

Appendix A: Glossary of Terms

Acute	Describing an effect or response, such as toxicity, that is measured or occurs over a relatively short amount of time; not chronic.
Adaptive management	Process of continually monitoring progress and adjusting the approach.
Algae	Any of a number of several groups of single-celled or multi-cellular organisms, all of which lack leaves, roots, flowers, and other organ structures that characterize higher plants.
Ammonia/ Ammonium	A Nitrogen-containing molecule that exists naturally in both gaseous (NH ₃) and ionized (NH ₄ ⁺) forms. The gaseous form is corrosive and toxic, while the ionized form is a usable source of nitrogen for plant growth. Ammonia may be produced by decomposition of nitrogen-containing molecules such as proteins.
Anthropogenic	Man-made or human in origin; influenced by mankind.
Aquatic	Relating to water, particularly freshwater.
Aquifer	An underground geologic feature containing water.
Autotroph/ Autotrophic	Describing organisms that can produce their own food, such as plants, algae or certain specialized bacteria.
Bankfull discharge	The high flow stage of a fluvial system distinguished by the highest stage elevation a stream can reach before spilling over.
Baseflow	Flow in a stream that is not influenced by precipitation.
Basic	Alkaline; containing oxide or hydroxyl ions; not acidic.
Benthic	Used to describe aquatic organisms living at the bottom of a body of water.
Benthic macroinvertebrates	Aquatic insect larvae that live on stream bottom. Because of a short lifespan and relative immobility, they reflect the chemical and physical characteristics of a stream and chronic sources of pollution.
Bioassessment	An evaluation technique that uses measures of the structure, condition, or distribution of biological communities.
Bioindicator	An organism that exhibits sensitivity or tolerance of environmental conditions and may be used in assessing an environmental condition, such as water pollution.

Biotic	Living, relating to life or biology.
BMP	Best Management Practice – Also called a “management option,” a BMP is a technique, measure, or structural control that addresses one or more objectives (e.g., a detention basin that gets built, an ordinance that gets passed, and an educational program that gets implemented).
BOD	Biological or biochemical oxygen demand, an empirical test procedure that measures the ability of a water sample to deplete oxygen.
Cadmium (Cd)	A toxic heavy metal element.
Calcium (Ca)	A metallic element found in limestone and numerous naturally occurring compounds.
CaCO₃	Calcium carbonate
CCD	County Conservation District
CCTV	Closed Circuit Television
Channelization	The process of modifying the natural course of a stream in order to make it flow into or along a restricted path.
Chlorophyll	Any of a group of green pigments necessary for photosynthesis, concentrations of which are used as a surrogate measurement of producer biomass.
Chl-a	Chlorophyll- α , a form of chlorophyll that is found universally in autotrophic organisms.
Chromium (Cr)	A heavy metal element, occurring naturally in trivalent [CrIII] and hexavalent [CrIV] forms. The latter form is highly toxic.
Chronic	Describing an effect or response, such as toxicity, that occurs or can be measured over a relatively long period of time; not acute.
Clay	Inorganic sediment particles smaller than 0.002 mm.
CO₃²⁻	Carbonate ion
Cobble	A stream particle with diameter between 64 and 256 mm.
Coliform	Of or relating to the bacilli (bacteria) that inhabit the intestines of warm-blooded animals.
Conductance/ Conductivity	A measure of the ability of a water sample to conduct an electric current; a measure of dissolved ionic strength.

Copper	An essential metallic nutrient that can be toxic in relatively small concentrations.
Criterion	An established standard, such as concentration of a pollutant, that is limited or regulated by law.
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
Culvert	A metal, concrete, or plastic pipe that allows water to flow under a road or any other obstruction.
CWA	Clean Water Act – Federal Amendment that authorizes EPA to implement pollution control programs and set water quality standards for all contaminants in surface waters. “The Act made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. It also funded the construction of sewage treatment plants under the construction grants program and recognized the need for planning to address the critical problems posed by nonpoint source pollution.” (EPA website)
CWA Section 104(b)(3) Program	Promotes the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction and elimination of pollution.
CWA Section 208 Wastewater Planning	Intended to encourage and facilitate the development and implementation of area-wide waste treatment management plans.
CWA Section 319(b) Non-point Source Management Program	Designed to address mine drainage, agricultural runoff, construction/urban runoff, hydrologic and habitat modifications, on-lot wastewater systems, and silviculture.
DCIA	Directly Connected Impervious Area
Decomposition	Decay; process through which a complex substance, such as dead organic matter, is broken down into smaller molecules.
Defective lateral	A plumbing problem in which a lateral pipe is damaged, potentially leading to sanitary waste in a storm sewer and the receiving water body.
Designation/ Designated Use	Describing the uses a waterbody is intended to support, such as stocking trout for recreational fishing.

Diatom	Single-celled algae of the class bacillariophyceae, having a cell wall composed of silica. Diatoms are primary producers in streams and lakes.
Diffusion	Spontaneous, random movement of molecules that tends to result in equalization of concentrations over time as net movement occurs from areas of greater concentration to areas of lower concentration.
Diluent/Dilutant	A thinning agent, such as water, which reduces the concentration of a solution. Pollution may be diluted by streamwater.
Dilute/Dilution	The process through which a solution is made less concentrated through the addition of a diluent/dilutant.
Discharge	Flow; a measure of the volume of water flowing through a defined area in a given time. Discharge is often abbreviated as Q, and measured in cubic feet per second (cfs).
Dissolve	Cause to pass into solution. In laboratory testing, substances may be considered dissolved if they pass through a 0.45 µm filter.
Diurnal	Relating to or occurring in a 24-hour period; daily.
DO	Dissolved Oxygen
Drainage area	The area of land that drains to a particular body of water or site on a waterbody.
DRBC	Delaware River Basin Commission
DVRPC	Delaware Valley Regional Planning Commission
DWO	Dry-Weather Outlet - connector pipe between a CSO regulator and interceptor sewer.
Dynamic	Relating to conditions that change or are in motion; not static.
E. coli	A common rod-shaped bacterium that is found in the intestinal tract of warm blooded animals. Used as an indicator of contamination by feces/sewage.
EACs	Environmental Advisory Councils
Ecoregion	A relatively large area of land characterized by a unique set of communities, physical, and climatological characteristics.
Ecosystem	A collection of living things and their environment.
Effluent	Outflow of liquid waste, such as discharge from a sewage treatment plant.

Empirical	Of or related to direct observation; not theoretical.
Encapsulated	Enclosed or covered, such a stream that has been built into a sewer.
Endogenous	Coming from or produced wholly from within, such as an enzyme produced by bacteria.
EPA	U.S. Environmental Protection Agency
Epifaunal	Of or relating to stream surfaces upon which attached algae and other living things may grow or find shelter.
Equilibrium	A steady state or condition in which opposing influences balance one another out.
Erosion	The process by which soil particles are removed or displaced, usually by wind or water.
Estuary	A body of water intermediate between an ocean and river, usually tidal and highly productive.
Eutrophic	Characterized by abundant or overabundant life, such as a stream or river that is nutrient enriched and has dense growth of algae or aquatic vegetation.
Eutrophication	The process through which a waterbody comes to have an overabundance of life, usually caused by nutrient enrichment.
FGM	Fluvial Geomorphology is the study of a stream's interactions with the local climate, geology, topography, vegetation, and land use; the study of how a river carves its channel within its landscape.
Fluvial	Of or relating to flowing waters, especially rivers.
Floatables	Waterborne waste material and debris (e.g., plastics, polystyrene, paper) that float at or below the water surface.
GIS	Geographic Information Systems
H₂CO₃	Carbonic acid
Hardness	A measure of the concentration of calcium and magnesium ions in water.
HCO₃⁻	Bicarbonate ion
Heterotrophic	Describes organisms that cannot synthesize their own food through photosynthesis or other chemical means.
Hilsenhoff Biotic	A biological index of stream health that employs a scale of sensitivity of

Index (HBI)	macroinvertebrates to organic pollution.
HNO₃	Nitric acid, a source of atmospheric nitrogen pollution and acid rain.
Hydraulic	Of or relating to forces exerted by a fluid, often water, under pressure.
Hydrograph	A graphical representation of the change in stage or discharge of a stream as a function of time.
Hydrolysis	A chemical reaction in which water reacts with another molecule, often resulting in new compounds. The breakdown of urea is a hydrolytic reaction.
IDD&E	Illicit Discharge, Detection, and Elimination – one of the six minimum control measures required of permittees under the Phase II NPDES Stormwater Regulations. Program steps include developing maps of municipal separate storm sewer system outfalls and receiving waterbodies; prohibiting illicit discharges via PA DEP-approved ordinance; implementing an IDD&E Program that includes a field screening program and procedures, and elimination of illicit discharges; conducting public awareness and reporting program. A similar program is being followed by PWD in the Long Term Control Plan (LTCP) for CSOs.
Illicit connection	An illegal sewer connection, particularly connection of a sanitary sewer, household or industrial waste pipe to a storm sewer. Illicit connections may result in sewage or other pollution inputs to receiving waterbodies.
Impairment	Weakening, damage, or instability, such as the effects caused by pollution.
Impervious	Incapable of being penetrated, such as a surface that does not absorb water.
Index/Indices	A number, ratio, or value on a scale of measurement that can reveal differences between observations or reveal changes over time. Numerous indices are used to assess the health of aquatic communities, such as the Hilsenhoff Biotic Index or HBI.
Infrastructure	The basic system of utilities and services needed to support a society. Structures such as culverts, pipes, bridges, dams, and flood control measures can cause instability of streams and affect aquatic habitats.
Insoluble	Unable to pass into solution.
Instantaneous	Immediate; occurring, such as a change, quickly. Some continuous water quality parameters are observed instantaneously.

Invertebrates	Animals, such as insects and crustaceans, that lack backbones (vertebrae).
IPM	Integrated Pest Management
Iron (Fe)	A common metallic element; an essential nutrient that may be toxic in relatively large concentrations. Iron can cause problems with taste and color of drinking water.
Kjeldahl nitrogen test	A laboratory procedure for determining the concentration of ammonia and organically-bound nitrogen in a water sample.
Larva/larvae	Immature life stage of an invertebrate, such as a beetle or fly. Many insects that have aquatic larval stages are used as bioindicators of water pollution.
LID	Low-Impact Development (similar to “better site design” and “conservation site design”).
LTCP	Long-Term CSO Control Plan – part of the EPA’s CSO Control Policy for regulation of CSOs under NPDES that guides municipalities, state, and federal permitting agencies in reaching full compliance with the CWA.
Macroinvertebrates	Macroinvertebrates are invertebrate animals that can be seen without the aid of a microscope.
Macronutrient	A nutrient, such as nitrogen or phosphorus, needed in relatively large amounts for biological growth.
Magnesium (Mg)	A common cation that contributes to hardness in water.
Mainstem	The main flow or central channel of a stream drainage network into which tributaries flow.
Manganese (Mn)	A relatively common metallic element; an essential nutrient that may be toxic in relatively large concentrations.
Mean/ Arithmetic mean	Average; a measure of the central tendency of a set of numbers equal to the sum of all members of a set divided by the number of members of the set.
Median	In descriptive statistics, the value in a set of numbers for which half the members of the set are greater and half are smaller. In some instances, the median value may be more informative than the arithmetic mean if a small number of extreme values tends to skew the mean.
Metabolism	All the biochemical processes exhibited by a living organism.

Model	A useful representation, such as a computer simulation, that can be used to simplify and study systems and processes.
MPC	Municipalities Planning Code
MS4	Municipal Separate Storm Sewer System
NH₃	Ammonia (gaseous, un-ionized)
NH₄⁺	Ammonium ion
Nitrate (NO₃)	An oxidized form of nitrogen; an essential plant nutrient. Elevated nitrate concentration may result in eutrophication of water bodies and in very great concentrations may be toxic (see methemoglobinemia).
Nitrification	The process of converting ammonia to nitrite and nitrate in the presence of oxygen, especially by the action of naturally occurring bacteria.
Nitrite (NO₂⁻)	An oxidized ion of nitrogen; an intermediate form in the reaction that converts ammonia to nitrate. Nitrite is usually not available for plant growth.
Nitrogen	A macronutrient needed for biological growth. Inert nitrogen gas makes up a large portion of the Earth's atmosphere.
NOAA	National Oceanic and Atmospheric Administration
Nonferrous	Not containing iron; especially metals and alloys that do not contain iron.
Nonparametric statistics	A collection of statistical analysis tools, used when the data to be analyzed do not meet the assumptions of parametric statistics, such as homogeneity of variances.
Non-point source pollution	Pollution that comes from a diffuse source such as atmospheric deposition, stormwater runoff from pasture and crop land, or individual on-lot domestic sewage systems discharging through shallow groundwater.
Non-structural BMPs	These BMPs will require no operation or maintenance. Examples are use of open space and vegetated buffers in development design, minimization of soil disturbance and compaction during construction, and minimization of directly-connected impervious areas.
NPDES	National Pollutant Discharge Elimination System
NPDES Phase I	The stormwater management component of the NPDES program instituted in 1990, which addressed the storm runoff sources most threatening to water quality. Under this phase, industrial activity, and construction sites within large communities (population 100,000 or more) are required to obtain permits for the stormwater leaving the site.

NPDES Phase II	Additional stormwater management regulations enacted in 1999, applying to smaller communities and construction sites.
NRCS	Natural Resource Conservation Service
NTU	Nephelometric turbidity units; a unit of measure describing the light scattering properties of a water sample.
Nutrient	An element or molecule needed for biological growth. When nutrients such as phosphorus are present in great concentrations, biological growth (algae in particular) can become overabundant, causing problems for aquatic ecosystems.
OLDS	On-Lot sewage Disposal Systems
O&M	Operations and Maintenance
OOW	PWD's Office of Watersheds
Orthophosphate (OPO₄)	A dissolved, inorganic form of phosphorus, available as a nutrient for plant growth; soluble reactive phosphorus.
Outfall	A pipe or other structure that discharges flow, such as treated sewage effluent or stormwater, to receiving waters.
Oxidation	Chemical process in which a molecule or atom reacts with oxygen or generally, a reaction in which an atom loses electrons and increases in valence state; the opposite of a reduction reaction.
Oxygen	An element, common in Earth's atmosphere and dissolved in water, necessary for most forms of complex animal and plant life.
PA Act 167	Stormwater Management Act
PA Act 537	Sewage Facilities Planning Act
PA DCNR	Pennsylvania Department of Conservation and Natural Resources
PA DEP	Pennsylvania Department of Environmental Protection
Parameter	A chemical constituent or physical characteristic of water quality (e.g., dissolved oxygen is a chemical constituent, temperature is a physical characteristic).
Parametric statistics	A collection of powerful statistical tools that assume certain qualities of the data being analyzed, such as homogeneity of variances.

Parasite	A functional feeding group of aquatic organisms characterized by feeding usually upon bodily fluids of other organisms, rather than direct predation and consumption. The organism that is fed upon need not die due to the effects of feeding
PEC	Pennsylvania Environmental Council
PFBC	Pennsylvania Fish and Boat Commission
Phosphate	An oxidized form of phosphorus, which may be organic or inorganic. Inorganic phosphates are generally more likely to be available as nutrients for biological growth.
Photosynthesis	A set of chemical reactions in which plants and other organisms, such as blue-green algae, can synthesize their own food using light and inorganic carbon. Photosynthetic activity in water increases dissolved oxygen concentration during daylight hours.
Physicochemical	Physical and chemical properties of water; a term used to group water quality parameters of interest.
Phytoplankton	Collectively, algae suspended in water; a group or growth form of algae defined by passive or active suspension in the water column.
PO₄	Phosphate
Point source	Pollution discharged from a single point, defined in the CWA as “any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel, or other floating craft from which pollutants are or may be discharged.”
Potassium (K)	An elemental macronutrient required for biological growth.
POTW	Publicly Owned Treatment Works
PRD	Planned Residential Development
Predator	A functional feeding group of aquatic organisms characterized by actively feeding upon captured prey.
Productivity	A measure of the amount of biological growth that occurs in an ecosystem.
PWD	Philadelphia Water Department
QA/QC	Quality Assurance/Quality Control

RBP	(Rapid Bioassessment Protocol) A standard method developed by the EPA to assess aquatic health through fish and macroinvertebrate diversity (EPA website).
RBPIII	(Rapid Bioassessment Protocol III) EPA approved technique for evaluating macroinvertebrate communities of a river or stream.
RBPV	(Rapid Bioassessment Protocol V) EPA approved technique for evaluating the fish communities of a river or stream.
RCP	PA DCNR's Rivers Conservation Planning Program.
Reach	A segment of a stream as defined by the study being undertaken.
Reference	A condition or value used for comparison. Many types of biological assessment techniques require comparison to references.
Regulator	In sewer infrastructure, a physical gate, valve, or other control structure that routes flow between two or more receiving pipes, usually one of which terminates in a CSO.
Respiration	Biological metabolic process in which a large molecule is broken into smaller pieces to yield usable energy. Aerobic respiration, the efficient respiration reaction favored by complex living things, requires oxygen.
Riffle	A reach of stream that is characterized by shallow, fast moving water broken by the presence of rocks and boulders.
Riparian	Related to, within, or near a river or its banks.
Riparian corridor	The area of land along the bank or shoreline of a body of water (EPA website).
Riparian woodlands	Woodlands that grow within the riparian corridor.
RTC	Real Time Control - a dynamic system of hydraulic controls to provide additional storage and reduce overflows from a combined sewer system.
Run	A reach of stream that is characterized by smooth flowing water.
Runoff	Generally, precipitation that is not absorbed by surfaces or evaporated, but allowed to flow over the surface to a receiving body of water.
Sediment	Particles, especially inorganic soil particles, that settle upon stream surfaces.
SEO	Sewage Enforcement Officers (designated by PA DEP).

Sinuosity	A measure of the degree to which a stream, viewed from above, deviates from a linear path, expressed as the ratio of stream length between two points divided by the valley length, or point-to-point distance between the same two points.
Significant	When describing the results of scientific or experimental study, describes a comparison or relationship that has been determined to be more likely real than related to randomness or chance to a stated degree of confidence.
Silt/Siltation	Inorganic sediment particles between 3.9 and 62.5 μm in diameter. also the process of being covered by or embedded in silt.
Soluble/Solubility	The quality or state of being able to pass into solution. In water chemistry analysis, a substance may be considered soluble or dissolved if it passes through a 0.45 μm filter.
Sonde	A continuous water quality monitoring instrument.
Species	The level of biological taxonomic classification at which living things are separated from one another by the ability to reproduce yielding fertile offspring.
SSA	Separate-Sewered Area stormwater runoff
SSO	Sanitary Sewer Overflow
STORET	U.S. EPA's water quality database (STORage and RETrieval).
Stormwater Management Program Protocol ("Protocol")	PA DEP guidance for implementing the requirements of the NPDES Phase II stormwater regulations.
Structural BMPs	These BMPs will require proper operation and maintenance. Examples include wet ponds, grassed swales, infiltration basins and bioretention areas.
SWMM	Storm Water Management Model
TDR	Transfer of Development Rights
Temporal	Of or relating to time, such as a change observed over time.
TIGER	Topologically Integrated Geographic Encoding and Referencing (U.S. Census database).
TMDL program	Total Maximum Daily Load program - EPA/PA DEP program for limiting and allocating discharges of a pollutant within a watershed.

Toxic/toxicity	Describing a substance that is harmful, able to cause injury or death; also the concentration at which a substance may cause injury or death.
Transpiration	The process by which water vapor passes through the membrane or pores of plants to the atmosphere.
Trophic	Describing or relating to food, food type, or the process through which a living thing acquires food.
TSS	Total Suspended Solids
TTFIWMP	The Tookey/Tacony-Frankford Integrated Watershed Management Plan.
Turbidity	A measure of the light scattering properties of water.
UA	Urban Areas
UAA	Use Attainability Analysis
Unimpaired	Natural, unmolested; describing an unaltered or undisturbed state.
USDA	United States Department of Agriculture
USGS	United States Geological Survey
Velocity	A vector quantity that describes speed in a stated direction or along an axis.
Vertebrate	A complex living thing having a backbone (vertebrae).
Violation	An instance or time period during which a regulated water quality parameter was exceeded.
Watershed	The area of land draining to a stream, river, or other water body. Watershed boundaries are established where any precipitation falling within the boundary will drain to a single water body. Precipitation falling outside the boundary will drain to a different watershed. These boundaries are typically formed on high elevation ridges. The water bodies formed from the watershed drainage are usually at the lowest elevation in the watershed. Watersheds can also be called drainage basins.
WLA	Waste Load Allocation
WMP	Watershed Management Plan
WQS	Water Quality Standards
WRAS	PA DEP's Watershed Restoration Action Strategy