KEEYASK GENERATION PROJECT

PHYSICAL ENVIRONMENT SUPPORTING VOLUME

GLOSSARY

JUNE 2012

KEEYASK
Hydropower Limited Partnership

13.0 GLOSSARY TERMS

Above sea level (ASL) Elevation: Elevations are referenced to Geodetic Survey of Canada, Canadian Geodetic Vertical Datum 1928, GSofC, CGVD28, 1929 Adjustment.

Adaptive management: Involves the implementation of new or modified mitigation measures over the life of a project to address its unanticipated environmental effects (Canadian Environmental Assessment Act).

Advect: A horizontal movement of a mass of fluid, such as ocean or air currents; can also refer to the horizontal transport of something such as sediment.

Adverse: Unfavourable or antagonistic in purpose or effect.

Alluvial: Pertaining to of composed of alluvium; clay, silt, sand, gravel, or similar detrital material deposited by running water.

Anchor ice: Ice that forms below the surface of a body of water that attaches either to a submerged object or to the bed of the waterbody bottom.

Aquatic environment: Areas that are permanently under water or that are under water for a sufficient period to support organisms that remain for their entire lives, or a significant portion of their lives, totally immersed in water.

Aquatic peatland: Peatland that borders a water body or waterway. The portion adjacent to the water is usually floating.

Aquatic: Living or found in water.

Aquifer: An underground bed or layer of earth, gravel or porous stone that yields water.

Attribute: A readily definable and inherent characteristic of an object or an entity.

Backbay: Area in a river or stream isolated from the main flow where water velocities are typically low or nonexistent.

Backwater effect: In hydrologic terms, the effect that a dam or other obstruction has in raising the surface of the water upstream from it.

Bank recession: progressive landward movement of a distinct escarpment or bluff along a river or lake shoreline due to erosion and mass wasting.

Bankfull: Water surface elevation at which a stream first overflows its natural banks.

Base loaded (mode of operation): Mode of operation in which the water level in the reservoir is maintained at or near the full supply level and outflow from the reservoir (i.e., from the powerhouse and spillway) will be approximately equal to the reservoir inflow.

Basin: A distinct section of a lake, separated from the remainder of the lake by a constriction.

Batch plant: A plant used to manufacture concrete by mixing cement, sand, aggregate and water. The aggregate may be either crushed rock or gravel.

Bathymetry: The area and water depth of a lake or river.

Bed load: Measure of moving particles over the bed by rolling, sliding or saltating (*i.e.*, bounce, jump or hop).

Bed material: Soil material that makes up the bed of the river or lake.

Bedrock: A general term for any solid rock, not exhibiting soil-like properties, that underlies soil or other surficial materials.

Best gate discharge: The flow through a single hydraulic turbine at the peak turbine efficiency**.**

Biological (biochemical) oxygen demand (BOD): A test used to measure biological (biochemical) activity in water by determining how much dissolved oxygen is consumed by microorganisms (*e.g.*, bacteria) as they break down organic matter (*e.g.*, plants).

Biota: The animal (fauna) and plant (flora) life of a region.

Blanket peatland: Bog, fen or mixtures of these types with peat of intermediate thickness (*i.e.*, up to approximately 2 m thick) and a featureless surface that cover gentle slopes.

Bog: A type of peatland that receives nutrient inputs from precipitation and dryfall (particles deposited from the atmosphere) only. Sphagnum mosses are the dominant peat forming plants. Commonly acidic and nutrient poor.

Border ice: Ice that forms along the bank or shoreline where velocities are low (also referred to as shore ice).

Boreal: Of or relating to the cold, northern, circumpolar area just south of the tundra, dominated by coniferous trees such as spruce, fir, or pine. Also called taiga.

Borrow area: An area where earth material (clay, gravel or sand) is excavated for use at another location (also referred to as 'borrow sites' or 'borrow pits').

Boulder: The largest of rock particles, having a diameter greater than 256 mm.

Buffer: An ionic compound that resists changes in its pH.

Camp: A temporary residence for employees working on a construction project at a remote location, consisting of bunkhouse dormitories, a kitchen and other facilities.

Canadian Shield: A broad region of Precambrian rock that encircles Hudson Bay. In total it covers 8 million km^2 and is made up of some of the planet's oldest rock, largely granite and gneiss.

Cement: A dry powder made of burned lime and clay that is mixed with water, sand and aggregate to make concrete.

Chronosequence: The arrangement of information from different aged locations by increasing time since disturbance to represent change through time. Also referred to as space-for-time substitution.

Churchill River Diversion (CRD): The diversion of the Churchill River under the CRD Licence. Involved constructing a control structure at the outlet of Southern Indian Lake to divert a large portion of the Churchill River down the Rat/Burntwood Rivers into the lower Nelson River at Split Lake to enhance power production at the Kettle, Long Spruce and Limestone operating stations.

Climate scenarios: A plausible and often simplified representation of the future climate, based on an internally consistent set of climatological relationships that has been constructed for explicit use in investigating the potential consequences of anthropogenic (i.e., caused by humans) climate change, often serving as input to impact models. Climate projections often serve as the raw material for constructing climate scenarios, but climate scenarios usually require additional information such as about the observed current climate. A climate change scenario is the difference between a climate scenario and the current climate.

Cobble: Rocks larger than gravel but smaller than boulders, having a particle diameter between 64 and 256 mm.

Cofferdam: A temporary dam, usually made of rockfill and earth, constructed around a work site in the river, so the work site can be dewatered or the water level controlled during construction.

Cohesive: Sediment materials of very small sizes for which intermolecular forces between particles are significant and affect the material properties.

Commercial fishing: A fishery where the catch is sold.

Community: An ecological unit composed of a group of organisms or a population of different species occupying a particular area, usually interacting with each other and their environment.

Concentration: The density or amount of a material suspended or dissolved in a fluid (aqueous) or amount of material in a solid (*e.g.*, sediments, tissue).

Concrete aggregate: Crushed rock or gravel of varying size used in the production of concrete. Aggregate is mixed with sand, cement, and water and other additives to produce concrete.

Concrete: A mixture of sand, gravel, water and cement which hardens to a stone like condition when dry, capable of bearing significant load.

Concrete aggregate: Crushed rock or gravel of varying size used in the production of concrete. Aggregate is mixed with sand, cement, and water and other additives to produce concrete.

Concrete: A mixture of sand, gravel, water and cement which hardens to a stone like condition when dry, capable of bearing significant load.

Construction: Includes activities anticipated to occur during Project development.

Consumer: An organism that obtains food by feeding on other organisms or organic matter.

Control structure: A type of structure designed to control the outflow from a waterbody (*e.g.*, Missi Falls control structure, Notigi control structure).

Converter station: A facility, which converts electricity, either from direct current (DC) to alternating current (AC) or from AC to DC.

Cree Nation Partners (CNP): A partnership formed in 2001 amongst Tataskweyak Cree Nation and War Lake First Nation.

Crest: The top surface of a dam or roadway, or the high point of the spillway overflow section, or the highpoint of a landform.

Critical shear stress: Minimum amount of shear stress needed to initiate particle motion.

Culvert: A pipe or small bridge for drainage under a road railroad or other embankment.

Cumulative effect (impact): The effect on the environment, which results when the effects of a project combine with those of the past, existing, and future projects and activities (Canadian Environmental Assessment Act). *OR* the incremental effects of an action on the environment when the effects are combined with those from other past, existing and future actions (Cumulative Effects Assessment).

Dam: A barrier built to hold back water.

Debris: Any material, including floating or submerged items (*e.g.*, driftwood, plants), suspended sediment or bed load, moved by flowing water.

Decommissioning: Planned shutdown, dismantling and removal of a building, equipment, plant and/or other facilities from operation or usage and may include site cleanup and restoration.

Decomposition: The process by which organisms, including bacteria and fungi, break down organic matter.

Delta Method: the Delta Method is a statistical technique use to generate future climate series based on Climate Model output without spatial downscaling. Absolute or relative difference between the control and future Climate Model simulations are superimposed on the observed baseline data set. Generally, mean monthly differences are applied to each day in the corresponding months of the baseline period.

Deposition: Settling of sediment particles on the river/lake bottom.

Deterministic: No randomness. Repeated trials or model runs produce the same outcome from a given starting condition or initial state.

Dewater: Removing the water from or draining an area behind a cofferdam so that construction activities can be undertaken.

Dissolved oxygen: The concentration of oxygen dissolved in water, expressed in mg/l or as percent saturation, where saturation is the maximum amount of oxygen that can theoretically be dissolved in water at a given altitude and temperature.

Diurnal: Occurring during the day, or having a daily cycle.

Downscaling: a method that derives local- to regional scale (10-100 km) information from larger-scale models or data analyses.

Driver: Any natural or human-induced factor that directly or indirectly causes a change in the environment.

Driving factor: Any natural or human-induced factor that directly or indirectly causes a change in the environment.

Duration: the period of time in which an effect may exist or remain detectable (*i.e.*, the recovery time for a resource, species or human use).

Dyke: An earth embankment constructed to contain the water in the reservoir and limit the extent of flooding.

Ecosite type: A classification of site conditions that have important influences on ecosystem patterns and processes. Site attributes that were directly or indirectly used for habitat classification included moisture regime, drainage regime, nutrient regime, surface organic layer thickness, organic deposit type, mineral soil conditions and permafrost conditions.

Ecosystem: a dynamic complex of plant, animal and micro-organism communities and their non-living components of the environment interacting as a functional unit (Canadian Environmental Assessment Act).

Ecozone: The most general level in the National Ecological Framework for Canada, an ecological land classification. There are 15 terrestrial and five marine ecozones in Canada.

Effect: Any change that the Project may cause in the environment. More specifically, a direct or indirect consequence of a particular Project impact [ref]. The impact-effect terminology is a statement of a cause-effect relationship (see **Cause-effect linkage**). A terrestrial habitat example would be 10 ha of vegetation clearing (*i.e.*, the impact) leads to habitat loss, permafrost melting, soil conversion, edge effects*, etc.* (*i.e.*, the direct and indirect effects).

- Note that while the *Canadian Environmental Assessment Act* requires the proponent to assess project effects, Manitoba legislation uses the terms impact and effect interchangeably. See also Impact. *OR* Any response by an environmental or social component to an action's impact. Under the Canadian Environmental Assessment Act, "environmental effect" means, in respect of a project, "(a) any change that the project may cause in the environment, including any effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons, or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance and (b) any change to the project that may be caused by the environment, whether any such change occurs within or outside of Canada" (from Cumulative effects assessment).

Energy: The capacity of an electric generating station to do work, usually measured in megawatts.

Ensemble: A group of parallel model simulations used for climate projections. Variation of the results across the ensemble members gives an estimate of uncertainty. Ensembles made with the same model but different initial conditions only characterise the uncertainty associated with

internal climate variability, whereas multi-model ensembles including simulations by several models also include impact on model differences.

Entrainment: 1) A process by which sediment from a surface is incorporated into a fluid flow (such as water) as part of the operation of erosion; and 2) Fish (larval or adult) that are drawn into a current and cannot escape.

Environment: The components of the Earth, including a) land, water and air, including all layers of the atmosphere, b) all organic and inorganic matter and living organsisms, and c) the interacting natural systems that include components referred to in a) and b) (Canadian Environmental Assessment Agency). Or (a) air, land, and water, or (b) plant and animal life, including humans (MEA).

Environmental assessment (EA): Process for identifying project and environment interactions, predicting environmental effects, identifying mitigation measures, evaluating significance, reporting and following-up to verify accuracy and effectiveness leading to the production of an Environmental Assessment report. EA is used as a planning tool to help guide decision-making, as well as project design and implementation (Canadian Environmental Assessment Agency).

Environmental component: Fundamental element of the physical, biological or socio-economic environment, including the air, water, soil, terrain, vegetation, wildlife, fish, birds and land use "that may be affected by a proposed project, and may be individually assessed in the environmental assessment(Canadian Environmental Assessment Agency)".

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 any change to the project that may be caused by the environment; whether any such change or effect occurs within or outside Canada (*Canadian Environmental Assessment Act*).

Environmental Impact Assessment (EIA): see *Environmental Assessment*. (Canadian Environmental Assessment Agency).

Environmental Impact Statement (EIS): A document that presents the findings of an environmental assessment (Canadian Environmental Assessment Agency).

Environmental monitoring: Periodic or continuous surveillance or testing, according to a pre-determined schedule, of one or more environmental components. Monitoring is usually conducted to determine the level of compliance with stated requirements, or to observe the status and trends of a particular environmental component over time (Canadian Environmental Assessment Agency).

Environmental Protection Plan (EnvPP): A practical tool that describes the actions required to minimize environmental effects before, during and after project implementation. The plan may include details about the implementation of the mitigation measures identified in the environmental assessment,

such as who is responsible for implementation, where the measures are intended to be implemented, and within what timeframe (Canadian Environmental Assessment Agency). *OR* A description of what will be dine to minimize the effects before, during and after project construction and operation. This includes protection of the environment and mitigation of effects from project activities.

Epilimnion: The upper, wind-mixed layer of a thermally stratified lake. This water is turbulently mixed throughout at least some portion of the day and because of its exposure, can freely exchange dissolved gases (such as dissolved oxygen) with the atmosphere.

Erodibility coefficients: A numerical parameter that represents the susceptibility of mineral soils to wave erosion. It is usually determined empirically as the gradient of the linear relationship between effective wave energy and volumetric erosion rate at sites where historical erosion has been monitored.

Erosion: A natural process, which is either naturally occurring or anthropogenic in origin, by which the Earth's surface is worn away by the actions of water and wind.

Esker: A narrow ridge of sand or gravel, usually deposited by a stream flowing in or under glacial ice.

Eutric: Referring to a soil with a relatively high degree of base saturation.

Evapotranspiration: Water transfer to the atmosphere through evaporation and plants emitting water vapour from their leaves.

Existing environment: The present condition of a particular area; generally assessed prior to the construction of a proposed project.

Exploitation: Harvesting or using a natural resource.

Fen: Peatland in which the plants receive nutrients from mineral enriched ground and/or surface water. Water chemistry is neutral to alkaline. Sedges, brown mosses and/or Sphagnum mosses are usually the dominant peat forming vegetation.

Fetch: Length of water surface exposed to wind during generation of waves.

Fibric peat (Of): Peat that has undergone little decomposition. This organic soil layer **has** the highest amount of fibre, the lowest bulk density, and the highest saturated water-holding capacity of the Of, Om and Oh horizons.

Fill: Natural soils or loose rock that may or may not have been processed and are placed to construct an earth fill structure or to construct a grade, dyke or dam.

Flooding: The rising of a body of water so that it overflows its natural or artificial boundaries and covers adjoining land that is not usually underwater.

Flow: Motion characteristic of fluids (liquids or gases); any uninterrupted stream or discharge.

Footprint: The surface area occupied by a structure or activity. *OR* The land or water area covered by a project. This includes direct physical coverage (*i.e.*, the area on which the project physically stands) and direct effects.

Forebay: Impoundment area immediately upstream from a dam or hydroelectric plant intake structure that forms the downstream portion of the reservoir.

Fossil fuel: A hydrocarbon deposit, such as petroleum, coal, or natural gas, derived from living matter of a previous geologic time and used for fuel.

Frazil ice: Fine, small, needle-like structures of thin, flat circular plates of ice formed in super-cooled, turbulent water.

Freeboard dyke: An embankment dyke that does not normally impound water. Its function is to retain water in a reservoir when water levels are higher than normal.

Freshet: The flood of a river from heavy rain or melted snow.

Full gate discharge: The maximum possible flow through a single hydraulic turbine at a turbine efficiency that is normally less than at best gate discharge.

Full supply level (FSL): The normal maximum controlled level of the forebay (reservoir).

Generating station (GS): A complex of structures used in the production of electricity, including a powerhouse, spillway, dam(s), transition structures and dykes.

Generator: Machine that coverts mechanical energy into electrical energy.

Geological overburden: Material overlying a useful mineral deposit or desired bedrock anchor.

Gigawatt (GW): One billion (1,000,000,000) watts, equivalent to one thousand megawatts.

Glaciofluvial: Pertaining to streams fed by melting glaciers, or to the deposits and landforms produced by such streams.

Glaciolacustrine: Pertaining to lakes fed by melting glaciers, or to the deposits forming therein.

Gradient: The rate at which a water level increases or decreases over a specific distance.

Granular fill: Fill material including sand and gravel.

Granular: Composed of granules or grains of sand or gravel.

Gravel: An accumulation of loose or unconsolidated, rounded rock fragments larger than sand, and between 10 and 100 mm in diameter; rock larger than sand but smaller than cobble having a particle diameter between 2 and 64 mm.

Greenhouse gas (GHG): Gases, *e.g.*, methane, carbon dioxide, chlorofluorocarbons emitted from a variety of sources and processes, said to contribute to global warming by trapping heat between the earth and the atmosphere. Or (a) carbon dioxide, (b) methane,(c) nitrous oxide, (d) hydrofluorocarbons, (e) perfluorocarbons, (f) sulphur hexafluoride, (g) any other gas prescribed by regulation (MEA).

Groin: A rock fill structure extending out into a river or lake from the bank or shore. Used to protect the bank from erosion.

Groundwater: The portion of sub-surface water that is below the water table, in the zone of saturation.

Habitat: The place where a plant or animal lives; often related to a function such as breeding, spawning, feeding, *etc.*

Hanging ice dam: A deposit of ice, typically at the downstream end of rapids that builds up through the winter by accumulating frazil ice, which then partially blocks the flow of water and causes water levels upstream to rise.

Head: The difference in energy levels between two water bodies usually measured and reported as the difference in elevation between the forebay and tailrace.

Horizontal peatland: Large, flat, featureless peatland; peat depth is generally intermediate to deep. May have a buried water layer.

Humic peat (Oh): Peat that is strongly decomposed. This organic soil layer has the lowest amount of fibre, the highest bulk density, and the lowest saturated water-holding capacity of the Of, Om and Oh horizons.

Hydraulic Zone of Influence (HZI): Reach of river over which water levels and water level fluctuations caused by the operation of a particular project are measurable within the accuracy required for operation and license compliance.

Hydraulic: 1) of or relating to liquid in motion; and, 2) of or relating to the pressure created by forcing a liquid through a relatively small orifice, pipe, or other small channel.

Hydroelectric generating station: A generating station that converts the potential energy of elevated water or the kinetic energy of flowing water into electricity.

Hydroelectric: Electricity produced by converting the energy of falling water into electrical energy (*i.e.* at a hydro generating station).

Hydrology: The study of the movement, distribution and quantity of water around the earth, including all aspects of the water cycle, and used to estimate the magnitude and timing of river flows.

Hypolimnion: The bottom, and most dense layer of a stratified lake. It is typically the coldest layer in the summer and warmest in the winter. It is isolated from wind mixing.

Ice boom: A floating structure, anchored at opposite shorelines and/or the river bottom, designed to help form and hold an ice cover in place.

Ice pans: Free-floating sheets of ice.

Ice regime: A description of ice on a water body (*i.e.*, lake or river) with respect to formation, movement, scouring, melting, daily fluctuations, seasonal variations, *etc.*

Impact: Essentially, a statement of what the Project is in terms of the ecosystem component of interest while a Project effect is a direct or indirect consequence of that impact (*i.e.*, a statement of the cause-effect relationship). A terrestrial habitat example would be 10 ha of vegetation clearing (*i.e.*, the impact) leads to habitat loss, permafrost melting, soil conversion, edge effects, *etc.* (*i.e.*, the direct and indirect effects).

• Note that while *Canadian Environmental Assessment Act* requires the proponent to assess project effects, Manitoba legislation uses the terms impact and effect interchangeably. See also Effect. *Or* any aspect of an action that may cause an effect, for example land clearing during construction is an impact, while a possible effect is loss and fragmentation of wildlife habitat.

Impermeable: Relating to a material through which substances, such as liquids or gases, cannot pass.

Impervious core: A zone of low permeability material (usually glacial till) in an earth dam, used to reduce leakage through the dam.

Impervious fill: Fill that has low permeability (usually clay) and used in an embankment structure to reduce leakage through the dam. It can also be used as a liner of a pond or lagoon to prevent leakage into the surrounding area.

Impoundment: The containment of a body of water by a dam, dyke, powerhouse, spillway or other artificial barrier.

In situ: In place; undisturbed. An *in situ* environmental measurement is one that is taken in the field, without removal of a sample to the laboratory.

Indirect environmental effect: A secondary environmental effect that occurs as a result of a change that a project may cause in the environment. An indirect effect is at least one step removed from a project activity in terms of cause-effect linkages (Canadian Environmental Assessment Agency). *OR* An effect in which the cause-effect relationship (*e.g.*, between the project's impacts and the ultimate effect on a VEC) has intermediary effects. As an interaction with another action's effects is required to have a cumulative effect (hence, creating intermediary effects), cumulative effects may be considered as indirect.

Inflow: The water flowing into a water body (lake, reservoir, etc.).

Infrastructure: Permanent or temporary structures or features required for the construction of the principal structures, including access roads, construction camps, construction power, batch plant and cofferdams.

Inland peatland: A peatland that is beyond the direct influence of a water body's water regime and ice regime.

Isostatic rebound: The rising of a land surface following the removal of the enormous weight of glacial ice. This phenomenon is of particular importance in Manitoba archaeology. Isostatic rebound is a by-product of the Wisconsinan ice sheet retreat.

Joint Keeyask Development Agreement (JKDA): An agreement between Tataskweyak Cree Nation and War Lake First Nation operating as Cree Nation Partners, and, York Factory First Nation, and Fox Lake Cree Nation, and, The Manitoba Hydro-Electric Board regarding the partnership, ownership, development and operation of the Keeyask Project.

Keeyask Cree Nations (KCN): Tataskweyak Cree Nation (TCN) at Split Lake; York Factory First Nation (YFFN) at York Landing; War Lake First Nation (WLFN) at Ilford; and Fox Lake Cree Nation (FLCN) at Bird and Gillam.

Keeyask Generation Project: The Keeyask Generation Project (the Project) is a proposed 695–MW hydroelectric generating station located near Gull Rapids on Nelson River in the Province of Manitoba.

Key topic: A topic selected to focus the terrestrial effects assessment. Includes valued environmental components and key supporting topics.

km: kilometer

km²: square kilometer

Lacustrine: Of or having to do with lakes, and also used in reference to soils deposited as sediments in a lake.

Lake Winnipeg Regulation (LWR):): The LWR project was constructed by Manitoba Hydro in the 1970s to regulate the outflow from Lake Winnipeg to the Nelson River and store water in the lake as authorized by the LWR Licence. The project includes three excavated channels, the Jenpeg generating station and control structure and a dam at Kiskitto Lake. Lake Winnipeg is regulated for hydropower generation and flood control.

Land cover type: The most general level in the hierarchical habitat classification used for the terrestrial assessment. From coarsest to finest, the levels in the habitat classification system are land cover, coarse habitat type, broad habitat type and fine habitat type.

Landscape: In general, ecological usage this term can refer to the entire mosaic of habitat patches that is relevant to the organism of interest, which makes its spatial extent relative. In the terrestrial habitat and ecosystems assessment, this term refers to a heterogeneous land area composed of a cluster of interacting landscape elements that is repeated in similar form throughout. In this usage, a landscape generally ranges in size from 100 ha to 2,000 ha.

Lentic: Pertaining to very slow moving or standing water, as in lakes or ponds.

Life stage: One of the stages of life beginning with birth and progressing through larval or juvenile phases to sub-adult and adult phases.

Likelihood: A probability or chance that an event or condition will occur. *Or* The degree of certainty of an event occurring. Likelihood can be stated as a probability.

Local knowledge: use MH definition.

Local study area: The spatial area within which potential Project effects on individual organisms, or individual elements in the case of ecosystem attributes, may occur. Effects on the populations to which the individual organisms belong to, or the broader entity in the case of ecosystem attributes, were assessed using a larger regional study area. *Or* The spatial area in which local effects are assessed (*i.e.*, within close proximity to the action where direct effects are anticipated.

Lotic: Pertaining to moving water.

Magnitude: A measure of the size of an effect. *Or* A measure of how adverse or beneficial an effect may be.

Mainstem: The unimpeded, main channel of a river.

Mass-wasting: A general term of the dislodgement and downslope transport of soil and rock material under the direct application of gravitational body stresses. Includes slow displacements, such as creep and rotational slump failures, and rapid movements, such as rock and soil falls, rock slides, and debris flows.

Member: Means a person who is a "member of a band" as defined in subsection 2(1) of the *Indian Act* (Canada).

Mesic peat (Om): Organic soils, which are more highly decomposed and contain less fibrous material than fibrisols/fibric peat (c.v.).

Mesic: Characterized by, relating to, or requiring a moderate amount of moisture.

Mineral erosion: Wearing away of minerals due to wind and water processes.

Mineral soil: Naturally occurring, unconsolidated material that has undergone some form of soil development as evidenced by the presence of one or more horizons and is at least 10 cm thick. If a surface organic layer (*i.e.*, contains more than 30% organic material or 17% organic carbon by weight) is present, it is less than 20 cm thick.

Minimum operating level (MOL): The normal minimum controlled level of the reservoir.

Mitigation: A means of reducing adverse Project effects. Under CEAA, mitigation is "the elimination, reduction or control of the adverse environmental effects of the project, and includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means."

Mode of operation: The method of operating a generating station for meeting electrical demands. The operation method, or mode, will determine the pattern of the outflows from the powerhouse.

Model: A description or analogy used to help visualize something that cannot be directly observed[2]. Model types range from a simple set of linkage statements or a conceptual diagram to a complex mathematical and/or computer model.

Modified peaking plant: [DN: Add definition]

Monitoring: Measurement or collection of data to determine whether change is occurring in something of interest. The primary goal of long term monitoring of lakes and rivers is to understand how aquatic communities and habitats respond to natural processes and to be able to distinguish differences between human-induced disturbance effects to aquatic ecosystems and those caused by natural processes. *Or* A continuing assessment of conditions at and surrounding the action. This determines if effects occur as predicted or if operations remain within acceptable limits, and if mitigation measures are as effective as predicted.

Moraine: A mass of rocks, gravel, sand, clay and other materials deposited directly by a glacier.

Movements: The act of individual or populations of fish moving from one aquatic habitat to another for spawning, foraging, overwintering, escape from predation, *etc.*

MW (Megawatts): A unit of power equal to one million watts. One megawatt is enough to power 50 average homes.

Nearshore downcutting: Erosion of the nearshore substrate by running water, waves or ice.

Nearshore slope: The nearshore substrate surface.

Nearshore: Aquatic habitat occurring at the interface between a lake or stream and adjacent terrestrial habitat; usually includes aquatic habitat up to 3 m in depth; shallow underwater slope near to shore.

Offshore: Aquatic habitat not adjacent to terrestrial habitat; usually includes aquatic habitat greater than 3 m in depth.

Off-system: Water body or waterway outside of the Nelson River hydraulic zone of influence.

Organic order: A classification level in the Canadian System of Soil Classification that includes soils with a surface organic layer that is generally at least 40 cm thick. The thickness criterion varies depending on the type of organic material and the nature of subsurface materials. This Order includes most of what is commonly known as peat, muck, bog or fen. Most organic soils develop in response to prolonged water saturation or paludification.

Organic: The compounds formed by living organisms.

Outflow: The water flowing out of a water body (lake, reservoir, etc.).

Overburden: Soil (including organic material) or loose material overlaying bedrock.

Parameter: Characteristics or factor; aspect; element; a variable given a specific value.

Parameterization: The identification or definition of parameters.

Peaking: Mode of operation that begins with reducing the flow through the generating station during off-peak periods, thereby storing some water in the reservoir, and then increasing the flow and using the stored water to generate extra energy during on-peak periods.

Peat: Material consisting of non-decomposed and/or partially decomposed organic matter, originating predominantly from plants.

Peat plateau bog: Ice-cored bog with a relatively flat surface that is elevated from the surroundings and has distinct banks.

Peat resurfacing: Process whereby all or portions of a peat mat that was submerged by flooding detaches and floats to the water surface.

Peatland disintegration: Processes related to flooded peat resurfacing; breakdown of non-flooded and resurfaced peatlands and peat mats; and, peat formation on peatlands and peat mats that have hydrological connections to a regulated area.

Percentile(s): A value on a scale of zero to one hundred that indicates the percentage of the data set values that are equal to or below it (e.g., 95% of the values in a data set are equal to or less than the 95th percentile value, and 5% of data set values are greater than the 95th percentile value).

Permafrost: Ground where the temperature remains below 0°C for two or more consecutive years.

Permeability: The degree to which fluids or gases can pass through a barrier or material.

pH: Method of expressing acidity or basicity of a solution. pH is the logarithm of the reciprocal of the hydrogen ion concentration, with pH 7.0 indicating neutral conditions.

Photosynthesis: A process which occurs in plants and algae where, in the presence of light, carbon dioxide and water are turned into a useable form of energy (sugar) and oxygen.

Physiography: Physical geography, *i.e.*, the study of physical features of the surface of the Earth.

Plant discharge: Rate of flow of water that passes through the powerhouse.

Plume: A column of one fluid moving through another (*e.g.*, effluent in a stream or lake).

Pollution: Any human alteration of the natural environment producing a condition that is harmful to living organisms. Or: any solid, liquid, gas, smoke, waste, odour, heat, sound, vibration, radiation, or a combination of any of them that is foreign to or in excess of the natural constituents of the environment, and (a) affects the natural, physical, chemical, or biological quality of the environment, or (b) is or is likely to be injurious to the health or safety of persons, or injurious or damaging to property or to plant or animal life, or (c) interferes with or is likely to interfere with the comfort, well being, livelihood or enjoyment of life by a person.

Pore pressures: The pressure of groundwater held within a soil or rock, in the gaps (*i.e.*, pores) between particles.

Post-project: The actual or anticipated environmental conditions that exist once the construction of a project has commenced.

Power: The instantaneous amount of electrical energy generated at a hydroelectric generating station, usually expressed in megawatts.

Powerhouse: Structure that houses turbines, generators, and associated control equipment, including the intake, scroll case and draft tube.

Precambrian bedrock: Bedrock formed in the Precambrian era, which began with the consolidation of the earth's crust and ended approximately 4,000 million years ago.

Precambrian shield2: Bedrock formed in the Precambrian Era, which began with the consolidation of the earth's crust and ended approximately 4 billion years ago.

Primary production: The production of organic compounds from atmospheric or aquatic carbon dioxide, principally through the process of photosynthesis by plants, with chemosynthesis being much less important. All life on earth is directly or indirectly reliant on primary production.

Productivity: Rate of formation of organic matter over a defined period; this can include the production of offspring.

Project activity: Elements of a project component that may result in environmental effects or changes. Example project activities include clearing, grubbing, excavating, stockpiling, reclaiming, *etc.*

Project component: A component of the project that may have an effect on the environment. Example project components include access road, construction camp, wastewater treatment facility, *etc.*

Project feature: Any Project physical impact or activity that changes the environment. Synonymous with "action" in the *Canadian Environmental Assessment Act*.

Project footprint: The maximum potential spatial extent of clearing, flooding and physical disturbances due to construction activities and operation of the Project, including areas unlikely to be used.

Project inflows: A synthetic record of Split Lake outflows created from historical monthly system inflows (1912 to 1997) and current system operating rules. Assumed to represent future inflows for the Project.

Project: Keeyask Generation Project.

Proponent: A person who is undertaking, or proposes to undertake a development or who has been designated by a person or group of persons to undertake a development in Manitoba on behalf of that person or group of persons (*The Environment Act*).

Proxy Area: Ecologically comparable areas previously exposed to impacts similar to those expected for the Project.

Qualitative analysis: Analysis that is either based on non-numerical information (*e.g.*, categorical data, narratives) or is expressed in non-numerical terms such as direction of change, magnitude classes (*e.g.*, low, medium, high) or order of magnitude. Or Analysis that is subjective (*i.e.*, based on best professional judgement).

Quantitative analysis: Analysis that is either based on numerical information or is expressed in numerical terms (*e.g.*, mean with confidence interval, flow rate). Or Analysis that uses environmental variables represented by numbers or ranges, often accomplished by numerical modeling or statistical analysis.

Quarry site: An open pit where rock is mined for use as a building material at the construction site.

Quarry: An open pit where rock is mined for use as a building material at the construction site.

Rapids: A section of shallow, fast moving water in a stream made turbulent by totally or partially submerged rocks.

Reach: A section, portion or length of stream or river.

Reaeration: The dissolving of molecular oxygen from the atmosphere into the water.

Regime: The frequency, size, intensity, severity, patchiness, seasonality and sub-type of a periodic event or continual fluctuation.

Regional study area: The regional comparison area used for a particular key topic. Or The spatial area within which cumulative effects are assessed (*i.e.* extending a distance from the project footprint in which both direct and indirect effects are anticipated to occur).

Rehabilitation: To restore a disturbed structure, site or land area to good condition, useful operation or productive capacity.

Relative abundance: The number of individuals of one species compared to the number of individuals of another species. The number of individuals at one location or time compared to the number of individuals at another location or time. Generally reported as an index of abundance.

Relief: Variation in elevation on the surface of the earth.

Reservoir: A body of water impounded by a dam and in which water can be stored for later use. The reservoir includes the forebay.

Residence time: The time required for a 'parcel' of water to flow through a lake. It generally describes the relationship between the size (or volume) of a lake and the streams or rivers that flow into it.

Residual effect: An actual or anticipated Project effect that remains after considering mitigation and the combined effects of other past and existing developments and activities.

Right-of-Way (ROW): Area of land controlled or maintained for the development of a road, pipeline or transmission line.

Riparian: Along the banks of rivers and streams.

Riprap: A layer of large stones, broken rock, boulder, or other suitable material placed on the upstream and downstream faces of embankments, dams or other land surfaces to protect them from erosion or scour caused by current, wind, wave, and/or ice action.

Riverine: Relating to, formed by, or resembling a river including tributaries, streams, brooks*, etc.*

Rock fill: Fill material typically consisting of excavated and crushed rock or blast rock that is used to provide mass to a structure while protecting it from erosion.

Rock groin: See "groin."

Rollway: The concrete portion of the spillway that water flows over when the spillway is in operation.

Rotational slump failures: A mass wasting feature, or landslide, in which shearing takes place on a well defined, curved shear surface, concave upward, producing a backward rotation in the displaced mass. It may be single, successive (repeated up- and down-slope), or multiple (as the number of slide components increases.

Run: An area of a stream with uniform, swiftly flowing water without surface breaks.

Sand: 1) a small, somewhat rounded fragment or particle of rock ranging from 0.05 to 2 mm in diameter, and commonly composed of quartz; 2) a loose aggregate or more or less unconsolidated deposit, consisting essentially of sand-sized rock particles or medium-grained clastics.

Saturation: The point at which a substance has the maximum amount of another substance at a given temperature and pressure (also see supersaturation).

Scenario analysis: Essentially the process of asking a set of germane "what if" questions and using conceptual and computer models to answers those questions to the best of our ability given the information available as well as potential mitigation measures and adaptive management options.

Scenario analysis takes various forms such as comparing Project effects based on cautious versus expected assumptions or running numerical models using a range of assumptions for each driving factor.

Scope: An activity that focuses the assessment on relevant issues and concerns and establishes the boundaries of the environmental assessment (Canadian Environmental Assessment Agency).

Sediment budget: An accounting of the erosion, storage and transport processes of soil and sediment in drainage basins or smaller landscape units.

Sediment core: A sample of sediment obtained by driving a hollow tube into the bed and withdrawing it with its contained sample or core.

Sediment oxygen demand (SOD): The dissolved oxygen demand from the sediments or substrate of lakes and rivers.

Sediment trap: Small cylindrical tube placed along the bottom of a water body to "trap" or capture a representative sample of deposited sediment.

Sediment(s): Material, usually soil or organic detritus, which is deposited in the bottom of a waterbody.

Sedimentation: A combination of processes, including erosion, entrainment, transportation, deposition and the compaction of sediment.

Shallow peatland: A coarse type in the hierarchical ecosite classification that includes peatlands that are 20 to 200 cm deep and not saturated. Often contain permafrost patches.

Shear stress: Stress caused by forces operating parallel to one another but in opposite directions.

Shore zone: Areas along the shoreline of a waterbody including the shallow water, beach, bank and immediately adjacent inland area that is affected by the water body.

Shore: The narrow strip of land in immediate contact with the sea, lake or river.

Significance: A measure of how adverse or beneficial an effect may be. Or A description of environmental and development conditions at a certain time to allow comparisons of change (*e.g.*, pre-development, current, and reasonably foreseeable).

Significant: A measure of how adverse or beneficial an effect may be on a VEC.

Silt: A very small rock fragment or mineral particle, smaller than a very fine grain of sand and larger than coarse clay; usually having a diameter of 0.002 to 0.06 mm; the smallest soil material that can be seen with the naked eye.

Spatial boundary: The specified geographic area examined in the assessment.

Spawning: The act of reproducing in fish.

Species: A group of organisms that can interbreed to produce fertile offspring.

Spillway: A concrete structure that is used to pass excess flow so that the dam, dykes, and the powerhouse are protected from overtopping and failure when inflows exceed the discharge capacity of the powerhouse.

Split Lake Resource Management Area (SLRMA): Formed by a Comprehensive Implementation Agreement between Tataskweyak Cree Nation and Manitoba in 1992 the area covers about 4,150 ha in northern Manitoba.

Sporadic(ally): The occurrence of isolated patches, 10–35% of a geographic region.

Stage(ing): The height of the water surface above a fixed reference point. Staging refers to an increasing water level.

Stakeholder: People with an interest or concern in something; in this EIS, refers to particularly to community residents from Bird, Gillam, Ilford, Sundance, Thompson, York Factory and surrounding areas.

Steady-state A stable condition that does not change over time or in which change in one direction is continually balanced by change in another.

Stratification: An effect where a substance or material is broken into distinct horizontal layers due to different characteristics such as density or temperature (see thermal stratification).

Stratigraphy: Scientific study of rock strata, especially the distribution, deposition, correlation and age of sedimentary rocks. Also can refer to the layering of materials or soil horizons at a location.

Study area: The geographic limits within which effects on a VEC (valued environmental component) or key topic is assessed.

Substrate(s)/Substrata: the material forming the streambed; also solid material upon which an organism lives or to which it is attached. See also bed material.

Supersaturation: When a substance is more highly concentrated (more saturated) in another substance than is normally possible under normal temperature and pressure.

Surcharge: A condition in a forebay or reservoir in which the water level rises above the full supply level.

Surface permafrost: Permafrost that occurs within the top 2 m of the surface materials.

Suspended sediment concentration: Measure of the amount of sediment in a unit of water usually expressed in terms of milligrams of dry sediment measured down to approximately 1 micron (0.001 mm) in a litre of water.

Suspended sediment transport: Part of a stream's (or other waterbody's) total sediment load that is carried in the water column due to turbulence, currents or colloidal suspension.

Swamp: A minerotrophic wetland with at least 30% tree and/or tall shrub cover, woody peat and a higher depth to water table than fens. Can be a peatland or a mineral soil wetland.

Tailrace: A channel immediately downstream from a powerhouse that directs the water away from the turbine and into the river channel.

Terrestrial habitat shoreline: Visible historical extent of surface water and ice regime effects on upland and inland peatland habitat.

Terrestrial habitat: The plants, standing and fallen dead trees, soils, ground ice, groundwater, surface water, topography and disturbance conditions such as fire occurring in a defined area.

Terrestrial: Belonging to, or inhabiting the land or ground.

Terrestrialization: The process whereby all or portions of a water body or waterway are filled in by organic sediment deposition and the horizontal expansion of peat from the shore towards the center of the water body or waterway.

Thalweg: The deepest part of the channel of a river or stream.

Thermal ice cover: An ice cover that forms where velocities are low.

Thermal stratification: Existence of a turbulently mixed layer of warm water (epilimnion) overlying a colder mass of relatively stagnant water (hypolimnion) in a water body due to cold water being denser than warm water coupled with the damping effect of water depth on the intensity of wind mixing. In winter the colder water may overlie the warmer water.

Thermocline: The depth at which the temperature gradient is steepest during the summer.

Thin peatland: A fine type in the hierarchical ecosite classification that includes veneer bogs that occur on slopes or crests.

Threshold: A limit or level which if exceeded likely results in a noticeable, detectable or measurable change or environmental effect that may be significant. Example thresholds include water-quality guidelines, acute toxicity levels, critical population levels and wilderness criteria. See also benchmark. Or A limit of tolerance of a VEC to an effects, that if exceeded, results in an adverse response by that VEC.

Till: An unstratified, unconsolidated mass of boulders, pebbles, sand and mud deposited by the movement or melting of a glacier.

Timber: The wood of growing trees suitable for structural uses; the body, stem or trunk of a tree.

Topography: General configuration of a land surface, including its relief and the position of its natural and manmade features.

Topple failures: A mass wasting feature where soil or rock blocks or slabs separate from steep soil or rock slopes, tip forward and fall due to gravitational forces. Blocks and slabs can range from sub-metre in size upwards.

Total Sediment Load: Measure of the total sediment being transported in suspension and on the bed.

Total suspended solids (TSS): Solids present in water that can be removed by filtration consisting of suspended sediments, phytoplankton and zooplankton.

Transect: A line located between points and then used to investigate changes in attributes along that line.

Transmission line: A conductor or series of conductors used to transmit electricity from the generating station to a substation or between substations.

Transmission tower spur: A rock-filled structure located in the river channel adjacent to the powerhouse that supports transmission towers.

Transmission: The electrical system used to transmit power from the generating station to customers.

Tributary(ies): A river or stream flowing into a lake or a larger river or stream.

Turbine: A machine for converting the power of flowing water to rotary mechanical power that is then transferred by a large metal shaft to the generator for conversion to electric power.

Uncertainty: The lack of certainty or a state of having limited knowledge where it is difficult or impossible to exactly describe an existing state or a future outcome, or there is more than one possible outcome. In environmental assessment, uncertainty is not knowing, with high confidence, the nature and magnitude of environmental effects or the degree to which mitigation measures would prevent or reduce adverse effects.

Unconsolidated: Not compact or dense in structure or arrangement; *i.e.*, "loose gravel."

Upland: A land ecosystem where water saturation at or near the soil surface is not sufficiently prolonged to promote the development of wetland soils and vegetation.

Valued Environmental Component (VEC): Any part of the environment that is considered important by the proponent, public, scientists or government involved in the assessment process. Importance may be determined based on cultural values or scientific concern.

Velocity: A measurement of speed.

Veneer bog: Bog with thin surface peat (*i.e.*, less than 1.5 thick) that generally occurs on gentle slopes and contain discontinuous permafrost.

Washload: Transport of fine particulate material (silt and clay) which is entrained in the flow and remains suspended in the water column.

Water quality: Measures of substances in the water such as nitrogen, phosphorus, oxygen and carbon.

Water regime: A description of water body (*i.e.*, lake or river) with respect to water levels, flow rate, velocity, daily fluctuations, seasonal variations*, etc.*

Water surface profile: A two-dimensional section view of a reach of the river that shows the elevation of the water surface along that reach.

Water table: The level below the surface where the soil is saturated by groundwater.

Watershed: A geographic region bounded by ridges, crest lines and other high points of land in which all surface water drains into a river, river system or other body of water.

Wet peatland: A coarse type in the hierarchical ecosite classification that includes peatlands where the water table is at or near the surface, often indicated by open water pools. Peat thickness is generally at least 200 cm and permafrost is usually absent.

Wetland: A land ecosystem where periodic or prolonged water saturation at or near the soil surface is the dominant driving factor shaping soil attributes and vegetation composition and distribution. **Peatlands** are a type of wetland.

Wildlife: All undomesticated organisms including invertebrates, amphibians, reptiles, birds, and mammals. Excludes people and plants.

Zone Of Influence (ZOI): The spatial areas outside of the Project Footprint where direct and indirect effects occur. The location and size of the zone of influence varies for each ecosystem component of interest.