Combined Sewer Overflow (CSO) Control Program
GLOSSARY

The following is a list of definitions of terms about combined sewers and more generally about wastewater treatment.

Average dry weather flow
The average non-storm flow over 24 hours during the dry months of the year (May through September). It is composed of the average sewage flow and the average dry weather inflow/infiltration.

Average wet weather flow
The average flow over 24 hours during the wet months of the year (October through April) on days when no rainfall occurred on that or the preceding day.

Base flow
Wastewater flow (including a reasonable amount of inflow and infiltration) originating from residential, commercial and industrial sources.

Basin
See *CSO basin*.

Baseline study
A study that documents the existing state of an environment to serve as a reference point against which future changes to that environment can be measured.

Best Management Practice (BMP)
A method, activity, or procedure for reducing the amount of pollution entering a water body.

Calibration
The determination, checking, or rectifying of the graduation of any instrument giving quantitative measurements. With respect to a computer model, calibration is a process whereby data recorded during an actual event is compared with data derived from a computer simulation of that event in order to determine the accuracy of the simulation.

CATAD system
Computer Augmented Treatment and Disposal System, which monitors flows in the wastewater conveyance system and operates regulator and pump stations to gain maximum use of pipe capacities.

Clean Water Act (CWA)
Also known as the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.).

Collection main
In collection systems, this is a larger pipe in which smaller branch and submain sewers are connected. The collection main may also be called a main or trunk sewer.

Collection system
In a wastewater system, a collection system is a system of pipes which receives and conveys sewage and/or storm water.

Combined sewer overflows (CSOs)
Overflows, during wet weather, of combined wastewater and stormwater. CSOs happen when flows in the wastewater collection system exceed the capacity of that system. The term "CSO" is also sometimes used to denote a pipe that discharges those overflows.

Combined sewer system
A wastewater collection and treatment system where domestic and industrial wastewater is combined with storm runoff.

Combined sewers
A sewer that carries both sewage and stormwater runoff.

Cost-effective alternative
An alternative control or corrective method identified after analysis as being the best available in terms of reliability, performance, and costs.

CSO basin
A geographic area served by a common sewer and stormwater system.

CSO event
A period of rainfall during which an overflow was recorded and that was preceded by 24 hours with no overflow and followed by 24 hours.

CSO treatment plant
A plant designed to provide primary treatment of combined sanitary sewage and storm water for peak flows above the 2.25 times the average wet weather flow. Such plants operate only intermittently, unlike most wastewater treatment plants which operate continuously.

Design event
A computer-simulated combined sewer overflow event, usually based on a design storm, which is used to determine the probable response of the sewer system to proposed modifications.

Design storm
A rainstorm used in the design of wastewater systems, primarily for systems which control combined sewer overflows. A particular storm may be selected as a design storm because adequate data exist to allow a calibration of a computer model being used to simulate the behavior of the sewer system during that storm.

Detention
The process of collecting and holding back stormwater or combined sewage for delayed release to receiving waters.

Discharge, direct or indirect
The release of wastewater or contaminants to the environment. A direct discharge of wastewater flows from a land surface directly into surface waters, while an indirect discharge of wastewater flows into surface waters by way of a wastewater treatment system.

Disinfection
A chemical or physical process that kills organisms which cause infectious disease. Chlorine is often used to disinfect treated sewage.

Diurnal base flow
Two peaks in the wastewater flow within the wastewater system in a single day.

Domestic wastewater
Human-generated sewage that flows from homes and businesses.

Effluent
Treated water, wastewater or other liquid flowing out of a treatment facility.

Environmental assessment
A written environmental analysis which is prepared pursuant to the National Environmental Policy Act to determine whether a proposed action would significantly affect the environment and thus require preparation of a more detailed environmental impact statement.

Environmental Impact Statement (EIS)
A document that discusses the likely significant impacts of a development project or a planning proposal, ways to lessen the impacts, and alternatives to the project or proposal. EISs may be required by national and state environmental policy acts.

Environmental Protection Agency (EPA)
A federal agency established in 1979 by presidential executive order to control pollution of the environment.

Fecal coliform bacteria
A group of organisms common to the intestinal tracts of humans and animals. The presence of fecal coliform bacteria in water, wastewater, or biosolids is an indicator of pollution and possible contamination by pathogens.

Final Design
The final phase of a project's design process. During final design, contract plans and specifications necessary for bidding are prepared. These contract documents provide all the necessary information needed by suppliers and contractors to construct the facility.

Force main
A pipeline leading from a pumping station that transports wastewater under pressure.

Groundwater infiltration
Infiltration that enters the sewerage system through pipe defects located below the normal groundwater table.

Hydraulic
Pertaining to the energy, momentum, and continuity effects of liquid in motion. The term usually refers to the flow of liquids in natural environments such as rivers or manmade structures such as pipes.

Hydrograph
The variation of the flow of liquids over time.

Hydrology
The science dealing with the properties, distribution and circulation of water. The term usually refers to the flow of water on or below the land surface before reaching a stream or manmade structure.

Hydraulic Routing Model
A computer model used to simulate the flow of water in King County's pipes.

Infiltration
The penetration of water from the land surface into the soil, or the penetration of water from the soil into a sewer system by such means as defective pipes, pipe joints or connections, or manhole walls.

Inflow
Flows of extraneous water into a wastewater conveyance system from sources other than a sanitary sewer connections, such as roof leaders, basement drains, manhole covers, and cross-connections from storm sewers.

Influent
Water, wastewater or other liquid flowing into a reservoir, basin or treatment plant.

Influent pump station
A pump station that pumps flow from an interceptor sewer into a treatment plant.

Infrastructure
Streets, water, sewer lines, and other public facilities basic and necessary to the functioning of an urban area.

Interceptor sewers
The portion of a collection system that connects main and trunk sewers with the wastewater treatment plant, thereby controlling the flow into the plant.

Lag
An interval of time before additional flow enters the system.

Lateral sewers
Pipes that receive sewage from homes and businesses and transport that sewage to trunks and mains.

Main sewer
This is a larger pipe in which smaller branch and submain sewers are connected. It may also be called a trunk sewer.

MG
Million gallons, a measure of liquid volume.

mgd
Million gallons per day, a rate of liquid flow.

Model
A formal set of relationships that attempt to represent some processes of the real world. Some models are intended to explain causes and effects of processes, others are tools to estimate or project the results of those processes, even if the processes themselves are not fully understood.

Monitor
To systematically and repeatedly measure conditions in order to track changes. For example, dissolved oxygen in a bay might be monitored over a period of several years in order to identify trends in concentration.

National Pollutant Discharge Elimination System (NPDES)
Section 402 of the U.S. Clean Water Act, which prohibits discharge of pollutants into navigable waters of the United States unless a special permit is issued by EPA, a state, or (where delegated) a tribal government on an Indian reservation.

Nonpoint source pollution
Pollution that enters water from dispersed and uncontrolled sources (such as surface runoff) rather than through pipes. Nonpoint sources (for example, stormwater runoff from agricultural or forest operations, on-site sewage disposal systems, and discharge from boats) may contribute pathogens, suspended solids, and toxicants. The cumulative effects of nonpoint source pollution can be significant.

NPDES Permit
Permit issued under the National Pollution Discharge Elimination System, which establishes reporting requirements and other conditions for discharge of pollutants to receiving waters.

Outfall
The exit point, usually a pipe or pipes where flow is discharged from the wastewater system into receiving water and which is engineered to ensure dispersion and dilution of the effluent in the receiving waters.

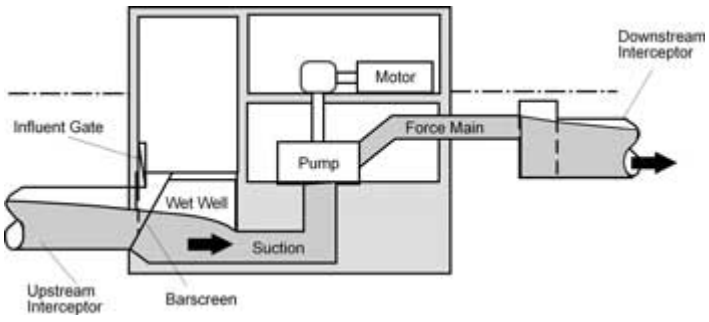
Pathogens
Microorganisms that can cause disease in other organisms or humans, animals, and plants. Pathogens include bacteria, viruses, fungi, or parasites found in sewage, in runoff from farms or city streets, and in water used for swimming. Pathogens can be present in municipal, industrial, and nonpoint source discharges.

Peak flow
The maximum flow expected to enter a facility.

Predesign
The initial phase of a project's design process. The results of this initial phase are generally limited to determination of the alignment, layout and technology for the project.

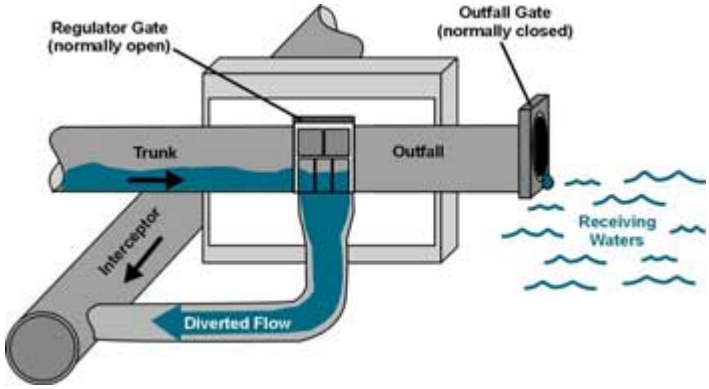
Primary treatment
The first stage of wastewater treatment involving removal of floating debris and solids by screening and/or settling.

Pump station
A pump station is used when sewer trunk lines have conveyed flows to a low-lying area. The pump station lifts the wastewater up to a point where it can flow by gravity to a wastewater treatment plant or another pump station.



Raw sewage
Untreated wastewater.

RegulatorRegulator
A structure that controls the flow of wastewater from two or more input pipes (trunk lines) to a single output (usually a larger interceptor line). Regulators can be used to restrict or halt flow, thus causing wastewater to be stored in the conveyance system until it can be handled by the treatment plant.



Runoff
That part of precipitation, snow melt, or irrigation water that runs off of the land surface into streams or other surface water instead of infiltrating the land surface.

Secondary treatment
Biochemical treatment of wastewater after the primary stage, using bacteria to consume the organic wastes. The secondary treatment step includes aeration, settling, disinfection and discharge through an outfall. Secondary treatment in conjunction with primary treatment removes about 85 to 90 percent of suspended solids in wastewater.

Sediment
Once-suspended material which has settled to the bottom of a liquid, such as the sand and mud that make up much of the shorelines and bottom of Puget Sound.

Sediment quality standards
Standards which identify chemical concentration and biological toxicity limits allowed in sediments which correspond to no observable acute or chronic adverse effects on biological resources and which do not pose a significant health threat to humans.

Sedimentation tanks
Tanks or tunnels for holding wastewater where floating wastes are skimmed off and solids settle by gravity. Settled solids, called "sludge," are pumped out for further treatment. Sedimentation tanks are also referred to as clarifiers.

Separation, total or partial
A method for controlling combined sewer overflow whereby the combined sewer is separated into both a sanitary sewer and a storm drain, as is the practice in new development. Separation may be total, in which case no stormwater is diverted to the sanitary sewer, or it may be partial, involving only the removal of runoff from streets and parking lots from the sanitary system.

Setpoint
A defined indicator point in an electronic or mechanical control system where an action takes place. In a sewage conveyance system, a setpoint is generally the liquid level or flow rate which causes a valve to be opened or closed or a pump to be activated.

Sewer
A channel or conduit that carries wastewater or stormwater runoff from the source to a treatment plant or receiving stream. Sanitary sewers carry household, industrial, and commercial wastewater. Storm sewers carry runoff from rain or snow. Combined sewers carry both kinds of water.

Sewer system
Collectively, all of the property involved in the operation of a sewer utility. It includes land, wastewater pipes, pumping stations, treatment plants, and general property. It may also be called a sewerage or wastewater system.

Side sewer
A privately owned and maintained sewer which connects the plumbing system of the building to the public sewer pipes.

State Environmental Policy Act (SEPA)
A state law (Chapter 43.21C RCW) that requires state agencies and local governments to consider environmental impacts when making decisions about certain activities, such as development proposals over a certain size, and comprehensive plans. As part of this process, environmental impacts are documented and opportunities for public comment are provided.

Storage
A method for controlling combined sewer overflows by storing the combined sewage until the rainstorm subsides, then releasing it back into the conveyance system to be treated at the usual treatment plant.

Storm drain
A system of gutters, pipes, or ditches used to collect and carry stormwater from buildings or land surfaces to streams, lakes, or other receiving waters. In practice storm drains carry a variety of substances such as sediments, metals, bacteria, oil, and antifreeze which enter the system through runoff, deliberate dumping, or spills. This term also refers to the end of the pipe where the stormwater is discharged.

Storm sewer
A system of pipes (separate from sanitary sewers) that carry only water runoff from building and land surfaces.

Stormwater
Water that is generated by rainfall and is often routed into drain systems in order to prevent flooding.

Suspended solids
Small particles of organic or inorganic materials that float on the surface of, or are suspended in, sewage or other liquids and which cloud the water. The term may include sand, mud, and clay particles as well as waste materials.

Synthetic Unit Hydrograph
Estimates amount and pattern of rainwater due to a "unit" of rainfall flowing into the sewer system over a certain period of time. The pattern is than factored according to the amount of rainfall that actually fell for the time period. These individual patterns are then added for each time step to get the cumulative hydrograph from each basin.

Telemeter
To transmit to a distant receiving station by radio or other electronic means.

Toxic
Causing death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in any organism or its offspring upon exposure, ingestion, inhalation, or assimilation.

Treatment
Chemical, biological, or mechanical procedures applied to industrial or municipal wastewater or to other sources of contamination to remove, reduce, or neutralize contaminants.

Trunk sewer
This is a larger pipe in which smaller branch and submain sewers are connected. It may also be called a main sewer.

Washington Administrative Code (WAC)
The codified regulations adopted by various Washington state agencies through the rule-making process.

Wastewater
Total flow within a sewerage system. In separated systems, it includes sewage and infiltration/inflow. In combined systems, it includes sewage and stormwater.

Wastewater collection system
The piping and pumping system used for the collection and conveyance of domestic, commercial, and industrial wastewater.

Water quality criteria
Standards used to protect of water for drinking, swimming, raising fish, farming or industrial use.

Water pollution
The addition of harmful or objectionable material to water in concentrations or sufficient quantities to adversely affect is usefulness or quality.

Weir
An overflow section of a pipe.

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