Silver Lake Improvement Association

2021 ANNUAL MEMBERSHIP MEETING

FEBRUARY 15, 2021

Agenda

- Welcome and Introduction
- Approve Agenda
- Election of Board Members
- Financial and Membership Report
- 2020 Activities
- 2021 Goals
- Lake Treatment
- Open Forum
- Adjourn

Welcome & Introductions

2020 Board Members

- President: Paul Nichol
- Vice Pres: Joyce Germscheid
- Secretary: Kristen Rieser
- Treasurer: Cheryl Ettlinger
- Member: Rick Gelbmann
- Member: John Muller
- Member: Open

2020 Liaisons

- North St. Paul: Joyce G/Rick G
- Maplewood: Paul Nichol
- VBWD: John M/Rick G
- MN DNR: Joyce Germscheid
- Ramsey Co/AIS:Rick Gelbmann
- Treatment: Joyce Germscheid
- Newsletter: Joyce Germscheid
- Cleanup: Sherry&Mark Long
- Website: Jason Lehmer
- Water Data: Mark Kotz

Election of Board Members

- How do elections work? - Bylaws – quick review

- President: Paul Nichol (ends Feb 2021)
- Vice Pres: Joyce Germscheid (ends Feb 2022)
- Secretary: Kristen Rieser (ends Feb 2022)
- Treasurer: Cheryl Ettlinger (ends Feb 2023)
- Member: John Muller (ends Feb 2021)
- Member: Rick Gelbmann (ends Feb 2022)
- Member: Open

Ballot

- _____ Paul Nichol
- _____ John Muller
- _____ ?
- _____ ?
- _____ ?
- _____ ?

*Vote for 3 Positions

2020 Financial Statement

Description	2019	2020
Starting Balance	$3,227.06	$4,702.03
Member Contributions	$1,629.15	$2,076.15
Fundraising	$664.82	$208.30
DNR Treatment Grants	0	$1,200.00
Treatment Contractor Fee	($1,395.00)	($2,145.00)
Expenses: 501(c)(3), Misc	($164.00)	0
Ending Balance	$4,702.03	$6,041.48

2020 Membership

- 25 out of 37 Lakeshore owners are members
- 10 Non-lakeshore members
- 35 Total members in 2020

2021 Membership

- Please Join or Renew!
  - Online payments accepted via website
  - $25 Annual Dues (minimum)
    - Donations are also appreciated
  - We are a 501c3 non-profit
    - Tax documentation forms become available on website.

2020: Accomplishments and Activities

2020 Accomplishments

- Covid-19 Response
- Social Distance Cleanup
- First ever SLIA “Zoom” Meeting
- Position Descriptions

2020 Activities - Support

- Fundraising & Outreach
  - Online membership & donations
  - Self directed charitable contributions (e.g. IRAs)

2020 Activities - Support

- Funding Partnerships
  - North St Paul - Half the cost of treatment: $945
  - DNR: $1,200

2020 Activities - Support

- Technical Partnership Outreach -1
  - Valley Branch Watershed District
    - AIS boat inspections now a regular activity
    - Spent Lime Filtering System Working
  - City of North St Paul
    - Road & Storm Sewer Improvements
    - Street Sweeping
    - Muck Work Ongoing
  - City of Maplewood
    - Lake Access maintenance

2020 Activities - Support

- Technical Partnership Outreach - 2
  - Ramsey/Washington County AIS
    - Additional AIS boat inspections
  - Washington Co.
    - Lake Assoc. Meeting

2020 Activities – Lake Treatment

Goal: Increase native plants & reduce invasive species

- Two plant surveys completed VBWD/Ramsey Co and DNR
- Minimal invasive plants found early
- Second survey showed invasives
- Off-shore treatment completed June and July
- On-shore treatment for lakeshore for participating homeowners June & July

2020 Treatment

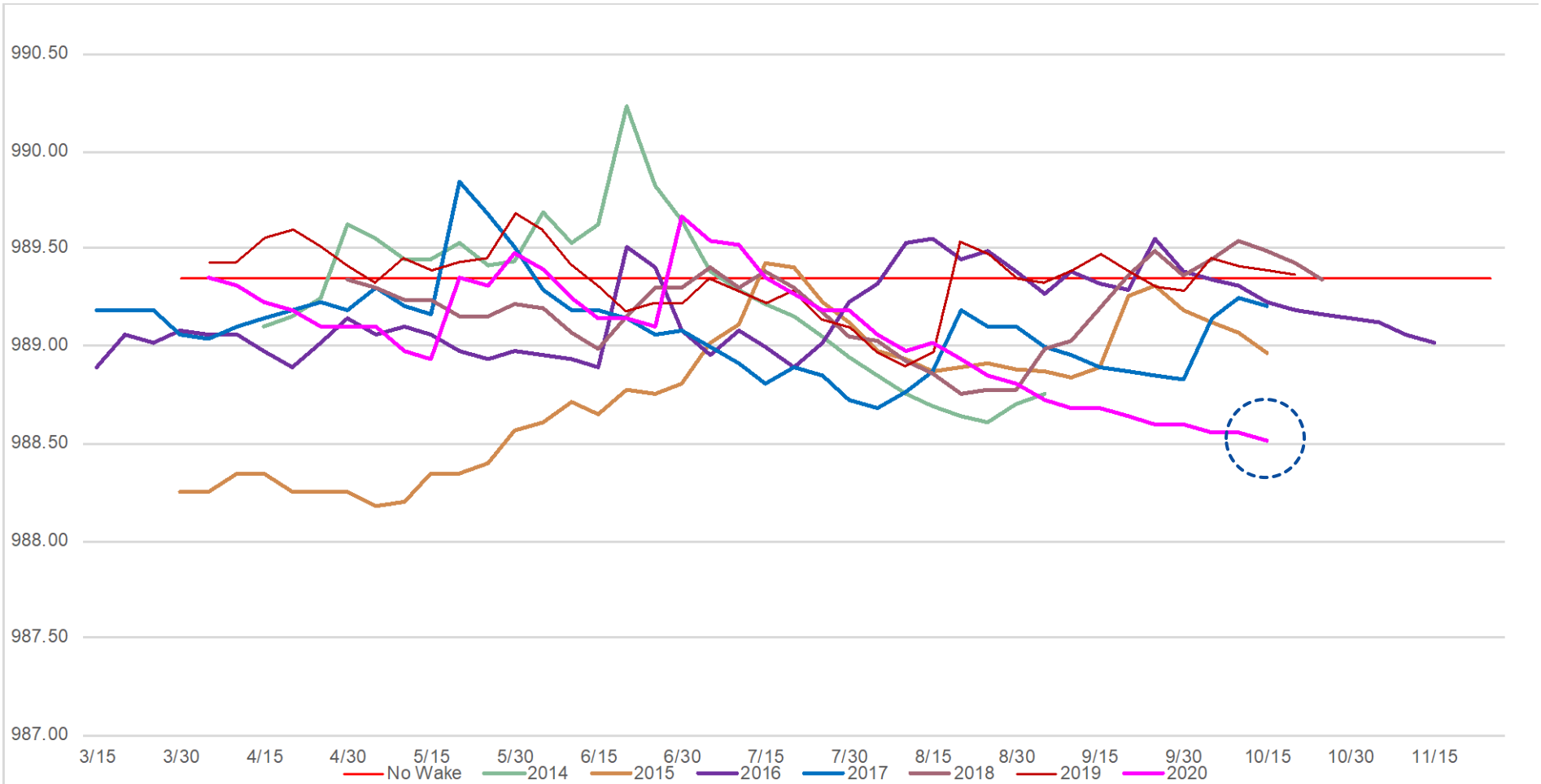
Figure 14
2020 Silver Lake Herbicide Treatment Areas

2020 Activities – Lake Levels

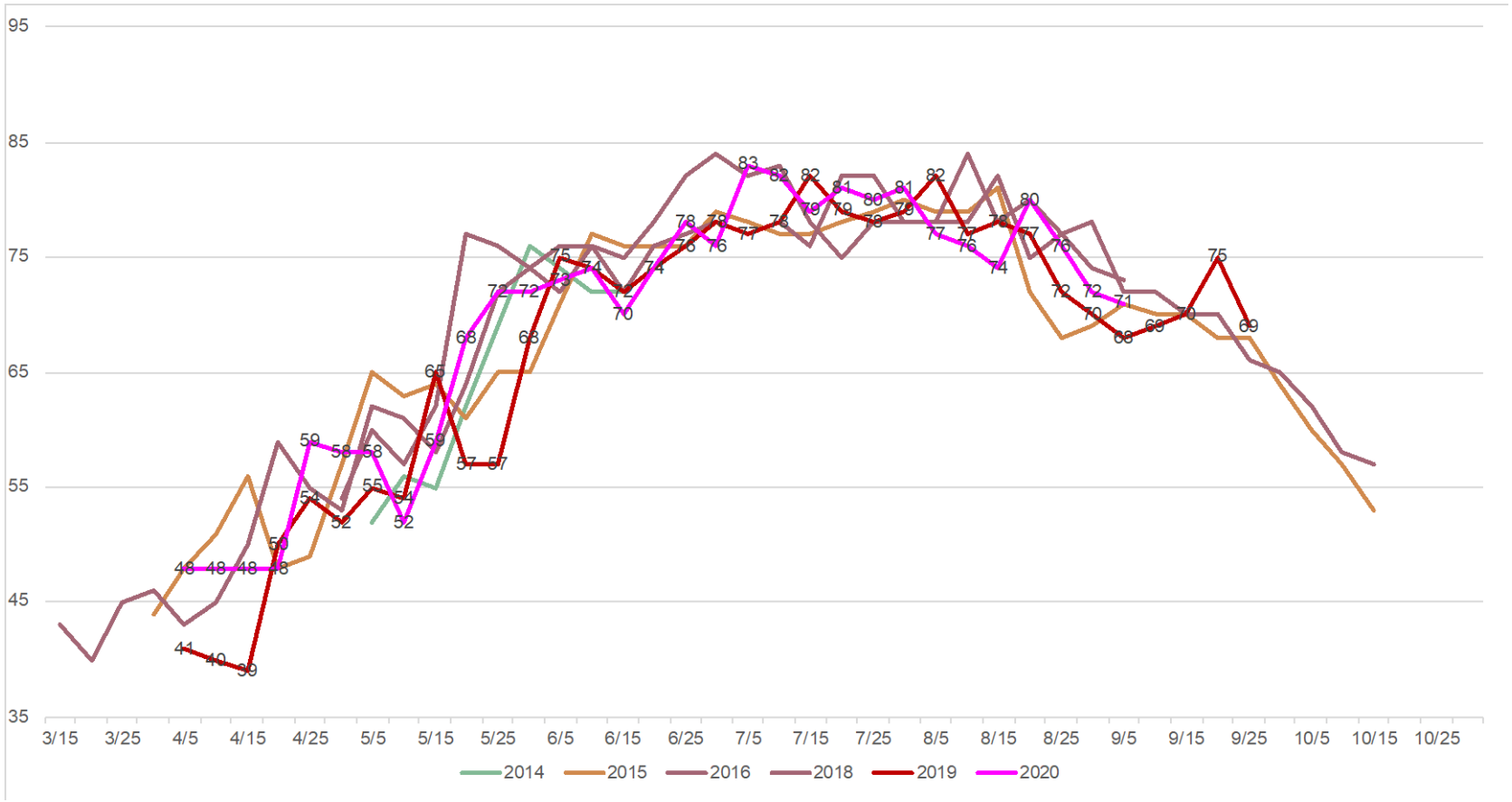
Goal: Address long-term lake level issues

- VBWD owns weir starting Jan. 2020
- Continue voluntary no wake when water above 989.35 ft.
- VBWD conducted water level study in 2020
- Meeting with VBWD regarding water levels and weir
- End of year – 2 months+ lower than No wake. No water going through weir

Silver Lake Water Level



Silver Lake Water Temperature



2020 Point-Intercept Plant Surveys

At Long Lake, Long Lake-Katherine Abbott Pond, Lake DeMontreville, Lake Olson, Lake Jane, Lake Elmo, and Silver Lake

Prepared for
Valley Branch Watershed District

December 2020



Highlights from Executive Summary

- **Silver Lake**— The SLIA treated a total of 6.5 acres with diquat in the spring of 2020 to control both EWM and CLP (Figure 13 and Figure 14). The treatment was effective and EWM and CLP were not observed in the treated area in June; however, 0.8 acres of EWM were observed in untreated areas (northeast corner of the lake and middle of the east shore) (Table 24 and Figure 15). CLP was not observed in Silver Lake in June 2020.

- **Reed canary grass** was present at one location in Long Lake and Lake DeMontreville, two locations in Silver Lake, and three locations in Lake Olson.

- **Purple loosestrife** was present in the channel between Lake DeMontreville and Lake Olson and at one location in Lake Jane. In Silver Lake, it was observed at one location during the June plant survey, but a lake resident observed it at several additional locations in September. Because it is currently present at multiple locations along the Silver Lake shore, Barr recommends that the Silver Lake Improvement Association initiate management to curtail its spread. The Minnesota Department of Natural Resources (MNDNR) recommends hand pulling for small infestations and herbicides for any infestations larger than 0.5 acres along a lakeshore. An MNDNR permit would be needed before beginning management of purple loosestrife.

- **Narrow-leaved cattail** was present at one location in Lake Jane and Silver Lake and along the western and southern shores of Lake Elmo.

Silver Lake Details: Read when this is sent out if interested

3.6 Silver Lake

3.6.1 EWM Treatment History and Changes in Post-Treatment EWM Extent

Pictured above, severely burned EWM from 2020 herbicide treatment.

EWM has been present in Silver Lake since 1992. The Silver Lake Improvement Association (SLIA) has conducted herbicide treatments to control EWM nearly annually since 1995. Most have been small-scale treatments to attain seasonal relief. However, large-scale treatments to attain long-term reduction occurred in 2007 and 2008, and subsequent efforts can be summarized as follows:

- Small-scale treatments to attain seasonal relief occurred from 2012 through 2015 and in 2017.
- Despite no EWM treatment or removal in 2018, Silver Lake EWM extent declined by an order of magnitude—from 30 acres in 2017 to 0.3 acres in 2018. The cause of the decline is unknown.
- Because EWM extent increased from June 2018 to spring 2019, nearly 4 acres of EWM in the south and southwest areas of the lake were treated with diquat in May 2019. The treatment reduced EWM extent to 0.3 acres in the northwest corner of the lake.
- A delineation plant survey by Ramsey County Soil & Water Conservation staff in April 2020 found EWM in approximately the same northwest corner (Figure 14). A total of 6.5 acres was treated with diquat in the spring of 2020 to control both EWM and CLP (Figure 15). Because EWM was only found at the one location, most of the area treated targeted CLP. Due to the successful treatment, EWM was not found at the northwest location in June 2020. However, it was found at two other locations (totaling 0.8 acres): one at the northeast corner and one midway on the east side of the lake (Table 24 and Figure 16).

3.6.2 History of CLP and Treatment

CLP presence in Silver Lake has been documented since 2006. The SLIA has conducted herbicide treatments to control CLP since 2007. These efforts can be summarized as follows:

- Large-scale treatments to attain long-term CLP reduction occurred from 2007 through 2009. Treatments were not needed again until 2013.
- Small-scale treatments to attain seasonal relief occurred in 2013, 2016, and 2017.
- CLP was not observed in 2018 because the plant survey occurred after natural senescence of CLP.
- CLP was present in the spring of 2019 and 1.75 acres were treated with diquat. Due to this successful treatment, CLP was not observed in Silver Lake during the June 2019 plant survey.
- A delineation plant survey by Ramsey County Soil & Water Conservation staff in April 2020 found CLP at multiple locations in the lake (Figure 16). As noted previously, a total of 6.5 acres were

Silver Lake Details: Read when this is sent out if interested

treated with diquat in spring 2020 to address both CLP and EWM (Figure 15); however, most of the treated area targeted CLP. Due to the successful treatment, CLP was not observed in Silver Lake in June 2020.

3.6.3 Plant Diversity

Plant diversity in Silver Lake has fluctuated widely during the monitoring period. Causes of the fluctuations include damage to the plant community from the 2007 and 2008 herbicide treatments and subsequent water-quality degradation and positive impacts from recent improvements to the lake's water quality. Simpson Diversity Index values have fluctuated between 0.63 and 0.84 during the 2006 through 2020 monitoring period.

Increased frequency of several native species including muskgrass, pictured above, contributed to improved plant diversity in 2020.

Plant diversity from 2018 through 2019 was lower than 2013 through 2017 due to dominance by coontail in 2018 and by coontail and filamentous algae in 2019. In 2020, coontail and filamentous algae frequency significantly declined and a few native species—white water lily (*Nymphaea odorata*), aquatic moss, flat-stem pondweed (*Potamogeton zosteriformis*), muskgrass (*Chara sp.*), and water star-grass (*Heteranthera dubia*)—increased in frequency. These changes resulted in an increase in the Simpson Diversity Index value from 0.68 in 2019 to 0.75 in 2020 (Table 25). Improved plant diversity in 2020 was a positive change for the lake.

3.6.4 MNDNR IBI

The 2020 Silver Lake plant community meets the criteria of the MNDNR Lake Plant Eutrophication IBI and is not impaired. A total of 20 plant species were observed in 2020, which is 67 percent greater than the impairment threshold of 12 species. The 2020 FQI score of 25.5 was 37 percent higher than the impairment threshold of 18.6 (Table 26).

From 2007 through 2016, the Silver Lake plant community often failed to meet the MNDNR Lake Plant Eutrophication IBI. This is due to CLP and EWP treatments in 2007 and 2008 that significantly damaged the native plant community. The data indicate the plant community met IBI criteria in 2006, but did not meet the criteria from 2007 through 2011, with the exception of August 2009. Over time, the plant community has improved such that Silver Lake met the IBI criteria about half the time from 2012 through 2016 and fully met the criteria from 2017 through 2020 (Table 26).

3.6.5 Significant Changes in Plant Frequency

The Silver Lake plant community was relatively stable in 2020 and the only plants to significantly change in frequency were coontail (*Ceratophyllum demersum*) and filamentous algae. Coontail frequency declined from 57 percent in 2019 to 37 percent in 2020 while filamentous algae declined from 89 percent in 2019 to 45 percent in 2020 (Table 27) The frequency declines had an overall positive impact on the plant community. Because several native species were able to use the available space to slightly (though not significantly) increase in frequency, plant diversity improved in 2020.

Silver Lake Details: Read when this is sent out if interested

3.6.6 Other AIS

EWM and CLP are the AIS of concern in Silver Lake, and the 2020 herbicide treatment targeted both species. After treatment, EWM was observed at two locations, but CLP was not observed. The June 2020 plant survey documented three additional AIS in the lake (Table 1 and Table 2).

Narrow-leaved cattail was observed at a location in the northeast area of the lake first in 2017, then again from 2018 through 2020. Barr did not consider narrow-leaved cattail problematic in 2020.

Reed canary grass was observed at the same location as narrow-leaved cattail—in the northeast area of the lake in 2017 and 2018. It moved to a different northeast location in 2019. In 2020, it was observed at two locations: the 2019 location and approximately the middle of the western shore. Although Barr did not consider it problematic in 2020, we recommend watching it in the future and initiating management if it spreads and increases in extent.

Purple loosestrife was observed at a single location in the southwest corner of the lake, first in 2018, then again in 2019 and 2020. In September of 2020, a lake resident observed purple loosestrife at several additional locations along the shore and provided maps of the observed locations (Figure 17 and Figure 18). Because it is currently present at multiple locations along the lake shore, Barr recommends the SLIA initiate management of purple loosestrife to curtail its spread. MNDNR recommends hand pulling for small infestations and herbicides for any infestations larger than 0.5 acres along a lakeshore. A MNDNR permit would be needed before beginning management of purple loosestrife.

Aquatic Invasive Species Survey - EWM

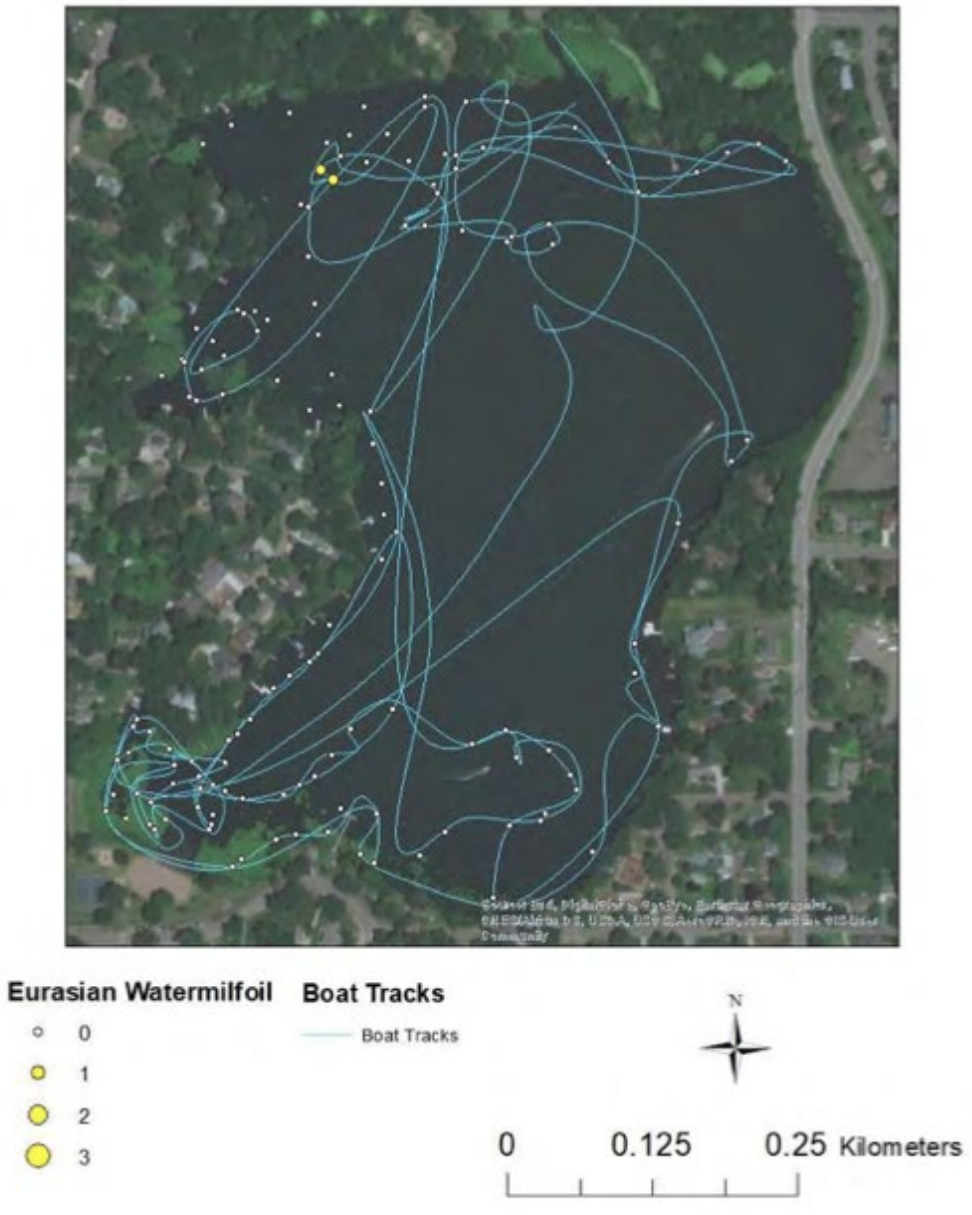
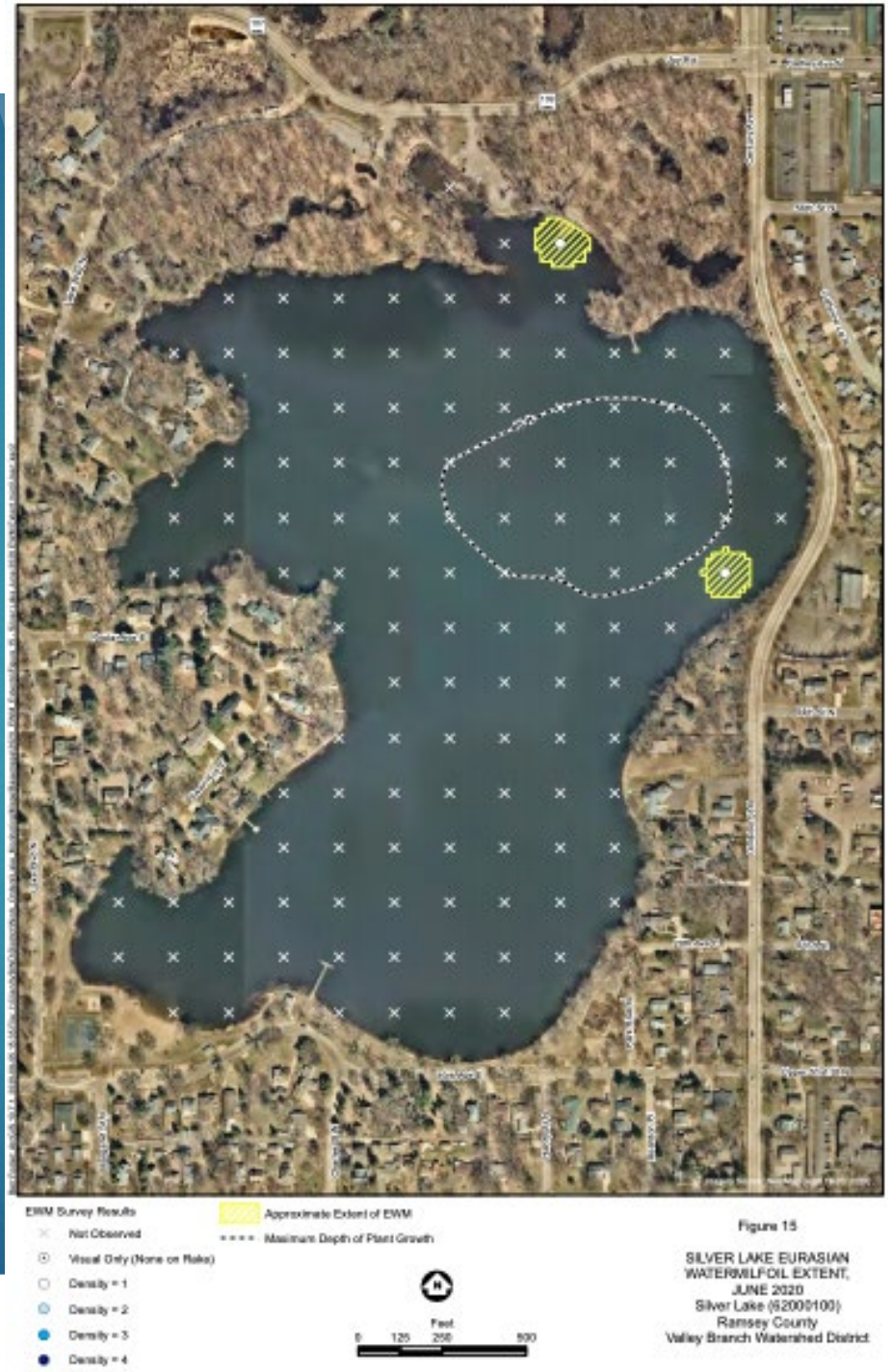


Figure 13. 2020 Silver Lake EWM Pre-Treatment Delineation Plant Survey Results

Delineation survey completed by Ramsey County Soil & Water Conservation staff on 4/20/2020
Map Credit: Ramsey County Soil & Water Conservation staff

Aquatic Invasive Species Survey - EWM



Aquatic Invasive Species Survey - CLP

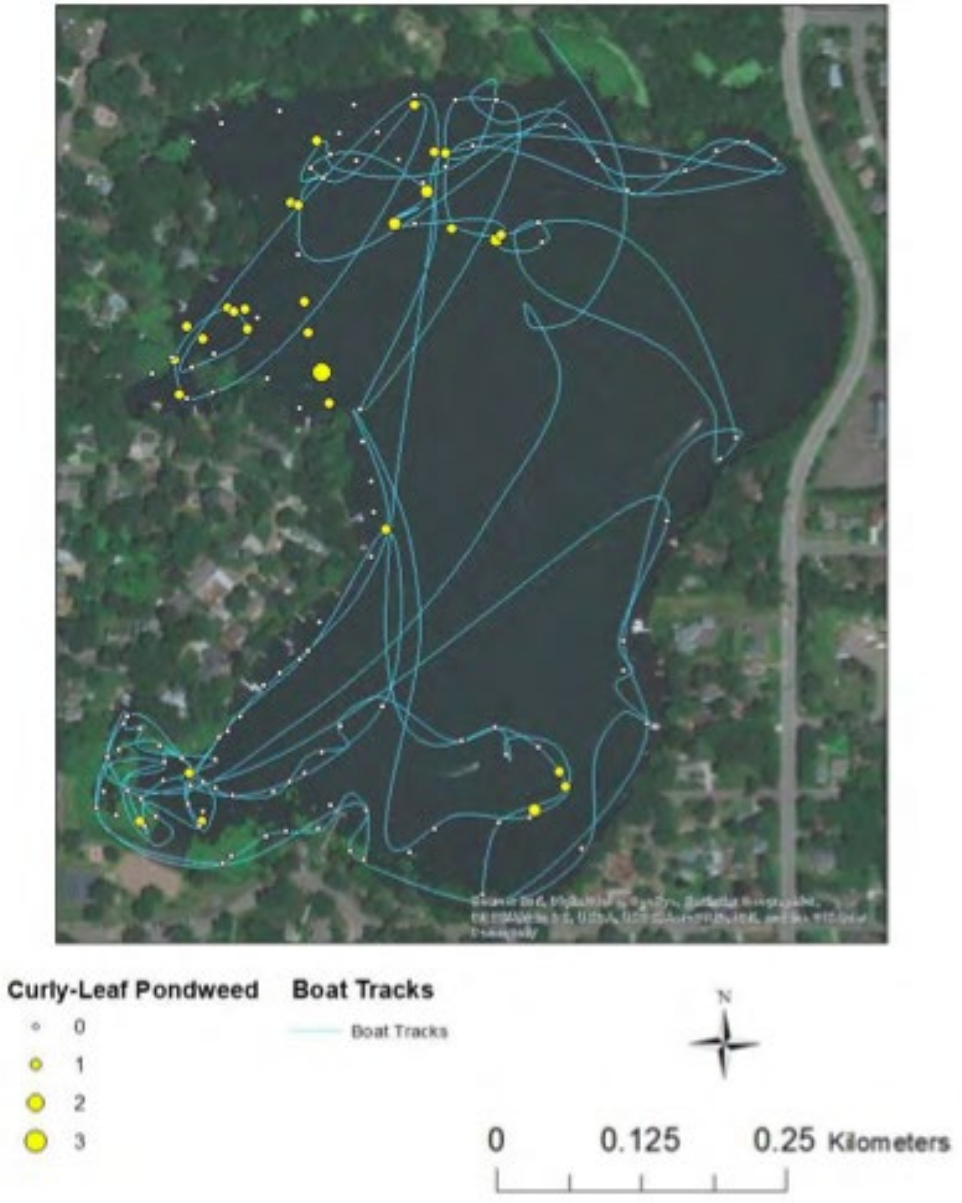
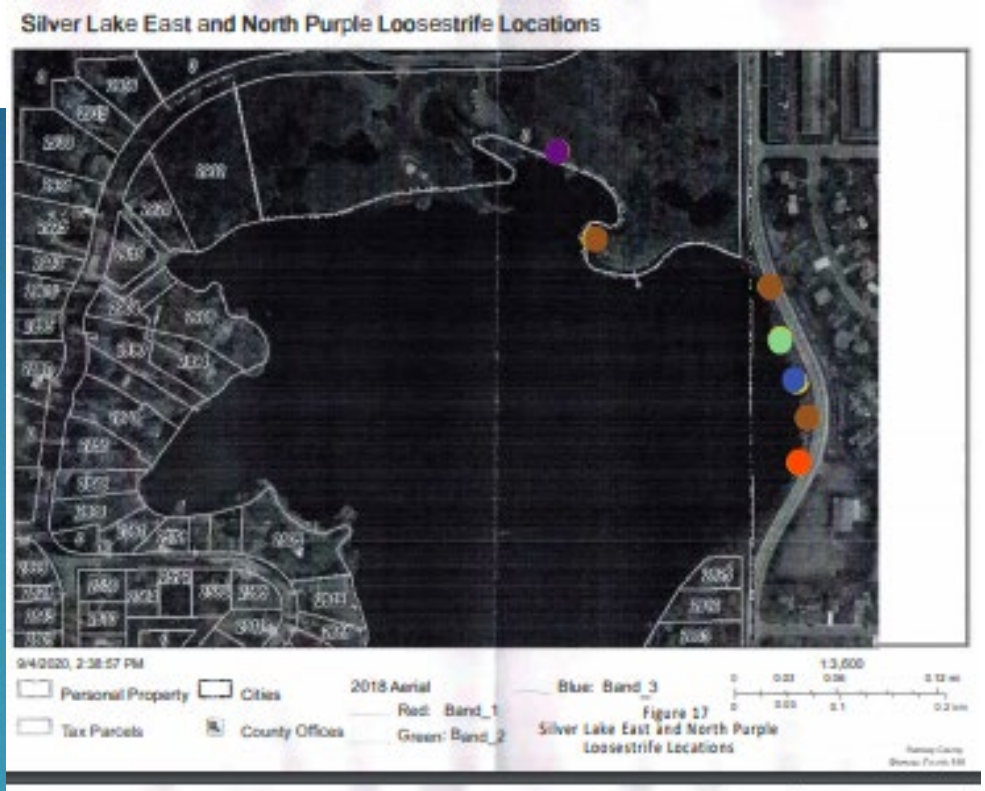


Figure 16. 2020 Silver Lake CLP Pre-Treatment Delineation Plant Survey Results

Delineation survey completed by Ramsey County Soil & Water Conservation staff on 4/20/2020
Map Credit: Ramsey County Soil & Water Conservation staff

Aquatic Invasive Species Survey



AIS Statistics

Table 1 Lake plant survey summary statistics (June 2020)

Lake	Number of Species*	Number of Native Species*	Number of Native Species Collected on Rake*	Number of Invasive Species	Maximum Depth of Plant Growth (feet)	Frequency of Occurrence (%)	Average Rake Fullness	Simpson Diversity Index Value
Jane	28	24	18	4	23.5	93.33	2.05	0.88
Elmo	27	24	20	3	16.5	89.86	2.4	0.92
Olson	30	24	20	6	20.0	95.83	2.10	0.84
DeMontreville	24	19	16	5	21.5	89.32	2.20	0.85
Silver	22	18	15	4	10.0	66.36	1.90	0.75
Long	17	14	13	3	18.0	65.83	1.95	0.81

*Filamentous algae, aquatic moss, and liverworts were not included in number of species.

AIS Statistics

Table 2 **June 2020 invasive species summary—frequency of occurrence at sites shallower than maximum depth of plant growth (percent or observed*)**

Lake	*Myriophyllum spicatum* (Eurasian watermilfoil)	*Potamogeton crispus* (curly-leaf pondweed)	*Phalaris arundinacea* (reed canary grass)	*Lythrum salicaria* (purple loosestrife)	*Typha angustifolia* (narrow-leaved cattail)	*Typha glauca* (hybrid cattail)	*Iris pseudacorus* (Yellow iris)
Elmo	31.88	P	--	--	18.84	--	--
Jane	4.44	1.11	--	P	P	--	--
Olson	1.67	P	0.83	P	--	P	P
DeMontreville	8.74	P	P	--	P	--	P
Silver	1.82	--	0.91	P	0.91	--	--
Long	--	15.00	P	--	--	P	--

*Observed in the lake but not collected on the rake (Present = P).

AIS Statistics

Table 24 Silver Lake acres of EWM, acres of plant growth, and percentage of plant-growth area with EWM (DOW

Sample Date	EWM Extent: Acres of EWM	Acres of Plant Growth	Percentage of Plant-Growth Area with EWM
6/25/2017	30.43	69.78	43.61%
7/29/2018	0.32	68.99	0.46%
4/29/2019	0.30	--	--
6/24/2019	0.31	69.03	0.45%
6/24/2020	0.78	67.34	1.16%

AIS Statistics

Table 25 Simpson Diversity Index values for Silver Lake, Ramsey County, MN (DOW 62.000100)

Year	Month	Day	Diversity
2006	June	7	0.84
2006	July	26	0.79
2007	June	11	0.79
2007	August	13	0.66
2008	June	23	0.67
2008	August	24	0.83
2009	June	2	0.72
2009	August	9	0.74
2011	August	1	0.79
2012	July	20	0.63
2013	August	13	0.83
2014	August	5	0.79
2015	August	20	0.77
2016	August	9	0.80
2017	June	25	0.82
2018	July	29	0.67
2019	June	24	0.68
2020	June	24	0.75

AIS Statistics

Table 26 MNDNR Plant IBI: Silver Lake, Ramsey County, MN (DOW 62.000100)

Year	Month	Day	MNDNR Species Richness Plant IBI Criterion*	Silver Lake Species Richness**	Percent Difference between MNDNR Criterion and Silver Lake Species Richness	MNDNR Floristic Quality Index (FQI) Plant IBI Criterion*	Silver Lake FQI**	Percent Difference between MNDNR Criterion and Silver Lake FQI	Does Silver Lake Meet MNDNR Plant IBI Criteria?
2006	June	7	≥12	19	58	≥18.6	25.9	39	Yes
2006	July	26	≥12	15	25	≥18.6	21.9	18	Yes
2007	June	11	≥12	12	0	≥18.6	18.5	-1	No
2007	August	13	≥12	12	0	≥18.6	18.5	-1	No
2008	June	23	≥12	9	-25	≥18.6	16.7	-10	No
2008	August	24	≥12	11	-8	≥18.6	19.3	4	No
2009	June	2	≥12	12	0	≥18.6	18.5	-1	No
2009	August	9	≥12	14	17	≥18.6	19.2	3	Yes
2010	June	16	≥12	8	-33	≥18.6	13.8	-26	No
2010	August	6	≥12	9	-25	≥18.6	14.0	-25	No
2011	August	1	≥12	11	-8	≥18.6	16.6	-11	No
2012	July	20	≥12	9	-25	≥18.6	15.3	-18	No
2013	August	13	≥12	13	8	≥18.6	18.6	0	Yes
2014	August	5	≥12	11	-8	≥18.6	15.7	-16	No
2015	August	20	≥12	14	17	≥18.6	19.0	2	Yes
2016	August	9	≥12	11	-8	≥18.6	16.0	-14	No
2017	June	25	≥12	20	67	≥18.6	23.9	29	Yes
2018	July	29	≥12	18	50	≥18.6	22.9	23	Yes
2019	June	24	≥12	18	50	≥18.6	24.5	32	Yes
2020	June	24	≥12	20	67	≥18.6	25.5	37	Yes

* Criteria for North Central Hardwoods—2B Deeper Water Lakes (≥ 15' Max Depth)

**Limited to species selected by MNDNR for FQI computations. Does not include filamentous algae and several emergent species.

AIS Statistics

Table 27 **Percent frequencies of occurrence in vegetated depth—range of plants in Silver Lake, Washington County, MN (DOW 62.000100)**

Year	Month	Day	Surveyor	*Ceratophyllum demersum*	*Elodea canadensis*	*Myriophyllum spicatum*	*Myriophyllum sibiricum*	*Ranunculus aquatilis*	*Ranunculus* sp.	*Utricularia vulgaris*	*Heteranthera dubia*	*Potamogeton amplifolius*	*Potamogeton crispus*	*Potamogeton foliosus*	*Potamogeton praelongus*	*Potamogeton pusillus*	*Potamogeton nodosus*	*Potamogeton richardsonii*	*Potamogeton robbinsii*	*Potamogeton* sp.	*Potamogeton zosteriformis*	*Najas flexilis*	*Najas guadalupensis*	*Najas* sp.	*Stuckenia pectinata*	*Zannichellia palustris*	*Chara* sp.	*Nitella*	*Chara and Nitella*	*Nymphaea odorata*	*Lemna minor*	*Lemna trisulca*	*Spirodela polyrhiza*	*Wolffia columbiana*	*Aquatic moss*	*Filamentous algae*	*Riccia fluitans*	*Eleocharis acicularis*	*Eleocharis* sp.	*Iris virginica*	*Iris pseudacorus*	*Lythrum salicaria*	*Phalaris arundinacea*	*Schoenoplectus tabernaemontani*	*Typha angustifolia*	*Typha* sp.
				Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Submersed	Float-leaf	Free-float	Free-float	Free-float	Free-float	Free-float	Mosses	Algae	Liverwort	Emergent	Emergent	Emergent	Emergent	Emergent	Emergent	Emergent	Emergent	Emergent
				Dicot	Dicot	Dicot	Dicot	Dicot	Dicot	Dicot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Monocot	Dicot	Monocot	Monocot	Monocot	Monocot	Monocot				Monocot	Monocot	Monocot	Monocot	Dicot	Monocot	Monocot	Monocot	Monocot
				Native	Native	Non-Native	Native	Native	Native	Native	Native	Native	Non-Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Native	Non-Native	Non-Native	Non-Native	Native	Non-Native	Non-Native
2006	06	7	VBWD	97	49	70	3		6		12	12	21		1				1	1	1	22	25					1	2		3		14							1							
2006	07	26	VBWD	97	41	56	10		1		14	10	1							1		1	29					3	1		2		9													
2007	06	11	Fortin	81	56	48	3					6	2							12			11						1		2	1	28													1
2007	08	13	Fortin	96	32	8							1							5			7									34														
2008	6	23	U of M	53	18						1				1								1					5			8		14					2							
2008	8	24	U of M	15	17						3	1			4	1							1					5			7		3					5							
2009	6	2	U of M	3	33						2		2														4	29	2		5	1	1			1			2							1
2009	8	9	U of M	1	35	1					8	2			2								2			2		47			9	1							3							3
2010	6	17	MnDNR		17	4	1	P			1		50													7				44																
2010	8	6	MnDNR	3	25	16					4	1	1			2										3		34																		
2011	8	1	MnDNR	2	13	42	4				3		5	10	2											2		21			6														3
2012	7	20	MnDNR		4	70	9						8	1	1											1		24			4														3
2013	8	13	MnDNR	10	2	11	19						3	2	1								2			2		2	30		7								2						
2014	8	5	MnDNR	22	2	63					1		38			13							4			4			44		5								1						
2015	8	20	MnDNR	39	2	7	1	1			7		2	6							1				5	1				47	8								1						
2016	8	9	MnDNR	46	3	19					4		17		1										8	2				29	8								2						
2017	06	25	VBWD	26	3	31		P			P		32	P	P	1	P				1	1			P		40			5	4	1	3	2		29		2		P			P		1	
2018	07	29	VBWD	64	1	1					4			P		2	1				P	4					30			9	3	2	2	2	1	19		2		P		P	P	P	1	
2019	06	24	VBWD	57		1					3	P				2	1				P		1				38			6	3	2	3	3	1	89	1	2		P	P	P	P	P	1	
2020	06	24	VBWD	37	1	2				1	4	P				2	1				4		1				40			9	3	2	2	2	4	45	1	2		P		P	P	P	1	

P = Present—Observed but not collected on the sampling rake

2021 Goals

2021 Goals – Partnerships

- Continue to develop city partnerships for lake treatment and technical support
- Work with VBWD on continued water level Issues strategy
- Apply for DNR AIS Grant - January
- Explore lake association partnerships
- Possible Business Membership
- Address Lake Sediment Issues
- Aerator – track responsibilities, change of ownership

2021 Goals – Lake Management

- Improve the health of the lake
  - Increase native plants & decrease invasive plants
  - Improve water quality (more clarity, less nutrients)
- Treatment
  - Off-shore treatment as needed
  - Perennial problem areas
  - Dependent on funding
- Lake Levels
  - Monitor lake levels
  - Work with governing agencies

Lake Treatment 2021

Permitting Process

- Paperwork submittal in February/March
- Sample & map invasives after ice-out
- Submit a proposal with maps to DNR
- Limited to 2.6 acres total
- DNR confirms via onsite inspection
- Contractor treats lake
- Timing (water temp) is critical for effectiveness

2021 Homeowner Actions

- Complete individual permit by May
- If you treated in 2020
  - Tell Joyce your plans for 2021
- If you did not treat in 2020
  - Ask Joyce for a permit application

2021 Homeowner Actions

- Watch for and stop invasive species especially:
  - Starry Stonewort and Zebra Mussels

Open Forum

- Questions
- Comments
- Adjourn