

Glossary

**FINAL
SUPPLEMENTAL
ENVIRONMENTAL
IMPACT STATEMENT**

**Brightwater
Regional Wastewater
Treatment System**

Glossary

acceleration	The rate of increase in velocity; that is, how much the velocity changes as a function of time.
acetone	A colorless, volatile, flammable liquid compound, CH_3COCH_3 , widely used as an organic solvent.
activated sludge process	See conventional activated sludge .
active fault	The USGS has defined active faults as those that have moved in the last 10,000 years.
aeration	The promotion of contact between air and wastewater by bubbling air or oxygen through the wastewater.
aerobic	Living or occurring only in the presence of elemental oxygen (O_2).
aeromagnetic survey	Measurements of the Earth's magnetic field gathered from aircraft. Magnetometers towed by an airplane or helicopter can measure the intensity of the Earth's magnetic field. The differences between actual measurements and theoretical values indicate anomalies in the magnetic field, which in turn represent changes in rock or sediment type or in thickness of rock or sediment.
aggregate	To come together or collect into a mass or whole.
algae	Simple rootless plants that contain chlorophyll. Algae blooms, or sudden growth spurts, can adversely affect water quality.
alluvium	Materials that have been transported by a stream or river and then deposited, including unconsolidated clay, silt, sand, gravel, or a combination of these materials. Commonly referred to as alluvial deposits.
Alquist-Priolo Earthquake Fault Zoning Act	An act passed in California in 1972 to prevent the construction of buildings used for human occupancy on the surface trace of active faults . The Act requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones) around the surface traces of active faults and to issue appropriate maps. Before a project can be permitted, cities and counties must conduct a geologic investigation. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (generally 50 feet).
alum	A common name for commercial-grade aluminum sulfate . In wastewater treatment, alum is used as a coagulant for suspended solids removal or biosolids dewatering.
aluminum sulfate	A chemical, $\text{Al}_2(\text{SO}_4)_3$, manufactured by combining a mineral known as bauxite with sulfuric acid. See alum .

ambient air quality	The quality of the portion of the atmosphere external to buildings to which the general public has access.
anadromous	Refers to fish, such as salmon, that migrate up rivers from the sea to breed in fresh water.
anaerobic	An environment that lacks the presence of oxygen .
anaerobic digestion	The decomposition of organic matter in wastewater solids into methane and carbon dioxide by microorganisms in the absence of oxygen.
annular space	The space between two objects, one of which is surrounded by the other, including the space between an underground tunnel and the pipes within the tunnel.
anomaly (geology)	Data that would suggest differing geologic conditions or differing measurements over a short distance.
aquifer	Permeable rock or soil that is capable of yielding significant quantities of water to wells. The saturated portion of an aquifer is referred to as the zone of saturation . An unconfined aquifer is one in which the water table defines the upper water limit. A confined aquifer is sealed above and below by impermeable material. A perched aquifer is an unconfined groundwater body supported by a small impermeable or slowly permeable unit.
aquitard	Area of fine-grained sediments that inhibits the flow of water underground.
average wet-weather flow (AWWF)	The average flow between November and April on days when no rainfall has occurred on the previous day. Composed of the average base flow and the average infiltration/inflow (I/I) .
bacteria	Single-cell or non-cellular microorganisms that lack chlorophyll. Some cause disease; others aid in pollution control by breaking down organic matter in air and water.
ballasted sedimentation	A primary treatment process used instead of conventional primary clarifiers in which a combination of coagulants and polymers is added to the wastewater to promote aggregation and settling of suspended solids . Ballasted sedimentation removes a higher quantity of solids and BOD than conventional clarifiers.
base flow	Wastewater flow (not including inflow and infiltration) originating from residential, commercial, and industrial sources. Base flow can also refer to the portion of streamflow contributed by groundwater as opposed to runoff.
Beef Barley trench	See Trench 2a .

Benioff Zone	A dipping planar (flat) zone of earthquakes that is caused by the interaction of a downgoing oceanic crustal plate (locally the Juan de Fuca plate) with a continental plate (locally the North American plate). The Benioff Zone produced the largest earthquakes in the Puget Sound region in the past 160 years. Also called the Intraslab Zone.
benthic/benthos	Organisms attached to, resting on, or living in the bottom sediment of a water body.
bioaccumulation	The accumulation of chemicals and nutrients in organisms.
biological treatment process	Any secondary treatment process that uses microorganisms to break down organic materials in wastewater .
biosolids	Municipal sewage sludge that is treated to meet standards for land application.
boring (or borehole)	A hole drilled or augured into the ground in which soil and/or rock is retrieved at selected intervals for use in classifying the engineering characteristics and geologic origins of the underlying materials..
Brightwater System	The combined components necessary to operate and maintain the Brightwater Treatment Plant—including the plant itself, pipelines, pump stations, odor control facilities, ventilation equipment, tunnel access, and outfall.
bypass	A diversion of flow around all or part of the treatment plant or a section of pipeline during construction, maintenance, and emergencies.
chemically enhanced primary clarification	The addition of metal salts such as ferric chloride and possibly polymers to primary clarifiers to improve solids removal efficiencies.
caisson	A watertight structure.
carbon dioxide	A colorless, odorless, incombustible gas, CO ₂ , formed during respiration, combustion, and organic decomposition.
Cascadia Subduction Zone	An area off the West Coast of North America where two tectonic plates (locally the Juan de Fuca and North American plates) collide and one dives under the other, producing earthquakes.
chloroform	A chemical compound, CHCl ₃ . It is a colorless liquid with a pleasant, nonirritating odor and a slightly sweet taste. It does not support combustion in air, although it will burn when mixed with more flammable substances. It is a member of a subset of environmental pollutants known as trihalomethanes, a byproduct of chlorination of drinking water and a long-standing health concern.

citric acid	An organic acid naturally found in many plants and animals, including humans. Citric acid in liquid form (50-percent solution) will be used to clean the membranes at the Brightwater Treatment Plant. Citric acid is not considered hazardous in its liquid form.
clarification	The process of removing the solids from wastewater . Typically, the solids are allowed to settle in clarifiers , often aided by chemically induced coagulation in the wastewater.
clarifier	A settling tank where wastewater is held to allow solids to sink and be removed from the wastewater. Primary clarifiers are used in primary treatment ; secondary clarifiers are used as the final step in secondary treatment , prior to disinfection and discharge. Also referred to as a sedimentation tank.
Code of Federal Regulations (CFR)	A codification of the general and permanent rules published in the Federal Registrar by the executive departments and agencies of the federal government.
cogeneration	The generation of both electricity and heat.
cogeneration facility	A facility that may be built at the Brightwater Treatment Plant to provide power to run the plant. It would contain gas turbines, reciprocating engines, and/or fuel cells that would be fueled by digester gas and natural gas.
coliform bacteria (fecal coliform)	Bacteria found in the intestinal tracts of mammals. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces. These organisms may also indicate the presence of pathogens that are harmful to humans.
combined tunnel	An underground tunnel that would contain influent , effluent , and reclaimed water pipelines that would serve the Brightwater Treatment Plant. The combined tunnel would run from the Kenmore area to the Route 9 treatment plant site.
comprehensive plan	A legal document required under the Washington State Growth Management Act to be adopted by local officials, establishing policies and procedures that guide the future physical development of the community.
conditional use permit (CUP)	A permit that allows a city or county to consider and approve designated uses not ordinarily allowed within a zoning district, subject to specified conditions.

conventional activated sludge (CAS) process	A biological secondary treatment process in which a mixture of wastewater and microorganisms is agitated and aerated to encourage the microorganisms to grow and feed on the organic matter in the wastewater. The activated sludge, made up primarily of microorganisms, is subsequently separated from the wastewater by clarification and is either recycled to the head of the aeration process (return activated sludge) or routed to the solids handling systems (waste activated sludge). Secondary treatment at the Brightwater Treatment Plant would consist of activated sludge in combination with membrane bioreactors for the clarification step.
conveyance system	A system, consisting of trunks, interceptors, force mains, pump stations , and other facilities, that moves wastewater from one place to another.
Cottage Lake Lineament	A lineament about 1 to 2 km east of the Route 9 site that was identified through LiDAR imagery and aeromagnetic surveying and was confirmed in field investigations.
critical areas	Wetlands ; streams; areas with a critical recharging effect on aquifers used for drinking water supply; fish and wildlife habitat conservation areas; frequently flooded areas; and geologically hazardous areas.
Cross Valley Aquifer	An aquifer in the area of the Route 9 treatment plant site that serves as a source of drinking water. Drinking water wells are east of the site.
crust	The Earth's outermost layer, ranging from about 6 to 40 miles (10 to 65 km) in thickness.
Crustal Zone	The zone in which most earthquakes in the Puget Sound area occur. The crustal zone earthquakes occur within a depth of about 15 miles (25 km) of the ground surface.
culvert	A closed channel or conduit for passage of drainage waters under a highway, railroad, canal, or other structure.
decomposition	The breakdown of organic matter by bacteria and/or environmental processes that change the chemical makeup and physical appearances of materials.
deformation	A change in the original shape of a material. Deformation from earthquakes is caused by stress and strain.
design life	A 50-year period, specified in the International Building Code (IBC 2003), used for design of structures. The code requires structures to be designed withstand a strength of seismic ground shaking that would have a 2 percent probability of being exceeded over a 50-year period.
detention	The process of collecting and holding back stormwater for delayed release to receiving water .

dewatering	The removal of groundwater to reduce the flow rate or diminish pressure. Dewatering is usually done to improve conditions in surface excavations and to facilitate construction work. Can also refer to removing water from a basin, tank, reservoir, or other storage unit, or from solid material such as the solids that are a byproduct of wastewater treatment.
differential settlement	Unequal settling of material and soil beneath building or structure foundations as a result of differing soil or loading conditions. Excessive differential settlement may cause distress and cracking of structures.
diffuser	The device at the end of an outfall pipe that distributes effluent into the receiving water so that maximum dilution is achieved.
digestion	The decomposition by microorganisms of organic matter in wastewater solids . Digestion can take place in either aerobic or anaerobic conditions.
digester gas	A gas generated when bacteria degrade biological material in the absence of elemental oxygen during anaerobic digestion . Digester gas (also called biogas) is a mixture of methane and carbon dioxide.
dip	The angle between a geologic surface—for example, a fault plane —and the horizontal. The direction of dip can be thought of as the direction a ball, if placed on a tilted surface, would roll. Thus, a ball placed on a north-dipping fault plane would roll northward. The dip of a surface is always perpendicular to the strike of that surface.
discharge—direct or indirect	The release of treated or untreated wastewater into the environment. A direct discharge of wastewater flows into surface waters. An indirect discharge of wastewater enters a sewer system. Also used to describe water from a groundwater dewatering operation that enters surface water (direct) or a storm sewer (indirect) or to describe stormwater discharged to surface water.
disinfection	Destruction of pathogens . Wastewater treatment plants often use ultraviolet light or chemicals to disinfect effluent .
displacement	The amount that any point affected by an earthquake has moved from where it was before the earthquake. Usually used to refer to movements across a zone of faulting.
dissolved oxygen (DO)	A measure of the amount of elemental oxygen available for biochemical activity in a given amount of water. Adequate levels of DO are needed to support aquatic life.
dip	The angle between a geologic surface—for example, a fault plane —and the horizontal. The direction of dip can be thought of as the direction a ball, if placed on the tilted surface, would roll. Thus, a ball placed on a north-dipping fault plane would roll northward.

E&E Constraints	Thirteen informal criteria used during Phase 1 of the Brightwater siting process to evaluate potential treatment plant sites.
earthquake	Sudden slip on a fault. Also defined as the ground shaking and radiated seismic energy caused by the slip, volcanic or magmatic activity, or other sudden stress changes in the earth.
effluent	Treated wastewater that leaves the treatment plant.
emergency flow management system	A five-part system developed for the Brightwater System to prevent overflows of untreated wastewater that could potentially occur during rare combinations of extreme circumstances, including extremely heavy storms and multiple equipment and power failures.
Endangered Species Act of 1973, as amended (ESA)	Federal statute that provides protection for species of fish, wildlife, and plants that are listed as threatened or endangered.
environmental impact statement (EIS)	A document that discusses the probable significant adverse environmental impacts of a development project or a planning proposal, discusses reasonable mitigation of identified impacts, and evaluates alternatives to the project and/or proposal. EISs are required under certain circumstances by the National Environmental Policy Act (NEPA) and/or Washington State Environmental Policy Act (SEPA).
erosion	The wearing away of land surfaces by wind or water. Also usually includes transportation of loosened soil and/or rocks.
essential public facility (EPF)	A facility that is an essential element of the public infrastructure that is typically difficult to site. Examples of EPFs include, but are not limited to, a wastewater treatment plant, airport, solid waste handling facility, correctional facility, mental health home, or group home. Under Washington state's Growth Management Act , no local comprehensive plan or development regulation may preclude the siting of EPFs.
expansion phase	Phase 2 of implementation of the Brightwater System in which the capacity of the 36-mgd treatment plant would be expanded to 54 mgd in 2040.
exposure pathway	The way in which a person or animal may come into contact with a hazardous substance, whether it is a chemical or some other harmful substance. Three basic exposure pathways are inhalation, ingestion, and direct contact.

Facilities Plan	Describes the existing and future wastewater service needs of north King County and south Snohomish County and the development of a system of treatment, conveyance, effluent management facilities to meet these needs (Brightwater System). The Facilities Plan for the Brightwater System was prepared under the Washington State Department of Ecology requirements for Engineering Reports (WAC 173-240-060) and 40 CFR Part 35. The plan was approved on June 20, 2005.
fault	A fracture along which the blocks of the Earth's crust on either side have moved relative to one another parallel to the fracture.
faulting	The fracturing and displacement of rock or sedimentary strata along a fault plane caused by either tension or compression.
fault plane	The planar (flat) surface along which there is slip during an earthquake.
fault scarp	A line of cliffs or topographic steps caused by surface rupture during an earthquake.
fault splay	Divergent small faults that are part of a larger fault system.
fault strand or fault trace	An individual fault or a set of parallel or subparallel faults of a fault zone.
fecal coliform	A group of bacteria that are passed through the fecal excrement of humans, livestock, and wildlife.
ferric and ferrous chloride	Corrosive chemicals that promote sedimentation of liquid sulfides and other suspended solids in wastewater . Used in treatment plants and conveyance lines for odor control or to improve solids settleability.
fill	Soil and/or rock material used to raise the level of a low area or to make an embankment.
flocculant	Water-soluble organic agent that is used alone or in conjunction with inorganic coagulants, such as aluminum or iron salts, to encourage solids present in water or wastewater to form large, dense floc particles that settle rapidly.
fluvial	Of, relating to, or inhabiting a river or stream, or produced by the action of a river or stream. Fluvial deposits are sediments deposited by the flowing water of a stream.
footprint	The area that a building or other structure will occupy, as shown on a map, photo, or plans.
force main	A pipeline that transports wastewater under pressure.
geophysical survey	Use of physical measurements and mathematical models to explore and analyze the structure and dynamics of the solid Earth and similar bodies and their fluid compounds. Involves use of non-invasive techniques such as a ground-penetrating radar, magnetometry, or measurements of electrical conductivity.

geotechnical	The use of scientific methods and engineering principles to acquire, interpret, and apply knowledge of earth materials and processes for solving engineering problems.
grading	The changing of the ground's slope to a different one, typically during construction using heavy equipment.
gravitational acceleration	Acceleration caused by gravity. Units are express as a fraction of gravity (g) where 1 g = 32.2 ft/sec/sec.
gravity sewer	A sloping sewer pipe in which wastewater can flow on descending gradients and where no pumping is required.
gray water	Domestic wastewater composed of wash water from kitchen, bathroom, and laundry sinks, tubs, and washers.
ground magnetic survey	Equivalent to an aeromagnetic survey except that it is performed at the ground surface. Ground magnetic measurements are usually made with portable instruments at regular intervals along more or less straight and parallel lines that cover the survey area. The resulting data provide an indication of anomalies closer to the ground surface than the aeromagnetic survey, thereby allowing the survey to focus on features that have been inferred from, for example, aeromagnetic or LiDAR surveys.
ground motion	See ground shaking .
ground shaking	The temporary vibratory movement of the earth's surface from earthquakes or explosions. Ground shaking is produced by seismic waves that are generated by sudden slip on a fault or sudden pressure at the explosive source and that travel through the Earth and along its surface. Quantification of ground shaking that occurs during earthquakes may be expressed in terms of acceleration , velocity, and displacement .
groundwater	Water that infiltrates into the earth and is stored in the soil and rock within the zone of saturation below the earth's surface. Groundwater is created by rain, which soaks into the ground and flows down until it is collected at a point where the ground is not permeable. Groundwater then usually flows laterally toward a river, lake, or ocean.
groundwater table	The upper limit in the soil of underlying material permanently saturated with water.
Growth Management Act (GMA)	A Washington state law (Chapter 36.70A RCW), guided by procedural criteria and adopted by the Washington State Department of Community Development, that provides a legal framework and guidance for the preparation of comprehensive plans, development regulations, and other land use planning for local governments.
habitat	The area or environment where an organism or ecological community normally lives or occurs.

Habitat Conservation Plan	An agreement between non-federal landowners, the U.S. Fish and Wildlife Service, and/or the National Oceanic and Atmospheric Administration Fisheries whereby the landowner provides habitat protection and other benefits to species covered by the Endangered Species Act in return for regulatory assurances under that Act.
Holocene epoch	The Holocene epoch includes most of the time since the end of the most recent ice age (regarded in the central Puget Sound region as the last 16,000 calendar years).
hydraulic conductivity	A measure of a soil's ability to transmit water when submitted to a hydraulic gradient (the direction of groundwater flow due to changes in the depth of the groundwater table).
hydrocarbon	Any organic compound, such as methane , that contains only hydrogen and carbon.
hydrogen sulfide (H₂S)	A gas produced in sewers and digesters by anaerobic decomposition . Is detectable in low concentrations by its characteristic "rotten egg" odor, deadens the sense of smell in higher concentrations or after prolonged exposure, and damages the human nervous system from high exposure. Also converts to an acid when exposed to water and corrodes unprotected wastewater pipelines.
hypoxia/hypoxic waters	Waters with dissolved oxygen concentrations of less than 2 ppm, the level generally accepted as the minimum required for most aquatic life to survive and reproduce.
infiltration	The water that enters a wastewater conveyance system from the ground through means such as corroded or broken pipes, pipe joints, pipe connections from storm sewers or combined sewers , catch basins, and surface runoff.
infiltration/inflow (I/I)	The total quantity of water from both infiltration and inflow without distinguishing the source.
inflow	The water discharged into a wastewater system from sources such as roof leaders, yard and area drains, foundation drains, cooling water discharges, drains from springs and swampy areas, manhole covers, cross connections from storm sewers and combined sewers , catch basins, surface runoff, and street wash waters.
influent	Water, wastewater , or other liquid flowing into a reservoir, basin, or treatment plant.
initial phase	The first phase of implementation of the Brightwater System in which the treatment plant would be constructed to treat 36 mgd in 2010.
interceptor sewer	Large pipelines that collect the flows from trunk sewers and carry them to the wastewater treatment plant.
Intraslab Zone	See Benioff Zone .

LiDAR (light detection and ranging)	A technique that uses laser equipment to precisely measure the three-dimensional position of objects. A narrow laser beam penetrates through tree cover, allowing the production of accurate terrain maps even where forest cover largely obscures the ground surface.
lineament	A linear alignment of landforms, including streams, low ridges steps, cliffs, and ravines that may be the result of faulting, erosion, or glacial processes.
Lineament GA	A discontinuous 240-foot (80-meter) long lineament that is approximately parallel to Lineament 4 and 50 feet (15 meters) southwest of Trench 2a on the north end of the Route 9 site. ¹
Lineament 4	A northwest trending topographic lineament in Snohomish County identified by USGS through aeromagnetic surveys and LiDAR mapping. The lineament is about 2 miles (3 km) long, follows the Bear Creek drainage, and crosses SR-522 about 0.6 mile (1 km) northeast of the intersection of SR-522 and SR-9. Also referred to as the Little Bear Creek lineament.
Lineament X	A weak magnetic contrast identified by the U.S. Geological Survey through aeromagnetic surveys. The lineament is located in the extreme southeast portion of the Route 9 treatment plant site. The contrast trends northwesterly, roughly parallel to Lineament 4 and crosses the combined influent-effluent tunnel as it enters the site. For purposes of this Supplemental EIS, it is assumed that this feature is an active fault .
liquefaction	The process in which poorly consolidated granular soil that is located below the water table loses its structural capacity and turns into a viscous fluid (relatively high resistance to flow) under earthquake ground shaking.
Little Bear Creek lineament	See Lineament 4 .
loading	The amount of material entering a wastewater system from all sources.
macroinvertebrate	An invertebrate visible to the naked eye, such as insect larvae and crayfish.
magnitude	Measurement on a logarithmic scale of the amount of energy released by an earthquake.
manhole	A vertical shaft covered by a lid at ground level that provides access for maintenance of an underground pipe.
marine water	Used in this Supplemental EIS to indicate a saltwater body.
marine biotoxins	Any poisonous compound produced by marine microorganisms that can be accumulated by shellfish.

¹ Sherrod, B.L., Blakely, R.J., Weaver, C., Kelsey, H., Barnett, E., and Wells, R. 2005. *Holocene fault scarps and shallow aeromagnetic anomalies along the Southern Whidbey Island Fault Zone near Woodinville, Washington*. U.S. Geological Survey Open-File Report 2005-1136, 40 p

maximum considered earthquake (MCE)	For most of the country, an earthquake ground shaking that is likely to occur at a building site once every 2,500 years.
maximum monthly flow	The maximum average daily flow projected to occur over a 30-day period during the planning horizon (year 2040 for the initial phase and year 2050 for expansion phase).
membrane bioreactor (MBR)	A biological process that uses microporous membranes to filter out particulate matter and bacteria, resulting in treated wastewater that is 7 to 10 times cleaner than wastewater treated with typical secondary treatment processes.
Mercalli scale	The ranking system used to quantify the severity of earthquake ground shaking as based on the observed effects to man made structures and individual perception. . A singular earthquake results in differing levels of observed intensity which generally decrease with distance from the source of the energy release.
methane	A colorless, odorless, flammable gaseous hydrocarbon (CH ₄) present in natural gas and formed by the decomposition of organic matter or produced artificially by heating carbon monoxide and hydrogen. A byproduct of solids digestion in wastewater treatment plants.
microorganisms	Microscopic organisms (bacteria, viruses, protozoans) that are not visible to the unaided eye. Some cause diseases in humans, animals, and plants; some are important because they are involved in breaking down and stabilizing wastewater and solid waste.
mitigation	The avoidance of an adverse impact by not taking a certain action or parts of an action; minimizing adverse impacts by limiting the degree or magnitude of the action and its implementation; rectifying an adverse impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating an adverse impact over time by preservation and maintenance operations during the life of the action; compensating for adverse impacts by replacing or providing substitute resources or environments.
mixing zone	A region defined by Washington State regulation (WAC 173-201A) that surrounds a discharge within which Water Quality Standards may be exceeded but is small enough not to interfere with beneficial uses. The acute and chronic mixing zones refer to the areas in which the acute and chronic Water Quality Standards may be violated.

National Pollutant Discharge Elimination System (NPDES)	Section 402 of the federal Clean Water Act . Prohibits discharge of pollutants from a point source into (navigable) surface waters of the United States unless a permit is issued by the Environmental Protection Agency, a state, or (where delegated) a tribal government on an Indian reservation. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington State Department of Ecology .
No Action Alternative	One of four alternatives evaluated in the Brightwater EIS. The other three alternatives were evaluated as “action alternatives.” Under the No Action Alternative, King County would not build a third regional wastewater treatment plant. It would, however, continue to implement other programs and projects called for in the Regional Wastewater Services Plan .
North Mitigation Area	Approximately 43 acres located on the north end of the proposed Brightwater Treatment Plant site that would be used to provide enhanced salmon and forest habitat and public access areas.
NPDES permit	Permit issued under the National Pollutant Discharge Elimination System to regulate discharges from point sources to surface waters of the United States.
nutrient	Essential chemical needed by plants or animals for growth. Excessive amounts of nutrients, such as nitrogen and phosphorous, can lead to degradation of water quality and algal blooms. Some nutrients can be toxic at high concentrations.
outfall	The final portion of a pipeline that carries treated wastewater from the treatment plant through riparian, nearshore, and offshore areas to discharge into receiving waters .
outwash	Stratified detritus (chiefly sand and gravel) removed or washed out from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of an active glacier.
pathogen	A microorganism that can cause disease in other organisms.
peak flow	The highest base flow and infiltration/inflow expected to enter a wastewater system during wet weather at a given frequency that the treatment plant is designed to accommodate.
peak ground acceleration (PGA)	The maximum acceleration experienced by a small particle attached to the earth during an earthquake. The irregular movement of the particle can be described by its position, its velocity, or its acceleration as a function of time.
pH	A measure of acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity. The pH scale ranges from 0 to 14.
phytoplankton	Tiny plants such as algae that live in the water.

plume	A space in air, water, or soil that contains pollutants released from a point source .
point source	A stationary location or fixed facility from which pollutants are discharged or emitted. Also, any single identifiable source of pollution, such as a pipe or ditch. A discharge pipe from a wastewater treatment plant or factory is a point source.
polyaluminum chloride	An aluminum compound used as a flocculant for treating wastewater, potable water, and industrial water.
polymer	A natural or synthetic substance used as a conditioning aid to improve the thickening and dewatering characteristics of solids.
portal	A vertical shaft and staging area constructed and maintained for the purpose of tunneling.
predesign	The initial phase of a project design process. For the Brightwater project, this initial phase generally would include determination of alignments, layouts, and technology options.
preliminary treatment	The stage before primary treatment that physically removes pollutants, such as rocks, sticks, and grit, from wastewater through screening and settling processes.
pretreatment	The process used to reduce the amount of pollution in wastewater before it enters the conveyance system and treatment plant. Usually occurs at the source, such as an industrial plant.
primary treatment	A stage in wastewater treatment in which about 60 percent of the solids in the wastewater are removed, primarily by allowing the solids to settle via gravity in large tanks called clarifiers .
Probabilistic Seismic Hazard Analysis (PSHA)	An analysis that computes the probability of ground motion at a site by considering the estimated frequency of occurrence of earthquakes of differing magnitudes along specified faults and other source zones.
Puget Lowland	An elongated topographic and structural depression bordered by the Cascade mountains on the east and the Olympic mountains on the west.
pump station	For wastewater purposes, a structure that houses pumps and other equipment for lifting wastewater in pipes to higher elevations so that it can continue to flow by gravity.
receiving water	Any body of water where treated or untreated wastes are discharged.
reclaimed water	Effluent that receives advanced treatment (beyond secondary treatment) and is used for non-drinking purposes such as landscape irrigation, heating and cooling, and other industrial uses.

recurrence interval	The average time span between specified events such as the occurrence of an earthquake of a specified magnitude at a specific fault or of ground motions of a defined level at a specified site. Also called a return period.
Regional Wastewater Services Plan (RWSP)	A capital improvement program adopted by the King County Council in December 1999 to provide wastewater services to the King County Service Area through 2030. The RWSP was updated in 2004.
return activated sludge (RAS)	Biomass produced in the activated sludge process that is recycled to the head of the process to promote more complete biological oxidation.
return period	See recurrence interval .
Revised Code of Washington (RCW)	A compilation of laws of the State of Washington published by the Statute Law Committee.
Route 9–195th Street System	One of three action alternatives considered for the Brightwater System. The Route 9–195th Street System, which was the Preferred Alternative and was selected for implementation, includes a wastewater treatment plant at the Route 9 site in unincorporated Snohomish County. The system would also include a conveyance system with an influent tunnel extending underground from existing pipelines in Kenmore and Bothell to the treatment plant site and an effluent pipeline extending underground from the site primarily along NE 195th Street in King County to an outfall extending into Puget Sound from Point Wells west of the city of Shoreline.
safety relief point	A feature analyzed in the EIS as part of the Brightwater System for the discharge of untreated wastewater in the lower Sammamish River in extremely rare events when emergency flow management system measures are implemented and a threat of uncontrolled overflows still exists. This feature is no longer part of the Brightwater proposal.
salmonid	Of, belonging to, or characteristic of the family Salmonidae, which includes salmon, trout, and whitefish.
sanitary sewer	A pipeline that carries household, industrial, and commercial wastewater.
scarp	A line of cliffs or topographic steps produced by faulting , landsliding , or erosion .
Scenario A	One of three earthquake scenarios developed to analyze potential environmental impacts from damage to the Brightwater System resulting from an earthquake on or near the Route 9 treatment plant site. Under Scenario A, strong ground shaking would occur beneath the entire site as the result of a ground rupture on Lineament 4 . This scenario is considered the base case for the seismic analysis in this document.

Scenario B	One of three earthquake scenarios developed to analyze potential environmental impacts from damage to the Brightwater System resulting from an earthquake on or near the Route 9 treatment plant site. Under Scenario B, ground deformation would occur beneath the combined influent-effluent conveyance tunnel near the plant site, in addition to the strong ground shaking that would occur under Scenario A .
Scenario C	One of three earthquake scenarios developed to analyze potential environmental impacts from damage to the Brightwater System resulting from an earthquake on or near the Route 9 treatment plant site. Under Scenario C, ground deformation would occur beneath treatment plant structures, in addition to the strong ground shaking that would occur under Scenario A .
Seattle Fault Zone	A 2- to 4-mile-wide, east-trending fault zone, comprised of at least four strands, extending from the foothills of the Olympic Mountains to the foothills of the Cascade Range. The northern strand of the zone passes approximately through the Pioneer Square section of downtown Seattle, about 14 miles south of the southern edge of the South Whidbey Island Fault .
secondary treatment	A two-step process that consists chiefly of clarification (primary treatment) followed by a biological process—with separate solids collection and treatment—and by secondary clarification, disinfection , and discharge through an outfall . A combination of primary and secondary treatment removes about 85 to 90 percent of the solids in the wastewater .
sediment	Loose, uncemented pieces of rock or minerals.
sedimentation	The processes of erosion, transportation, and deposition of sediment by water and air. These processes occur naturally but may be enhanced by human activities such as road and reservoir construction, logging, mining, and livestock grazing. Wastewater treatment: See clarification .
seismic	Pertaining to, characteristic of, or produced by earthquakes or earth vibrations from an event such as an explosion.
Seismic Importance Factor	A safety factor applied to earthquake loads as defined by the International Building Code to account for variations in importance of a facility.
seismic moment	A measure of the energy of an earthquake , equal to the product of area of the fault involved in the earthquake, the average slip across the fault, and the degree of rigidity of the rocks surrounding the fault.
seismic refraction line	A line of acoustic or vibration measuring devices that are used as part of a seismic refraction survey.

seismic refraction survey	A non-destructive test that measures the travel time of compressional or shear waves through soil or rock. The wave travel times are used to compute shear or compressional wave velocities and the associated stiffness of the soil or rock. This method is also used to image subsurface strata with contrasting wave velocities. In this test, seismic waves are generated at the ground surface and travel down through the soil and along discontinuities or zones of contrasting velocities and are subsequently refracted back to the ground surface where the energy waves are recorded on geophones or recording devices placed at the ground surface.
seismic use groups	Three groups defined by the International Building Code for designing structures to withstand earthquake activity, according to the use of the structure. A structure assigned to Seismic Use Group I should be designed to prevent collapse and provide for life safety under the maximum considered earthquake ; Seismic Use Group III structures should be designed to be operational and provide for life safety. Structures designed under Seismic Use Group II should perform somewhere in between Groups I and III. Most Brightwater structures are assigned to Groups II and III.
sensitive receptor	An individual who may have a compromised respiratory system and could therefore have a higher sensitivity to air and odor emissions. This sensitivity could be extended to other types of releases, such as water-borne pollutants and high noise levels.
sewage	See wastewater .
sewer	A pipe that carries wastewater and/or stormwater runoff from the source to a treatment plant or receiving water . Sanitary sewers carry household, industrial, and commercial wastewater. Storm sewers carry runoff from rain or snow. Combined sewers are used for both purposes.
shear wave (or S wave)	A seismic body wave that shakes the ground back and forth perpendicular to the direction the wave is moving.
shoreline	The area between the extreme high tide line and the riparian zone .
slip	The relative displacement of formerly adjacent points on opposite sides of a fault measured on the fault surface.
sludge	The untreated accumulated solids that have been separated from liquids during the wastewater treatment process.
sodium bisulfite	A type of salt used to dechlorinate treated wastewater prior to discharge.
sodium hydroxide	A reactive, corrosive liquid used to manage the pH in odor control facilities.

sodium hypochlorite	A liquid commonly used as household bleach and used at stronger concentrations to disinfect wastewater and to control odor in treatment plants and conveyance lines.
sole source aquifer	Designated by the Environmental Protection Agency as an aquifer that supplies 50 percent or more of the drinking water for a given area, and for which there are no reasonably available alternative sources should the aquifer become contaminated.
solids	The organic and inorganic material in wastewater that is removed during treatment.
South Treatment Plant	A King County regional wastewater treatment plant, located in the city of Renton.
South Whidbey Island Fault (SWIF)	A fault located on Whidbey Island in western Washington State. Northwest-southeast trending extensions of the SWIF on the mainland are being investigated.
split flow (or split stream)	A process in which average wet-weather flows receive secondary treatment using membrane bioreactor (MBR) technology, excess flows receive only primary treatment, and both flows are blended and disinfected prior to discharge.
State Environmental Policy Act (SEPA)	A Washington State law (Chapter 43.21C RCW) that requires state agencies and local governments to consider environmental impacts when making decisions regarding 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.
stormwater	The portion of precipitation that does not percolate into the ground or evaporate. Stormwater flows across the ground surface in channels or ditches, or flows within pipes.
strike	The direction or trend of the line marking the intersection of a fault plane with the horizontal. Strike is always at a right angle to dip .
strike-slip fault	A fault along which the slip motion is parallel to the strike of the fault.
subduction	The process in which two tectonic plates collide and one plate is pushed downward beneath the other plate. Faulting occurs in the process. The subducted plate usually moves in jerks, releasing vibratory energy and resulting in earthquakes .
subduction zone	An elongated region where two tectonic plates collide, resulting in one plate overriding the other.
subsidence	A gradual sinking of land with respect to its previous level.
sulfuric acid	A highly reactive, corrosive liquid used for pH control in odor control facilities.

surface water	Any water, including fresh water and salt water, on the surface of the earth.
suspended solids	Particles of organic or inorganic pollutants that float on the surface of, or are suspended in, wastewater and that cloud the water. Refers to sand, mud, and clay particles as well as solids in wastewater .
tectonic	Mountain-building processes and resulting structures that occur over large sections of the lithosphere.
tectonic plate	A large, thin, relatively rigid plate in the earth's crust and upper mantle that moves relative to other plates. Slip on faults that define the plate boundaries commonly results in earthquakes.
temperature inversion	Occurs when cold air is trapped under warm air, preventing vertical mixing in the atmosphere.
tensional forces	Forces that pull crustal rocks apart.
total maximum daily load (TMDL)	The maximum amount of pollution that can be assimilated in a water body in a day that will not violate Water Quality Standards, as determined by the Washington State Department of Ecology. A margin of safety is included so that any variability, regardless of source, would not produce a violation of Washington State Water Quality Standards .
Trench 2a	An approximately 8-foot-deep, 140-foot-long trench dug across Lineament 4 in the North Mitigation Area of the Route 9 site to explore the origins of the lineament. Also called Beef Barley trench. ²
Trench 2b	An approximately 4-foot-deep, 70-foot-long trench dug across Lineament 4 east of the StockPot Building on the Route 9 site to explore the origins of the lineament.
trenching	The process of digging a deep furrow or ditch and examining subsurface features for evidence of past earthquake activity.
trunk	A pipeline that receives flow from many tributary pipes and serves a large territory. Also known as a main sewer.
urban growth area (UGA)	Areas designated by counties in Washington state under the Growth Management Act within which urban growth is encouraged and outside of which growth can occur only if it is not urban in nature. Areas must be designated sufficient to accommodate projected growth for a 20-year period, and public services and utilities must be provided to serve the projected growth with the UGA.
volatile organic compounds (VOC)	Carbon-based chemical compounds that evaporate quickly (have a high vapor pressure) under atmospheric conditions.

² Sherrod, B.L., Blakely, R.J., Weaver, C., Kelsey, H., Barnett, E., and Wells, R. 2005. *Holocene fault scarps and shallow aeromagnetic anomalies along the Southern Whidbey Island Fault Zone near Woodinville, Washington*. U.S. Geological Survey Open-File Report 2005-1136, 40 p

volatilization	A change in a chemical's form from liquid to a vapor, facilitating its emission into the surrounding air.
Washington Administrative Code (WAC)	The codified regulations adopted by various Washington State agencies through the rule making process.
Washington State Department of Ecology (Ecology)	The state agency designated by the Environmental Protection Agency to be responsible for developing, implementing, and enforcing environmental protection laws and policies, including the Clean Water Act and the Shoreline Management Act. Ecology issues the NPDES permit , which allows a wastewater treatment plant to operate.
wasteload	The mass of a particular pollutant discharged to a receiving water .
wastewater	The water and wastes from homes and businesses that enter pipes and are transported to treatment plants for treatment and disposal.
Water Quality Standards	Washington State standards that define what water will be used for, set levels to protect those uses, implement and enforce water treatment plans, and protect existing high quality waters.
water reclamation	The reuse of wastewater treated beyond the secondary level according to the Water Reclamation and Reuse Standards, issued in 1997 by the Washington State Departments of Health and Ecology. Four classes of reclaimed water were established based on the end uses of the reclaimed water. The Brightwater plant will produce Class A reclaimed water. Allowed end uses of Class A reclaimed water are irrigation of food and non-food crops and irrigation of open access areas, such as parks. The water could also be used for industrial cooling and process water and other non-drinking-water (non-potable) uses.
water table	The upper surface of the zone of saturation of groundwater .
weir	An obstruction in the wastewater flow that is used to measure or control flow.
wellhead protection area	The area managed by a community to protect groundwater-based public drinking water supplies.
wetland	Land with saturated soils that are at least periodically inundated and that under normal conditions support vegetation suited to such environments. Wetlands include swamps, marshes, and bogs.
West Point Treatment Plant	A King County regional wastewater treatment plant, located in Seattle's Discovery Park.