

APPENDIX 1

GLOSSARY

Following are definitions of terms used in this handbook which may be unfamiliar. For definitions of indicators (for example, pH, orthophosphate, etc.) and methods (for example, titration, ascorbic acid, etc.), see Appendix 2, *Guide to Indicators and Monitoring Methods*.

Accuracy	How close to the true or expected result you are in your analysis of a sample.
Assessment	Determination of the condition of a waterbody using monitoring and/or survey information.
Aquatic Life Special Water Quality Protection Surveys	DEP surveys that assess the need for special water quality protection which would require revision of the water quality standards to provide that protection in order to maintain existing high quality.
Calibration Blank	De-ionized or distilled water processed like any of the samples and used to “zero” an instrument.
Calibration Standards	One or more “standard concentrations” (made up in the lab to specified concentrations) of the indicator being measured used to calibrate an instrument.
Cause/Effect Surveys	Monitoring to see if specific sources of point or nonpoint source pollution are causing known or reported problems.
Channel	That part of the drainage area which carries or contains water at a given flow or level.
Channel Cross-section	Measurements of the depth to the channel bed from some benchmark elevation at regular intervals perpendicular across the channel.
Colloid	A suspension of fine particles in water that do not settle out rapidly and are not readily filtered.
Colorimetric	Determining the concentration of an indicator in a sample by adding to it a reagent that causes a color change in direct proportion to the concentration of the indicator being measured. The intensity of the color is measured, by the extent to which it absorbs or transmits light, and converted to a concentration.

Comparability	The extent to which data can be compared between sampling locations, times or data sets.
Completeness	Comparison between the amount of valid or usable data you planned to collect, versus how much you actually collected.
Designated Uses	Uses specified in the Water Quality Standards for each waterbody, whether or not they are actually supported.
Digestion	The process of disintegration by means of chemical action, heat and/or moisture.
Distillation	Boiling the sample and collecting the steam.
Duplicate Samples	Two or more samples from the same site, or sub-samples from the same sample, collected and/or analyzed in the field or lab.
Electrometric	Determining the concentration of an indicator in a sample by using a meter with an attached electrode which measures the electric potential (millivolts) of the sample. This amount of electric potential is a function of the activity of ions or molecules in the sample and proportional to the concentration of the indicator being measured.
Epidemiology	The study of disease in human populations.
Existing Uses	Those uses actually supported by conditions in the waterbody, whether or not they are designated.
Geometric Mean	A statistical summary typically used to summarize bacteria data to reduce the influence of very high and very low numbers on the data set. A set of data is transformed to the logarithmic values of each data point, averaged and then transformed back to the original units. Since addition of logarithms is equivalent to multiplication of their antilogarithms, another way of representing this quantity is $Gm_y = \sqrt[n]{Y_1 Y_2 Y_3 \dots Y_n}$
Gravimetric	Determining the concentration of an indicator in a sample by filtering a specified quantity of the sample and determining the weight of the material retained on the filter.

Hess Sampler	A quantitative benthic macroinvertebrate sampler that is basically a bucket with no bottom and a net coming out of the side.
Impact Sites	Sites downstream of some sort of human alteration of the stream. They represent conditions in the stream after the impact of the alteration.
Impairment	A description of waters that do not support their designated uses.
Indicator	A measurable feature that represents the condition, or a part of the condition, of the waterbody being measured.
Ions	Positively or negatively charged atoms or molecules.
Known Samples	Outside lab-prepared samples with pre-determined concentrations that are known to the project lab.
Membrane Filtration and Incubation	A method of determining the bacteria concentration of a water sample by filtering a specified quantity through a specified gridded membrane filter, which retains the bacteria cells and other particles larger than 0.45 microns. After filtration, the membrane containing the bacterial cells is placed on a specific nutrient medium and then incubated at a specified temperature for a specified length of time. Colonies growing on the filter are then counted.
Metal	Elements with a positive charge that usually have a shiny surface, are generally good conductors of heat and electricity and can be melted or fused, hammered into thin sheets or drawn into wires. Typical metals form salts with nonmetals, basic oxides with oxygen and alloys with one another.
Monitoring	Testing or sampling on a regular or ongoing basis.
National Pollution Discharge Elimination System	A system set up by the Clean Water Act that requires all discharges to the nation's waters to obtain a permit.
Negative Plates (bacteria)	Sterile water that has been filtered and analyzed the same way as a sample.

Nephelometric	Determining the clarity of a sample by measuring the intensity of light scattered by particles in the sample and comparing this with a known solution. The higher the intensity of the scattered light, the higher the turbidity reported in nephelometric turbidity units (NTU's).
Oxide	A molecule containing two kinds of atoms, with one being oxygen.
Phase 1 Diagnostic - Feasibility Study	An intensive lake study that results in a management plan to control pollution sources and restore lake quality.
Phase 2 - Management Plan Implementation Assessment	On-going lake monitoring to see if the protection and restoration efforts in the management plan are working.
Pool	Deep (>2'), slow-moving (<0.4 feet per second) sand or mud-bottom areas of a stream.
Positive Plates (bacteria)	Water known to contain bacteria (such as wastewater treatment plant influent) that is filtered and analyzed the same way as a sample.
Precision	The degree of agreement among repeated measurements of the same indicator.
Quality Assurance	A system put into place to ensure that data will meet standards of quality that is defined.
Quality Control	Specific measures taken or special samples collected and analyzed during the collection and analysis of samples to ensure the accuracy, precision, representativeness, comparability and completeness of monitoring.
Quality Control – External	Types of samples collected and analyzed by non-volunteer field staff and a lab (also known as a “quality control lab”). The results are compared with those obtained by the project lab.
Quality Control – Internal	Types of samples that are collected and analyzed by project field volunteers, staff and lab.
Quality Evaluation	That part of quality assurance system that involves calculating the accuracy, precision, representativeness, comparability and completeness of quality control samples and comparing them to data quality objectives.

Recovery Sites	Sites downstream of some sort of human alteration of the stream. They represent conditions in the stream after the impacts of the alteration have begun to diminish.
Reference Condition	The condition that describes 1) desired conditions (e.g. water quality standards or 2) actual conditions in a relatively homogenous area with minimal human influence (e.g. aquatic life in an undeveloped area).
Representativeness	The extent to which sampling or measurements represent the true population or condition at the time the sample was collected.
Riffle	Shallow (1-2'), fast moving (0.4 - 2.5 feet per second), cobble bottom areas of a stream.
Riparian	Of or relating to the banks of a natural waterbody.
Runs	Moderately deep (>2'), moderately fast moving (0.4 - 2.0 feet per second), sand and gravel bottom areas of a stream.
Sample Analysis	The separation of a sample into its constituent elements to determine either their nature (qualitative analysis) or their proportions (quantitative analysis).
Sampling	Collecting a representative portion of water, aquatic life, sediment or some other material.
Soluble	Able to be dissolved.
Spike Samples (sometimes known as "standard additions")	A sample is split into two sub-samples in the lab. One is analyzed according to the specified procedure. The other is treated by adding a known amount and concentration of the indicator being measured, then running the specified procedure. This should increase the concentration in the spiked sample relative to the unspiked sample by a predictable amount.
Split Sample	A sample split into two sub-samples at the lab or in the field. One sub-sample is analyzed at the project lab and the other is analyzed at an outside lab and the results compared.
Standard Analysis Codes	A numbering system used by DEP to describe standardized sets of indicators and lab analysis procedures.

Study Design	The process of making choices about the why, what, how, where, when and who of your monitoring program. A document such as a monitoring plan.
Surber Sampler	A metal frame net for sampling benthic macroinvertebrates. The net has a metal frame extension that lies on the bottom of the stream and delineates the area to be sampled.
Survey	An examination of one or more aspects of the watershed. Results feed into an assessment (determination of condition).
305(b) Report	A biennial report prepared in response to Section 305(b) of the federal Clean Water Act that requires states to provide an assessment of water quality.
303(d) List.	A subset of these waters in the 305(b) report that are considered impaired and will not meet the water quality standards even if appropriate technology is applied.
Titration	Determining the concentration of an indicator in a sample by adding to it a standard reagent of known concentration in carefully measured amounts until a color change or electrical measurement is achieved, and then calculating the unknown concentration.
Total Maximum Daily Loads	The maximum input (usually in pounds or tons per day) from all point and nonpoint pollution sources allowed to enter a waterbody while meeting water quality standards.
Trip (Field) Blank	De-ionized or distilled water which is poured into a sample container in the field as if it were a stream or lake sample.
Trophic Status	The status of food production in lakes as measured by water clarity, phosphorus and chlorophyll a.
Unknown Samples	Outside lab-prepared samples with pre-determined concentrations unknown to the project lab.
Use Attainability Studies	Studies carried out to review and revise (if needed) water quality standards to ensure that designated fish and aquatic life uses are protected.
Water Column	The vertical profile of the water itself in a river or lake.

Watershed Reference Sites	Sites that are in the least-developed parts of the watershed and represent “least-impaired” conditions.
Water Quality Criteria	Levels of indicators or conditions that need to be maintained or achieved in order to support the designated uses.
Water Quality Network	DEP’s long-term network of 153 fixed monitoring stations on rivers, streams and lakes throughout the state.
Water Quality Standards	Chapter 93 of the Pennsylvania Code which describes the water uses to be protected and the water quality criteria (conditions) needed to protect those uses.

ABBREVIATIONS AND ACRONYMS

ALLARM	Alliance for Aquatic Resource Monitoring
AMD	Abandoned Mine Drainage
BOD	Biochemical Oxygen Demand
CVI	Canaan Valley Institute
CVMP	DEP’s Citizens’ Volunteer Monitoring Program
DCNR	Pa. Department of Conservation and Natural Resources
DEP	Pa. Department of Environmental Protection
DO	Dissolved Oxygen
DRKN	Delaware Riverkeeper Network
EASI	Environmental Alliance for Senior Involvement, Pa. Senior Environment Corps
EMAP	EPA’s Environmental Monitoring and Assessment Protocol
EPA	US Environmental Protection Agency
EPT	Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddis flies)
FSN	DEP’s Fixed Station Network
GWN	DEP’s Ground Water Network
HDPE	High Density Polyethylene
IWLA	Izaak Walton League of America

mTEC	Membrane Filtration Thermotolerant <i>E. coli</i>
NCDC	National Climatic Data Center
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NTU	Nephelometric Turbidity Unit
NWS	National Weather Service
PA BSP	Pa. Bureau of State Parks
PA FBC	Pa. Fish and Boat Commission
PALMS	Pa. Lake Management Society
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RBP	EPA's Rapid Bioassessment Protocols
RPD	Relative Percent Difference
RN	River Network (formerly River Watch Network)
SM	Standard Methods
SAC	Standard Analysis Codes
SOC	Synthetic Organic Compound
SWAP	DEP's Source Water Assessment Program
SWRC	Stroud Water Research Center
TKN	Total Kjeldahl Nitrogen
TMDLs	Total Maximum Daily Loads
TSI	Trophic State Index
USFS	US Forest Service
USGS	US Geological Survey
VOC	Volatile Organic Compound
WQN	DEP's Water Quality Network