





Silver Lake

A Hollis, New Hampshire Treasure

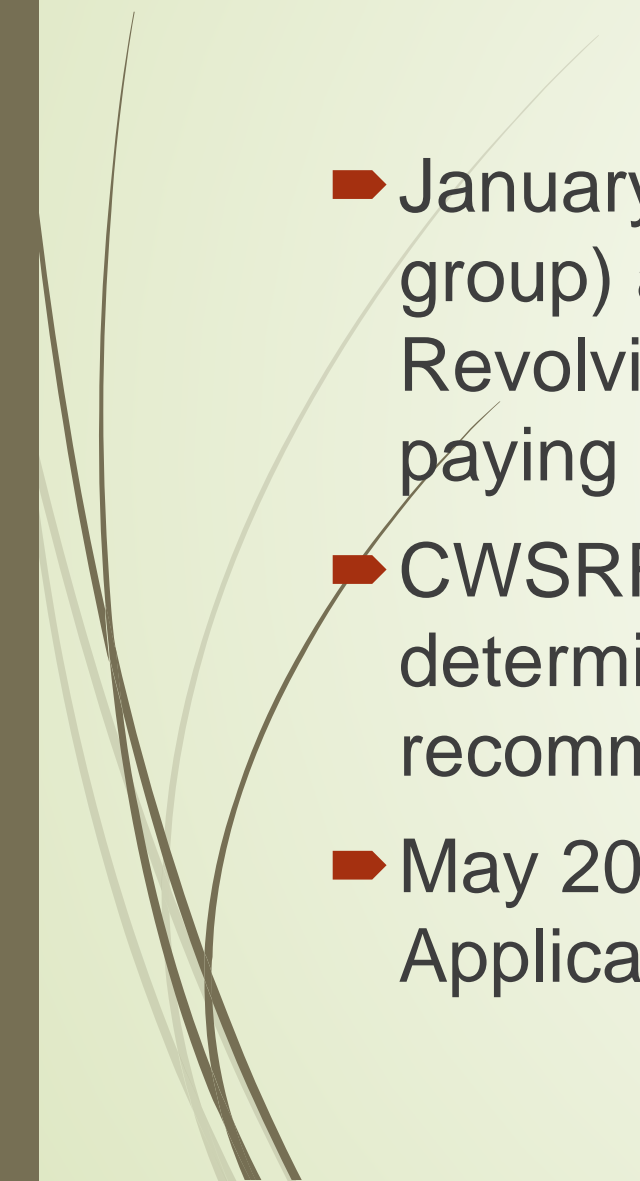


Team Formed to Explore Silver Lake Cyano Bloom Solutions

- October—Eric McIntyre and Sharon O’Neil, Silver Lake Improvement Association (SLIA), presented cyanobacteria problem to the Hollis Conservation Commission (HCC).
- November—Bernadette McQuilkin learned about loan/grant funding at NH Association of Conservation Commissions.
- December—Tom Dufresne, HCC Chair, appointed Peter Band, James Plummer, and Bernadette McQuilkin to collaborate with SLIA & NH Department of Environmental Services (NHDES).



Prelude to CWSRF Pre-Application

- January–April 2023: The Silver Lake team (SLIA and HCC group) and NHDES pursue NH Clean Water State Revolving Fund (CWSRF) fully-forgivable loan, with SLIA paying the low interest and no cost to Hollis taxpayers.
 - CWSRF loan would fund a Watershed-based Study to determine causes and make **non-binding** recommendations for mitigation.
 - May 2023: Select Board voted 4 to 1 to submit Pre-Application.
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CWSRF Pre-Application Approved

- September 2023: NHDES Approved CWSRF Loan Pre-Application.
- November 1, 2023: Silver Lake team continues to consult with Steve Landry and Katie Zink, NHDES

Projects Funded for 2023–2024

- 15/32 Projects Pre-Approved to Move Forward for Funding in Stormwater Category
- Silver Lake Watershed-based Study ranked 3rd out of 15 funded.

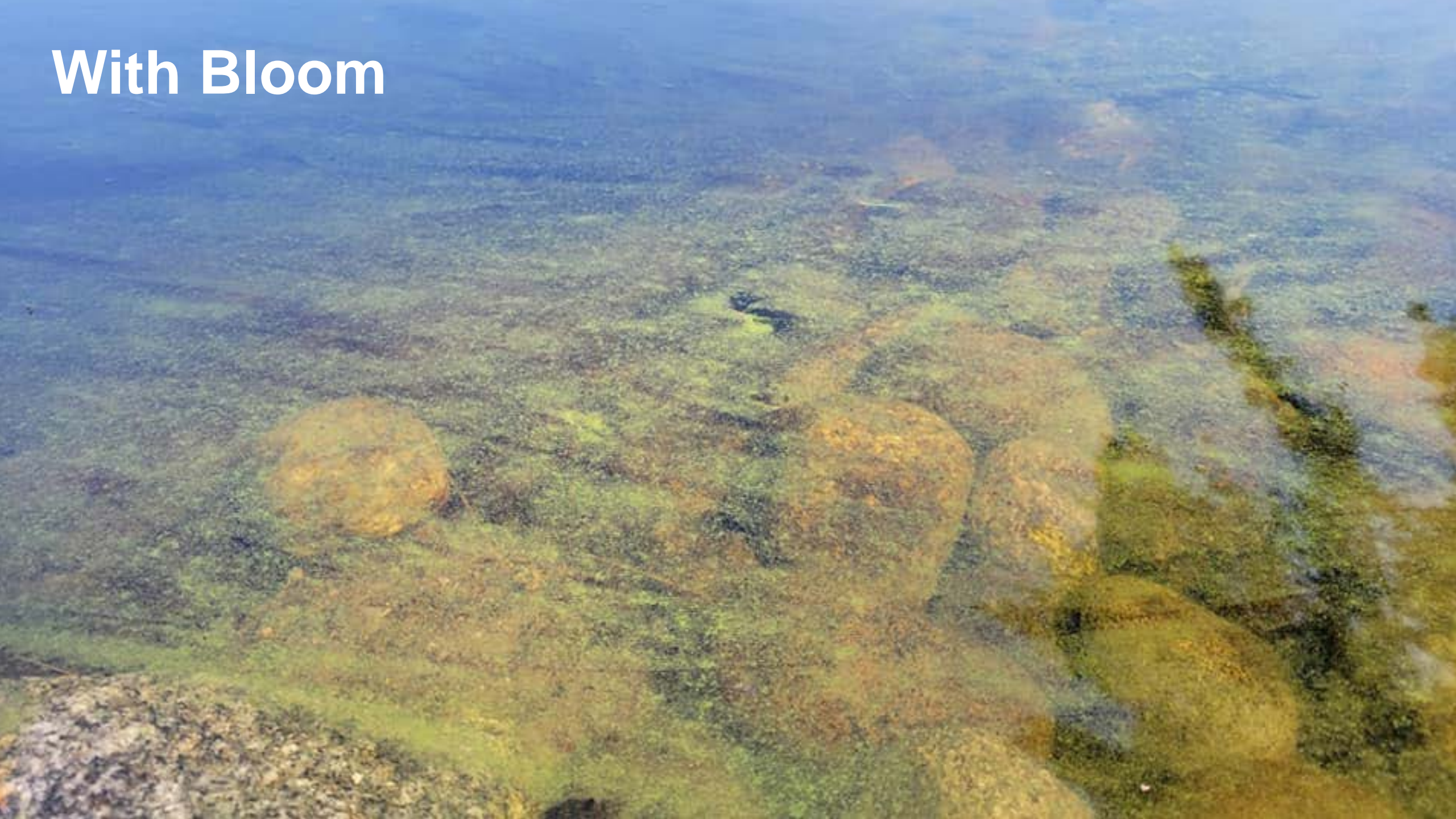


2023 NHDES CLEAN WATER SRF PRIORITY LIST STORMWATER PLANNING PROJECTS



No.	APPLICANT	PROJECT NAME	TOTAL COST	CWSRF Amount ¹	Principal Forgiveness ²
1	Dover	Chapel Street Ravine SW Property Acquisition	*	\$100,000	\$100,000
2	Exeter	Water Street Improvements	\$100,000	\$100,000	\$100,000
3	Hollis	Watershed-Based Plan Development for Silver Lake	\$100,000	\$100,000	\$100,000
4	Lebanon	Mascoma Watershed Protection Plan	\$100,000	\$100,000	\$100,000
5	Newfields	Community Forest Acquisition	*	\$100,000	\$100,000
6	Pembroke	Memorial Park Drainage Improvement- Phase 2 and MS4 Requirements	*	\$100,000	\$100,000
7	Raymond	Governors Lake Watershed-Based Plan and Phosphorus Control	\$100,000	\$100,000	\$100,000
8	Salem	Captains Pond Watershed Planning and Preliminary Green Infrastructure Design	\$100,000	\$100,000	\$100,000
9	Sunapee	Perkins Pond Watershed Management	\$100,000	\$100,000	\$100,000
10	Sutton	Watershed Plan for a Healthy Kezar Lake	\$100,000	\$100,000	\$100,000
11	Newmarket	Moonlight Brook SW Investigation	\$73,500	\$73,500	\$73,500
12	Merrimack	Baboosic Lake (Pine Knoll Shores) Drainage Study	*	\$50,000	\$50,000
13	Milton	Dawson and Silver Streets Drainage Improvements -Phase 3	*	\$30,000	\$30,000
14	Swanzey	California and N. Winchester Street Improvements	*	\$25,000	\$25,000
15	Marlborough	Downtown SW Infrastructure Planning - Phase 2	*	\$20,000	\$20,000

With Bloom



Without Bloom



NHDES Swimming Advisories

- **From 6/15/2011–7/27/2016 (five-year period)**
 - Highest number of days – **17** (7.8 days average with 18 advisories)
 - One kind of bacteria noted for each advisory: anabaena or microcystis
- **From 6/12/2017–8/8/2022 (five-year period)**
 - Highest number of days – **100** (44.2 days average with 11 advisories)
 - Several types of bacteria usually listed: anabaena, microcystis, woronichinia, dolichospermum

Full Advisory History

6/15/2011–8/8/2022

advisories:

[https://www4.des.state
.nh.us/onestoppub/Tro
phicSurveys/Silver.Holl
is.Cyano.html](https://www4.des.state.nh.us/onestoppub/TrophicSurveys/Silver.Hollis.Cyano.html)

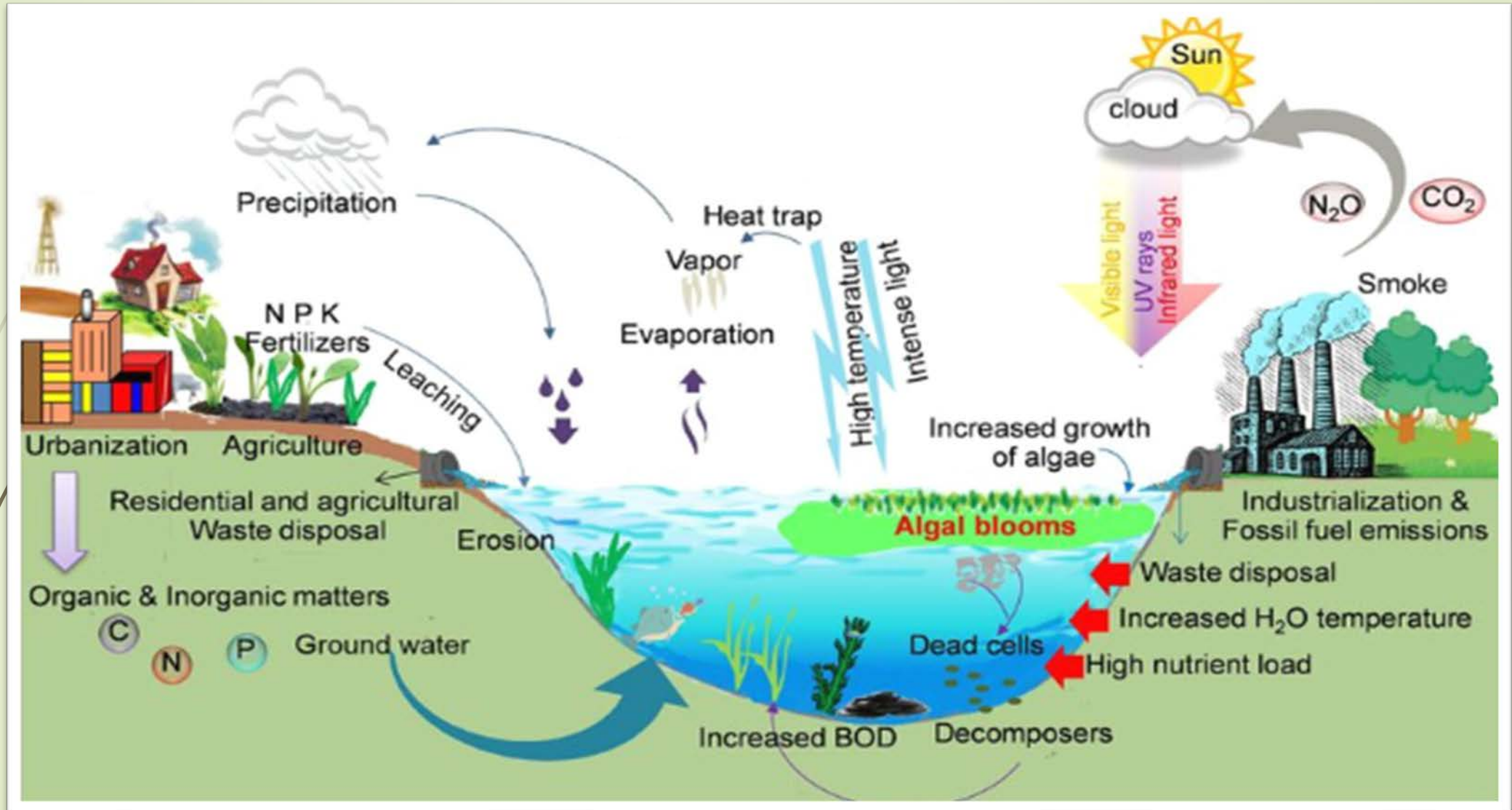




Health Implications

- ➡ Robert R. Scott, Commissioner of NHDES states, “...Effects [on humans] can range from short term skin irritation or gastroenteritis to severe acute neurologic effects...”. Full document:
<https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/hb276-20230125.pdf>
- ➡ We know cyanobacteria can be fatal to pets.

Causes of Cyanobacteria Blooms



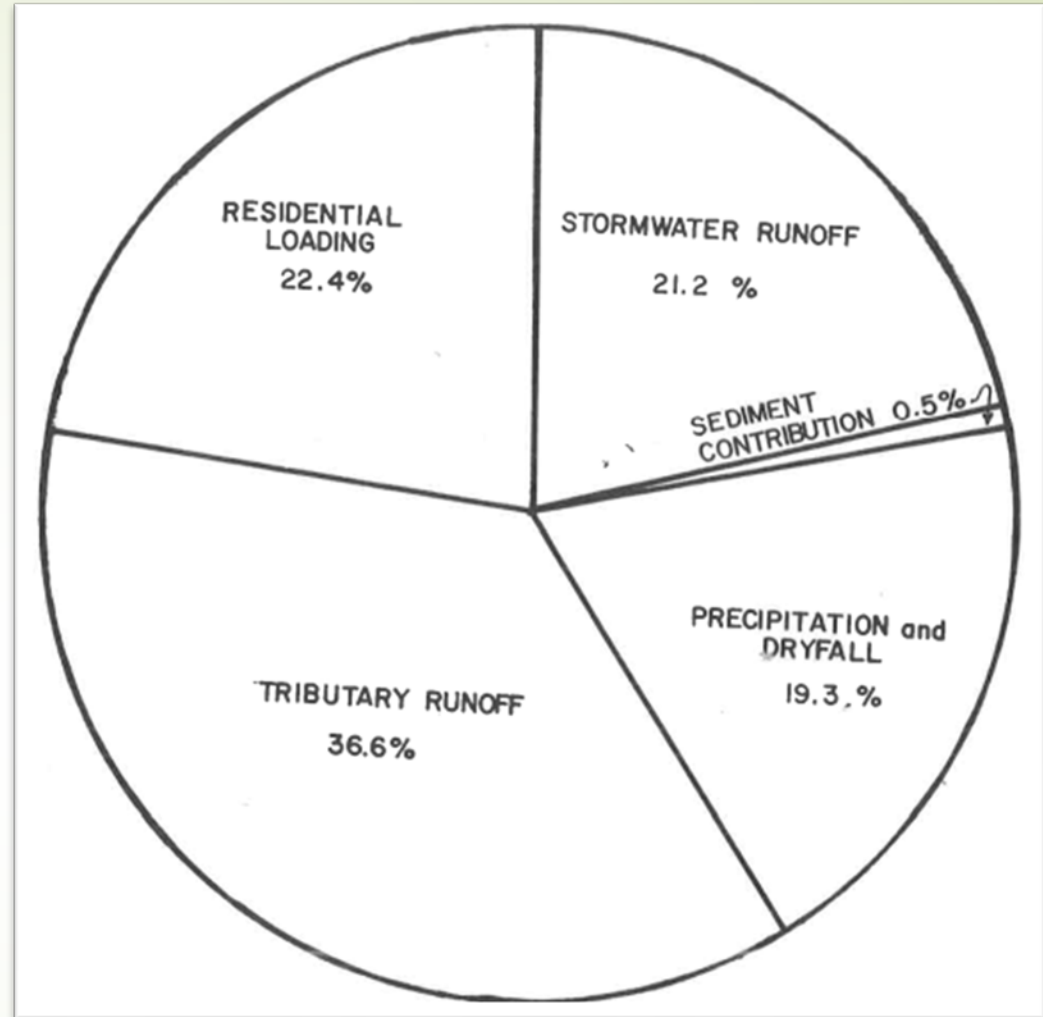
SILVER LAKE STUDY

HOLLIS, NEW HAMPSHIRE




DECEMBER 1986

NASHUA REGIONAL PLANNING COMMISSION



NHDES was established in 1987...

<https://www4.des.state.nh.us/onestoppub/TrophicSurveys/Silver%20Lake,%20Hollis,%201986.pdf>



Updated Study Needed for Scientific Accuracy

- New considerations are legacy phosphorus (from uses years ago) locked up in sediment and now released because of changing weather patterns.
- Number of houses and length of time residents reside in previously seasonal homes has increased.
- Flow of water most likely decreased from State dam installation, etc.

Beginning of the Solution


- Develop a Watershed Management Plan
 - Pinpoint the sources of the problem
 - Recommend (nonbinding) solutions

FB Environmental Associates | Squam Lakes Watershed Survey

Rank	Site #	Description	Problem	Recommendations	Impact Rating	TSS (kg/yr)	TP (kg/yr)	TN (kg/yr)	Est. Cost Range
10	3-07	Sandwich Town Beach	Erosion, inadequate shoreline vegetation, undercut shoreline	Enhance buffer around beach and boat ramp	High	304.6	0.6	2.2	\$25,000-\$75,000
11	1-08	Beach area across from Cottage Place On Squam Lake (right)	Road shoulder/ditch erosion, poor/degraded buffer; sand dumped right at shoreline	Install runoff diverter, plant/improve buffer, establish buffer, install bioretention cells	High	612.1	0.9	8.5	\$25,000-\$75,000
14	2-25	Metcalf Rd, Lake Access parking area	Road shoulder/ditch erosion, roadside plow/grader berm, poor/lack of shoreline vegetation/buffer, concentrated stormwater flowpath, lake access parking area, minimal buffer between rd and lake, plow berm area with lots of loose sediment	Armor w/stone or grass, install turnouts, vegetate, add to buffer, stabilize stream bank	Medium	488.2	2.2	8.1	\$25,000-\$75,000
12	2-24	Coolidge Farm Rd cross-culvert	Undersized, unstable inlet/outlet, hanging (no fish passage), road shoulder/ditch erosion, roadside plow/grader berm, recent soil gravel moving work, hayed and grassed along rd side banks, lots of loose sediment	Armor/vegetate inlet/outlet, enlarge, install plunge pool, armor w/stone or grass, install check dams, vegetate, install turnouts	Medium	106.4	0.1	0.4	\$10,000-\$20,000

Sample Watershed Management Plans

- Baboosic Lake in Merrimack and Amherst:
<https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/baboosic-wbp.pdf>
- Squam Lakes, NH Lakes Region:
<https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/squamlakes-wbp.pdf>
- Others in NH: <https://www.des.nh.gov/resource-center/publications?keys=+WBP+&purpose=Plans&subcategory>



CWSRF Funding for Plan Now Pre-Approved

- Municipality must receive authority to borrow the entire \$100K from the State through a Town warrant article. (Municipalities receive loans with **principal forgiveness** while other entities do not.)
- Process: Town sends invoices to NHDES, which in turn sends check made out to Town to pay vendor.
- Once all eligible expenses are incurred and subsequently disbursed, the loan is closed. Principal forgiveness is then applied to the principal balance.



No Cost to Hollis Taxpayer

- Loan is fully forgivable.
- Approximately \$3K interest on loan will be paid in full by the SLIA.
- SLIA has money for interest already in place.
- Terms will be worked out between Eric McIntyre, SLIA Treasurer, and Town.



Consultant Does Extensive Work in Watershed Study

- Consultant will collaborate with the community via a steering committee; CWSRF Guidance Document:
<https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/cwsrf-swplanning-guidance.pdf>
- Volunteers from Town will be essential, and many of us are on board for this task.
- NHDES and Silver Lake team collaboration will continue.

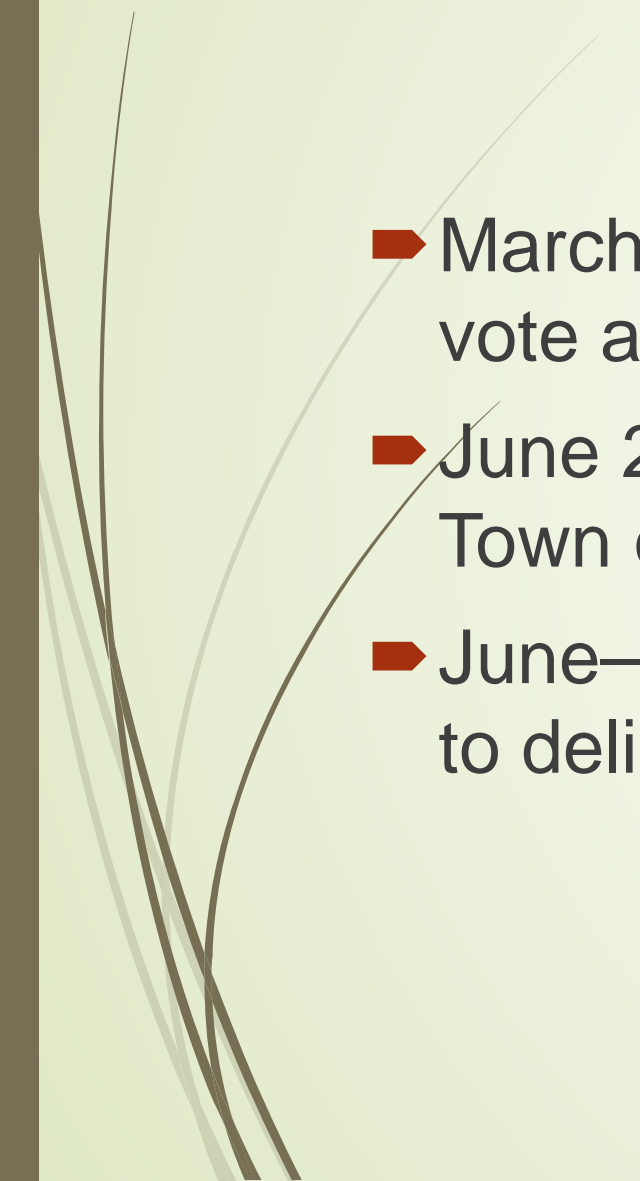


Current Watershed Plan Opens Doors to Mitigation Funding

- 485-A:58 Establishment and Implementation of Cyanobacteria Mitigation Loan Program
<https://www.gencourt.state.nh.us/rsa/html/L/485-A/485-A-58.htm>
- 319 Grant Funds <https://www.des.nh.gov/business-and-community/loans-and-grants/watershed-assistance>
- And potentially more



Next Steps

- March 2024: Silver Lake Warrant Article approved by 3/5 vote at Town Meeting.
 - June 2024: Contingent upon approval at Town Meeting, the Town of Hollis submits CWSRF Application.
 - June–2025: Silver Lake Watershed-based Study compiled to delineate causes and suggest mitigations.
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Request Bud Com Support for Warrant Article



Draft Warrant Article
Approved by Town Counsel:

https://www.dropbox.com/scl/fi/x250imolb7xrsvw1wcfow/Silver-Lake-Warrant-Article-Draft-Rev-10_26_23.docx?rlkey=je6ekq7ojn49tobeyjjbddthp&dl=0



Silver Lake Team to Gain Public Support

- November 1, 2023 “Silver Lake & the Cyanobacteria Problem” was presented at Lawrence Barn and via Zoom with a recording now available on HCC website.
- Educational outreach events will continue to achieve voter support for CWSRF Silver Lake Warrant Article.



Conclusion

- Goal is to restore Silver Lake water quality to restore the lake to its traditional use of swimming.
- The Lake and surrounding land will provide another recreational resource for our residents.
- Value of Silver Lake and surrounding properties will increase, which will result in more tax revenue.
- A Watershed-based Study will be one step toward solving a problem affecting this natural resource and our community.