

TERMS IN USE ON THE WATER RESOURCES TOPIC

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Aquaculture water use: Water use associated with the farming of organisms that live in water (such as finfish and shellfish) and offstream water use associated with fish hatcheries.

Aquifer: An underground bed of porous rock or soil that carries or holds water. **Aquifer storage and recovery (ASR)** Injecting freshwater into a confined aquifer during times of excess water and recovering it during times of water deficit. **Artesian (aquifer or well)** Water held under pressure in porous rock or soil confined by impermeable geologic formations. An artesian well is free-flowing.

American Society of Civil Engineers: This professional society of engineers regularly grades the state of repair for various elements of America's infrastructure; the current grade for U.S. water infrastructure, much of which is now more than 50 years old, is D+.

America's Water Infrastructure Act: This legislation, which became law on October 23, 2018, imposed federal requirements on every community water system serving a population of more than 3,300 persons in order to protect against terrorist attacks, ensure the safety and resilience of source water and pipes as well as the storage and handling of certain chemicals.

Bioaccumulate: The build-up of toxic substances, such as heavy metals and pesticides, in the tissue of living things.

Biofuel: A fuel which is the product of recent living matter, providing what is sometimes considered to be a renewable energy source.

Blue water: Fresh surface and groundwater, in other words, the water in freshwater lakes, rivers and aquifers.

Catchment area: An area of land, bounded by a divide, in which water flowing across the surface will drain into a stream or river and flow out of the area through a specified point on that stream or river.

Clean Water State Revolving Fund (SRF): This federal program provides below market-rate loans to communities to finance local wastewater infrastructure needs with 30-year repayment terms.

Clean Water Act (CWA): This legislation originated in 1948 with the passage of the Federal Water Pollution Control Act, but took the name, "Clean Water Act," in 1972 after a series of amendments significantly strengthened its regulations. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained.

Clean Water Rule: This refers to a 2015 regulation published by the Obama-era EPA that more precisely defined the "Waters of the United States" (WOTUS) resulting in a significant broadening of federal authority to regulate water resources. The new rule defined WOTUS as any streams and wetlands having a significant hydrological and ecological connection to navigable or interstate waters. The Trump administration issued an Executive Order on September 12, 2019 repealing this rule and returning it to its pre-2015 interpretation. In early 2021 it remains unclear what position the Biden administration will take in defining the Waters of the United States.

Combined sewer overflow (CSO): This is a technical term used in the National Pollutant

- Discharge Elimination System (NPDES). A combined sewer system collects rainwater runoff, domestic sewage, and industrial wastewater into one pipe. Under normal conditions, it transports all of the wastewater it collects to a sewage treatment plant for treatment, then discharges to a water body. The volume of wastewater can sometimes exceed the capacity of the treatment plant (e.g., during heavy rainfall events or snowmelt). When this occurs, untreated stormwater and wastewater, discharges directly to nearby streams, rivers, and other water bodies. This situation triggers federal regulation.
- Conservation agriculture: Type of agriculture focused on soil ecosystem health and sustainability; characterized by little to no tillage, cover crops, and crop diversification.
- Constructed wetlands: An artificial wetland that simulates natural wetlands for human use and benefit, usually to clean municipal, industrial, wastewater, or stormwater runoff.
- Desalination: The removal of salts from saline or brackish water to provide freshwater.
- Domestic use: Water used for household purposes, such as drinking; food preparation; bathing; washing clothes, dishes, and dogs; flushing toilets; and watering lawns and gardens.
- Ecosystem services: Services provided by ecosystems that support human life in some way (e.g. food, medicine and clean water). Evaluating these services helps to focus public attention on environmental issues that could result in the loss of these services.
- Effluent Limitations Guidelines (ELG): This refers to a September 2015 Obama-era EPA ruling requiring electrical power plants to limit their wastewater discharges of toxic metals. The power generators were given until 2018 to comply with the new discharge limits. This rule was reversed by Trump administration EPA administrator, Andrew Wheeler.
- Estuary: A place where freshwater and salt water mix, such as a bay, salt marsh, or where a river enters a gulf or an ocean.
- Eutrophication: The enrichment of plant nutrients in freshwater and marine water bodies; this results in the accelerated bloom of plants in the water, leading to a detrimental effect on other organisms in the water.
- Federal reserved water rights: Water rights associated with the water necessary to fulfill the purposes of federal reservations such as national parks, forests, monuments, and military bases.
- Flint, Michigan water system: This city is currently the prime example of the dangers associated with lead contamination of water. The controversy began with a 2014 decision of local officials to switch its water supply from Lake Huron to the Flint River. At the time of the switch, water authorities failed to utilize anticorrosion measures that are typically employed to prevent the leaching of lead into drinking water. The resulting lead contamination of drinking water reportedly exceeded 1,500 parts per billion, or one hundred times more than what is allowed by EPA standards. Numerous local and state officials have been held legally responsible for their failure to prevent lead poisoning.
- Floodplain management: The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to, emergency preparedness plans, flood-control works, and floodplain management regulations.
- Fracking: The preferred industry name for this method is “hydraulic fracturing.” The process involves drilling deep into the earth and using small explosions, along with the injection of fluids under high pressure to break up shale formations and release natural gas and oil. This method has resulted in dramatic increases in U.S. oil and gas output, but is controversial because of the amount of water used in the process as well as the potential for contamination

- of groundwater.
- Green infrastructure:** A cost-effective approach to managing wet weather impacts with many community benefits; it reduces and treats stormwater at its source with environmental, social, and economic benefits. A cost-effective, resilient approach that incorporates vegetation, soils, and natural processes to manage wet weather impacts, providing many community benefits.
- Green New Deal:** This refers to a comprehensive plan for reducing greenhouse gas emissions; the primary congressional sponsors of the plan are Representative Alexandria Ocasio-Cortez of New York and Senator Edward J. Markey of Massachusetts.
- Green water:** The precipitation on land that does not run off or recharge the groundwater, but is stored in the soil or temporarily stays on top of the soil or vegetation.
- Greenhouse gas:** A gas that traps heat in the atmosphere by absorbing infrared radiant energy. Water vapor, carbon dioxide, methane, nitrous oxide and ozone are some of the most abundant greenhouse gases present in the atmosphere.
- Grey water:** Freshwater that is required to assimilate the load of pollutants based on natural background concentrations and existing ambient water quality standards.
- Groundwater depletion:** the lowering of the water table or potentiometric surface of an aquifer due to pumping that exceeds the rate of recharge.
- Groundwater recharge:** The inflow to a groundwater reservoir or aquifer. **Halliburton loophole:** In 2005 a national energy bill provided an exemption for hydraulic fracturing processes from the regulations of the Safe Drinking Water Act. The resulting loophole came to be known as the “Halliburton loophole” because it was widely believed that Vice President Dick Cheney, formerly the CEO of Halliburton, had engineered the exemption. This effectively barred the EPA from protecting drinking water from the risks of using fracturing fluids. Environmentalists lament that the oil and gas industry is the only industry in America that can inject hazardous materials directly or indirectly into underground drinking water supplies.
- Hypoxia:** The condition whereby the dissolved oxygen available is below the required level to support most life forms. It is the result of the oxygen being used in the decomposition of organic matter exceeding oxygen replenishment through photosynthesis and from exchange with the atmosphere.
- Impoundment:** A body of water, such as a pond, confined by a dam, dike, floodgate, or other barrier. It is used to collect and store water for future use.
- Infrastructure:** Physical and organizational facilities required to provide services such as the delivery of potable water to communities.
- Injection wells:** Pipes extending several thousand feet into rocks bounded by impermeable layers having no contact with aquifers; commonly used to dispose of hazardous wastes.
- Inland waterways:** The U.S. river systems offer about 25,000 miles of navigable waterways, carrying about 630 million tons of cargo annually. A large percentage of America’s energy and agricultural products are carried by barge traffic on inland waterways. The barge industry reports that a single 15-barge tow is equivalent to about 225 railroad cars or 870 tractor-trailer trucks. Use of this mode of transportation reportedly avoids major traffic congestion on America’s highways as well as reducing greenhouse gas emissions and air pollution that would be associated with truck or rail traffic.
- Integrated water resources management (IWRM):** A process promoting coordinated development and management of water, land, and related resources to maximize economic and social welfare in an equitable manner without compromising sustainability of vital

- ecosystems.
- Irrigation water:** The application of water by an irrigation system to assist crop and pasture growth or to maintain vegetation on recreational lands such as parks and golf courses.
- Lead and Copper Rule (LCR):** Starting in 1991 the U.S. Environmental Protection Agency established a maximum level of allowable contamination. The current standard requires water systems to “find and fix” sources of contamination if a home water sample exceeds 15 parts per billion. The rule requires that homeowners be notified within 24 hours if the standard is exceeded, though homeowners are expected to bear the cost of service line replacement on their own property.
- Locks:** Enclosures making it possible for vessels and barges to travel inland waterways that vary in elevation by raising or lowering the water levels depending on the direction of travel – upstream or downstream. These enclosures have a gate at each end; vessels and barges enter at one end for the purpose of being raised or lowered. The U.S. Army Corps of Engineers reports that for the 191 locks in operation, the average age is 58 years; many locks are in need of repair or replacement.
- Managed aquifer recharge:** The recharging of water into an underground aquifer for storage and subsequent withdrawal.
- Municipal water system:** a system to provide water to municipalities that includes water storage facilities, water treatment facilities, and a water distribution network.
- National Environmental Policy Act (NEPA):** Enacted in 1969, NEPA requires federal agencies to consider environmental consequences of their actions by requiring that an environmental impact statement (EIS) be prepared for proposals to undertake any major federal actions that significantly affect the quality of the human environment.
- National Pollutant Discharge Elimination System (NPDES):** A program authorized by the 1972 Clean Water Act and administered by the EPA to regulate point source pollution; it was amended in 1987 to also regulate nonpoint source pollution.
- Neonics:** This refers to neurotoxic insecticides designed to kill insects by attacking their nerve cells. These insecticides are widely used in American agriculture as well as in lawn and garden bug sprays. The concern among environmentalists is that neonics contaminate the water supply, harming not only bees and other wildlife, but also could be linked in humans to developmental defects, heart deformations, muscle tremors, and memory loss.
- Non-conventional water resource:** Volume of water obtained through technologies such as desalination.
- Nonpoint pollution:** Pollution which comes from sources which are difficult to precisely locate. The pollution is likely to have come from a number of locations over a wide area. An example of nonpoint pollution is nitrate leaching from agricultural land.
- Point source pollution:** Pollution that involves discharge of wastes from a single, identifiable source, such as a factory, refinery, smokestack, or sewage treatment plant; also called single point source pollution.
- Polyfluoroalkyl substances (PFAs):** These chemicals are in widespread use because their “nonstick” qualities make them useful in cookware coatings, food wrappers, umbrellas, tents, carpets and firefighting foam. Environmentalists charge that PFAs now contaminate rivers, lakes, and drinking water supplies. While the health impacts of PFAs are still under study, some commentators charge that they reduce resistance to infectious diseases and suppress the human body’s response to vaccines,

Potable water: Water of a high enough quality that it can be safely consumed by humans.

Precautionary principle: A decision-making approach which believes that lack of scientific evidence for warnings about future threats of serious damage should not be used as an excuse to avoid action in order to prevent damage from happening; action should be taken as early as possible.

Protect and Restore America's Estuaries Act: This law, signed by President Trump on January 13, 2021 reauthorizes for FY2022-FY2026 and revises the National Estuary Program, which provides grants to protect or restore estuaries of national significance. Specifically, the bill expands the types of projects that qualify for grants under the program, such as projects that address issues related to coastal resiliency, stormwater runoff, or accelerated land loss.

Public-private partnerships (P3s): Public-private partnerships involve collaboration between a government agency and a private-sector company that can be used to finance, build, and operate projects. In the context of water infrastructure, this could refer to federal efforts to partner with private companies to repair or replace water supply lines.

Public water supply: A system that provides water for human consumption through pipes or other constructed conveyances to at least fifteen service connections or serves an average of at least twenty-five people for at least sixty days a year.

Reasonable use: Ability of upstream riparian owners to use any amount of water desired as long as usage does not interfere with reasonable needs of lower riparian owners.

Recharge area: A surface area that is connected with the underground aquifer(s) by a highly porous soil or rock layer. Water entering a recharge area may travel for miles underground.

Riparian rights: A doctrine of water law under which the right to use the water of lakes and streams rests with owners of riparian land, or land that borders on the surface water.

Rivers and Harbors Act: Federal act of 1899 that provides authority for the U.S. Army Corps of Engineers to control all construction in the nation's navigable waters.

Safe Drinking Water Act (SDWA): Passed in 1974, this act seeks to ensure that public water supply systems meet national standards for protecting public health, such as requiring pipes and solder used in those systems to be free of lead and other contaminants.

Sanitary sewer overflow (SSO): This is a term used in the National Pollutant Discharge Elimination System (NPDES). The EPA estimates there are at up to 75,000 SSOs per year involving sewer blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism. If SSOs reach "Waters of the United States," they are regarded as point sources of pollution, subject to federal regulation.

Save Our Seas Act: This law, signed by President Trump on December 18, 2020, establishes requirements and incentives to reduce, recycle, and prevent marine debris (e.g., plastics), including requirements to establish a Marine Debris Response Trust Fund, a Marine Debris Foundation, a Genius Prize for Save Our Seas Innovations, a strategy to improve waste management and recycling infrastructure, a Waste Management Revolving Fund for states, a Waste Management Infrastructure Grant program, a Drinking Water Infrastructure Grant program, a Wastewater Infrastructure Grant program, and a Trash-Free Water Grant program.

Thermal pollution: Negative impact of the discharge of water that is notably warmer than its natural conditions typically resulting from the use of river water to cool nuclear or conventional power plants.

Trichloroethylene (TCE): This chemical is a common ingredient in industrial cleaning solutions.

The widely viewed film, “A Civil Action,” charges that the drinking water of 14 million Americans is contaminated with TCE. The EPA reports that TCE exposure “can affect the human central nervous system (CNS), with symptoms such as dizziness, headaches, confusion, euphoria, facial numbness, and weakness. Liver, kidney, immunological, endocrine, and developmental effects have also been reported in humans. A recent analysis of available epidemiological studies reports trichloroethylene exposure to be associated with several types of cancers in humans, especially kidney, liver, cervix, and lymphatic system.”

U.S. Army Corps of Engineers (USACE): A part of the Department of the Army that functions as a civil works agency, dealing mainly with water resources through planning and construction activities on the nation’s navigable waters. In civil works, the USACE has authority for approval of dredge and fill permits in navigable waters and related tributaries; it enforces wetlands regulations, and constructs and operates various water resources projects, mostly notably levees, dams, and locks. It has an important role in stormwater management and disaster reduction by providing federal flood protection while also supporting state and local agencies in addressing flood management.

U.S. Department of the Interior (USDOI): The DOI is the main cabinet-level agency in charge of water resources, especially through the U.S. Geological Survey and the Bureau of Reclamation.

U.S. Geological Survey (USGS): Agency within the U.S. Department of the Interior responsible for financing water resources research at universities, preparing technical reports on water management, and collecting data on the nation’s groundwater and surface water supplies.

Water conservation: A management technique that focuses on limiting the demand for water rather than increasing the supply of water.

Water Pollution Control Act: This 1948 legislation was the first major federal effort to control water pollution; after this Act was significantly strengthened in 1972, it came to be called the Clean Water Act.

Water Quality Act: The act reauthorized the Clean Water Act in 1987, focusing on control of nonpoint source pollution. It required states to do planning studies and make abatement plans for water degraded by nonpoint pollution.

Water Resources Development Acts (WRDA): The current set of water-related omnibus acts authorized by the U.S. Congress to deal with various aspects of water resources: environmental, structural, navigational, flood protection, and hydrology.

Waters of the United States (WOTUS): Federal authority to regulate water resources is established by the Clean Water Act (CWA). The reach of federal authority depends upon how the term “Waters of the United States” is to be defined under the CWA. The Obama administration dramatically broadened federal authority by defining WOTUS as not only interstate wetlands and waterways, but also any streams or wetlands that have a significant hydrological and ecological connection to such interstate waters. The Trump administration, by Executive Order, rejected this broadening of WOTUS. It is not yet clear what position the Biden administration will take in defining WOTUS.

Watershed :The land area that drains water to a particular stream, river, or lake. It is a land feature that can be identified by tracing a line along the highest elevations between two areas on a map, often a ridge. Large watersheds, like the Mississippi River basin, contain thousands of smaller watersheds.

Wetlands: Areas of shallow standing water that contains plants with the capability to filter out pollutants.

