GLOSSARY

This glossary is a modified version of the Minnesota Sea Grant's "Glossary of the Great Lakes" (http//www.d.umn.edu/seagr/pubs/ggl.html).

2,3,7,8, tetrachlorodibenzo-p-dioxin TCDD
See Dioxin.

33 CFR 320-330
Federal regulations which identify Army Corps of Engineers (ACOE) general policies to implement Section 404 of the Clean Water Act. Part 320 outlines the ACOE's general policies; Part 321 -- permit regulations for dams and dikes; Part 322 -- permit regulations for structures; Part 323 -- permit regulations for dredged materials; Part 324 -- permit regulations for ocean dumping; Part 325 -- permit regulations for discharges to navigable waters and wetlands; Part 326 -- enforcement policies; Part 327 -- public hearings; Part 328 -- definition on navigable waters regulations; and Part 330 -- nationwide permit program regulations.

40 CFR
Federal regulations for air, waste, and water-related programs. Water-related regulations include the National Pollutant Discharge Elimination System (NPDES), water quality standards, discharges to navigable waters, other discharges, and test procedures. *See also* Code of Federal Regulations.

Abatement
A reduction in the degree or amount of pollution.

Accumulation
The build-up of a substance in a plant or animal due to repeated exposure to and uptake of that substance from the environment. *See also* bioaccumulation.

Acid Deposition
The total amount of pollutants that make up what is commonly referred to as acid rain. This includes both the wet deposition and dry deposition components that settle out of the atmosphere. *See* acid rain.

Acid Rain
Occurs when sulfur dioxide and nitrogen oxide emissions are transformed in the atmosphere and return to the earth in rain, fog, or snow. Acid rain can damage lakes, forests, and buildings, contribute to reduced visibility, and may harm human health. Regulations have been implemented at the federal and state (MN) level to reduce acid rain. Related programs: Clean Air Act, MN Rule Chapter 7009.

Acute Test
A comparative study in which organisms are subjected to different treatments and observed for a short period, usually not constituting a substantial portion of the organism's life span.

Acute Toxicity
Adverse effects to a plant or animal that result from an acute exposure to a stimulant, such as a

pollutant. The exposure usually does not constitute a substantial portion of the life span of the organism. In standard laboratory toxicity tests with aquatic organisms, an effect observed in 96 hours or less is typically considered acute. Also described as a stimulus severe enough to induce an effect.

Aerobic
A term that describes organisms or processes that require the presence of molecular oxygen.

Air Pollution Control Rules-Minnesota
MN state rules regulating air pollution and implementing requirements of the 1990 Clean Air Act Amendments (1990 CAAA). *See* Minnesota Rules Chapters 7007, 7009, and 7021. Related programs: Clean Air Act.

Air Toxics
Substances that cause or contribute to air pollution and which can cause serious health and environmental hazards, such as cancer or other illnesses. *See also* Hazardous Air Pollutants. Related programs: Clean Air Act, Minnesota Air Toxics Strategy.

Air Toxics Strategy
See Minnesota Air Toxics Strategy.

Algae
Simple plants found in water and elsewhere that have no roots, flowers, or seeds. These are usually microscopic plants and are the primary producers in lakes. *See also* phytoplankton and periphyton.

Ambient Toxicity
A measurement made using a standard toxicity test to determine how toxic a natural water body is. In some cases a water body may already possess some degree of toxicity before a known pollutant is discharged into it.

Anaerobic
A term that describes processes that occur in the absence of molecular oxygen. *See also* anoxia.

Anoxia
The absence of oxygen or a deficiency of oxygen that is harmful to living organisms. Anoxic conditions can develop in a lake bottom when oxygen is depleted by decomposition processes. This often happens in eutrophic lakes and can result in fish kills. *See also* anaerobic.

Anthropogenic
Anything that is human-caused or derived.

Anti-Backsliding
A federal policy to ensure that water bodies that have been improved are kept at that higher quality. Point source dischargers are required by governments to meet effluent limits, but if discharges become cleaner, or fall below the limit, they are not allowed to go up again. Relaxation of National Pollutant Discharge Elimination System permit limits are not allowed except in certain, limited circumstances.

Anti-Degradation
A federal policy to protect water quality. The policy states that the existing high quality of a particular water resource cannot get worse unless justified by economic and social development considerations. Contained in the U.S. Water Quality Guidance for the Great Lakes System. Related programs: Clean Water Act.

Aquatic Life Criteria
Water quality criteria designed to protect aquatic organisms, including fish, plants, and invertebrates. Related programs: Great Lakes Initiative, Clean Water Act.

Aquatic Nuisance Species (ANS)
Water-borne plants or animals that pose a threat to humans, agriculture, fisheries, and/or wildlife resources. *See also* non-indigenous species, zebra mussel, Bythotrephes, Eurasian ruffe, Eurasian watermilfoil.

Aquatic Nuisance Species Great Lakes Panel
A federal organization formed in 1991 by the Great Lakes Commission to advance exotic species research, monitoring, and control activities. The activities conducted are based on federal legislative and budgetary needs and research and management requirements. Activities include Great Lakes-wide education.

Aquatic Nuisance Species Task Force
An international organization that develops and implements programs to prevent the introduction and distribution of aquatic nuisance species. Their goal is to monitor, control, and study these species, and to disseminate technical and educational information. Made up of 19 provincial, state, and federal organizations.

Area of Concern (AOC)
Areas of the Great Lakes identified by the International Joint Commission as having serious water pollution problems requiring remedial action and the development of a Remedial Action Plan. AOCs are defined in the Great Lakes Water Quality Agreement as: "a geographic area that fails to meet the general or specific objectives of the Great Lakes Water Quality Agreement, or where such failure has caused or is likely to cause impairment of beneficial use or of the areas ability to support aquatic life." Initially, there were 43 AOCs in the Great Lakes Basin. The 8 AOCs in Lake Superior are: Deer and Torch Lakes in Michigan; St. Louis River in Minnesota and Wisconsin; Jackfish Bay, Nipigon Bay, Thunder Bay, and Peninsula Harbour in Ontario; and St. Mary's River in Michigan and Ontario. Related programs: Great Lakes Water Quality Agreement, Remedial Action Plans.

Army Corps of Engineers (ACOE)
The federal agency that administers the Section 404 permit program on dredging or filling navigable waters, including wetlands.

Arrowhead Regional Development Commission (ARDC)
One of several regional development commissions located throughout Minnesota, this one serves seven counties in northeastern Minnesota. Through its mission to provide local leadership it is involved in many issues related to the environment in the Lake Superior basin.

Atmospheric Deposition
Pollution that travels through the air and falls on land and water. Related programs: Clean Air Act, Great Lakes Toxic Reduction Effort.

Basin
The land area that drains into a lake or river. This area is defined and bounded by topographic high points around the water body. *See also* watershed.

Bayfield Institute
A Canadian federal organization that conducts fisheries research, habitat management, hydrographic surveys and chart production, fisheries and recreational harbor management, and ship support. Together with the work of the Freshwater Institute in Winnipeg, it provides the federal Fisheries and Oceans Program for Central and Arctic Canada.

Beneficial Use
The role that the government decides a water body will fulfill. Examples of these uses include healthy fish and wildlife populations, fish consumption, aesthetic value, safe drinking water sources, and healthy phytoplankton and zooplankton communities. Restoring beneficial uses is the primary goal of the Remedial Action Plans for the Areas of Concern and of the Great Lakes. Related programs: Great Lakes Water Quality Agreement, Lakewide Management Plans, Remedial Action Plans.

Beneficial Use Impairment
A negative change in the health of a water body making it unusable for a beneficial use that has been assigned to it. Examples of these use impairments, as designated in the Great Lakes Water Quality Agreement, include: restrictions on fish and wildlife consumption, beach closings, degradation to aesthetics, loss of fish and wildlife habitat, and restrictions on drinking water consumption. Related programs: Great Lakes Water Quality Agreement, Lakewide Management Plans, Remedial Action Plans.

Benthic
A term that describes both organisms and processes that occur in, on, or near a lake's bottom sediments. *See also* benthos.

Benthic Invertebrate
Refers to animals with no backbone or internal skeleton that live on the bottom of lakes, ponds, wetlands, rivers, and streams, and among aquatic plants. Benthic invertebrates provide an essential source of food for young and adult fish, wildlife, and other animals. Examples include caddisflies, midge larvae, scuds, waterfleas, crayfish, sponges, snails, worms, leeches, and nymphs of mayflies, dragonflies, and damselflies. The benthic invertebrate *Diaporeia*, is an ecosystem indicator.

Benthos
A term applied to organisms that live on or in a river or lake's bottom and/or bottom sediments. *See also* benthic.

Best Available Control Technology (BACT)
Technology required to reduce emissions of air pollutant. Defined in the Great Lakes Permitting

Agreement as: “emission limits, operating stipulations, and/or technology requirements based on the maximum degree of reduction which each Great Lakes State determines is achievable through application of processes or available methods, systems, and techniques for the control of listed pollutants, taking into account energy, environmental, and economic impacts, and other costs."

Best Available Technology (BAT)
The most effective, economically-achievable, and state-of-the-art technology currently in use for controlling pollution, as determined by the U.S. EPA.

Best Management Practice (BMP)
Methods used to control nonpoint source pollution by modifying existing management practices. BMPs include the best structural and non-structural controls and operation and maintenance procedures available. BMPs can be applied before, during, and after pollution-producing activities, to reduce or eliminate the introduction of pollutants into receiving waters. Related programs: Clean Water Act, Wetlands Conservation Act, Coastal Zone Management, Section 319.

Binational Policy Task Force
An international organization that provides overall policy coordination for the Binational Program. Representation includes federal, provincial, and state government agencies. Related Programs:Binational Program.

Binational Program
The commonly-used name for the Lake Superior Binational Program to Restore and Protect the Lake Superior basin. An international program developed by the governments of Canada, the U.S., Minnesota, Michigan, Wisconsin, and Ontario to protect the high quality waters of the Lake Superior basin and to restore those areas that have been degraded. These goals are to be met through pollution prevention, enhanced regulation, and special designations. One specific goal of the program is to achieve zero discharge and zero emission of designated persistent and bioaccumulative toxic substances from point sources in the basin. Related programs: Great Lakes Water Quality Agreement, International Joint Commission, the Broader Program.

Bioaccumulation
The net accumulation of a substance by an organism as a result of uptake from all environmental sources. As an organism ages it can accumulate more of these substances, either from its food or directly from the environment. Bioaccumulation of a toxic substance has the potential to cause harm to organisms, particularly to those at the top of the food chain. The pesticide DDT is an example of a chemical that bioaccumlates in fish and then in humans, birds, and other animals eating those fish. *See also* accumulation and biomagnification.

Bioaccumulation Factor (BAF)
The ratio of a substance’s concentration in an organism's tissue to its concentration in the water where the organism lives. BAFs measure a chemical’s potential to accumulate in tissue through exposure to both food and water. *See also* bioconcentration factor. Related programs: Great Lakes Initiative.

Bioaccumulative Chemicals of Concern (BCCs)
Any chemical which, upon entering surface waters, bioccumulates in aquatic organisms by a bioaccumulation factor greater than 1000. This formula takes into account metabolism and other factors that might affect bioaccumulation. Related programs: Great Lakes Initiative.

Bioassay
A test used to evaluate the relative potency of a chemical or mixture of chemicals by comparing its effect on a living organism with the effect of a standard preparation on the same organism. Bioassays are frequently used in the pharmaceutical industry to evaluate the potency of vitamins and drugs.

Bioavailability
A measure of how available a toxic pollutant is to the biological processes of an organism. The less the bioavailability of a toxic substance, the less its toxic effect on an organism.

Bioconcentration Factor (BCF)
The ratio of a substance's concentration in tissue versus its concentration in water in situations where the organism is exposed through water only. BCF measures a chemical's potential to accumulate in an organism's tissue through direct uptake from water (excludes uptake from food). *See also* bioaccumulation factor.

Biocriteria
See biological criteria.

Bioindicator
An organism and/or biological process whose change in numbers, structure, or function points to changes in the integrity or quality of the environment.

Biological Control
A method of controlling a disease-causing organism or pathogen or an exotic species. A biochemical product or bioengineered or naturally-occurring organism is used to cause death, inhibit growth, or inhibit the reproduction of an unwanted organism. One example is the import and use of the European beetle that feeds exclusively on Purple Loosestrife.

Biological Criteria
Biological measures of the health of an environment, such as the incidence of cancer in benthic fish species. Biological criteria can consist of narrative statements (in the simplest case) or of numeric statements.

Biological Oxygen Demand (BOD)
This is a measurement of the oxygen depletion in a water sample incubated under controlled conditions over a period of time. The aerobic decomposition of organic matter by bacteria in the sample requires oxygen. BOD is an important measurement of the impact that sewage discharge may have upon a water body because a certain amount of oxygen will be used in the breakdown of the wastewater.

Biomagnification
The process by which the concentration of a substance increases in different organisms at higher

levels in the food chain. For example, if an organism is eaten by another organism, these substances move up the food chain and become more concentrated at each step. *See also* bioaccumulation and accumulation.

Biomonitoring
The process of assessing the well-being of living organisms. Often used in water quality studies to indicate compliance with water quality standards or effluent limits and to document water quality trends.

Biosphere
A term that includes all of the ecosystems on the planet along with their interactions. The sphere of all air, water, and land in which all life is found. The Lake Superior Biosphere includes all ecosystems within the basin. Related programs: Lake Superior Biosphere Preserve.

Board of Water and Soil Resources (BWSR)
A Minnesota state agency that oversees a number of state programs designed to protect the state's soil and water. These programs include: the Soil and Water Conservation Districts, Comprehensive Local Water Management Plans, Conservation Reserve Program, Shoreland Block Grants, Reinvest in Minnesota, among others. BWSR is responsible for the Wetland Conservation Act and associated rules.

Boundary Waters
See Interstate Waters.

Boundary Waters Treaty
The international treaty between the United States and Great Britain signed on January 11, 1909, regarding the waters joining the two nations and relating to questions arising between the United States and Canada. It gave rise to the International Joint Commission. Related programs: Binational Program, International Joint Commission.

Broader Program
The portion of the Lake Superior Binational Program containing the Lakewide Management Plan and ecosystem approach pursuant to the Great Lakes Water Quality Agreement.

Bythotrephes BC
Also called the spiny water flea, this non-indigenous species has spread to all of the Great Lakes and some inland lakes. The impact that this new predator will have on the Great Lakes has yet to be determined, though it may compete for food with some fish.

Canada/Ontario Agreement (COA)
A federal/provincial agreement under which Canada's obligations to the Canada/U.S. Great Lakes Water Quality Agreement are coordinated and implemented. This 1994 agreement lists and defines 50 commitments specific to the restoration, protection, and conservation of the Great Lakes. Related programs: Great Lakes Water Quality Agreement.

Canadian Environmental Protection Act (CEPA)
A 1988 federal act designed to protect the people and environment of Canada from the effects of toxic substances.

Carcinogen
A substance that is known or suspected to cause cancer.

Center for Lake Superior Environmental Studies (CLSES)
The original name for the Lake Superior Research Institute. Related programs: University of Wisconsin-Superior.

Center for Water and the Environment (CWE)
One of three centers within the University of Minnesota's Natural Resources Research Institute. CWE provides basic environmental information essential to safe and sustainable natural resource development. Related programs: Natural Resources Research Institute.

Chlordane
A critical pollutant that was used as a pesticide until banned by the U.S. in 1983 (except for use in controlling underground termites). Chlordane bioaccumulates in the food chain. Concentrations are highest in fat and liver tissue of predatory species. It has been detected in lake trout and other wildlife. Related programs: Binational Program.

Chlorinated Organic Compounds
Organic chemicals that contain PCBs, DDT, chlorinated dioxins and furans, dieldrin, and hexachlorobenzene. Also called organochlorines or chlorinated organics.

Chlorination
The addition of chlorine to water for disinfection. Used in drinking water purification and sewage treatment prior to discharge.

Chlorine
A common, naturally-occurring element. One form of chlorine is a highly poisonous gas that is typically used for water disinfection, sewage treatment, and the manufacture of bleach and other chemicals.

Chronic Test
A comparative study in which organisms are subjected to different treatments and observed for a long period or a substantial portion of their life span.

Chronic Toxicity
A harmful and delayed response (such as death, unusual growth, reduced reproduction, or disorientation) to a chemical that causes adverse effects over a long period of time relative to an organism's natural life span. In standard laboratory tests an effect observed in 96 hours or more is considered a chronic effect. *See also* toxicity test.

Clean Air Act (CAA)
Federal law originally passed in 1970 for the purpose of protecting and enhancing the quality of the nation's air resources. *See also* Clean Air Act Amendments of 1990.

Clean Air Act Amendments of 1990 (CAAA)
Federal legislation passed in 1990 that amended the Clean Air Act. It resulted in major changes further limiting the generation of air pollution in the United States. Significant sections of the 1990 CAAA include:

- Title I - National Ambient Air Quality Standards;
- Title II - Mobile Sources (e.g. automobiles);
- Title III - Air Toxics;
- Title IV - Acid Rain;
- Title V - Permit Program; and
- Title VI - Ozone-depleting Chemicals.

Related programs: Clean Air Act.

Clean Water Act (CWA)
A federal law that identifies national requirements to protect the nation's waters. Originally known as the Federal Water Pollution Control Act. The CWA is divided into six subchapters:

- Subchapter I - Research and Related Programs;
- Subchapter II - Grants for Construction of Treatment Works;
- Subchapter III - Standards and Enforcement;
- Subchapter IV - Permits and Licenses;
- Subchapter V - General Provisions; and
- Subchapter VI - State Water Pollution Control Revolving Fund.

The law provides for pretreatment standards, plans involving point and nonpoint source pollution, and effluent limitations that satisfy the act's intent.

Clean Water Act Reauthorization (CWAR)
The name for a federal legislative process to amend the Clean Water Act. It is anticipated that the CWA will be reauthorized in the mid- to late-1990s.

Coastal
Waters in the Great Lakes basin, coastal waters are defined in the Coastal Zone Management Act as the waters within the territorial jurisdiction of the United States, consisting of the Great Lakes, their connecting waters, harbors, roadsteads, and estuary-type areas such as bays, shallows, and marshes. Related programs: Coastal Zone Management Act.

Coastal Zone Act Reauthorization Amendments of 1990 (CZARA)
Federal legislation reauthorized by Congress in 1990, resulting in states being asked to combat the problems of coastal water quality, specifically nonpoint source pollution. CZARA also encourages states to tackle issues such as wetland loss, cumulative and secondary impacts of growth, increased threats to life and property from coastal hazards, and dwindling opportunities for public access to the shoreline. Related programs: National Oceanic and Atmospheric Administration, U.S. EPA.

Coastal Zone Management Act (CZMA)
A federal law enacted in 1972 to deal with increasing stresses on the nation's coastal areas, including the Great Lakes. Administered by National Oceanic and Atmospheric Administration (NOAA), the CZMA provides money, technical help, and policy guidance to states for balancing conservation and development of coastal resources. Under CZMA, states voluntarily develop their own Coastal Zone Management programs. Related programs: National Oceanic and Atmospheric Administration.

Code of Federal Regulations (CFR)
Federal regulations on how to implement federal law.

Combined Sewer Overflow (CSO)
Occurs when heavy rainfall or thaw conditions overload a sewer system designed to carry both waste and stormwater. Often the result is the discharge of untreated sewage into receiving waters. Also refers to the outfall structures themselves.

Comparative Risk Analysis
A procedure for ranking environmental problems by their seriousness (relative risk) for the purpose of assigning program priorities. Typically, teams of experts put together a list of problems, sort the problems by types of risk, then rank them by measuring them against standards, such as the severity of effects, the likelihood of the problem occurring among those exposed, the number of people exposed, and the like. Relative risk is then used to set priorities. *See also* risk assessment, risk management, ecological risk assessment.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or Superfund
A federal law, better known as Superfund, enacted in 1980 to give the EPA authority and money to take corrective measures and clean up hazardous waste sites. The 1986 Superfund Amendment Reauthorization Act (SARA) outlined preferred cleanup methods, including permanent on-site treatment.

Comprehensive Local Water Management Plan
See County Water Plan.

Confined Disposal Facility (CDF)
A facility providing a contained disposal area for contaminated sediments removed during dredging operations. Related programs: County Water Plan.

Cost-Benefit Analysis
The determination of how much it will cost to achieve a benefit, for example from pollution control, and the comparison of this amount to the cost of obtaining a higher or lower level of the benefit, or the cost of using some other alternative method.

Council of Great Lakes Governors (CGLG)
An organization comprised of the governors of the eight Great Lakes States who declared their shared intention to manage and protect the water resources of the Great Lakes basin through the Great Lakes Charter and the Great Lakes Toxic Substances Control Agreement.

Council of Great Lakes Industries (CGLI)
An organization that represents businesses with significant investments, facilities, products, and/or services in the Great Lakes basin, including manufacturing, utilities, telecommunications, transportation, financial, and trade. CGLI provides a focal point for offering industry's views and resources. It strengthens regional efforts to integrate social, economic, and environmental issues as a way to build a more vital Great Lakes basin.

Council of Great Lakes Research Managers
A binational advisory group to the International Joint Commission to evaluate the status of Great Lakes research.

County Water Plan
Also called Comprehensive Water Management Plans. These plans are developed by Minnesota counties to identify water resource problems and provide sound planning to prevent future problems. A bill was passed by the Minnesota State Legislature in 1985 encouraging counties to develop and implement County Water Plans. Related programs: Board of Water and Soil Resources, Clean Water Act.

Criteria
See water quality criteria.

Criteria Pollutants
A group of air and water pollutants regulated by the EPA under the Clean Air Act and Clean Water Act on the basis of criteria that includes information on health and environmental effects. Criteria pollutants include particulates, some metals, organic compounds, and other substances attributable to discharges.

Critical Pollutant
Chemicals that persist at levels that are causing or could cause impairment of beneficial uses lakewide. Other critical pollutants will be added to the list, but the Lake Superior Lakewide Management Program will first focus on the same nine critical pollutants identified in the zero discharge demonstration program (TCDD, OCS, HCB, chlordane, DDT, dieldrin, toxaphene, PCBs, and mercury). *See also* Great Lakes Critical Pollutants. Related programs: Lakewide Management Program, Binational Program, Zero Discharge Demonstration Program.

Decomposition
The breakdown of complex organic substances into more simple organic chemicals or substances. The ultimate product of decomposition in an aerobic environment is carbon dioxide.

Designated Scientific and Natural Areas (SNA)
See Scientific and Natural Areas.

Designated Uses
The role that a water body is slated to fulfill, such as a drinking water source. Uses are specified in water quality standards for each water body or segment, whether or not the current water quality is high enough to allow the designated use. Other typical uses of a water body include propagation of fish and wildlife, recreation, agriculture, industry, and navigation.

Dichlorodiphenyltrichloro-ethane, DDT
DDT, one of the nine critical pollutants, was commonly used as an insecticide after World War II and is now banned in the U.S. and Canada. DDT and its metabolites are toxic pollutants with long-term persistence in soil and water. They concentrate in the fat of wildlife and humans and may disrupt the human body's chemical system of hormones and enzymes. DDT caused eggshell thinning in a number of fish-eating birds and is associated with the mortality of embryos and sterility in wildlife, especially birds. DDT still enters the Great Lakes, probably from a number

of sources including airborne transport from other countries, leakage from dumps, and the illegal use of old stocks. Related program: Binational Program.

Dieldrin
Dieldrin, a critical pollutant, was used as a pesticide for veterinary uses and to control soil insects. In the U.S. and Canada, its use is now restricted to termite control. Dieldrin has a long half-life in shallow waters compared to most chlorinated organic compounds. It is acutely toxic and poses a potential carcinogenic threat to humans. This chemical enters the Great Lakes System from the air or contaminated sediments and has been detected in fish and wildlife in all of the Great Lakes. Related program: Binational Program.

Dioxin
A critical pollutant considered to be highly toxic, 2,3,7,8 tetrachlorodibenzo-p-dioxin, or TCDD, is a variant in a family of 75 chlorinated organic compounds referred to as dioxins. An unwanted chemical byproduct of incineration and some industrial processes that use chlorine, dioxin tends to accumulate in the fatty tissue of fish. Dioxin is a suspected human carcinogen. Related program: Binational Program.

Discharge
Any release or unloading of a substance or materials from a pipe, or other emission source. The addition of any pollutant to the waters of the state or to any disposal system from a point source. Related programs: 40 CFR.

Discharge of Dredged or Fill Material
Any addition of dredged or fill material into navigable waters or into the waters of the United States. This includes the driving of pilings and the addition of any material that changes the bottom elevation or configuration of a water body or material that might destroy or degrade any navigable water. Related programs: Section 404, 33 CFR.

Dry Deposition
The deposition of pollutants from the atmosphere (such as dust and particulate matter) that occurs during dry weather periods. Dry deposition rates are often drastically different than wet deposition rates.

Duluth-Superior Port Plan
A local program where the MN DNR is required to establish a port plan before it can authorize the filling of protected waters for port development. The plan includes provisions to protect designated natural resources areas, and to adopt a policy of no net loss for wetlands, fish habitat, and aquatic communities in the St. Louis River and Estuary.

Ecological Risk Assessment
An organized procedure to evaluate the likelihood that adverse ecological effects will occur as a result of exposure to stressors related to human activities, such as the draining of wetlands or release of chemicals.

Ecosystem
A biological community and its environment working together as a functional system, including transferring and circulating energy and matter.

Ecosystem Charter for the Great Lakes Basin
Initiated by the Great Lakes Commission, this is a binational statement of goals, objectives, principles, and action items for the Great Lakes with a plan for achieving it. This non-binding agreement supports a philosophy of "ecosystem management that recognizes natural resources as part of a dynamic and complete matrix that pays no heed to political boundaries or jurisdictions. Related programs: Great Lakes Commission.

Ecosystem Indicator
An organism or community of organisms that is used to assess the health of an ecosystem as a whole. For example, the Binational Program has selected the lake trout and *Diaporeia* (a benthic invertebrate) to be indicator species for Lake Superior. Related programs: Binational Program.

Ecosystem Principles and Objectives for Lake Superior
A binational program described in Volume IV of the Lake Superior Lakewide Management Program. The report lists specific ecosystem principles and objectives for the Lake Superior basin, provides a set of benchmarks, and helps guide decisions pertaining to land and water management in the Lake Superior ecosystem. Related programs: Binational Program.

Effluent
Liquid wastes that are discharged into the environment as a by-product of human-oriented processes, such as waste material, liquid industrial refuse, or sewage.

Effluent Limitation
Any restriction placed on quantities, discharge rates, and concentrations of pollutants that are discharged from point sources into waters of the United States or the ocean. Related programs: 40 CFR, Clean Water Act.

Endangered Species Act (ESA)
Federal statutes passed in 1973 that protect endangered and threatened species. The act has 16 sections.

Endangered Species Act Reauthorization (ESAR)
The name for the federal legislative process to amend the Endangered Species Act. It is anticipated that reauthorization will occur in the mid- to late-1990s.

Environment Canada (EC)
The lead federal agency responsible for implementing Great Lakes 2000 and the 1994 Canada-Ontario Agreement respecting the Great Lakes Basin ecosystem. Together, Great Lakes 2000 and the Canada-Ontario Agreement represent the Canadian response to the Great Lakes Water Quality Agreement.

Environmental Impact Assessment (EIA)
A decision-making process mandated under the National Environmental Policy Act (NEPA) which may require a detailed environmental impact statement analyzing the potential significant environmental impacts and alternatives to the action before the action is permitted. A public comment period takes place on each EIA.

Environmental Impact Statement (EIS)
A statement detailing the environmental impacts of and the alternatives to an action. *See* Environmental Impact Assessment.

Environmental Monitoring and Assessment Program (EMAP)
A federal program initiated by the EPA in 1988 to provide improved information on the current status and long-term trends in the condition of the nation's ecological resources. Seven resource categories are defined: near coastal waters, the Great Lakes, inland surface waters, wetlands, forests, arid lands, and agroecosystems. Related programs: Environmental Protection Agency.

Environmental Protection Agency (EPA)
A federal agency whose primary goal is to prevent or mitigate the adverse impacts of pollution on human health and the environment.

Environmental Research Laboratory (ERL) Duluth
See Mid-Continent Ecology Division.

Erosion
The wearing away of the land surface by running waters, glaciers, winds, and waves. Erosion occurs naturally from weather or runoff but can be intensified by land-clearing practices related to farming, residential or industrial development, road building, or timber cutting.

Estuary (Freshwater)
Areas of interaction between rivers and nearshore lake waters, where seiche activity and river flow create a mixing of lake and river water. These areas may include bays, mouths of rivers, marshes, and lagoons. These ecosystems shelter and feed fish, birds, and wildlife. Most importantly, Great Lakes estuaries provide habitat for wildlife and for young-of-the-year and juvenile fish.

Eurasian Ruffe
A non-indigenous species now found in Lake Superior and Lake Huron. This relatively new invader is a member of the perch family. It is usually less than 6 inches long, has a perch-like body shape, and is very slimy when handled. This fish may be competing with native perch and other fish for food. There is a great deal of concern over the potential for this fish to expand its range into other North American waters. It has also been called the European ruffe and river ruffe. *See also* aquatic nuisance species.

Eurasian Watermilfoil
An exotic aquatic macrophyte that forms thick underwater stands of tangled stems and vast mats of vegetation on the surface of inland lakes. In many shallow areas this plant can crowd out native plants and interfere with water recreation such as boating, fishing, and swimming. The plant can spread from lake to lake by stem fragments that cling to boats and trailers. Public education campaigns aimed at preventing unintentional transport of the plant by boaters have successfully slowed its spread in some states. *See also* aquatic nuisance species.

Eutrophic
A term used to classify those lakes of high primary productivity as indicated by high algal concentrations or high nutrient levels. *See also* eutrophication.

Eutrophication
The process of physical, biological, and chemical changes that occurs in a lake when enriched by nutrients, organic matter, and/or silt and sediments. The process can occur naturally, but if accelerated by human activities such as agriculture, urbanization, and industrial discharge, it is called cultural eutrophication.

Exotic Species
See non-indigenous species.

Exposure
Contact with a chemical or physical agent.

Exposure Assessment
Estimates the amount of a substance something is exposed to.

Fecal Coliform
Bacteria that come from the intestines of humans and other large animals. A high coliform count in a water body indicates human or animal sewage is leaking or being dumped into the lake.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
Originally adopted in 1947 and currently enforced by EPA, this law regulates the marketing of pesticides.

Federal Register
The official document of the U.S. government that announces proposed federal rules and regulations. It signals the beginning of a period of time for public review and comment.

Federal Water Pollution Control Act (FWPCA)
A federal law that identifies national requirements to protect the nation's waters. Commonly referred to as the Clean Water Act (CWA). Related programs: Clean Water Act.

Fill Material
Material used to convert a water body into dry land or change its configuration or bottom elevation. Related programs: Section 404, 33 CFR, Wetlands Conservation Act, Wetlands Conservation Act Rules.

Fish Consumption Advisory (FCA)
An advisory issued by a government agency recommending that the public limit their consumption of fish. Advisories are issued to limit exposure to toxic substances in the fish that have the potential to impact human health. A fish consumption advisory is prepared annually by the Minnesota Department of Health. Fish caught from selected lakes and streams are tested for toxic substances (mercury, sometimes PCBs and dioxins). Many of the lakes tested have restrictions on fish consumption due to high mercury levels. PCBs and dioxin levels in fish have also resulted in suggested restrictions on fish consumption in some lakes and streams. Other states and the federal government also issue advisories.

Five-Year Strategy
See Great Lakes Five-Year Strategy.

Flushing Time
See residence time.

General Permit
An Army Corps of Engineers (ACOE) authorization that is issued on a nationwide or regional basis for categories of human activities within navigable waters of the U.S. General permits are issued when: (1) these activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts; or (2) the general permit would result in avoiding unnecessary duplication of the regulatory control exercised by another federal, state, or local agency provided it has been determined that the environmental consequences of the action are individually and cumulatively minimal. There are three types of general permits: regional permits, nationwide permits, and programmative permits. Related programs: Section 404, 33 CFR.

Glossary of the Great Lakes (GGL)
You are reading it!

Great Lakes
Lake Ontario, Lake Erie, Lake Huron (including Lake St. Clair), Lake Michigan, and Lake Superior, and the connecting channels (St. Mary's River, St. Clair River, Detroit River, Niagara River, and St. Lawrence River to the Canadian border).

Great Lakes 2000 (GL2000)
Led and implemented by Environment Canada, GL2000 is based on a vision of sustainable development in the Great Lakes Basin, with specific objectives of restoring degraded ecosystems, preventing and controlling pollutant impacts, and conserving human and ecosystem health. Other participating federal agencies include the Department of Fisheries and Oceans, Health Canada, Agriculture and Agri-food Canada, Transport Canada, Canadian Heritage, and Public Works and Government Service Canada.

Great Lakes Atmospheric Deposition Network
See Integrated Great Lakes Atmospheric Deposition Network.

Great Lakes Basin
See Great Lakes System.

Great Lakes Charter
An international organization formed in 1985 by the premiers of Ontario and Quebec and the governors of the 8 Great Lakes States in response to the increased interest in diverting Great Lakes water to arid regions of the U.S. The Charter does not encourage these diversion proposals, but has no enforcement powers to prevent their implementation.

Great Lakes Commission (GLC)
A Great Lakes states' organization formed in 1955 by the states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin to promote a cleaner environment, stronger economy, and better quality of life for residents of the Great Lakes states. Although Canada is not an official member of the Commission, it is on the task force. Through policy development, intergovernmental coordination, and advocacy, the Commission offers a variety of

services to member states, and provides a unified and influential regional voice on policy, program, and legislative matters affecting the Great Lakes. It maintains an active observer program with representation from federal agencies, provincial governments, regional organizations, and tribal authorities. The Commission also maintains the Great Lakes Information Network and initiated the Ecosystem Charter for the Great Lakes Basin.

Great Lakes Critical Pollutants (GLCP)
Substances (a total of 138) currently identified as most critical to improving water quality under four major Great Lakes initiatives: the Great Lakes Water Quality Initiative, the Lake Michigan Lakewide Management Plan, the Lake Ontario/Niagara River Four Party Agreement, and the Lake Superior Binational Program Agreement. Each of the four initiatives may define critical pollutants differently.

Great Lakes Critical Programs Act
Amendments to Section 118 of the federal Clean Water Act in 1990 to improve the effectiveness of EPA's existing programs in the Great Lakes. The Critical Programs Act established the Great Lakes Water Quality Initiative and identified key treaty agreements between the United States and Canada in the Great Lakes Water Quality Agreement. The Act required the EPA to establish statutory deadlines for treaty activities and increased federal resources for the program. It also requires the EPA to publish proposed water quality guidelines for the Great Lakes System. The guidelines must specify minimum requirements for waters in the Great Lakes system in three areas: water quality standards; anti-degradation policies; and implementation procedures.
Related programs: Clean Water Act, Great Lakes Initiative.

Great Lakes Enforcement Strategy
A federal program that is a joint effort of the eight Great Lakes States and the EPA. The strategy is a part of the process for implementing the Great Lakes Five-Year Strategy for the National Pollutant Discharge Elimination System program by reducing dischargers' non-compliance in the Great Lakes basin and reducing toxics loading. A key element of the strategy is the use of screening criteria that are more stringent than the national definition of significant non-compliance.

Great Lakes Environmental Research Laboratory (GLERL)
A federal research facility run by the National Oceanic and Atmospheric Administration located in Ann Arbor, Michigan. The GLERL's mission is to conduct integrated, interdisciplinary environmental research in support of resource management and environmental services in coastal and estuarine water, with special emphasis on the Great Lakes. GLERL's research provides federal, state, and international decision and policy makers with scientific understanding of:

1. sources, pathways, and fates of toxicants;
2. natural hazards;
3. ecosystems and their interactions;
4. hydrology and Great Lakes water levels; and
5. regional effects related to global climate change.

Related programs: National Oceanic and Atmospheric Administration.

Great Lakes Fishery Commission (GLFC)
An international organization established in 1955 by Canada and the United States. Located in

Ann Arbor, Michigan, the GLFC works to improve the Great Lakes fishery, coordinates efforts of the two nations, and implements management of the sea lamprey. The Commission also advises the two governments on other non-indigenous species. The USFWS is the U.S. agency that acts for the Commission. Related programs: United States Fish and Wildlife Service (Dept. of Fisheries and Oceans), Sea Lamprey Control Program.

Great Lakes Five-Year Strategy (1992)
A federal (EPA) program that commits the states, tribes, and U.S. federal agencies responsible for environmental protection and natural resource management in the Great Lakes basin to achieving specific environmental goals. This overarching EPA strategy provides a framework for EPA's Great Lakes Programs and contains three major areas of focus: reduction of toxic pollutants; restoration of habitat; and protection of the health of all species. Specifically, regarding toxics reduction (as set forth in the Great Lakes Water Quality Agreement with Canada), the Strategy calls for "...reducing the level of toxic substances in the Great Lakes System with an emphasis on persistent toxic substances, so that all organisms are adequately protected and toxic substances are virtually eliminated from the Great Lakes ecosystem." Related program: National Pollutant Discharge Elimination System.

Great Lakes Indian Fish and Wildlife Commission (GLIFWC)
An organization of Native American tribes from Michigan, Wisconsin, and Minnesota that assists member tribes in the management of natural resources, in the protection of ecosystems, and in the development of institutions of tribal self-government.

Great Lakes Information Network (GLIN)
A nationwide Internet information exchange service for the Great Lakes basin. GLIN ties together a host of databases and file servers from a wide range of government and academic groups in an easy-to-access format. Maintained by the Great Lakes Commission. Related Program: Great Lakes Commission.

Great Lakes Initiative (GLI)
GLI is the commonly used name for the Water Quality Guidance for the Great Lakes System. This federal guidance, drafted in 1993 and finalized on March 23, 1995, has regulatory implications, establishing minimum water quality standards, anti-degradation policies, and implementation procedures for waters in the Great Lakes system. Related programs: Great Lakes Toxic Reduction Initiative, Great Lakes Toxic Reduction Effort, Clean Water Act.

Great Lakes Laboratory for Fisheries and Aquatic Sciences (GLLFAS)
As a component of the Bayfield Institute, this Canadian laboratory conducts research on the persistence and impacts of toxic chemicals on Great Lakes fish communities and food chains, and studies fish habitat for factors that affect production, species associations, and rehabilitation potential of fish stocks. It is also responsible for implementing the federal Fish Health Regulations for Ontario. Research helps support the 1987 Great Lakes Water Quality Agreement and binational concerns related to the long-range transport of atmospheric pollutants.

Great Lakes Maritime Industry Voluntary Ballast Water Management Plan for the Control of Ruffe in Lake Superior
Co-sponsored by the maritime shipping industry Great Lakes-wide, the plan is designed to reduce

the risk that commercial vessels will transport the Eurasian ruffe in ballast water from Duluth-Superior Harbor to other ports. It requires that ballast water be exchanged in deep, cold water areas of Lake Superior. Commonly referred to as the Voluntary Ballast Water Management Plan.

Great Lakes National Program Office (GLNPO)
A federal EPA office created in 1978 to oversee the U.S. fulfillment of its obligations under the Great Lakes Water Quality Agreement with Canada. It was mandated by the Clean Water Act in 1987 to be responsible for coordinating the U.S. response to the water quality agreement. Located in Chicago, Illinois, GLNPO is made up of scientists, engineers, and other professionals who work with staff throughout the EPA, Great Lakes states, other federal agencies, Environment Canada, Ontario provincial government, International Joint Commission, colleges, universities, and the public. GLNPO developed the Great Lakes Five-Year Strategy to focus the activities of these groups on the following objectives: reduction of toxic substance levels, protection and restoration of habitats, and the protection of health. Related programs: Great Lakes Water Quality Agreement, Environmental Protection Agency, Great Lakes Five-Year Strategy, International Joint Commission.

Great Lakes Natural Resource Center
This is a private wildlife protection group located in Ann Arbor, Michigan and run by the National Wildlife Federation. Their Lake Superior Project focuses on the environmental problems of Lake Superior.

Great Lakes Protection Fund (GLPF)
A program initiated by the governors of the Great Lakes states as the United States first multi-state environmental endowment, the Fund is guided by principles stressing regional cooperation and communication with the purpose of promoting a healthy and sustainable Great Lakes ecosystem.

Great Lakes Regional Office
See Great Lakes Water Quality Advisory Board.

Great Lakes Research Office
This federal office, administered by the National Oceanic and Atmospheric Administration, identifies issues relating to Great Lakes resources on which research is needed, inventories existing research programs, establishes a mechanism for information exchange, and conducts research through the Great Lakes Environmental Research Laboratories, the National Sea Grant College Program, and other federal labs and the private sector. Related programs: Clean Water Act, National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Laboratories, National Sea Grant College Program.

Great Lakes Science Advisory Board (SAB)
See Science Advisory Board.

Great Lakes Sea Grant Network
A U.S. network consisting of Sea Grant programs in Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, and New York.

Great Lakes Sport Fishing Council
A binational organization of the Great Lakes sportfishing community concerned with the present and future health of sportfishing, natural resources, and the Great Lakes ecosystem in general.

Great Lakes States
The states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin.

Great Lakes States Air Permitting Agreement
A federal program signed by the environmental administrators of the Great Lakes states in 1988 to assure consistent implementation of the Toxic Substances Management in the Great Lakes basin through the permitting process agreement.

Great Lakes System
All the streams, rivers, lakes, and other bodies of water within the drainage basin of the Great Lakes.

Great Lakes Toxic Substances Control Agreement
An interstate agreement signed by the governors of the eight Great Lakes states in 1986, this agreement seeks uniform water quality standards for the Great Lakes. The purpose of the governors' agreement was to establish a framework for coordinated regional action in controlling toxic substances entering the Great Lakes system.

Great Lakes Toxics Reduction Effort (GLTxRE)
This is a federal/state partnership that seeks to reduce the generation and release of toxics to the Great Lakes basin, with an emphasis on nonpoint sources. It supports the Great Lakes Water Quality Agreement and Great Lakes Five-Year Strategy. EPA and the Great Lakes states have established a process to deal with gaps or barriers to effectively preventing, controlling, or eliminating toxics loadings from nonpoint sources. An EPA team works with federal and state Great Lakes agencies to enhance efforts to reduce Great Lakes critical pollutants through three parallel projects: Virtual Elimination, Lake Michigan Mass Balance, and source pathway analysis. Related program: Great Lakes Initiative.

Great Lakes Toxics Reduction Initiative (LtxRI)
The original name for the Great Lakes Toxics Reduction Effort.

Great Lakes Water Quality Advisory Board
A binational advisory group to the International Joint Commission to assist in evaluating progress by Canada and the U.S. in accomplishing the Great Lakes Water Quality Agreement goals and to make recommendations regarding the development and implementation of programs. Related programs: Great Lakes Water Quality Agreement, International Joint Commission.

Great Lakes Water Quality Agreement (GLWQA)
An international agreement signed by the United States and Canada in 1972 and updated in 1978 and in 1987. The Agreement seeks to restore and maintain full beneficial uses of the Great Lakes system. Language committing the two nations to virtually eliminate the input of persistent toxic substances in order to protect human health and living aquatic resources was included when the

agreement was updated in 1978. The philosophy adopted by the two governments is zero discharge of such substances. Related programs: Lakewide Management Program, Remedial Action Plans.

Great Lakes Water Quality Guidance (GLWQG)
See Water Quality Guidance for the Great Lakes System and the Great Lakes Initiative. Related programs: Great Lakes Toxic Reduction Initiative, Clean Water Act.

Great Lakes Water Quality Initiative (GLWQI)
A federal program initiated in 1989 by the EPA and the Great Lakes states to further address the environmental concerns identified in the Great Lakes Toxic Substances Control Agreement. The GLWQI was intended to provide a forum for the Great Lakes states and the EPA to develop uniform water quality criteria and implementation procedures for the Great Lakes basin so as to create an even playing field for all industries in the region. This was proposed in 1993 as the Water Quality Guidance for the Great Lakes System. Related programs: Great Lakes Toxic Reduction Initiative, Great Lakes Initiative.

Great Waters Program
This program was mandated by Title III of the 1990 Clean Air Act Amendments to assess the extent of atmospheric deposition of hazardous air pollutants to the Great Lakes and other designated waters. It includes setting up the Great Lakes Atmospheric Deposition Network and reporting the monitoring results from the network to investigate sources and deposition rates of air toxics, to find out what proportion of pollutants come from the atmosphere, and to evaluate any harmful effects to public health or the environment. Related program: 1990 Clean Air Act Amendments.

Great Waters Study
See Great Waters Program.

Ground Water
Water that occurs beneath the ground surface in soils and geologic formations.

Half-Life
The period of time necessary for one half of a substance introduced to a living system or ecosystem to be eliminated or disintegrated by natural processes.

Hazardous Air Pollutants (HAPs)
Any air pollutant listed as such in Title III of the 1990 Clean Air Act Amendments. These are chemicals that have the potential to cause serious health effects. HAPs are released by mobile sources and industrial sources. Also referred to as air toxics. Related program: Clean Air Act.

Hazardous Waste
A waste which, because of its quantity, concentration, or characteristics, may be hazardous to human health or the environment when improperly treated, stored, transported, or disposed. Specific definitions of hazardous waste vary by statute or regulation.

Heavy Metals
Metallic elements with relatively high atomic weights that can contaminate ground water and

surface waters, wildlife, and food. Heavy metals have the potential to be toxic at relatively low concentrations. Examples include arsenic, cadmium, chromium, copper, lead, mercury, selenium, and zinc.

Hexachlorobenzene (HCB)
A critical pollutant once used as a pesticide for grain protection until banned by the U.S. in 1976. It is still produced as a byproduct during the manufacture of other chlorinated hydrocarbons. It is a persistent toxic substance and is found in the tissues of fish, animals, and humans from the Great Lakes basin. Limited uses of HCB are still permitted. Related program: Binational Program.

House Great Lakes Task Force
A bipartisan coalition of U.S. Representatives from Great Lakes states that works to advance the economic and environmental health of the Great Lakes region.

Human Health Criteria
These are descriptive or numeric expressions that specify how much of a pollutant can be allowed in a water body and still allow for the protection of human health. *See also* water quality criteria. Related program: Great Lakes Initiative.

Hydric Soils
Soils that are saturated, flooded, or ponded long enough during the growing season to develop anoxic conditions in the upper part of the soil profile.

Hydrocarbons
A class of compounds that contain hydrogen and carbon. This group of compounds includes the naturally occurring hydrocarbons produced by plankton, as well as many petroleum-based products like gasoline and motor oil. Chlorinated hydrocarbons, a subclass of hydrocarbons, are human derived and generally toxic.

Hydrophytic Vegetation
Plant life capable of growing in wet conditions, such as in water or in soil or other substrate that is periodically saturated with water. The presence of hydrophytic plants is one of the indicators used in wetland identification and delineation. Related programs: Wetlands Conservation Act, Wetlands Conservation Act Rules.

Individual Permit
An Army Corps of Engineers permit that is issued following a case-by-case evaluation of an application to perform dredge or fill activities in the waters of the U.S., including wetlands. Related programs: Section 404, 33 CFR.

Industrial Waste
Any liquid, gaseous, or solid waste resulting from any process of industry, manufacturing, trade, or business or from the development of any natural resource.

Inflow and Infiltration (I and I)
The penetration of water from the soil into sewer or other pipes through defective joints or connections and/or the penetration of water through the ground surface into the subsurface soil.

Institute for Lake Superior Research (ILSR)
Original name for the Large Lakes Observatory.

Intake Credits
A process that allows a point source discharger to take into account the quality of its source water when determining its effluent limitation standards.

Integrated Great Lakes Atmospheric Deposition Network (IGLADN)
A joint effort of the U.S. and Canada to measure atmospheric deposition of toxic material to the Great Lakes. It was mandated by the Great Lakes Water Quality Agreement. The network also fulfills the requirements of the Great Waters Program mandated by the 1990 Clean Air Act Amendments calling for a Great Lakes atmospheric deposition network. One master sampling station was installed at each of the Great Lakes by the end of 1991 to monitor for deposition of selected toxic pollutants, including mercury. Related program: Great Lakes National Program Office.

Integrated Pest Management (IPM)
A management system that uses all suitable techniques in an economical and ecologically-sound manner to reduce pest populations and maintain them at levels that do not have an economic impact, while minimizing danger to humans and the environment.

International Association for Great Lakes Research (IAGLR)
An international association of scientists that studies the world's large lakes. They publish a research periodical called the Journal of Great Lakes Research and hold yearly meetings within the Great Lakes basin.

International Joint Commission (IJC)
An international organization formed by Canada and the United States in 1909 as a result of the Boundary Waters Treaty to assist in preventing disputes and resolving issues involving all water bodies shared by the U.S. and Canada and to make recommendations about their management, particularly water quality issues and the regulation of water levels. Three commissioners are appointed by each country. Under the Great Lakes Water Quality Agreement, the IJC is also required to monitor progress by Canada and the United States as the two countries implement the goals and objectives of the Agreement. The IJC analyzes and publishes data, provides advice and recommendations and undertakes other initiatives as requested. Two advisory boards, the Great Lakes Water Quality Advisory Board and the Science Advisory Board, exist to assist the Commission with the Agreement-related responsibilities. Related program: Great Lakes Water Quality Agreement

Interstate Waters
Rivers, lakes, and other waters that flow across state or international boundaries. These include waters of the Great Lakes.

Invertebrates
The classification for animals that do not have a backbone or internal skeleton. *See also* zooplankton and benthic invertebrates.

Lacey Act
This act, enforced by the U.S. Fish and Wildlife Service, is designed to control environmental releases of injurious fish and wildlife. This law includes species that threaten non-agricultural interests.

Lake Carriers Association
This organization, established in 1880, represents U.S. maritime shipping companies throughout the Great Lakes. Its mission includes safe, efficient shipping procedures; Great Lakes shipping statistics; consultation on ice-breaking issues; harbor and channel dredging; sediment disposal; and environment and commerce regulations and legislation.

Lake Michigan Mass Balance Study (LMMB)
This mass balance research project begun in 1994 is part of the Lake Michigan Lakewide Management Plan and is designed to develop a sound, scientific base of information that will guide future toxic pollutant load reduction and prevention activities. Related Programs: Great Lakes Toxic Reduction Effort, Lakewide Management Plan, Clean Air Act, Clean Water Act.

Lake Superior
At the head of the Great Lakes system, Superior is the world's largest freshwater lake by surface area and long considered the cleanest and most pristine of the Great Lakes. Industrial activity, shipping, and atmospheric inputs of persistent and bioaccumulative toxic substances have raised concerns about the lake's water quality.

Lake Superior Basin
Used to describe Lake Superior and the surrounding watersheds emptying into the lake.

Lake Superior Binational Forum
This international program consists of a cross-section of basin stakeholders, including representatives from environmental and native groups, industries, and municipalities in the Lake Superior basin. It provides citizen input into the Binational Program concerning reductions in the use and discharge of toxic substances into the basin. The Forum identifies barriers to reductions in pollutant use and proposes alternatives for overcoming those barriers. Related Program: Binational Program

Lake Superior Binational Program to Restore and Protect the Lake Superior Basin
See Binational Program.

Lake Superior Biosphere Reserve
An international undertaking that would identify portions of the lake for special protection or study. Proposals to create a binational Lake Superior Biosphere Reserve as part of the United Nations Man and the Biosphere program are under review by the United States and Canada.

Lake Superior Center (LSC)
An education/exhibition facility on freshwater systems and Lake Superior, located in Duluth, Minnesota. Home of Superior Lakewatch.

Lake Superior Lakewide Management Plan (LaMP)
A binational plan to address threats to the Lake Superior ecosystem. The LaMP embodies a

systematic and comprehensive ecosystem approach to restoring and protecting beneficial uses. It is being developed in four stages. LaMP Stages 1 and 2 have been completed for the chemical portion of the LaMP. The Stage I LaMP (completed in September 1995) applies only to the nine designated critical pollutants from the zero discharge demonstration program for point source discharges. The Stage 2 LaMP (completed in July 1999) sets remediation goals or load reduction schedules for the nine virtual elimination pollutants identified in the Stage 1 LaMP. The Stage 3 LaMP (released for public comment in November 1999) selects pollutant load reduction strategies and remedial actions with respect to the nine virtual elimination pollutants. LaMP 2000 reflects the state of knowledge and progress of the LaMP at that time. The LaMP process will be an iterative process from 2000 forward and the LaMP will be updated biennially. *See also* State of the Lake Superior Basin Reporting Series. Related programs: Great Lakes Water Quality Agreement, Binational Program.

Lake Superior Partnership
A partnership between the state of Minnesota and the Western Lake Superior Sanitary District in Duluth that conducts multi-media inspections to insure compliance and identify pollution prevention opportunities for dischargers.

Lake Superior Pollution Prevention Strategy (P2 Strategy)
A federal/state action plan consisting of recommendations for achieving the goal of eliminating pollution at its source and evaluating recycling, treatment, and disposal options where source reduction is not possible. The focus of the Pollution Prevention Strategy is the nine critical pollutants identified by the Zero Discharge Demonstration Program. Commonly called the P2 strategy. Related programs: Binational Program, Great Lakes National Program Office.

Lake Superior Pollution Prevention Team
An organization that developed the Lake Superior Pollution Prevention Strategy. The team is made up of regulatory staff from Minnesota, Michigan, Wisconsin, and the Great Lakes National Program Office. Related program: Binational Program.

Lake Superior Project
An EPA-administered program that establishes a strategy and implementation plan for pollution prevention technical assistance for small and medium-sized businesses in the Lake Superior basin. Related program: Council of Great Lakes Governors.

Lake Superior Research Institute (LSRI)
A University of Wisconsin-Superior center that conducts research and education specifically on Lake Superior. Originally called the Center for Lake Superior Environmental Studies. Related program: University of Wisconsin-Superior.

Lake Superior Task Force
An international organization made up of the senior managers who developed the Binational Program to Restore and Protect Lake Superior and who continue to provide direction to the Superior workgroup of the Binational Program.

Lakewatch Program
See Superior Lakewatch.

Lakewide Management Plan (LaMP)
The binational programs called LaMPs provide a process for coordinating and prioritizing activities designed to reduce loadings of critical pollutants. The emphasis is on identifying the major sources of these pollutants and concentrating regulatory efforts where they will have the most impact. LaMPs are being developed for each of the Great Lakes. *See also* Lake Superior LaMP.

Large Lakes Observatory (LLO)
This University of Minnesota organization established in 1994 supports and performs research on large lakes of the world, including Lake Superior. It was formerly called the Institute for Lake Superior Research. Related program: University of Minnesota.

Leachate
The contaminated liquid resulting from water seeping through a landfill or other materials. Chemicals such as fertilizer are leached from the soil when rainwater travels through the soil.

Legislative Commission on Minnesota Resources (LCMR)
The LCMR recommends funding for natural resource programs to be financed by the Minnesota Future Resources Fund, the Minnesota Environment And Natural Resources Trust Fund, and Federal Oil Overcharge Funds. Funds have been used for a number of projects related to Lake Superior, such as public boat access improvement.

Lethal Concentration 50% (LC50)
A statistically or graphically estimated concentration that is expected to be lethal to 50% of a group of organisms under specified conditions.

Lethal Dose 50% (LD50)
A statistically or graphically estimated dose that is expected to be lethal to 50% of a group of organisms under specified conditions.

Levels Reference Study
A report that suggested methods to alleviate the adverse consequences of fluctuating water levels in the Great Lakes-St. Lawrence River System. The Levels Reference Study Board, appointed by the International Joint Commission, completed the report in 1993 after an intensive public involvement process in the U.S. and Canada.

Limited Resource Value Waters
Surface waters in Minnesota which are of limited value as a water resource and where water quantities are intermittent. These waters are protected to allow secondary body contact use, to preserve the ground water for use as a drinkable water supply, and to protect aesthetic qualities of the water. Related program: Minnesota Rule Chapter 7050.

Limnology
The scientific study of freshwater, especially the history, geology, biology, physics, and chemistry of lakes.

Load
An amount of water, sediment, nutrients, pollutants, heat, etc. that is introduced into a receiving

water. Loading may be either of anthropogenic origin (pollutant loading) or natural (natural background loading). Related programs: Water-related Code of Federal Regulations (parts in chapter 40 of the CFR), Clean Water Act, MN Rule Chapter 7050.

Load Allocation (LA)
The portion of a receiving water's load capacity that is attributed either to nonpoint sources of pollution or to natural background sources. Load allocations are best estimates depending on the availability of data and prediction techniques. Wherever possible, natural and nonpoint source loads are distinguished. Related program: Water-related Code of Federal Regulations (parts in chapter 40 of the CFR).

Load Capacity
The greatest amount of load that a water body can receive without violating water quality standards. Related programs: Water-related Code of Federal Regulations (parts in chapter 40 of the CFR), federal and state statutes.

Local Governmental Unit (LGU)
A county board, joint county board, watershed management organization, watershed district or a township, or city. Related programs: Wetlands Conservation Act, Wetlands Conservation Act Rules.

Lowest Observable Effect Concentration (LOEC)
For toxic substances, it is the lowest tested concentration at which adverse effects are observed in aquatic organisms at a specific time of observation.

Macrophytes
This term literally means "large plant." Usually refers to rooted, seed-producing aquatic plants.

Management Measures (MM)
A management measure is an economically achievable way to control the addition of pollutants from existing and new nonpoint sources. These measures call for the best available nonpoint pollution control practices, technologies, processes, site specific criteria, operation methods, or other alternatives. Related programs: Coastal Zone Management Act, Clean Water Act.

Mass Balance
A scientific approach that studies the sources, movement, and destination of any substance, for example a contaminant, that enters a lake system. A mass balance budget for a particular pollutant is the amount that enters a lake minus the amount that is tied-up in the sediment, broken down by chemical or biological processes, or removed by some other means. This should equal the amount that flows out of the lake system. This exercise enables scientists to assess the possible long-term effects of a pollutant and possible remediation actions. *See also* Lake Michigan Mass Balance Study. Related programs: Great Lakes Toxic Reduction Effort, Lakewide Management Programs.

Mercury (Hg)
A heavy metal, mercury is a neurotoxin that is toxic if breathed or ingested at sufficiently high concentrations. Mercury is present naturally in the environment. It has commonly been used in a wide variety of applications including thermometers, fluorescent bulbs, mirrors, hide

preservation, paints, plastic coloring, inks and stains, and golf course pesticides. Because of its common use, mercury is released during garbage incineration. It is also released through the combustion of fuels such as coal and wood for energy production. Mercury readily bioaccumulates in all aquatic organisms, especially fish and shell fish and in humans and wildlife that consume fish. Many lakes in the Great Lakes region have fish consumption advisories due to high levels of mercury primarily caused by atmospheric deposition. Mercury is one of the nine critical pollutants addressed by the Lake Superior LaMP. Related program: Binational Program.

Mesotrophic
A term used to describe a lake of moderate primary productivity. *See also* eutrophic and oligotrophic.

Mid-Continent Ecology Division (MED)
The EPA's freshwater ecology and water pollution research laboratory in Duluth, Minnesota. Established in 1967, the lab develops methods for predicting and assessing the effects of pollutants on freshwater resources. It is also involved in Great Lakes research, such as work in food chain contaminants, modeling, coastal wetlands, and the Environmental Monitoring and Assessment Program. MED was formerly called the Environmental Research Lab-Duluth. Related program: Environmental Protection Agency.

Minnesota Acid Deposition Control Act
A Minnesota law passed in 1982 that required the MPCA to (1) identify the areas of the state containing resources sensitive to acid deposition, (2) develop a standard to protect these resources, (3) adopt a control plan to reduce sulfur dioxide emissions, and (4) ensure that all Minnesota emission sources subject to the control plan were in compliance by January 1, 1990.

Minnesota Air Toxics Strategy
A program developed by the Minnesota Pollution Control Agency to help achieve smooth, fair implementation of air toxics provisions of the 1990 Clean Air Act Amendments, protection of public health and the environment, and the collection of air toxics information. The strategy mirrors the federal program somewhat, but has not gone through rule-making. It is a shift in focus for the state away from air toxics rules.

Minnesota Department of Health (MDH)
The state agency responsible for human health protection in Minnesota. Among other duties, the MDH prepares the fish consumption advisory each year and establishes drinking water standards.

Minnesota Department of Natural Resources (MN DNR, DNR)
A Minnesota state agency responsible for the management of the state's timber, waters, minerals, and wildlife. The Department is organized by division according to the resources it manages: forestry, fish and wildlife, parks and recreation, minerals, trails and waterways, enforcement, and waters.

Minnesota Environmental Response and Liability Act (MERLA)
This Minnesota state legislation was patterned after the Comprehensive Environmental Response, Compensation, and Liability Act, and provides the state with the authority to deal with uncontrolled releases of hazardous substances to the environment (MN Statute 115B).

Minnesota Interagency Exotic Species Task Force Committee
Established by Minnesota state legislation in 1989, this task force established a state-wide communications network between agencies that are involved with regulations, management, research, technical assistance, public awareness, and educational programming regarding potential and existing exotic species.

Minnesota Pollution Control Agency (MPCA, PCA)
A Minnesota state agency responsible for setting standards and authorizing permits for air quality, solid waste, hazardous waste disposal, water quality, and noise pollution. The focus of the MPCA is on compliance to these standards through technical assistance, education, and information. The agency is organized into four major divisions: air quality, water quality, ground water and solid waste, and hazardous waste.

Minnesota Rule Chapter 6280
A Minnesota rule that requires permits for activities which are meant to control aquatic plants and submerged vegetation. These rules are administered by the MN DNR.

Minnesota Rule Chapter 7001
A Minnesota state regulation that contains the permit process and permit requirements for hazardous waste facilities, National Pollutant Discharge Elimination System, and water quality certification (Section 401 Certification). This regulation is administered by the MPCA. Related program: Clean Water Act.

Minnesota Rule Chapter 7007
A Minnesota state regulation that contains requirements for a facility to obtain an air emission facility permit. It is administered by the MPCA. Related program: Clean Air Act.

Minnesota Rule Chapter 7009
A Minnesota state regulation that contains the state ambient air quality standards and methods of measurement to meet those standards. The programs are administered by the MPCA. Related program: Clean Air Act.

Minnesota Rule Chapter 7021
The Minnesota rule that includes the acid deposition standard and control requirements which apply to the electric power generating utilities. Also known as the Minnesota Acid Deposition Control Rule. The rule is administered by the MPCA. Related program: Clean Air Act.

Minnesota Rule Chapter 7050
A Minnesota rule that sets standards for protecting the quality and purity of the waters of the state. These standards are administered by the MPCA. Related program: Clean Water Act.

Minnesota Rule Chapter 7060
A Minnesota rule that protects and preserves the underground waters of the state. This rule is administered by the MPCA.

Minnesota Rule Chapter 8420
A Minnesota rule that identifies replacement plan criteria for wetland drain and fill activities

which require mitigation under the Wetland Conservation Act. These rules are administered by the Board of Water and Soil Resources. Related program: Wetland Conservation Act Rules.

Minnesota Sea Grant (Sea Grant)
This University of Minnesota-based program supports research, extension, and education about Lake Superior, the other Great Lakes, and inland waters of Minnesota, making research accessible to citizens, resource managers, and policy makers. Related programs: National Oceanic and Atmospheric Administration, National Sea Grant College Program.

Minnesota Toxic Pollution Prevention Act (TPPA)
State legislation passed into law in 1990, this act creates policies and sets up ways to prevent the release of toxic pollutants into the environment by reducing or eliminating toxic pollutants at their source through pollution prevention.

Mitigation
See wetland mitigation.

Mixing Zone
A limited area or volume of water where initial dilution of a point source pollutant discharge takes place. The zone is extended to cover the secondary mixing in the surrounding waterbody. Numeric water quality criteria can be exceeded, but acutely toxic conditions are prevented from occurring in this zone. Related programs: Clean Water Act, National Pollutant Discharge Elimination System.

Multi-media Inspections
These are inspections of a discharger's effect on water and air quality and the generation of solid waste. Related program: Western Lake Superior Sanitary District.

Multi-media Risk
The human health risk due to exposure to a pollutant through all pathways, such as inhalation, ingestion, or skin contact.

Municipal Industrial Strategy for Abatement (MISA)
A program initiative of the province of Ontario intended to reduce water pollution.

Mutagen
A substance that is known or suspected to cause mutations.

Mutation
A permanent change in the hereditary material involving a physical change in chromosomes or genes.

Nation's Waters
See Waters of the United States.

National Ambient Air Quality Standards (NAAQS)
Standards that EPA sets under the Clean Air Act to protect public health with an adequate margin of safety (primary standards) and to protect the environment (secondary standards). These

standards apply to sources that emit pollutants into the atmosphere. Related program: Clean Air Act.

National Environmental Policy Act (NEPA)
A federal law passed in 1990 that promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulates the health and welfare of people. It established a Council on Environmental Quality. It is comprised of two Titles: Title I - Declaration of National Environmental Policy; Title II - Council on Environmental Quality.

National Oceanic and Atmospheric Administration (NOAA)
A federal agency, NOAA's mandate is to conserve and manage wisely the nation's coastal and marine resources, and describe and predict changes in the earth's environment to ensure sustainable economic opportunities. NOAA administers the National Sea Grant College Program, National Underseas Research Program, National Marine Fisheries Service, National Coastal Resources Research and Development Institute, National Weather Service, and others.

National Park Service (NPS)
An agency of the U.S. Department of the Interior that manages the national park system. Active participant in the Binational Program.

National Pollutant Discharge Elimination System (NPDES)
Federal regulations that constitute the national program for issuing, modifying, revoking, re-issuing, terminating, monitoring and enforcing permits, and enforcing pretreatment requirements for point source discharges to surface waters under the Clean Water Act, Section 402. Related programs: Clean Water Act, 40 CFR.

National Priorities List (NPL)
A list of inactive, hazardous waste sites designated under Superfund as needing long-term remedial actions. Currently, there are about 1,200 sites on the NPL. Related program: Comprehensive Environmental Response, Compensation, and Liability Act.

National Sea Grant College Program (NSGCP)
A nation-wide partnership with public and private sectors combining research, education, and technology transfer for public service. A national network of universities meeting changing environmental and economic needs of people, industry, and government in coastal, ocean, and Great Lakes states. The program is administered by National Oceanic and Atmospheric Administration. *See also* Minnesota Sea Grant. Related program: National Oceanic and Atmospheric Administration.

Nationwide Permit (NWP)
A type of general permit issued by the Army Corps of Engineers allowing certain activities to take place in the waters of the U.S. If certain conditions are met, the specified activities can take place without the need for an individual or regional permit. Related programs: Section 404, 33 CFR.

Natural Resources Conservation Service (NRCS)
A federal agency within the United States Department of Agriculture that provides technical assistance to land users in cooperation with other federal, state, and local agencies in carrying out

a variety of natural resources-related programs designed to promote protection and wise use of these resources on private lands. Formerly the Soil Conservation Service.

Natural Resources Research Institute (NRRI)
A University of Minnesota research institute established in 1983 by the Minnesota legislature to foster economic development of Minnesota's natural resources in an environmentally-sound manner and promote private sector employment. *See also* Center for Water and the Environment. Related program: University of Minnesota.

Naturalized Species
An intentionally or unintentionally introduced species that has adapted to and reproduces successfully in its new environment. Some Great Lakes examples include the rainbow smelt, the alewife, and some salmon and trout species.

Navigable Waters
Navigable waters of the United States are waters subject to the ebb and flow of the tide and/or used to transport interstate or foreign commerce. Once the determination of navigability is made, it applies over the entire surface of the water body, and is not changed by later actions or events which impede or destroy navigable capacity. Also referred to as waters of the U.S. Related program: 33 CFR.

Neurotoxin
A substance that is known or suspected to be poisonous to nerve tissue.

Nitrogen Oxides (NOx)
Pollutants that can be a component of smog and also can contribute to acid rain. One of the criteria pollutants regulated by the 1990 Clean Air Act Amendments. Sources include automobiles and industrial point sources.

No Net Loss
A federal and Minnesota state policy to achieve no overall net loss of the nation’s remaining wetlands base as defined by acreage and function and to restore and create wetlands where feasible, to increase the quality and quantity of the nation’s wetland resource base. Related programs: Wetland Conservation Act, Section 404.

No Observable Effect Concentration (NOEC)
For toxic substances, it is the highest tested concentration at which no adverse effects are observed in an aquatic organism at a specific time of observation.

Non-Chemical Stressors
Physical and biological factors that can impact water quality or ecosystem health. Examples include heat, sediment, and non-indigenous species.

Non-Indigenous Aquatic Nuisance Prevention and Control Act of 1990
A federal law to prevent the unintentional introduction and dispersal of non-indigenous species into the waters of the U.S. The act mandates the establishment of: a national ballast water control program; the Aquatic Nuisance Species Task Force; initial research funding; technical assistance and education for federal and state agencies; state management plans; and grant

programs to prevent, monitor, and control the spread of zebra mussels and other exotic species. It also provides for the establishment of regulations that control the introduction of and dispersal of these organisms. *See also* aquatic nuisance species.

Non-Indigenous Species
Those species found beyond their natural ranges or natural zone of potential dispersal. Also referred to as exotic species. *See also* aquatic nuisance species.

Nonpoint Source
See nonpoint source pollution.

Nonpoint Source Pollution (NPS)
Pollution where the sources cannot be traced to a single, distinct, identifiable point. Nonpoint source pollution can come from atmospheric deposition, erosion, and runoff from parking lots, farms, and streets.

North Shore Management Board (NSMB)
A Minnesota joint powers board that represents local governments in decisions about coastline management on Minnesota's north shore. The board implements the North Shore Management Plan.

North Shore Management Plan (NSMP)
A Minnesota plan for the environmental protection and orderly growth of the north shore of Lake Superior developed by the residents of the area. Consists of several planning elements, each dealing with an area needing special attention, such as shoreland management, harbors of refuge, transportation, recreation, tourism, and economic development.

Northeast Minnesota Waste Exchange (NMWE)
A local program administered by the Western Lake Superior Sanitary District, this organization recycles household waste such as paint. Its primary effort is aimed at getting businesses that have unwanted products in touch with potential users of those products. Related program: Western Lake Superior Sanitary District.

Northeastern Minnesota Environmental and Economic Council (NEMEEC)
An organization of northeastern Minnesota citizens formed in the 1970's in response to the potential for Minnesota's enrollment in the federal Coastal Zone Management Program. NEMEEC's approach is to ensure that CZM does not ignore or hamper economic development.

Nutrients
Elements or compounds essential as raw materials for organism growth and development, such as carbon, nitrogen, and phosphorus.

Octachlorostyrene (OCS)
A toxic substance and critical pollutant that is a by-product of high temperature industrial processes involving chlorine. Like dioxin, OCS is not produced intentionally. Release to the environment occurs in effluent from chlorine and gas production, aluminum smelting, and other metal production. OCS has been found in leachate from industrial landfills and fly ash from waste incinerators. Related program: Binational Program.

Oligotrophic
Refers to an unproductive, nutrient poor lake that typically has very clear water. Lake Superior is classified as an ultra-oligotrophic lake.

Ontario Federation of Anglers and Hunters (OFAH)
An Ontario conservation organization that promotes sustainable use of natural resources by providing boater education programs on exotic species, fish, wildlife, forestry research and management, and timber management policy.

Ontario Ministry of Natural Resources (OMNR)
This provincial agency is responsible for management of Canadian waters of the Great Lakes to help sustain a healthy ecosystem. Responsibilities of the OMNR include: coordinating resource planning with other entities; protecting and enhancing biological resources; managing fish harvest; protecting and rehabilitating habitat and fish communities; enforcing legislation; increasing public awareness of exotic species through educational programming; and monitoring ecosystem health through assessment and research programs.

Ordinary High Water Mark (OHW)
The elevation marking the highest water level which has been maintained for a sufficient time to leave evidence upon the landscape. Defined in Minnesota statutes as the boundary of protected waters. Generally, it is the point where the natural vegetation changes from predominately aquatic to upland species. For streams, the OHW is generally the top of the bank of the channel. The OHW is the elevation from which building and sewage setbacks are measured. OHWL means the ordinary high water level.

Organic Chemicals
Nearly all of the millions of compounds that contain carbon atoms are organic chemicals. More than 90% of all known compounds are organic. The few carbon compounds that are not considered organic include carbon dioxide and bicarbonate. Hydrocarbons like methane are simple organic chemicals that contain only hydrogen and carbon. Other organic chemicals include most pesticides and chemicals based on benzene.

Outfall
The location or structure where wastewater or drainage empties into the surface water from a sewer, drain, or other conduit.

Outstanding International Resource Waters (OIRW)
This proposed designation by the Binational Program and the Great Lakes Initiative would protect the entire Lake Superior basin from new or expanded point source discharges of persistent toxic substances.

Outstanding National Resource Waters (ONRW)
This proposed designation contained in the Clean Water Act Reauthorization would establish special areas within the U.S. portion of the Lake Superior basin where new or expanded point source discharges of persistent toxic substances would be prohibited as part of the Binational Program and Great Lakes Initiative. *See also* MN Rule Chapter 7050. Related program: Clean Water Act.

Outstanding Resource Value Waters (ORVW)
Waters of the state of Minnesota with high water quality, wilderness characteristics, unique scientific or ecological significance, exceptional recreation value, or other special qualities that warrant stringent protection from pollution. *See* MN Rule Chapter 7050.

Ozone
A pollutant formed in the lower atmosphere by the reaction of nitrogen oxides and hydrocarbons in sunlight, commonly called smog, for which National Ambient Air Quality Standards have been established. Ozone is also found naturally in the upper atmosphere where it acts as a protective filter, screening out ultra-violet rays.

PAHs
See Polycyclic Aromatic Hydrocarbons.

Part 70 Permit
A federal regulation that defines the requirements for permitting facilities for air emissions. States with federally-approved permit programs administer the permitting of facilities within their state. Related programs: Minnesota Rule Chapter 7007, 1990 Clean Air Act Amendments.

Particulates
Very small separate particles composed of organic or inorganic matter.

Parts per Billion (ppb)
The number of parts of a substance per billion parts of another substance into which it is combined. Often expressed as micrograms per liter for water and micrograms per kilogram for fish and sediments.

Parts per Million (ppm)
The number of parts of a substance per million parts of another substance into which it is combined. Often expressed as milligrams per liter water or milligrams per kilogram for fish tissue and sediments.

Parts per Thousand (ppt)
The number of parts of a substance per thousands parts of another substance into which it is combined. Often expressed as grams per liter of water or grams per kilogram for fish tissue and sediments.

Periphyton
Algae that grow attached to surfaces such as rocks or larger plants.

Persistent Toxic Substance
A toxic pollutant that remains in the environment for a substantial period of time, potentially causing injury to ecosystem health.

pH
A numeric value that indicates relative acidity and alkalinity on a scale of 1 to 14. A pH of 7.0 is neutral, higher values indicate increasing alkalinity; lower values indicate increasing acidity.

Phytoplankton
Algae that grow suspended in the water column or open waters of a lake.

Plankton
A term used to describe bacteria, tiny plants (phytoplankton), and animals (zooplankton) that live in the water column of lakes.

Point Source
See point source pollution.

Point Source Pollution
Pollution from a distinct, identifiable source, such as a pipe, smokestack, or exhaust.

Pollutant
Chemicals or refuse material released into the atmosphere, water, or onto the land.

Pollution Prevention (P2)
This is defined in the Minnesota Toxic Pollution Prevention Act as eliminating or reducing at the source the use, generation, or release of toxic pollutants. Methods of reducing pollution include, but are not limited to, industrial process modification, inventory control measures, feedstock substitutions, various housekeeping and management practices, and improved efficiency of machinery. The federal version of this term is source reduction.

Pollution Prevention Act of 1990
A federal law that establishes a national policy of pollution prevention, and requires the EPA to develop and implement a strategy to promote source reduction. This act declares as national policy that pollution prevention is the preferred approach to environmental protection.

Polychlorinated Biphenyls (PCBs)
One of the nine critical pollutants, PCBs are a group of over 200 nonflammable compounds formerly used in heating and cooling equipment, electrical insulation, hydraulic and lubricating fluids, and various inks, adhesives, and paints. These compounds are highly toxic to aquatic life, persist in the environment for long periods of time, and are bioaccumulative. PCBs are suspected carcinogens, and are linked to infant development problems. Fish from some lakes and streams in Minnesota contain measurable amounts of PCBs. *See also* Fish Consumption Advisory. Related program: Binational Program.

Polycyclic Aromatic Hydrocarbons (PAHs)
A family of organic chemicals based on the chemical structure of benzene which result from incomplete combustion of organic chemicals and are associated with grease and other components derived from petroleum byproducts. Some examples of the many PAH compounds include: benzo(a)anthracene, benz(b)fluoranthene, benzo(a)pyrene, chrysene, phenanthrene, and pyrene.

Pretreatment
Partial wastewater treatment required for some industries. Pretreatment removes some types of industrial pollutants before the wastewater is discharged to a municipal wastewater treatment plant.

Primary Productivity
The amount of production of living organic material through photosynthesis by plants, including algae, measured over a period of time.

Primary Treatment
The first step in wastewater treatment in which most of the debris and solids are removed mechanically.

Priority Pollutants
Pollutants identified in certain federal and state regulations. Priority pollutants have different definitions in air, water, and waste programs.

Program Office
See Great Lakes National Program Office.

Protected Waters
Minnesota waters of the state identified as public waters or wetlands under Minnesota statutes.

Public Waters
Generally, public waters are water bodies determined by Minnesota statutes to have significant public value. They are controlled by the state.

Public Waters Wetlands
A class of wetlands defined by the state of Minnesota as public waters deserving of a certain level of protection under the Wetland Conservation Act. These include all Types 3, 4, and 5 wetlands, as defined in U.S. Fish and Wildlife Service Circular No. 39 (1971 edition), that are ten or more acres in size in unincorporated areas, or 2-1/2 or more acres in size in incorporated areas.

Publicly Owned Treatment Works (POTW)
Any device or system that is used in treatment, including recycling and reclamation, of municipal sewage. Related programs: Clean Water Act, 40 CFR.

Purple Loosestrife
A wetland plant from Eurasia that quickly invades water bodies, including the Great Lakes, forming dense stands unsuitable as cover, food, or nesting sites for fish, amphibians, waterfowl, and wildlife. Imported as an ornamental plant, it spread quickly across North America along roads, canals, and drainage ditches. Research on the use of European beetles that attack only purple loosestrife shows promise for biological control in North America.

Quagga Mussel
A close cousin to the zebra mussel, this exotic mussel was brought into the Great Lakes in the ballast water of transoceanic ships and is expected to have impacts similar to those of the zebra mussel. Although some evidence suggests that it prefers the deeper waters of the Great Lakes, it has, like the zebra mussel, quickly infested inland river systems. The name quagga comes from an extinct member of the zebra family.

Receiving Waters
Rivers, streams, lakes, or any body of water into which wastewater is discharged.

Region 5
The EPA's regional office that covers Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Related program: Environmental Protection Agency.

Regional Environmental Monitoring and Assessment Program (REMAP)
Environmental Monitoring and Assessment Program work on a regional scale. The St. Louis River is a Great Lakes example of a REMAP study. Cooperators include MED, GLNPO, NRRI, MPCA, UWS, and EPA Region 5. Related programs: Environmental Protection Agency, Environmental Monitoring and Assessment Program.

Regional Permit
A type of general permit that may be issued by a division or district engineer (Army Corps of Engineers), after compliance with other procedures, for activities in navigable waters of the U.S. or wetlands. Related programs: Section 404, 33 CFR.

Regulation
Rules that outline specific procedures developed by federal or state agencies which are used to implement laws.

Remedial Action Plan (RAP)
These are federally-mandated local plans designed to restore environmental quality to Areas of Concern on the Great Lakes (there are 8 in Lake Superior and there were initially 43 throughout the Great Lakes). The Areas of Concern were identified for their persistent pollution problems. Remedial Action Plans were called for by a protocol added to the Great Lakes Water Quality Agreement in 1987. Related program: Great Lakes Water Quality Agreement.

Report to Congress on Toxic Air Deposition to the Great Waters
See Great Waters Study.

Residence Time
The time required for a water body to exchange its entire volume of water. Lake Superior takes about 173 to 191 years to flush its entire volume. This is an important factor used in determining the residence time of toxic pollutants in the lake. Also referred to as flushing time.

Resource Conservation and Recovery Act (RCRA)
A federal law that established a comprehensive cradle-to-grave system for regulating hazardous waste.

Riparian Area
Vegetated ecosystems found along any stream or river. These areas characteristically have a high water table and are subject to periodic flooding and influence from the adjacent water body.

Riprap
Rock or other large material that is placed to protect streambanks or lakeshores from erosion due to runoff or wave action.

Risk Assessment
A complex process by which scientists determine the harm that a substance, activity, lifestyle, or

natural phenomenon can inflict on human health or the environment. The process involves analyzing scientific data to describe the form, dimension, and characteristics of risk. Assessments are usually predictive estimates of how risky a particular situation is. *See also* risk management, ecological risk assessment, comparative risk analysis.

Risk Management
The process by which risk assessment results are used with other information to make regulatory decisions. Risk management asks, "What shall we do about this risk?" *See also* risk assessment and ecological risk assessment.

Risk Reduction
Anything, such as education, regulation, or remediation, that reduces the adverse effects of exposure to risks from a substance, activity, lifestyle, or natural phenomenon.

Rivers and Harbors Act of 1899
A federal statute that allows the Army Corps of Engineers to regulate the creation of obstructions and filling of navigable waters of the U.S.

River Watch
A citizen-based volunteer water monitoring, education, and outreach program on Lake Superior sponsored by the EPA. The primary emphasis of the program is to work with secondary school teachers and students to incorporate River Watch concepts into existing course curricula. *See also* St. Louis River Watch.

Ruffe
See Eurasian ruffe.

Ruffe Control Plan
The Ruffe Control Task Force Committee (appointed by the Aquatic Nuisance Species Task Force) developed this integrated plan encompassing the legal requirements mandated by the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990 to control the Eurasian ruffe. The program provides assessment and control measures including range reduction by chemical treatments, prevention of ballast water transport, and monitoring and surveillance. The plan also emphasizes research and public education as essential components of a ruffe control effort.

Ruffe Control Task Force Committee
An organization representing academic, business, shipping, fisheries management, and fishing interests Great Lakes-wide that developed a five-part plan aimed at controlling the spread of ruffe to western Lake Superior. Chaired by the U.S. Fish and Wildlife Service, this task force was established in 1991 by the Great Lakes Fisheries Commission.

Rule
See Regulation.

St. Louis River Management Plan
A local management plan developed by the St. Louis River Board to provide adequate protection to the Whiteface, Cloquet, and St. Louis rivers ecosystems in the areas of land use, forestry management, and land acquisition. Once implemented, the plan will result in increased lot sizes,

a no-cut zone along the river corridor, mandated forestry management plans, and public purchase of 22,000 acres of river front land. Also known as the St. Louis, Cloquet, Whiteface Corridor Management Plan.

St. Louis River Remedial Action Plan (St. Louis River RAP)
A two-state (MN and WI) group representing industry, environmental groups, academic institutions, government, researchers, and community leaders coordinated by the MPCA and WDNR. The goal is to develop a plan to combat pollution sources and to protect natural areas on the St. Louis River, an Area of Concern and the largest U.S. tributary to Lake Superior. Related program: Remedial Action Plan.

St. Louis Riverwatch
A citizen-based water quality monitoring, outreach, and education program administered by the MPCA. Students and teachers from the communities along the river conduct water chemistry tests and survey the benthic invertebrate community as well as monitor frog populations and sediment toxicity. *See also* River Watch.

Science Advisory Board (SAB)
A binational advisory group that provides advice on the adequacy of Great Lakes science and research to the International Joint Commission and the Water Quality Board. The board is responsible for developing recommendations on all matters related to research and the development of scientific knowledge pertinent to the identification, evaluation, and resolution of current and anticipated problems related to Great Lakes water quality. Related programs: Great Lakes Water Quality Agreement, International Joint Commission.

Scientific and Natural Areas (SNA)
These are areas set aside to preserve the ecological diversity of Minnesota's natural heritage. They include landforms, fossil remains, plant and animal communities, rare and endangered species or other biotic features and geologic formations. The areas are preserved for scientific study and public edification as components of a healthy environment. The program is administered by the MN DNR, Division of Fish and Wildlife.

Sea Grant
See Minnesota Sea Grant and National Sea Grant College Program.

Sea Lamprey
An exotic, eel-like animal that attaches to fish with a sucking disk and sharp teeth. A native of the Atlantic Ocean, the lamprey made its way into all the Great Lakes following the opening of the Welland Canal in 1829 and its deepening in the 1900's. By the 1930's, sea lamprey were found in all of the Great Lakes. During the 1940's and 1950's, lamprey caused the collapse of lake trout, whitefish, and chub populations in all the Great Lakes with the exception of Lake Superior. It has been estimated that one sea lamprey can kill up to 40 pounds of lake trout during its lifespan. *See also* Sea Lamprey Control Program.

Sea Lamprey Control Program
The U.S. Fish and Wildlife Service and the Department of Fisheries and Oceans in Canada work together, under the direction of the Great Lakes Fishery Commission, to minimize sea lamprey

populations in the Great Lakes. Lamprey are controlled by applying a selective toxicant, TFM, to streams during the lamprey's most vulnerable life stage. Other control techniques include barriers, pheromone release, and sterilization of male lamprey.

Seaway Port Authority of Duluth
The Authority, consisting of seven members representing state, county, and city (Duluth) interests, promotes growth of international and domestic maritime commerce for Minnesotas World Port, and strives to strengthen the financial condition of the Port while enhancing the regional economy through industrial development and construction of port facilities. The Authority co-sponsored, along with the Lake Carriers Association, the Voluntary Ballast Water Exchange Plan for the Control of Ruffe in Lake Superior.

Secchi Disk Depth (SDD)
An estimate of the transparency of a lake, obtained by lowering a small (20 cm) disk into the water until it is no longer visible and noting the depth at which it disappears from view. Oligotrophic lakes are typically more transparent (and have a greater Secchi depth) than more productive, or eutrophic lakes. *See also* Superior Lakewatch.

Secondary Treatment
The second step in most publicly-owned treatment systems, where bacteria consume the organic parts of the waste.

Section 10
Refers to Section 10 of the federal Rivers and Harbors Act of 1899.

Section 118
A term used to refer to Section 118 of the federal Clean Water Act that identifies program requirements for the Great Lakes. Related program: Clean Water Act.

Section 305 (b)
The term refers to Section 305 (b) of the federal Clean Water Act, which requires a report on the status of fishable, swimmable waters. The states submit a biennial report to the EPA, which compiles the reports into a report to Congress. Related program: Clean Water Act.

Section 319
A term used to refer to Section 319 of the federal Clean Water Act that identifies the program requirement for nonpoint source management programs. Related program: Clean Water Act.

Section 401
A term used to refer to Section 401 of the federal Clean Water Act which requires water quality certification by the appropriate state agency, for example, the Minnesota Pollution Control Agency. Under Section 401, no federal permit to discharge pollutants into the waters of the U.S. is valid unless the state where the discharge occurs grants or waives its right to certify that the permit will not violate the state water quality standards. A federal agency cannot issue a permit when the state has denied water quality certification. Related program: Clean Water Act.

Section 402
A term used to refer to Section 402 of the federal Clean Water Act that identifies permit

requirements for point source discharges, known as the National Pollutant Discharge Elimination System. Related program: Clean Water Act.

Section 404
A term used to refer to Section 404 of the federal Clean Water Act that outlines permit requirements for dredging and other filling activities in waters of the U.S.. This is the primary federal law that regulates activities affecting wetlands. The Section 404 program is administered by the Army Corps of Engineers in accordance with the EPA. Related program: Clean Water Act.

Section 6217
A federal regulation that is a part of the Coastal Zone Act Reauthorization Amendments of 1990 entitled, Protecting Coastal Waters. This provision requires states with Coastal Zone Management Programs that have received federal approval under Section 306 of the Coastal Zone Management Act, to develop and implement Coastal Nonpoint Pollution Control Programs. These programs are to be used to control sources of nonpoint pollution which impact coastal water quality. Related programs: Coastal Zone Act Reauthorization Amendments of 1990, Coastal Zone Management Act.

Sediments
Soil particles that are or were at one time suspended in and carried by water as a result of erosion and/or resuspension. The particles are deposited in areas where the water flow is slowed such as in harbors, wetlands, and lakes.

Seiche
Seiches are lakewide displacements of water that are wind-induced. Water pushed by the wind can pile up on shore causing noticeable increases in water depth. When the wind is reduced the water mass continues to slosh back and forth like water in a bathtub. "The Seiche" is also the name of Minnesota Sea Grant's quarterly newsletter.

Sequencing
A term used in wetlands regulations to define a process that involves avoiding, minimizing, and mitigating impacts. Related programs: Wetland Conservation Act, Wetland Conservation Act Rules.

Shorelands
Refers to Minnesota lands located 1000 feet from the ordinary high water level of a lake, pond, or flowage, and 300 feet from a river, stream, or the landward extent of floodplains.

Shoreland Management Program
A Minnesota program administered by a local government unit that meets minimum standards and criteria for the subdivision, use, and development of the shorelands of public waters.

Sigurd Olson Environmental Institute
A regional, private, non-profit organization of Northland College in Ashland, Wisconsin. Its mission is to protect environmental quality in the greater Lake Superior region and to build a future that is ecologically, socially, and economically sustainable.

Site-Specific Criteria
Water quality criteria that have been developed to be specifically appropriate to the water quality characteristics and/or species composition at a particular location. Related programs: Great Lakes Initiative, National Pollutant Discharge Elimination System.

Soil and Water Conservation Districts (SWCDs)
Local county units of government in Minnesota that assist landowners with implementation of soil and water conservation measures and practices. Related program: Board of Water and Soil Resources.

Soil Conservation Service (SCS)
See Natural Resources Conservation Service.

Source Reduction
A term that means reducing pollution at its source. It includes management systems, technologies, and other practices which reduce or eliminate the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment prior to recycling, treatment, or disposal. The term includes equipment or technology modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control. *See also* Pollution Prevention. Related programs: Pollution Prevention Strategy, Clean Water Act, Great Lakes Initiative.

Special Designation
As part of the Binational Program to Restore and Protect the Lake Superior Basin, governments are encouraged to make special designations which: favor zero discharge of human made toxins and protect and enhance the unique character and pristine nature of the lake basin. The U.S. policy on special designation includes enhanced anti-degradation approaches (including best available technology) for new or proposed expansions to facilities. Related program: Binational Program.

Standard
See water quality standard.

State Implementation Plan (SIP)
A state plan that sets out the process for complying with the Clean Air Act requirements. If approved by the EPA it will give the state the authority to run the federal clean air program for the state. Related program: Clean Air Act.

State of the Lake Superior Basin Reporting Series (SOTLSBRS)
A series of reports prepared by the Superior Work Group that will communicate progress on the Lake Superior Binational Program. When completed, the series will consist of 5 volumes.

- Vol I: Introduction to the Basin, Its Economy, and Its Inhabitants;
- Vol II: Lakewide Management Plan (Stages I-IV);
- Vol III: Lakewide Management Plan for Nonchemical Stressors;
- Vol IV: Ecosystem Principals and Objectives for Lake Superior; and

- Vol V: Comprehensive Management Plan to Protect the Lake Superior Ecosystem (an amalgamation of volumes I-IV).

Related programs: Lake Superior Binational Program, Great Lakes Water Quality Agreement.

State of the Lakes Ecosystem Conference (SOLEC)
A conference sponsored by Environment Canada and EPA, held every two years to review and make available information on the state of the chemical, physical, and biological integrity of the Great Lakes basin ecosystem. A major purpose of the conference is to cooperate in implementing the Great Lakes Water Quality Agreement by supporting better decision-making through improved availability of information on the condition of the living components of the system and the stresses which affect them. Working papers are prepared as background for the conference.

State Shoreland Management Plan
See Shoreland Management Program.

Statute
An enactment of the legislative body of a government that is formally expressed and documented as a law.

Storm Sewers
The underground infrastructure designed to collect storm runoff from urban areas which is typically not treated by sewage treatment facilities before being discharged into nearby surface waters. Storm sewer runoff has been found to be a major contributor to nonpoint source pollution in the Great Lakes.

Storm Water
Rainwater runoff, snow melt runoff, surface water runoff, and discharges that are collected by storm sewers. Related programs: National Pollutant Discharge Elimination System, CFRs, Minnesota Rules.

Stressor
Any chemical, physical, or biological entity that can induce adverse effects on individuals, populations, communities, or ecosystems.

Sulfur Dioxide (SO_2)
A chemical compound that when emitted to the atmosphere is considered to be a major component of acid rain. One of the criteria pollutants regulated by the 1990 Clean Air Act Amendments, SO_2 is emitted mainly by anthropogenic sources. Sources include industrial point sources, such as coal fired electric utilities.

Sunsetting
A process to restrict, phase out, and eventually ban the manufacture, generation, use, storage, discharge, and disposal of a persistent toxic substance.

Superfund
See Comprehensive Environmental Response, Compensation, and Liability Act, and Minnesota Environmental Response and Liability Act.

Superfund Amendment Reauthorization Act (SARA)
See Comprehensive Environmental Response, Compensation, and Liability Act

Superior Lakewatch
A binational organization coordinated by the Lake Superior Center, the Ontario Ministry of Environment and Energy, and the Sea Grant Offices of Michigan, Wisconsin, and Minnesota that offers volunteers the opportunity to help in monitoring the water quality of Lake Superior by measuring Secchi disk depth throughout the lake.

Superior Work Group
A binational organization that assembles technical and scientific professionals from each of the six jurisdictions (U.S. and Canada) and key national agencies surrounding Lake Superior to coordinate Binational Program implementation. Related program: Binational Program.

Surface Water
All water above the surface of the ground including, but not limited to lakes, ponds, reservoirs, artificial impoundments, streams, rivers, springs, seeps, and wetlands.

Teratogen
A substance that can cause malformation in the fetus following exposure of the mother. The malformation or abnormality may be biochemical or anatomic and be of genetic or environmental origin.

Tertiary Treatment
The advanced cleaning of wastewater that goes beyond secondary treatment. This process removes nutrients, such as phosphorus and nitrogen, and most biological oxygen demand and suspended solids.

Thermal Stratification
The layering of warmer waters over colder waters that can occur in lakes, usually in the summertime. This layering occurs because as surface waters are warmed they become less dense than the underlying colder waters.

Total Maximum Daily Load (TMDL)
TMDLs are set by regulators to allocate the maximum amount of a pollutant that may be introduced into a water body and still assure attainment and maintenance of water quality standards. Related programs: water-related CFRs and rules, federal and state statutes.

Toxaphene
One of the nine critical pollutants, toxaphene is an insecticide that was developed as a substitute for DDT. Its use is now restricted in the U.S. and Canada. Toxaphene has been detected in wildlife as far north as the Arctic and levels in Lake Superior appear to be increasing in fish and sediments. Related program: Binational Program.

Toxic Pollutant
A substance or combination of substances, including disease-causing agents, which may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including reproductive malfunctions), or physical deformation in organisms or their offspring.

Also refers to those substances listed under Section 307(a) of the Clean Water Act. Related programs: Clean Water Act, parts of chapter 40 of the CFR.

Toxic Substances
See Toxic Pollutants.

Toxic Substances Management in the Great Lakes Basin Through the Permitting Process Agreement
A binational agreement entered into by the environmental administrators of the Great Lakes States in 1986 requiring that best available control technology be installed wherever possible on all new and existing sources of persistent air toxic pollutants which impact the Great Lakes. This agreement is pursuant to implementing the governors' Great Lakes Toxic Substances Control Agreement.

Toxicity
The inherent potential of a substance to cause adverse effects in a living organism. *See* acute toxicity and chronic toxicity.

Toxicity Test
A procedure that measures the degree of effect caused by a chemical or effluent, by exposing living test organisms to the substance. *See also* acute toxicity and chronic toxicity.

U.S. Army Corps of Engineers (ACOE)
See Army Corps of Engineers.

U.S. Ballast Water Management Regulation
Mandatory regulations, enforced cooperatively by the U.S. and Canadian Coast Guards, that prohibit a commercial trans-oceanic vessel from importing ballast water having salinity values less than 30 parts per thousand into the Great Lakes in an effort aimed at preventing further introductions of harmful exotic species.

U.S. Coast Guard (USCG)
As mandated by federal law, the Coast Guard promotes safe and efficient passage of marine and air traffic in coastal waters by providing: (1) a continuous, accurate, all-weather radio navigation service; (2) warnings of dangers and obstructions by providing visual or electronic signals, buoys, and lights; and (3) search and rescue services for commerce and recreation. They also help prevent pollution by inspecting vessels and aiding in pollution clean-up efforts.

U.S. Coast Guard Auxiliary (CGAUX)
A volunteer civilian organization established by Congress in 1939 to assist the U.S. Coast Guard in promoting safety in U.S. recreational boating.

United States Code (USC)
An abbreviation used to identify federal statutes. It is used when referring to a specific code section(s). For example, the Clean Water Act is 33 U.S.C. 1251-1387.

U.S. Department of Agriculture (USDA)
A federal agency that administers the Natural Resources Conservation Service and the U.S. Forest Service, among others.

U.S. Department of Agriculture - Animal and Plant Health Inspection Service (APHIS)
An agency that inspects incoming agriculture, livestock, and produce for disease and pest-related disease.

U.S. Environmental Protection Agency (EPA, U.S. EPA)
See Environmental Protection Agency.

U.S. Fish and Wildlife Service (USFWS)
A federal agency whose mission is to conserve, protect, and enhance the Nation's fish and wildlife and their habitats for the continuing benefit of people.

U.S. Geological Survey (USGS)
A federal agency that performs surveys, investigations, and research covering topography, geology, and the mineral and water resources of the U.S.

U.S. Geological Survey - Biological Resources Division (USGS - BRD)
A federal division within the USGS. The mission of the BRD is to provide, with others, the scientific understanding and technologies needed to manage the nation's biological resources.

Variance
A mechanism or provision that allows modification to or waiver of requirements or standards.

Virtual Elimination
A term that refers to the elimination of inputs and discharges of persistent toxic substances with the end goal being their elimination from the Great Lakes Ecosystem. Because it is not practical to completely remove persistent toxic substances, especially from contaminated sediments, the qualifier virtual is appropriate. It may not be possible to achieve total elimination from the Great Lakes System for some persistent toxic substances produced by natural processes and/or by the release of toxins from contaminated sediments. Because of these impediments, virtual elimination is seen by many as a more realistic objective than zero discharge. *See also* Zero Discharge.

Virtual Elimination Pilot Project
A federal project undertaken by the EPA in response to the Great Lakes Water Quality Agreement, that has as its goal the virtual elimination of persistent bioaccumulative chemicals of concern from the Great Lakes basin. Related program: Great Lakes National Program Office.

Virtual Elimination Strategy
A binational report produced by the Virtual Elimination Task Force for the International Joint Commission that outlines a conceptual framework to achieve the virtual elimination of persistent toxic substances from the Great Lakes basin. Related programs: International Joint Commission, Great Lakes Water Quality Agreement.

Virtual Elimination Task Force
A binational organization established by the International Joint Commission to address specific virtual elimination issues in the Great Lakes ecosystem.

Volatile Organic Compounds (VOCs)
Organic chemicals that evaporate readily into the atmosphere, providing a path for transport through the environment.

Voluntary PCB Phasedown Program
A federal program initiated by EPA Region 5 requesting electric utilities in the Great Lakes basin to voluntarily remove from service all electrical equipment containing PCBs at levels greater than 500 parts per million.

Wasteload Allocation (WLA)
The portion of a receiving waters total maximum daily load that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation. Related programs: water-related CFRs and rules, federal and state statues.

Wastewater Treatment Plant (WWTP)
A facility that receives sewage and stormwater from collection structures, then uses various levels of treatment to purify the water. Most modern publicly-owned treatment works in larger municipalities provide primary treatment, secondary treatment, tertiary treatment, and disinfection techniques to kill disease-producing organisms. Related Program: Western Lake Superior Sanitary District.

Water Quality Advisory Board
See Great Lakes Water Quality Advisory Board.

Water Quality Agreement of 1987
A binational agreement that amends the Great Lakes Water Quality Agreement of 1978. Related program: Great Lakes Water Quality Agreement.

Water Quality Board
See Great Lakes Water Quality Advisory Board.

Water Quality Criteria
Numeric or narrative expressions that specify concentrations of water constituents (such as toxic chemicals or heavy metals) which, if not exceeded, are expected to support an ecosystem suitable for protecting life in water and life dependent on water for its existence. States incorporate water quality criteria into their water quality standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act. Related programs: Clean Water Act, parts of chapter 40 of the CFR.

Water Quality Guidance for the Great Lakes System
The official name for the Great Lakes Initiative. The final version of the guidance was published on March 23, 1995 and has regulatory implications. The guidance establishes minimum water quality standards, anti-degradation policies, and implementation procedures for waters in the

Great Lakes system. Related programs: Great Lakes Toxic Reduction Initiative, Great Lakes Toxic Reduction Effort, Clean Water Act.

Water Quality Standard
A water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water, by setting water quality criteria necessary to protect the uses, and by preventing degradation of water quality through anti-degradation provisions. States adopt water quality standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act. Related programs: Clean Water Act, parts of chapter 40 of the CFR.

Water Table
The upper surface of the ground water or that level below which the soil is saturated with water.

Water Use Classification
A classification of waters of the state contained in MN Rule Chapter 7050 for the purpose of water quality protection, consideration of the best use in the interest of the public, and other considerations. Water quality standards for each class of waters prescribe the quality of the water that is necessary for the designated uses, as follows: Class 1 waters are for domestic consumption; Class 2 waters for aquatic life and recreation; Class 3 waters for industrial consumption; Class 4 waters for agriculture and wildlife; Class 5 waters for aesthetic enjoyment and navigation; Class 6 waters for other uses; and Class 7 waters for limited resource value waters.

Waters of the State
A term used in Minnesota statutes and regulations that refers to all water bodies regulated by the state. They include streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the state of Minnesota or any portion thereof.

Waters of the United States
A term used in federal regulations that defines all water bodies regulated as waters of the U.S. It includes: (1) all waters which may be susceptible to use in interstate or foreign commerce; (2) all interstate waters, including interstate wetlands; (3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters; (4) all impoundments of waters otherwise defined as waters of the United States; (5) tributaries of waters identified in this section; (6) the territorial seas; (7) wetlands adjacent to waters (other than waters that are themselves wetlands) identified in this section. Related programs: Clean Water Act, 33 CFRs.

Watershed
The drainage basin or area in which surface water drains toward a lake, stream, or river at a lower elevation. Related programs: Coastal Zone Management Act, Wetland Conservation Act, Clean Water Act.

Western Lake Superior Region Resource Management Cooperative (WLSRRMC)
A multi-agency/university assemblage established to coordinate programs in the Lake Superior basin. It provides coordinated research, information exchange, and outreach and education program support. Its goal is to achieve full benefits of Lake Superior regional waters, air, fish, wildlife, forests, and wildlands and associated resources for their cultural, social, commercial, economic, and recreational utilization and enjoyment. Formed in 1989, the cooperative represents eight federal agencies, Wisconsin and Michigan DNRs, Great Lakes Indian Fish and Wildlife Commission, and six academic instituitions.

Western Lake Superior Sanitary District (WLSSD)
A local agency responsible for sewage treatment, hazardous household and solid waste collection, recycling, and waste disposal for a number of municipalities in the greater Duluth, Minnesota area.

Wet Deposition
The deposition of pollutants from the atmosphere that occurs during precipitation events. Acid rain is one form of wet deposition. Wet deposition is calculated by multiplying precipitation amounts by the pollutant concentration. Wet deposition rates are often very different than dry deposition rates.

Wetland Conservation Act (WCA)
A Minnesota statute that requires regulation for draining and filling activities in wetlands. This act amended various Minnesota statues (namely 103A, 103B, and 103C). Also referred to as Chapter 354.

Wetland Conservation Act Rules (WCAR)
See Minnesota Rule Chapter 8420.

Wetland Mitigation
A regulatory requirement to replace or enhance wetland areas destroyed or impacted by proposed land disturbances with artificially created or restored wetlands.

Wetlands
The lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have a predominance of hydric soils and be inundated or saturated by surface water or ground water at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation. This is a legal definition and controversy still exists among scientists and policy makers as to how many of these characteristics must be present in order for an area to be defined as a wetland. Related programs: Wetland Conservation Act, Wetland Conservation Act Rules, Clean Water Act, Section 404.

Whole Effluent Toxicity Test (WET)
The total toxic effect of a complex effluent measured directly by a toxicity test. Related programs: 40 CFR, Great Lakes Initiative.

Wildlife Criteria
Water quality criteria designed to protect wildlife. These are surface water concentrations of toxic substances that will cause no significant reduction in the viability or usefulness (in a

commercial or recreational sense) of a population of animals that use the waters of the Great Lakes system as a drinking and/or foraging source over several generations. Related program: Great Lakes Initiative.

Wisconsin Department of Natural Resources (WI DNR)
A Wisconsin state agency responsible for overall management of the state's natural resources and environmental quality.

Wisconsin Lake Superior Basin Water Quality Management Plan
Wisconsin's five-year blueprint for water quality. This plan, prepared by the WDNR, will be used to set water quality management priorities in the Lake Superior basin.

Zebra Mussel
An exotic species originally introduced into the Great Lakes via the ballast water of transoceanic ships. This small bivalve mussel poses a multibillion dollar threat to industrial, agricultural, and municipal water supplies across North America by clogging water intake pipes. It can also have impacts on fisheries, native freshwater mussels, and natural ecosystems. By moving along contiguous waters of the Great Lakes, attached to ships, barges, and recreational boats, this Eurasian native has rapidly spread throughout the Mississippi River basin and many of its major tributaries, such as the Ohio River. Free-swimming larvae are also spread by river currents. Boater education campaigns focus on preventing further spread of this species.

Zero Discharge
Zero discharge refers to halting all inputs from all human sources and pathways to prevent any opportunity for persistent toxic substances to enter the environment from human activity. To completely prevent such releases, the manufacture, use, transport, and disposal of these substances would have to stop. The Binational Program has designated nine toxic substances (critical pollutants) to be part of the Zero Discharge Demonstration Program for the Lake Superior Basin. These substances are chlordane, dieldrin, dichloro-diphenyl-trichloro-ethane (DDT and its metabolites), hexachlorobenzene (HCB), mercury, octachlorostryrene (OCS), polychlorinated biphenyls (PCBs), 2, 3, 7, 8 tetrachlorodibenzo-p-dioxin (TCDD), and toxaphene.

Zero Discharge Demonstration Program
This international program is in response to the recommendation by the International Joint Commission that Lake Superior be designated a zero discharge demonstration zone where no point source discharge of any persistent bioaccumulative toxic substance be permitted. Nine persistent toxic substances (critical pollutants) have been designated as critical for the program. The first priority of the program is the goal of achieving zero discharge of the nine substances from point sources. To completely prevent such releases, the manufacture, use, transport, and disposal of these substances must stop. This objective is to be met by:

1. pollution prevention;
2. enhanced controls and regulations, and;
3. protection through special designations of all or part of the basin. (*See also* Outstanding International Resource Waters and Outstanding National Resource Waters.)

Related program: Binational Program.

Zone of Initial Dilution (ZID)
The region of initial mixing surrounding or adjacent to the end of an outfall pipe or diffuser. The ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

Zooplankton
Small, mostly microscopic animals that swim or float freely in open water. Zooplankton eat algae, detritus, and other zooplankton and in turn are eaten by fish.