Understanding Stormwater Terminology

Stormwater management involves complex technical terminology that is defined in detail by city codes and regulations. For clarity and ease of understanding, the following definitions are simplified versions of commonly used stormwater terms. These simplified definitions are intended for general reference and should not be interpreted as replacing the official definitions or regulations established in City Code.

Stormwater Outreach for Regional Municipalities (STORM) is a regional group of 80+ jurisdictions that work to provide consistent messaging in stormwater outreach. The Stormwater Terminology below is work developed from the collective of STORM.

A

Aquifer: A layer of sand, gravel and clay below the earth's surface with enough water for people to withdraw for use (through wells and springs). Rainwater soaks into the ground and fills aquifers.

B

Backwater: Water upstream from an obstruction which is deeper than it would normally be without the obstruction.

Baffle: A device to deflect, regulate, or check flow.

Basin: Any area draining to a point of interest, like into Lake Sammamish.

Beaver Deceiver: A constructed flow device that reduces beaver damming activities. It is a non-lethal beaver management technique. Learn more about beavers and regulations on the Washington Department of Fish & Wildlife's website.

Image courtesy of Sammamish Maintenance Staff.

Berm: A constructed barrier of compacted earth.

Best Management Practices (BMPs): A Best Management Practice is a behavior, action, or facility that a person performs that protects the health of the environment. Learn about simple BMPs you can do every day.

Bioswale: A long, shallow ditch with gently sloping sides and various layers of soil beneath intended to slow stormwater runoff and direct it to an area where it can soak in. Grass is the most common vegetation for bioswales, but wetland vegetation is an option if the soil is saturated.

Buffer: A designated area adjacent to and a part of a steep slope or landslide hazard area which protects slope stability, attenuation of surface water flows, and landslide hazards reasonably necessary to minimize risk. A buffer may also be a designated area adjacent to or part of a stream or wetland that is an integral part of the stream or wetland ecosystem. View the City's online GIS hazard maps here.

C

Catch Basin, Type 1: An underground concrete water receiving inlet, rectangular in shape (approximately 3' x 2' x 4' deep) with a slotted iron grate on top to inlet water or a solid rectangular cover. Water may also enter/exit through culverts visible in the side walls of basin. Also referred to as Inlet.

Catch Basin, Type 2: A round concrete underground basin (4' - 8' diameter; 6' or greater deep). It may contain a Flow Restrictor/Oil Pollution control/separator device. These basins may also be required when larger diameter culverts are used. Also referred to as a Manhole, Control Manhole, or Maintenance Access Hole.

Catch Basin Insert: A device installed underneath a catch basin inlet to treat stormwater through filtration, settling, absorption, adsorption, or a combination of these mechanisms. There are a number of shapes, sizes, and configurations of inserts available.

Channel: A long, narrow excavation or surface feature that conveys surface water and is open to the air. Channels may be constructed or natural.

Cistern: A waterproof receptacle for holding liquids, usually water. Cisterns are often built to catch and store rainwater. Cisterns are distinguished from wells by their waterproof linings.

Clean Water Act (CWA): The federal environmental law that includes the management of stormwater. Learn more about the Clean Water Act on the Environmental Protection Agency's website.

Constructed Conveyance System Facilities: Gutters, ditches, pipes, channels, and most flow control and water quality treatment facilities.

Conveyance System: Drainage facilities that collect, contain, and provide for the flow of surface and storm water from the highest points on the land down to a receiving water. Conveyance systems are made up of natural elements and of constructed facilities.

Critical Areas: These are areas where flooding and/or erosion conditions present an imminent likelihood of harm to the welfare and safety of the surrounding community.

Culvert: Pipe or concrete box structure which drains open channels, swales, or ditches under a roadway or embankment typically with no catch basins or manholes along its length.

Curb and Gutter: Pathway along streets that directs stormwater to a storm drain and into a pipe to be transported to a stream or river. Curbs and gutters are often referred to as gray infrastructure.

D

Detention: Release of surface and stormwater runoff from the site at a slower rate than it is collected by the drainage facility system, the difference being held in temporary storage.

Detention Facility: A facility that collects water from developed areas and releases it at a slower rate than it enters the collection system. The excess of inflow over outflow is temporarily stored in a pond, tank, or vault and is typically released over a few hours or a few days.

Determination of Non-Significance (DNS): The written decision by the responsible official of the lead agency that a proposal is not likely to have a significant adverse environmental impact per the SEPA process.

Direct Discharge: Undetained discharge from a proposed project to a major receiving water.

Discharge: Runoff, not including offsite flows, leaving the proposed development through overland flow, built conveyance systems, or infiltration facilities.

Ditch: A constructed channel with its top width less than 10 feet at design flow.

Diversion: A change in the natural discharge location or runoff flows onto or away from an adjacent downstream property.

Downspout: The part of roof gutters that directs water away from a building. These are best directed onto planted areas to reduce the amount of water that runs off a property and to make good use of the rain.

Drainage: The collection, conveyance, containment, and/or discharge of surface and stormwater runoff.

Drainage Facility: A constructed feature that collects, conveys, stores or treats surface and stormwater runoff. Drainage facilities include but are not limited to all constructed or engineered streams, pipelines, channels, ditches, gutters, lakes, wetlands, closed depressions, flow control or water quality treatment facilities, erosion and sedimentation control facilities, and other drainage structures and appurtenances that provide for drainage.

Drinking Water: Water that has been treated so it is safe to drink, cook with, etc. Facilities, staff, energy, and money are required to treat water. Conserving drinking water helps municipalities save money.

Dry Season: May 1 to September 30.

E

Ecosystem: Community of living things (plants, animals, microorganisms) and nonliving things (water, air, soil) that interact to create habitats. When water is polluted, the ecosystem is impaired.

Embankment: A structure of earth, gravel, or similar material raised to form a pond bank or foundation for a road.

Erosion: The process that moves material, especially soil, from one location to another. It is caused by the action of wind, water, ice, or other forces working on the Earth's surface. Runoff water increases erosion.

Estuary: A partially enclosed coastal body of brackish water with one or more rivers or streams flowing into it, and with a free connection to the open sea. Estuaries form a transition zone between river environments and maritime environments. They are subject both to marine influences—such as tides, waves, and the influx of saline water—and to riverine influences—such as flows of fresh water and sediment. The mixing of sea water and fresh water provide high levels of nutrients both in the water column and in sediment, making estuaries among the most productive natural habitats in the world.

F

Filtration: Passing a fluid through a medium to separate solids such as when water passes through soil and solids are trapped by soil particles or plant roots. When water runs directly into a storm drain, it is not filtered as it is when allowed to flow through and soak into a planted area first.

Flow Control Facility: A drainage facility designed to mitigate the impacts of increased surface and stormwater runoff generated by site development. Flow control facilities are designed to either hold water for a considerable length of time and then release it by evaporation, plant transpiration, and/or infiltration into the ground, or to hold runoff for a short period of time and then release it to the conveyance system.

Flow Restrictor: A control device or T section with a specific sized orifice to control release rates.

Fresh Water: Water that is not salty. Only about 3% of the Earths' water is fresh water. As Earth's population grows, the demand for freshwater increases.

G

Groundwater: Water that exists underground in the cracks and spaces in soil, sand, and rock. Groundwater is usually stored in aquifers and originates from infiltration. Much of the water used for drinking and irrigation comes from groundwater.

H

Habitat: The specific area or environment in which a particular type of plant or animal lives and grows.

Headwaters: Source of a stream.

Hydrologic Cycle: The circuit of water movement from the atmosphere to the earth and return to the atmosphere through various stages or processes such as precipitation, interception, runoff, infiltration, percolation, storage, evaporation, and transpiration.

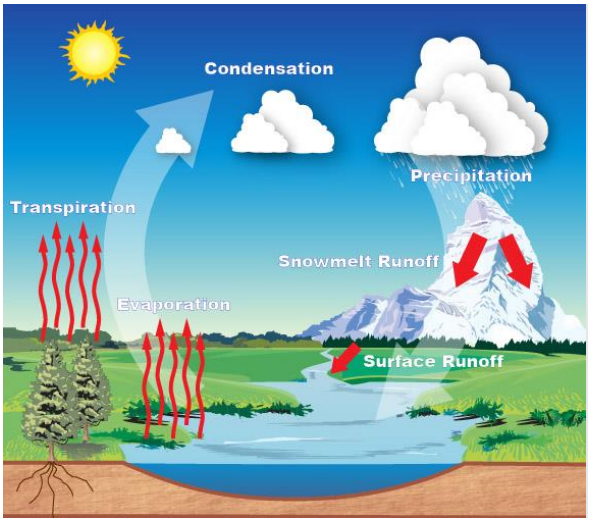

Image courtesy of NOAA: https://www.noaa.gov/jetstream/atmosphere/hydro

I

Impervious Surface: Any surface that water cannot soak into such as streets, sidewalks, driveways, rooftops, and compacted soils. Urban areas have lots of impervious surfaces, so there is more stormwater runoff. Common impervious surfaces include rooftops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, and packed gravel roads.

Infiltration: Process of moving water into the soil from the surface. Infiltration is the focus of many new stormwater management practices. These practices are referred to as green infrastructure.

Infiltration Facility: A drainage facility designed to use the hydrologic process of water soaking into the ground (commonly referred to as percolation) to dispose of surface and stormwater runoff. Types of infiltration facilities may include basins, ponds, and tanks.

Illicit Discharge: Any discharge to a municipal separate storm sewer system (MS4) that is not composed entirely of stormwater, with some exceptions. An illicit discharge is often referred to as a spill.

Illicit Discharge Detection and Elimination (IDDE): A program whose purpose is to find, fix and prevent illicit discharges through a series of techniques and awareness campaigns.

Inlet: See Catch Basin, Type 1.

Iron Bacteria: Long, orange-red thread-like bacteria that secrete slime, occur naturally, and "feed" on iron in water and soil. Sometimes leave a sheen on water that looks similar to petroleum. Learn how to identify iron bacteria, what causes it, and why it's not actually pollution.

Image courtesy of Washington Storm Center.

Isopluvial: A line on a map connecting places registering the same amount of precipitation or rainfall.

J

K

L

Low Impact Development (LID): Techniques and design considerations that help manage the rainwater that falls on your property by allowing some to evaporate back into the air, some to absorb into the ground, some to be captured and used later as needed, and the rest to slowly pass into the stormwater system and into nearby streams. Learn about low impact development techniques in Sammamish.

M

Manhole: See Catch Basin, Type 2.

Municipal Separate Storm Sewer System (MS4): A storm system that flows through its own set of pipes rather than being combined with the sanitary sewer system. Sammamish has its own storm system which does not receive treatment before it discharges into streams, lakes, and rivers.

N

National Pollutant Discharge Elimination System (NPDES): A permit program, created in 1972 by the Clean Water Act (CWA), that helps address water pollution by regulating point sources that discharge pollutants to waters of the United States. Learn more about the NPDES permit program.

Natural Conveyance System Elements: Swales and small drainage courses, streams, rivers, lakes, and wetlands.

Natural Drainage Feature: A natural swale, channel, stream, closed depression, wetland, or lake.

Nonpoint Source Pollution: Pollution that cannot be easily traced to one source or property because small amounts come from many sources and properties. It occurs when rainfall, snowmelt, or irrigation runs over land or through the ground, picks up pollutants, and deposits

them into streams, rivers, lakes, and coastal waters or introduces them into groundwater. These numerous small amounts of pollutants eventually accumulate to become harmful amounts.

Nonstructural BMP: A preventative action to protect receiving water quality that does not require construction. Nonstructural best management practices (BMPs) rely predominantly on behavioral changes in order to be effective. Major categories of non-structural BMPs include education, recycling, maintenance practices and source controls.

O

Oil/Water Separator: A vault, usually underground, designed to provide a quiescent environment to separate oil from water. Floatables are also removed.

Outfall: A point where collected and concentrated surface and stormwater runoff is discharged from a pipe system or culvert.

P

Pervious (porous) Surface: A surface that allows water and air to move into and through it (i.e. soil, porous pavers). A new type of pervious concrete and asphalt is can be used to pave driveways and parking lots.

Point Discharge: The release of collected and/or concentrated surface and stormwater runoff from a pipe, culvert, or channel.

Point Source Pollution: Pollution that can be traced to a specific source or property such as a factory, and oil or chemical spill, or a wastewater treatment plant.

Puget Sound: A complex estuarine system of interconnected marine waterways and basins, with one major (Admiralty Inlet) and two minor (Deception Pass and Swinomish Channel) connections to the open Pacific Ocean via the Strait of Juan de Fuca. Its complex series of waterways were formed from receding glaciers that left the area about 14,000 years ago. The glaciers cut deep into the land to form valleys that eventually flooded, creating the intricate landscape that we know today. The Puget Sound coastline lies within 12 Washington State counties, while 14 counties lie within the entire watershed. Puget Sound has 1,332 miles of coastline, not including the San Juan Islands or the Strait of Juan de Fuca. Puget Sound is the third largest estuary (a partially enclosed body of water where saltwater and freshwater merge) in the United States. See a map showing the Puget Sound watershed.

Q

R

Rain Barrel: An irrigation system that collects and stores rainwater runoff through a drain (gutter) system. Rainwater storage tanks can store between 30 and 100 gallons of water. They are commonly made of wood or plastic.

Rain Garden: A bowl-shaped shallow planted area in the landscape where rain water collects and absorbs back into the soil. Learn more about rain gardens.

Rainwater Harvesting: Catching or collecting rainwater in a planted area (rain garden, green roof) or container (rain barrel, cistern) so less runs off. Harvested rainwater is often used instead of drinking water for irrigation.

Receiving Waters: Bodies of water or surface water systems receiving water from upstream man-made or natural systems.

Retention: The process of collecting and holding surface and stormwater runoff with no surface outflow.

Riparian: Pertaining to the banks of rivers and streams, and sometimes also wetlands and lakes.

Riprap: A facing layer or protective mound of stones placed to prevent erosion or sloughing of a structure of embankment due to the flow of surface and stormwater runoff.

Runoff: Water originating from rainfall and other precipitation that ultimately flows into drainage facilities, rivers, streams, springs, seeps, ponds, lakes, and wetlands as well as shallow groundwater.

S

Salish Sea: The Salish Sea is the intricate network of coastal waterways that encompasses Puget Sound, the San Juan Islands and the waters off of Vancouver, BC. The area spans from Olympia, Washington in the south to the Campbell River, British Columbia in the north, and west to Neah Bay and includes the large cities of Seattle and Vancouver. It's one of the world's largest and biologically rich inland seas, and its name pays tribute to the first inhabitants of the region, the Coast Salish. See a map and learn more about the Salish Sea.

Salmonid: A member of the fish family Salmonidae. Common salmonid species in our area include Chinook, Coho, chum, sockeye, and pink salmon; cutthroat, rainbow, and brown trout and steelhead; Dolly Varden, brook trout, char, kokanee, and whitefish.

Sediment: Primarily eroded soil; also dirt from rooftops or paved surfaces. Sediment is often deposited in water bodies with runoff.

Septic System: An onsite wastewater collection system. Learn more about septic systems from Washington State Department of Health.

Sanitary Sewer System: The system of pipes and pump stations that collect and transport wastewater from homes and businesses to a wastewater treatment plant. Wastewater typically comes from indoor sources like sinks, showers, bathtubs, toilets, and washing machines. There are two water and sewer districts in Sammamish, Sammamish Plateau Water and Northeast Sammamish Sewer and Water district.

Source Control: The process of finding potential sources of pollution, then stopping or reducing them before they reach the nearest body of water. Source control includes a variety of actions, such as site investigation and cleanup, business inspections, controlling stormwater runoff and sewage overflows, coordination among agencies, and public education and outreach. Learn about Sammamish's Source Control Program.

Storm and Surface Water Comprehensive Plan: A plan that sets a course for stormwater programs and capital projects for the coming years and addresses current and anticipated regulatory requirements, emerging stormwater management technologies, existing flooding and water quality problems, and the resources the City needs to fully implement its plan. Learn about the City's current Storm and Surface Water Comprehensive Plan. Often referred to as the Stormwater Comp Plan.

Storm Drain: An opening built into a curb or street and connected to a pipe to carry away stormwater.

Storm Drain System: The system of gutters, pipes, streams, or ditches used to carry surface and stormwater from surrounding lands to streams, lakes, rivers, and Puget Sound.

Stormwater: Water from rainfall and snow that runs off surfaces such as rooftops, paved streets, highways, and parking lots and flows into surface water including drainage facilities, rivers, streams, lakes, or Puget Sound. Stormwater can also come from hard grassy surfaces like lawns, play fields, and from graveled roads.

Stormwater Engineer: A person who designs solutions for problems created by surface water runoff and pollution. Some stormwater designs require a licensed engineer. For more information refer to the City's requirements and the Washington Board of Registration for Professional Engineers and Land Surveyors.

Stormwater Facility: A facility that controls the discharge of stormwater. This includes storage facilities (ponds, vaults, underground tanks, and infiltration systems); water quality facilities (wet ponds, bioswales, constructed wetlands, sand filters, and oil/water separators); and conveyance systems (ditches, pipes, and catch basins).

Stormwater Management: The application of site design principles and construction techniques to prevent sediments and other pollutants from entering surface or groundwater; source controls; and treatment of runoff to reduce pollution.

Stormwater Management Program (SWMP) Plan: An annual report that describes proposed stormwater program activities for the coming year; also referred to as Stormwater Management Plan. Learn about Sammamish's current Stormwater Management Program.

Stormwater Pollution: Anything in our stormwater that makes it unclean. This can include contaminants like soil, pesticides, litter, oil, grass clippings, tree leaves, and bacteria that are collected by stormwater flowing over a surface and are then carried into surface water.

Stormwater Runoff: Precipitation (such as rain or snow) that falls on streets, parking areas, sports fields, gravel lots, lawns, rooftops or other developed land and flows directly into nearby creeks, lakes, rivers, and Puget Sound. This runoff carries pollutants to these waterways. The more impervious surfaces there are, the more runoff there is and the faster it moves. Fast moving water can collect more pollutants and cause more erosion of soil and stream banks.

Structural BMP: Constructed facilities or measures to help protect receiving water quality and control stormwater quantity. Examples include storage, vegetation, infiltration, and filtration.

Surface Water: Water found above the land, including oceans, estuaries, lakes, rivers, streams, and ponds.

Surface Water Design Manual: The formally adopted manual describing surface and stormwater design and analysis requirements, procedures, and guidance. View the Sammamish Design Manual and References.

T

Total Maximum Daily Load (TMDL): A calculation of the maximum amount of pollutant that a waterbody can receive and still meet water quality standards. Water quality standards identify the uses for each waterbody, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. The Clean Water Act (CWA), section 303, establishes the water quality standards and TMDL programs.

Toxic: Poisonous, carcinogenic, or otherwise directly harmful to life.

U

V

W

Wastewater Treatment (Sewage) Plant: Municipal plant the treats wastewater (water from toilets, washing machines, dishwashers, showers, etc.) before it is released into a stream or river. In most communities, including Sammamish, stormwater is not treated before it is released into a stream or river.

Water Cycle: The continuous movement of water through its liquid, gas, and solid phases above, on and below the Earth. The water on Earth today is the same water as when Earth was formed. New water is not added to the Earth when it rains.

Water Resource Inventory Area (WRIA): This is another term for a watershed. The Department of Ecology typically studies and regulates water resources by WRIAs. There are 62 WRIAs in Washington state. Sammamish is located in WRIA-8, the Cedar-Sammamish watershed.

Watershed: The entire land area from which water drains into a particular surface water body such as a lake, stream, or river. We all live in a watershed, and we all live upstream or downstream from other watersheds.

Wet Season: October 1 to April 30.

Wetland: An area inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wetpond/Wetvault: Drainage facilities for water quality treatment that contain a permanent pool of water. They are designed to optimize water quality by providing long retention times (on the order of a week or more) to settle out particles of fine sediment to which pollutants such as heavy metals adsorb, and to allow biologic activity to occur that metabolizes nutrients and organic pollutants.

For wet vaults, the permanent pool of water is covered by a lid which blocks sunlight from entering the facility, limiting light-dependent biologic activity.

X

Y

Z