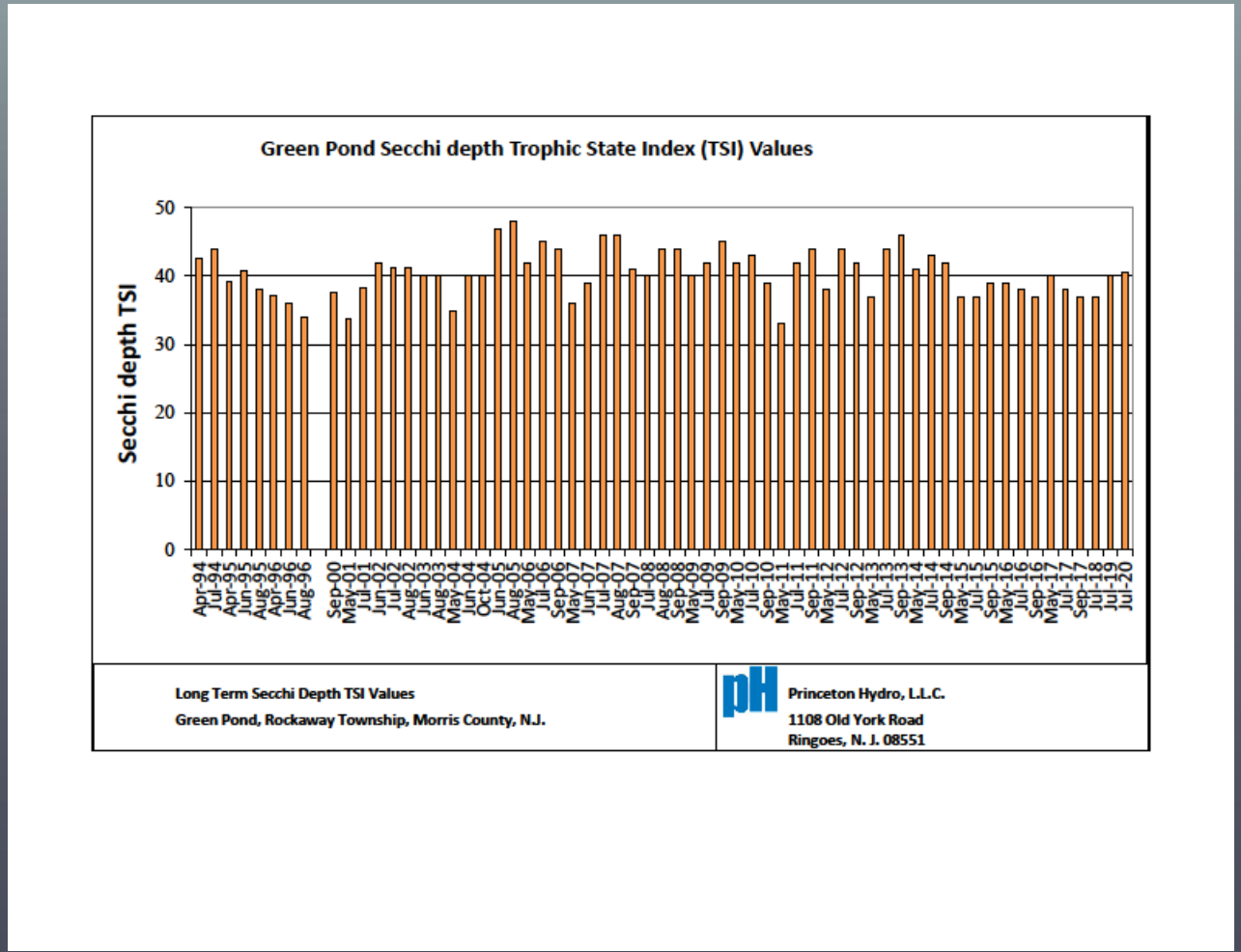
- ✓ Proper field collection protocol
- ✓ Proper laboratory protocol
- ✓ Proper QA/QC practices
- ✓ Proper data analysis/tracking
- ✓ Proper data interpretation
- ✓ Introduction to limnological processes

And the often-forgotten benefit….

A LONG-TERM DATA SET

LONG-TERM DATASETS

- Typically, 5+ years
- Consistent location
- Consistent field methods
- Consistent time of year
- Consistent lab practices



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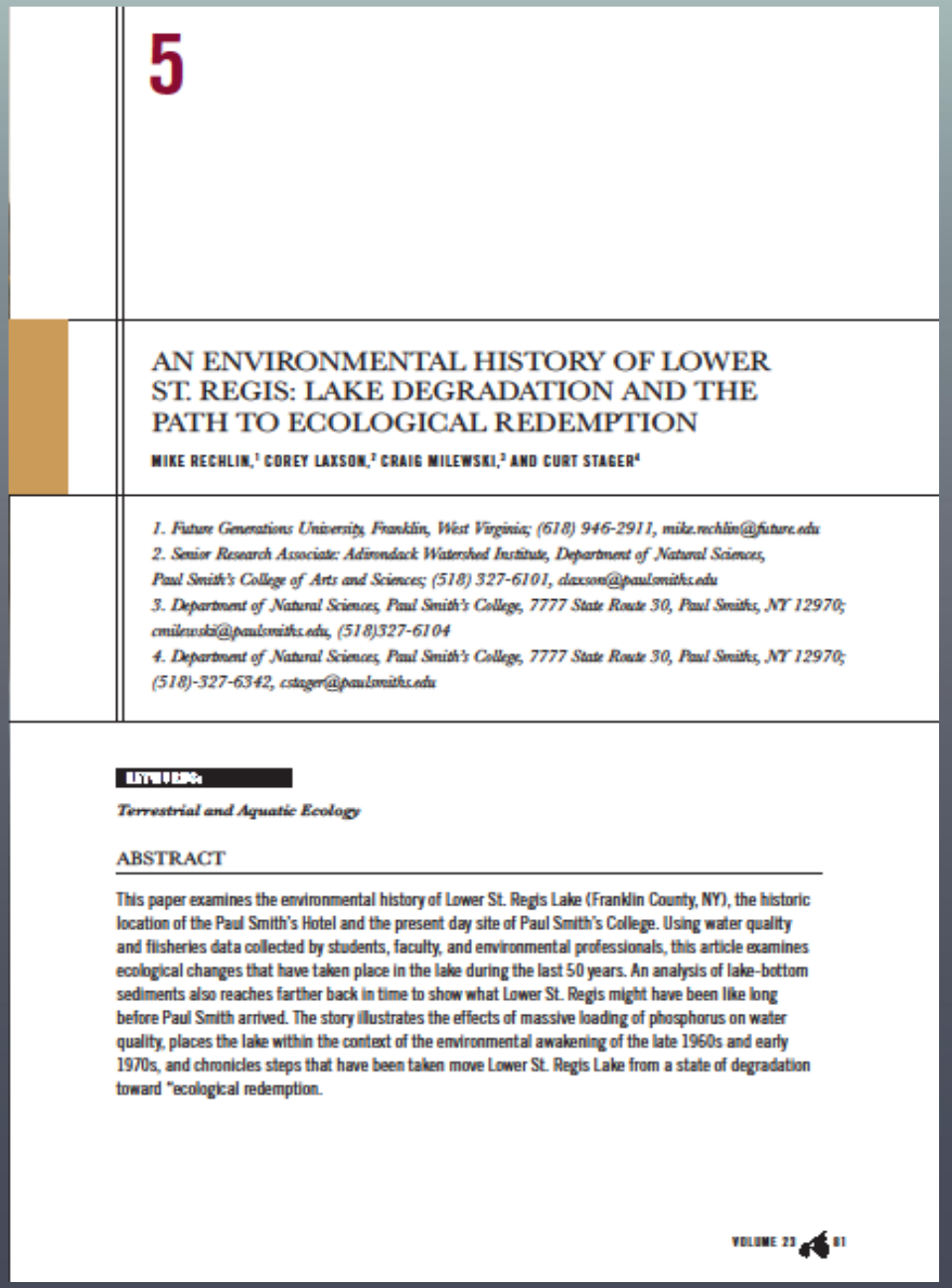
LONG-TERM DATASETS

- The founding of the college
- Human impact
- Phytoplankton blooms dominate (early 1960s)
- **DATA COLLECTION** revealed P and N sources
- Pre EPA
- Pre significant P/Phytoplankton research
- Sewage treatment adjustments



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AN ENVIRONMENTAL HISTORY OF LOWER ST. REGIS: LAKE DEGRADATION AND THE PATH TO ECOLOGICAL REDEMPTION

MIKE RECHLIN,[1] COREY LAXSON,[2] CRAIG MILEWSKI,[3] AND CURT STAGER[4]

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Terrestrial and Aquatic Ecology

ABSTRACT

This paper examines the environmental history of Lower St. Regis Lake (Franklin County, NY), the historic location of the Paul Smith's Hotel and the present day site of Paul Smith's College. Using water quality and fisheries data collected by students, faculty, and environmental professionals, this article examines ecological changes that have taken place in the lake during the last 50 years. An analysis of lake-bottom sediments also reaches farther back in time to show what Lower St. Regis might have been like long before Paul Smith arrived. The story illustrates the effects of massive loading of phosphorus on water quality, places the lake within the context of the environmental awakening of the late 1960s and early 1970s, and chronicles steps that have been taken move Lower St. Regis Lake from a state of degradation toward "ecological redemption.

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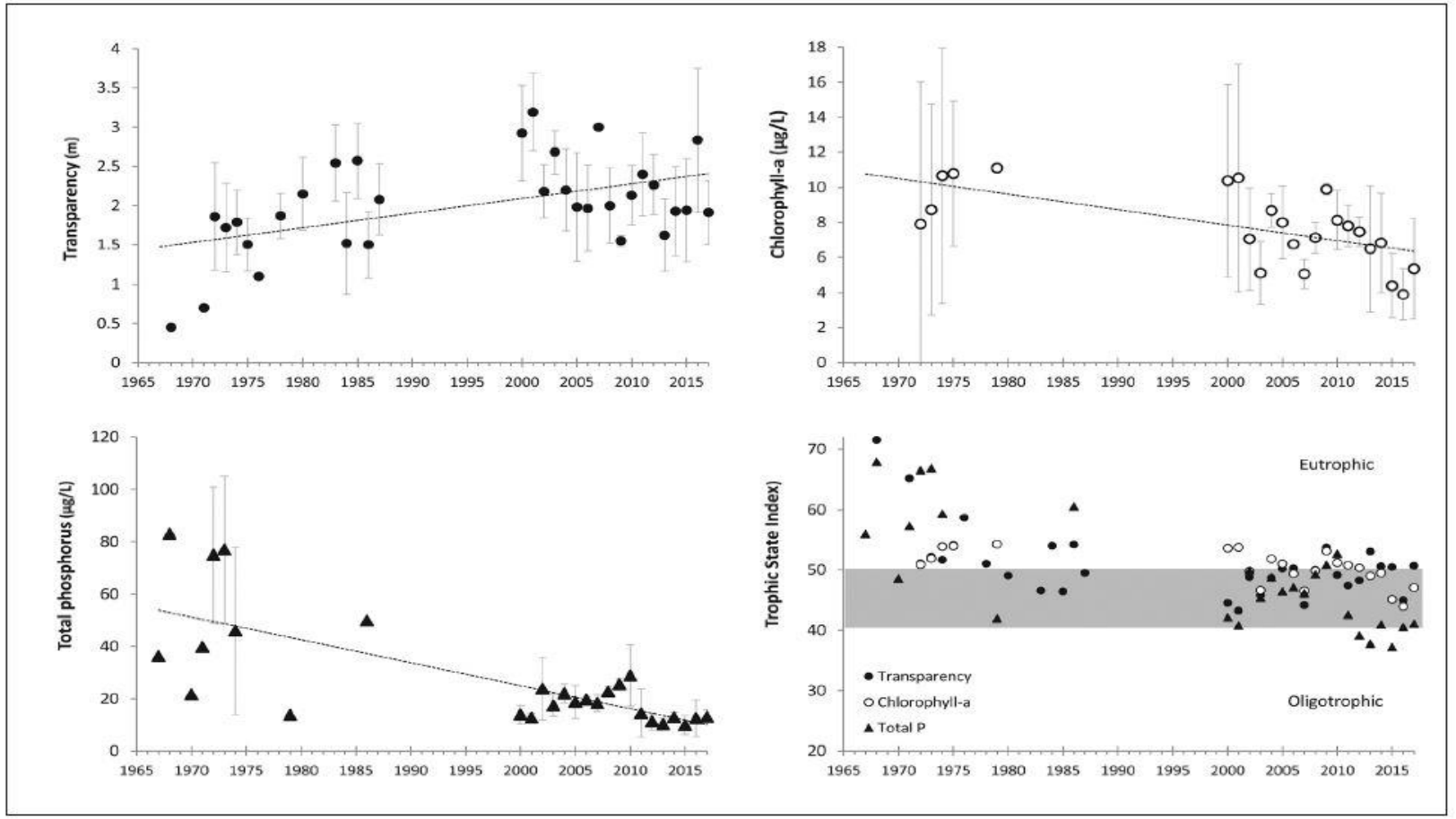

Figure 3. *Time series of annual average trophic indicators in the surface water of Lower St. Regis Lake, 1967-2017. Error bars represent one standard deviation of the mean. Dashed line indicates a significant historical trend based on the Kendall's Tau, a rank correlation coefficient (transparency: p value = 0.03, tau = 0.27; chlorophyll-a: p value = <0.001, tau = -0.51; total phosphorus: p value = 0.003, tau = -0.43).*

An Environmental History of Lower St Regis Lake: Lake Degradation and the Path to Ecological Redemption

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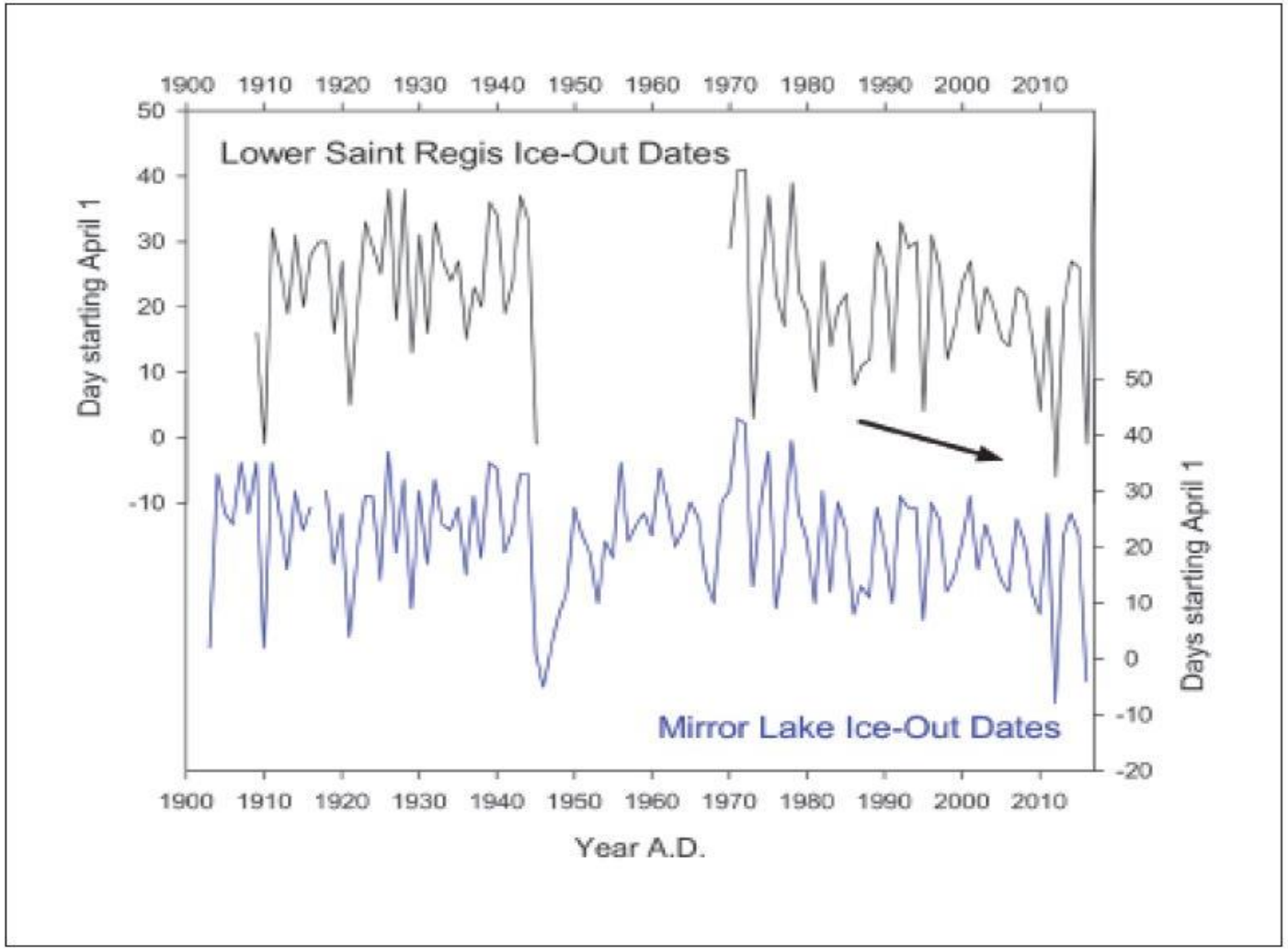

Figure 7: *Ice-out dates on Lower St. Regis and Mirror Lake, showing a trend toward earlier dates beginning in the 1970s.*

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"These efforts put Lower St Regis Lake and the college's academic programs on a positive trajectory that continues to this day. As part of the National Eutrophication Survey, Paul Smith's College students in the Ecology and Environmental Technology (EET) program began working with water quality professionals from the NYSDEC on a water quality-monitoring program that has collected data from Lower St Regis Lake for more than four decades. It also initiated academic programs to train environmental professionals who would soon make their marks in newly emerging environmental professions. The pioneering research that was conducted on Lower St. Regis and other lakes during the 1970s added to the scientific consensus that phosphorus was the problematic "limiting nutrient" in thousands of lakes that were undergoing cultural eutrophication. The college's mitigation efforts also began to alter the water quality, fisheries, and resulting recreational opportunities on Lower St. Regis Lake."

Citizen Statewide Lake Assessment Program

"The Citizens Statewide Lake Assessment Program (CSLAP) is a ***volunteer lake monitoring program run by the NYS Department of Environmental Conservation (NYSDEC) and the NYS Federation of Lake Associations, Inc. (NYSFOLA)****. It was initiated in 1985 and was modeled after successful volunteer programs in Vermont, Maine, Illinois and Minnesota. Each participating lake association is a member of NYSFOLA, a not-for-profit coalition of lake associations and others interested in lake management. NYSFOLA was founded in 1983 and presently serves over 200 lake associations as well as individual and corporate members." -NYSFOLA*

One of the longest running, continuous, volunteer monitoring programs in the nation!

- Volunteers are trained in approved sampling methods
- Certified labs are used to analyze the water samples
- Lake data are interpreted by professionals

- ✓ Statewide
- ✓ Bi-weekly sampling (June-Sept) by volunteers
- ✓ Surface and deep samples
- ✓ Standard limnological analyses (P, N, Chl a, Ca, Cl^-)
- ✓ Plant samples (invasives?)
- ✓ Ice-on/Ice-off surveys
- ✓ Angler creel surveys
- ✓ NELAP certified laboratory
- ✓ Standardized CSLAP training protocol
- ✓ 5-year commitment necessary

CSLAP volunteer collecting water sample with Kemmerer sampler on Kirk Lake.

Remember the often-forgotten benefit?

A LONG-TERM DATA SET!

AGAIN, ALL THROUGH SIMPLE MONITORING….

ACKNOWLEDGMENTS

To the Paul Smith's College students who over the years worked on the water and in the lab to better understand the ecology of Lower St. Regis Lake.

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AND WHERE ARE THOSE PSC SWAMPIES NOW?

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NHDES Personnel Profile

TECHNICAL-SERVICES

SHERRY GODLEWSKI

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Assists state agencies, municipalities and community groups in understanding climate change impacts and how to adapt/respond so they can be more resilient in our changing environmental conditions.

Related Tags: RAMang | Climate Change | Resilience | Adaptation | Flooding

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319 connections

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Research

I am particularly interested in using archives of environmental information (soils, sediments and the fossils they contain) to understand how and why vegetation and climate vary through time. I research the interrelationships among the ecology, biomass and distribution of vegetation and the chemistry of soil organic matter. This allows me to better understand the role of ancient and modern high-latitude wetland forests and peat forming environments in carbon cycling.

You can follow this link to my Google Scholar Profile

Professional Associations

Geological Society of America (GSA), International Association of Wood Anatomists (IAWA), International Organisation of Palaeobotany (IOP), Sigma Xi

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SPEARS SCHOOL OF BUSINESS

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Curriculum Vitae

Biography

, Esq. is a practicing attorney with 20 years of
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l of four parts: Teaching, litigating Indian Trust and
ases, starting a small brewery, and conducting social
ning Justice and Sustainable Development. I am
ice in all Oklahoma courts, the Northern, Western
eral Districts of Oklahoma, the Western and Eastern
nsas, the United States Federal Court of Claims, the
urt of Appeals, and the United States Supreme

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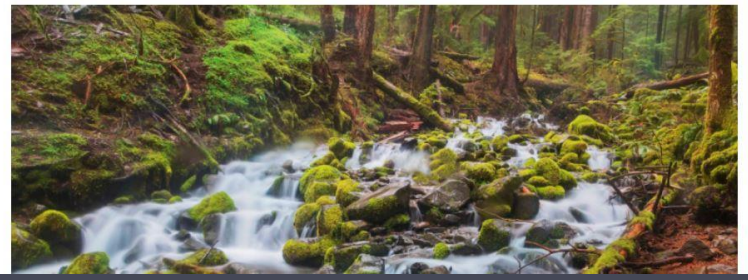

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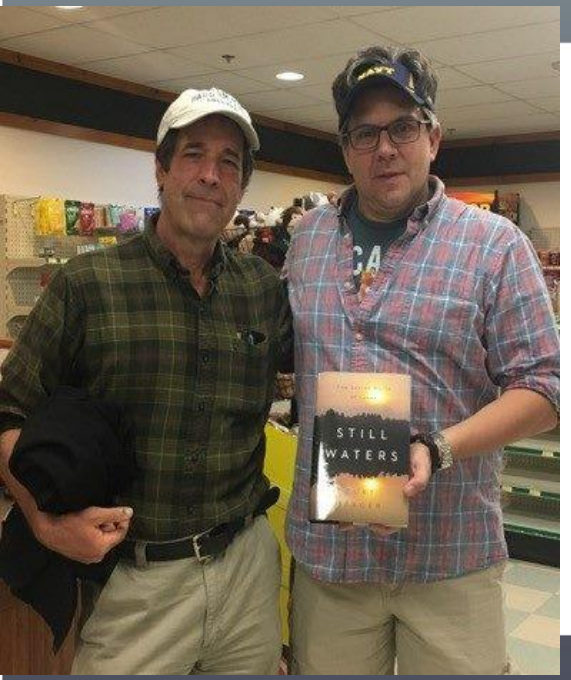
NALMS Executive Committee

Christopher Mikolajczyk (President)

Contact NALMS' President

Christopher (Chris) Mikolajczyk, CLM, attended his first NALMS conference in Madison, Wisconsin in 2001. From there, Chris went on to serve as the Region 2 Director from 2012–2015 and both served and chaired the certification committee from 2015–2019. Chris is actively involved in the New Jersey C Associations (NJCOLA), has presented at and sponsored severa Federation of Lake Association annual conferences for several and has recently joined the Colorado Lake and Reservoir Mana after his move to that state. Chris is a CLM and senior manage Princeton Hydro and conducts the management, oversight, an aquatic ecology and water resource projects in three main areas: aquatic resource restoration and management, aqu sampling and investigations, and stormwater quality modeling and management. Chris has been with Princeton Hy has studied and managed well over 75 lakes in his career there. Chris possesses an associate degree in ecology and e technology from Paul Smiths College and both bachelor's and master's degrees in Geography (with an emphasis on from Rutgers University.

QUESTIONS?



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THANK YOU!

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