LAKE REDSTONE PROTECTION DISTRICT ANNUAL MEETING

AUGUST 2, 2025

The mission of the Lake Redstone Protection District is to protect and rehabilitate the water quality of Lake Redstone for its residents and the public.

Please silence
your cellphone

AGENDA

• WELCOME	5	MITTELSTADT
• ELECTION OF 2 COMMISSIONERS	5(20)	MITTELSTADT
• MINUTES 2024 ANNUAL MEETING	5	KEEGSTRA
• SECRETARY'S REPORT	5	KEEGSTRA
• TREASURER'S REPORT	5	CROCKETT
• PROPOSED 2026 OPERATING BUDGET	10	CROCKETT

AGENDA (CONTINUED)

• REPORTS ON RECENT ACTIVITIES	40	
• WATER QUALITY ISSUES	20	KEEGSTRA
• WAKE BOAT ISSUES	20	MITTELSTADT
• INTRODUCE NEW COMMISSIONERS	5	MITTELSTADT
• QUESTION AND ANSWERS	15	LRPD BOARD

ELECTION OF 2 COMMISSIONERS

MIKE MITTELSTADT

NOMINATIONS FROM THE FLOOR

ELECTION PROCESS

- WE WILL HEAR A BRIEF STATEMENT FROM EACH CANDIDATE
- ADD ANY FLOOR NOMINATIONS TO BALLOT 1(WHITE)
- USE BALLOT 1(WHITE) TO VOTE FOR 2 CANDIDATES

2024 ANNUAL MEETING MINUTES

KEN KEEGSTRA

SECRETARY'S REPORT

KEN KEEGSTRA

TREASURER'S REPORT

DAVE CROCKETT

BALANCE SHEET AS OF JULY 8, 2025

Current Assets		**Liabilities**	
Checking	$ 94,913	Dredging Loan	$ 1,527,678
Dredging Savings	86,547		
Maintenance Reserve	167,874		
Total Current Assets	349,335	Total Liabilities	1,527,678
Other Assets			
		Net Worth (Deficit)	(944,397)
Land	233,946		
Total Assets	583,281	**Total Liabilities and Fund Balance**	$ 583,281

FINANCIAL REVIEW MAY 31, 2025

- A FINANCIAL REVIEW WAS CONDUCTED BY HEIDI GEILS AND DON HAASL
- THE FOLLOWING ITEMS WERE REVIEWED:
  - WE AGREED THAT THE YEAR-END BANK AND INVESTMENT MATCHED STATEMENTS.
  - CHECKED LOAN BALANCE TO BANK RECORDS.
  - EXAMINED LARGE TRANSACTIONS FOR PROPER RECORDING.
  - REVIEWED SAMPLE OF EMPLOYEE REIMBURSEMENTS FOR PROPER DOCUMENTATION.
  - SAMPLE PAYMENTS (CHECKS)TO SUPPORT DOCUMENTATION AND BOARD APPROVAL.
  - COMPARED BUDGET TO ACTUAL.

DON AND HEIDI AGREED WITH THE FINDINGS THAT ALL THE PAPERWORK AND FINANCES ARE IN ORDER.

PROPOSED REVENUE 2026

	2024 Jan. - Dec. Actual	2025 Approved Budget	2025 Jan. - June Actual	2025 July - Dec. Estimated	2025 Jan. - Dec. Estimated	2026 Proposed Budget
Revenue & Reinbursement for Grants						
DNR Grant Funding (see below)	**7,515**	**4,000**	**1,000**	**45,609**	**46,609**	**4,000**
- Aquatic Plant Management Plan	2,500	-	-	-	-	-
- Clean Boats/Clean Water Grant	5,015	4,000	1,000	3,000	4,000	4,000
- Surface Water Grant - Martin Meadowlark Weir	-	-	-	42,609	42,609	-
Sauk County Grant Funding (see below)	**8,138**	-	**10,000**	**22,207**	**32,207**	-
- Martin Meadowlark Weir	-	-	-	4,069	4,069	-
- Tributary Stream Sampling	8,138	-	-	8,138	8,138	-
- Cardinal Bay	-	-	10,000	10,000	20,000	-
Interest Income	4,597	3,000	18	17	35	40
General Tax Levy	110,936	115,200	76,800	38,400	115,200	118,200
Draw from Maintenance Fund	3,727	-	-	-	-	-
Other Income	-	2,000	-	2,000	2,000	2,000
Carryover from Prior Years Surpluses	-	-	-	-	-	4,460
Total Revenue:	**134,913**	**124,200**	**87,818**	**108,233**	**196,051**	**128,700**
Tax Levy						
- General	110,936	115,200	76,800	38,400	115,200	118,200
- Dredging	350,970	351,000	242,454	108,546	351,000	351,000
Total Tax Levy	**461,906**	**466,200**	**319,254**	**146,946**	**466,200**	**469,200**

Note: Special dredging levy approved on May 18th 2019

PROPOSED EXPENDITURES 2026

	2024 Jan. - Dec. Actual	2025 Approved Budget	2025 Jan. - June Actual	2025 July - Dec. Estimated	2025 Jan. - Dec. Estimated	2026 Proposed Budget
Expenditures						
General	**20,438**	**30,000**	**10,919**	**16,527**	**27,446**	**36,500**
- Commissioner Compensation	12,009	14,000	2,660	12,000	14,660	14,000
- Legal Fees	-	3,500	1,080	420	1,500	3,500
- Office, Administration, and Mailing	3,162	4,500	1,440	3,107	4,547	4,500
- Professional meetings and memberships	3,661	4,000	2,948	1,000	3,948	4,000
- Other	1,606	4,000	2,791	-	2,791	10,500
Education and Outreach Funding	**16,399**	**23,200**	**4,174**	**18,200**	**22,374**	**22,200**
- Newsletter	4,176	4,000	4,174	-	4,174	4,000
- PLRW Field Day	-	1,000	-	1,000	1,000	1,000
- Property owners for runoff incentive	10,194	15,000	-	15,000	15,000	15,000
- Sauk county lakes meeting	-	1,000	-	1,000	1,000	1,000
- Education workshop	2,029	1,000	-	1,000	1,000	1,000
- Shoreline assessment led by Sauk Co. intern	-	1,000	-	-	-	-
- Lake Champion Signs and/or Tours of Lake Properties	-	200	-	200	200	200
Plan Integration	-	**22,000**	**3,957**	**12,000**	**15,957**	**22,000**
- Lake Mgt. Plan Consultant	-	20,000	3,957	10,000	13,957	20,000
- Producer Conservation Practices Incentives	-	2,000	-	2,000	2,000	2,000
Sediment Control	**4,573**	**18,000**	-	**101,000**	**101,000**	**18,000**
- Design & Repair of Martin Meadowlark Weir	3,933	-	-	76,000	76,000	-
- Lake Maintenance and Erosion Control	-	8,000	-	-	-	8,000
- Watershed Improvement Funding	640	10,000	-	-	-	10,000
- Sauk Co. Grant Exp. - Cardinal Bay	-	-	-	25,000	25,000	-
Water Quality	**48,860**	**31,000**	**6,599**	**18,891**	**25,490**	**30,000**
- Aquatic Plant Management	8,930	15,000	-	8,000	8,000	10,000
- DNR Grant Clean Boats/Clean Water	3,844	5,000	1,328	3,672	5,000	5,000
- Stream/Lake Monitoring, Sampling	3,186	6,000	1,771	5,969	7,740	10,000
- Tributary Stream Sampling	32,900	-	-	-	-	-
- Goose Control	-	5,000	3,500	1,250	4,750	5,000
Total Expenditures	**90,270**	**124,200**	**25,649**	**166,618**	**192,267**	**128,700**

BUDGET MOTION

I MOVE THAT WE APPROVE THE PROPOSED 2026 BUDGET WITH OPERATING EXPENSES OF $128,700 AND AN OPERATING EXPENSE TAX LEVY OF $118,200.

WATER QUALITY ISSUES

KEN KEEGSTRA

Water Quality Issues-1976 to 2025

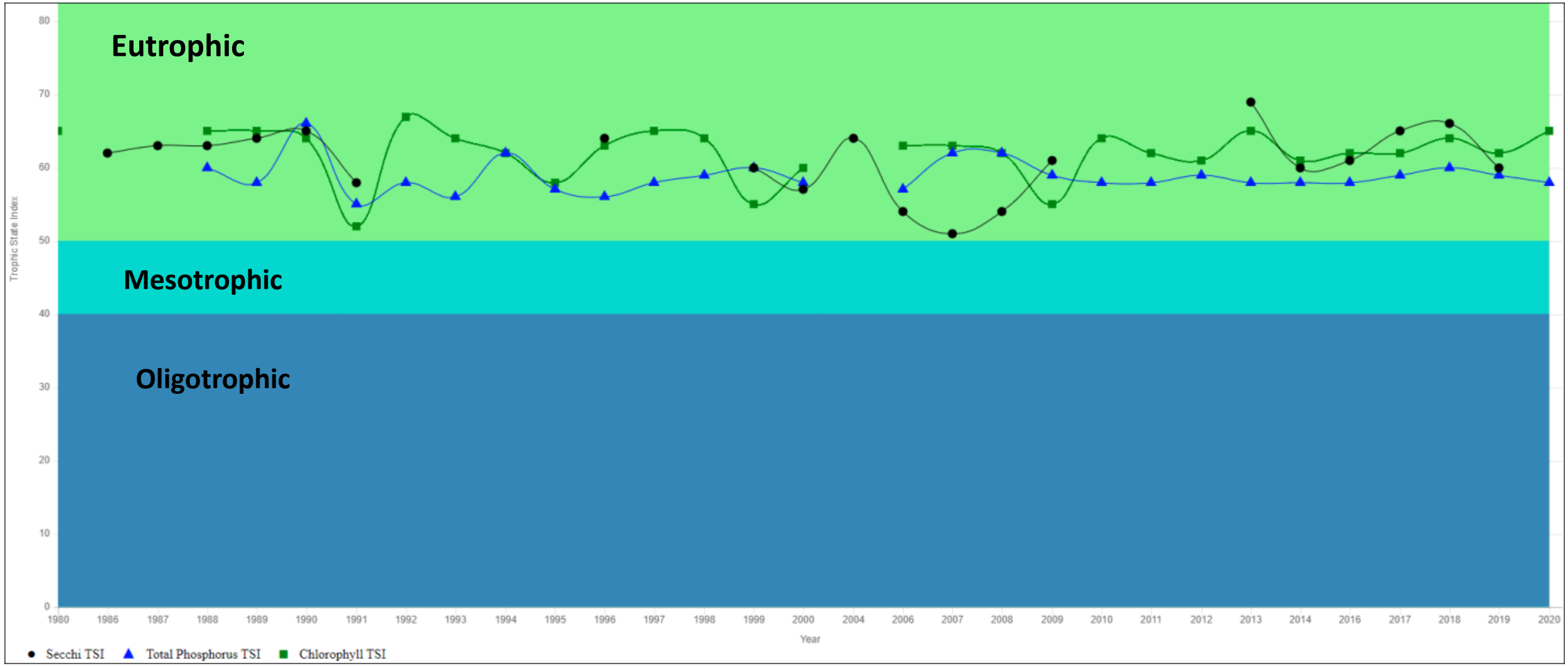
I. Water Quality issues are not new to Lake Redstone
II. How and where is water quality measured?
III. What has LRPD done and what are we doing?
IV. Phosphorus is the key nutrient for water quality
V. Where does Phosphorus come from?
    A. Watershed-3 different sections
    B. Internal loading
VI. How can the levels of Phosphorus be reduced?

Water Quality Issues-1976 to 2025

“Shortly after Lake Redstone filled, signs of water quality deterioration appeared. Fast-growing algae clouded the water in warm summer months. Dense growth of aquatic weeds stood along the shore. Small bays became shallower. Fish kills occurred during several summers.”

Introduction to 1981 report on Lake Redstone Water Quality

Trophic index at Deep Hole

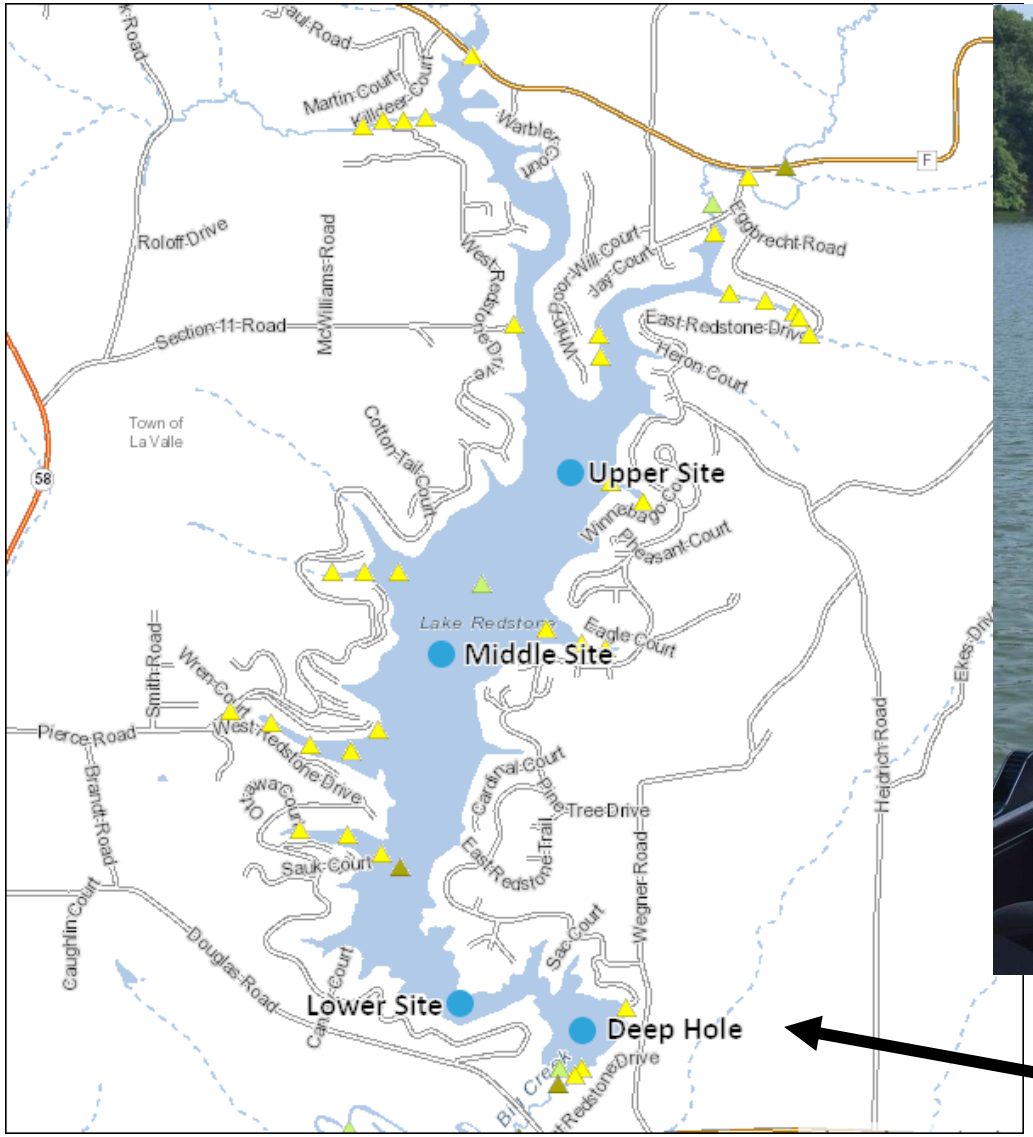


Secchi

Phosphorus

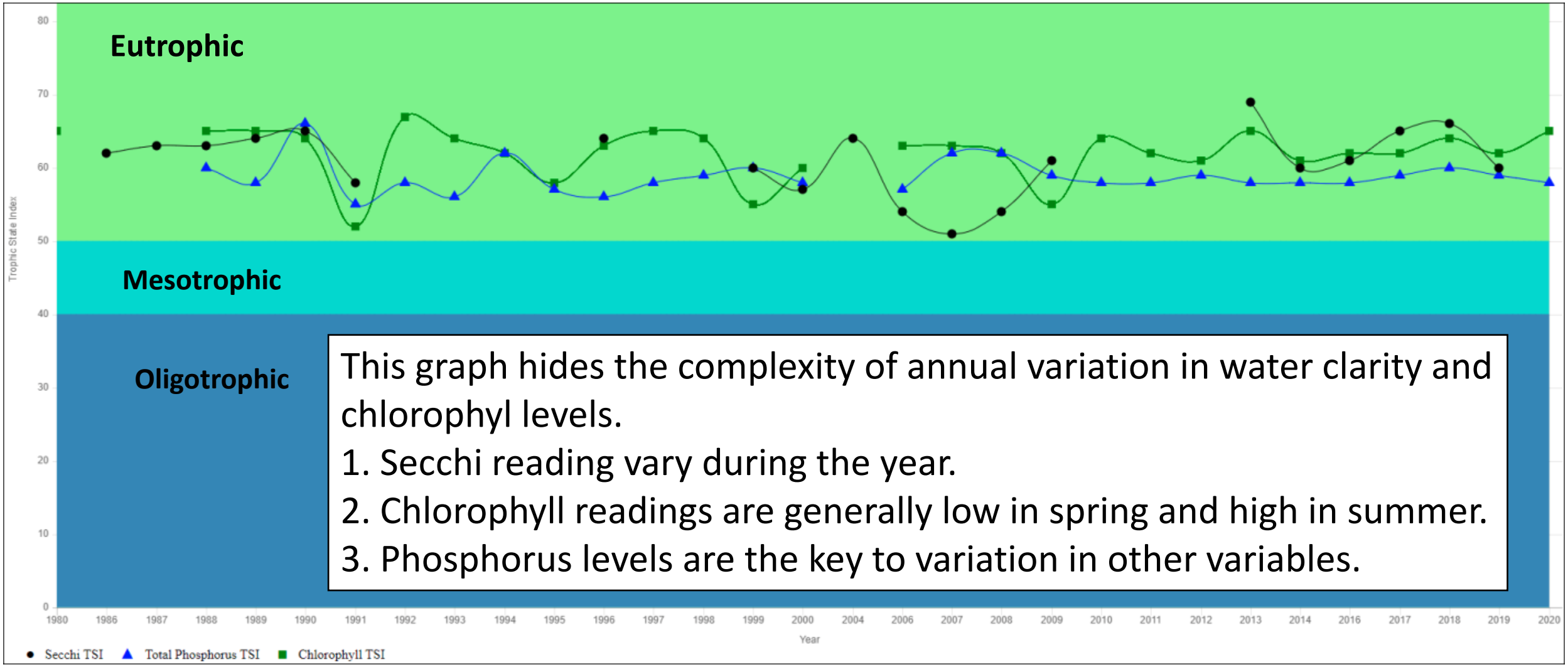
Chorophyll

Lake Redstone monitoring sites



Longest, most complete record

Trophic index at Deep Hole



This graph hides the complexity of annual variation in water clarity and chlorophyl levels.

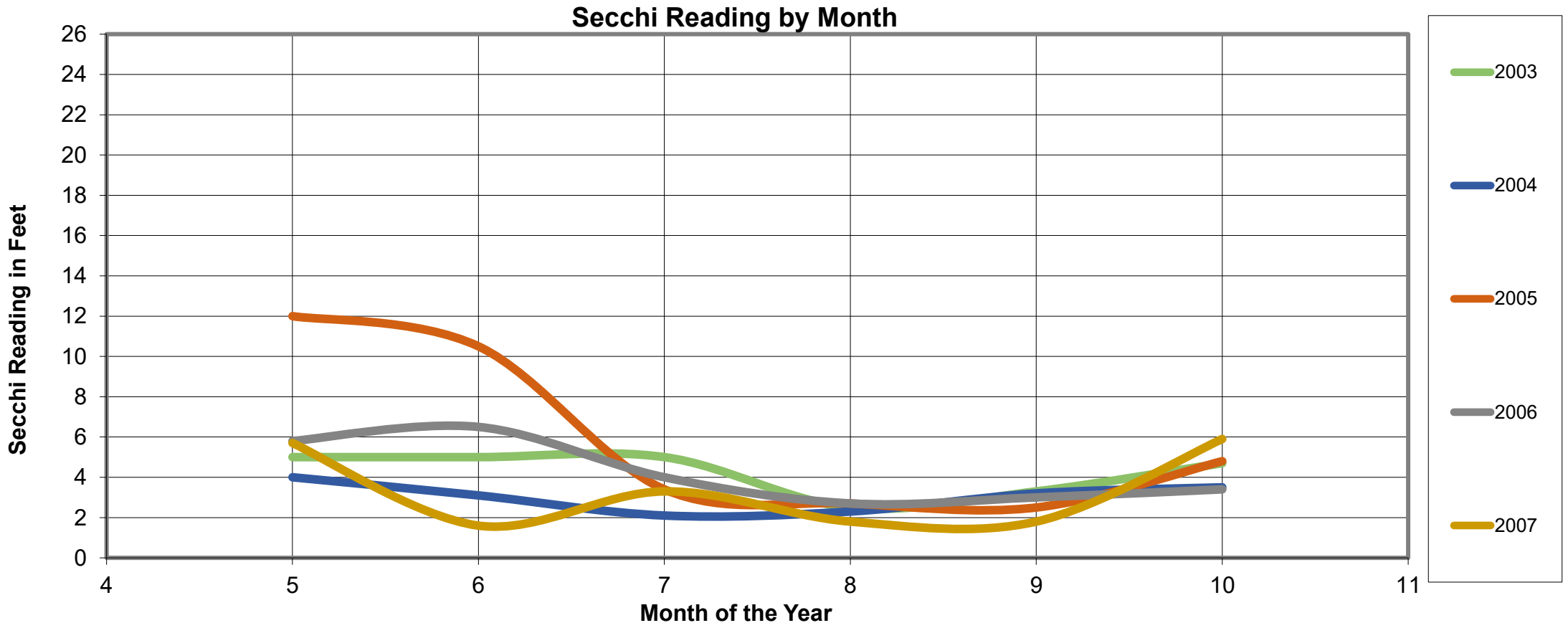
1. Secchi reading vary during the year.
2. Chlorophyll readings are generally low in spring and high in summer.
3. Phosphorus levels are the key to variation in other variables.

● Secchi ▲ Phosphorus ▮ Chorophyll

Water clarity varies

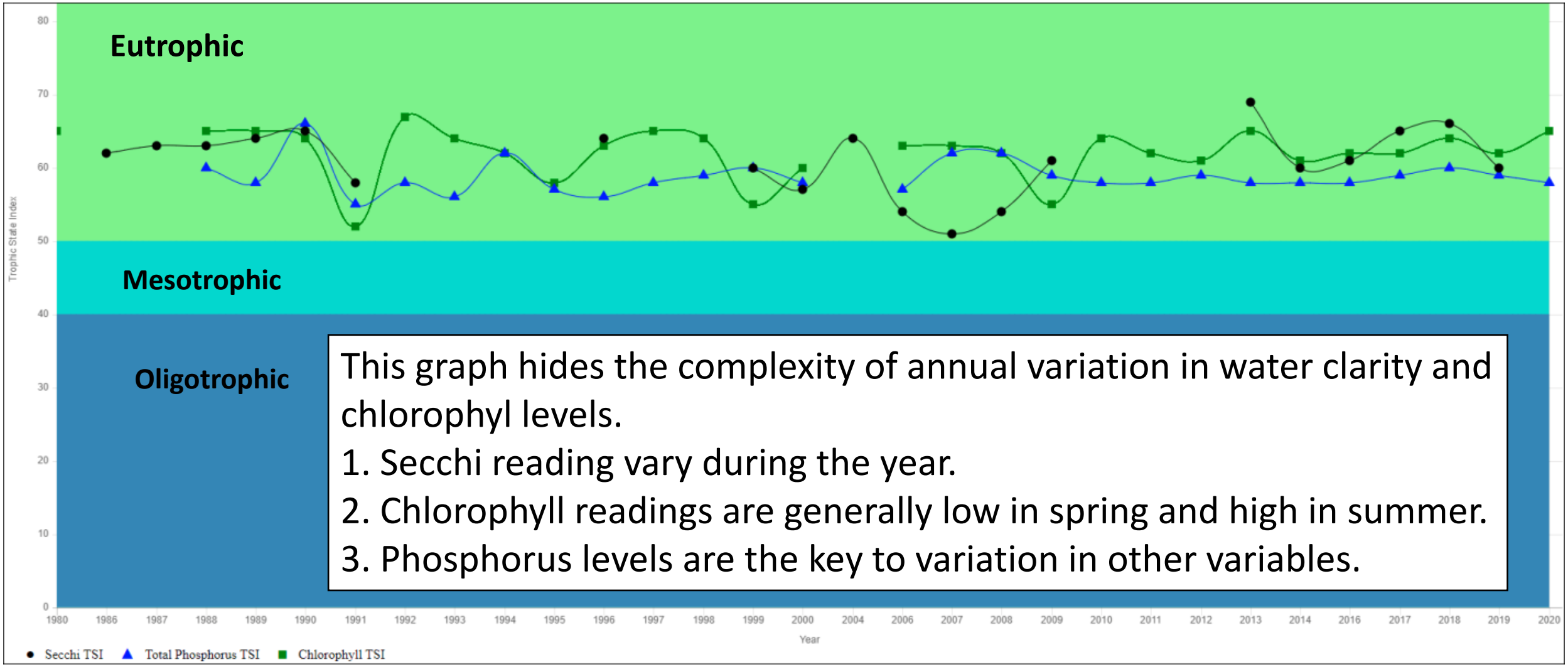
From month to month during the year

From year to year (2003-2007)



Data presented by Al Baade at the 2007 LRPD Annual Meeting

Trophic index at Deep Hole



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What has LRPD done and what are we doing?

- Following the 1981 water quality report, the LRPD pursued many activities in the watershed aimed at reducing phosphorus entry into the lake- numerous activities and studies over the past 40+ years.

- Beginning in 2017, the LRPD began a 5-year process of creating a lake management plan.

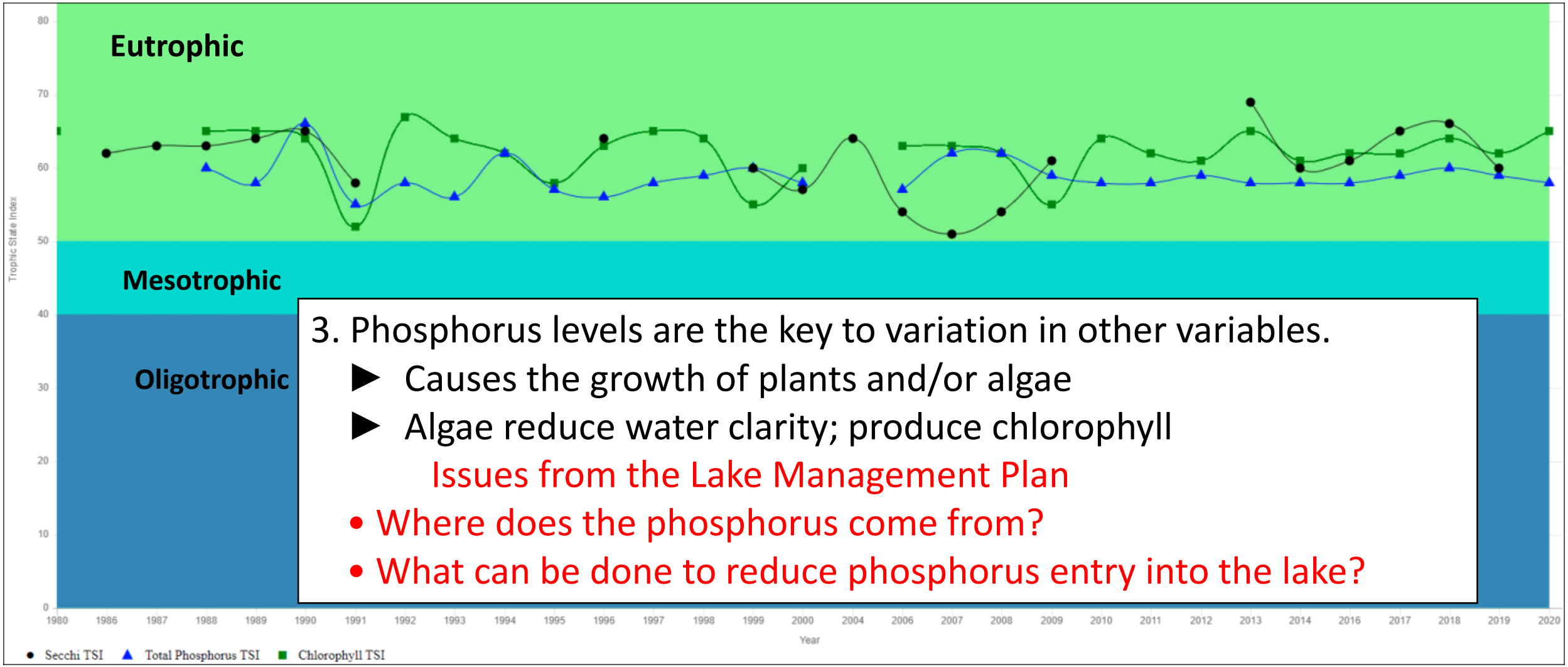
- In 2022, the LRPD received WDNR approval for the 10-year lake management plan (9-key element plan). We are now in year 3 of implementing this 10-year plan.

With advice from Dick Lathrop & Arthur Watkinson the LRPD team has performed enhanced sampling in 2024 & 2025

	Month		18-May	19-Jun	17-Jul	5-Aug	22-Aug	23-Sep	15-Oct
Deep Hole						extra			
Surface	pH				8.8				
	Secchi	inches	28	30	27	16	19	23	21
	Chlorophyll	ug/l		28.5	44.3	148	97.8	78.9	
	Total P	mg/l	0.0768	0.049	0.0599		0.0825	0.0749	0.0785
	Ortho P	mg/l		0.00543	0.00447		0.00516		
	Ammonia	mg/l	ND		0.0131		0.0162		
	Nitrate	mg/l	ND	ND		ND			
	TKN	mg/l		0.7	0.852				
	Total N	mg/l			0.795		1.34		
16 Feet	pH				8				
	Total P	mg/l	0.0727	0.148	0.0792		0.0686		
20 Feet									
	Total P	mg/l	0.0721	0.193	0.216		0.296	0.483	
	Iron	mg/l		0.792	0.738		1.25		
24 Feet	pH				7.9				
	Total P	mg/l	0.15	0.277	0.424		0.525	0.594	
	Iron	mg/l		1.02	1.32		1.83	2.76	
28 Feet	pH				7.6				
	Total P	mg/l	0.233	0.332	0.534		0.853	1.3	
	Iron	mg/l		1.14	1.56		2.47	4.18	
Middle Site									
Surface	pH				8.9				
	Secchi	inches	25	29	23	16	16	19	21
	Chlorophyll	ug/l		27.8	71.1	144	111	83.7	
	Total P	mg/l	0.075	0.0527	0.0822		0.0939	0.0934	0.0859
	Ortho P	mg/l		0.00563	0.00514		0.00902		
	Ammonia	mg/l	ND	ND			0.0169		
	Nitrate	mg/l	ND	ND		ND			
	TKN	mg/l		0.776	0.97				
	Total N	mg/l			0.889		1.58		
16 Feet	pH				8				
	Total P	mg/l	0.0971	0.0885	0.13		0.188		

In addition, in 2025 the sampling team has collected water samples to identify the types of algae present in Lake Redstone water.

Trophic index at Deep Hole



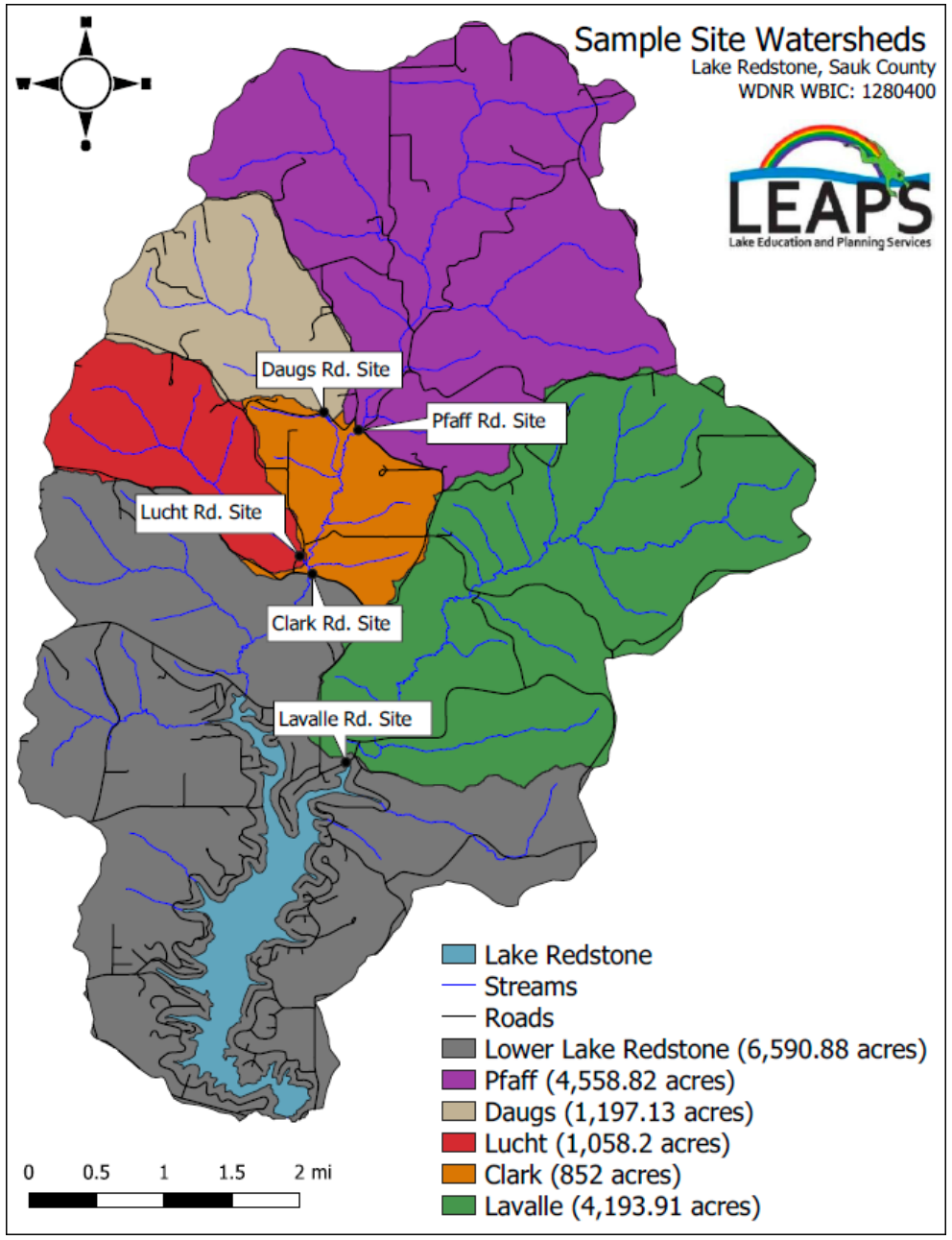
3. Phosphorus levels are the key to variation in other variables.
   - ► Causes the growth of plants and/or algae
   - ► Algae reduce water clarity; produce chlorophyll

Issues from the Lake Management Plan

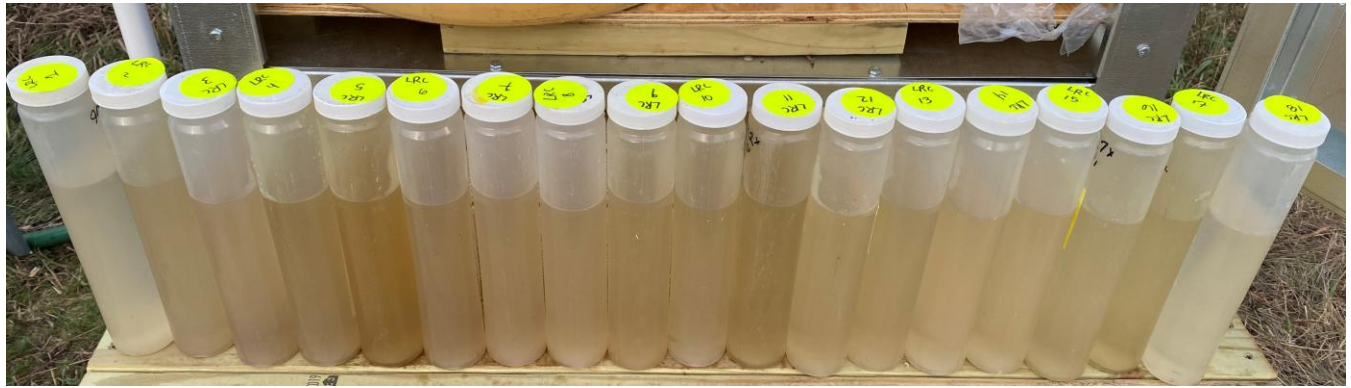
- Where does the phosphorus come from?
- What can be done to reduce phosphorus entry into the lake?

● Secchi ▲ Phosphorus ▮ Chorophyll

How much P comes in from remote parts of watershed?



LRPD & USGS- 2021 to 2023



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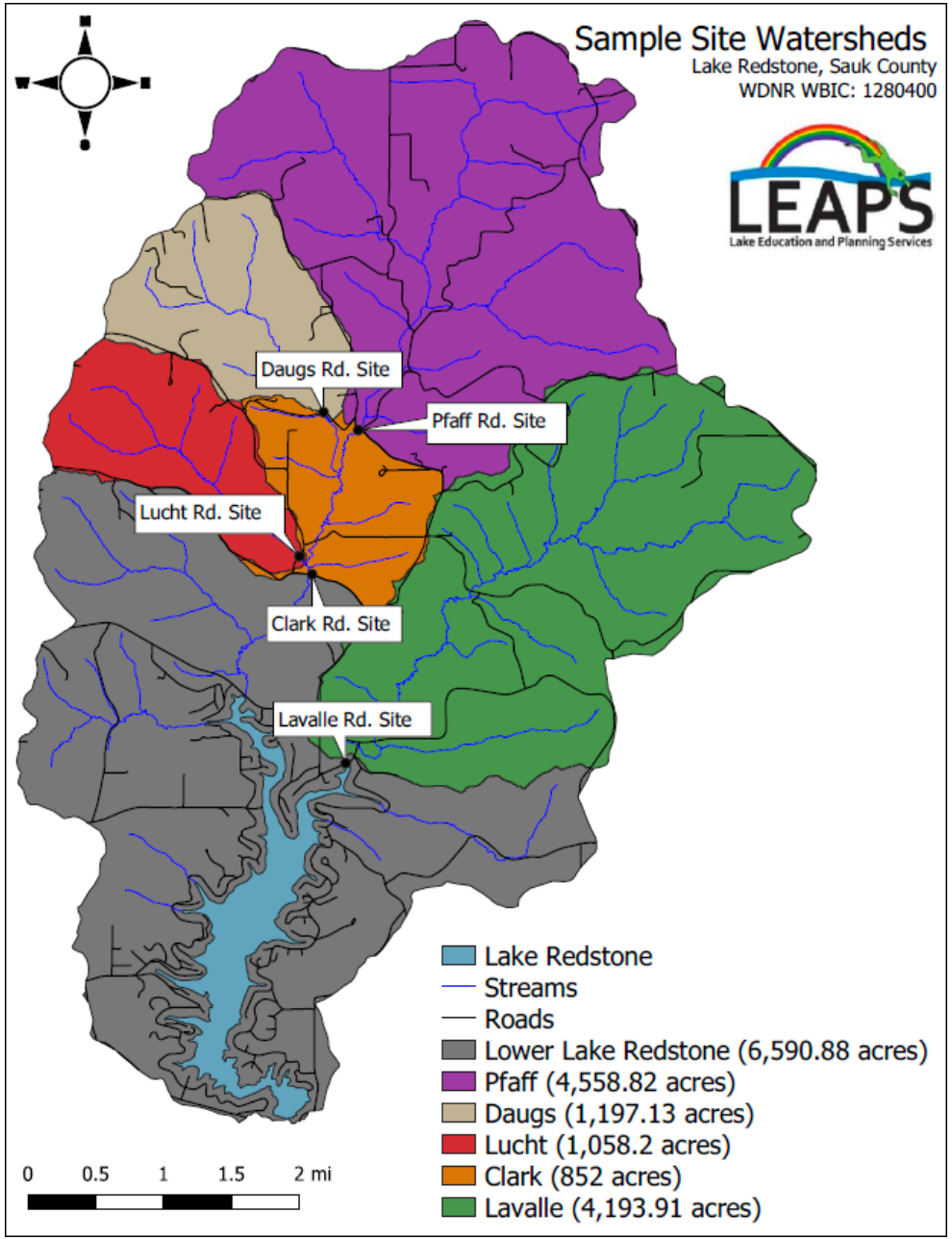
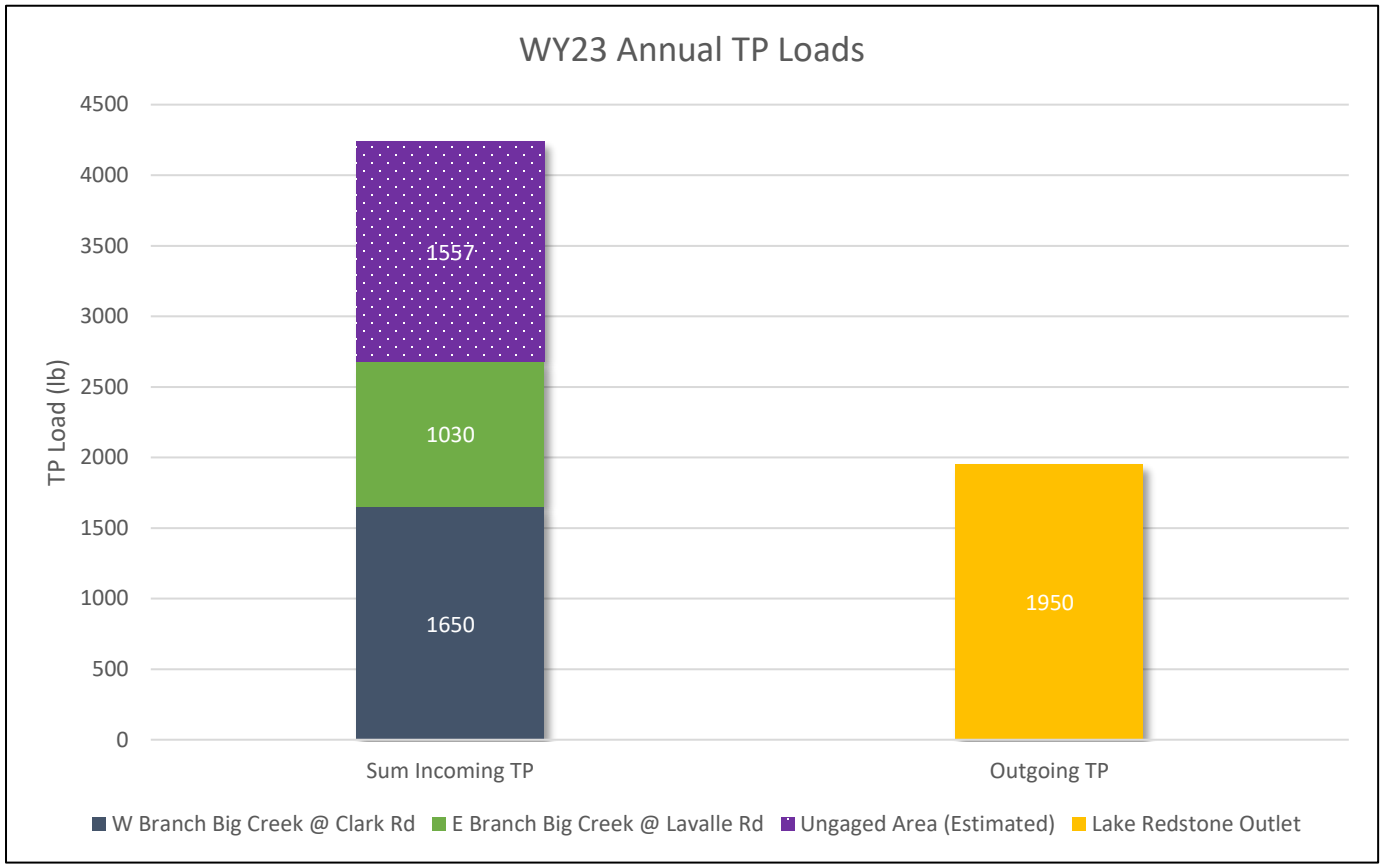
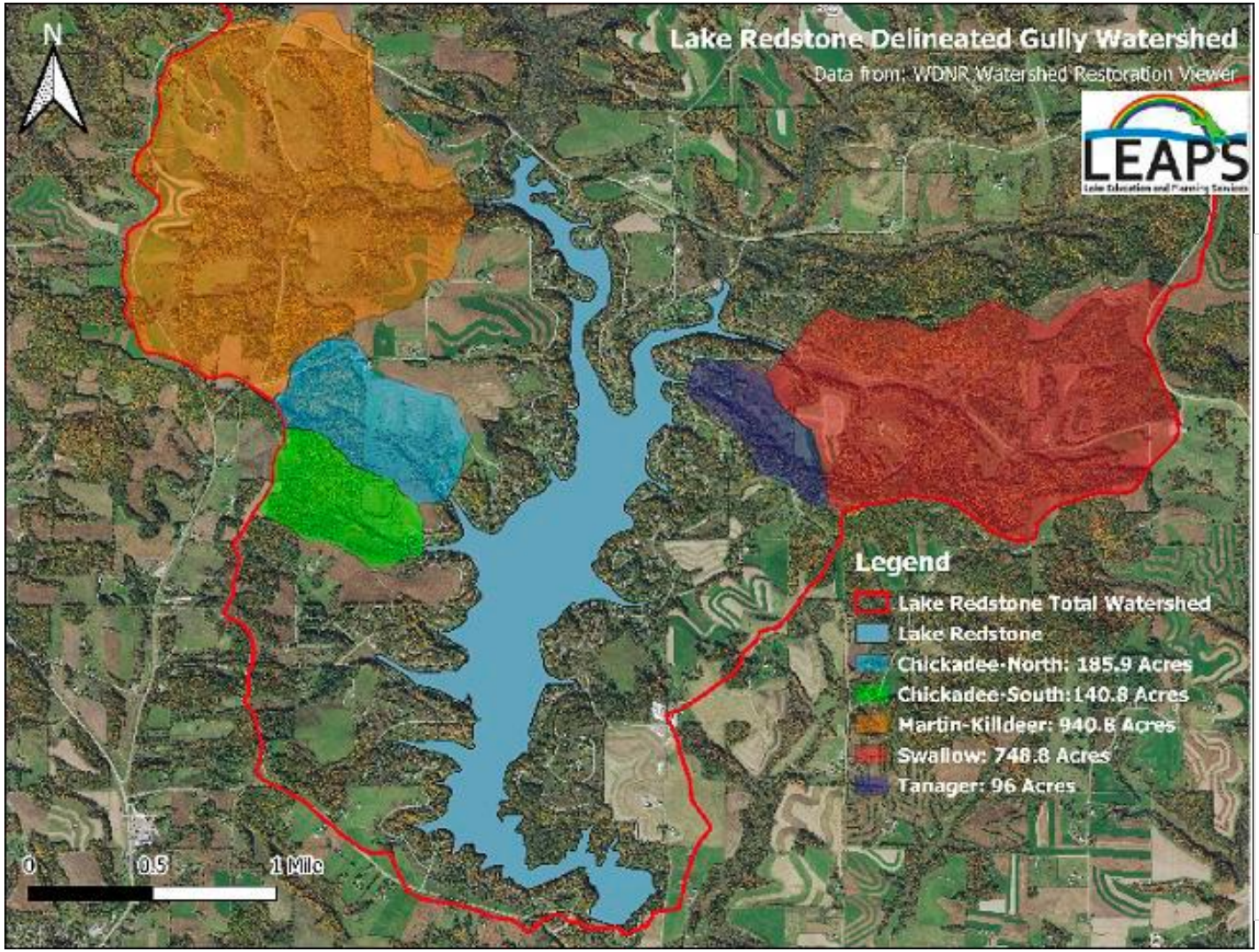




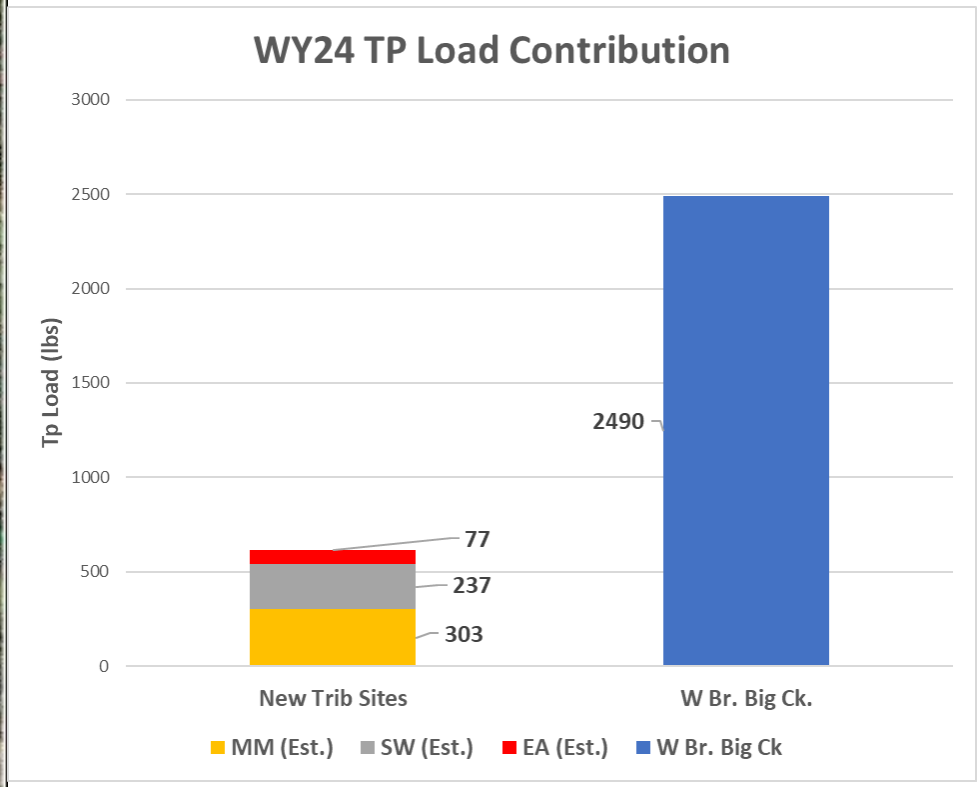
Details on the LRPD website

https://www.lakeredstonepd.org/

How much P comes from small streams?



LRPD & USGS 2024



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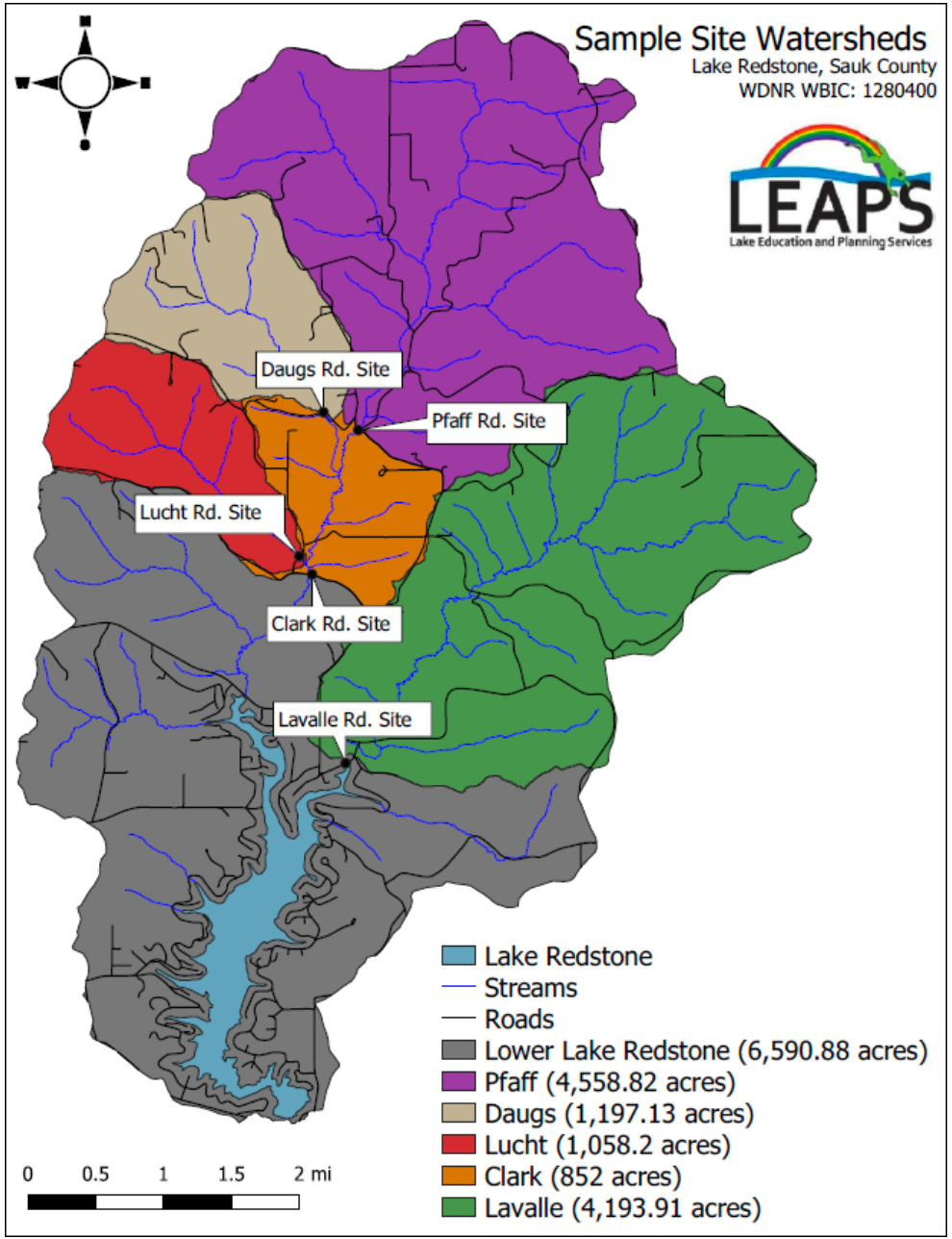

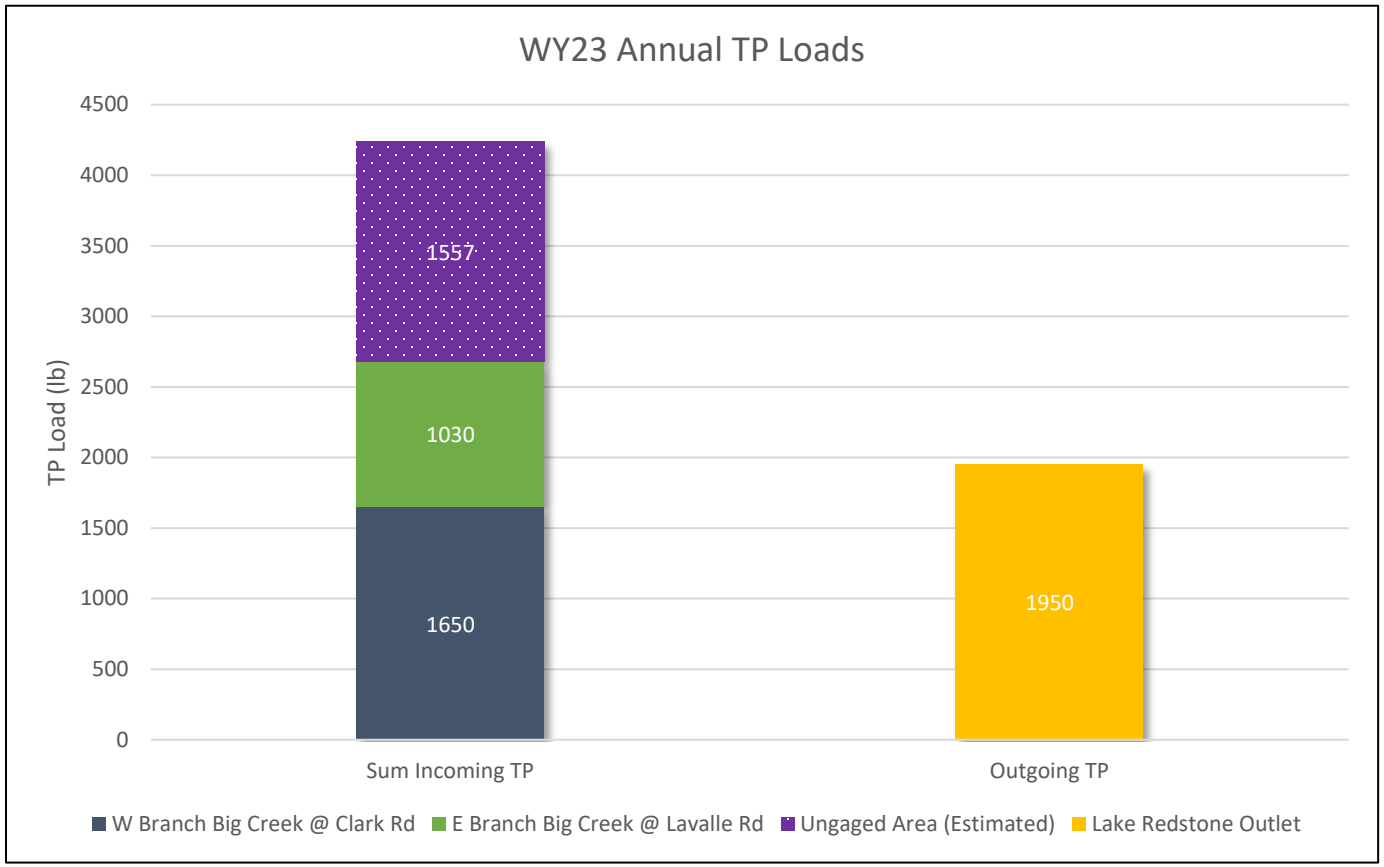

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Where does the phosphorus come from?
Conclusions from 4 years of studies with USGS

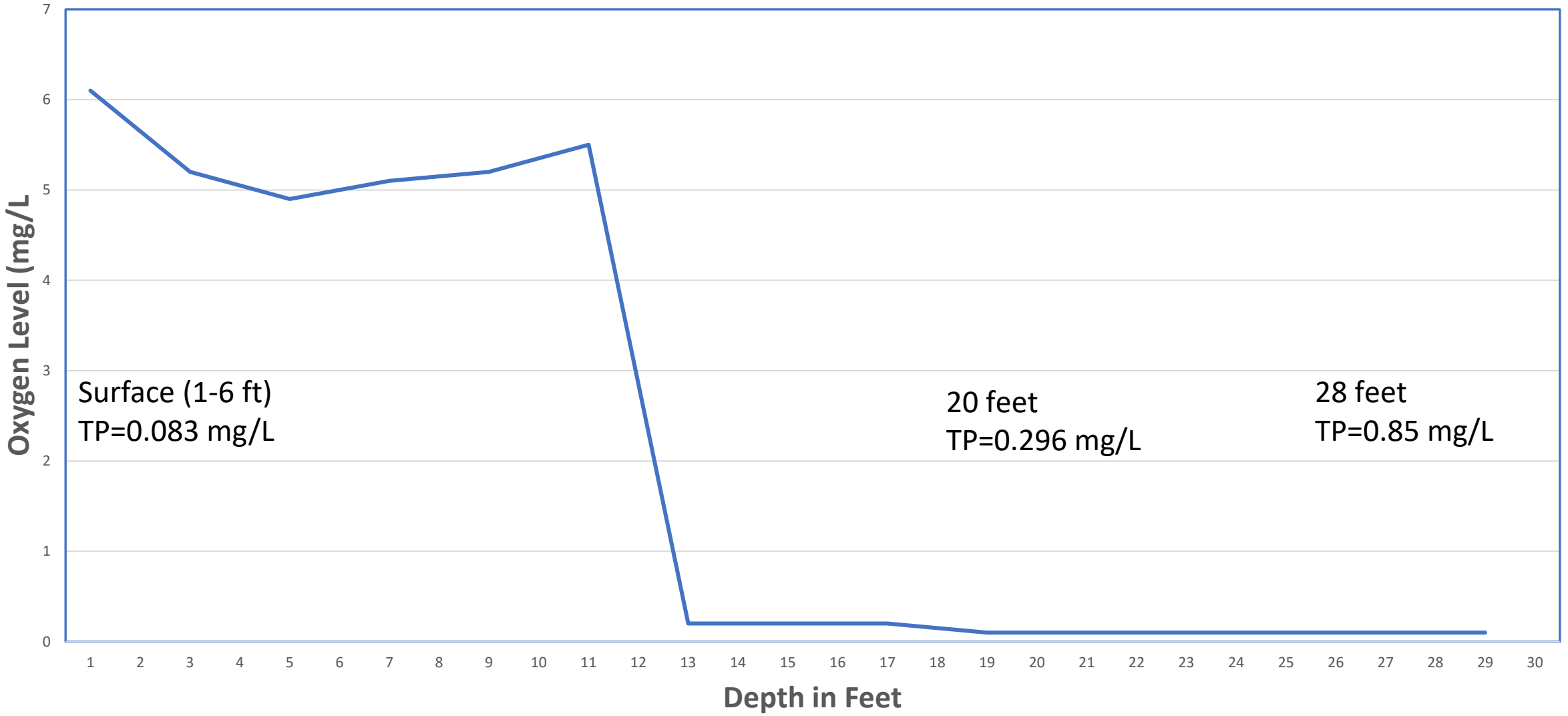
- Most sediment and phosphorus enters the lake during storms
- About 60% of phosphorus comes from remote regions of watershed
- Region near the lake contributes about 40% to phosphorus entry
- It is difficult to measure how much comes from gullies vs lawns
- About 45% of incoming phosphorus leaves the lake via the outlet stream

What can be done to reduce phosphorus entry?
Activities outlined in Lake Management Plan

- Encourage sustainable farming practices by producers in watershed
  - Cover crops, no-till practices, convert row crops to grassland
- Prevent sediment and phosphorus entry from small streams
- Improve shorelines to prevent phosphorus entry from lawns
- Remove geese from the lake (contribute phosphorus from their feces)

- These are address external sources of phosphorus
- Also “internal loading” of phosphorus released from sediment
  (phosphorus that entered the lake over the past 50+ years)

Dissolved Oxygen Levels at Deep Hole-August 2024
Phosphate levels in August 2024



What can be done to limit the impact of internal loading?

- Natural cycles limit the impact of internal phosphorus
  - One form of iron phosphate is insoluble
  - Another form is soluble-complicated cycle
- It is possible to remove phosphate with alum treatment (aluminum)
  - Expensive to perform
  - Does not make sense until external loading is controlled

What is next? Advice from our consultant

- *“In lakes, unique or rare occurrances of phenomenon, like intense algae blooms, fishkills, or loss of vascular plant life, are never the result of a single event, stressor or impact, they are the result of a cumulation of events, stressors, and impacts.”*
- *”While the yearly results may be interesting, the trends over the long-term should be considered the most important because they indicate what is truly happening in the lake. All lakes have good years and bad years, and as described above, it is a cumulation of many factors that drive a lake’s water quality. So, trying to determine exactly why a lake had poorer than normal water clarity one year to make sure that it does not happen again is very likely a waste of time.”*

Carlson's Trophic State Index values

TSI values	TrophicStatus	Attributes
< 30	Oligotrophic	Clear water, oxygen throughout the year in the hypolimnion
30-40	Oligotrophic	A lake will still exhibit oligotrophy, but some shallower lakes will become anoxic during the summer
40- 50	Mesotrophic	Water moderately clear, but increasing probability of anoxia during the summer
50-60	Eutrophic	Lower boundary of classical eutrophy: Decreased transparency, warm-water fisheries only
60-70	Eutrophic	Dominance of blue-green algae, algal scum probable, extensive macrophyte problems
70-80	Eutrophic	Heavy algal blooms possible throughout the summer, often hypereutrophic
>80	Eutrophic	Algal scum, summer fish kills, few macrophytes

WAKE BOAT ISSUES

MIKE MITTELSTADT

WISCONSIN GREENFIRE REPORT

FIRST PUBLISHED IN FEBRUARY 2024 AND REVISED IN MAY OF 2024. BASED ON SCIENTIFIC LITERATURE, THIS REVIEW FOCUSES ON HOW WAKE BOATS AFFECT:

1. AQUATIC INVASIVE SPECIES
2. SHORELINE EROSION
3. AQUATIC PLANTS
4. SEDIMENT RESUSPENSION
5. BIRDS AND FISH

“WISCONSIN'S GREEN FIRE'S MISSION IS TO ADVANCE SCIENCE-INFORMED ANALYSIS AND POLICY SOLUTIONS THAT ADDRESS WISCONSIN’S GREATEST CONSERVATION CHALLENGES.”

WISCONSIN'S GREEN FIRE IS NONPARTISAN AND INDEPENDENT.

HTTPS://WIGREENFIRE.ORG/2019/WP-CONTENT/UPLOADS/2024/05/WAKEBOATSLAKEECOSYSTEMHEALTH_WGF-MAY2024_FINAL.PDF

WISCONSIN GREENFIRE REPORT

WAKE BOATING ACTIVITIES THAT CREATE RECREATIONAL WAKES SHOULD BE DONE ONLY IN AREAS THAT MEET THE FOLLOWING CRITERIA:

A. AT LEAST 20 FEET DEEP

B. AT LEAST 600 FEET FROM ANY SHORELINE

WISCONSIN LAKES COALITION – SEPTEMBER 16, 2024

MEMBERS OF THE COALITION:

- WISCONSIN'S GREEN FIRE
- WISCONSIN WILDLIFE FEDERATION
- LAKES AT STAKE WISCONSIN
- **WISCONSIN LAKES ASSOCIATION**
- LAST WILDERNESS ALLIANCE

SINCE ITS FORMATION, MORE THAN 80 GROUPS HAVE JOINED THE COALITION

WISCONSIN LAKES COALITION PRINCIPLES

THE COALITION BELIEVES THE FOLLOWING PRINCIPLES ARE ESSENTIAL TO ENACTING STATEWIDE MINIMUMS TO PROTECT OUR LAKES AND RIVERS.

- 700 FEET FROM SHORE – WAKE-ENHANCED BOATING ACTIVITIES SHOULD OCCUR AT LEAST 700' FROM ANY SHORELINE.
- 30-FOOT DEPTH – WAKE-ENHANCED BOATING ACTIVITIES SHOULD OCCUR IN WATER DEPTHS OF NO LESS THAN 30 FEET.
- PREVENT INVASIVE SPECIES IN BALLAST TANKS – BOATS MOVING FROM LAKE TO LAKE MUST HAVE PROOF OF DECONTAMINATED BALLAST TANKS BEFORE ENTERING LAKES
- LOCAL CONTROL – LOCAL MUNICIPALITIES' EXISTING RIGHT TO ENACT AND MAINTAIN LOCAL ORDINANCES THAT ARE MORE RESTRICTIVE THAN THESE STATE MINIMUMS SHALL BE PRESERVED

LRPD REQUESTS PASSAGE OF LAST WILDERNESS ALLIANCE ORDINANCE

- BASED ON THE RECOMMENDATION OF THE LAKE'S COALITION, LRPD BOARD BELIEVES LAKE REDSTONE CANNOT SUPPORT WAKE SURFING
- WITH THE RECORD HIGH CHLOROPHYLL-A READING, DECLINING WATER CLARITY AND PLANT POPULATION, THE LRPD BOARD FELT ACTION WAS REQUIRED
- AT THE OCTOBER 2024 BOARD MEETING, THE LRPD BOARD VOTED UNANIMOUSLY TO REQUEST THE TOWN OF LA VALLE ADOPT THE LAST WILDERNESS ALLIANCE ORDINANCE.
- AT THAT TIME, 33 TOWNS HAD ADOPTED A FORM OF THIS ORDINANCE. CURRENTLY 59 TOWNS HAVE PASSED A VERSION OF THIS ORDINANCE.

TOWN OF LA VALLE ORDINANCE

THE TOWN BOARD TOOK UP THE REQUEST FOR THE ORDINANCE. AFTER MANY MEETINGS THE BOARD DECIDED TO MOVE FORWARD WITH THE FOLLOWING:

- OPERATE AT LEAST 400 FEET FROM SHORE
- OPERATE IN MINIMUM 20 FEET OF DEPTH
- NO TURNING PAST 90 DEGREES UNDER WAKE MODE
- ONLY BETWEEN THE HOURS OF 10 AM AND 8 PM

TOWN OF LA VALLE NEXT STEPS

- SUBMIT TO DNR FOR REVIEW
  - PRELIMINARY RECOMMENDATION OF REMOVING 20 FEET DEPTH AS UNENFORCEABLE
  - PRELIMINARY RECOMMENDATION OF REMOVING 90% TURN AS CONFLICT WITH EXISTING STATE STATUTES
  - AT JULY BOARD MEETING THE BOARD VOTED TO ACCEPT DNR RECOMMENDATIONS
- SUBMIT TO LEGAL FOR REVIEW
- 30 DAY NOTICE FOR PUBLIC MEETING
- HOLD PUBLIC MEETING
- VOTE ON FINAL ORDINANCE

TOWN OF SCOTT LAWSUIT

- THE SUIT WAS FILED IN BURNETT CO CIRCUIT COURT AND SERVED ON THE TOWN OF SCOTT (BURNETT CO) ON MAY 28, 2025. IT IS BROUGHT BY THREE PLAINTIFFS WHO MAINTAIN CABINS AND WAKE SURF BOATS ON BIRCH ISLAND LAKE.
- THE PLAINTIFFS ASSERT 10 SEPARATE COUNTS
- THE TOWN HAS HAD THE CASE REMOVED TO FEDERAL COURT (THE U.S. DISTRICT COURT FOR THE WESTERN DISTRICT OF WISCONSIN). REMOVAL TO FEDERAL COURT WAS THE TOWN'S RIGHT, SINCE THE PLAINTIFFS INCLUDED A NUMBER OF COUNTS BASED ON FEDERAL LAW.
- LAST WILDERNESS ALLIANCE (LWA) HAS FILED A MOTION IN THE CASE SEEKING ENTRY AS A "PARTY-INTERVENOR." IF THE MOTION IS ALLOWED, THIS WOULD MAKE THE LWA A CO-DEFENDANT WITH THE TOWN

STATE LEVEL ACTIVITIES

- IN ODD YEARS FROM JANUARY TO JUNE THE LEGISLATORS WORKS ON THE BUDGET
- IN ODD YEARS FROM JULY TO DECEMBER THE LEGISLATORS WORKS ON OTHER BILLS
- IN EVEN YEARS FROM JANUARY TO MAY THE LEGISLATORS WORKS ON OTHER BILLS
- IN EVEN YEARS FROM JUNE TO NOVEMBER THE LEGISLATORS ARE CAMPAIGNING
- IN EVEN YEARS IN DECEMBER THERE IS A LAME DUCK SESSION WHERE LITTLE GETS DONE
- THE COALITION IS LOBBYING FOR A STATE WIDE ORDINANCE, BUT AT THIS POINT NOTHING SEEMS TO BE HAPPENING

LRPD POSITION

- ORDINANCE IN THE HANDS OF TOWN BOARD
- FULL BAN ON HOLD PENDING RESOLUTION OF LAW SUIT
- LRPD CONTINUES TO MONITOR RESEARCH
  - I.E. UNIVERSITY OF MINNESOTA STUDY ON DEPTH RELEASED THIS WEEK
- LRPD CONTINUES TO MONITOR STATE LEVEL ACTIVITIES

INTRODUCE NEW COMMISSIONERS

MIKE MITTELSTADT

CONGRATULATIONS TO OUR NEW COMMISSIONERS

MATTHEW HAERTER

JANE MAHONEY

THANK YOU TO OUR BOARD

DAVE CROCKETT

BRAD HORNER

KEN KEEGSTRA

PAT SULLIVAN

RAY DEMANSKIE

PETER KINSMAN

THANK YOU TO OUR SPOUSES

JEANNINE CROCKETT

KIM HORNER

SUE KEEGSTRA

BARB MITTELSTADT

JEAN SULLIVAN

THANK YOU TO OUR RETIRING MEMBERS

PAT SULLIVAN

- SERVED 6 YEARS
- CLEAN BOATS CLEAN WATER COORDINATOR
- SEDIMENT CONTROL CHAIR

KEN KEEGSTRA

- SERVED 12 YEARS
- SECRETARY 10 YEARS
- WATER QUALITY CHAIR

QUESTIONS & COMMENTS

- LIMITED TO 1 QUESTION/COMMENT PER PERSON AND A MAXIMUM OF 3 MINUTES
- PLEASE IDENTIFY YOURSELF FOR THE RECORD

THANK YOU!

FOR MORE INFORMATION:

WWW.LAKEREDSTONEPD.ORG

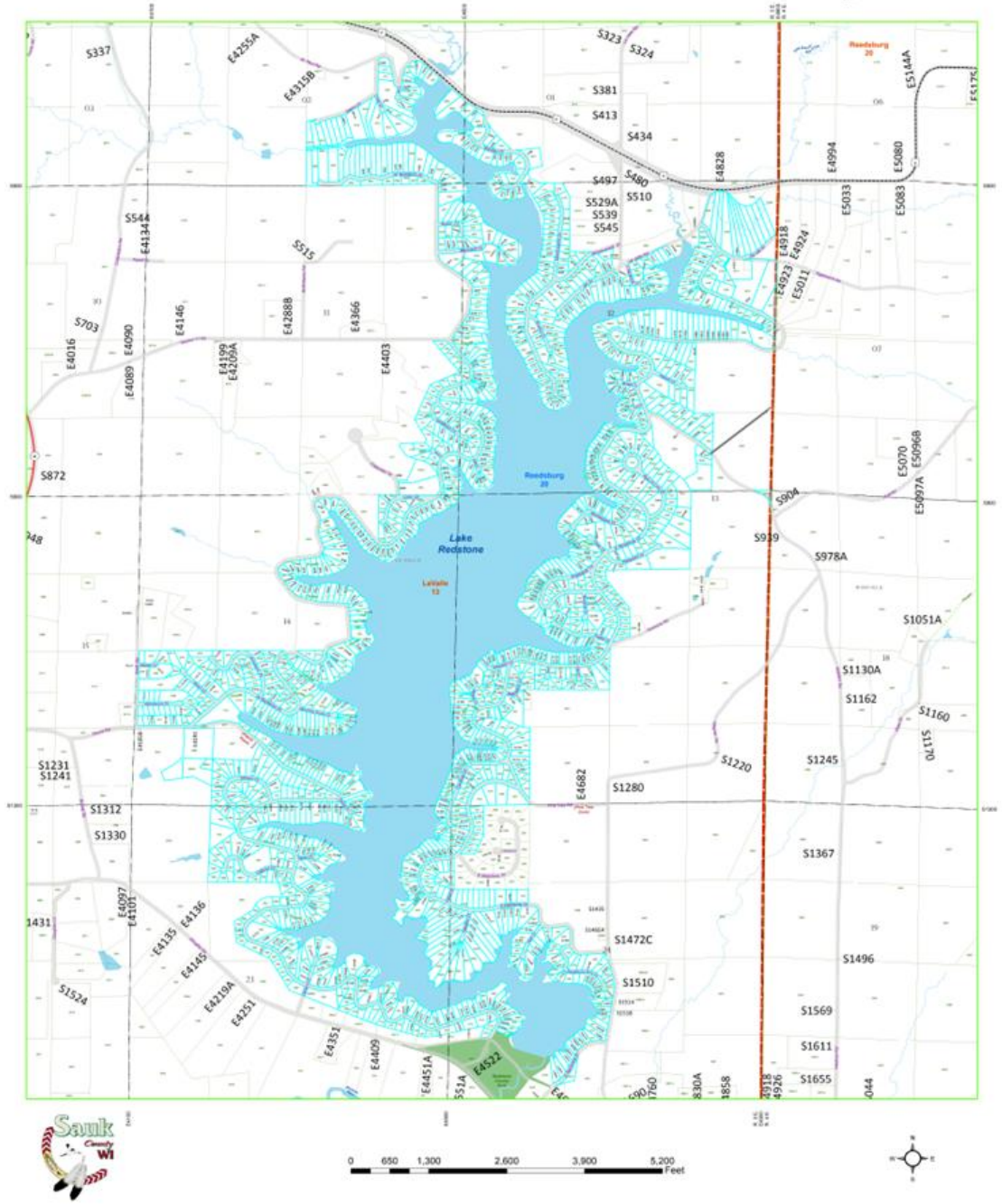
LRPD.BOARD@GMAIL.COM

EXTRAS

Fire Number Map

Lake Redstone Detail

Sauk County, WI T.13N - R.3 E.



KEY POINTS FROM THE GREENFIRE SUMMARY

SEDIMENT RESUSPENSION:

"COMPARED TO MOTORIZED NON-WAKE BOATS, WAKE BOATS HAD THE LARGEST DISTURBANCE OF SEDIMENT AND RELEASE OF NUTRIENTS AFTER DRIVING PAST SAMPLING LOCATIONS ONCE (DAEGER ET AL.,2022)"

AQUATIC INVASIVE SPECIES PER RESEARCH:

"CURRENTLY, PUMPS CANNOT COMPLETELY DRAIN INTERNAL BALLASTS, LEAVING BEHIND AN AVERAGE OF 8.37 GALLONS, BUT IN SOME CASES, UP TO 22.9 GALLONS (86.8L) (CAMPBELL ET AL., 2016)"

KEY POINTS FROM THE GREENFIRE SUMMARY

SHORELINE EROSION PER RESEARCH:

"COMPARED TO MOTORIZED NON-WAKE BOATS, RECREATIONAL WAKES CAN TRANSFER MORE ENERGY TO THE SHORE AND ACCELERATE SHORELINE EROSION (GOUDEY & ASSOCIATES, 2015; RAY, 2020; RUPRECHT" ET AL., 2015)

KEY POINTS FROM THE GREENFIRE SUMMARY

PLANTS AND FISH:

STUDIES HAVE SHOWN THAT DECREASES IN AQUATIC PLANTS IN LAKES CAN LEAD TO NEGATIVE CASCADING EFFECTS, ULTIMATELY CAUSING DECREASES IN FISHERIES (HANSEN ET AL., 2019; HAWKINS ET AL.,1983)

IMPACTS ON FISH AND PLANTS ON LAKE REDSTONE

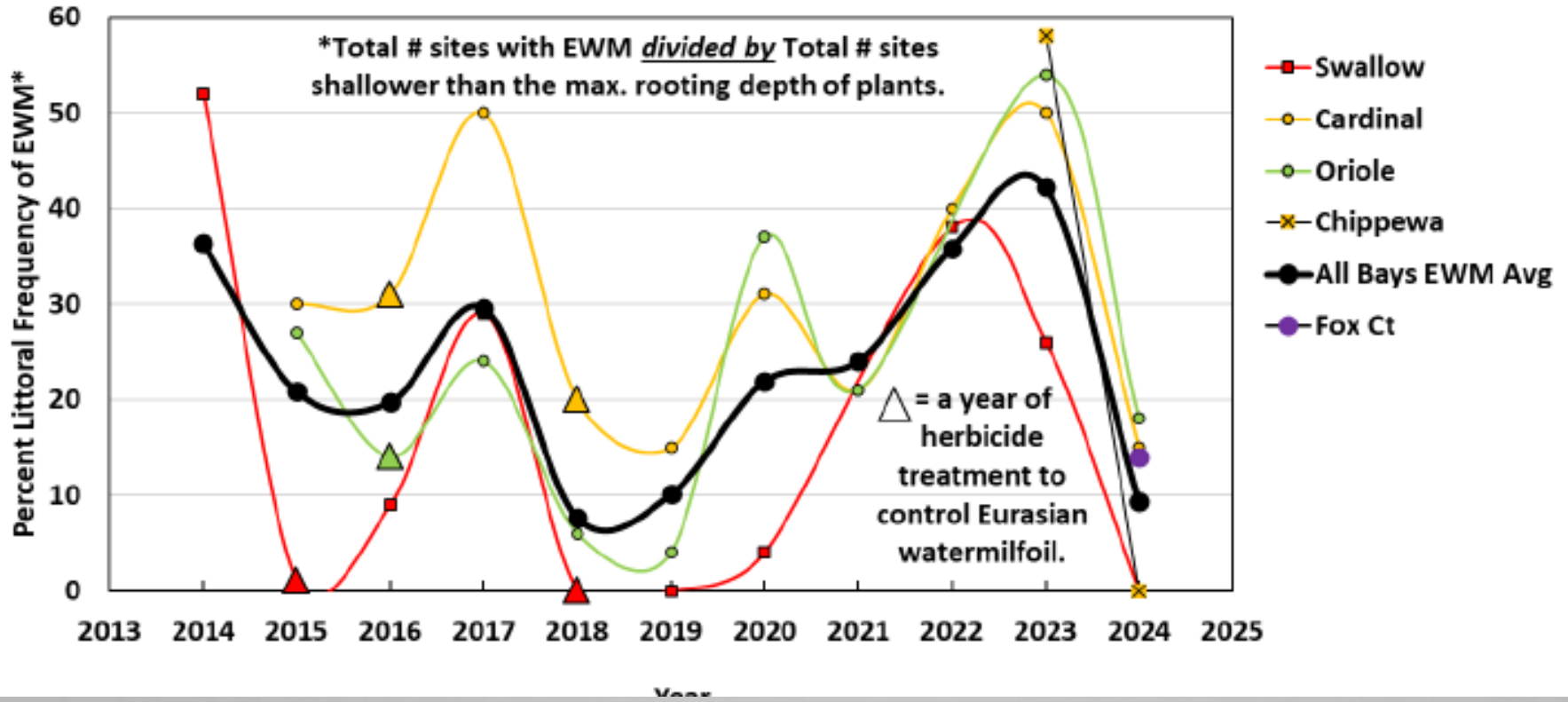
STIRRING OF THE LAKE BOTTOM NEGATIVELY AFFECTS FISH AND PLANTS IN MANY WAYS:

- PER LATEST STUDY BY SARAH HATLILI, AQUATIC PLANT AND HABITAT SERVICES LCC, WHO HAS PERFORMED NUMEROUS ANNUAL PLANT SURVEYS ON OUR LAKE, PLANTS HAVE BEEN DRASTICALLY REDUCED THROUGHOUT THE LAKE.
- REDUCTION OF PLANTS OF ALL TYPES REDUCES OXYGEN, REDUCES CLARITY, AND REDUCES FISH HABITAT.
- A HEALTHY PLANT POPULATION IS REQUIRED FOR A HEALTHY LAKE.

2024 PLANT SURVEY DATA

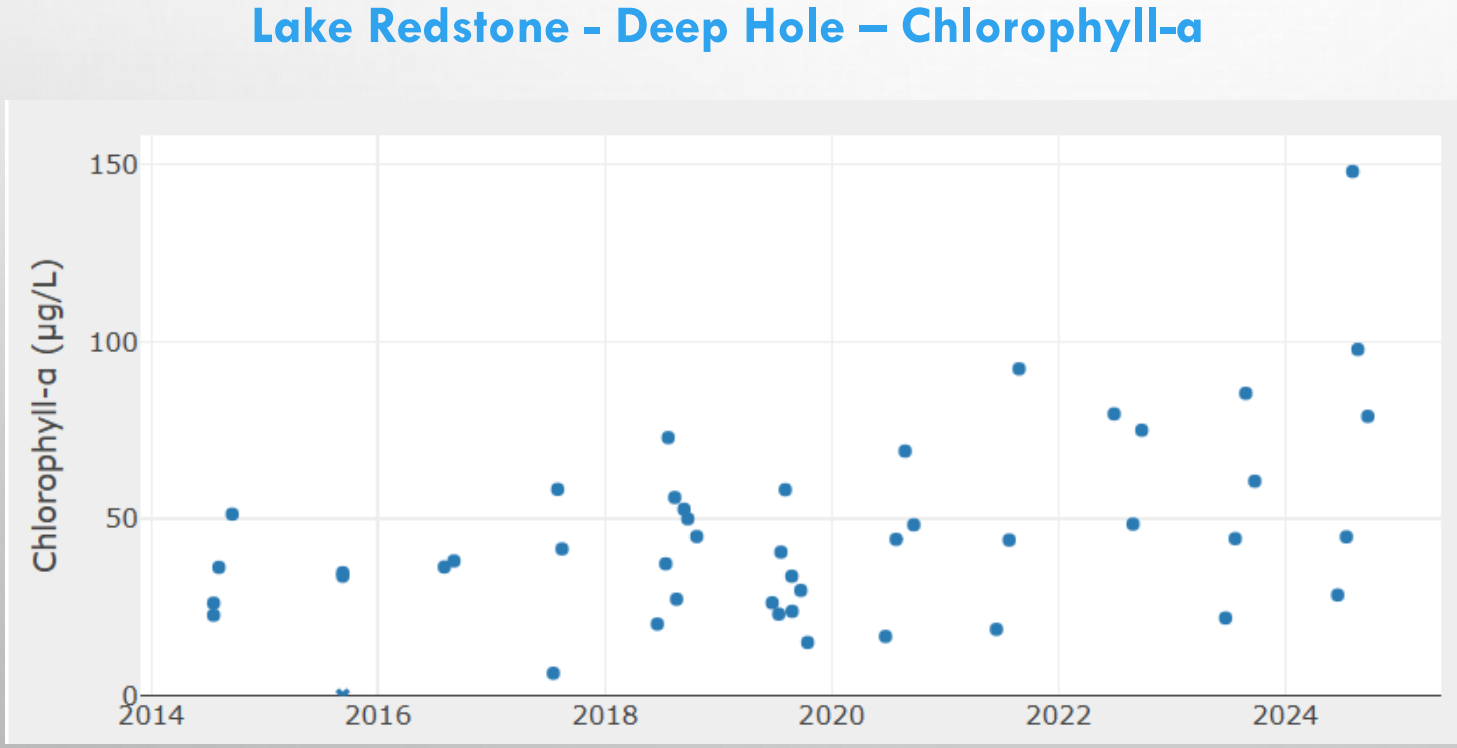
THE MOST RECENT SURVEY SHOWED A SIGNIFICANT DROP EURASIAN WATERMILFOIL.
WHILE A NUISANCE NEAR SHORELINES, IT IS A FISH HABITAT AND AN INDICATOR OF THE HEALTH OF A LAKE.

Fig. 2: Eurasian Watermilfoil Littoral Frequency



CHLOROPHYLL-*A*

CHLOROPHYLL-*A* IS THE GREEN PIGMENT FOUND IN PLANTS AND ALGAE.
THE CONCENTRATION OF CHLOROPHYLL-*A* IS USED AS A MEASURE OF THE ALGAL POPULATION IN A LAKE.



- The 2024 Chlorophyll-a were the highest ever recorded. When this data was shared at our annual Partners meeting the DNR experts indicated that with levels that high, we likely have cyanobacteria.
- The LRPD will begin a monitoring program in 2025 to test for cyanobacteria and possibly cyanotoxins.

WATER CLARITY

THE DEPTH AT WHICH A SECCHI DISK CAN BE SEEN HAS DRAMATICALLY DECREASED THE LAST FEW YEARS.