MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

FY24 SWAG Workplan

Surface Water Assessment Grant (SWAG)

Doc Type: Workplan

Instructions begin on Page 2.

I. Project information

Project title: (8 word maximum)

Project title: Mille Lacs Rum River Watershed Assessment

Your affiliation? ☐ LGU ☒ Tribal ☐ Education ☒ Other: Soil & Water Conservation District & Tribal Entity

Contact information

Primary contact person: Willow Dean

Organization: Mille Lacs Soil & Water Conservation District

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City: Milaca State: MN Zip code: 56353

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Field contact name: Willow Dean Phone: 320-983-2160

Email address: willow.dean@millelacs.mn.gov

*Estimated** Full-time equivalents (FTE) (total project hrs/2,088 hrs): 0.284

**Actual FTE calculated within progress reports*

Name of eligible laboratory: A.W. Research Laboratories, Inc.

Project location

Major watershed(s): Rum River Hydrologic unit code(s): 07010207

Project details

Start date: 03/01/2024 *(mm/dd/yyyy)* End date: 01/31/2026 *(mm/dd/yyyy)* Budget amount: $

II. Project summary

The Rum River has its headwaters on the Mille Lacs Reservation, where it runs from the southwestern part of Lake Mille Lacs, through lakes Ogechie, Shakopee, and Onamia, and then sets a course through Mille Lacs, Isanti, Sherburne, and Anoka counties before it merges with the Mississippi River in Anoka. The full watershed covers ten counties in Minnesota. Several smaller streams feed into the Rum in Mille Lacs County. This project would assess and monitor 11 sites; ten stream sites, and one lake site. Of the stream sites, 4 would be on the main stem of the Rum itself, 1 would be established at a county ditch, and the other 5 would be tributary waterbodies. The lake site would be at Lake Shakopee, and sampled in partnership with the Mille Lacs Band of Ojibwe.

III. Workplan detail

Objectives and tasks

Objective Surface Water Quality Monitoring, Data Management, and Project management

Task A: Prepare for lake and stream water quality monitoring

Sub-task 1: Review and verify lake monitoring locations and coordinates provided by the Minnesota Pollution Control Agency (MPCA). If needed, develop reconnaissance plan for lakes without monitoring locations. Provide updated coordinates for deep centrally located sites to MPCA for Environmental Quality Information System (EQuIS) site corrections as necessary.

Sub-task 2: Review stream monitoring locations and details provided by MPCA and coordinate stream reconnaissance as necessary.

Sub-task 3: Review MPCA Intensive Water Monitoring (IWM) Standard Operating Procedures (SOP) for lakes, streams, and Aquatic Invasive Species (AIS). Review safety protocols.

Sub-task 4: Complete EQuIS *Project establishment form* and submit to MPCA by April 30, 2023.

Sub-task 5: Provide subcontracted laboratory with individual EQuIS site IDs for selected locations, EQuIS project ID, staff names, and contact information for reporting.

Sub-task 6: Review the Minnesota Department of Natural Resources (DNR) List of Minnesota Designated Infested Waters and establish monitoring plan accordingly. Review AIS permit if applicable and distribute hard copies to lead monitoring staff. Ensure that all lead monitoring staff are carrying copies of permit when sampling and transporting water quality samples.

Task B: Follow sample collection protocols as defined in the IWM Lakes SOPs at selected lakes.

Sub-task 1: Conduct lake monitoring per the schedules and parameters within the tables of Section VI.

Sub-task 2: Collect one set of field duplicates per lake in July 2024.

Sub-task 3: Record water clarity depth using a Secchi Disk and conduct profile measurements (dissolved oxygen, specific conductance, temperature, and pH) at one-meter intervals. **Profile optional based on equipment capabilities**.

Sub-task 4: Conduct field meter calibration and maintenance per manufacturer specifications and the IWM Lakes SOP.

Sub-task 5: Complete chain of custody form and submit samples to designated laboratory for water chemistry analysis.

Task C: Follow sample collection protocols as defined in the IWM Streams SOPs at selected stream locations.

Sub-task 1: Conduct stream monitoring per the schedules and parameter lists within the tables of Section VI.

Sub-task 2: Ensure E. coli samples analyzed by designated laboratory within 30 hours of collection. Ensure that all samples analyzed over 24 hours are flagged and reported to MPCA.

Sub-task 3: Collect one set of field duplicates per site in 2024 or 2025 depending on schedule.

Sub-task 4: Collect one equipment blank per monitoring crew at a designated stream location in 2024 or 2025.

Sub-task 5: Record Secchi Tube, field measurements (dissolved oxygen, specific conductance, temperature, and pH), upstream photograph, and recreational suitability during all stream monitoring events.

Sub-task 6: Conduct field meter calibration and maintenance per manufacturer specifications and the IWM Stream SOP.

Sub-task 7: Complete chain of custody form and submit samples to designated laboratory for water chemistry and E. coli analyses.

Task D: Organize and review laboratory and field data.

Sub-task 1: Review laboratory results and field measurements regularly for analytical and/or transcription errors.

Sub-task 2: Track Electronic Data Delivery (EDD) submittals by laboratory.

Sub-task 3: Enter field data into EQuIS template provided by the MPCA. Submit all data by November 1, 2024, and November 1, 2025.

Sub-task 4: Complete final EQuIS data review using data spreadsheets provided by the MPCA.

Task E: Prepare and submit stream photographs to MPCA project manager.

Sub-task 1: Name photo files as described in the IWM Stream SOP.

Task F: Track project expenditures and submit invoices.

Sub-task 1: Develop budget tracking spreadsheet with MPCA project manager and track expenses.

Sub-task 2: Compile and submit invoices on a minimum quarterly or maximum monthly basis.

Task G: Complete and submit required reports using templates provided by the MPCA.

Sub-task 1: Complete and submit interim and final progress reports and calibration logs.

Sub-task 2: Post approved Final Progress Report on designated website.

Sub-task 3: Complete meter calibration log and submit to MPCA Project Manager.

Task H: Obtain administrative training as arranged by the MPCA Project Manager.

Sub-task 1: Participate in a site visit with the MPCA Project Manager for administrative and field training as required.

Sub-task 3: Participate in monthly check in meetings by phone with MPCA project manager from May-October of 2024 and 2025.

IV. Evaluation plan

Measures for success:

-MPCA monitoring procedures will be learned and followed.

-AIS safety protocols will be followed as appropriate for all sites.

-Completion of prescribed data collection of water chemistry for ten stream sites and one lake site in Mille Lacs County.

-Accepted Quality Assurance (QA) & Quality Control (QC) sampling and field monitoring procedures will be adhered to.

-All monitoring data collected throughout the project will meet the requirements of & be entered into EQuIS.

-Completed templates & photos for sampling season 2024 will be entered by November 1, 2024.

-Completed templates & photos for sampling season 2025 will be entered by November 1, 2025.

-Repeatability of laboratory testing procedures will be tested by submission of laboratory QA and equipment blank samples.

-Completion of EQuIS establishment form before start of sampling season.

-Stream & lake samples will be taken at the schedule dictated in the Work Plan, or as close to it as possible as allowed by weather conditions.

-E. coli samples will be delivered to the laboratory on the same day they are collected and analyzed within 24 hours.

-All other sampling protocols as defined in IWM Stream SOPs and work plan task B subtasks 1-7 will be followed.

-Laboratory data will be checked for accuracy and submitted to MPCA in a timely manner.

-Budget tracking spreadsheet will be developed with MPCA project manager and kept accurately.

-Invoices will be sent on a minimum quarterly & maximum monthly basis.

-Stream photographs will be taken at each site, and named per IWM Stream SOP.

-Completion of onboarding training with MPCA Project Manager.

-Participate in monthly check-ins with MPCA Project Manager via phone or other method.

-Fulfillment of all other tasks described in the Work Plan.

V. Monitoring site table

Watershed	County	Stream name	Site ID#	Site location	Latitude	Longitude	Sampling	AIS
Rum River	Mille Lacs	Rum River, West Branch	S002-953	At CR 102, 1 mi. W of Princeton	45.58103	-93.6145	ML SWCD	
Rum River	Mille Lacs	Rum River	S002-955	Upstream of CSAH 16, 7 mi. N of Milaca	45.86591	-93.69049	ML SWCD	
Rum River	Mille Lacs	Rum River	S004-409	Upstream of CSAH 95, in Princeton	45.57377	-93.57835	ML SWCD	
Rum River	Mille Lacs	Estes Brook	S006-104	At Davenport Rd, 4.5 mi. NW of Princeton	45.65798	-93.65635	ML SWCD	
Rum River	Mille Lacs	Tibbetts Brook	S007-553	At CSAH 19, 5.5 mi. NW of Milaca	45.85064	-93.70318	ML SWCD	
Rum River	Mille Lacs	Bradbury Brook, N. Brook	S007-554	Upstream of Hwy 169, 5 mi. S of Onamia	45.99741	-93.6652	ML SWCD	
Rum River	Mille Lacs	County Ditch #4	Establish	Establish location at 90th St.	45.67603	-93.58294	ML SWCD	
Rum River	Mille Lacs	Rum River	S004-340	RUM R AT CSAH-26, 4.5 MI NW OF ONAMIA, MN	46.11584	-93.73356	ML SWCD	
Rum River	Mille Lacs	Rum River	Establish	At State Hwy 27 bridge just downstream from Onamia outlet	46.06902	-93.68018	MLSWCD	

Watershed	County	Lake name	Lake ID#	Lat.	Long.	Sampling	AIS
Rum River	Mille Lacs	Shakopee	48-0012-00-101	46.10776	-93.71975	MLBO	

VI. Monitoring parameters, sampling regime, and sampling frequency

Streams

S004-409, S006-104, S007-553	May		June			July			August			September	
2024	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
TSS	X		X			X			X			X	
TP	X		X			X			X			X	
Chloride	X												
Hardness as CaCO3	X												
E coli			X	X	X	X	X	X	X	X	X		
Secchi tube	X		X	X	X	X	X	X	X	X	X	X	
Specific Conductance	X		X	X	X	X	X	X	X	X	X	X	
Temperature	X		X	X	X	X	X	X	X	X	X	X	
pH	X		X	X	X	X	X	X	X	X	X	X	
DO	X		X	X	X	X	X	X	X	X	X	X	
Upstream Photo	X		X	X	X	X	X	X	X	X	X	X	
Rec Suitability, appearance, stage	X		X	X	X	X	X	X	X	X	X	X	
	X		X	X	X	X	X	X	X	X	X	X	

S007-554/S004-978	May		June			July			August			September	
2024	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Chl-a, Pheo Corrected			X		X	X		X	X		X	X	X
TSS	X		X			X			X			X	
TP	X		X		X	X		X	X		X	X	X
Chloride	X												
Hardness as CaCO3	X												
E coli			X	X	X	X	X	X	X	X	X		
Secchi tube	X		X	X	X	X	X	X	X	X	X	X	X
Specific Conductance	X		X	X	X	X	X	X	X	X	X	X	X
Temperature	X		X	X	X	X	X	X	X	X	X	X	X
pH	X		X	X	X	X	X	X	X	X	X	X	X
DO	X		X	X	X	X	X	X	X	X	X	X	X
Upstream Photo	X		X	X	X	X	X	X	X	X	X	X	X
Rec Suitability, appearance, stage	X		X	X	X	X	X	X	X	X	X	X	X

S004-340	May		June			July			August			September	
2024	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Chl-a, Pheo Corrected			X		X	X		X	X		X	X	X
TP	X		X		X	X		X	X		X	X	X
Sulfate	X		X			X			X			X	
Secchi tube	X		X		X	X		X	X		X	X	X
Specific Conductance	X		X		X	X		X	X		X	X	X
Temperature	X		X		X	X		X	X		X	X	X
pH	X		X		X	X		X	X		X	X	X
DO	X		X		X	X		X	X		X	X	X
Upstream Photo	X		X		X	X		X	X		X	X	X
Rec Suitability, appearance, stage	X		X		X	X		X	X		X	X	X

07010207-509	May		June			July			August			September	
2024	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Sulfate	X		X			X			X			X	
Secchi tube	X		X			X			X			X	
Specific Conductance	X		X			X			X			X	
Temperature	X		X			X			X			X	
pH	X		X			X			X			X	
DO	X		X			X			X			X	
Upstream Photo	X		X			X			X			X	
Rec Suitability,	X		X			X			X			X	
appearance, stage	X		X			X			X			X	

07010207-535	May		June			July			August			September	
2024	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Chl-a, Pheo Corrected			X		X	X		X	X		X	X	X
TP	X		X		X	X		X	X		X	X	X
Secchi tube	X		X		X	X		X	X		X	X	X
Specific Conductance	X		X		X	X		X	X		X	X	X
Temperature	X		X		X	X		X	X		X	X	X
pH	X		X		X	X		X	X		X	X	X
DO	X		X		X	X		X	X		X	X	X
Upstream Photo	X		X		X	X		X	X		X	X	X
Rec Suitability, appearance, stage	X		X		X	X		X	X		X	X	X

S002-953, S002-955	June			July			August			September	
2024	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Chl-a, Pheo Corrected	X		X	X		X	X		X	X	X
E coli	X	X	X	X	X	X	X	X	X		
Secchi tube	X	X	X	X	X	X	X	X	X	X	X
Specific Conductance	X	X	X	X	X	X	X	X	X	X	X
Temperature	X	X	X	X	X	X	X	X	X	X	X
pH	X	X	X	X	X	X	X	X	X	X	X
DO	X	X	X	X	X	X	X	X	X	X	X
Upstream Photo	X	X	X	X	X	X	X	X	X	X	X
Rec Suitability, appearance, stage	X	X	X	X	X	X	X	X	X	X	X

S004-409, S006-104, S007-553	May		June			July			August			September	
2025	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
TSS	X		X			X			X			X	
TP	X		X			X			X			X	
Chloride	X												
Hardness as CaCO3	X												
E coli			X		X	X		X	X		X		
Secchi tube	X		X		X	X		X	X		X	X	
Specific Conductance	X		X		X	X		X	X		X	X	
Temperature	X		X		X	X		X	X		X	X	
pH	X		X		X	X		X	X		X	X	
DO	X		X		X	X		X	X		X	X	
Upstream Photo	X		X		X	X		X	X		X	X	
Rec Suitability, appearance, stage	X		X		X	X		X	X		X	X	
	X		X		X	X		X	X		X	X	

S007-554/S004-978	May		June			July			August			September	
2025	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Chl-a, Pheo Corrected			X		X	X		X	X		X	X	X
TSS	X		X			X			X			X	
TP	X		X		X	X		X	X		X	X	X
Chloride	X												
Hardness as CaCO3	X												
E coli			X		X	X		X	X		X		
Secchi tube	X		X		X	X		X	X		X	X	X
Specific Conductance	X		X		X	X		X	X		X	X	X
Temperature	X		X		X	X		X	X		X	X	X
pH	X		X		X	X		X	X		X	X	X
DO	X		X		X	X		X	X		X	X	X
Upstream Photo	X		X		X	X		X	X		X	X	X
Rec Suitability, appearance, stage	X		X		X	X		X	X		X	X	X

S004-340	May		June			July			August			September	
2025	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Chl-a, Pheo Corrected			X		X	X		X	X		X	X	X
TP	X		X		X	X		X	X		X	X	X
Sulfate	X		X			X			X			X	
Secchi tube	X		X		X	X		X	X		X	X	X
Specific Conductance	X		X		X	X		X	X		X	X	X
Temperature	X		X		X	X		X	X		X	X	X
pH	X		X		X	X		X	X		X	X	X
DO	X		X		X	X		X	X		X	X	X
Upstream Photo	X		X		X	X		X	X		X	X	X
Rec Suitability, appearance, stage	X		X		X	X		X	X		X	X	X
	X		X		X	X		X	X		X	X	X

07010207-509	May		June			July			August			September	
2025	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Sulfate	X		X			X			X			X	
Secchi tube	X		X			X			X			X	
Specific Conductance	X		X			X			X			X	
Temperature	X		X			X			X			X	
pH	X		X			X			X			X	
DO	X		X			X			X			X	
Upstream Photo	X		X			X			X			X	
Rec Suitability, appearance, stage	X		X			X			X			X	

07010207-535	May		June			July			August			September	
2025	Early	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Chl-a, Pheo Corrected			X		X	X		X	X		X	X	X
TP	X		X		X	X		X	X		X	X	X
Secchi tube	X		X		X	X		X	X		X	X	X
Specific Conductance	X		X		X	X		X	X		X	X	X
Temperature	X		X		X	X		X	X		X	X	X
pH	X		X		X	X		X	X		X	X	X
DO	X		X		X	X		X	X		X	X	X
Upstream Photo	X		X		X	X		X	X		X	X	X
Rec Suitability, appearance, stage	X		X		X	X		X	X		X	X	X

S002-953, S002-955	June			July			August			September	
2025	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Late
Chl-a, Pheo Corrected	X		X	X		X	X		X	X	X
E coli	X		X	X		X	X		X		
Secchi tube	X		X	X		X	X		X	X	X
Specific Conductance	X		X	X		X	X		X	X	X
Temperature	X		X	X		X	X		X	X	X
pH	X		X	X		X	X		X	X	X
DO	X		X	X		X	X		X	X	X
Upstream Photo	X		X	X		X	X		X	X	X
Rec Suitability, appearance, stage	X		X	X		X	X		X	X	X

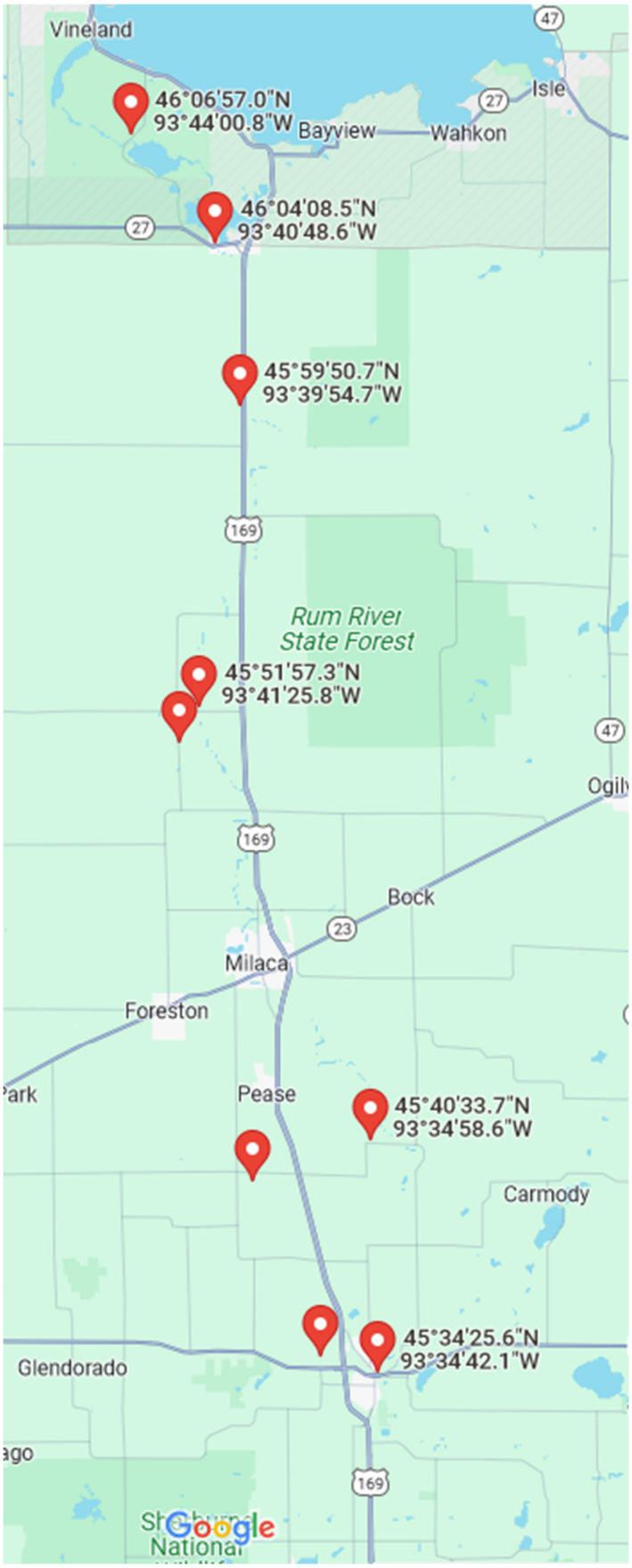
Lakes

	May	June	July	August	September
2024					
TP[1]	X	X	X	X	X
Chl-A[1]	X	X	X	X	X
Chloride[2]				X	
Hardness as CaCO3[2]				X	
Secchi Disk	X	X	X	X	X
Specific Conductance	X	X	X	X	X
Temperature	X	X	X	X	X
pH	X	X	X	X	X
DO	X	X	X	X	X
Rec Suitability, Appearance	X	X	X	X	X
	X	X	X	X	X

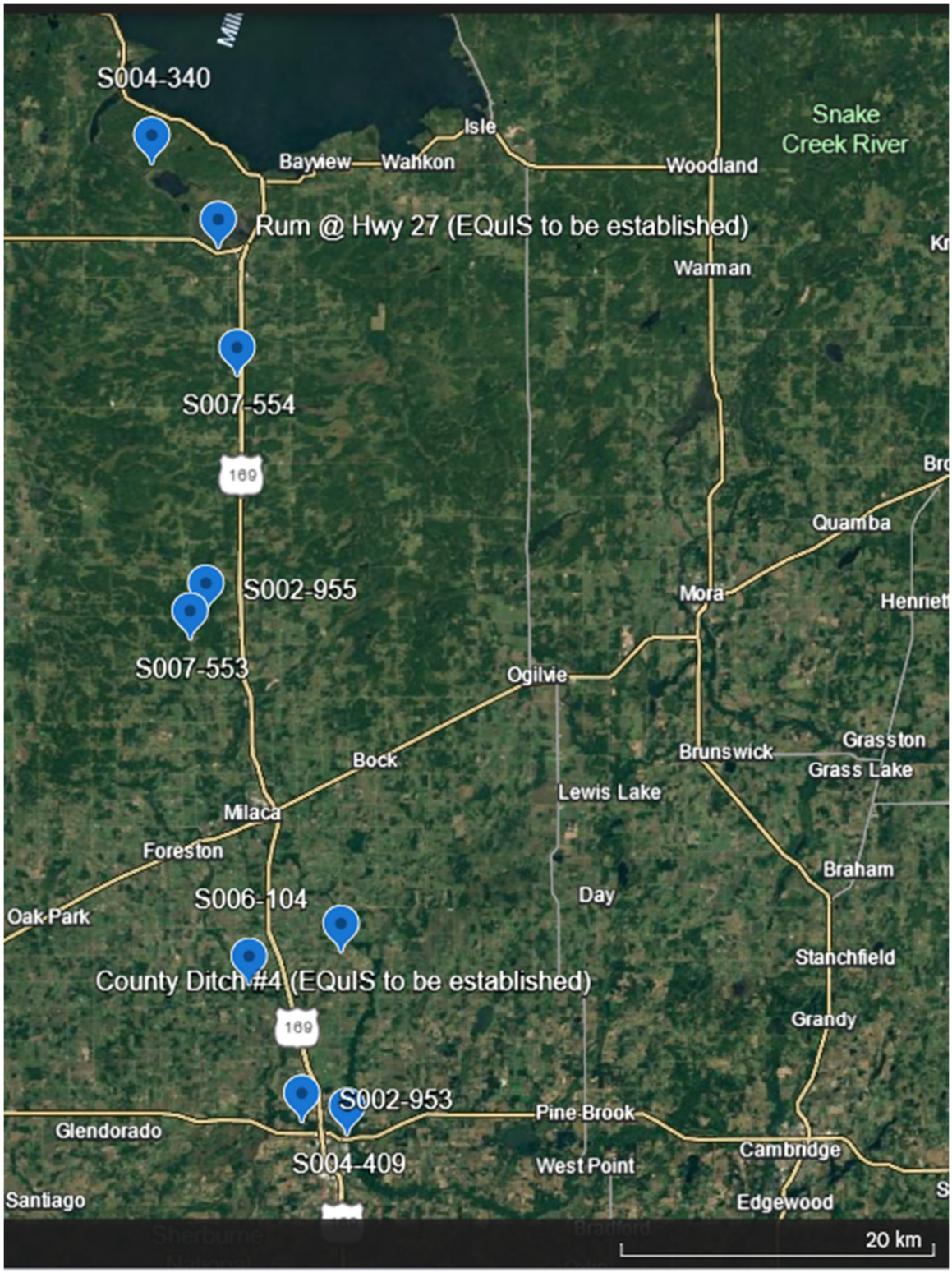
	May	June	July	August	September
2025					
TP	X	X	X	X	X
Chl-A	X	X	X	X	X
Secchi Disk	X	X	X	X	X
Specific Conductance	X	X	X	X	X
Temperature	X	X	X	X	X
pH	X	X	X	X	X
DO	X	X	X	X	X
Rec Suitability, Appearance	X	X	X	X	X
	X	X	X	X	X

1. *Collect **one** additional set of bottles in July 2024 for QA/QC field duplicate for applicable lab parameters.*
2. *Collect one Chloride and one Hardness in August 2024.*

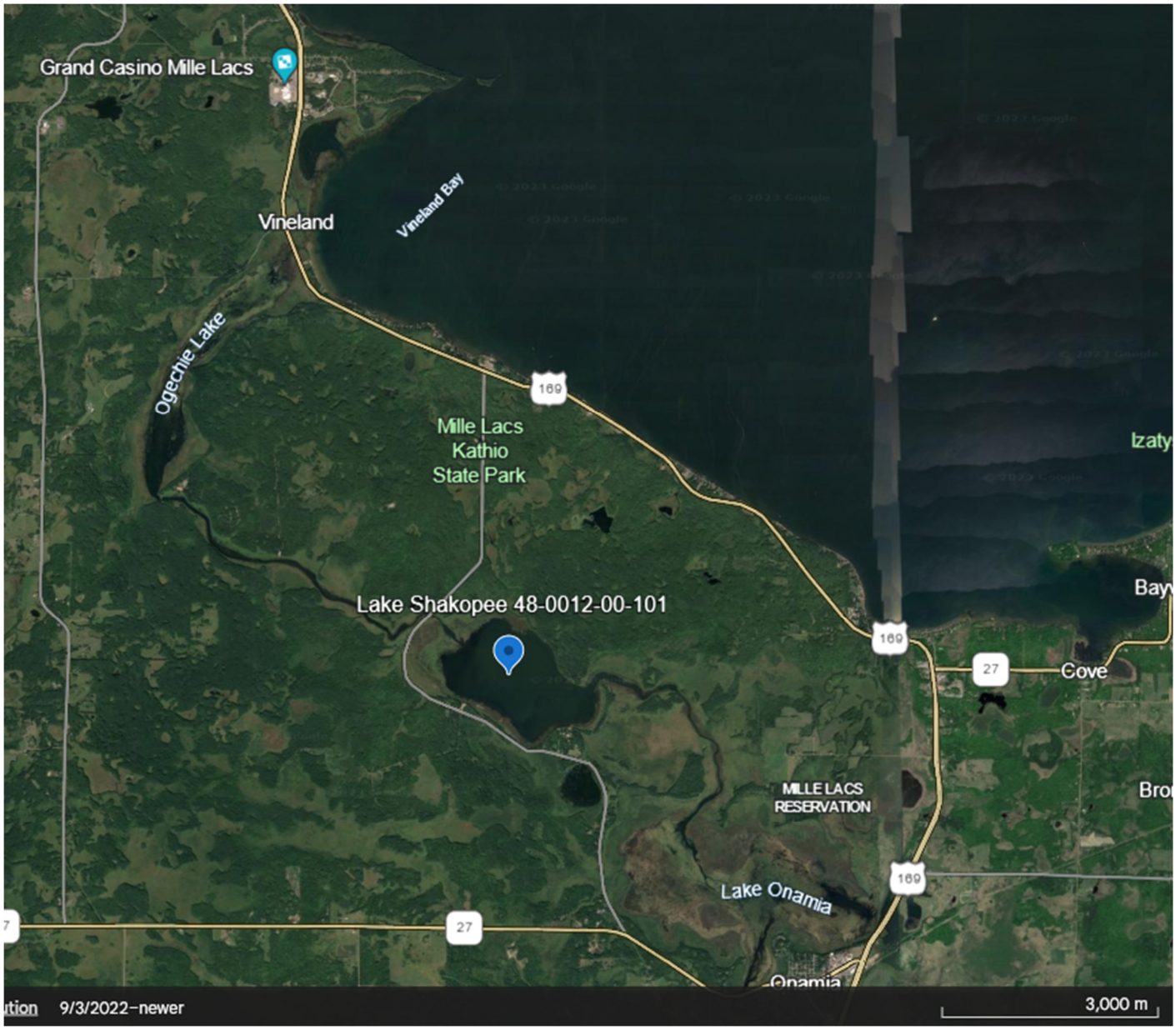
VII. Project area map



Stream sampling sites in Mille Lacs County, per Google Maps



Map of stream sampling sites with EQuIS names, Google Earth



Map of lake sampling site, Lake Shakopee, coordinates 46.10776, -93.71975

VIII. Project budget

Total budget

	Quantity needed	Unit cost	Total cost
Personnel (not to exceed) *			$
Laboratory†, Equipment and Supplies, Shipping			$
Travel (Mileage & Meals§)			$
		Total:	**$**
** Staff rates shall not exceed the following:*			
No positions beyond those listed here shall perform work within the work plan without approval and execution of an amended joint powers agreement.			
MLSWCD Tech rate:			$
MLSWCD Admin rate:			$
MLSWCD District Administrator rate:			$
MLBO Tech 1 rate:			$
MLBO Tech 2 rate:			$
†*Current sampling and laboratory services master contract rates shall not be exceeded.*			
§*Must follow the Commissioner's Plan.*			