

8.0 Keystone XL Project Glossary

Term	Definition
access road	A temporary or permanent road that provides access to a facility, campsite, pipeline right-of-way, water source, or infrastructure site.
adult fish	Fish that have attained sexual maturity.
adverse environmental effect	The impairment of, or damage to, the environment.
alkaline soil	Any soil that has a pH greater than 7.0
all-weather road	A paved or unpaved road that is maintained for all-weather and year-round access.
alluvial	Pertaining to, or consisting of, material deposited by flowing water.
alluvial deposits	Pertaining to, or consisting of, past and present sediments deposited by flowing water, including glaciofluvial deposits. Wave-worked deposits and deposits resulting from sheet erosion and mass wasting are not included.
alluvial fan	A fan-shaped deposit of alluvium that is laid down by a stream at the point where it emerges from upland into less steeply sloping terrain.
alluvial horizon	A soil horizon that has been formed by the process of alluviation, which is the downward or lateral removal of material in solution or suspension.
alluvium	Pertaining to, or consisting of, unconsolidated material, usually clay, sand, silt and gravel, deposited by flowing water.
ambient sound levels	The sound pressure level at a given location, normally specified as a reference level to study a new intrusive sound source. Ambient sound levels are often measured to map sound conditions over a spatial regime to understand their variation with locale.
amphibian	Any of the class of cold-blooded vertebrates, including frogs, toads, and salamanders, intermediate between fish and reptiles; they are gilled, aquatic larvae and air-breathing adults.
anoxic	Lacking, or without, oxygen.
appurtenance, pipeline	A supplementary component associated with and attached to a pipeline, necessary for safe and efficient operations. Common pipeline appurtenances include valves and valve control equipment, pigging facilities, and cathodic protection apparatus.

Term	Definition
aquatic	Growing in, living in, or frequenting water. Also, occurring, situated in, or on water.
aquifer	A saturated geologic unit having relatively higher permeability compared with adjacent units that can transmit relatively greater quantities of water under normal hydraulic gradients.
aquitard	A saturated unit having relatively lower permeability compared with adjacent units that can transmit relatively lesser quantities of water under normal hydraulic gradients.
archaeology	The discipline that investigates past human cultures by recovering, analyzing, describing, and interpreting their remains.
archaeological site	A location that contains evidence of past human activity, such as artifacts or structural remains.
artifact	Any portable object made, modified or used by humans, including tools, weapons, ceremonial items, art objects, industrial materials, and floral and faunal materials.
artifact scatters	Any location that contains a collection of artifacts indicative of human activities but lacking evidence of specific habitation. Such a site can be identified in a surface or buried context.
atmospheric attenuation	The attenuation of sound as it is absorbed by parts of the atmosphere.
atmospheric environment	The layer of air near the earth's surface to a height of about 6.2 miles.
API gravity	The gravity (weight per unit volume of oil measured on the API scale according to the following formula: $\text{API Gravity} = [141.5 / (\text{specific gravity at } 60^{\circ}\text{F})] - 131.5$
average channel depth	The total of all depth measurements divided by the number of measurements taken.
backfill	The fill material used to cover a completed pipeline. Adequate fill material is provided above and below the pipe to prevent damage caused by loose rock, abrasion, shifting or washouts.

Term	Definition
backhoe	An excavating machine fitted with a hinged arm with a rigidly attached bucket used for excavating ditches.
backup control center	A secondary control center for use when the primary operations control center is unavailable.
badlands	A land type generally devoid of vegetation and broken by an intricate maze of narrow ravines, sharp crests, and pinnacles resulting from serious erosion of soft geologic materials. This type is most common in semi-arid or arid regions.
bank	The rising slope or face of ground bordering a watercourse. It is located above the streambed and below the level of rooted vegetation.
bankful width	The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters, this is often the 1:2 year flood flow return level.
barrel	A volume of oil equal to 42 U.S. gallons
barrier attenuation	The attenuation of sound as it is absorbed or refracted by intervening structures (e.g., buildings and hills).
baseline	A surveyed condition that serves as a reference point to which later surveys or assessments are coordinated and correlated.
batch	Petroleum is shipped by pipeline in batches of uniform quality. When there are adjacent batches of different qualities, there will be some mixing at the interface between the batches. The mixing can be minimized by operating the pipeline in a turbulent flow regime (which reduces the absolute size of the mixing interface compared to laminar flow) and by scheduling large batch sizes (which reduces the relative amount of mixed petroleum in each batch.)
batch tracking system (BTS)	Part of the SCADA that will follow the progress of individual batches of petroleum as they travel through the pipeline.
bed and banks - SEE BANKS DEFINITION	The streambed and the rising slope or face of ground bordering a watercourse, up to the level of rooted perennial terrestrial vegetation.
bedrock	Solid rock either exposed at the surface or found underlying soil or any other unconsolidated surficial cover.

Term	Definition
benzene	A colorless, carcinogenic, flammable hydrocarbon with a sweet odor. It is a volatile chemical that evaporates quickly into air.
berm	A containment structure, reaching above ground-level, constructed of materials such as soil, soil-filled bags, and synthetic materials.
best available technology economically achievable (BATEA)	Selection and employment of technology that is normal (or better) for the specific industry, is energy efficient, and economically viable.
best management practices (BMPs)	A practice or combination of practices that are determined to be the most technically and economically feasible means of preventing or managing potential effects.
biophysical	Pertaining to, or consisting of, the air, noise, aquatic (groundwater, hydrology, water quality and fisheries) and terrestrial (soils, landforms, vegetation and wildlife) conditions in the Project area.
bitumen	A mixture of organic liquids that is highly viscous, black, sticky, and entirely soluble in carbon disulfide, and composed primarily of highly condensed polycyclic aromatic hydrocarbons.
blanket	A thick, widespread sedimentary deposit of relatively uniform thickness that is relatively thin in relation to aerial extent.
blanket slope drainage	A type of drainage that occurs in subdued topography where basin types are not definable. Water flows down the slope like a sheet.
blowout	A small area from which soil material has been removed by wind.
bog	A plant community that develops and grows in areas with permanently waterlogged peat substrates.
borrow material	Earth material, such as gravel or sand, taken from one location to be used as fill at another location.
borrow site	An area that could be excavated to provide borrow material.
boulder	A large rock with a diameter exceeding 256 mm.
boulder garden	An aquatic habitat characterized by an abundance of boulders that provide in stream cover for fish.

Term	Definition
Brunisolic soils	An order of soils with horizons sufficiently developed to exclude them from the Regosolic Order, but lacking the degrees and kinds of horizon development specified for soils of the other orders.
Calcareous soil	Soil containing sufficient calcium carbonate, often with magnesium carbonate, to effervesce visibly when treated with cold 0.1 N hydrochloric acid.
canopy	The cover of branches and foliage formed by tree crowns or the tallest layer of vegetation in an area.
campsite, archaeological	A location containing artifacts that are more patterned in their distribution, including evidence of a fireplace or hearth and which are indicative of habitation activities. May include other culturally modified materials such as lithics, faunal remains, ceramics, and structural remains. Such a site can be identified in a surface or buried context.
cathodic protection	Application of an electric potential to a buried pipeline so that it is slightly negative (typically -0.85 V) with respect to the surrounding soil. Since corrosion of the pipe occurs when the pipe's potential is greater than that of its environment, CP acts to prevent corrosion.
cascade	Series of small falls or steps and pools. Substrate is bedrock or boulder accumulations. Highly turbulent, high velocity, >7% slope.
channel	A natural or artificial waterway that periodically or continuously contains moving water, has a defined bed (evidence of alluvial scour), and has banks that confine water at low to moderate streamflow.
wetted width	The horizontal distance along a transect line, measured perpendicular to the mid-line channel, between two margins of flowing water in a watercourse.
Chernozemic soils	An order of soils developed under xerophytic or mesophytic grasses and forbs, or under grassland–forest transition vegetation, in cool to cold, sub-arid to sub-humid climates. The soils have dark colored surfaces (Ah, Ahe and Ap) horizon and a B or C horizon, or both, with high base saturation. The order consists of Brown, Dark Brown, Black, and Dark Gray great groups.
chute	Rapidly flowing water within narrow, steep slots of bedrock.

Term	Definition
clay	As a particle-size or textural term: a size fraction less than 0.002 mm in equivalent diameter. As a rock term: a natural, earthy, fine-grained material that develops plasticity with a small amount of water. As a soil term: a textural class.
coarse fragments	Particles of rock or mineral with a diameter greater than 2 mm.
cobble	A rock fragment larger than a pebble and smaller than a boulder, with a diameter of 64 to 256 mm.
colluvial	Pertaining to colluvium.
colluvium	A loose, heterogeneous and incoherent deposit of soil material or rock fragments, usually deposited by mass wasting.
commissioning	The act of charging a system and doing checkouts to ensure that equipment functions safely before start up.
coking	A process in which bitumen is cracked into its fractions and from which coke is withdrawn to start the process of converting bitumen to upgraded crude oil. See Fluid Coking.
confined aquifer	An aquifer that is bounded above and below by adjacent aquitards. (A water level in a well installed in a confined aquifer usually rises to a level in the well above the top of the aquifer, indicating the water in the aquifer is under heightened pressure, resulting in artesian conditions.)
confluence	The place where two watercourses flow together to form one.
coniferous forest	Typically, evergreen trees or plants that are cone bearing, such as pine trees.
consistence	The resistance of a soil material to deformation or rupture; the degree of cohesion or adhesion of the soil mass.
construction phase	The phase of a project preceding operations, during which project facilities are assembled, installed on their foundations, connected, and tested to ensure that they will operate as designed.
contiguous	A term used when the Project right-of-way parallels an existing right-of-way.
contingency crossing location	An alternative location that will be used if the initially proposed location is found to be infeasible when it is being installed.

Term	Definition
contingency crossing technique	An alternative technique that will be used to install a pipeline crossing if the initially proposed technique is infeasible or cannot be completed successfully when the crossing is being installed.
contract	Defined in Keystone's proposed Tariff as a Petroleum Transportation Service Agreement between the Carrier (Keystone) and a Term Shipper.
committed capacity	Defined in Keystone's proposed Tariff as the capacity on Keystone's pipeline system equal to the sum of the monthly volumes of all Term Shippers.
contract volume	Defined in Keystone's proposed Tariff as the daily volume of petroleum specified by a Term Shipper.
Cretaceous	A geological period ranging from 144 to 65 million years ago when the climate was warmer and dinosaurs were at their peak. All dinosaurs, marine reptiles, and ammonites went extinct at the end of the Cretaceous.
critical habitat	The habitat necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species, according to the Species at Risk Act.
cumulative effects	The effect on the environment which results from effects of a project when combined with those of other past, existing, and imminent projects and activities. These may occur over a certain period of time and distance (CEAA).
Cumulic Regosolic soils	An order of soils that develop in areas where periodic disturbance or deposition occurs.
custody transfer	The process of changing ownership of, control of, or responsibility for, quantities of gas, petroleum, or petroleum products.
dam and pump	A technique used for pipeline construction at isolated trenched watercourse crossings, in which a dam blocks water flow upstream and downstream of the crossing and a pump moves the water around via hoses.
deep-seated failure	An occurrence on slopes when a large block of soil moves laterally out from the slope, or a large block of soil rotates within the slope. The failure plane or plane of movement is at or below the valley level and extends well back into the slope.
demobilization	The process of moving people, supplies and equipment from the worksite to another location.

Term	Definition
deposit	Material left in a new position by a natural transporting agent, such as water, wind, ice, or gravity, or by the activity of people.
diagnostic artifact	A type of artifact that can be related to a specific time period or cultural complex, identified by its form, style, or material type. The diagnostic artifact is the basis for interpreting the relative cultural or temporal association of a cultural assemblage.
dinosaur	Extinct reptiles distinguished by their pelvic girdles. They were the dominant land animal during the Mesozoic era.
discharge	The rate of flow at a given moment, expressed as volume per unit of time (e.g., stream flow usually expressed as cfs (cubic feet/sec).
dissolved oxygen	A measure of the amount of oxygen dissolved in water. Dissolved oxygen concentration is one indication of the suitability of surface waters for aquatic life.
dispersion model	A computer program that simulates how emission sources influence ground level concentrations of contaminants in the atmosphere during specified meteorological conditions and terrain effects.
distance attenuation	The attenuation of sound with increasing distance from the source.
ditch	A long, narrow excavation dug in the earth in which a pipeline is buried.
ditch line stripping	The process of removing vegetation and topsoil.
ditch plug	A short section of pipeline ditch that is not excavated and that acts to separate the wet, in stream section of a watercourse excavation from the dry, onshore ditch.
ditching	The process of excavating ditches.
ditch line	The centre of the trench
diversity, in ecology	The variety, distribution, and abundance of different plant and animal communities and species in an area.
domestic waste	The waste products, such as sewage and garbage, typically generated at camps.
downstream	Below a reference point in the direction of the flow of a stream or river.

Term	Definition
drainage	The process or means of draining.
drain tile	Pipe used to conduct drainage water from the soil.
dystric Brunisolic soils	An order of soils that develop in acidic parent materials, usually noncarbonated, with no organic surface horizons.
dunes	Wind-built ridges and hills of sand formed in the same manner as snowdrifts.
Early Precontact Period	Period between about 12,000 and 7,500 years B.P. (before present) associated with big-game mammoth and bison hunting peoples of the Americas.
easement	An agreement under which a company acquires the right to use land for the pipeline or power line. It is a written contract that sets out the rights of the company and rights of the landowner for the use of the right-of-way.
ecology	A branch of science concerned with the interrelationship of organisms and their environments.
ecoregion	An ecological area that has broad similarities in soil, relief, and dominant vegetation.
ecosection	Clearly recognizable landforms such as river valleys and wetlands at a broad level of generalization.
ecosystem	A single functional system that includes all living organisms in a given area and nonliving factors, such as sunlight, temperature, moisture, soil, mineral elements, and topography, linked together through nutrient cycling and energy flow.
edge	Where different plant communities meet in space on a landscape, and where plant communities meet a disturbance. An outer band of a patch that usually has an environment significantly different from the interior of the patch.
edge effect	An ecological effect associated with patch edges. An outer band of a plant community that usually has an environment significantly different from the interior of the plant community.
electrical conductivity	Measure of the concentration of dissolved mineral constituents in the soil solution.

Term	Definition
endangered	A species facing immediate extinction or extirpation.
environment	The components of the earth, including land, water, and air, all layers of the atmosphere, organic and inorganic matter, and living organisms, and the interacting natural systems of all components.
environmental and socioeconomic assessment	A report prepared in accordance with the Nebraska's Filing Manual and the Canadian Environmental Assessment Act that identifies possible environmental effects from the Project, proposes measures to mitigate potential effects, and predicts whether there will be significant environmental effects, even after mitigations are implemented.
environmental effect	In respect of a project: (a) any change that the Project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat, or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the Species at Risk Act; (b) any effect of any change referred to in paragraph (a) on: (i) health and socio-economic conditions; (ii) physical and cultural heritage; (iii) the current use of lands and resources for traditional purposes by aboriginal persons; or (iv) any structure, site, or thing that is of historical, archaeological, paleontological or architectural significance; or (c) any change to the Project that may be caused by the environment, whether any such change or effect occurs within or outside Canada.
environmental noise	An accumulation of distant noise sources that creates a relatively steady background noise with no identifiable source.
environmentally sensitive area	An area designated in regional or local land use plans, or by a local, regional, provincial, or federal government body as being sensitive to disturbance or identified by an applicant as being sensitive for some reason.
environmentally significant area	Landscape elements or places which are vital to the long-term maintenance of biological diversity, soil, water, or other natural process, both onsite and in a regional context, as selected by Alberta Environment.
eolian	Pertaining to, or consisting of, materials eroded, transported, or deposited by wind, usually including poorly graded, well-sorted medium to fine sand and coarse silt that is sorted and not compacted.
ephemeral watercourse	Streamflows in channels that are short-lived or transitory and occur from precipitation, snow melt, or short-term water releases. Watercourse often has no or poorly defined bed and banks.
equivalent sound level (Leq)	The A-weighted equivalent continuous sound level. This measure is an energy average of the varying sound levels over a specified time.

Term	Definition
erosion	The wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep.
ethylbenzene	Substance that occurs naturally in coal tar and petroleum and is found in many products, such as inks, paints, and insecticides.
extinct	A species that no longer exists.
facilities	Structures of the pipeline system, including pump stations, block valves, pigging facilities, and meter stations.
falls	Free-falling water with vertical or nearly vertical drops as it falls over an obstruction. Falls may or may not be a barrier to fish passage depending on the height and species present.
fen	Low land, such as peat land, that is wholly or partly covered by water, especially in the upper regions of old estuaries and around lakes. These areas do not drain naturally.
fine-grained sediment	Sediment comprising silts and clays; consisting of particles less than 62 μm in diameter.
fines	Particulate material, less than 2 mm in diameter, including sand, silt, clay, and fine organic material.
fish habitat	Those parts of the environment on which fish depend, directly or indirectly, to live. Fish habitats include spawning grounds and nursery, rearing, food supply, and migration areas.
flume	A structure used to contain stream flow across the right-of-way during installation of the pipeline. The structure can be constructed of steel, reinforced concrete, or wood.
flume seal	Materials, such as sandbags, that might be required around a flume to prevent water flowing between the flume wall and the watercourse channel or dam.
flake	A fragment or spall removed from a larger stone by pressure or percussion during stone tool production.
catchment	An area of land that drains to a single outlet. Essentially synonymous terms include drainage area, watershed, and basin.
floodplain	The low-lying land adjacent to a watercourse that may be inundated when the stream is at flood stage.

Term	Definition
fluid coking	A major part of the upgrading process whereby high temperatures in a coker break down the complex bitumen molecules, reject carbon, and cause the molecules to reformulate into lighter fractions that become the main ingredients in upgraded crude oil.
footprint	The amount and shape of area to be disturbed. For example, the perimeter of a facility site.
forage	Grasses, herbs and small shrubs that are used by wildlife for food.
forage fish	Fish species used as a food source by other fish.
forb	Any herbaceous plant, other than a grass (e.g., a weed or a broad-leaved non-woody plant).
formation	A geological stratigraphic unit that consists predominantly of a certain lithologic type or combination of types. It is the fundamental lithostratigraphic unit and can be combined into groups or subdivided into members.
fossil	Any remains, traces or imprints of past life preserved in the earth's crust. Also known as a paleontological resource.
fracture	Any break in a rock, including joints, cracks, and faults.
fragmentation	The process of breaking into pieces or sections. For example, dividing contiguous tracts of land into smaller and less connected sections through site clearing (i.e., for roads).
freeze-up	Freezing of a watercourse or waterbody in the fall or winter.
freshet	Rapid temporary rise in stream discharge and water level caused by heavy rains or rapid melting of snow or ice.
fry	A young fish at the post-larval stage. Can include all fish stages from newly hatched to fingerling.
furbearer	Mammals that have traditionally been trapped or hunted for their fur.
FWMIS	The acronym for the Fisheries and Wildlife Management Information System.
geotechnical	Related to the application of scientific methods and engineering principles to solve civil engineering problems by acquiring, interpreting, and using knowledge of materials of the crust of the earth.

Term	Definition
glacial deposits	Also known as glacial drift, geologic deposits formed by or in association with continental glaciers, including glacial till and moraine deposits, glaciofluvial sediments, and glaciolacustrine deposits.
glaciofluvial deposits	Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice.
glaciolacustrine	Pertaining to lakes fed by melting glaciers, or to the deposits forming in former glacial lakes.
gleyed soil	Soil affected by gleysation, caused by periodic to permanent reducing conditions within the soil matrix. Often expressed by the presence of mottles or reduced blueish color.
gleysolic soils	An order of soils developed under wet conditions and permanent or periodic reduction. These soils have low chromas, prominent mottling, or both in some horizons.
grading	The process of constructing a work area to facilitate moving personnel, equipment, and material onto and along a right-of-way. The process includes leveling, cutting, and filling.
gravel	Rock fragments with diameters of 2 mm to 7.5 cm.
ground attenuation	The weakening of sound as it passes over absorptive or semi-absorptive open terrain.
ground truth survey	Measures of various properties, such as temperature, vegetation, and land use, done on the ground to calibrate observations made from satellites, maps, or aircraft.
groundwater	Subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated.
grubbing	The selective removal and disposal of vegetation, by hand or mechanical means.
gully	Channel resulting from erosion caused by the concentrated but intermittent flow of water during rainfall and snowmelt events.
habitat	The area where an animal or plant naturally or normally lives and grows (e.g., stream habitat or forest habitat).

Term	Definition
habitat effectiveness	The physical characteristics associated with the suitability of a habitat and the ability of a habitat to be used by wildlife. The effectiveness of a habitat can be decreased through visual, auditory, or olfactory disturbance even though the physical characteristics of the habitat remain unchanged.
habitat fragmentation	Occurs when extensive, continuous tracts of habitat are reduced by habitat loss to dispersed and usually smaller patches of habitat. Generally reduces the total amount of available habitat and reduces remaining habitat into smaller, more isolated patches.
habitat patches	Isolated patches of habitat.
habitat suitability index (HIS)	A method of evaluating habitat quality based on species-specific habitat parameters that describe food and cover characteristics.
non-criteria air pollutants	Consists of a vast number of chemicals that exist as gases, particles and aerosols (particles less than 10 microns in size) and are dispersed in the atmosphere. They pose a health threat to living organisms and are not comprehensively regulated by ambient air quality criteria.
headwater	The source and upper part of a stream or river.
heavy crude	Defined in Keystone's proposed Tariff as petroleum with a density between 876 kg/m ³ and 940 kg/m ³ inclusive, and a kinematic viscosity between 20 cSt (mm ² /s) and 350 cSt, inclusive.
hectare	A unit of area equal to 10,000 m ² . 1 km ² = 100 ha.
holding habitat	A place with low water velocity where fish can rest and conserve energy.
horizontal directional drilling (HDD)	A trenchless method of crossing obstacles such as watercourses whereby a pilot hole is first drilled in a guided arc under the obstacle. If this is successful, the pilot hole is reamed to a diameter sufficient to accommodate the pipe, which is then pulled through the hole. Since success is not guaranteed, all HDD crossing plans must include a contingency alternative.
horizontal axially-split bearing pump	A type of pumping unit typically used on liquids pipelines.
hibernacula	A sheltered area in which hibernating animals spend the winter. It might be communal where several individuals of the same species share the site (e.g., prairie rattlesnakes).

Term	Definition
historic period	The period after time of contact between indigenous peoples and Europeans. A term used to indicate a time for which there are written (documentary) records. In North America, this typically refers to the time period following contact between Europeans and EuroCanadians and aboriginal peoples. Also called the Postcontact Period.
historic site	A site characterized by structures, features, and objects of European influence.
hummock	A rounded or conical mound or hillock, generally of equal dimensions and not ridge-like.
hummocky moraine	A strongly undulating surface of ground moraine, with a relative relief of up to 100 m, and showing steep slopes and deep, enclosed depressions.
hydraulics	The branch of science and technology concerned with the mechanics of fluids, especially liquids.
hydraulic conductivity	A measure of the fluid transmitting capacity of geologic deposits based on the permeability of the deposits and the characteristics of the fluid.
hydraulic head	A measure of the potential energy of groundwater as defined by the elevation of the water table in an unconfined aquifer or the artesian pressure in a confined aquifer.
hydrocarbons	Organic compounds of hydrogen and carbon whose densities, boiling points, and freezing points increase as their molecular weights increase. Petroleum is a mixture of many different liquid hydrocarbons.
hydrogen sulfide	A colorless gas that is readily detectable by its distinctive rotten egg odor.
hydrogeology	The study of the physical and chemical properties of groundwater, not to be confused with hydrology.
hydrograph	A graph showing stage, flow, velocity, or other properties of water with respect to time.
hydrology	The science dealing with the properties, distribution and circulation of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere.

Term	Definition
hydrostatic testing	The final quality control check of the structural soundness of a pipeline or facility. In this test, the line is filled with water or a glycol-water mixture and pressurized to a designated point. This pressure is maintained for a specific period of time. Any ruptures or leaks revealed by the test are repaired. The test is repeated until no problems are noted. Also known as pressure testing.
impeded drainage	A condition that hinders the movement of water by gravity through soils.
impervious	Resistant to penetration by fluids or roots.
inadvertent mud release	The unplanned release of drilling fluids.
incident	A specific unplanned event or sequence of events that has an unwanted and unintended effect on people's safety or health, property, the environment, or on regulatory compliance.
infrastructure	Basic facilities, such as transportation, communications, power supplies and buildings, which enable an organization, project or community to function.
in-line inspection	Inspection of a pipeline while in service.
instream	Within the wetted perimeter of a watercourse channel.
instream cover	Areas with structure, such as boulders, rock, and logs, in a stream channel that provide aquatic organisms with shelter or protection from high velocity flow, predators, or competitors.
integrated public awareness	A program used by TransCanada to promote awareness of its pipeline by landowners, communities, and emergency organizations.
integrity management program (IMP)	A quantitative, risk-based system used by TransCanada to identify potential integrity threats to its pipeline system and then initiate appropriate inspection and mitigation activities. From the IMP, TransCanada develops its annual pipeline management plan (PMP).
intermittent watercourse	Watercourse with flows that occur at certain times of the year only when groundwater levels are adequate but may cease entirely in low water years or be reduced to a series of isolated pools. Defined bed and banks will be present.
inundation	The process of being flooded or covered with standing or flowing water.
invasive species	A term describing species that move into a habitat and reproduce so aggressively that indigenous species are displaced or existing community structures are changed.

Term	Definition
isolated crossing technique	A method of installing a section of pipeline through a watercourse that involves diverting the water upstream of the right-of-way to downstream of the right-of-way. This technique allows a pipeline to be installed without halting the flow of water.
isolated (artifact) find	A site type, which consists of one item only.
juvenile fish	Any fish that has not yet reached sexual maturity.
karst topography	The landscape surface that forms over limestone, dolomite, or gypsum and is characterized by sink holes, caves, and underground drainage.
kilometer post	A designation on maps for each kilometer along the centerline of the right-of-way used for reference points.
Kjeldahl nitrogen level	The nitrogen content in an organic compound, determined by quantitative chemical analysis.
lacustrine	Pertaining to, produced by, or inhabiting a lake or lakes.
lacustrine deposits	Material deposited in lake water and later exposed either by lowering the water level or uplifting the land.
land classification	The arrangement of land units into various categories based on the properties of the land or its suitability for some particular purposes.
landscape connectivity	A measure of the probability that individuals are capable of moving across a landscape and colonizing suitable habitat patches in their dispersal range.
landscape diversity	The size, shape and connectivity of different ecosystems across a large area.
Late Precontact Period	Period between about 2000 and 250 years B.P. associated with the development and widespread employment of bow and arrow technology among precontact peoples.
leak detection system	A system of sensors, combined with the SCADA, that will enable operators in the control center to become aware of leaks above certain sizes.
light crude	Defined in Keystone's proposed Tariff as petroleum with a density of less than 875 kg/m ³ and a kinematic viscosity of less than 20 cSt.

Term	Definition
lithic	Human altered stone (usually refers to the products of stone tool manufacturing).
littoral zone	A shallow shore area of a waterbody where light can usually penetrate to the bottom and that is often occupied by rooted aquatic plants. The extent of the plants might mark the boundaries of the zone.
logistics	The activities associated with procuring, maintaining, and transporting materials, equipment, and personnel.
low vapor pressure	Used to designate petroleum liquids having a vapor pressure of less than 110 kPa absolute at 38°C, as determined using the Reid method (as specified in ASTM D 323.).
luvisolic soils	An order of soils with an eluvial horizon (Ahe or Ae horizon) and illuvial (Bt or Btj) horizon. They develop under forest or forest-grassland transition in a moderate to cool climate, and are associated with well-drained, fine-textured parent materials.
macrophyte	A plant visible to the naked eye, especially one in aquatic habitat.
magnitude	Relating to an effect, the severity or intensity of the effect. It is rated as low, moderate, or high.
mainline ditching	A pipeline crossing technique used for installing pipelines across watercourses that do not have defined beds and banks, and that can be done by the mainline construction spread without the use of typical wet construction methods.
major ion	Dissolved elements abundant in surface and ground waters. Major ions that are common in freshwater include bicarbonate, calcium, carbonate, chloride, magnesium, potassium, sodium, sulfate, and sulfide.
maximum channel depth	The deepest of all measurements taken along a transect.
maximum operating pressure (MOP)	The maximum pressure at which a pipeline or pressure vessel is legally allowed to operate.
mean	The sum of observations, or items, in a sample divided by the number of observations in the sample.
mean velocity	The average velocity of water measured along a transect.
mesisolic soils	A Subgroup of the Organic Soil Order slightly more decomposed than Fibrisols. They contain moderately decomposed organic material and are found in areas that favor slightly greater rates of decomposition than Fibrisol locations.

Term	Definition
meter	An instrument for measuring and indicating, or recording the volume of a substance that has passed through it.
meter station	A facility where the flow of a substance is recorded. Meter stations are located at key transfer points, such as the Hardisty Operational Tank Facility and the international boundary crossing between Canada and the United States.
mineral soil	Soil containing primarily mineral materials, the presence of which predominantly determines the properties of the soil. Mineral soil generally evolves from fluvial, lacustrine, or glacier-deposited parent materials, and except for an organic surface or litter layer, contains less than 30% organic material by weight.
Middle Precontact Period	Period between about 7500 and 2000 years B.P. associated with the prevalent use of atlatl and dart technology in the subsistence strategies employed by contemporary precontact peoples.
minnow	The common name for any freshwater fish of the family Cyprinidae.
mitigation	In respect to a project, the elimination, reduction, or control of the adverse environmental effects of the Project; includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation, or any other means (CEAA).
mixed wood forest	A forest that includes deciduous and coniferous trees.
modeling domain	The area over which dispersion modeling was completed and the area over which graphical results of the air quality modeling are presented.
moderately well-drained soil	Soil from which water is removed slowly in relation to supply because of imperviousness or lack of gradient.
follow-up monitoring	Periodic inspection to: observe and report on compliance with approved conditions; confirm effectiveness of approved protective measures; verify the accuracy of impact predictions; and identify any unpredicted effects.
monthly volume	Defined in Keystone's proposed Tariff as the product of the Contract Volume times the number of days in a given month.
mm	The abbreviation for millimeter.
moraine	An accumulation of earth, generally with stones, carried, and deposited by a glacier.

Term	Definition
mottles	Spots or blotches of different color or shades of color interspersed with the dominant color.
noise	The phenomenon of unwanted sound.
non-contiguous	A term used when the Project right-of-way does not parallel an existing right-of-way
open cut crossing technique	A method of installing a section of pipeline through a watercourse that requires excavation of the bed and banks to create a trench to install the pipe. No measures are used to protect the work area from the rest of the river.
operations control center	The room from which the operation of the Project will be monitored and controlled 24 hours a day.
operation phase	The phase of the Project during which the pipeline and associated facilities are operated. The operation phase is the period immediately following the construction phase whereby the facilities are commissioned and placed in service to support the needs of the executed contracts.
organic deposit	A layer of soil that contains plant and animal residue in various stages of decomposition.
organic soil	Any soil comprising at least 30% organic matter. Most are saturated throughout the year and occur in poorly and very poorly drained depressions.
Orthic Regosol soil	Typical, weakly developed soil lacking horizon development indicative of all other soil orders.
outflow	The amount of water flowing out a drainage basin, such as groundwater seepage and stream water.
over bend	The concave bend radius portion of the S-shaped configuration of pipe located near the top of each bank of a pipeline watercourse crossing.
overburden	The loose soil, silt, sand, gravel, or other unconsolidated materials overlying bedrock.
overwinter	To live or keep alive through the winter.
overwintering habitat	Habitat used by aquatic organisms during winter.
paleontology	A scientific discipline that studies fossil plant and animal remains.

Term	Definition
paleontological site	A type of historical resource site that contains evidence of past plant and animal communities.
parent material	The unconsolidated and more or less chemically unaltered mineral or organic matter from which the solum of a soil has developed by pedogenic processes.
passerines	Perching birds, mostly small and living near the ground with feet having four toes arranged to allow for gripping the perch. Most are songbirds.
patch	An area that is different from the area around it (e.g., vegetation types and non-forested areas). This term is used to recognize that most ecosystems are not homogeneous, but rather exist as a group of patches or ecological islands that are recognizably different from the parts of the ecosystem that surround them but nevertheless interact with them.
peat	An organic deposit consisting of decayed or partially decayed, humified plant materials that have decomposed in wet or waterlogged, anaerobic environments.
percolate	The process of water oozing, seeping, or filtering through soil without a definite channel or course.
perched water table	A water table resulting from the perching of water on a relatively impermeable layer at some depth below the ground surface.
perennial spring	A spring that flows during all seasons of the year.
perennial watercourse	Stream with water continuously present during a normal water year.
permeability	As relating to geologic deposits, the interconnected pore space that is a function of grain size, sphericity, roundness, and packing. Gravel has a high permeability and clay has low permeability. The capacity of a porous rock, soil or sediment for transmitting a fluid without damaging the structure of the medium. Also known as perviousness.
permissible sound level (PSL)	Limit determined by regulatory agencies regarding the maximum allowable noise level for a given area or region.
Petroleum Administration for Defence District.	The US Department of Energy divides the country into PADDs. PADD II, which Keystone is intended to service, comprises the states of Oklahoma, Kansas, Nebraska, South Dakota, North Dakota, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Michigan, Ohio, Kentucky, and Tennessee.
pH	A measure of the relative acidity or alkalinity of a liquid or soil. The pH scale ranges from 1 to 14, with 7 being neutral, 1 being the most acidic and 14 being the most alkaline.

Term	Definition
pig	An in-line scraper, such as a brush, blade cutter or swab, forced through a pipeline by fluid pressure. The pig is used to remove scale, sand, water, and other foreign matter from the interior surface of the pipe. In hydrostatic testing, the pig is used inside the line to push air ahead of the test water and to push water out after the test. The name resulted from the squeals made by early versions equipped with wire brushes.
pigging	The movement of a tool—the pig--propelled by gas or liquid through the inside of a pipeline for the purpose of cleaning, dimensioning, or inspecting. Inspection pigs, equipped with sophisticated sensors and electronics to detect and measure corrosion and other defects are known as “smart pigs.”
pig trap, launcher or receiver	Pipeline equipment used to launch and receive pigs.
pig receiver	A piping arrangement that diverts an incoming pig to a receiving cylinder, then isolates and removes it.
pigging facilities	Receivers and launchers for the pipeline in-line inspection and cleaning tool.
pipeline maintenance plan	TransCanada’s annual plan for mitigating integrity threats to its pipeline. The PMP results from the integrity maintenance plan.
pool habitat	Aquatic habitat in a stream with a gradient less than 1% that is normally deeper and wider than aquatic habitats immediately above and below it. Pool habitat is subdivided as Class 1, Class 2, and Class 3 habitat.
pool	A discrete portion of a watercourse channel, produced by channel scour, that has increased depth and reduced velocity relative to adjacent riffle and run habitats.
pool, impoundment	An area within a watercourse that forms behind damming structures such as debris, beaver dams, and landslides. These pools tend to accumulate more sediment and organic debris than scour pools.
pool, scour	Pool created by the scouring action of current flowing against an obstruction, a result of flow deflection, constriction, or increased local turbulence induced by non-alluvial obstruction.
poorly drained soils	Soil from which water is removed so slowly in relation to supply that the soil remains wet for most of the time that it is not frozen.
population (in biology)	A collective word for individuals of the same species that potentially interbreed.

Term	Definition
porosity	The volume percentage of the total bulk not occupied by solid particles.
postglacial	Relating to the period following the last glaciation. In North America, this is approximately the last 10,000 to 12,000 years.
potentiometric surface	A contour map of the hydraulic head distribution in a confined aquifer.
PFRA	The abbreviation for Prairie Farm Rehabilitation Administration.
pre-contact period	The period before contact between Europeans and EuroCanadians and aboriginal peoples. Archaeologically, the term implies a period before the advent of a written (documentary) record and replaces the term prehistoric.
pressure testing	A quality control check of the structural soundness of a pipeline or facility. In this test, the line is filled with water, a freeze depressant mixture, or gas (e.g. methane) and pressurized. This pressure is maintained for a specific period of time. Any ruptures or leaks revealed by the test are repaired. The test is repeated until no problems are noted. Pressure testing with a liquid is known as hydrostatic testing.
pressure control valve	A valve that can be remotely controlled (e.g., from the OCC). It requires a source of electric power.
primary disturbance	Effects to contents or contexts of historical resource sites resulting from planned disturbance factors directly associated with a specific development program.
productive capacity	The maximum natural capacity of habitats to produce healthy fish safe for human consumption or to support or produce aquatic organisms upon which fish depend.
programmable logic controller	A computer dedicated to monitoring and controlling a single piece of machinery.
Project, the	The Keystone XL Project.
projectile points	A term used collectively for spear points, dart points, and arrowheads. Projectile points are diagnostic, based on temporally and regionally variable styles, providing an indication of period and archaeological cultural affiliations.
pump station	A group of one or more pumps that raises the pressure of the oil to a maximum of the MOP of the downstream pipeline.

Term	Definition
Quaternary	A geological period ranging from 1.8 million years ago to the present. This is a time of major glaciations and cool climates.
rapidly drained soil	Soil from which water is removed rapidly in relation to supply.
rapids	Moderately steep (4-8% gradient), rapid and turbulent water movement, surface with intermittent whitewater. Coarse substrate with exposed boulders at low flows.
range health	The interaction of ecological processes in a rangeland ecosystem, generating specific functions valuable for sustainable management. These functions include productivity, site stability, capture and beneficial release of water, nutrient cycling, and plant species diversity. Healthy rangeland occurs when all functions are being performed, allowing optimal livestock stocking rates.
raptor	A carnivorous (meat-eating) bird, includes eagles, hawks, falcons, and owls.
recharge areas	The areas involved in the absorption and addition of water to the zone of saturation.
reclamation	The process of re-establishing a disturbed site to a former or other productive use, not necessarily to the same condition that existed before disturbance.
Reynolds Number, Re	<p>In fluid mechanics the Reynolds number (dimensionless) is the ratio of the inertial forces to the viscous forces in a flowing fluid. It is calculated as:</p> <p>, where v_s = mean fluid velocity (m/s) ; $Re = \frac{v_s \cdot D}{\nu}$</p> <p>D = pipe diameter (m); ν = kinematic viscosity (m^2/s). For $Re < 2500$, flow is generally laminar (smooth); above that it is generally turbulent (rough.)</p>
regional study area (RSA)	The Regional Study Area includes the area over which the potential cumulative environmental effects of the Project could be measurable.
Regosolic soils	An order of soils having no horizon development of the A and B horizons sufficient to meet the requirements of another order.
relative humidity	The ratio of the amount of water vapor actually in the air compared with the maximum amount of water vapor required for saturation at a particular temperature, usually expressed as percent

Term	Definition
residual effects	Effects that are present after mitigation is applied.
residual material	Unconsolidated and partly weathered mineral materials formed by the disintegration of consolidated rock in place.
Responsible Authority	In relation to a project, a federal authority that is required pursuant to subsection 11(1) of the Canadian Environmental Assessment Act to ensure that an environmental assessment of the Project is conducted.
restricted activity period (RAP)	The period during which fish migration, fish spawning, egg incubation, fry emergence, and early fry development are likely to occur in a waterbody.
revegetation	Re-establishment of vegetation in disturbed areas.
riffle	Shallow reaches with 1-4% gradient in alluvial channels. Characterized by small hydraulic jumps over rough bed material, causing small ripples, waves, and eddies, but which do not break the surface tension.
right-of-way, ROW	Land rights held by a linear utility, such as a pipeline company, which gives the company a perpetual right to install and operate its lines within a legally-designated area. See also easement.
right-of-way, pipeline	The easement in which the pipeline will be installed and operated.
right-of-way, construction	The pipeline easement and temporary workspace required to construct the pipeline.
right-of-way, new pipeline	Pipeline right-of-way not contiguous with existing rights-of-way.
riparian area	The land next to the normal high-water mark in a stream, river, or lake. Riparian areas typically exemplify a rich and diverse vegetation mosaic, reflecting the influence of available surface water.
riprap	Large boulders or angular rocks used as protective layer.
river	A large, natural, or human-modified freshwater waterbody that flows in a defined course or channel. It has considerable flow volume compared to its smaller tributaries.
rolling	An assemblage of parallel or sub-parallel linear forms with subdued relief.
rookery	Nesting area for wading birds.

Term	Definition
rough broken land	An area having steep slopes and many intermittent drainage channels, but usually covered with vegetation.
run habitat	Swiftly flowing stream reach with a gradient greater than 4%, little to no surface agitation or turbulence, no major flow obstructions, approximately uniform flow from bank to bank. It is generally deeper than riffle and rapid habitats, and is subdivided as Class 1, Class 2, and Class 3 habitat.
runoff	The water from rain and snow that flows over land to streams, ponds, or other surface waterbodies. Also, the water from precipitation that does not infiltrate into the ground or evaporate.
sag bend	The convex-bend radius portion of the S-shaped configuration of pipe at the bottom of each bank of a watercourse designed to increase the depth of cover of the pipeline beneath the watercourse.
salinity	A measure of the quantity of dissolved solids in water.
saline soil	A non-alkali soil that contains enough soluble salts to interfere with the growth of most crop plants. The conductivity of the saturation extract is greater than 4 mmhos/cm, the exchangeable sodium percentage is less than 15, and the pH is usually less than 8.5.
sand	A soil particle between 0.05 and 2.0 mm in diameter. Any one of five soil separates: very coarse sand, coarse sand, medium sand, fine sand, or very fine sand. A soil textural class.
saturate	The act of filling all voids between soil particles with a liquid. The act of forming the most concentrated solution possible under a given set of physical conditions in the presence of an excess of the solute. The act of filling to capacity, as the adsorption complex with a cation species.
saturation percentage	Moisture content of a soil when all soil porosity is water filled.
scour	Localized erosion of substrate from a watercourse bed by flowing water, when water velocity is high.
secondary disturbance	Effects to contents or contexts of historical resource sites resulting from unplanned or indirect disturbance factors associated with a specific development program.
sediment	Fragmented material from weathered rocks and organic material that is suspended in, transported by, and eventually deposited by, air, water, or ice.
sediment quality	The physical, chemical, or biological properties of sediment relative to its use or value as an environment for aquatic life.

Term	Definition
sedimentary rock	Rock formed by the lithification of sediments.
seepage	Escape of water downward through the soil. The emergence of water from the soil along an extensive line of surface in contrast to a spring where the water emerges from a local spot.
seep	A small groundwater discharge that slowly percolates to the surface of the ground or into a stream.
sensitive	Any species that is not at risk of extinction or extirpation but might require special attention or protection to prevent it from becoming at risk. Also used to describe species at risk in general.
shale	A fine-grained laminated or fissile sedimentary rock made up of silt or clay-sized particles. It usually comprises about one-third quartz, one-third clay materials, and one-third minerals, such as carbonates, iron oxides, feldspars, and organic matter.
shoofly	A temporary road used to bypass specific points along the right-of-way, such as steep gradients and environmentally sensitive areas.
side channel	An elongated extension off a main channel that can become separated from the main channel under flow conditions and dry up.
silt	A soil separate consisting of particles between diameters of 0.002 and 0.05 mm; a soil textural class.
system control and data acquisition	A group of sensors, computers, and telecommunications systems that enable a distributed network, like a pipeline, to be monitored and controlled from a central point, such as an OCC.
site content	All artifacts, fossils, features, structures, and cultural or natural residues that comprise a historical resource site.
site context	The unmodified natural or cultural setting in which a historical resource site occurs immediately following deposition of site contents and the unmodified spatial and temporal relationships among the contents of the site under such conditions.
slash	Woody debris, such as limbs and branches, removed from large timber.
slickenside	Smoothed surfaces along planes of weakness resulting from the movement of one mass of soil against another in soils dominated by swelling clays.
slope	The percentage of vertical rise to the horizontal run.

Term	Definition
slump	Mass sliding of semi-consolidated sediment downslope under the influence of gravity.
Sodic soil	A soil containing sufficient sodium to interfere with the growth of most crop plants; a soil having an exchangeable-sodium percentage of 15 or more.
sodium absorption ratio	A useful index of the sodicity or relative sodium status of soil solutions, aqueous extracts or water in equilibrium with soil, which is calculated: $SAR = \frac{[Na^+]}{([Ca^{2+}] + [Mg^{2+}])^{0.5}}$
soil	The top few meters of regolith, generally including some organic matter derived from plants.
soil admixing	The mixing of organic soil horizons with subsurface mineral soil horizons.
soil association	A natural grouping of soil associates based on similarities in climatic or physiographic factors and soil parent materials. It may include a number of soil associates, provided they are all present in significant proportions.
soil complex	A mapping unit used in detailed soil surveys where two or more defined soil units are so intimately intermixed geographically that it is impractical (because of the scale used) to separate them.
soil horizon	A layer of soil or soil material approximately parallel to the land surface; it differs from adjacent genetically related layers in properties such as color, structure, texture, consistency, and chemical, biological, or mineralogical composition.
soil order	A category in the Canadian System of Soil Classification. All the soils in an order have one or more characteristics in common.
soil phase	A subdivision of a soil type or order unit of classification having characteristics that affect the use and management of the soil, but that do not vary sufficiently to differentiate it as a separate type.
soil permeability	The ease with which gases and liquids penetrate or pass through a bulk mass of soil or a layer of soil. The property of a porous medium that relates to the ease with which gases and liquids can pass through.
soil profile	A vertical section of the soil through all its horizons and extending into the parent material.
soil salinity	The amount of soluble salts in a soil, expressed in terms of percentage, parts per million, or other convenient ratios.

Term	Definition
soil series	A category in the in the Canadian System of Soil Classification. This is the basic unit of soil classification and consists of soils that are essentially alike in all major profile characteristics except the texture of the surface.
soil solution	The aqueous liquid phase of the soil and its solutes consisting of ions dissociated from the surfaces of the soil particles and of other soluble materials.
soil subgroup	A category in the in the Canadian System of Soil Classification. These soils are subdivisions of the great groups.
soil variant	A soil whose properties are believed to be sufficiently different from other known soils to justify a new series name, but comprising such a limited geographic area that creation of a new series is not justified.
soil zone	Area in which the dominant or zonal soils reflect the zonal influence of climate and vegetation and form a natural land pattern with other soils that exhibit the zonal influence only weakly or not at all.
Solonetzic soil	An order of soils developed mainly under grass-forest vegetative cover in semi-arid to sub-humid climates. The soils have a stained brownish solonetzic B (Bnt or Bn) horizon and a saline C horizon.
song birds	Perching birds (e.g., warblers, sparrows, swallows, chickadees, thrushes and kinglets).
sound	Any pressure variation the human ear can detect. These variations in pressure travel between source and receptor as atmospheric waves.
spatial boundaries	All areas where measurable changes in the surrounding ecosystem might be caused by the Project, regardless of any political boundaries.
spawning	A fish reproduction process, characterized by females and males depositing eggs and sperm into the water simultaneously or in succession to fertilize the eggs.
spawning habitat	Habitat selected by fish for spawning.
special concern	A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.
species	A group of organisms that actually or potentially interbreed and are reproductively isolated from all other such groups or a taxonomic grouping of genetically and morphologically similar individuals. Also the classification below genus.

Term	Definition
species distribution	A location where species in an ecosystem are found. Species distribution varies with season.
species diversity	A description of a biological community that includes the number of species and their relative abundance. Provides a measure of the variation in the number of species in a region, depending on the variety of habitats and resources in habitats and, in part, on the degree of specialization of species to particular habitats and resources.
species richness	The number of different species occupying a given area.
spoil	Subsoil material excavated from a pipeline trench and from areas subject to grading. It is to be kept separate from topsoil.
spread, construction	A designated length of pipeline construction that is intended to be constructed by a single pipeline contractor over a single construction season.
spring breakup	The time of year when the temperature rises sufficiently to thaw ice, causing it to break up in rivers and lakes.
spring freshet	The annual spring increase of flow in streams and rivers in cold climates as a result of melting snow.
SSPC	The acronym for Structural Steel Painting Council.
Staging birds/areas	Key locations, often wetlands, along their migratory routes where birds concentrate in huge numbers to replenish the body fat and energy reserves needed for their migration.
staging site	A location where equipment is stored, maintained, or readied for work.
stakeholders	People or organizations with an interest in, or, who are affected by, or share in an undertaking.
strata	A geological layer of rock or sediment, distinct from the parallel layers deposited above and below.
stockpile	A supply of materials, such as line pipe or borrow materials, to be used later.
stream	Natural water course containing flowing water, at least part of the year, together with dissolved or suspended materials, that normally supports communities of plants and animals.

Term	Definition
stress cracking and corrosion	A type of corrosion where “colonies” of extremely fine cracks develop on a pipe surface and their growth is aggravated by the expansion stress (caused by internal pressure) on the pipe wall.
subdrain	A pervious backfilled trench containing a pipe with perforations or gravel for the purpose of intercepting groundwater or seepage and directing it away from the pipeline trench.
submergent vegetation	Aquatic vegetation that grows with its roots under water and with leaves and stems that do not emerge above the surface of the water.
substrate	Mineral and organic material forming the bottom of a watercourse or waterbody.
substratum	Underlying bedded or layered rocks.
surficial deposit	Unconsolidated sediments overlying bedrock at or near the earth’s surface.
temperature inversion	When temperature increases with height in the atmosphere. Under such conditions, vertical motion is strongly suppressed and the elevated inversion acts as a lid, restricting vertical mixing, reducing dilution, and increasing ground-level concentrations in areas with high emissions.
temporary workspace	Space adjacent to a permanent right-of-way, which is required during the construction period only, and is not required for operation of the pipeline.
temporal boundaries	The period over which the Project-specific and cumulative environmental effects are to be considered. These include periods of construction, operations, decommissioning and abandonment.
term shipper	Defined in Keystone’s proposed Tariff as a Shipper (a person who contracts with Keystone for the transportation of petroleum) that is a party to a Contract.
terrace	A single or assemblage of step-like forms, each of which consists of a scarp face and a horizontal or gently inclined surface above.
thalweg	The deepest continuous line along a watercourse; a line drawn to join the lowest points along the length of a streambed.
threatened	The term used to describe any indigenous classification (species) of fauna or flora likely to become endangered if the factors affecting its vulnerability are not reversed.

Term	Definition
three-lift	Management technique pertaining to soil stripping and replacement in which the topsoil, upper subsoil, and lower subsoil are removed, stored and replaced separately to prevent admixing and degradation of qualities specific to each layer.
till, glacial	Unsorted sedimentary material deposited directly by, and underneath, a glacier, consisting of a mixture of clay, silt, sand, gravel, and boulders. Also known as till.
toe slope drainage	The drainage that occurs at the base of a slope, and is not confined by a basin or hollow. Water is received from upslope, sheet, or channeled flow.
toluene	A clear, colorless substance with a distinctive smell that occurs naturally in crude oil. It is produced during the process of making gasoline and other fuels from crude oil, in making coke from coal, and as a byproduct in the manufacture of styrene.
topography	The physical feature of a district or region, such as those represented on a map, taken collectively; especially, the relief and contours of the land. The configuration of a surface, including its relief and natural and artificial features.
topsoil	(i) the layer of soil moved in cultivation; (ii) the A horizon; (iii) the Ah horizon; (iv) presumably, fertile soil material used to topdress road banks, gardens, and lawns.
total dissolved solids (TDS)	A measure of the total concentration of chemicals that are dissolved in water or that are in particulate form smaller than a standard-size filter, i.e., 0.45 microns, in water. These chemicals are usually salts, such as calcium, sodium, chloride, and sulfate ions.
total hydrocarbons	A term used to describe compounds containing hydrogen and carbon atoms, such as methane, propane, and butane. At high concentrations, THC's can be toxic to humans, animals, and vegetation.
TransCanada Operating Procedures	A series of documents kept in an electronic library that constitutes TransCanada's operating and maintenance manual.
total organic carbon	A measure of the dissolved and particulate organic carbon, most of which is in the form of carbon dioxide (CO ₂), carbonate (CO ₃), and bicarbonate (HCO ₃) compounds.
total suspended solids (TSS)	A measure of the total concentration (usually in mg/L) of suspended solids in water.
traditional knowledge	Cultural knowledge that is based on direct observation or information passed on orally from other community members, developed from centuries of experience of living off the land.

Term	Definition
TransCanada	The abbreviation for TransCanada Pipelines, Limited.
transmissivity	A measure of the water-transmitting capacity of an aquifer as a function of the product of the aquifer thickness and hydraulic conductivity.
transect	A line or strip across the earth's surface, or through any object, along which a survey or observations are made.
travel lane	The portion of the right-of-way used for travel by vehicles and equipment.
trench	A long, narrow excavation dug in the earth in which a pipeline is buried. Also known as a ditch.
trenching	The act of constructing a trench
trenchless crossing	A water crossing technique used in pipeline construction in which the pipe is buried under the riverbed without disturbing the bed of the river. The most common technique is Horizontal Directional Drilling, but punch-and-bore techniques may also be used.
turbidity	The relative clarity of a waterbody. A measure of the extent to which light penetration in water is reduced by the presence of suspended particles, such as silt, clay, organic matter, and plankton.
turbulent flow	When the flow of petroleum in a pipeline becomes sufficiently large it changes from laminar (or smooth) flow; eddies of turbulence appear. Typically the transition from laminar to turbulent flow occurs at Reynolds numbers > 2500.
unconfined	As relating to an aquifer, this is an aquifer that is not bounded above by an adjacent aquitard. A water level in a well installed in an unconfined aquifer directly represents the surrounding water table elevation.
understory	A foliage layer occurring beneath, and shaded by, the main canopy of a forest.
undifferentiated soil map unit	Soil mapping unit in which two or more soils units occur, but not in a regular geographic association.
ungulate	Any hoofed, grazing mammal, which is usually also adapted for running.
uncommitted capacity	Defined in Keystone's proposed Tariff as the volume determined by Keystone on its pipeline system that is available after Term Shippers' nominations in respect of their Committed Capacity have been provided for.

Term	Definition
uninterruptible power supply	Batteries and other devices (e.g., generators) that provide power to operate machinery and computer in the event of failure of the regular power supply.
upland	Terrain with sufficient topographical relief that the communities and processes of the site are not influenced by a surface or near-surface water table, and in which riparian vegetation or aquatic processes do not persist.
upstream	The direction from which a watercourse flows.
valley bottom width	The distance from the base of the slope on one side of a valley to the base of the slope on the other side. Also known as floodplain width.
valued ecosystem component (VEC)	Any part of the environment that is considered important by the proponent, public, scientists, and government involved in the assessment process; based on cultural values or scientific concern.
vegetated channel	A watercourse with ephemeral flow, no discernible banks or defined bed, and a drainage area less than 15 km ² . It is primarily a shallow flow through shrubs and trees during spring runoff or rainfall and is dry most of the year.
very poorly drained soil	Soil from which water is removed so slowly that the water table remains at or near the surface for most of the time when the soil is not frozen.
vulnerable	Any indigenous classification (species) of flora or fauna that is particularly at risk (e.g., because of low or declining numbers, occurrence at the fringe of its range or in restricted areas). Not a threatened species.
viscosity, dynamic	A measure of the resistance of a fluid to deform under shear stress (shear force per unit area). It is commonly perceived as the fluid's "thickness" or resistance to pouring. In a liquid, viscosity is independent of pressure (except at very high pressures), but falls as temperature increases. Petroleum viscosity is normally expressed in centistokes (cSt), where 1 cSt = 1 mm ² /s. This is the kinematic viscosity.
viscosity, kinematic	The dynamic viscosity, in centipoise (cP), where 1 cP = 0.001 Pa·s, is calculated by multiplying the kinematic viscosity by the density of the liquid, in kg/m ³ .
waste management plan	The system developed to track and control emissions and waste, and evaluate pollution-prevention steps.
water column	A portion of water in a waterbody extending vertically from a given point on the surface to any depth. It is generally used to locate, describe, or characterize the chemical and physical constituents at a given depth or range.

Term	Definition
water (color)	The measure of the amount of humic material, i.e., dark-colored organic material, contained in water.
water table	Elevation at which the pressure in the water is zero with respect to the atmospheric pressure.
waterbody	A body of water up to the high-water mark. Including canals, reservoirs, oceans and wetlands, but not including sewage or waste treatment lagoons.
watercourse	A natural or artificial channel with perennial or intermittent flow and definable bed and banks.
watercourse crossing	A location where a pipeline or access road crosses a stream, river or lake.
watercourse gradient	The slope of a stream defined as the vertical drop per unit of horizontal distance traveled.
waterfowl	Aquatic birds, especially swimming game birds, such as ducks and geese.
waterfowl staging area	Waterbodies used by waterfowl to gather, rest, and feed before or during migration.
watershed	An area of land that drains to a single outlet and is separated from other watersheds by a divide.
water velocity	The speed of water flow, usually presented in meters per second (m/s).
well-drained soil	Soil from which water is removed readily, but not rapidly.
wetland	Wetland is those areas that are inundated or saturated by surface or ground 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. (USACE Wetland Delineation Manual, 1987)
windrow	A linear stockpile of material cleared, graded, or excavated from the right-of-way.
work side	The side of the pipeline right-of-way where construction activities, such as stringing, welding, coating, and lowering-in, take place.
xerophytes	Plants that grow in or on extremely dry soils or soil materials.

Term**Definition**

xylene

A colorless gas with a sweet odor. It occurs naturally in petroleum and coal tar and is formed naturally during forest fires. There are three isomer forms of xylene in which the methyl group positions vary on the benzene ring, including metaxylene, orthoxylene, and paraxylene (m-, o-, and p-xylene).