

Glossary

Rivers, Streams & Lakes Terms

Baseflow:

Stream discharge or flow composed of ground water drainage and delayed surface drainage. Baseflow is typically characterized as that portion of stream flow not related

Best Management Practices:

Agricultural and urban land management practices that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.

Bacteria:

The overall recreational value of a surface water body (river, stream, or lake) can be measured in part by its suitability for swimming (i.e. all water contact activities), as determined by the presence of fecal coliform bacteria. These bacteria are found in the wastes of warm-blooded animals, including people, dogs and cattle, and may indicate the presence of potentially dangerous pathogens such as typhoid fever, hepatitis and dysentery. Bacteria levels with a monthly average below 200 bacteria colonies/100 ml of water are generally considered to be safe for human contact.

Bioaccumulation:

The process by which the concentration of a substance in an organism is increased through successive links in a food chain, resulting in higher concentrations at the top of the chain.

Bioavailable:

Biologically available for uptake in living organisms.

BOD:

Biochemical Oxygen Demand is a measure of the quantity of dissolved oxygen necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Composite Sample:

A combined water sample consisting of a series of discrete water samples taken over a given period of time and mixed according to a specified weighting factor such as stream flow. A composite sample is often collected with the use of an automated sampler over the duration of a runoff event.

Conductivity:

A measure of the ability of water to carry an electrical current, related to the amount of ions in the solution.

Dissolved Oxygen:

Living organisms need oxygen to survive, and the amount of dissolved oxygen in a surface water body determines how much aquatic life it can support. Dissolved oxygen is reduced through respiration by aquatic plants and animals, or the decomposition of organic material in the water, which may come from wastewater treatment plants or agricultural and urban nonpoint source runoff. Dissolved oxygen levels of 5 mg/l and greater provide protection of aquatic life.

EPT richness index:

A biological index of stream health, expressed as the sum of the number of taxa in three aquatic insect orders: Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies). These three insect orders are composed primarily of species considered to be relatively intolerant of pollution and environmental alterations. Variations of the EPT index include number of EPT taxa, percentage of EPT taxa, number of EPT individuals, and percentage of EPT individuals in a macroinvertebrate sample.

Fish Consumption Advisories:

Any fish could contain contaminants such as mercury and PCBs that can harm human health - especially the development of children and fetuses. The Minnesota Department of Health provides advice on how often fish caught in Minnesota's rivers and lakes can safely be eaten.

Flow:

River or stream flow, commonly expressed as cubic feet per second or "cfs".

Flow Weighted Mean Concentration:

Similar to normalized yield, "flow weighted mean concentration" (FWMC) is calculated by dividing the total mass or load of a pollutant by the total flow, for a given time period. The FWMC is mass normalized for flow. Conceptually, a FWMC would be the same as routing all the flow that passed by a monitoring site into a big, well-mixed pool, and collecting and analyzing one sample from the pool to obtain an average pollutant concentration.

FLUX:

An interactive program developed by the U.S. Army Corps of Engineers that allows the user to estimate loads and flow weighted mean concentrations for water quality variables, using grab sample concentration data and continuous stream flow records. The term "load" refers to a mass of material passing through a stream during a given time period.

Hydrograph:

A graph of stream flow during a given time period, often seasonal or annual. MCES hydrographs depict daily average stream flows, in cubic feet per second (cfs).

Load:

A "load" is the total amount or mass of a water quality variable passing through a stream during a given time period, often seasonally or annually. A load reflects the combined contributions of surface runoff and ground water discharge from a specific watershed, as measured at the monitoring station. MCES uses water chemistry and stream flow data to calculate annual loads (expressed in tons) using a FLUX program.

Macroinvertebrate:

An aquatic invertebrate animal large enough to be seen with the naked eye. Macroinvertebrates include insects, freshwater "shrimp", crayfish, clams, snails, and worms. An analysis of the types and numbers of macroinvertebrates present in a stream, often expressed as a biological "index", is a very useful indicator of water quality and habitat conditions.

Nonpoint Source Pollution:

Nonpoint source (NPS) pollution, unlike pollution from industrial and wastewater treatment plants, comes from many diffuse sources. NPS pollution is primarily caused by runoff from rainfall or snowmelt that picks up and carries natural and human-made pollutants and deposits them into lakes, streams, rivers, and wetlands. Check out the NPS fact page for more information about non-point source pollution and its causes.

Normalized Pollutant Yield:

For many water quality variables, the more precipitation that falls on a given watershed, the higher the stream loads and watershed yields will be. To help account for spatial and temporal differences in precipitation, a yield can be further divided by the number of inches of water (water yield) contributed to the stream by the watershed during a given time period, providing a "normalized yield" expressed as pounds per acre per inch of water.

Phosphorus:

Aquatic plants provide food, oxygen, and habitat for aquatic organisms. However, an excess of plant growth can lead to unsightly algae blooms which cause oxygen depletion and odor upon decaying, making the water unpleasant for recreational activities and unsuitable for aquatic life. Phosphorus, a common component of wastewater treatment plant discharges and urban and agricultural runoff, can stimulate excessive plant growth when phosphorus levels in surface waters are too high.

Point Source Pollution:

Pollution whose source is easily identifiable, such as discharges from wastewater treatment or industrial plants.

Rating Curve:

A continuous record of stream discharge or flow (hydrograph) is established by developing a mathematical relationship between water stage, which is continuously measured at the monitoring station, and discharge. This stage-discharge relationship, or "rating curve", is developed by pairing stage data with individual point-in-time discharge measurements. To properly develop a rating curve, discharge measurements should be made at a variety of water stages, from low to high. Using the rating curve, all water stages continuously measured at the monitoring station can be converted to flows, thereby establishing a flow record (hydrograph) for a given time period.

River Mile:

Specific location along a river or stream that designates how far that point is upstream from the mouth of the river. For example, Le Sueur River Mile 1.3 means the location is 1.3 miles upstream from the mouth of the Le Sueur River.

Runoff:

Rainfall, snowmelt, or irrigation water that runs off the land into streams, rivers, lakes, and wetlands. Runoff frequently picks up natural and human-made pollutants from land surfaces and carries these pollutants into surface waters.

Runoff Event:

The response of stream flow to precipitation-induced runoff. After a precipitation event, a runoff event is characterized by an increase in flow from the baseflow condition as watershed runoff reaches the stream, followed by a subsequent decrease in flow to the baseflow condition after watershed runoff passes through the stream. One objective of the MCES stream monitoring program is to sample throughout each runoff event (via composite sampling), to characterize concentrations and loads of key nonpoint source pollutants.

Stage:

Level or height of the water surface, commonly measured in feet.

Target Pollutant Load:

A target pollutant load is a goal set to limit the amount or load of a pollutant that is being discharged from a watershed via the stream. MCES is developing target pollutant loads for TCMA watersheds, to reduce water quality impacts due to nonpoint source pollution, to help achieve federal and state water quality standards, and to help reduce unnecessary investments in advanced wastewater treatment.

Target pollutant loads will be developed through an iterative process that comprehensively assesses stream monitoring data, identifies water quality problems, uses a water quality model to help evaluate the feasibility of target pollutant load goals, and provides support for development of watershed plans that identify management strategies for improvement or protection of stream water quality. MCES intends this to be a collaborative process involving local stakeholders, including watershed management organizations and districts and other local units of government.

TCMA:

Twin Cities Metropolitan Area.

Turbidity:

Turbidity (cloudiness) is caused by soil particles or organic matter in the water. These particles may harm aquatic life by decreasing light available for plant growth, increasing

water temperature, clogging the gills of aquatic inhabitants, and covering habitat. Low turbidity (at or below 25 NTU) indicates good water quality.

Watershed:

The land area that contributes surface water drainage to a stream. The watershed of a larger stream or river may encompass a number of smaller tributary subwatersheds.

Yield:

One way to assess and compare the pollutant loads from watersheds of different sizes is to determine the "yield", or pollutant load per unit area of the watershed. Yield normalizes pollutant load on the basis of watershed area, allowing for more relative comparisons to be made between watersheds. Yield is calculated by dividing the total pollutant load for a given time period by the watershed area, and is commonly expressed as pounds per acre. Pollutant loads and yields are primarily a function of soil type, land use, landscape characteristics, and the amount, timing, and intensity of precipitation.