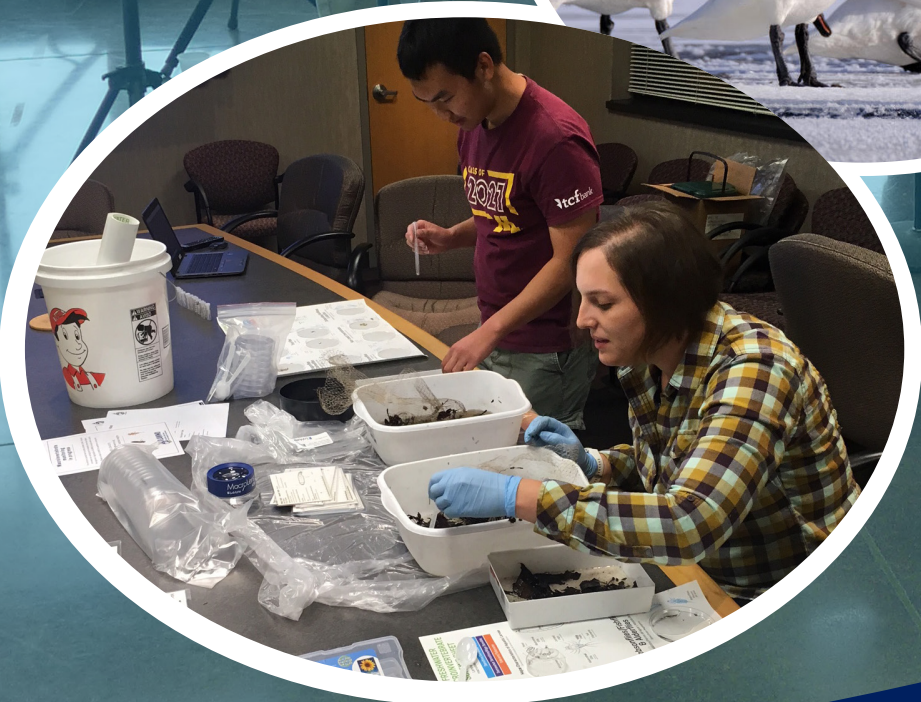




EST 1983

# VLAWMO

Vadnais Lake Area  
Water Management Organization



# 2019

# ANNUAL REPORT



Vadnais Lake Area Water Management Organization (VLAWMO)  
800 East County Road E  
Vadnais Heights, Minnesota 55127

Website: [www.vlawmo.org](http://www.vlawmo.org)  
Email: [office@vlawmo.org](mailto:office@vlawmo.org)  
Phone: (651) 204-6070  
Fax: (651) 204-6173

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**WHO WE ARE**  
The people who make VLAWMO

APPENDICES (AVAILABLE ONLINE AT VLAWMO.ORG)  
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## WHAT IS VLAWMO?

Introduction and background

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## Letter from the Administrator

Greetings!

2019 was a time of starting big projects and moving forward on others for the Vadnais Lake Area Water Management Organization (VLAWMO). This Annual Report will give you some highlights. We welcome your feedback on both the work and the Annual Report.

VLAWMO 2017-2026 Water Management Plan and the Joint Powers Agreement (JPA) were both amended to identify work on carp management on Pleasant and West Vadnais Lakes, the Lambert Lake project, and wetland efforts. The carp management project on Pleasant Lake kicked off with electroshocking and tagging the very large carp that live in Pleasant Lake. 2020 will see the antenna installed to monitor their movement, allowing an efficient harvesting effort. As carp stir lake sediments and uproot vegetation, reducing their number has had a positive effect in water quality in lakes. VLAWMO is working jointly with Ramsey Washington Metro Watershed District on West Vadnais Lake management. The project to adjust the outlet of the lake went through an environmental review process and will be proceeding in 2020. Next up will be addressing the very significant carp population in West Vadnais.

VLAWMO was able to secure a grant for the Lambert Lake restoration project and a zero interest loan to replace failing sheet pile in the pond. The restoration portion of the project includes rebuilding a section of the creek to what it might have looked like before it was ditched. Remote cameras captured some of the resident river otters enjoying the creek in Lambert Lake. They may like the new meanders even more than the straight ditch. The project includes biochar treatment cells designed to address the bacteria impairment and reduce phosphorus loads in the creek.

Birch Lake iron enhanced sand filter project moved forward in 2019 with installation anticipated in 2020. This filter project should address minimally treated stormwater before it enters Birch Lake. Partners, City of White Bear Lake, Ramsey County and the Birch Lake Improvement District on this project are again essential. Service learning students and VLAWMO volunteers helped with site preparation work done in 2019. The Whitaker Treatment wetlands, the wrapped up a 4-year effort.

The results are great! Water from Whitaker pond, in the headwaters of Lambert creek is pumped into the treatment wetlands where it interacts with various filter media. University of Minnesota students monitored the effect on select pathogens.

Check the monitoring report on the VLAWMO website for more information on this project. Whitaker treatment wetland was made possible through funding from the Legislative Citizens Commission for Minnesota Resources.

Partnerships were critical to the watershed work. Work on and around Goose Lake are another example of working with state and local agencies, the cities involved and very importantly the local residents. Cities and agencies are often providing funding and technical knowhow. Residents are staying engaged. Some are adopting their local stormdrains and keeping them clean, installing infiltration practices or native plantings and staying engaged in the dialogue on the management of the lake. VLAWMO applied for grant funds to treat the internal loading in Goose Lake. 2020 will see more collaboration at work.

This will be my last Annual Report letter. I am retiring in the spring of 2020. It has been 30 rewarding years with the Vadnais Lake Area Water Management Organization. With the help of many of you, we have gotten a lot done. I have been privileged to have a job that I really liked doing – almost every day. Working with some inspiring, intelligent, hard-working people who have enriched both my life and the work of the watershed. The capacity and impact of VLAWMO has grown. Thank you all for letting me be a part of that. The staff at the watershed, Brian, Tyler, Nick and Dawn are a great team to work with, passionate about water resources and effective. They have put up with me and my quirky management style. The Technical Commission and the Board are truly dedicated to the work and mission of the watershed. I know you will all carry on. I plan to stay tuned into what VLAWMO is working on. It's one of the better shows in town.

You will be introduced to the new administrator shortly. He is bringing a wealth of experience and energy to VLAWMO. Take care folks and be well.

-Stephanie McNamara, Administrator

## Background

The Vadnais Lake Area Water Management Organization (VLAWMO) was formed in 1983 to protect the Vadnais Lake watershed area in northern Ramsey County and a small portion of Anoka County. Our organization was formed through a Joint Powers Agreement (JPA) that was ratified by the 6 cities within VLAWMO boundaries to comply with the State of Minnesota Metropolitan Surface Water Management Act (Minnesota statute Chapters 103A – 103H). We are governed by a 6 member Board of Directors that is represented by an elected official from each of the communities. VLAWMO covers approximately 25 square miles and includes portions of Vadnais Heights, White Bear Township, White Bear Lake, Gem Lake, Lino Lakes, and all of North Oaks.

## OUR APPROACH

Managing a watershed area to protect our vital water resources has become the primary approach across the country. Since water flows across political boundaries, partnerships among local governments, regional, state and federal agencies are vital. Because Vadnais Lake is used as the drinking water reservoir for approximately 400,000 customers in the St. Paul area, VLAWMO frequently partners with the St. Paul Regional Water Service (SPRWS) on a variety of water quality monitoring and improvement projects.

## OUR CORE PRINCIPLES

To guide our efforts towards achieving our mission, VLAWMO shares responsibility with its member communities to:

- » Protect surface water quality
- » Protect groundwater quality and recharge areas
- » Provide public education to promote good stewardship of water resources
- » Protect and manage wetlands through the Wetland Conservation Act
- » Collaborate with other public and private organizations
- » Manage stormwater and control flooding through the use of best management practices
- » Require good erosion control practices, both during development and as a part of good stewardship



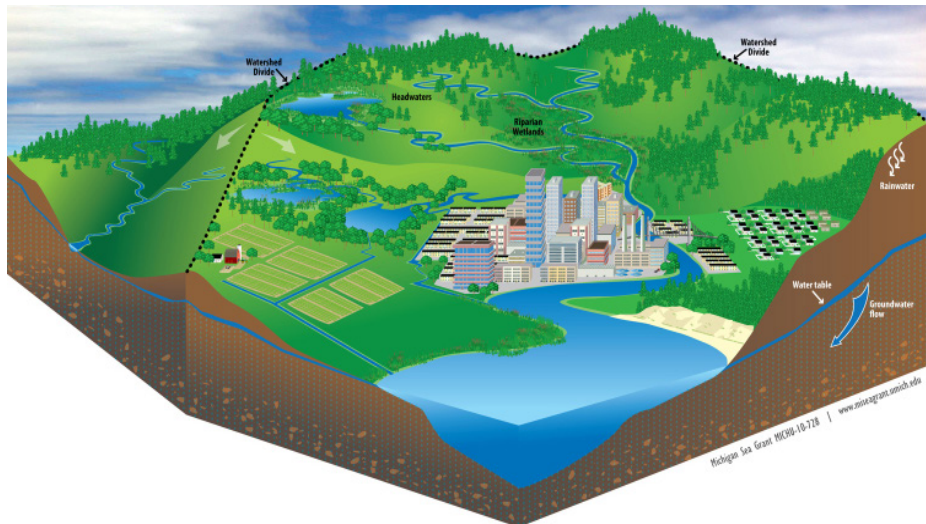
Stephanie McNamara, VLAWMO Administrator (Left)  
Jim Lindner, Board of Directors Chair (Center)  
Nick Voss, VLAWMO Education and Outreach (Right)

## Mission Statement

*Our mission at the Vadnais Lake Area Water Management Organization is to protect and enhance the water resources within the watershed.*

*Activities we work on include: water quality monitoring, education and outreach projects, wetland protection, and water quality enhancement projects.*





"How Watersheds Work" courtesy of Michigan Sea Grant (MICHU-10-728)



## What is a Watershed?

A watershed is all the land area that drains to a specific water resource, such as a lake or stream. Watersheds range in size from a few square miles to an entire continent. As rain and melting snow run downhill, they carry sediment and other materials into streams, lakes, and groundwater.

The land use activities within a watershed have a direct impact on the quality of the water. 96% of the land use within VLAWMO is urban with a small area of agricultural land in the northern end.

Watersheds provide water for drinking, irrigation, streams, and activities such as fishing, swimming, and boating. In addition, watersheds also provide food and shelter for wildlife.

### OUR GOALS

Accomplishing our mission requires a focus on common goals. The VLAWMO will pursue the following goals as a way of proceeding towards the mission.

- » Protect and improve surface water quality
- » Protect and enhance wetland resources
- » Protect and improve waters for wildlife habitat and recreation
- » Enhance public participation and stewardship
- » Make and enable informed decisions
- » Optimize public resources
- » Protect and improve groundwater quality and quantity
- » Analyze and use alternative funding sources
- » Improve communications
- » Prevent flooding

### WHAT IS A WMO?

A watershed management organization (WMO) is a local government agency charged with protecting water resources within its boundaries. All land within the metropolitan area must be within an organized watershed (State Statutes Chapters 103B & 103D). Watershed Districts are governed by County Commissioners while Water Management Organizations are governed on the municipal level.

### WHO PAYS FOR IT?

The Vadnais Lake Area Water Management Organization is funded by a stormwater utility fee. Property owners within the watershed are charged a fee to manage the stormwater that runs off their property. This public utility fee is determined by land use (eg. residential, commercial etc), and is included on Ramsey County property tax statements. The authority to charge and collect a stormwater utility fee is governed by Minnesota State Law.

## Water Resources in the Watershed

### LAKES

There are 16 lakes within VLAWMO. East Goose Lake, West Goose Lake and Birch Lake are located in White Bear Lake. Tamarack Lake, Fish Lake and Ox Lake are Located in White Bear Township. Gem Lake is located in Gem Lake. Amelia Lake is Located in Lino Lakes. Pleasant Lake, Charley Lake, Deep Lake, Black Lake, Wilkinson Lake and Gilfillan Lake are located in North Oaks. Sucker Lake, East and West Vadnais Lake are located in Vadnais Heights.

East Vadnais Lake is the drinking water reservoir for the City of Saint Paul. East Vadnais Lake is supplied with water pumped from the Mississippi River in Fridley that flows via underground aqueduct into Lake Charley in North Oaks. The water then flows east to Pleasant Lake, then south into Sucker Lake, and then into East Vadnais.

### LAMBERT CREEK

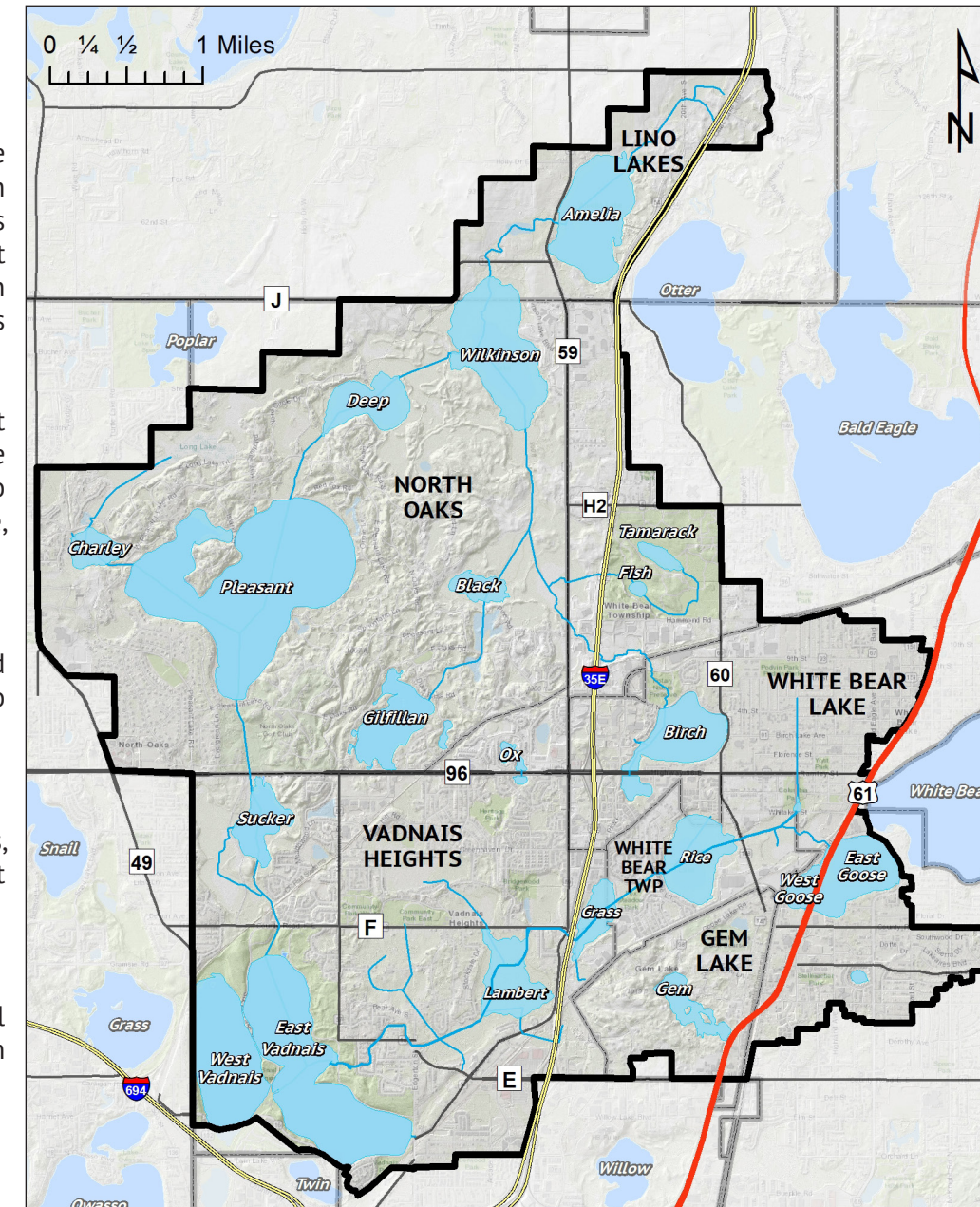
VLAWMO has jurisdiction over Lambert Creek, 4.5 miles of creek and wetland that runs from West Goose Lake and eventually empties into East Vadnais Lake.

### WETLANDS

There are over 500 wetlands within VLAWMO. Tamarack, Grass, Wilkinson, Rice, Lambert, and Sobota Slough are a few of the largest tracts of wetlands in the watershed.

### GROUNDWATER

Groundwater beneath the land surface of the Watershed flows to local lakes, the Mississippi River, and aquifers including the Prairie du Chien aquifer.





**THE YEAR IN REVIEW:**  
2016 activities, projects, and improvements

**IN THIS SECTION**

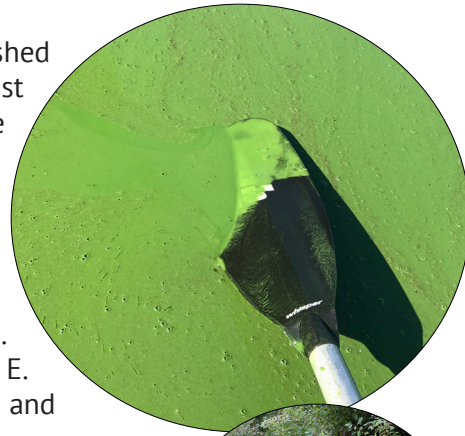
- » What problems does the watershed face?
- » Project Updates
- » In the Community
- » Education Programs
- » Cost Share Programs
- » Community Blue
- » City Engagement
- » Outreach
- » Volunteer Activities
- » Be part of the solution!
- » Water Monitoring
- » Lambert Creek Maintenance

*What problems does the watershed face?*

**IMPAIRED LAKES:**

Several lakes in the watershed are on the State Impaired List for high nutrients. These include Wilkinson, Goose, West Vadnais, and Gilfillan Lakes, as well as Lambert Creek. Lambert Creek has the additional impairment of high E. coli bacteria levels. Our studies show that the E. coli is coming from canine and avian sources.

Improving these waterbodies requires cooperation between cities, land owners, businesses, and the watershed organization. Each home, park, and property connects to a waterbody through stormwater runoff and is part of the puzzle.



**RISING CHLORIDE LEVELS:**

Road salt has a permanent impact on fresh water, with no economical way to remove it once it's in the water. When it washed into lakes and wetlands, the chlorides in salt interrupt the natural nutrient cycling that fish depend on.

While some water bodies flush salt downstream to another watershed, some lakes in VLAWMO are accumulating salt. All of VLAWMO's lakes are currently below state standards, but VLAWMO is monitoring this closely to track changes and guide management.



**SEDIMENTATION:**

Erosion and sedimentation is a natural process that can be accelerated with human activity. Bare soil, degraded slopes, and poorly protected drainage routes are common sources of excess sediment.

Small amounts of sediment accumulate in stormwater runoff to create a big issue for lakes and streams. Sediment clogs wetlands, culverts, and drainage ditches, suffocates aquatic plants that stabilize lake beds, and carries excess nutrients with it.



**DEGRADED WETLANDS**

Many shorelines on lakes and ponds contain turf grass up to the water's edge. This causes problems for water quality and degrades nature's ability to protect water resources.

Sometimes wetlands are altered or filled in illegally. Even small infringements on wetland boundaries contribute to a state-wide struggle in preventing the gradual loss and degradation of wetlands. Preventing this loss supports clean and secure surface and groundwater for the future.



*See page 17 for how to be part of the solution.*

*Major Updates*

**PRIORITY WATERSHED STATUS**

VLAWMO applied to become a priority small watershed through the Minnesota Pollution Control Agency (MPCA) in early 2019. After a robust interview process, VLAWMO was selected as a priority small watershed for 2021. VLAWMO is part of a cohort of 10 small watersheds that will work closely with the MPCA to identify and pursue with federal EPA funds. The evaluation procedure weighed VLAWMO's current program capacity, grant writing capacity, partnership network, current needs, and the importance of the water resources to the region. We're grateful to the many city, county, and local partners that supported us through the application and interview process.

The program will place VLAWMO and the rest of the cohort in a prioritized position to receive four, four-year grant awards, spanning over a total of 16 years. Specific projects are not outlined at this time. Projects will be identified with partnership from the MPCA and build upon previous projects over the life of the program. VLAWMO is thankful for its many partners that supported the application process, from interviewing to taking time to document and verify past projects.



Celebrating our new priority watershed status at Gem Lake

**LAMBERT CREEK REMOTE MONITORING**

To better understand and evaluate the needs of Lambert Creek, VLAWMO has installed four new monitoring stations at various locations along the creek. Each station is equipped with a sensor that is programmed to take readings of the water levels with open-source technology. Data from the sensor is sent to a cellular service account, which is then sent to the internet.

Stream flow, depth, and macroinvertebrate sampling data are publically available through the Monitor My Watershed web portal, linked from our website:

<http://www.vlawmo.org/waterbodies/lambert-creek/>



Remote sensors are positioned at Whitaker Pond, Oakmede, County Road F, and Kohler Road, fastened to existing creek flume structures. VLAWMO staff assembled the sensors with the help of EnvironDIY staff.





## In the Community

### COMMUNITY EVENTS

Staffing a booth at local events is a fun and valuable way to connect with community members. At events VLAWMO has the opportunity to share its work, provide brochures, give away prizes such as rainbarrels or tote bags, and answer questions for event goers. This year, community events served a dual purpose by also providing a place to conduct community surveys for the Education and Outreach Plan (p. 11).

VLAWMO booths were presented at the following 2019 events:

- » Bearly Open - White Bear Lake
- » Landscape Revival - Shoreview
- » North Oaks Plant Sale - North Oaks
- » Saint Paul Regional Water Service Treatment Facility Open House
- » Vadnais Heights Ice Cream Social - Berwood Park, Vadnais Heights
- » Marketfest Conservation and Environment Day - White Bear Lake
- » Children's Water Festival, MN State Fair grounds
- » Heritage Days - Vadnais Heights (Education materials rented by volunteers)
- » Whitaker Treatment Wetlands Tour - Columbia Park, White Bear Township
- » North Oaks Company Information Gathering - North Oaks
- » Aquatic Invasive Species (AIS) and You: Ramsey County Public Works
- » White Bear Lake Volunteer Fair, South Campus High School



MarketFest



Heritage Days



Bearly Open



Vadnais Heights Ice Cream Social

Heritage Days

North Oaks Plant Sale

## Education Programs

### SCHOOL PROGRAMS

VLAWMO staff provides water-focused activities for elementary, middle, and high schools in the watershed. If a school has a stormwater best management practice such as a raingarden on the grounds, this often becomes a living, outdoor classroom. Students learn how to maintain the raingarden, observe nature, work with topographic maps, and much more.



Left: Students pose with Drippy at Lakeaires Elementary.

Below: Students at Vadnais Heights Elementary help with raingarden maintenance after a stormwater lesson on the school grounds.



### PUBLIC WORKSHOPS

VLAWMO offers a raingarden workshop each Spring. Participants in the raingarden workshop learned about the watershed, stormwater runoff, how to build and maintain a raingarden, and got a head start with tools to select plants and get funding assistance.

The native plant workshop is the most popular workshop for the second year in a row. This workshop dug deep into plant identification, planting plans and strategies, and how perennial vegetation is a valuable asset for the watershed.



Right: Raingarden workshop participants learn about the watershed, how raingardens work, and calculated runoff on their own properties.



## Cost Share Programs

VLAWMO's Cost Share Program provides assistance to public and private landowners for implementing stormwater improvement projects. Qualifying projects support one or more of the following:

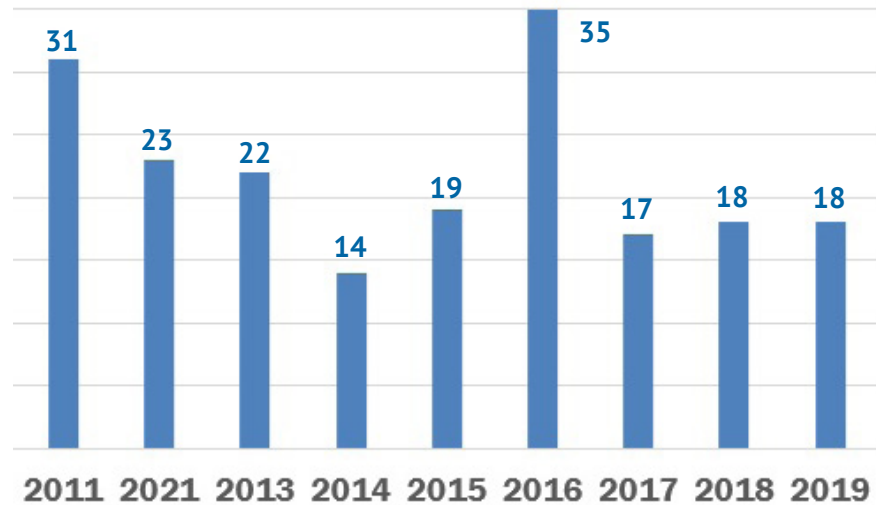
- » Prevention of flooding or mitigation of drought
- » Water quality improvement or increase in watershed storage capacity
- » Preservation, protection, and restoration of native plant and wildlife communities, especially along lakes, streams, and wetlands
- » Protection and preservation of groundwater quality and quantity

Funds vary by year and are granted on a first come first serve basis. Once the annual amount is depleted, applicants are advised to re-apply the following year.

There are 3 cost share programs:

- » Rainbarrel
- » Landscape Level 1
- » Landscape Level 2

### Cost Share Grants by Year: Landscape & Rainbarrel



### LANDSCAPE COST SHARE PROGRAMS

**Landscape Level 1:** Reimburses property owners 75% of the costs associated with implementing approved water quality improvement projects. The maximum reimbursement is \$2,000 for this program. Typical projects include raingardens, shoreline restoration, native habitat restoration, or pervious paver installation.

**Landscape Level 2:** Projects with a larger total cost (minimum total cost of \$5,000) and will reimburse 75% of the costs, up to \$20,000. The program was updated in 2015 to allow funding to be more available for applicants.

VLAWMO uses Minimal Impact Design Standards (MIDS) to measure the impact of landscape improvement projects. The impact of 2019's projects are estimated to improve water quality by:

- Reducing total phosphorus by **.797 lbs** per year.
- Reducing suspended solids by **144.2 lbs** per year.
- Infiltrating **300,141 gallons** of water into the ground annually.



A 2019 shoreline restoration on Birch Lake

### LANDSCAPE LEVEL 1 SUMMARY

For Landscape level one, **10** grants were awarded funding for a total of \$15,580.26. Funding for the year was not completely utilized.



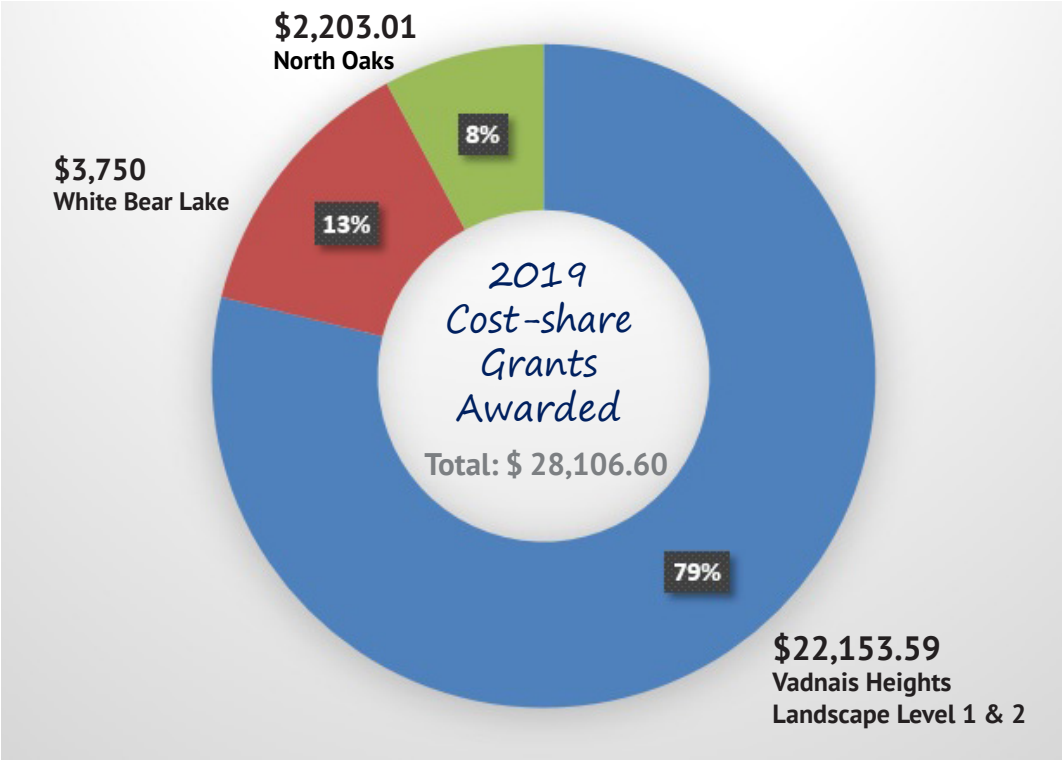
A raingarden in Vadnais Heights featuring a pop-up connection from the downspout.

Of the 10 level one grants, 6 were native plant restorations totaling 37,375 ft<sup>2</sup>. 3 were raingardens totaling 922 ft<sup>2</sup>. 1 was a shoreline restoration totaling 990 ft<sup>2</sup>.

2018 project square footage: <b>56,507 ft<sup>2</sup></b>	2019 project square footage: <b>42,037 ft<sup>2</sup></b>
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### LANDSCAPE LEVEL 2 SUMMARY

**1** landscape level two grant was awarded for a total of \$11,928. The project was a raingarden plus native plant restoration in Vadnais Heights, covering 2,550 sq ft.



### RAINBARREL COST SHARE PROGRAM

The Rainbarrel Program reimburses residents 50% of the cost towards the purchase of up to 2 rainbarrels. Applicants are limited to \$125 maximum reimbursement per rainbarrel.

### RAINBARREL SUMMARY

In 2019 VLAWMO awarded grants for **6** rainbarrels, for a total of \$598.34. A total of 98 rainbarrel grants have been awarded since the program began in 2007. Each time the barrels are filled, up to 4,900 gallons of rain water is available for reuse. If each rainbarrel gets filled 10 times throughout the year from various storm events, up to 49,000 gallons of water is available for reuse. Four additional rainbarrels were awarded in 2019 as prizes for public events.



## Community Blue

### DESCRIPTION

Community Blue is an education focused grant program for community groups within VLAWMO. It funds educational events and resources as they relate to water resources, and provides support in making existing stormwater, wetland, or watershed improvements into educational tools with public exposure.

### 2019 PROJECTS



### Connect the Drops

Growing Green Hearts, an organization specializing in watershed education in public school and religious settings, has networked between several local congregations for this project. Following a multi-congregation kick-off event, Growing Green Hearts will lead youth and community members in watershed education sessions and service projects. Service project examples include outreach and education for smart salting, building raingardens and native plantings, cleaning and adopting stormdrains, and more. Partners include Frassatti academy, Christ the Servant Lutheran Church, and Peace United Methodist.

### Picture Posts & Native Planting Signage

Community Blue is also a tool to support educational signage on existing projects. In 2019, the City of Vadnais Heights used Community Blue funds to accompany a new native planting at the Vadnais Heights Commons, and the Birch Lake Improvement District (BLID) used it to build a picture post station for shoreline, algae, and ice monitoring.



Visit <http://www.vlawmo.org/get-involved/picturepost/> for more information on picture posts.

### Creative Landscaping

Serving as a capstone project in the Master Water Stewards Program (see pg 16), Ed and Ceci Shapland used Community Blue to improve stormwater runoff on their property, create a video of the project construction, and conduct a neighborhood tour of spotlight raingardens and native plantings.



## City Engagement

### ADOPT-A-DRAIN: GOOSE LAKE

In a partnership between VLAWMO, the City of White Bear Lake, and Clean Water MN, VLAWMO pioneered adopt-a-drain outreach in the Goose Lake subwatershed. Using the website Adopt-a-Drain.org, residents signed up to adopt a specific stormdrain near their property. The website guides users in reporting the amount of debris that's cleaned from the drain, which is tracked across the Twin Cities metro. Yard signs were provided for residents to help spread the word and encourage others to try out this easy way to help Goose Lake. VLAWMO is excited to continue this effort in other cities in 2020!



### PET WASTE OUTREACH

VLAWMO and White Bear Township partnered together for a targeted pet waste pick-up outreach effort. Mailings were sent to homeowners who live in the Lambert Creek subwatershed within White Bear Township. Studies by VLAWMO staff have detected canine-sourced E. coli in Lambert Creek. Such partnerships are possible and encouraged with other cities in the watershed.

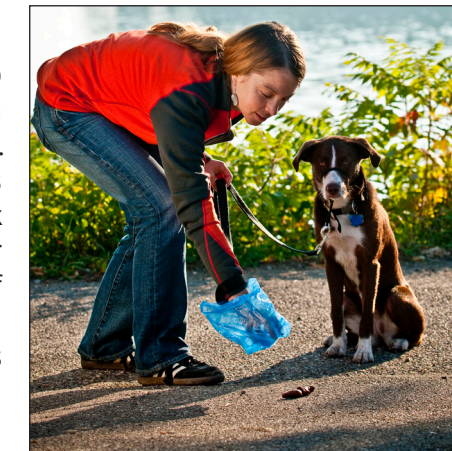


Photo: Clean Water MN

## In the News

### TRUMPETER SWANS AT SUCKER CHANNEL

Debbie Hartmann was a concerned resident simply walking through Vadnais/Sucker Lake Park, taking photos. Upon discovering several dead swans, she alerted VLAWMO staff. Through partnerships and collaboration, tests showed that lead poisoning was the cause of their deaths. What followed was a year-long education effort to raise awareness about the harmful impacts of lead sinkers and fishing tackle on wildlife. Signage is now posted at the Sucker Channel south of Hwy 96, where the swans were originally discovered.



### MEDIA

Our collection of videos and media is a tool for residents and cities to glimpse the work of the watershed. Our YouTube channel contains education videos, recorded presentations, event summaries, and more!

#### Videos produced in 2019 include:

- Climate Change in Minnesota
- Turf Talk: Part 1 and 2
- "Who Lives in the Watershed?" series
- Managing stormwater at home



Visit our blog at [VLAWMO.org](http://VLAWMO.org)

Follow our social media with the handle: "@VLAWMO"





## Watershed Action Volunteers

Volunteers bring VLAWMO's work into the community. In addition to the volunteer programs outlined on this page, volunteers help present booths at public events, conduct wetland surveys, and photograph wildlife in the watershed. Thanks to Jerome Strom, Debbie Hartmann, and Kyra Oliver for contributing to these efforts in 2019.



### CITIZEN LAKE MONITORING PROGRAM (CLMP)

VLAWMO would like to thank the following volunteers for their role in the Citizen Lake Monitoring Program, collecting water samples bi-weekly from May through September. The volunteers for 2017 were: Jim Grisim (Birch Lake), Justine Rowe (East Vadnais Lake) and Shannon Stewart (Tamarack Lake).

### ADOPT-A-RAINGARDEN & ADOPT-A-DRAIN

Volunteers help maintain public raingardens throughout the watershed. VLAWMO would like to thank Christ the Servant Lutheran Church, Mick Jost, Susan Miller, and the Vadnais Heights City Hall staff for making raingarden maintenance a regular part of everyday life.

In its first year under the new Adopt-a-Drian.org, over 60 stormdrains in the watershed have been adopted and maintained by residents - thank you!



### MONITORING: MACROINVERTEBRATES & PHENOLOGY

2019 began a new effort in biological monitoring. With the Leaf Pack Method, VLAWMO volunteers are now actively monitoring four locations along Lambert Creek for aquatic macroinvertebrates. Thank you to Ceci and Ed Shapland, Katherine Doll, Alex Yang, and Susan Miller for contributing to this effort. Four picture posts are placed throughout the watershed to monitor shoreline and lake changes, algae blooms, and ice conditions. A special thank you to Susan Miller, Diane Gorder, and Steve Elfstrom for supporting this effort.



### CITIZEN ADVISORY COMMITTEE (CAC)

The CAC is a venue for residents to help advise and guide VLAWMO education and outreach efforts, help plan and gather public feedback (surveys, etc.), and convey public interests, concerns, and opportunities for networking to staff and the VLAWMO Board of Directors. Thank you to Tom Falk, Rika Pennington, Katherine Doll, Ceci Shalpland, and Ed Shapland for serving on the committee!

### AQUATIC INVASIVE SPECIES (AIS)

Partnering with Ramsey Soil and Water Conservation Division (RSWCD), VLAWMO gathers volunteers to serve as citizen AIS detectors. RSWCD provides training and records of aquatic invasives across the county. Together we're able to have eyes-on-the-water for quick detection and response should new infestations occur.

Thank you to Jeannie Miller, Susan Miller, Ed Severson, and Gloria Tessier for participating in the AIS detection training and helping monitor VLAWMO lakes.



### MASTER WATER STEWARDS

VLAWMO joined the Master Water Stewards program in 2018. This program is coordinated through the nonprofit Freshwater, who trains and prepares volunteers to be citizen champions in projects and outreach. After promoting the program and searching for two champion volunteers, VLAWMO is excited to host two Master Water Stewards in 2019, with close collaboration with stewards from neighboring watersheds. A big thank you to VLAWMO's stewards, Ed and Ceci Shapland!



## Be a part of the solution!

### How to help improve the watershed from home: Continued from page 8

#### WINTER:

##### Practice Smart Salting:

- Shovel and scrape early after a snowfall.
- Spread salt with 2-3" between crystals.
- Don't over salt: 1/2 - 2/3 of a coffee mug holds enough salt for one parking space.
- Practice spot-treatment, apply salt, sand, or grit in cold temps and as a salt alternative.
- Visit <http://www.vlawmo.org/residents/water-stewardship/> for more info.

- Sweep up extra salt and sand when pavement is dry.
- Select your product according to the temperature.

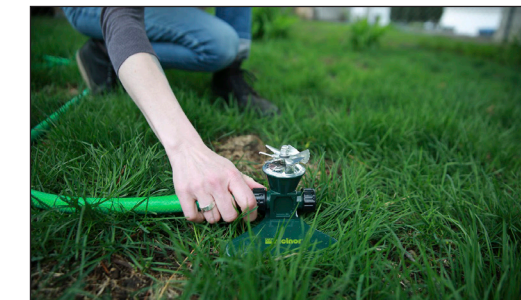


#### SPRING & SUMMER:

- Adopt a stormdrain to promote local water quality.

##### Water with care:

- Water lawn in the morning and evening to reduce evaporation.
- Use sprinklers that keep water low to the ground.
- Direct sprinklers away from pavement.



##### Mow with care:

- Mow grass at 3" to hold moisture on the lawn and reduce runoff.
- Keep grass clippings out of the street.
- Leave grass clippings on lawn for free fertilizer, or fertilize sparingly.

#### FALL:

- Core aerate the lawn to increase root depth, durability, and water absorption.
- Continue adopt-a-drian efforts, cleaning out leaves and debris from stormdrains and the curb.
- Mulch leaves with a mower for free fertilizer.
- If you must use weed killer, do so now to make a bigger impact and use less compared to Spring/Summer.



#### ALL YEAR LONG:

- Prevent illegal dumping into stormdrains: "only rain down the drain".
- Build a native planting or raingarden. Plan with VLAWMO to make planting and installation easy and effective.
- Restore shorelines with deep-rooted native vegetation.
- Hire contractors certified in winter maintenance or turf maintenance best practices.
- Respect wetland boundaries. Each wetland plays a role in the watershed no matter how small.
- Always pick up pet waste.



Photos: Clean Water MN



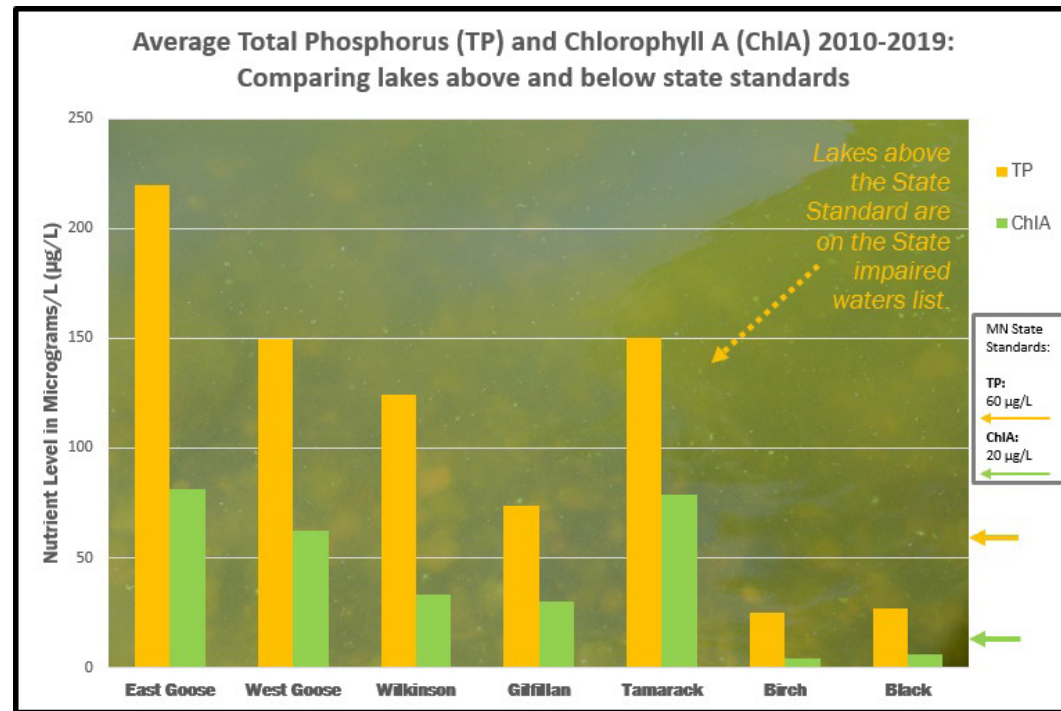
# Water Monitoring

## INTRODUCTION

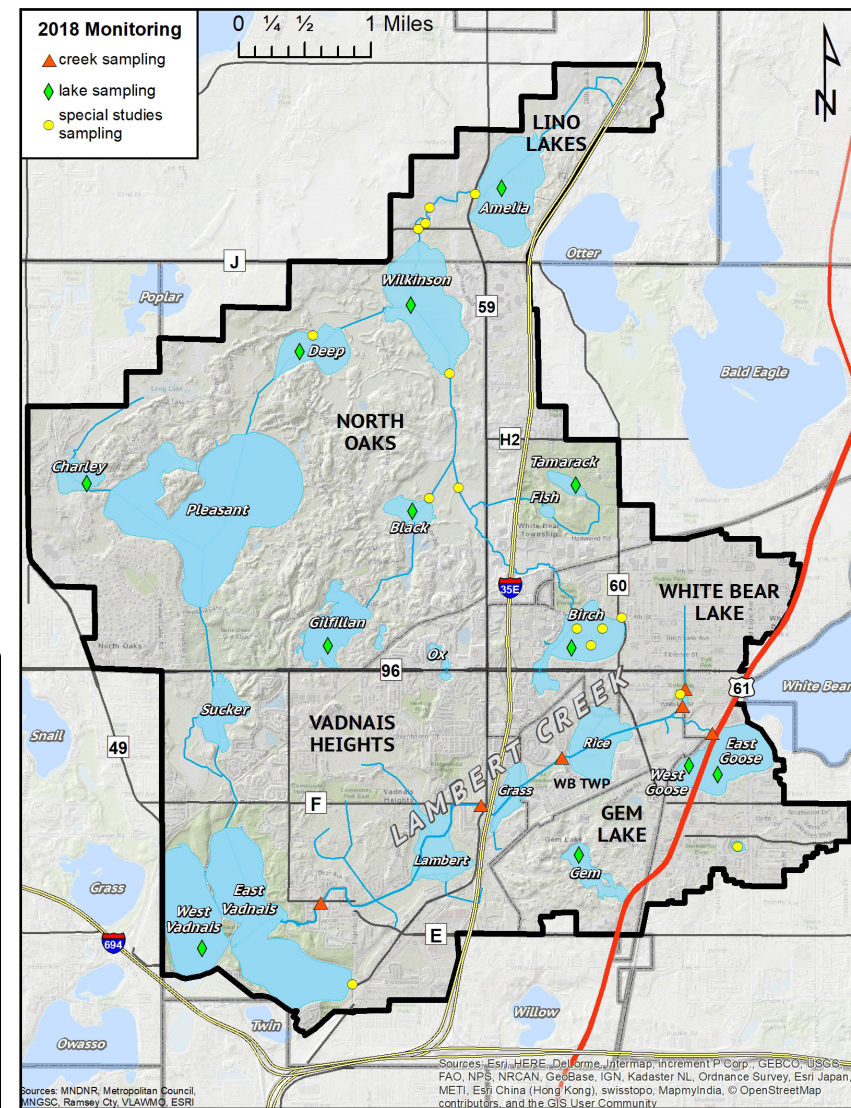
VLAWMO's regular water quality monitoring program includes nutrient sampling on 6 Lambert Creek sites, and nutrient sampling on 12 of the Vadnais Lake Area Watershed lakes. Nutrients and pollutants sampled for data include: total phosphorus, chlorophyll-A, soluble-reactive phosphorus, iron, total nitrogen, nitrate, total suspended solids, and chloride. VLAWMO's specialty monitoring programs, such as E coli and winter chloride sampling, will continue. See the 2016 Annual Report Summary for a map of monitoring locations.

Part of VLAWMO's water monitoring includes rainfall measurements because rainfall and the timing of rainfall are factors that influence water quality. Typically, more precipitation implies more water runoff, which carries more contaminants from the land surface into water bodies.

Lakes are summarized with a grading system called the Trophic State Index (TSI). This system was developed in the 1970's to calculate average phosphorus, chlorophyll-A, and Secchi disk readings, and generate a summarizing number. Letter grades are developed from the Metropolitan Council matrix for annual averages.



## VLAWMO Monitoring Locations



Monitoring results are used to guide local water policies and management, and to help prioritize and locate future water quality projects such as raingardens, underground retention basins, and shoreline restorations. The full 2018 monitoring report is available at: [vlawmo.org/resources](http://vlawmo.org/resources)

## WATER MONITORING HIGHLIGHTS

**Gem Lake:** Gem Lake's chemistry has improved, coinciding with a 2014 Highway 61 swale reconstruction. The improved swale is likely capturing nutrients and sediment that drain into the lake from a large nearby parking lot. After 10 years on the State Impaired List and continued monitoring, the Minnesota Pollution Control Agency (MPCA) officially de-listed Gem Lake in 2018. This success story demonstrates that lake improvements are possible!

**Birch Lake Storm Sampling:** The automated storm sampler was installed at 4th and Otter Lake Rd for a third year. This area drains stormwater into Birch Lake. Results showed exceptionally high nutrient levels during storms. A sand iron filter system will be installed at this location in spring, 2020.

**Goose Lake (East & West):** East Goose and West Goose have nutrient levels exceeding State standards. A fish survey was done in August, 2019, and indicated the bullhead population has increased substantially. Ongoing fish management may be needed to help address water quality issues.

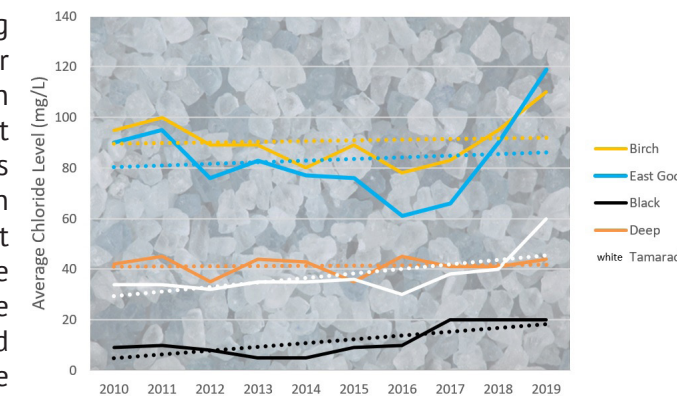
**Wilkinson Lake:** Wilkinson's phosphorus is over the State standard but Chlorophyll A is below the standard. Wilkinson acts more like a wetland than a lake, meaning what goes on in the surrounding watershed has a greater effect on the chemistry. A special study was done on the wetland complex connecting Amelia to Wilkinson and results indicate nutrient loading from the landscape. A special study was also done on the south complex to Wilkinson Lake from Black Lake. This area also showed high nutrient levels. A feasibility study is in the works for 2020 to help address the needs and outline potential projects that work to correct these loading issues.

**Whitaker Treatment Wetlands:** The wetland treatment system at Whitaker completed the second year of testing and 3 storm events were sampled. Results showed great reductions in E. coli and nutrients as well as pathogens. The U of M is doing the pathogen study.

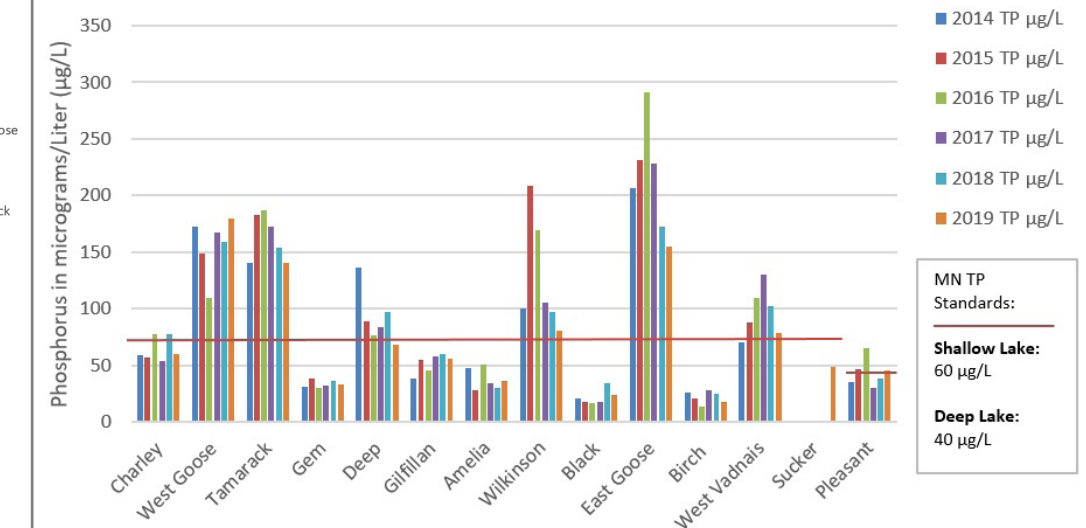
» **Chloride Levels:**

VLAWMO has been sampling chloride for 9 years with no significant changes detected. Birch Lake and East Goose have the highest chloride content and appear to be showing upward trends over the last few years. This is likely due to their close proximity to major roads. All of the lakes are below the current State standard of 230 mg/L, with Black Lake having the lowest chloride level.

VLAWMO lakes that show upward trends in chloride



Annual Average Total Phosphorus (TP) of VLAWMO Lakes: 2014-2019



**Find the complete 2019 Monitoring Report and a summary at [VLAWMO.org/resources/reports](http://VLAWMO.org/resources/reports)**



## MONITORING SUMMARY: CONTINUED

### STATE OF THE LAKES

VLAWMO uses the Trophic Status Indicator (TSI) to summarize lake health. TSI is calculated from annual monitoring data, combining phosphorus, chlorophyll-a, and transparency readings.

#### TSI Status of VLAWMO Lakes: 2019

Lake Name	Clear Oligotrophic		Moderately Clear Mesotrophic		Green Eutrophic	Very Green Hypereutrophic
	20	30	40	50	60	70
Amelia					▲	
Birch			▲			
Black			▲			
Charley					▲	
Deep					▲	
Gem			▲			
Gilfillan						▲
Goose (East)						▲
Goose (West)						▲
Pleasant					▲	
Sucker					▲	
Tamarack						▲
Vadnais (East)			▲			
Vadnais (West)						▲
Wilkinson					▲	



VLAWMO staff monitoring Lambert Creek at the outlet of West Goose Lake

### 2019 ANNUAL REPORT

#### LAMBERT CREEK LEAD SAMPLING

In December, 2019, VLAWMO staff sampled 11 sites for lead along Lambert Creek. Samples were taken by scooping sediment from the creek bottom and bring it to a lab for testing. While lead was detected along the creek, 10/11 of the sample sites had concentrations too low to provide conclusive lab results. The conclusive reading was taken at Otter Lake road, at a level of 10 mg/kg, which is below the MPCA's Level I Sediment Quality Target (SQT) of 36 mg/kg.

Lead detection is common in urban environments, with a variety of sources such as gas, exhaust, or paints. In soil, lead binds to soil particles and has low mobility from a contamination site. In surface water, lead can travel through physical processes. Because of the variety of possible lead sources from the urban landscape, the data is unable to trace lead in Lambert Creek to the Water Gremlin facility. The MPCA and Wenck will continue monitoring on and around the Water Gramlin facility into 2020.

To view a map of the 2019 lead sample sites and the estimated lead levels, visit our webpage here:

<http://www.vlawmo.org/waterbodies/lambert-creek/>

For more on Water Gremlin and environmental remediation efforts, visit the MPCA website: <https://www.pca.state.mn.us/air/water-gremlin>



To monitor sediment levels, sediment was scooped with a shovel from the bottom of Lambert Creek and brought to a lab for testing.

#### MACROINVERTEBRATES MONITORING

VLAWMO started a volunteer-based macroinvertebrate program to coincide with the implementation of remote sensors on Lambert Creek (pg. 9). Aquatic macroinvertebrates are organisms that live in lakes and streams, such as mayflies, damselflies, dragonflies, or leaches, scuds, and aquatic worms. Monitoring these organisms through collection and ID is a common technique in the aquatic sciences to gauge the health of a waterbody. The presence of certain organisms and their diversity illuminate the conditions they live in. Some organisms only survive in clean water, while others can cope with pollution, sedimentation, or other contamination such as high nutrients and bacteria levels. While water quality monitoring focused on chemistry offers a concise numerical data point, biological monitoring such as looks at a long-term trend due to the time it takes for organisms to grow and populate an area.

Using the Leaf Pack method, a pack of leaves is placed in the creek for three weeks. After this time, the pack is retrieved and the organisms are identified indoors using tools such as petri dishes, eye-droppers, spoons, and magnifying glasses. Data is recorded and displayed according to the Monitor My Watershed Wiki website, which is where the VLAWMO remote sensor data is also displayed. In addition to the four current locations on Lambert Creek, VLAWMO hopes to build this program into other areas in the watershed with volunteer support. To provide time to build a base of data, initial findings on this effort will be available in 2021.



VLAWMO staff placing a Leaf Pack in Lambert Creek at County Road F and Centerville Road



**CHARTING IT OUT:**

Review of 2018 Goals, 2019 Projections

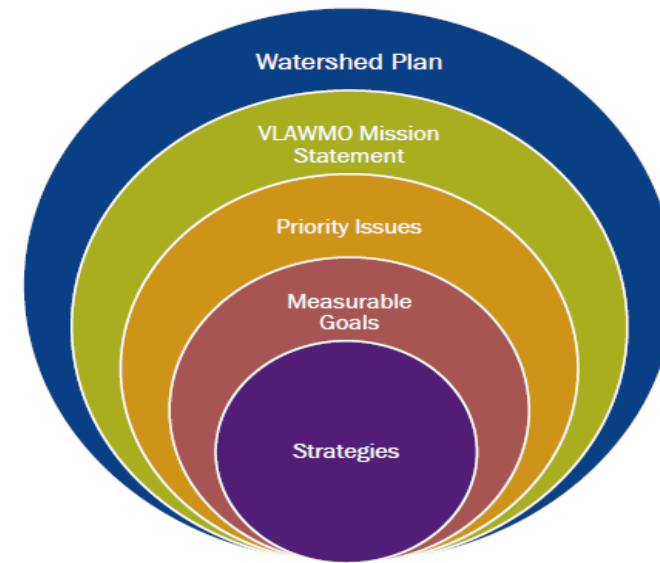
**IN THIS SECTION**

- » 2018 Work Plan Review
- » 2019 Work Plan

**VLAWMO CORE ACTIVITIES**



**WATER PLAN STRUCTURE**



**ACRONYMS:**

- WLA: Waste Load Allocation
- DNR: Department of Natural Resources
- MS4: Municipal Separate Storm Sewer System
- NEMO: Northland
- SWPPP: Storm Water Pollution Prevention Program
- STEM: Science, Technology, Engineering, Mathematics
- BMP's: Best Management Practices
- CIP's: Capital Improvement Project
- LGU: Local Governing Unit
- LCCMR: Legislative Citizen Commission on Minnesota Resources
- AIS: Aquatic Invasive Species
- TMDL: Total Maximum Daily Load
- TEP: Technical Evaluation Panel
- BOD: Board of Directors
- BMP: Best Management Practice (pertaining to stormwater treatment)
- RFP: Request for Proposal
- TEC: Technical Commission

**2019 WORK PLAN PROJECTION**

VLAWMO will put the 2017-2026 comprehensive water plan into action. The water plan structure (above) informs issues that will be addressed, goals that VLAWMO will set, and the strategies employed to reach those goals. See the 2017-2026 comprehensive water plan on our website under About > Why Water Matters for a more in-depth look at these plan components.

The tables for the 2018 review and 2019 work plan are color coded according to the VLAWMO core activities diagram (above). Each core activity also has a number, conveyed in the 2017-2026 comprehensive water plan.

*Review of 2019 Work Plan*

**CAPITAL IMPROVEMENT PROJECTS**

Project Name	Description	Goal: Going into 2019	Goal: 2019 Result
<b>Goose Lake Improvement</b>	Work with contracted engineer using Watershed-based Funding to identify 3 BMP's with 60% design completion, choosing one project for 100% design and installation in 2019. Vegetation and ecosystems management. Reapply for 2020 CWF grant for alum treatment.	Alum Grant Channel restoration Stakeholder presentation ID and install BMP project	Grant awarded Jan, 2020. Channel still in planning. Stakeholder presentation complete Jan 2019. Install by end of 2021.
<b>Whitaker Treatment Wetlands</b>	A stormwater treatment project partnering with the U of MN with funding through LCCMR grant funding. Stormwater from Whitaker Pond will be routed to underground wetland treatment cells and then infiltrated into shallow groundwater. Treatment cells contain different sorption material - the study will determine which material is most effective at filtering pollutants. VLAWMO will monitor for nutrients and bacteria, while the U of MN will monitor for pathogens.	Complete 2nd season of monitoring. Partner with the U of M to monitor pathogens.	Second season of monitoring complete. Pathogen monitoring complete.
<b>Oak Knoll Pond Spent Lime Study</b>	Partner with Barr Engineering for spent lime treatment and monitoring on Oak Knoll Pond (tributary to Goose Lake). VLAWMO staff will assist in monitoring efforts, supported by homeowner and City coordination.	Complete spent lime treatment and seasonal storm monitoring.	Project delayed into 2020.
<b>Birch Lake: 4th &amp; Otter Lake Road Project Development</b>	VLAWMO will work with a consultant to assess the options for BMPs at the 4th and Otter Lake Rd site. Conceptual designs of best possible projects will be completed and VLAWMO will work with its partners to finalize design and secure funding for 2019 installation.	Installation of project. Complete partner agreements.	Project delayed into 2020 due to contractor bid process and associated costs. Installation to be complete 2020.



## Review of 2019 Work Plan

### GRANT PROGRAMS

Project Name	Description	Goal: Going into 2019	Goal: 2019 Result
<b>Landscape Level 1</b>	Establish relationships and provide grants to property owners within the watershed to install water quality enhancement projects.	Install at least 10 projects Achieve .25 lbs of phosphorus/year removed from local waters.	10 landscape grants approved .231 lbs modeled annual TP removal
<b>Landscape Level 2</b>	Landscape Level 2 Cost Share Program is aimed at assisting landowners with implementing larger BMP projects within the watershed. Preference for projects that have high visibility, educational value and/or local citizen support.	Install at least 1 project. Achieve .25 lbs of phosphorus/year removed from local waters.	1 project approved, construction in 2020. .57 lbs of phosphorus annually.
<b>Community Blue</b>	A communication and outreach grant program to provide money for projects big and small that otherwise might not qualify for other grant awards. Projects must provide education and outreach benefits that directly relate to water quality.	Complete 3 active grants initiated in 2018. Secure all results and grant measurables through collection of final reports.	3 grants complete, 2 mini-grants complete. Results and measurables secured for all but one grant, Birch Lake

### PUBLIC EDUCATION AND OUTREACH

Project Name	Description	Goal: Going into 2019	Goal: 2019 Result
<b>Watershed Action Volunteers (WAV)</b>	The WAV consists of Master Water Stewards (Freshwater partnership), Citizen Advisory Commission (CAC), and VLAWMO-specific volunteers who have their own volunteer job description.	Plan, mentor, and complete job descriptions with two VLAWMO-specific volunteers. Guide and complete two Master Water Steward (MWS) capstone projects. Hold three CAC meetings throughout the year, each achieving tangible insight for VLAWMO.	One VLAWMO-specific volunteer complete. MWS capstones complete. Two CAC meetings in 2019, three deemed unnecessary.
<b>Workshops</b>	Workshops educate residents on watershed processes, raingarden and native plant function, and installation. They also introduce VLAWMO's cost-share program to participants and encourage them to apply.	Hold a raingarden workshop, native plant workshop, and general sustainable landscaping workshop. At least 3 residents who attend a raingarden or native plant workshop will pursue a cost-share grant.	All workshops complete 2 workshop residents also pursued a cost-share.

### PUBLIC EDUCATION AND OUTREACH

## Review of 2019 Work Plan

Project Name	Description	Goal: Going into 2019	Goal: 2019 Result
<b>Community Events</b>	Staff a VLAWMO booth at various community events. Develop information and engagement components for community events. A rainbarrel giveaway contest is used to attract event goers, and number of entries signify how many people stopped by the VLAWMO booth. Prizes such as tote bags, boating kits, and craft soda will be provided for free to guests who engage the booth.	Attend at least 6 community events annually. Accrue at least 1 new volunteer. Grow general email list by 150 people, volunteer email list by 15 people.	12 community events attended
<b>Communications</b>	Create and update material and publications for social media, website, seasonal Enews, and local publications. Make all sections of the website active. Create and maintain communications to promote public awareness for responsible use of our water resources.	Appear in at least 6 news articles in local papers. Appear in at least 3 City/Township newsletters with events and education opportunities. Maintain weekly social media postings all year. Maintain monthly blog and news postings on the VLAWMO website. Create at least 4 neighborhood spotlight articles.	Over 15 newspaper articles complete 3 City/Township newsletters complete Social media maintained all year Monthly blog and news postings on the website complete. Four neighborhood spotlight articles complete.
<b>K-12</b>	Develop youth involvement opportunities and programs that improve/benefit VLAWMO's goals and activities: Macroinvertebrates field days, STEM lessons. Reach multiple age demographics through school involvement. Assist schools in establishing and maintaining stormwater best management practices (BMP's).	Reach 10% of the school age population in 2019 through education and BMP maintenance. At least 5 adults will contact VLAWMO about cost-share grants as a result of hearing about their student's school activities.	5% of school age population reached. No adults contacted VLAWMO as a result of student school activities.



**6.3 MONITORING PROGRAM**

*Review of 2019 Work Plan*

	Project Name	Description	Goals: Going into 2019	Goals: 2019 Result
Lambert Creek	<b>E. coli Sourcing</b>	Dry and wet weather monitoring of the Goose, Oakmede, County Road F, and Whitaker sites (wet weather= during rainfall event). Four-year summary is currently in the works, presentation to be completed in 2018.	Complete final report of four-year project, present report to stakeholders.	Final report under review, presentation to stakeholders extended to 2020 for study to complete.
Lambert Creek	<b>Lambert Creek monitoring program</b>	Monitor basic phosphorus, nitrogen, Chlorophyll A, chloride, and sediment levels at 6 sites along with pH, conductivity and DO at the 3 flumes. Maintain automated flow meter and precipitation gauge at Whitaker.	Document and evaluate the general health of the creek.	Monitoring complete, no change in creek health.
Multiple	<b>Lake Level Program</b>	Gilfillan, Birch, Gem & Goose Lake gauges are calibrated in the spring and read up to 11 times during the summer.	Monitor lake levels on 4 targeted lakes in the watershed to track short & long term trends.	Complete.
Multiple	<b>Stormwater Monitoring</b>	Automated and manual sampling, including flow measurements on targeted streams into Birch Lake and Wilkinson Lake.	Document watershed nutrient loading into Birch and Wilkinson to assist selection of implementation strategies.	All identified lake surveys complete.
Multiple	<b>Lake Monitoring Program</b>	Monitor chemistry of 12 of VLAWMO's lakes through nutrient and sediment sampling, along with pH, conductivity, and dissolved oxygen (DO) measurements. Continue integration of automated sampling.	Keep water quality record of watershed's lakes. Utilize water quality data for future projects and CIPs.	3rd season of stormwater monitoring completed at Birch Lake.
Multiple	<b>Chloride Measurements</b>	Sample lakes and Lambert Creek. Partner with Birch Lake Improvement District (BLID) for summer monitoring of Birch Lake.	Check monthly measurement.	Complete.
Multiple	<b>Lake Monitoring Program</b>	Monitor chemistry of 12 of VLAWMO's lakes through nutrient and sediment sampling, along with pH, conductivity, and dissolved oxygen (DO) measurements. Continue integration of automated sampling.	Keep water quality record of watershed's lakes. Utilize water quality data for future projects and CIPs.	Complete.

*Review of 2019 Work Plan*

**ADMINISTRATION & REGULATION**

	Project Name	Description	Goals: Going into 2019	Goals: 2019 Results
	<b>Budget &amp; Stormwater Utility</b>	Storm sewer rates are based on the adopted budget and certified to the counties for collection.	Provide necessary financing for watershed.	Complete
	<b>Plan Amendment</b>		Complete plan amendment and approval by VLAWMO Board.	Complete
	<b>Wetland Conservation Act (WCA)</b>	Complete boundary and type & other determinations in consultation with the TEP. Respond to WCA questions.	Administer WCA Rules with VLAWMO as LGU.	Complete

**SUSTAINABLE LAKE MANAGEMENT PLAN (SLMP)**

	Project Name	Description	Goals: Going into 2019	Goals: 2019 Results
	<b>Pleasant Lake SLMP</b>	A report covering the sub-watershed of Deep Lake on its health and trends, with lake management plans to sustain its health.	» Collect background data, share with lake stakeholders to develop a prioritized list of management strategies.	Complete



## 2020 Work Plan

### CAPITAL IMPROVEMENT PROJECTS

	Project Name	Description	Goals	Timeline
SUB-WATERSHED	Goose Lake <b>Goose Lake Improvement</b>	Work with contracted engineer using Watershed-based Funding to identify 3 BMP's with 60% design completion, choosing one project for 100% design and installation in 2019. Vegetation and ecosystems management. Reapply for 2020 CWF grant for alum treatment.	Installation of BMP project. Complete partner agreements. 20 new adopt-a-drain adoptions in Goose subwatershed.	Grant awarded Jan, 2020. Treatment and treatment plan ongoing.  Install by end of 2021.
	Lambert Creek <b>Whitaker Treatment Wetlands</b>	A stormwater treatment project partnering with the U of MN with funding through LCCMR grant funding. Stormwater from Whitaker Pond will be routed to underground wetland treatment cells and then infiltrated into shallow groundwater. Treatment cells contain different sorption material - the study will determine which material is most effective at filtering pollutants. VLAWMO will monitor for nutrients and bacteria, while the U of MN will monitor for pathogens.	Final report and data analysis complete. Present to stakeholders via webinar.	June 2020
	Goose Lake <b>Oak Knoll Pond Spent Lime Study</b>	Partner with Barr Engineering for spent lime treatment and monitoring on Oak Knoll Pond (tributary to Goose Lake). VLAWMO staff will assist in monitoring efforts, supported by homeowner and City coordination.	Complete study	Spring-Summer 2020
	Lambert Creek <b>Birch Lake: 4th &amp; Otter Lake Road Project Development</b>	VLAWMO will work with a consultant to assess the options for BMPs at the 4th and Otter Lake Rd site. Conceptual designs of best possible projects will be completed and VLAWMO will work with its partners to finalize design and secure funding for 2019 installation.	Complete installatoin Invasive species removal and vegetation restoration near filter to optimize function.	Summer 2020

### CAPITAL IMPROVEMENT PROJECTS

	Project Name	Description	Goals	Time line
SUB-WATERSHED	Lambert Creek <b>Lambert Lake Meander</b>	Replace sheetpile at Lambert Lake, meander a portion of ditch, add biochar treatment ceels for bacteria and nutrient removal. Partnership with SEH, City of Vadnais Heights, and various contractors, University of Minnesota. Grant provided by the MPCA.	Grant signed, designs, construction, and lab study	Construction winters '20-'21. Vegetation restoration '21-'22 Biochar monitoring '21-'23
	Pleasant Lake <b>Pleasant Lake Carp Removal</b>	Partnership with Carp Solutions to electro tag, track, and remove carp.	Begin invasive carp removal in Pleasant Lake	December 2020

### GRANT PROGRAMS

	Project Name	Description	Goals	Time line
CORE ACTIVITY #	3.4 <b>Landscape Level 1</b>	Establish relationships and provide grants to property owners within the watershed to install water quality enhancement projects.	Install 2 target priority zone funding projects, award 75% of LL! funds. Identify and confirm 4 cost-share spotlights.	Ongoing
	3.4 <b>Landscape Level 2</b>	Landscape Level 2 Cost Share Program is aimed at assisting landowners with implementing larger BMP projects within the watershed. Preference for projects that have high visibility, educational value and/or local citizen support.	Fund 2 LL2 projects and acheive .5 lbs of annual phosphorus removal with project implementation.	Ongoing
	3.3 <b>Community Blue</b>	A communication and outreach grant program to provide money for projects big and small that otherwise might not qualify for other grant awards. Projects must provide education and outreach benefits that directly relate to water quality.	Use 75% of allocated funds. Complete 2 grants over \$100 Complete 2 mini-grants under \$100	Ongoing



**PUBLIC EDUCATION AND OUTREACH**

*2020 Work Plan*

Project Name	Description	Goals	Time line
<b>Watershed Action Volunteers (WAV) and other volunteering</b>	The WAV consists of Master Water Stewards (Freshwater partnership), Citizen Advisory Commission (CAC), and VLAWMO-specific volunteers who have their own volunteer job description. Service Learning Partnership with the U of M Custom volunteer job descriptions.	Assist 1 Master Water Steward in capstone project Fulfill 50 hour volunteer requirement in MWS program for 2 Master Water Stewards. Host 3 student service learners. Host 2 successful volunteers with job descriptions.	Ongoing
<b>Workshops</b>	Workshops educate residents on watershed processes, raingarden and native plant function, and installation. They also introduce VLAWMO's cost-share program to participants and encourage them to apply.	Host 3 workshops independently, 3 workshops in partnership	Spring-Fall
<b>Community Events</b>	Staff a VLAWMO booth at various community events. Develop information and engagement components for community events. A rainbarrel giveaway contest is used to attract event goers, and number of entries signify how many people stopped by the VLAWMO booth. Prizes such as tote bags, boating kits, and craft soda will be provided for free to guests who engage the booth.	Attend 6 community events with a booth Conduct 2 watershed education tours Conduct 3 nature-based education activities	Spring-Summer
<b>Communications</b>	Create and update material and publications for social media, website, seasonal Enews, and local publications. Make all sections of the website active. Create and maintain communications to promote public awareness for responsible use of our water resources.	Complete updated lake factsheets Maintain social media and email communications Maintain specific project webpages for Lambert Lake and Goose Lake regular updates.	Ongoing
<b>K-12</b>	Develop youth involvement opportunities and programs that improve/benefit VLAWMO's goals and activities. Reach multiple age demographics through school involvement.  Assist schools in establishing and maintaining stormwater best management practices (BMP's).	Complete two volunteer raingarden maintenance events at each school.  Interact with each school in the watershed once each year through either an in-person class visit or providing tools, maps, or resources to a class.	Ongoing

CORE ACTIVITY #

3.3

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**MONITORING PROGRAM**

*2020 Work Plan*

Project Name	Description	Goals	Time line
<b>E. coli Sourcing</b>	Dry and wet weather monitoring of the Goose, Oakmede, County Road F, and Whitaker sites (wet weather= during rainfall event).  Four-year summary is currently in the works, presentation to be completed in 2018.	Complete final report of four-year project, present report to stakeholders.	Final report to be complete June, 2020.
<b>Lambert Creek monitoring program</b>	Monitor basic phosphorus, nitrogen, Chlorophyll A, chloride, and sediment levels at 6 sites along with pH, conductivity and DO at the 3 flumes. Maintain automated flow meter and precipitation gauge at Whitaker. Four remote sensors installed along creek, live updated volume and water levels displayed online.	Document and evaluate the general health of the creek.	Monitoring May-Sept
<b>Lake Level Program</b>	Gilfillan, Birch, Gem & Goose Lake gauges are calibrated in the spring and read up to 11 times during the summer.	Monitor lake levels on 4 targeted lakes in the watershed to track short & long term trends.	Monitoring May-Sept
<b>Stormwater Monitoring</b>	Automated and manual sampling, including flow measurements on targeted streams into Birch Lake and Wilkinson Lake.	Document watershed nutrient loading into Birch and Wilkinson to assist selection of implementation strategies.	December, 2020
<b>Biological monitoring</b>	Volunteer-based macroinvertebrate monitoring in Lambert Creek, Lambert Lake, and Deep and Charley Lake channels. Utilizing the LeafPack monitoring method by trained volunteers. Results posted on the VLAWMO Monitor My Watershed Wiki.  Remota camera monitoring, otter telemetry project, frog and toad call surveys to build baesline information on wetland health and function and to build measures for comparison into long-term implementation initiatives.	Complete 5 Leaf Pack monitoring sessions on Lambert Creek/Lake. Begin monitoring Deep and Charly channels.	Ongoing

SUB - WATERSHED

Lambert Creek

Lambert Creek

Multiple

Multiple

Multiple



## 2020 Work Plan

CORE ACTIVITY #

### ADMINISTRATION & REGULATION

Project Name	Description	Goals	Time line
<b>Budget &amp; Stormwater Utility</b>	Storm sewer rates are based on the adopted budget and certified to the counties for collection.	Continued county participation and budgeting for future years.	Ongoing
<b>Wetland Conservation Act (WCA)</b>	Complete boundary and type & other determinations in consultation with the TEP. Respond to WCA questions.	Continued administration of WCA.	Ongoing

### SUSTAINABLE LAKE MANAGEMENT PLAN (SLMP) AND FEASIBILITY STUDIES

Project Name	Description	Goals	Time line
<b>Pleasant Lake Feasibility</b>	A feasibility study to analyze sediment accumulation and possible removal in the west bay of Pleasant Lake	» Complete study	December 2020
<b>Wilkinson Lake Feasibility</b>	Partner with Ramsey County and SEH to identify improvement projects in the Wilkinson subwatershed, such as best management practice (BMP) installations.	» Complete study	December 2020
<b>West Vadnais, East Vadnais, and Sucker Lake SLMP's</b>	Surveys and research to be completed to support sustainable lake management plans.	» Complete plans	December 2020



Wildlife captured by remote camera in various VLAWMO wetlands.



**LOGISTICS:**

Financial statement and budget

**IN THIS SECTION**

- » Finance and Budget
- » WCA Summary
- » Water Standards
- » Local Plan Adoption
- » Biennial Solicitations

**Wetland Conservation Act (WCA)**

VLAWMO administers the Wetland Conservation Act with review. There were 25 landowner contacts in which wetland related technical assistance was provided during 2019. There were 4 potential WCA violation sites investigated, all 4 were resolved.

**WCA SUMMARY**

Type of Application	Approved	Denied	Withdrawn
<b>Boundary and Type</b>	7	0	0
<b>No-Loss</b>	2	0	0
<b>Exemption</b>	1	0	0
<b>Sequencing</b>	1	0	0
<b>Replacement Plan</b>	1	0	0

**Local Plan Adoption**

Adoption of Local Plans: Gem Lake, Lino Lakes, North Oaks, White Bear Lake, White Bear Township, Vadnais Heights are all complete and have been adopted.

Member Community	Last Local Water Plan Update Year
Gem Lake	2018
Lino Lakes	2018
North Oaks	2007
Vadnais Heights	2018
White Bear Lake	2009
White Bear Township	2019

**Partnerships**

One of VLAWMO's greatest successes is working together with partners to use resources wisely and maximize effectiveness. Workshops, meetings, and webinars allow VLAWMO to be on the cutting edge of the water resources in the Northeast Metro.

- » Metro Watershed Partners provides monthly meetings to keep updated with other watersheds, receive feedback and strategy assistance, as well as hear from guest speakers to enhance education and outreach efforts.
- » Ramsey County GIS User Group focuses on sharing, developing, and promoting GIS data and technology. As a member agency, VLAWMO contributes and receives data, and has a voting hand in the content the Group funds and develops. Regular RCGISUG membership fees go to producing aerial images of Ramsey County and other GIS data.
- » Ramsey Conservation District holds informative forums on topics of general concern (AIS, State of the Waters, groundwater). They also provide technical assistance for lake studies and BMP design. Lastly, they provide financial partnership in grant funding of projects.
- » Many other organizations and groups (p. 35) help carry out VLAWMO's mission through events, outreach strategies, and project planning.

**Biennial Solicitation for Proposals**

Proposals for professional auditing services and legal services will be solicited for in 2020.

**2019 Partners**

- » Metro Watershed Partners
- » Ramsey County GIS User Group
- » Ramsey Conservation District
- » Vadnais Heights Economic Development Corp.
- » Birch Lake Improvement District
- » North Oaks Home Owners Association
- » Tamarack Nature Center
- » Minnesota Pollution Control Agency
- » MN Erosion Control Association
- » Conservation Minnesota
- » H<sub>2</sub>O for Life
- » SCC Local Cable TV
- » White Bear Lake School District
- » White Bear Preserve Town homes
- » Cities in VLAWMO



Stormwater Plinko is a big hit for kids at VLAWMO's public booth events.

**Special Thanks**

Each year our fabulous partners provide leadership, guidance, resources, to support our goals. 2019 saw the completion of some efforts and the continued investment of others. VLAWMO would like to thank:

- » Tracy Lawler: Tracy of Natural Shores, Inc generously supported a Birch Lake wetland and shoreline educational event, in addition to presenting a native plant talk at the Vadnais Heights City Hall.
- » Debbie Hartmann: Debbie notified VLAWMO of dead trumpeter swans at Sucker Lake. Upon investigation, VLAWMO found that the swans died of lead poisoning. Debbie continued to support the watershed through photography, capturing dozens of birds, landscapes, and plants to demonstrate the beauty of our local natural resources.
- » Jeff Melcoch: Jeff recorded multiple presentations for VLAWMO, complete with editing.
- » Ed and Ceci Shapland: Ed and Ceci became VLAWMO's first Master Water Stewards in 2019. Completing a year of coursework, they became trained in watershed resources to support a capstone project.
- » Rika Pennington and Katherine Doll: As residents and members of the Citizen Advisory Committee (CAC), Rika and Katherine helped gather valuable survey responses for VLAWMO's 2019 end-of-year survey.
- » Girl Scout Troop 56087 for supporting education and outreach about the harmful impacts of lead on wildlife.



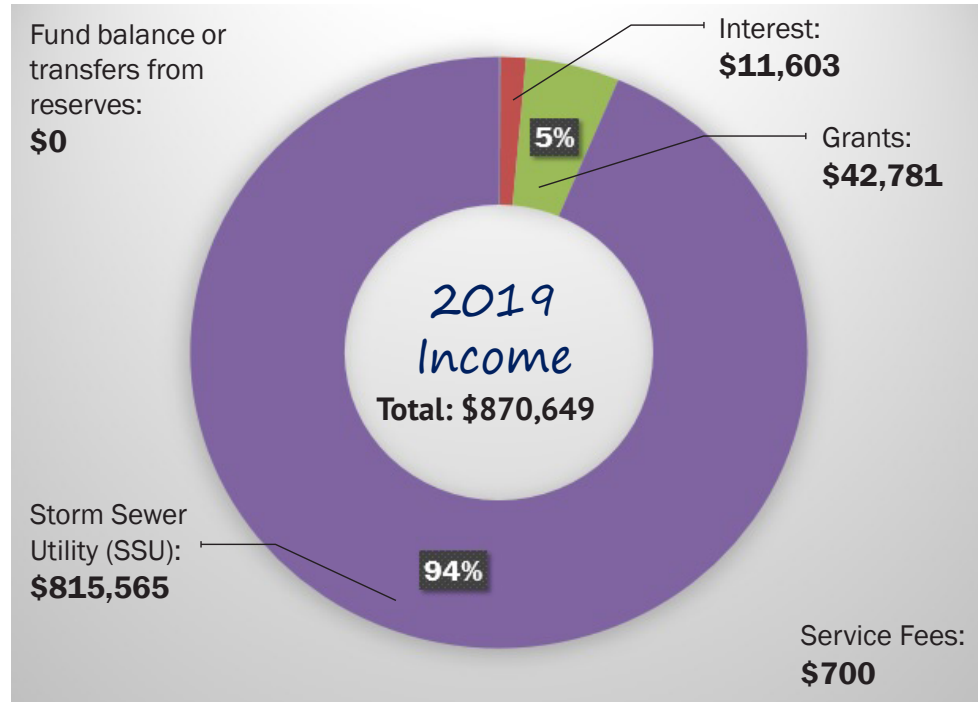
VLAWMO staff presenting the swans and lead education initiative (p. 15) with Local Girl Scout Troop 56087. Pictured with State representatives Peter Fischer and Chuck Wiger at the 2019 Water Resources Conference.



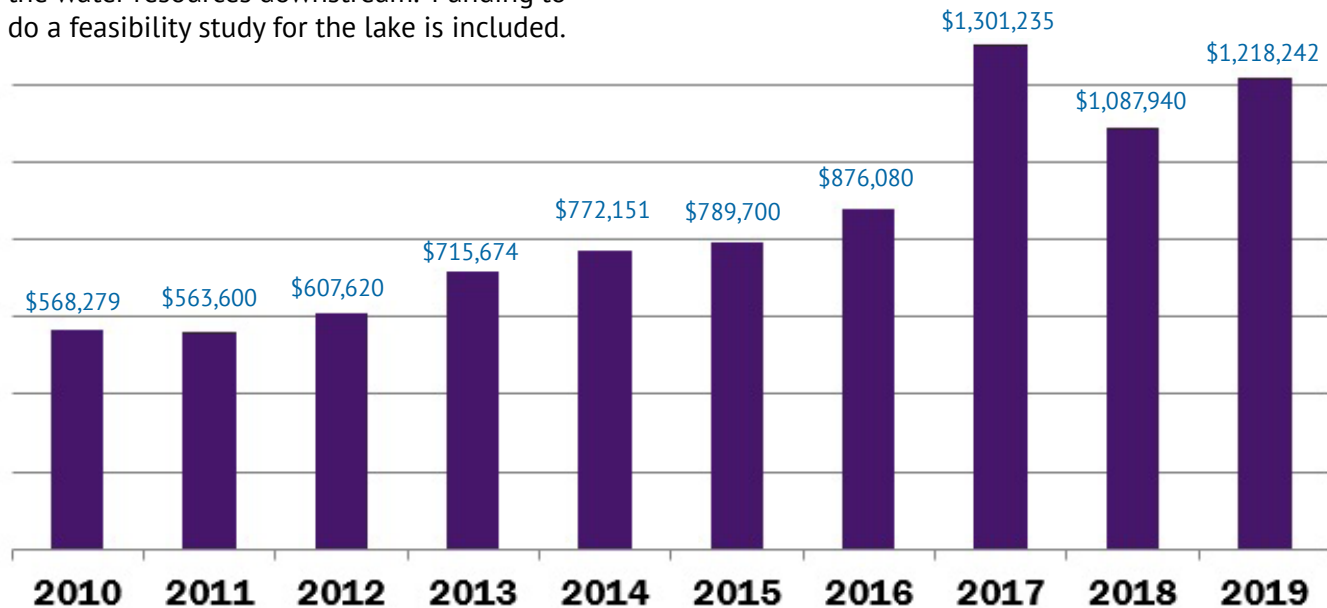
## Finance and Budget

The Board of Directors established the 2019 budget in June with designated project and program funds carried over in December 2018. The Finance and Policy Committee with members from the Technical Commission and the Board reviewed and made recommendations on the 2019 budget to the Board in June 2018. The Board approved project focused funding in three main areas: Lambert creek, Goose Lake and Wilkinson Lake. Lambert Creek funds are scheduled in anticipation of addressing a sheet pile maintenance need. Another focus was on Goose Lake and its subwatershed. Best management practices both in-lake with an Alum treatment and in the subwatershed are needed to address the most impaired lake in the watershed. Wilkinson Lake has also been prioritized in the Water Plan. It is also impaired and its upstream location affects the water resources downstream. Funding to do a feasibility study for the lake is included.

<b>Approved budget for 2019:</b> <b>\$1,218,242</b>
<b>Actual income from 2019:</b> <b>\$870,649</b>
<b>Money spent in 2019:</b> <b>\$382,149</b>

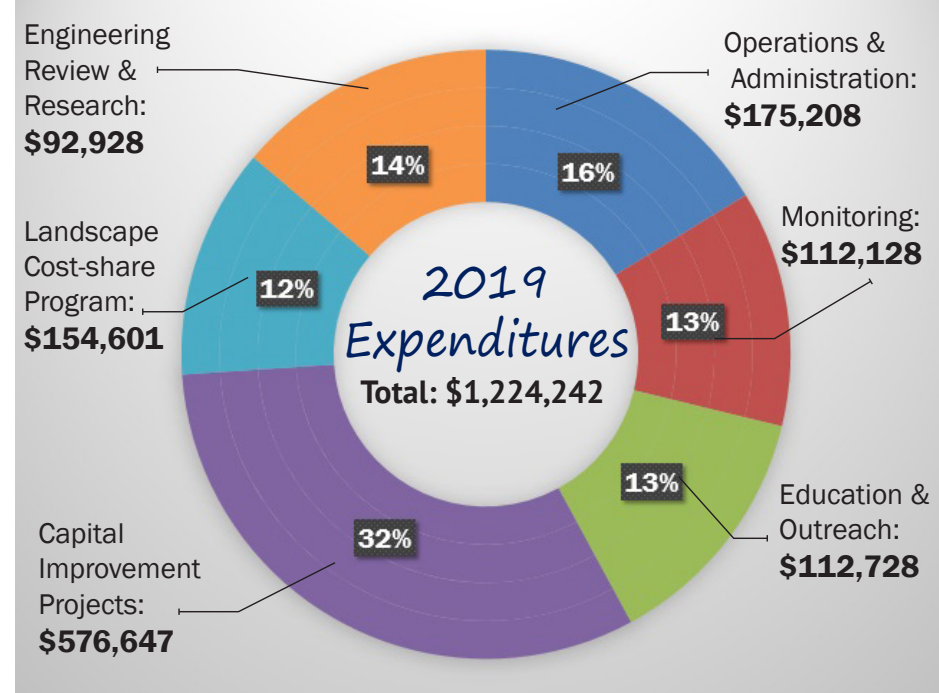


## Annual Budget with Fund Balance



## INCOME

The mainstay of support for VLAWMO work comes from its Storm Sewer Utility (SSU) fees. These fees are based on an estimate of impervious surface for each parcel of land that is in line with its land use classification. \$ 830,878.34 in SSU was certified to Ramsey and Anoka Counties for 11,496 parcels. The average single family (1-3 units) homeowner paid \$ \$46.80 per year to support all of the projects and programs conducted by the watershed. That's about \$3.90 per month. The 10.5% increase in storm sewer utility fees allowed VLAWMO's budget to sustainably support the programs and projects of the Water Plan. Ongoing projects resulted in a significant amount of funding being carried over from 2018 to 2019 and again into 2020.



## EXPENSES

Total cash expenses for 2019 were less than budgeted at \$657,053. The Sucker channel restoration came in slightly under budget. Projects on Lambert Creek and Goose Lake will be carried over into 2020. Several efforts were moving through planning and development in 2019. The Birch Lake sand-iron filter will be installed early in 2020. Funds for Goose Lake projects will also be available as well as a major project in Lambert Lake. Overall some 2019 expenses were carried over to 2020 which reduced total 2019 expenses. Further financial detail is available in the annual audit attached as an Appendix to this Report.

## GRANTS AND PARTNERSHIPS

Grant funds received in 2019 totaled \$39,919. Much of this was from LCCMR supported the Whitaker Treatment wetlands monitoring. Clean Water Legacy funding supported the Birch Lake hot-spot remediation project targeting nutrient loading to one of the cleanest lakes in the watershed (\$48,500) and completing a robust feasibility study on the Goose Lake subwatershed (\$29,520). Much of the Legacy funds have been carried over as the projects continue into 2019. Wetland Conservation Act reimbursement funds totaled \$ 1150. Grants for the Lambert Lake meander and biochar project and the sheet pile replacement were requested and approved the 319 grant program and the 0% interest loan.

## CAPITAL IMPROVEMENT PROJECTS

Installation of the Whitaker Treatment Wetlands was completed in 2018 and monitoring began (see page 20). The focus of the project is to research new ways to filter bacteria, excess nutrients, and pathogens out of stormwater runoff. A linked study on pathogens will be done by the University of Minnesota. The pathogen study wrapped up in 2019. Construction of the Fourth and Otter hotspot remediation project for Birch Lake was bid in the summer of 2019. When the bids came in higher than anticipated, the Board directed a second bid effort in the winter with some design clarifications. In the meantime, service learning students and other volunteers helped prepare the adjacent parcel, clearing invasive species and preparing for restoration with native vegetation. The partners, White Bear Lake, Ramsey County, the Birch Lake Improvement District and VLAWMO continue to finalize the operations and maintenance plan. The sand-iron filter should do much to address neighborhood runoff that has been loading nutrients into Birch Lake. Goose Lake work received a substantial boost from the Watershed Based funding pilot grant which will complete modeling and a feasibility study of the subwatershed in 2019. Design and estimated costs should be available early in 2020. VLAWMO applied for grant funding for an in-lake treatment of Goose Lake. Again, more information will be available in 2020.



Tamarack Nature Center, White Bear Township



**WHO WE ARE:**

The people who make VLAWMO

**IN THIS SECTION**

- » Staff
- » Consultants
- » Partnerships
- » Board of Directors
- » Technical Commission (TEC)

**The VLAWMO office is located at:**  
800 E County Road E  
Vadnais Heights, MN 55127

**Who we are:**

VLAWMO Employs five full-time staff for everyday operations. Consultants are required for a variety of purposes including auditing, bookkeeping, engineering, and technical assistance. The VLAWMO Board of Directors consists of one elected official from each of the six cities within the watershed. Each board member is appointed for a three year term. The VLAWMO Technical Commission consists of one citizen representative from each of the six cities. The Technical Commission meets to review and consider watershed business as well as make recommendations to the Board for wider scope decisions.

**BOARD OF DIRECTORS (BOD)****Primary Directors**

**Jim Lindner, Chair**  
4200 Otter Lake Rd  
Gem Lake, MN 55110  
651.492.5083

**Dan Jones**

1956 Lakeaires Blvd  
White Bear Lake, MN 55110  
651.283.6097

**Marty Long**

10 Larch Lane  
North Oaks, MN 55127  
651.407.8507

**Ed Prudhon**

470 Otter Lake Rd  
White Bear Twp, MN 55110  
651.426.2311

**Patricia Youker**

883 Evergreen CT.  
Vadnais Heights, MN 55127  
612.790.7577

**Rob Rafferty**

1573 Merganser Ct  
Lino Lakes, MN 55038  
651.982.2492

**Alternate Directors**

Rick Bosak  
Gem Lake

Bill Walsh  
White Bear Lake

Gregg Nelson  
North Oaks

Bob Kermes  
White Bear Township

Craig Johnson  
Vadnais Heights

Dave Roeser  
Lino Lakes

**TECHNICAL COMMISSION (TEC)****Commissioners can be reached by contacting VLAWMO****Primary**

**Jim Grisim, Chair**  
White Bear Lake

**Jesse Farrel**  
Vadnais Heights

**Gloria Tessier**  
Gem Lake

**Bob Larson, Treasurer**  
North Oaks

**Paul Duxbury**  
White Bear Township

**Marty Asleson**  
Lino Lakes

**Alternate**

Connie Taillon  
White Bear Lake

Kevin Watson  
Vadnais Heights

Gretchen Artig-Swomley  
Gem Lake

Diane Gorder  
North Oaks

Tom Riedesel  
White Bear Township

*No alternate available*  
Lino Lakes

**STAFF****Stephanie McNamara****Administrator**

stephanie.o.mcnamara@vlawmo.org  
651.204.6073

**Dawn Tanner, PhD****Program Development Coordinator**

dawn.tanner@vlawmo.org  
651.204.6074

**Brian Corcoran****Water Resources Manager**

brian.corcoran@vlawmo.org  
651.204.6075

**Nick Voss****Education and Outreach Coordinator**

nick.voss@vlawmo.org  
651.204.6070

**Tyler Thompson****GIS Watershed Technician**

tyler.thompson@vlawmo.org  
651.204.6071

**CONSULTANTS**

**SEH - Engineer on retainer**  
3535 Vadnais Center Dr  
Vadnais Heights, MN 55110  
800.325.2055

**Abdo, Eick & Meyers LLP.**  
5201 Eden Ave. Ste. 250  
Eden Prairie, MN 55436  
952.835.9090

**Burns & McDonnell**

8201 Norman Center Dr  
Bloomington, MN 55437  
952.656.6003

**Ehlers & Associates**

3060 Centre Point Dr  
Roseville, MN 55113  
651.697.8500

**HDR Engineering, Inc.**

701 Xenia Ave. S. Ste. 600  
Minneapolis, MN 55416  
763.591.5400

**Houston Engineering Inc.**

6901 E Fish Lake Rd  
Maple Grove, MN 55369  
763.493.4522

**Kennedy & Graven, Chartered**

200 South Sixth St Ste. 470  
Minneapolis, MN 55402  
612.337.9215

**Ramsey Soil and Water Conservation Division**

2015 Van Dyke Street  
Maplewood, MN 55109

**St Paul Regional Water Service**

1900 Rice St  
St Paul, MN 55113  
651.266.6350

**Barr Engineering**

4300 Market Pointe  
Minneapolis, MN 55435  
952.832.2600



