
GLOSSARY OF TECHNICAL TERMS

A

Accretion: The gradual accumulation of new material on top of older sediments or soils.

Accuracy: The closeness of a measured value to the true value (see also: precision).

Acre-foot (ac-ft): The volume of liquid required to cover one acre to a depth of one foot.

Adaptive management: The application of scientific information and explicit feedback mechanisms to refine and improve future management decisions.

Agricultural privilege tax: An annual tax levied on farming activities in the Everglades Agricultural Area and the C-139 basins to support Everglades restoration.

Alkalinity: The alkaline nature of a substance (water) derived by measuring its ability to accept hydrogen ions.

Analyte: A substance measured in an analytical procedure.

Anthropogenic: Resulting from human influence.

Aquifer: An underground, water-bearing layer of porous rock, sand, or gravel.

Aquifer Storage and Recovery (ASR): The injection of fresh water into a confined saline aquifer during times when supply exceeds demand (wet season), and recovering it during times when there is a supply deficit (dry season).

B

Baseline period: A specified period of time during which collected data are used for comparisons with subsequent data.

Benthic: Pertaining to the bottom or sediment habitats of a body of water.

Benthic flux: The rate that chemicals dissolved in water flow out of or into the bottom of aquatic systems. Also known as internal recycling, this represents the transport of dissolved chemical species across the solid-liquid interface at the bottom of aquatic systems. The flux of solutes can be either positive (into the water column from the sediment) or negative (out of the water column into the sediment), and can vary over multiple temporal and spatial scales.

Best Management Practices (BMPs): Land, agricultural, industrial, and waste management techniques that reduce pollutant export from a specified area.

Bioaccumulation: An increase in concentration of a contaminant in an organism, relative to its concentration in the environment over time (see also: biomagnification).

Bioaccumulation factor (BAF): The ratio of a contaminant concentration in living tissue to its concentration in the organism's diet.

Biogeochemistry: Study of the chemical, physical, geological, and biological processes and reactions that govern the composition of the natural environment (including the biosphere, the hydrosphere, the pedosphere, the atmosphere, and the lithosphere), and the cycles of matter and energy that transport the Earth's chemical components in time and space.

Biomagnification: In a food chain, the process by which contaminants increase progressively in organisms at higher trophic levels (see also: bioaccumulation).

Biomass: The amount of living material in a particular sample, population, or area, usually measured as dry mass.

Brackish: Containing a mixture of salt water and fresh water.

Bulk density: The mass of soil in a given volume.

C

Central and Southern Florida Project (C&SF Project): A complete system of canals, storage areas, and water control structures spanning the area from Lake Okeechobee to both the east and west coasts and from Orlando south to the Everglades. It was designed and constructed during the 1950s by the U.S. Army Corps of Engineers (USACE) to provide flood control and improve navigation and recreation.

Certificates of Participation (COPs): As defined by Florida law (Section 373.584, Florida Statutes), a type of revenue bond that water management districts may issue to finance undertaking of any capital or other project for purposes permitted by the state's constitution.

Compliance monitoring: In a water quality management program, compliance is associated with meeting permit conditions based on ambient standards. Ongoing monitoring provides periodic water quality data, which are used to assess compliance.

Comprehensive Everglades Restoration Plan (CERP): The framework and guide for the restoration, protection, and preservation of the South Florida ecosystem. CERP also provides for water-related needs of the region, such as water supply and flood protection.

Conductance: The ability of an aqueous solution to carry an electric current. Conductance is used as a measure of total dissolved solids in water.

Consumptive Use Permit (CUP): A permit issued by the South Florida Water Management District under authority of Chapter 40E-2, Florida Administrative Code, allowing withdrawal of water for consumptive use.

Critical Restoration Projects: Seven projects determined to be critical to the restoration of the South Florida ecosystem, which were authorized in 1996 prior to CERP. These are comparatively small restoration projects undertaken by the USACE and the South Florida Water Management District, and are being implemented along with CERP projects.

D

Decomposition: The action of microorganisms breaking down organic compounds into simpler ones, resulting in the release of energy.

Diel: A variation that occurs regularly every day.

Discharge (or flow): The rate of water movement past a reference point, measured as volume per unit time (usually expressed as cubic feet or cubic meters per second).

Dissolved oxygen (DO): The concentration of oxygen dissolved in water, sometimes expressed as percent saturation, where saturation is the maximum amount of oxygen that theoretically can be dissolved in water at a given altitude and temperature.

District Water Management Plan (DWMP): Regional water resource plan developed by the South Florida Water Management District under Chapter 373.036, Florida Statutes.

Drawdown: A lowering of the water level in a reservoir or other body of water.

Drought: An extended period of low rainfall, below normal streamflow, and depleted surface and subsurface storage.

E

Ecology: The study of the relationship of plants and animals to their physical and biological environment.

Ecosystem: Biological communities together with their environment, functioning as a unit.

Ecotoxicology: A scientific discipline combining the methods of ecology and toxicology in studying the effects of toxic substances, especially pollutants, on the environment.

Emergent aquatic vegetation (EAV): Wetland plants that extend above the water surface. Cattail and rushes are two examples.

Environmental Resource Permit (ERP): A permit issued by the South Florida Water Management District under authority of Chapter 40E-4, Florida Administrative Code, to ensure that land development projects do not cause adverse environmental, water quality, or water quantity impacts.

Estuary: The part of the wide lower course of a river where its current is met by ocean tides or an arm of the sea at the lower end of a river where fresh and salt water meet.

Eutrophic: An aquatic environment enriched with nutrients, usually associated with high plant productivity and low oxygen levels.

Evapotranspiration (ET): The process by which water is released to the atmosphere by evaporation from a water surface or movement from a plant surface (more specifically known as transpiration).

Everglades Agricultural Area (EAA): An area extending south from Lake Okeechobee to the northern levee of WCA-3A, from its eastern boundary at the L-8 canal to the western boundary along the L-1, L-2, and L-3 levees. The EAA incorporates almost 3,000 square kilometers (1,158 square miles) of highly productive agricultural land.

Everglades Construction Project (ECP): The ECP is a requirement of the 1994 Everglades Forever Act and is the foundation of a large ecosystem restoration program, composed of 12 interrelated construction projects between Lake Okeechobee and the Everglades including about 40,000 acres of Stormwater Treatment Areas (STAs). It also contains four hydropattern restoration projects that will improve the volume, timing, and distribution of water entering the Everglades. Through the state's 2003 Long-Term Plan, the ECP was expanded to include the addition of approximately 18,000 acres of STAs.

Everglades Forever Act (EFA): A 1994 Florida law (Section 373.4592, Florida Statutes), amended in 2003, to promote Everglades restoration and protection. This will be achieved through comprehensive and innovative solutions to issues of water quality, water quantity, hydroperiod, and invasion of exotic species to the Everglades ecosystem. The EFA establishes the plan, the enforceable schedule, and the funding for the various components of the Everglades Program.

Everglades Nutrient Removal (ENR) Project: A constructed wetland, initiated in 1994, designed to biologically remove phosphorus from agricultural runoff water before entering the Arthur R. Marshall Loxahatchee National Wildlife Refuge. This demonstration project was also designed to optimize operation of constructed wetlands for phosphorus removal, which has proven highly effective.

Everglades Program: Projects, regulations, monitoring efforts, and research associated with restoring and protecting the Everglades. This program was established by the 1994 Everglades Forever Act.

Everglades Protection Area (EPA): As defined in the Everglades Forever Act, the EPA comprises Water Conservation Areas 1, 2A, 2B, 3A, and 3B, the Arthur R. Marshall Loxahatchee National Wildlife Refuge, and the Everglades National Park.

Everglades Stormwater Program (ESP): A program to ensure that water quality standards are met at all structures not included in the Everglades Construction Project.

Everglades Trust Fund: A fund created by Florida law (Chapter 97-258, Florida Statutes) to support ecosystem restoration of the Everglades.

Excursion (in water quality): A constituent concentration that is of potential concern as an exceedance and possible violation of a water quality criterion. "Excursion" indicates some uncertainty in the interpretation of the reported constituent concentration, requiring further evaluation of background conditions, ancillary data, quality assurance, and historical data. These factors must be assessed by the Florida Department of Environmental Protection before the concentration is considered an exceedance or violation.

Expenditure: The disbursement of appropriated funds to purchase goods or services.

F – G

Fauna: All animal life associated with a given habitat.

Fiscal Year (FY): The South Florida Water Management District's fiscal year begins on October 1 and ends on September 30 the following year.

Floating aquatic vegetation (FAV): Wetland plants that have portions floating at or near the water surface but are rooted in substrate (for example, water lily).

Flora: All plant life associated with a given habitat.

Florida Administrative Code (F.A.C.): The official compilation of the rules and regulations of Florida's regulatory agencies. The code is organized by titles with each title number representing a department, commission, board, or other agency.

Florida Department of Environmental Protection (FDEP): The South Florida Water Management District operates under the general supervisory authority of the FDEP, which includes budgetary oversight.

Florida Forever Act: A 1999 Florida law (Section 259.105, Florida Statutes) authorizing the issuance of bonds to fund land acquisition, water resource development, stormwater management projects, water body restoration activities, recreational facilities, public access improvements, and invasive plant removal.

Florida Statutes (F.S.): The Florida Statutes are a permanent collection of state laws organized by subject area into a code made up of titles, chapters, parts, and sections. The Florida Statutes are updated annually by laws that create, amend, or repeal statutory material.

Flow-weighted mean (FWM) concentration: The average concentration of a substance in water, corrected for the volume of water flow at the time of sampling. Samples taken when flow is high are given greater weight in the average. Flow-weighted mean concentrations can be used to calculate mass loading at a particular location.

Geometric mean: A statistical average of a set of transformed numbers, often used to represent a central tendency in highly variable data, such as water quality. It is calculated from data transformed using powers or logarithms and then transformed back to original scale after averaging.

H – L

Hydraulic residence (or retention) time (HRT): The length of time that water resides in a specified area.

Hydrogeomorphology: The scientific study of the physical appearance and operational character of a water body as it adjusts its boundaries to the magnitude of flow and erosional debris produced within the watershed.

Hydrology: The scientific study of the properties, distribution, and effects of water on the Earth's surface, in the soil and underlying rocks, and in the atmosphere.

Hydropattern: Water depth, duration, timing, and distribution of fresh water in a specified area. A consistent hydropattern is critical for maintaining various ecological communities in wetlands.

Hydroperiod: Duration and frequency of inundation in a wetland area.

Impoundment: A reservoir used for retaining water.

Inflow: The act or process of flowing in or into.

Intrusion: The invasion of a body of fresh water by a body of salt water, due to its greater density. It can occur either in surface water or groundwater bodies. The term is applied to the flooding of freshwater marshes by sea water, the upward migration of sea water into rivers and navigation channels, and the movement of sea water into freshwater aquifers along coastal regions.

Invasive exotic species: Species of plants or animals that are not naturally found in a region (nonindigenous). They can sometimes aggressively invade habitats and cause multiple ecological changes, including the displacement of native species.

Ion: An atom that has acquired a net electric charge by gaining or losing one or more electrons.

Landscape pattern: In the Everglades, the large-scale organization of features such as tree islands, ridges, and sloughs (including vegetation).

Limnology: The scientific study of bodies of fresh water for their biological, physical, geological, and hydrological properties.

Litterfall: Movement of leaves, twigs, and other forms of organic matter from the biosphere to the litter layer found in soil.

Littoral: The region of well-lit water close to shore. Home to most of the aquatic plant life (both rooted and floating) in a pond or lake because the high amount of sunlight reaching it allows for significant photosynthetic activity.

Loading (or mass loading): The amount of material carried by water into a specified area, expressed as mass per unit of time. One example is phosphorus loading into Water Conservation Area 2A, measured in metric tons per year.

Long-Term Plan: The plan for achieving and maintaining water quality goals for all discharges to the Everglades Protection Area. The 2003 Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area (Long-Term Plan) contains activities to achieve these goals, and to permit the state of Florida and the South Florida Water Management District to fulfill their obligations under the Everglades Forever Act.

Loxahatchee Impoundment Landscape Assessment (LILA): A large-scale physical reproduction of the Everglades, located at the Arthur R. Marshall Loxahatchee National Wildlife Refuge, used to conduct eco-hydrology experiments. LILA consists of four 17-acre macrocosms and a re-circulating water system that prevents nutrient pollution and provides control over flow rates and water levels. Each macrocosm mimics the Everglades landscape pattern of tree islands, ridges, and sloughs.

M – O

Macrophytes: Visible (non-microscopic) plants found in aquatic environments. Examples in South Florida wetlands include sawgrass, cattail, sedges, and lilies.

Marsh: An area of soft, wet, low-lying land, characterized by grassy vegetation and often forming a transition zone between water and land.

Median: The middle value in a set of ordered data. The median is often used to express the typical (central tendency) value of a group of water quality data, because the median is less influenced than the arithmetic average by outlying values routinely seen in such data.

Methylmercury (MeHg): A highly toxic form of the heavy metal mercury that is readily accumulated by living organisms. Inorganic mercury is converted to methylmercury by sulfate-reducing bacteria in aquatic sediments, such as those that are present in Everglades marshes.

Minimum Flows and Levels (MFLs): Florida law (Chapter 373, Florida Statutes) requires the state's water management districts to set water levels for each major body of water "...at which further withdrawals would be significantly harmful to the water resources or ecology of the area."

Mitigation: The acquisition, creation, restoration, or enhancement of wetlands to compensate for permitted wetland impacts.

Mitigation banking: A process providing a unit of currency known as a "credit" that represents the increase in ecological benefit or "value" resulting from restoration, enhancement, preservation, or creation.

Moving average: The arithmetic average of a sequence of data within a dataset, moved and calculated sequentially to smooth the data and reveal trends (e.g., 12-month moving average total phosphorus concentration).

Muck: Dark, organic soil derived from well-decomposed plant biomass.

National Geodetic Vertical Datum (NGVD): A nationally established reference for elevation data.

Non-Everglades Construction Project (Non-ECP): All water control structures associated with the Everglades Protection Area outside the Everglades Construction Project (ECP).

Northern Everglades: Northern extent of the South Florida Water Management District covering the Kissimmee, Lake Okeechobee, Caloosahatchee, and St. Lucie watersheds. Main features include the Kissimmee area lakes and rivers, Lake Okeechobee, and the Caloosahatchee and St. Lucie rivers and estuaries.

Northern Everglades and Estuaries Protection Program (NEEPP): As defined by Florida law (Section 373.4595, Florida Statutes), an initiative to holistically restore the Everglades through increased focus and integration of regional projects in the Northern Everglades, including the Lake Okeechobee Watershed, and the Caloosahatchee and St. Lucie River watersheds and estuaries.

Nutrients: Organic or inorganic compounds essential for the survival of an organism. In aquatic environments, nitrogen and phosphorus are important nutrients that affect the growth rate of plants.

Oligotrophic: An aquatic environment depleted of nutrients, resulting in low plant productivity.

Outflow: The act or process of flowing out of.

P – R

Parameter: A variable or constant representing a characteristic of interest. For example, conductance is a water quality parameter. Use of this term is highly subjective and varies greatly across disciplines.

Parts per billion (ppb): A unit of measure, equivalent to micrograms per liter (1 ppb = 1 µg/L).

Performance Measure: Performance measures quantify how well or how poorly an alternative meets a specific objective. Good performance measures are quantifiable, have a specific target, indicate when a target has been reached, and measure the degree to which the goal has been met.

Periphyton: The biological community of microscopic plants and animals attached to surfaces in aquatic environments. Algae are the primary component in these assemblages, which naturally reduce phosphorus levels in water and serve a key function in Stormwater Treatment Areas.

pH: A dimensionless quantity measured on a scale that is a reverse logarithmic representation of the activity of hydrogen ions in the solution.

Phosphorus (P): An element that is essential for life. In freshwater aquatic environments, phosphorus is often in short supply; increased levels can promote the growth of algae and other plants.

Photosynthesis: The process by which green plants and certain other organisms synthesize carbohydrates from carbon dioxide and water using light as an energy source.

Pollutant loading: Influx of a chemical or nutrient mass that can contaminate air, soil, or water.

Porewater: Water contained within the spaces between particles within sediments.

Precision: The degree of reproducibility of a measurement. Low precision yields high scatter in data (also see: accuracy).

Quality assurance (QA): A program to provide a means for a product to meet a defined set of quality standards at a specific level of confidence.

Quality control (QC): Steps taken to ensure that quality standards are met.

RECOVER (Restoration Coordination and Verification): An interagency, interdisciplinary team sponsored by the U.S. Army Corps of Engineers and South Florida Water Management District. The role of RECOVER is to organize and apply scientific and technical information in ways that are most effective in supporting objectives of the Comprehensive Everglades Restoration Plan, and to ensure that the plan's systemwide goals and purposes are achieved.

Regional Water Supply Plan: Detailed water supply plan developed by the South Florida Water Management District under Section 373.0361, Florida Statutes, providing an evaluation of available water supply and projected demands at the regional scale. The planning process projects future demand for 20 years and develops strategies to meet identified needs.

Regulatory Action Strategy (RAS): A suite of projects and programs being developed to address water quality concerns for structures outside the Everglades Construction Project permit.

Reservoir: A man-made or natural water body used for water storage.

Revenue: Monies received from all sources (with the exception of fund balances) that will be used to fund expenditures in a fiscal year.

Ridge: A raised area, typically elongated and vegetated with sawgrass, which forms an alternating pattern with sloughs within the Everglades.

Riverine: Located on or inhabiting the banks of a river.

S – T

Salinity: Dissolved salt content of a body of water. In 1978, oceanographers redefined salinity in practical salinity units (psu) as the conductivity ratio of a seawater sample to a standard sodium chloride solution.

Save Our Rivers (SOR): In 1981, the Florida legislature created the Save Our Rivers program for the water management districts to acquire environmentally sensitive land. The legislation produced Section 373.59, Florida Statutes, known as the Water Management Lands Trust Fund.

Scientifically defensible: Information that is supportable using accepted scientific methods of data collection, analysis, and reporting.

Slough: A depression associated with swamps and marshlands as part of a bayou, inlet, or backwater; it contains areas of slightly deeper water and a slow current and can be thought of as the broad, shallow rivers of the Everglades.

Species richness: The number of species occurring in a particular area for a specified sampling period.

Stage: The height of a water surface above an established reference point (datum or elevation). This vertical control measurement is usually expressed as feet National Geodetic Vertical Datum of 1929 or feet North American Vertical Datum of 1988.

Southern Everglades: Southern extent of the South Florida Water Management District encompassing the watersheds south of Lake Okeechobee to the Florida Keys. Key features include the Water Conservation Areas, Big Cypress National Preserve, Everglades National Park/Florida Bay, and coastal bays and estuaries south of Lake Okeechobee.

South Florida Environmental Report (SFER): A comprehensive report prepared by the South Florida Water Management District, along with the Florida Department of Environmental Protection and other collaborating agencies and organizations, and submitted annually by March 1, in accordance with Chapter 2005-36, Laws of Florida, and Subsection 373.036(7), Florida Statutes. In two volumes, the SFER consolidates over 50 individual reports in order to efficiently satisfy many statutorily mandated reporting requirements and supporting technical and financial information for the reporting period.

Stormwater Treatment Areas (STAs): Large, constructed wetlands designed to remove pollutants, particularly nutrients, from stormwater runoff using natural processes.

Structure: Man-made pump stations, reservoirs, channel improvements, canals, levees, and diversion channels.

Submerged aquatic vegetation (SAV): Wetland plants that exist completely below the water surface.

Surface Water Improvement and Management (SWIM) Plan: A comprehensive statewide program for restoring and protecting priority surface waters of state or regional significance, established in 1987 by Chapter 373.451-373.4595, Florida Statutes.

Technology-based Effluent Limitation (TBEL): An effluent limitation for a pollutant that is based on the capability of a treatment method to reduce the pollutant to a certain concentration.

Total Maximum Daily Load (TMDL): The maximum allowed level of pollutant loading for a water body, while still protecting its uses and maintaining compliance with water quality standards, as defined in the Clean Water Act.

Total Nitrogen (TN): An estimate of the concentration of nitrogen in both inorganic and organic forms in a water sample.

Total Organic Carbon (TOC): A measurement of all carbon atoms covalently bonded in organic molecules.

Total Phosphorus (TP): An estimate of the concentration of phosphorus in both organic and inorganic forms in a water sample.

Tree island: A raised area, typically surrounded by water that supports a woody vegetation community and is a site of high biodiversity. Two types of tree islands are typical of the Everglades: strand islands, which are typically tear-drop shaped, and pop-up islands, which are typically round.

Tributary: A stream that flows into a larger stream or other body of water.

Trophic levels: Distinct levels at which groups of organisms are using or producing energy. Plants, the primary producers of energy, are in the lowest trophic level. Predators, such as bass, wading birds, and raccoons, are in the highest trophic level. Some metals, such as mercury, accumulate at higher trophic levels.

Turbidity: The measure of suspended material in a liquid (typically measured in nephelometric turbidity units, or NTUs).

W

Water Conservation Areas (WCAs): Diked areas of the remnant Everglades that are hydrologically controlled for flood control and water supply purposes. The primary targets of the Everglades restoration, and major components of the Everglades Protection Area.

Water Preserve Areas (WPA): Multipurpose water-holding areas located along the western border of Southeast Florida's urbanized corridor.

Water quality: The physical, chemical, and biological condition of water as applied to a specific use, typically propagation of fish and wildlife, public water supply, industry, or recreation.

Water quality criteria: Constituent concentrations based on scientific data and judgments on the relationship between pollutant concentrations and environmental and human health effects.

Water quality standards: State-mandated water quality levels composed of a beneficial use classification, water quality criteria applicable to that classification, Florida antidegradation policy, and several provisions in other rules.

Water Reservation: As defined by Florida law [Section 373.223(4), Florida Statutes], water set aside or designated from use by the District's Governing Board or the Florida Department of Environmental Protection, in such locations and quantities and for such seasons of the year, as may be required for the protection of fish and wildlife, or the public health and safety.

Watershed: A region or area bounded peripherally by a water parting and draining ultimately to a particular watercourse or body of water.

Water Year (WY): The period from May 1 through April 30, during which water quality and other data were collected and reported in the *2009 South Florida Environmental Report*.

Wetland: An area that is inundated or saturated by surface water or groundwater with vegetation adapted for life under those soil conditions (for example, swamps, bogs, and marshes).