

WATER RESOURCES ACRONYMS & DEFINITIONS

As compiled by the Vadnais Lake Area Water Management Organization

2016

Sources include local, state, and federal agencies

Commonly used water resources acronyms.....	1
Administrative definitions.....	3
Water quality definitions.....	5

Acronyms

AIS	Aquatic Invasive Species
BLID	Birch Lake Improvement District
BMP	Best Management Practice
Board	VLAWMO Board of Directors
BWSR	Board of Water and Soil Resources
CAC	Citizen Advisory Committee (which, in VLAWMO is called the Watershed Advisory Volunteers or WAV)
CCM	Conservation Corps of Minnesota
cfs	cubic feet per second
Chl- a	Chlorophyll- a
CIP	Capital Improvements Plan
CLMP	Citizens Lake Monitoring Program
DNR	Minnesota Department of Natural Resources
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
EQUIS	Environmental Quality Information System (MPCA water quality data)
IBI	Index of Biotic Integrity
JPA	Joint Powers Agreement
LA	Load Allocation
LCCMR	Legislative-Citizen Commission on Minnesota Resources
LGU	Local Government Unit
LWMP	Local Water Management Plan
MDA	Minnesota Department of Agriculture
µg/ L	Micrograms per liter (ppb)
mg/L	Milligrams per liter (ppm)
MIDS	Minimal Impact Design Standards
MNDOT	Minnesota Department of Transportation
MnRAM	Minnesota Routine Assessment Methodology (for evaluating wetland functions)
MPCA	Minnesota Pollution Control Agency
MS4	Municipal Separate Storm Sewer Systems
NO3	Nitrate
NO2	Nitrite

Acronyms

NPDES	National Pollutant Discharge Elimination System
NWI	National Wetland Inventory
NWS	National Weather Service
Plan	Watershed Management Plan
ppb	parts per billion (ug/L)
ppm	parts per million(mg/L)
QA/QC	Quality Assurance/Quality Control
SLMP	Sustainable Lake Management Plans
SPRWS	St. Paul Regional Water Service
SRP	Soluble Reactive Phosphorus
SWPPP	Storm Water Pollution Prevention Program
TAC	Technical Advisory Committee
TEC	Technical Commission
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphors
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VLAWMO	Vadnais Lake Area Water Management Organization
WAV	Watershed Action Volunteers (VLAWMO's Citizen Advisory Committee)
WCA	Wetland Conservation Act
WLA	Waste Load Allocation
WMO	Watershed Management Organization
WWTP	Waste Water Treatment Plant

Administrative definitions

“303d list” or “Impaired Waters List” - List of water bodies with impairments in Minnesota that “require Total Maximum Daily Load (TMDL) ‘cleanup studies’...”those with completed TMDLs that have not yet been restored, ‘non-pollutant’ impairments, and impairments due to natural sources.”

“Agreement” - This Agreement pursuant to Minnesota Statutes Section 471.59, Subd. 2 reconstituting the Vadnais Lake Area Water Management Organization (VLAWMO).

“Area” - The boundaries of the Vadnais Lake Area Watershed as set forth by the map titled *Figure 2: Hydrologic Subwatershed Boundary vs. Political Boundary* found in Appendix B of the Comprehensive Watershed Management Plan 2017-2026, as labeled “VLAWMO political boundary.”

“Board” - The governing board of VLAWMO consisting of one elected official from each of the Members which are a party to this Agreement, and shall be the governing body of the Commission.

“Capital Improvement Program” or “capital improvement program” or “Works of Improvement” - A multi-year itemized program, described in the approved VLAWMO Water Management Plan and any amendments to it, setting forth the schedule, timing, and details of specific contemplated capital improvements by year.

“City Council or Town Board” - The governing body of a governmental unit which is a Member to this Agreement.

“City Staff” - Persons hired by units of local government whether as an employee or as an independent contractor.

“Commissioner” - A representative appointed by each Member government to the Board or Technical Commission.

“Comprehensive Plan” or “comprehensive plan” - The meaning given it in Section 473.852, Subd. 5.

“Council” - The governing body of a governmental unit which is a member of this Commission.

“Flood Prone” - Areas within the floodplain or the floodway.

“Governmental Unit” - Any city, county, town, township, school district or other political subdivision or an “instrumentality of a governmental unit” as cited in Minnesota Statutes Section 471.59, Subd. 1.

Administrative definitions

“Local Government Unit” or “local government unit” or “LGU” - Cities, counties, towns and townships, not including school districts, as described in Minnesota Statutes Section 473.852, Subd. 7.

“Local Water Management Plan” - A plan adopted by each of the Members pursuant to Minnesota Statute Section 103B.235.

“Member” - Each local governmental unit that is a party to this Agreement.

“Non-degradation” - No significant increase in stormwater runoff or pollutant loads from 2015 or most currently amended MPCA numerical standards that decreases water quality from its previous or current state.

“Organization” - The organization created by the Agreement, the full name of which is the “Vadnais Lake Area Water Management organization” and is abbreviated VLAWMO. It shall be a public agency of its Members.

“Redevelopment” - Alterations of a property that change the “footprint” of a site or building in such a way that results in the disturbance equal to or greater than 1 acre of land.

“St. Paul Regional Water Service” (SPRWS) - Drinking water utility service governed by the Board of Water Commissioners of the City of Saint Paul.

“Technical Commission” - A commission composed of persons appointed by each Member local government unit to decide technical business decisions, or to give recommendation to the Board.

“Vadnais Lake Area Watershed” - The area contained within a line drawn around the extremities of all terrain whose surface drainage is tributary to Vadnais Lake.

“VLAWMO” or “the VLAWMO” - The abbreviated name of the organization created by the Agreement, the full name of which is the “Vadnais Lake Area Water Management Organization.”

“Watershed Management Plan” - A comprehensive watershed management plan adopted by the VLAWMO pursuant to Minnesota Statutes Section 103B.231.

“Water Management Organization” or “WMO” - An organization mandated by the Minnesota Board of Water and Soil Resources to create and implement a watershed management plan as detailed by Minnesota Rules Chapter 8410.0020 Subp. 22.

Water quality definitions

Ammonia (NH₃) – an inorganic form of nitrogen that is contained in fertilizers, septic system effluent, and animal wastes. It is also a product of bacterial decomposition of organic matter. NH₃ becomes a concern if high levels of the un-ionized form are present. In this form NH₃ can be toxic to aquatic organisms. The presence of un-ionized ammonia is a function of the NH₃ concentration, pH, and temperature. Conversion of NH₃ to NO₂ by nitrification requires large quantities of oxygen which can kill aquatic organisms due to the lowered dissolved oxygen concentrations in water.

Aquatic Invasive Species (AIS) – non-native species such as zebra mussels and Eurasian watermilfoil

Birch Lake Improvement District (BLID) – Homeowner/lakeshore owners on Birch Lake in White Bear Lake MN

Chlorophyll-a (Chl A) - Chl A is a green pigment in algae. Measuring Chl A concentration gives an indication of how abundant algae are in a waterbody.

Colony Forming Units (CFU) – unit used in measuring the level of E. coli in a water sample.

Conductivity (mS/cm) - Conductivity is a good measure of salinity in water. The measurement detects chloride ions from the salt. Salinity affects the potential dissolved oxygen levels in the water. The greater the salinity, the lower the saturation point. Measurement in millisiemens per cm. 1 mS/cm = 1000 uS/cm.

Dissolved Oxygen (DO) - The concentration of molecular oxygen (O₂) dissolved in water. The DO level represents one of the most important measurements of water quality and is a critical indicator of a water body's ability to support healthy ecosystems. Levels above 5 mg/L are considered optimal, and most fish cannot survive for prolonged periods at levels below 3 mg/L. Microbial communities in water use oxygen to breakdown organic materials, such as animal waste products and decomposing algae and other vegetation. Low levels of dissolved oxygen can be a sign that too much organic material is in a water body.

Ecoli – Criteria for E. coli set forth in Minn.R. 7050.0222; creek must not exceed 126 organisms per 100 ml as a geometric mean of not less than 5 samples in any calendar month, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 ml

EQUIS - a repository for water quality, biological, and physical data and is used by state environmental agencies, EPA and other federal agencies, universities, private citizens, and many others. The MPCA uses the information entered into the database to determine the quality of the state's water bodies. If water quality standards are not met, the water body will be designated as impaired and will need to have a TMDL study conducted.

Eutrophic – a water body that is high in nutrients and low oxygen content. A eutrophic lake is usually shallow, green, with limited oxygen in the bottom layer of water.

Eutrophication – The aging process by which lakes are fertilized with nutrients. Natural eutrophication will gradually change the character of a lake. Human activities can accelerate the process.

Water quality definitions

Hypereutrophic – A very nutrient-rich lake with murky water, frequent algal blooms and fish kills, foul odor, and rough fish

Impaired Waters – The Clean Water Act requires states to publish, every two years, a list of streams and lakes that are not meeting their designated uses because of excess pollutants. The list, known as the 303(d) list, is based on violations of water quality standards.

Mesotrophic – the classification between eutrophic and oligotrophic lakes. These lakes have moderately clear water, late-summer algal blooms, moderate macrophyte populations, and occasional fish kills.

Molecular Sourcing – the use of specific DNA markers to determine presence of a specific host origin of E.coli in a water sample (example, Human or Avian)

Most Probable Number (MPN) - unit used in measuring the level of E. coli in a water sample, similar to (CFU)

Nitrate (NO₃) – High NO₃ levels are often caused by over application of fertilizers that leach into waterbodies. Nitrate loading from water bodies in Minnesota has national implications as it is the primary chemical contributing to the hypoxia (low oxygen) zone at the mouth of the Mississippi River in the Gulf of Mexico. The Environmental Protection Agency (EPA) has a standard for nitrates in drinking water of 10ppb, infants and children are especially at risk.

Nitrite (NO₂) – The second stage of the nitrogen cycle. Nitrite is poisonous to fish. Levels over 75 µg/L can cause stress in fish and greater than 500 µg/L can be toxic

Nitrogen (N) – Nitrogen is second only to phosphorus as an important nutrient for plant and algae growth. The amount of nitrogen in a water body strongly correlates to land use. Nitrogen comes from fertilizers, animal waste, sewage treatment plants and septic systems through surface runoff or groundwater sources. Nitrogen does not occur naturally in soil minerals but is a major component of all organic matter.

Nitrogen Cycle - the process of nitrogen breakdown in water. The first stage is the production of NH₃. The second stage is the oxidation of NH₃ into NO₂ which is very poisonous to fish. The final stage is conversion of NO₃ which aquatic plants use. Once the plants have used their share of NO₃, bacteria change it back into a gaseous form and release it back to the atmosphere. The Nitrogen Cycle is dependent on oxygen. If a water body has low DO, organic decay of nitrogen is slower and the water will have increased interim levels of toxic products (NH₃ and NO₂). The cycle also moves quicker in warmer water.

Oligotrophic – a water body that is generally clear, deep, and free of weeds or large algae blooms.

Particulate Phosphorus – a form of phosphorus that is attached to sediment particles and in plant and animal fragments suspended in the water and may not be immediately available to support algae growth. Some of this phosphorus is readily available but the amount can vary.

Water quality definitions

Phosphorus (P) - Phosphorus is the primary cause of excessive plant and algae growth in lake systems. Phosphorus originates from a variety of sources, many of which are human related. Major sources include human and animal wastes, soil erosion, detergents, septic systems and runoff from farmland, yards, and streets.

Secchi Disk – a round, white, metal disk that is used to determine water clarity. It is lowered into the water until it is not visible. The depth is recorded, and then the disk is raised until it is visible. The mean value of the two readings gives the clarity.

Secchi Disk Transparency (SDT) - the term used in describing the results of a secchi reading expressed in feet or meters.

Soluble Reactive Phosphorus (SRP) – a form of phosphorus that dissolves in water and is readily available (bio-available) to algae and has an immediate effect on algae growth and DO depletion. Its concentration varies widely over short periods of time as plants take it up and release it.

St. Paul Regional Water Service (SPRWS) – Agency which assists VLAWMO with water quality testing and controls the Vadnais chain of lakes, which supplies drinking water to the city of St. Paul.

Surface Water Assessment Grant (SWAG) - Grant awarded by the PCA to help fund surface water monitoring

Total Kjeldahl Nitrogen (TKN) – The sum of NO₂, NO₃, and NH₃ in a water body. High measurements of TKN typically results from sewage and manure discharges to water bodies.

Total Maximum Daily Load (TMDL) – Calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards and an allocation of that amount to the pollutant's source.

Total Nitrate and Nitrite Nitrogen - Nitrate (NO₃) plus nitrite (NO₂) as nitrogen. In lakes, most nitrate/nitrogen is in NO₃ form.

Total Phosphorus (TP) – A nutrient essential to the growth of organisms, and is commonly the limiting factor in the primary productivity of surface water bodies. Total phosphorus includes the amount of phosphorus in solution (reactive) and in particle form. Agricultural drainage, wastewater, and certain industrial discharges are typical sources of phosphorus, and can contribute to the eutrophication of surface water bodies.

Total Suspended Solids (TSS) – Very small particles remaining dispersed in a liquid due to turbulent mixing that can create turbid or cloudy conditions. A measure of the material suspended in water in mg/l. Total suspended solids (TSS) cause: a) interference with light penetration, b) buildup of sediment and c) potential reduction in aquatic habitat. Solids also carry nutrients that cause algal blooms and other toxic pollutants that are harmful to fish. Clay, silt, and sand from soils, phytoplankton (suspended algae), bits of decaying vegetation, industrial wastes, and sewage are common suspended solids.

Water quality definitions

Trophic Status Indicator (TSI) – TSI is an indicator of water quality. Lakes can be divided into three categories based on trophic state – oligotrophic, mesotrophic and eutrophic. A natural aging process occurs in lakes which cause them to change from oligotrophic to eutrophic over time and eventually fill in. Humans can accelerate this process by allowing nutrients from agriculture, lawn fertilizers, streets, septic systems, and urban storm drains to enter lakes. Trophic status is determined through TP, Chl A, and SDT measurements.

Turbidity – a water quality parameter that refers to how clear the water is. It is an indicator of the concentration of suspended solids in the water. Excessive sedimentation in streams and rivers is considered to be the major source of surface water pollution in the United States. Polluted waters are commonly turbid. Turbidity is expressed in NTU (Nephelometric Turbidity Units).

Volatile Suspended Solids (VSS) – a measure of the organic matter in suspended particles. When measured in conjunction with TSS, the proportions of organic versus mineral content of the particles can be determined.