



# 2020 AIS Prevention & Management Plan

## Comfort Lake–Forest Lake Watershed District

### Lake Management Districts:

#### Bone Lake District

- Moody Lake
- Bone Lake

#### Little Comfort Lake District

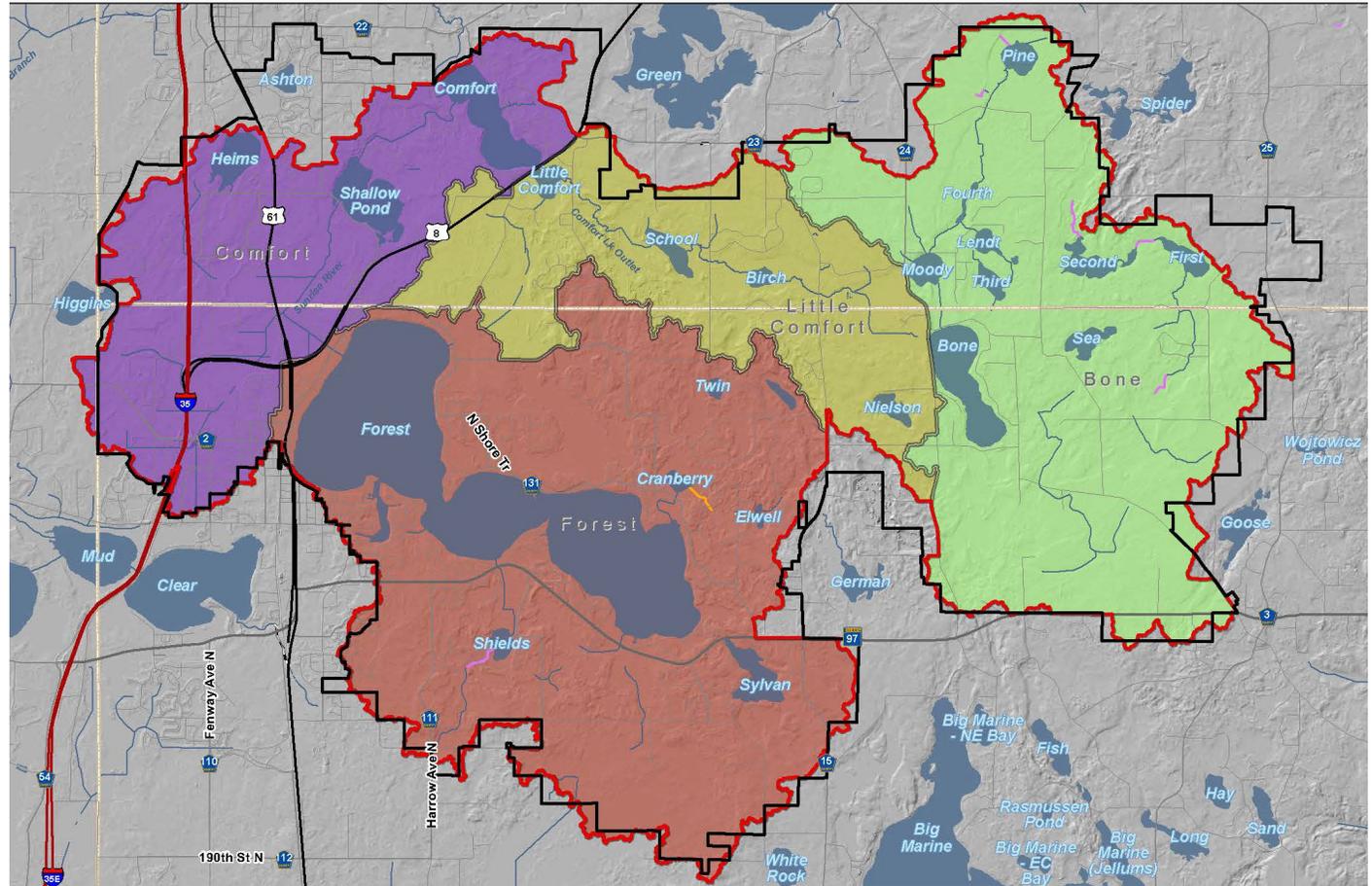
- Little Comfort Lake

#### Forest Lake District

- Shields Lake
- Lake Keewahtin
- Forest Lake

#### Comfort Lake District

- Comfort Lake



Comfort Lake – Forest Lake Watershed District

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# AIS Budget Summary



Lake	Funding Sources		Estimated Yearend Expense Totals			Balance**	Littoral Acreage	Expense/Littoral Acre
	CLFLWD Local	Grants/Cont.	Blue Water Science	Contractor/ Other	EOR			
District-Wide*	\$7,000	\$1,275		(\$24,917)		(\$16,642)		
Moody	\$4,000	\$0	(\$3,400)	(\$2,956)		(\$2,356)	22	\$288.92
Bone	\$11,000	\$6,194	\$4,300	(\$12,509)		\$8,985	124	\$66.20
Little Comfort	\$0	\$0	\$0	\$0		\$0	16	\$0.00
Shields	\$4,000	\$1,155	(\$3,300)	(\$1,373)		\$482	22	\$212.42
Keewahtin	\$0	\$0	\$0	\$0		\$0	67	\$0.00
Forest	\$118,000	\$81,123	(\$12,200)	(\$125,550)		\$61,373	1,531	\$89.97
Comfort	\$11,000	\$5,500	(\$3,200)	(\$11,500)		\$1,800	90	\$163.33
<b>Total</b>	<b>\$155,000</b>	<b>\$95,247</b>	<b>(\$17,800)</b>	<b>(\$178,806)</b>		<b>\$53,641</b>		

EOR AIS Program Management Costs		
Month of Services	Invoice #	Expense
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		
	Running Total	\$ -

### Budget Notes

\*District-wide budget line items include General Program Mgmt (includes EOR time), Comprehensive Plan & Policy Development, AIS Prevention at Boat Launch Sites, AIS Rapid Response (Bone Lake zebra mussel rapid response)



# Moody Lake

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## Management Narrative

**Aeration system:** The winter aerator was activated for the season on January 2, 2020 and will remain active until all ice has melted on the lake. After deactivating the system, District staff will canoe around Moody Lake and collect each of the thin ice signs. The purpose of the aeration system is to keep Moody Lake's dissolved oxygen levels above the thresholds needed to support game fish species over the winter, which will help keep rough fish populations in check.

**Curly-leaf pondweed (CLP):** Same as 2019, the 2020 budget contains \$4,000 for Moody Lake AIS Management. Shortly after this season's ice out, Blue Water Science (BWS) will conduct a CLP delineation to determine the size and location of treatment areas. Following treatment, a point intercept macrophyte survey will be conducted by BWS to remain compliant with the Minnesota DNR's variance permit for Moody Lake's CLP management. For reference, 7.81 acres of CLP were treated on Moody Lake in 2019.

**Fish Survey:** The Minnesota Department of Natural Resource's Hinckley Area Fisheries office has communicated to staff that Moody lake is "tentatively" scheduled for a bluegill gill netting fish survey this spring.

# Moody Lake AIS Prevention and Management



		Revenues		Expenses		Annual Balance	Timeline (2019-2020)									
		CLFLWD	Grants	BWS	Other		April	May	June	July	August	September	October	November	December	January
		\$ 4,000	\$ -	\$ (3,400)	\$ (2,956)	\$ (2,356)										
Curly-Leaf Pondweed	Work Task	CLFLWD	Grants	BWS	Other	Total Expense										
	Surveys-Report			\$ (3,400)		\$ (3,400)	BWS								BWS	
	Permitting/Public Notice	\$ 4,000				\$ -	WD									
	Management		\$ 1,391		\$ (2,956)	\$ (2,956)		Lake Mgmt Inc.								
	Total	\$ 4,000		\$ (3,400)	\$ (2,956)	\$ (6,356)										
Aeration System	Work Task	CLFLWD*	Grants	BWS	Other	Total Expense										
	Permitting					\$ -					WD					
	Setup - Public Notice					\$ -								WD		
	Operation/Inspections - Electricity					\$ -		WD							WD	
	Total	\$ -	\$ -	\$ -	\$ -	\$ -										
2020 General Program Management							WD/EOR									

Figures in italics are cost estimates/haven't been invoiced yet

\*Aeration system dollars removed because not under AIS Program in budget (under 3010 - Operations and Maintenance)

2019 Work	Status Summary
Aeration system	Deactivated on 4/9, signs collected.
Curly-leaf pondweed	Lake Management Inc. treated 7.81 acres of CLP with Aquathol K on May 20th. Blue Water Science conducted an assessment on June 18th and found there was a total lake control of CLP this season

2020 Work	Status Summary
Aeration system	Activated on January 2, 2020 and will operate until ice melt.
Curly-leaf pondweed	Blue Water Science will conduct a point intercept macrophyte survey to determine treatment locations for CLP.

Moody Lake Water Quality Goals & Measured Averages					
	2020 Goal	2030 Goal	2040 Goal	5-Year Avg (2015-2019)	Long-Term Trend
Water quality rating at or above	C	C	C	D-	N/A
Mean summer phosphorus concentration below (µg/L)	60	40	40	93	Significantly Improving (-57%) since 2005
Mean summer secchi depth at or above (ft)	3.3	4.6	4.6	2.2	Improving since 2005

- Improving or declining trends means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, but NOT in a statistically significant way.
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- A scientific trend analysis of District lake water quality is available in the District's Draft 2019 Water Monitoring Report available at [www.cflwd.org/data.php](http://www.cflwd.org/data.php).

DNR Lake Classification: Natural Environment



# Bone Lake

## Management Narrative

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**Curly-leaf pondweed (CLP):** Blue Water Science will perform a delineation survey of curly-leaf pondweed in Bone Lake shortly after the ice has melted from the lake. Following the delineation survey, the need for CLP treatment will be assessed. For reference, past years' CLP treatments are as follows – 2019: 3.88 acres, 2018: hand pulling only, 2017: treated 3.89 acres, 2016: no treatment, 2015: treated 2.45 acres. Blue Water Science plans to perform a delineation survey after spring ice-off.

**Eurasian watermilfoil (EWM):** As was the case in 2019, the District's 2020 budget does not contain any funding for Eurasian watermilfoil treatment. The Bone Lake Association (BLA) received grant monies from the Minnesota DNR and Washington County for EWM management. District staff has offer treatment advice and recommendations, in addition to, hiring Blue Water Science to conduct delineation and assessment surveys. In 2019, 2018, and 2017, the District did not treat any EWM on Bone Lake. In 2016, the District treated 0.69 acres of EWM.

**Fish barriers:** Since October 28, 2019, the Bone Lake fish barriers have been completely opened in anticipation of spring snow runoff. The barriers will start to be actively managed once the surface water temperature of Bone Lake is 55 degrees F or higher and the lake level is less than 908.6 feet. The latest stop log information can be found using this link: [Bone Lake Fish Barrier Operations Log](#).

**Rough fish management:** The 2020 budget does not contain any funding for rough fish management on Bone Lake. Observations of staff and lake homeowners have indicated that the carp population appears to be declining since the installation of the inlet and outlet fish barriers. Staff has been in communication with the DNR East Metro Fisheries Supervisor in order to coordinate fish survey scheduling and efforts. The DNR typically performs fish surveys on a 5-6 year rotation (except for Forest Lake which is on a 2-year rotation). The upcoming survey schedule for Bone Lake is as follows: June 2021 – gill net only survey, June 2024 – standard survey, June 2027 – gill net only survey. Surveys are performed more frequently on Bone Lake than many other District lakes since the DNR stocks Bone Lake with walleye.

**Zebra mussels:** Since the initial zebra mussel discovery on May 28, 2019, no more zebra mussels have been observed in Bone Lake. Periodic lake surveys began following the June 17<sup>th</sup>- 26<sup>th</sup> 2019 eradication attempt and will continue throughout the open water season in 2020.

**Water Hyacinth:** Water hyacinth was discovered in Bone Lake on July 30, 2019. District staff performed several surveys and removal events with help from property owners and the Washington Conservation District. Surveys for the species will continue in 2020, but District staff is confident Minnesota's winter weather will eradicate any water hyacinth that remained in the lake from 2019.

**Watercraft inspections:** An estimated total of approximately \$10,500 will be available from the CLFLWD budget and project partners to support the 2020 watercraft inspection program on Bone Lake. This would support around 500 hours of inspections. In 2019, 575 inspection hours and 689 inspection surveys were completed. Inspector shifts will prioritize weekend and holiday hours to ensure that program funds are being spent efficiently. The inspection program will run from mid-May to mid-October.

**Non-native Phragmites:** A population of non-native phragmites was identified near the intersection of 235<sup>th</sup> Street North and Meadowbrook Avenue North. On October 4, 2019 the District treated 900 sq. feet. In 2020, the District anticipates treating the same area in late-September.

# Bone Lake AIS Prevention and Management



		Revenues		Expenses		Annual Balance	Timeline (2019-2020)											
		CLFLWD	Grants/Other	BWS	Other			April	May	June	July	August	Sept	Oct	Nov	December	January	February
		\$ 11,000	\$ 6,194	\$ (3,900)	\$ (12,509)	\$ 785												
Curly-Leaf Pondweed (CLP)	Work Task	CLFLWD	Grants/Other	BWS*	Other	Total Expense												
	Surveys-Report			\$ (1,900)		\$ (1,900)	BWS											
	Permitting/Public Notice	\$ 3,100				\$ -	WD											
	Management		\$ 1,194		\$ (1,509)	\$ (1,509)	Lake Mgmt Inc.											
	<b>Total</b>	\$ 3,100	\$ 1,194	\$ (1,900)	\$ (1,509)	\$ (3,409)												
Eurasian Watermilfoil (EWM)	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Surveys-Report	\$ 1,900		\$ (2,000)		\$ (2,000)	BWS											
	Coordination/Mgmt Assistance					\$ -	WD											
	<b>Total</b>	\$ 1,900	\$ -	\$ (2,000)	\$ -	\$ (2,000)												
Rough Fish Management	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Spawning Observations	\$ -				\$ -	WD											
	Harvest					\$ -	TBD											
	<b>Total</b>	\$ -	\$ -	\$ -	\$ -	\$ -												
Zebra Mussels (ZM)	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Samplers	\$ -				\$ -	WD											
	<b>Total</b>	\$ -	\$ -	\$ -	\$ -	\$ -												
Watercraft Inspections*	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Inspection Hours	\$ 6,000	\$ 5,000		\$ (11,000)	\$ (11,000)	WD/Chisago Co.											
	<b>Total</b>	\$ 6,000	\$ 5,000	\$ -	\$ (11,000)	\$ (11,000)												
<b>2020 General Program Management</b>							WD/EOR											

Figures in italics are cost estimates/haven't been invoiced yet

\*Planned watercraft inspection funding sources include:

- CLFLWD levy: \$6,000 (1 access)
- Washington County AIS Prevention grant rec. award: \$1,000 (same as last year)
- Bone Lake Association: \$2,500
- City of Scandia: \$1,000
- Estimated Scandia Lions Club: \$500

2019 Work	Status Summary
CLP surveys and management	LMI treated 3.88 acres of CLP on May 20th. There was poor CLP control in 2019.
EWM surveys and coordination	BWS conducted a delineation on June 6th. No treatments were conducted in 2019.
Zebra mussel early detection	Zebra mussels were first discovered on May 28th. A treatment was conducted from June 17th to June 26th. Lake surveys were conducted periodically since the treatment. To date, no more zebra mussels have been discovered in the lake.
Carp management	Continued operation of fish barrier per O&M
Watercraft inspections	575 inspection hours & 689 inspections

Bone Lake Water Quality Goals & Measured Averages	2020 Goal	2030 Goal	2040 Goal	5-Year Avg (2015-2019)	Long-Term Trend
Water quality rating at or above	C	C	B	B-	N/A
Mean summer phosphorus concentration below (µg/L)	40	40	30	31	Significantly Improving (-41%) since 2010
Mean summer secchi depth at or above (ft)	4	4	7	5.1	Improving since 1984

- Goals shown in green are currently being met according to their latest 5-year average
- Improving or declining trends means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, but NOT in a statistically significant way.
- Significantly improving or significantly declining means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, AND in a statistically significant way. The percent change in the parameter over the entire time period is reported for statistically significant trends.
- A scientific trend analysis of District lake water quality is available in the District's Draft 2019 Water Monitoring Report available at [www.clflwd.org/data.php](http://www.clflwd.org/data.php).

**DNR Lake Classification:** Recreational Development

2020 Work	Status Summary
CLP surveys and management	The District has approximately \$3,100 budgeted for CLP surveys and treatment.
EWM surveys and coordination	BWS will conduct delineation and assessment surveys for EWM in 2020.
Zebra mussel early detection	Periodic lake surveys will be performed throughout the open water season.
Common carp management	Continued operation of fish barrier per O&M.
Watercraft inspections	There are approximately 500 inspection hours budgeted for Bone Lake in 2020.



# Little Comfort Lake

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## Management Narrative

**Curly-leaf pondweed (CLP):** The 2020 budget does not contain any funding for curly-leaf pondweed management in Little Comfort Lake. Staff anticipate conducting a simple meandering survey to assess CLP's growth within the lake. Dependent upon abundance, location, and staff availability, a hand pulling event could take place this Spring.

**Zebra mussels:** Staff continues to seek a volunteer who will monitor a sampler plate on their dock. Staff have not heard any reports of zebra mussels in Little Comfort Lake yet, although it is listed as infested by the DNR due to its connectivity with Comfort Lake.

# Little Comfort Lake AIS Prevention and Management



		Revenues		Expenses		Annual Balance	Timeline (2019-2020)									
		CLFLWD	Grants	BWS	Other		April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Jan.
		\$ -	\$ -	\$ -	\$ -	\$ -										
Curly-Leaf Pondweed (CLP)	Work Task	CLFLWD	Grants	BWS	Other	Total Expense										
	Survey					\$ -		WD								
	Summary					\$ -		WD								
	Total	\$ -	\$ -	\$ -	\$ -	\$ -										
Zebra Mussels (ZM)	Work Task	CLFLWD	Grants	BWS	Other	Total Expense										
	Samplers					\$ -		WD								
	Total	\$ -	\$ -	\$ -	\$ -	\$ -										
2020 General Program Management								WD/EOR								

2019 Work	Status Summary
CLP survey	No CLP surveys occurred on the lake this season and there are no plans to do a treatment.
Zebra mussel early detection	No sampler plate in 2019. Could not find volunteer.

	2020 Goal	2030 Goal	2040 Goal	5-Year Avg (2015-2019)	Long-Term Trend
Water quality rating at or above	C	C	B	C	N/A
Mean summer phosphorus concentration below (µg/L)	40	40	30	61	Declining since 2010
Mean summer secchi depth at or above (ft)	5	5	7	4.1	Significantly Declining (-24%) since 2010

2020 Work	Status Summary
CLP survey	As time allows, staff will survey the lake and potentially hand pull any observed CLP.
Zebra mussel early detection	Continue to try to find a new volunteer to monitor a zebra mussel sampler plate on their dock in order to monitor zm spread from Big Comfort Lake

- Goals shown in green are currently being met according to their latest 5-year average
- Improving or declining trends means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, but NOT in a statistically significant way.
- Significantly improving or significantly declining means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, AND in a statistically significant way. The percent change in the parameter over the entire time period is reported for statistically significant trends.
- A scientific trend analysis of District lake water quality is available in the District's Draft 2019 Water Monitoring Report available at [www.clflwd.org/data.php](http://www.clflwd.org/data.php).

**DNR Lake Classification:** General Development



# Shields Lake

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## Management Narrative

**Fish barrier:** The mechanical fish barrier was installed in August 2019. District staff will continue to operate the electric fish barrier as is, pursuant to Administrator discretion in 2020.

**Curly-leaf pondweed (CLP):** The 2020 budget contains \$4,000 for Shields Lake AIS Management. Blue Water Science (BWS) will conduct a CLP delineation in early spring to determine potential treatment areas. Following treatment, BWS will also conduct a point intercept macrophyte survey. For reference, 3.1 acres of CLP was treated in 2019.

**Rough Fish Management:** A common carp removal was attempted in the Fall of 2019, resulting in lower than expected removal numbers. According to WSB's "Shields Lake: 2019 Carp Removal Project Report" there are still between 364 and 630 individual carp that need to be removed from the lake in order to reach management goals. District staff is working with WSB to develop new carp removal strategies for 2020.

**Zebra mussels:** Staff continues to seek a volunteer who will monitor a sampler plate on their dock. Staff have not received any reports of zebra mussels in Shields Lake to date.

# Shields Lake AIS Prevention and Management



		Revenues		Expenses		Annual Balance	Timeline (2019-2020)										
		CLFLWD	Grants	BWS	Other		April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
		\$ 4,000	\$ 1,155	\$ (3,300)	\$ (1,373)	\$ 482											
<b>Fish Barrier*</b>	<b>Work Task</b>	<b>CLFLWD</b>	<b>Grants</b>	<b>Staff/EOR</b>	<b>Other</b>	<b>Total Expense</b>											
	Retrofit Project					\$ -											
	Planning/Inspections/Oversight					\$ -											
	Total	\$ -	\$ -	\$ -	\$ -	\$ -											
<b>Zebra Mussels</b>	<b>Work Task</b>	<b>CLFLWD</b>	<b>Grants</b>	<b>BWS</b>	<b>Other</b>	<b>Total Expense</b>											
	Samplers					\$ -											
	Total	\$ -	\$ -	\$ -	\$ -	\$ -											
<b>Curly-Leaf Pondweed</b>	<b>Work Task</b>	<b>CLFLWD</b>	<b>Grants</b>	<b>BWS</b>	<b>Other</b>	<b>Total Expense</b>											
	Surveys-Report			\$ (3,300)		\$ (3,300)											
	Permitting/Public Notice	\$ 4,000				\$ -											
	Management		\$ 1,155		\$ (1,373)	\$ (1,373)											
	Total	\$ 4,000	\$ 1,155	\$ (3,300)	\$ (1,373)	\$ (4,673)											
<b>Rough Fish Management</b>	<b>Work Task</b>	<b>CLFLWD</b>	<b>Grants</b>	<b>BWS</b>	<b>Other</b>	<b>Total Expense</b>											
	Survey					\$ -											
	Total	\$ -	\$ -	\$ -	\$ -	\$ -											
<b>2020 General Program Management</b>																	

Figures in italics are cost estimates/haven't been invoiced yet

2019 Work	Status Summary
Zebra mussel early detection	No sampler plate in 2019. Could not find volunteers
Fish barrier upgrades/maint.	Construction completed in August 2019
Curly-leaf pondweed planning	Lake Management Inc. completed CLP treatment on May 20th. Blue Water Science conducted a treatment assessment on June 18th and found there was total lake control of CLP.
Rough fish management	WSB, District staff, and the local commercial fisherman attempted several carp removals on Shields Lake and only removed 71 carp. WSB estimates there to be between 505 and 873 carp left in the lake.

Shields Lake Water Quality Goals & Measured Averages					
	2020 Goal	2030 Goal	2040 Goal	5-Year Avg (2015-2019)	Long-Term Trend
Water quality rating at or above	D	C	C	F+	N/A
Mean summer phosphorus concentration below (µg/L)	100	60	60	208	Improving since 1993
Mean summer secchi depth at or above (ft)	4.26	4.26	4.26	2.3	Significantly Declining (-63%) since 1993

- Improving or declining trends means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, but NOT in a statistically significant way.
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- A scientific trend analysis of District lake water quality is available in the District's Draft 2019 Water Monitoring Report available at [www.cflwd.org/data.php](http://www.cflwd.org/data.php).

**DNR Lake Classification:** Natural Environment

2020 Work	Status Summary
Zebra mussel early detection	Seek volunteers to hang a sampler plate from their dock for the 2020 season.
Fish barrier upgrades/m	Operate per O&M manual.
Curly-leaf pondweed	The District's budget contains \$4,000 for CLP surveys and treatments on Shield Lake in 2020.
Rough fish management	District staff is working with WSB to develop new removal strategies for Shields Lake. If removal were to occur in 2020, it would likely happen in springtime during the carp spawn.



# Lake Keewahtin

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## Management Narrative

**AIS early detection survey:** District staff plan to perform an early detection survey at Lake Keewahtin this summer. During this survey, staff will look for new invasive species such as Eurasian watermilfoil, flowering rush, or starry stonewort and monitor the distribution of existing invasive species, purple loosestrife and curly-leaf pondweed.

**Purple loosestrife:** Locations of purple loosestrife will be documented in the 2020 AIS early detection survey. Biocontrol insects may be collected and released to supplement existing populations if deemed necessary during the early detection survey.

**Zebra mussels:** A zebra mussel sampling plate will be deployed at one private dock on Lake Keewahtin in 2020. No zebra mussels have been detected in Lake Keewahtin to date.

**Curly-leaf pondweed (CLP):** District staff will conduct a simple meandering survey to map the distribution and abundance of CLP in the lake. Dependent upon abundance, location, and staff availability, a hand pulling event could take place this spring.

# Lake Keewahtin AIS Prevention and Management



		Revenues		Expenses		Annual Balance	Timeline (2019-2020)											
		CLFLWD	Grants	BWS	Other		April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
		\$ -	\$ -	\$ -	\$ -	\$ -												
Purple Loosestrife	Work Task	CLFLWD	Grants	BWS	Other	Total Expense												
	Check-Up Assessment					\$ -				WD								
	Biocontrol Collection and Release					\$ -				WD								
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
AIS Detection Survey	Work Task	CLFLWD	Grants	BWS	Other	Total Expense												
	Survey									WD/BWS								
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
Zebra Mussels	Work Task	CLFLWD	Grants	BWS	Other	Total Expense												
	Samplers			\$ -		\$ -				WD								
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
Curly-leaf Pondweed	Work Task	CLFLWD	Grants	BWS	Other	Total Expense												
	Hand pulling					\$ -				TBD								
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
2020 General Program Management										WD/EOR								

2019 Work	Status Summary
AIS early detection survey	Staff not able to survey in 2019
Purple loosestrife check-up	Staff not able to survey in 2019
Zebra mussel early detection	Volunteer observed no ZM in 2019
Curly-leaf pondweed pulling	Plan to perform in 2020

Lake Keewahtin Water Quality Goals & Measured Averages					
	2020 Goal	2030 Goal	2040 Goal	5-Year Avg (2015-2019)	Long-Term Trend
Water quality rating at or above	A	A	A	A	N/A
Mean summer phosphorus concentration below (µg/L)	20	20	20	16	Improving since 1979
Mean summer secchi depth at or above (ft)	10	10	10	13.8	Significantly Improving (+29%) since 1974

- Goals shown in green are currently being met according to their latest 5-year average
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- Significantly improving or significantly declining means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, AND in a statistically significant way. The percent change in the parameter over the entire time period is reported for statistically significant trends.
- A scientific trend analysis of District lake water quality is available in the District's Draft 2019 Water Monitoring Report available at [www.cflwd.org/data.php](http://www.cflwd.org/data.php).

2020 Work	Status Summary
AIS early detection survey	Staff anticipate conducting a spring survey
Purple loosestrife check-up	Spring survey
Zebra mussel early detection	Continue to work with same volunteer.
Curly-leaf pondweed pulling	Perform as capacity allows.

**DNR Lake Classification:** Recreational Development



# Forest Lake

## Management Narrative

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**Curly-leaf pondweed (CLP):** Blue Water Science will perform a delineation survey of curly-leaf pondweed in Forest Lake shortly after the ice has melted from the lake. For reference, past years' CLP treatments are as follows – 2019: 99.12 acres, 2018: 16.6 acres, 2017: 169 acres, 2016: 114 acres, 2015: 88 acres.

Blue Water Science performed calculations in 2017 which showed that whole lake control of curly-leaf pondweed can be achieved when 131 acres are treated. This means that the concentration of chemical in the water throughout the entire lake is high enough to control CLP if 131 acres are treated. For this reason, staff recommends that the CLFLWD does not treat more than 131 acres of CLP in years going forward unless extenuating circumstances present themselves.

**Eurasian watermilfoil (EWM):** As was the case in 2019, the District's 2020 budget does not contain any funding for Eurasian watermilfoil treatment. The District will still hire Blue Water Science to conduct delineation and assessment surveys. The Forest Lake Lake Association obtained grants from Washington County and the Minnesota DNR to treat EWM in 2020. In 2017, the District treated a total of 33.4 acres of EWM. In 2016, the District treated a total of 13.9 acres of EWM.

**Flowering rush (FR):** The flowering rush management program that has been implemented by the CLFLWD since 2014 has been successful and will continue in 2020. The details of the program have gone through a few iterations and improvements year after year. The proposed program for 2020 is roughly as follows: pre-treatment delineation survey (Late June), spot treatment #1 (July), follow-up survey (Early August), spot treatment #2 (Late August), spot treatment #3 (Optional- September), manual flower removal #1 (August), manual flower removal #2 if necessary (August/September), final effectiveness survey (September). Overall, this year's plan will entail more frequent, smaller herbicide spot treatments as opposed to two rounds of large-scale herbicide treatments that were the case in previous years. With FR density decreasing drastically over the years, it is possible to reduce the amount of herbicides being used this year, while still maintaining control.

**Zebra mussels:** Zebra mussels have now been detected throughout all of 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> Lakes. The sampling plate program will continue in 2020 in order to provide information about zebra mussel population densities post-colonization.

**Watercraft inspections:** An estimated total of \$51,000 will be available from the CLFLWD budget and project partners to support the 2020 watercraft inspection program on Forest Lake. This would support approximately 2,318 hours of inspections. In 2019, 2,172 paid inspection hours and 4,440 inspection surveys were completed (excludes DNR inspections). Inspector shifts will prioritize weekend and holiday hours. The inspection program will run from mid-May to mid-October.

**Plant Harvester:** Staff have worked with the City and the Forest Lake Lake Association to develop a harvesting map that avoids all Eurasian watermilfoil and flowering rush beds. Harvesting typically occurs in mid-late summer after the curly-leaf pondweed has died back, regardless, curly-leaf pondweed beds are avoided as much as possible.

# Forest Lake AIS Prevention and Management



		Revenues		Expenses		Annual Balance	Timeline (2019-2020)											
		CLFLWD	Grants/Other	BWS	Other		April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
		\$ 118,000	\$ 81,123	\$ (12,200)	\$ (125,550)	\$ 61,373												
Curly-Leaf Pondweed	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Delin-Report			\$ (2,900)		\$ (2,900)	BWS											
	Permitting/Public Notice	\$ 48,400				\$ -	WD											
	Management		\$ 39,143		\$ (69,179)	\$ (69,179)	Lake Mgmt Inc.											
	Total	\$ 48,400	\$ 39,143	\$ (2,900)	\$ (69,179)	\$ (72,079)												
Flowering Rush	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Delin-Report			\$ (6,100)		\$ (6,100)	BWS											
	Permit/Outreach/Pub. Notice	\$ 48,400	\$ 8,980		\$ (900)	\$ (900)	WD											
	Management				\$ (4,471)	\$ (4,471)	PLM											
	Total	\$ 48,400	\$ 8,980	\$ (6,100)	\$ (5,371)	\$ (11,471)												
Eurasian Watermilfoil	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Surveys-Report	\$ 3,200		\$ (3,200)		\$ (3,200)	BWS											
	Coordination/Mgmt Assistance					\$ -	WD											
	Total	\$ 3,200	\$ -	\$ (3,200)	\$ -	\$ (3,200)												
Zebra Mussels	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Samplers					\$ -	WD											
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
Watercraft Inspections*	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Inspection Hours	\$ 18,000	\$ 33,000	\$ -	\$ (51,000)	\$ (51,000)	WD/Chisago Co.											
	Total	\$ 18,000	\$ 33,000	\$ -	\$ (51,000)	\$ (51,000)												
Plant Harvester	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	DNR Aquatic Plant Mgmt Permitting					\$ -	WD/FLLA											
	Harvester Operation					\$ -	City of Forest Lake											
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
Macrophyte Survey	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense												
	Point-Intercept Survey					\$ -												
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
<b>2020 General Program Management</b>							<b>WD/EOR</b>											

Figures in italics are cost estimates/haven't been invoiced yet

\*Watercraft inspection funding sources include:

CLFLWD Levy: \$18,000 (3 accesses)

Washington County AIS Prevention grant rec. award: \$15,500 (same as last year)

Forest Lake Lake Association: \$2,500

City of Forest Lake: \$15,000 (same as last year)

Forest Lake Water Quality Goals & Measured Averages								
	2020 Goal	2030 Goal	2040 Goal	5-Year Avg (2015-2019)	Long-Term Trend			
Water quality rating at or above	C	C	B	C+	Forest- West	Forest- Middle	Forest- East	
Mean summer phosphorus concentration below (µg/L)	37	37	30	36	Sig. Improving (-47%) since 2010	Declining since 2010	Declining since 2010	
Mean summer secchi depth at or above (ft)	5	5	7	6.5	Sig. Improving (+74%) since 2010	Sig. Improving (+54%) since 2010	Sig. Improving (+57%) since 2010	

- Goals shown in green are currently being met according to their latest 5-year average
- Improving or declining trends means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, but NOT in a statistically significant way.
- Significantly improving or significantly declining means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, AND in a statistically significant way. The percent change in the parameter over the entire time period is reported for statistically significant trends.
- A scientific trend analysis of District lake water quality is available in the District's Draft 2019 Water Monitoring Report available at [www.clflwd.org/data.php](http://www.clflwd.org/data.php).

**DNR Lake Classification:** General Development

2019 Work	Status Summary
CLP surveys & management	Treated 99.12 acres. BWS found good control in treatment areas.
EWM surveys & coord.	BWS delienated 49.34 acres of EWM. FLLA contracted Clarke Aquatic Services for the treatment. EWM control
FR surveys & management	Only 0.06 acres of flowering rush remained at the end of the season following two spot treatments and a seed
ZM population monitoring	ZM discovered in 2015, densities increasing over time. Staff worked with two volunteers in 2019 to monitor
Watercraft inspections	The District achieved 2776 hours worth of watercraft inspections on Forest Lake this season resulting in 5,496

2020 Work	Status Summary
CLP surveys & management	Shortly after ice-out, Blue Water Science will conduct a delienation to locate potential CLP treatment areas. A treatment is anticipated to take place in late-May, followed by an assessment survey.
EWM surveys & coord.	The 2020 budget does not include funds for an EWM treatment. BWS will still conduct a delienation and assessment survey.
FR surveys & management	A combination of spot treatments and seed head removal will be utilized to manage flowering rush on Forest Lake in 2020.
ZM population monitoring	Continue working with volunteers to monitor population
Watercraft inspections	The 2020 budget has approximately 2,318 inspection hours funded for Forest Lake.
Purple Loosetrife	If time allows, District Staff will survey the lake.



# Comfort Lake

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## Management Narrative

**Curly-leaf pondweed (CLP):** Blue Water Science will perform a delineation survey of curly-leaf pondweed in Comfort Lake shortly after the ice has melted from the lake. For reference, CLP hasn't been observed in high enough densities to warrant treatment since 2015 when the District treated 1 acre. Feasibility of District staff hand-pulling CLP will be assessed following BWS's surveys.

**Eurasian watermilfoil (EWM):** As was the case in 2019, the 2020 budget does not contain any funding for Eurasian watermilfoil treatment. The District will still hire Blue Water Science to conduct delineation and assessment surveys. In 2017, the District treated a total of 3.2 acres of EWM in Comfort Lake. In 2016, the District treated a total of 7.5 acres of EWM.

**Zebra mussels:** Zebra mussels were discovered in Comfort Lake in 2017. The sampling plate program will continue in 2020 in order to provide information about zebra mussel population densities post-colonization.

**Watercraft inspections:** An estimated total of \$11,500 will be available from the CLFLWD budget and project partners to support the 2020 watercraft inspection program on Comfort Lake. This would support about 520 hours of inspections. In 2019, 571 inspection hours and 884 inspection surveys were completed. Inspector shifts will prioritize weekend and holiday hours to ensure that program funds are being spent efficiently. The inspection program will run from mid-May to mid-October.

# Comfort Lake AIS Prevention and Management



		Revenues		Expenses		Annual Balance	Timeline (2019-2020)									
		CLFLWD	Grants/Other	BWS	Other		April	May	June	July	August	September	October	November	December	January
		\$ 11,000	\$ 5,500	\$ (3,200)	\$ (11,500)	\$ 1,800										
<b>Curly-Leaf Pondweed</b>	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense										
	Surveys-Report			\$ (1,400)		\$ (1,400)	BWS			BWS						
	Permitting/Public Notice Management (N/A)	\$ 2,500				\$ -	WD									
	Total	\$ 2,500	\$ -	\$ (1,400)	\$ -	\$ (1,400)										
<b>Eurasian Watermilfoil</b>	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense										
	Surveys-Report	\$ 2,500		\$ (1,800)		\$ (1,800)	BWS			BWS						
	Coordination/Mgmt Assistance					\$ -	WD									
	Total	\$ 2,500	\$ -	\$ (1,800)	\$ -	\$ (1,800)										
<b>Zebra Mussels</b>	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense										
	Samplers					\$ -	WD									
	Total	\$ -	\$ -	\$ -	\$ -	\$ -										
<b>Watercraft Inspections*</b>	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense										
	Inspection Hours	\$ 6,000	\$ 5,500		\$ (11,500)	\$ (11,500)	WD/Chisago Co.									
	Total	\$ 6,000	\$ 5,500	\$ -	\$ (11,500)	\$ (11,500)										
<b>Macrophyte Survey</b>	Work Task	CLFLWD	Grants/Other	BWS	Other	Total Expense										
	Point-Intercept Survey					\$ -										
	Total	\$ -	\$ -	\$ -	\$ -	\$ -										
<b>2020 General Program Management</b>							WD/EOR									

2020 General Program Management

*Figures in italics are cost estimates/haven't been invoiced yet*

\*Planned watercraft inspection funding sources include:

CLFLWD levy: \$6,000 (1 access)

Chisago County AIS Prevention Funds: \$5,000

Comfort Lake Association: \$500

Wyoming: TBD

2019 Work	Status Summary
CLP surveys & management	Blue Water Science delineated CLP in the lake and determined growth was not abundant enough for treatment.
EWM surveys & coordination	BWS conducted delineation and assessment surveys. No EWM treatments in 2019.
Zebra mussel monitoring	ZM discovered in 2017, densities increasing over time. One sampler plate volunteer in 2019.
Watercraft inspections	The District achieved 566 hours worth of watercraft inspections, resulting in 884 surveys.

Comfort Lake Water Quality Goals & Measured Averages					
	2020 Goal	2030 Goal	2040 Goal	5-Year Avg (2015-2019)	Long-Term Trend
Water quality rating at or above	C	C	B	B-	N/A
Mean summer phosphorus concentration below (µg/L)	40	40	30	31	Improving since 1994
Mean summer secchi depth at or above (ft)	5	5	7	6.0	Significantly Improving (+74%) since 2010

- Goals shown in green are currently being met according to their latest 5-year average
- Improving or declining trends means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, but NOT in a statistically significant way.
- Significantly improving or significantly declining means that the water quality parameter is consistently increasing or decreasing from year to year over the time period, AND in a statistically significant way. The percent change in the parameter over the entire time period is reported for statistically significant trends.
- A scientific trend analysis of District lake water quality is available in the District's Draft 2019 Water Monitoring Report available at [www.clflwd.org/data.php](http://www.clflwd.org/data.php).

**DNR Lake Classification:** General Development

2020 Work	Status Summary
CLP surveys & management	The 2020 budget does not have funds for CLP treatment. BWS will still conduct delineation and assessment surveys.
EWM surveys & coordination	No EWM treatments budgeted for the lake in 2020. BWS will still conduct delineation and assessment surveys.
Zebra mussel monitoring	Continue to work with volunteers to monitor sampler plates.
Watercraft inspections	The 2020 budget has 523 survey hours funded for Comfort Lake in 2020.