# Appendix 3

## Glossary and Acronyms

# ABBREVIATIONS AND ACRONYMS

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|---|---|
| **-** | Minus |
| **#** | Number |
| **%** | Percent |
| **%EPT** | Percentage of all individuals made up of the orders Ephemeroptera, Trichoptera, and Placoptera |
| < | Less than |
| > | More than |
| **∑** | Sum |
| ≈ | Almost equal to |
| ≤ | Less than or equal to |
| ≥ | More than or equal to |
| ° | Degree |
| **µg** | micrograms |
| **µg/m$^3$** | microgram per cubic metre |
| **µm** | Micrometres (microns) |
| **µS/cm** | MicroSiemens per centimetre |
| **AAC** | Annual Allowable Cut |
| **AADT** | Average annual daily traffic |
| **AAQO** | Ambient Air Quality Objectives |
| **ACC** | Alberta Caribou Committee |
| **ACCS** | Alberta Culture and Community Spirit |
| **ACGIH** | American Conference of Governmental Industrial Hygienists |
| **ADAG** | Alberta Acid Deposition Assessment Group |
| **AENV** | Alberta Environment |
| **AENV** | Alberta Environment |
| **AGRASID** | Agriculture Region of Alberta Soil Inventory Database |
| **AHW** | Alberta Health and Wellness |
| **Al-Pac** | Alberta Pacific Forest Industries Inc. |
| **Altagas** | Altagas Ltd. |

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|---|---|
| **ANHIC** | Alberta Natural Heritage Information Centre |
| **ANPC** | Alberta Native Plant Council |
| **AOA** | Area Operating Agreement |
| **AOSA** | Athabasca Oilsands Area |
| **AOSERP** | Alberta Oil Sands Environmental Research Program |
| **API** | American Petroleum Institute |
| **AQLSA** | Air quality local study area |
| **AQRSA** | Air quality regional study area |
| **ARSEIM** | Alberta Regional Social and Economic Infrastructure Model |
| **ASL** | Ambient sound level |
| **ASL** | Above sea level |
| **ASRD** | Alberta Sustainable Resource Development |
| **ATC** | Athabasca Tribal Council |
| **Atco** | Atco Electric Ltd |
| **Atm-m³/mol** | Henry's Law constant |
| **ATSDR** | Agency for Toxic Substances and Disease Registry |
| **ATV** | All terrain vehicle |
| **AUC** | Alberta Utilities Commission |
| **avg.** | Average |
| **AVI** | Alberta Vegetation Inventory |
| **AWI** | Alberta Wetland Inventory |
| **AWIS** | Alberta Wetland Inventory Standards |
| **b/d**<br>**bpd** | Barrels per day |
| **bbl** | Barrel |
| **bbls/d** | Barrels per day |
| **BFW** | Boiler Feed Water |
| **BM** | Boreal Mixedwood Ecological Area |
| **BMD** | Benchmark doses |
| **BOD** | Board of Directors |

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|---|---|
| **BOD** | Biological oxygen demand |
| **bpd** | Barrels per day |
| **BS&W** | Basic sediment and water |
| **C** | Centigrade or Celsius (metric measures of temperature) |
| **C&R** | Conservation and reclamation |
| **C:N** | Carbon to Nitrogen ratio |
| **$Ca(OH^2)$** | Hydrated lime |
| **CAC** | Criteria air contaminants |
| **CAPP** | Canadian Association of Petroleum Producers |
| **CASA** | Clean Air Strategic Alliance |
| **CCME** | Canadian Council for Ministers of the Environment |
| **CEA** | Cumulative Effects Assessment |
| **CEA Agency** | Canadian Environmental Assessment Agency |
| **CEAA** | Canadian Environmental Assessment Act |
| **CEMA** | Cumulative Environmental Management Association |
| **$CH_4$** | Methane |
| **CL** | Critical load |
| **cm** | Centimetre |
| **CMA** | Census metropolitan area |
| **CNRL** | Canadian Natural Resources Limited |
| **CO** | Carbon monoxide |
| **$CO_2$** | Carbon dioxide |
| **$CO_2E$** | Carbon dioxide equivalents |
| **Cogen** | Cogeneration power plant |
| **COGL** | Connacher Oil and Gas Limited |
| **Connacher** | Connacher Oil and Gas Limited |
| **COPC** | Chemicals of Potential Concern |
| **COSEWIC** | Committee on the Status of Endangered Wildlife in Canada |
| **cP** | CentiPoises |
| **CPDFN** | Chipewyan Prairie Dene First Nation |

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| **CPF** | Central Processing Facility |
| **CR** | Consultant Report |
| **CRB** | Capital region board |
| **CRISP** | Compliance Regional Infrastructure Sustainability Plan |
| **CSS** | Cyclic Steam Stimulation |
| **CWE** | Cold water equivalent |
| **CWQG** | Canadian Water Quality Guidelines |
| **CWS** | Canada-Wide Standards |
| **d** | Day |
| **Daytime** | Defined as the hours from 07:00 to 22:00 |
| **dB** | Decibel |
| **dBA** | Decibel A-weighted sound level |
| **dBC** | Decibel C-weighted sound level |
| **DCS** | Distributed control system |
| **DEM** | Digital elevation models |
| **Devon** | Devon Canada Corporation |
| **DGF** | Dissolved gas flotation |
| **dil-bit** | Diluted Bitumen |
| **DOC** | Dissolved organic carbon |
| **DOW** | Dangerous oilfield waste |
| **DRS** | Disposition Reservations |
| **DWD** | Drilling waste disposal |
| **EA** | Environmental Assessment |
| **EARP** | Environmental assessment and review process |
| **EC** | Environment Canada |
| **EC20** | Effective concentration were 20% of the population is effected) |
| **Eco-SSL** | Ecological soil screening level |
| **EIA** | Environmental Impact Assessment |
| **ELC** | Ecological land classification |
| **EPA** | Environmental Protection Agency |

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| **EPEA** | Environmental Protection and Enhancement Act |
| **EPS** | Edmonton Police Service |
| **ERA** | Ecological risk assessment |
| **ERCB** | Energy Resources Conservation Board |
| **ERP** | Emergency response plan |
| **ESAR** | East Side of the Athabasca Caribou Range |
| **ESDV** | Emergency Shutdown Valves |
| **ET-DSP** | Electro-Thermal Dynamic Stripping Process |
| **EZE** | Easements |
| **F** | Fair |
| **FEARO** | Federal Environmental Assessment Review Office |
| **Fido** | Fido Solutions Inc. |
| **FMA** | Forest Management Area |
| **FMFN** | Fort McMurray #468 First Nation |
| **FN** | First Nation |
| **FTOR** | Final terms of reference |
| **FWKO** | Free water knock out |
| **FWMIS** | Fish and Wildlife Management Information System |
| **g** | Gram |
| **g/GJ** | Grams per Gigajoule |
| **g/m²/d** | Grams per square meter per day |
| **g/mol** | Grams per mol (molecular weight) |
| **g/s** | Gram per second |
| **GCM** | Global climate models |
| **GDC** | Geographic Dynamic Corporation |
| **GDEP** | Great Divide SAGD Expansion Project |
| **GDOC** | Great Divide Oil Corporation |
| **GDP** | Gross domestic product |
| **GHG** | Greenhouse gas |
| **GIS** | Geographic Information System |

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| **GJ** | Gigajoule (109 Joules) |
| **GJ/d** | Gigajoule per day |
| **GJ/d/MW** | Gigajoule per day per Megawatt |
| **GJ/h** | Gigajoules Per Hour |
| **GJ/m³** | Gigajoule per cubic meter |
| **GLJ** | GLJ Petroleum Consultants Ltd. |
| **GOA** | Government of Alberta |
| **GoA** | Government of Alberta |
| **GPS** | Global Positioning System |
| **GST** | Goods and Services Tax |
| **GTG** | Gas Turbined Generator |
| **GWP** | Global Warming Potential |
| **h or hr** | hour |
| **H+** | Hydrogen ion |
| **$H_20$** | Water |
| **$H_2S$** | Hydrogen sulphide |
| **ha** | Hectare |
| **HCI** | Hydrochloric acid |
| **HHRA** | Human Health Risk Assessment |
| **HHV** | Higher heating value |
| **HLFN** | Heart Lake First Nation |
| **$HNO_3$** | Nitric acid |
| **HQ** | Hazard quotient |
| **HRIA** | Historical Resource Impact Assessment |
| **HRSG** | Heat recovery steam generator |
| **HRV** | Historical Resources Value |
| **HSI** | Habitat suitability index |
| **HSPF** | Hydrologic Simulation Program-FORTRAN |
| **Hwy** | Highway |
| **Hz** | Hertz |

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|---|---|
| **IFN** | In-stream flow needs |
| **IGF** | induced gas floatation |
| **ILCR** | Incremental Lifetime Cancer Risk |
| **IPCS** | International Program of Chemical Safety |
| **IRC** | Industry Relations Corporations |
| **IRP** | Integrated resource plan |
| **ISQG** | Interim Sediment Quality Guideline |
| **Iteration** | Iteration Energy Inc |
| **JACOS** | Japan Canada Oil Sands Ltd. |
| **K** | Calvin |
| **KB** | Kilobyte |
| **keq** | Kiloequivalent – Equal to 1 kmol of hydrogen ion (H+). |
| **Keq H+/ha/yr** | Kiloequivalent of Hydrogen ions per hectare per year |
| **keq/ha/yr** | Kiloequivalent per hectares per year. |
| **kg** | Kilogram |
| **Kg CO2/bbl bitumen** | Kilogram of CO2 per barrel of bitumen |
| **kg N/ha/y** | Kilogram of Nitrogen per hectare per year |
| **kg/ha/yr** | Kilogram per hectare per year |
| **kg/m$^3$** | Kilogram per cubic meter |
| **KH** | Hydraulic conductivity |
| **kHz** | Kilohertz |
| **kJ/kg** | Kilojoule per kiologram |
| **Kl/year** | Kilolitre |
| **km** | Kilometre |
| **km/km$^2$** | Kilometre per square kilometre |
| **km/night** | Kilometres per night |
| **km$^2$** | Square kilometre |
| **kPa** | Kilopascals |
| **kPag** | Kilopascal gauge |

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| **kV** | Kilovolt |
| **L or l** | Litre |
| **LACT** | Liquid Accounting and Custody Transfer |
| **LARP** | Lower Athabasca Regional Plan |
| **LC** | Lethal Concentration |
| **LC50** | Lethal Concentration |
| **LCC** | Land Capability Classification. A system by which the ability of a soil is capable of sustaining a commercial forest. |
| **LCCS** | Land Capability Classification System |
| **LEL** | Lower Explosive Limit |
| **Leq** | Energy Equivalent Sound Level |
| **Leq** | Equivalent sound level |
| **Leq24** | 24 hour period |
| **LeqDay** | 07:00 to 22:00 |
| **LeqNight** | 22:00 to 07:00 |
| **LFH** | Leaf-Fibre-Humic Substances. A soil horizon. |
| **LIDAR** | Light detections and ranging |
| **LIS** | Low impact seismic |
| **LM** | Landscape models |
| **L-MPOI** | Local maximum point of impingement |
| **LOAEL** | Lowest observed adverse effect level |
| **LOC** | Licence of Occupation |
| **LOEL** | Lowest Observed Effect Level |
| **LSA** | Local Study Area |
| **LSD** | Location Service Daemon |
| **m** | Metre |
| **m/ha** | Meters per hectare |
| **m/s** | Metres per second |
| **$m^2$** | Square metre |
| **$m^2$ /d** | Square metre per day |

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| **$m^3$** | Cubic metre |
| **$m^3$ /d** | Cubic metres per day |
| **$m^3$/hr** | Cubic meters per hour |
| **$m^3$/s** | Cubic metres per second |
| **$m^3$/year** | Cubic meters per year |
| **$m^3$/yr** | Cubic meters per year |
| **MARP** | Measurement Accounting and Reporting Plan |
| **masl** | Metres Above Sea Level |
| **mbbls** | Million barrels |
| **MBC** | Mix bury cover |
| **md** | Millidarcy |
| **MEMS** | Millennium EMS Solutions Limited |
| **mg** | Milligrams |
| **mg/Kg** | Milligrams per Kilogram |
| **mg/L** | Milligrams per litre |
| **Mg2+** | Magnesium base cation (particle) |
| **MJ/$m^3$** | Megajoules per cubic meter |
| **MLL** | Miscellaneous Lease |
| **mm** | Millimetre |
| **$Mm^3$** | Million cubic metres |
| **MMbbls** | Million barrels |
| **MMBtu/hr** | Million Btu per hour |
| **MMcf** | Million cubic feet |
| **mmHg** | Millimetres of mercury (vapour pressure) |
| **MMscfpd** | Million square cubic foot per day |
| **MPOI** | Maximum point of impingement |
| **MSI** | Municipal sustainability initiative |
| **MSL** | Mineral Surface Leases |
| **Mt CO2/ year** | Metric tonnes of CO2 per year |
| **Mt/yr** | Metric tonnes per year |

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| **MW** | Megawatt |
| **MWD** | Measurement While Drilling |
| **N** | Nitrogen |
| **$N0_2$** | Nitrogen dioxide |
| **$N_20$** | Nitrous oxide |
| **NAABA** | The Northeast Alberta Aboriginal Business Association |
| **NaCl** | Sodium chloride |
| **NAD** | North American Datum |
| **NAOH** | Caustic Soda |
| **NE** | northeast |
| **$NH_4$** | Ammonia (particle) |
| **NIA** | Noise impact assessment |
| **Nighttime** | Defined as the hours from 22:00 to 07:00. |
| **NO** | Nitric oxide (gas) |
| **No.** | Number |
| **$NO_2$** | Nitrogen dioxide |
| **$NO_3$** | Nitrate |
| **NOAEL** | No-observed-adverse-effect level |
| **NOEL** | No-observed-effect level |
| **NOx** | Nitrogen oxides |
| **NTDB** | National Topographic Data Base |
| **NTP** | National Toxicity Program |
| **NTS** | National Topographic Series |
| **NWF** | Flooded areas |
| **NWL** | Ponds and lakes |
| **O.D.** | Outside diameter |
| **$O_3$** | Ozone |
| **OBIP** | Original bitumen in place |
| **Observation Well** | A constructed controlled point of access to an aquifer which allows groundwater observations. Small diameter observation wells are often called piezometers. |

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| **ºC** | Degrees Celsius |
| **OEHHA** | Office of Environmental Health Hazard Assessment |
| **OH&S** | Occupational Health and Safety |
| **OLM** | Ozone Limiting Method |
| **OMOE** | Ontario Ministry of the Environment |
| **OOIP** | Original Oil in Place |
| **ORF** | Oil removal filter |
| **OSCA** | Oil Sands Conservation Act |
| **OSDG** | Oil Sands Development Group |
| **OSL** | Oil sands lease |
| **OSLI** | Oil Sands Leadership Initiative |
| **OSSDS** | Oil Sands Sustainable Development Secretariat |
| **OSVRC** | Oil Sands Vegetation Reclamation Committee |
| **OTSG** | Once through steam generator |
| **Pa** | Pascal |
| **PAH** | Polycyclic aromatic hydrocarbon |
| **PAI** | Potential acid input |
| **PARC** | Prairie Adaptation Research Collaborative |
| **PDC** | Planned Development Case |
| **PDD** | Public Disclosure Document |
| **PDD** | Public Disclosure Document |
| **PF** | Project Footprint |
| **pH** | Power of hydrogen |
| **PHC** | Petroleum hydrocarbon |
| **PI** | Potential Input |
| **PIL** | Pipeline Installation Lease |
| **PLA** | Pipeline Agreements |
| **PM** | Parent material |
| **PM** | Particulate matter |

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| **$PM_{10}$** | Particulate matter less than 10 mm |
| **$PM_{2.5}$** | Particulate matter less than 2.5 microns in diameter |
| **PNG** | Petroleum and natural gas |
| **PNT** | Protective notations |
| **Pods** | Distinct sub areas |
| **ppb** | Parts per billion |
| **ppm** | Parts per million |
| **PQRA** | Preliminary quantitative risk assessment |
| **Project** | Great Divide SAGD Expansion Project |
| **PSL** | Permissible sound level |
| **pToR** | Proposed terms of reference |
| **QA/QC** | Quality assurance / quality control |
| **RAMP** | Regional Aquatics Monitoring Program |
| **RCMP** | Royal Canadian Mounted Police |
| **RD** | Rural District |
| **RFC** | Reference concentration |
| **RFD** | Reference dose |
| **Rge** | Range |
| **RIVM** | National Institute for Public Health and the Environment |
| **RM** | Regional Municipality |
| **RMWB** | Regional Municipality of Wood Buffalo |
| **RoW** | Right-of-way |
| **RQ** | Risk quotient |
| **RSA** | Regional Study Area |
| **RsC** | Risk-specific concentration |
| **RsD** | Risk-specific does |
| **s** | second |
| **S** | Species Richness |
| **$S0_2$** | Sulphur dioxide |
| **SA** | Study Area |

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|---|---|
| **SAC** | Strong Acid Cation |
| **SAGD** | Steam Assisted Gravity Drainage |
| **SAGD** | Steam-assisted gravity drainage |
| **SARA** | Species At Risk Act |
| **SAS** | Statistical analysis software |
| **SC** | Stream channel |
| **SCA** | Soil correlation area |
| **SCADA** | Supervisory control data acquisition system |
| **SCO** | Synthetic crude oil |
| **SCRAM** | Support Centre for Regulatory Air Models |
| **SCWG** | Soil Classification Working Group |
| **Sd** | Standard deviation |
| **SEIA** | Socio-Economic Impact Assessment |
| **SEWG** | Sustainable Ecosystems Working Group |
| **SF** | Slope factors |
| **SFNN** | Forested swamps |
| **SIL** | Survey intensity level |
| **SIR** | Supplementary information request |
| **SLM** | Soil Landscape Model |
| **SLWRA** | Screening Level Wildlife Risk Assessment |
| **SME** | Surface Material Exploration |
| **SML** | Surface Material Lease |
| **SMR** | Soil moisture regime |
| **SNR** | Soil nutrient regime |
| **$SO_2$** | Sulphur dioxide |
| **$SO_4$** | Sulfate |
| **SONS** | Deciduous swamps |
| **SOPs** | Standard Operating Procedures |
| **SOR** | Steam to Oil Ratio |
| **$SO_x$** | Sulphur oxides |

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| **SQCWG** | Soil Quality Criteria Working Group |
| **SQG** | Soil quality guidelines |
| **SRD** | Sustainable Resource Development |
| **SRTM** | Shuttle Radar Topography Mission |
| **STNN** | Wooded swamps |
| **SW** | southwest |
| **SWQG** | Surface Water Quality Guidelines |
| **t** | Tonne |
| **t/d** | Tonnes per day |
| **TCEQ** | Texas Commission on Environmental Quality |
| **TCPL** | Trans Canada Pipelines |
| **TCU** | Total Carbon units |
| **TDS** | Total dissolved solids |
| **TEK** | Traditional Environmental Knowledge |
| **THAI** | Toe to Heel Air Injection |
| **THC** | Total hydrocarbons |
| **TLU** | Traditional Land Use |
| **TLUS** | Traditional Land Use Studies |
| **TOC** | Total Organic Carbon |
| **Ton** | Two thousand pounds (short or U.S. ton) |
| **Tonne** | Metric ton (1 000 kg) |
| **ToR** | Terms of Reference |
| **TOXLINE** | Toxicology Literature Online |
| **TPA** | Trapping Area |
| **TPR** | Timber Productivity Rating |
| **TRS** | Total reduced sulphur |
| **TRV** | Toxicological Reference Values |
| **TS** | Topsoil |
| **TSP** | Total suspended particulates |
| **TSS** | Total suspended solids |

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|---|---|
| **TSX** | Toronto Stock Exchange |
| **TUC** | Chronic Toxicity Unit |
| **Twp.** | Township |
| **UC** | Utility Corridor |
| **ug/m$^3$** | Microgram per cubic metre |
| **UPS** | uninterruptible power supplies |
| **UR** | Unit Risks |
| **US** | upper subsoil |
| **USD** | United States dollar |
| **USEPA** | United States Environmental Protection Agency |
| **UTM** | Universal transverse mercator |
| **V** | volt |
| **VAC** | Volts in an alternating current |
| **VCE** | Vegetation Control Easements |
| **VDC** | Voltage in a direct current |
| **VEC** | Valued Environmental Component |
| **VOC** | Volatile organic compounds |
| **VRU** | Vapour recovery unit |
| **W4M** | West of the 4th Meridian |
| **WAC** | Weak acid cation |
| **WBEA** | Wood Buffalo Environmental Association |
| **WDW** | Water Disposal Wells |
| **WHO** | World Health Organization |
| **WLML** | Willow Lake Metis Local 780 |
| **WLS** | Warm lime softening |
| **WP** | Well Pads |
| **WSC** | Water Survey Canada |
| **WSW** | Water Source Wells |
| **wt** | Weight |
| **wt%** | Weight percentage |

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| **WTI** | West Texas Intermediate |
| **ZN_Top** | Zone top |
| **ZOI** | Zone of influence |

# GLOSSARY

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| **7-Q-10** | Discharge The minimum average discharge over a period of seven days duration which has a return period of 10 years; i.e., the probability that the minimum 7-day duration discharge will be equal to or less than the stated value is 10%. |
| **Acidification** | The decrease of acid neutralizing capacity in water, or base saturation in soil, caused by natural or anthropogenic processes. Acidification is exhibited as the lowering of pH, which can adversely affect aquatic life. |
| **Acre** | A unit of area in the U.S. Customary System, used in land and sea floor measurement and equal to 160 square rods, 4,840 square yards, or 43,560 square feet. 1 acre = 0. 40469 ha |
| **Adverse Effect** | An undesirable or harmful effect to an organism (human, animal or plant), indicated by some result such as mortality, growth inhibition, reproductive abnormalities, altered food consumption, altered body and organ weights, altered enzyme concentrations, visible pathological changes or carcinogenic effects. |
| **Airshed** | Describes the geographic area requiring unified management for achieving air pollution control. |
| **Alkalinity** | A measure of water's capacity to neutralize an acid. It indicates the presence of carbonates, bicarbonates and hydroxides, and less significantly, borates, silicates, phosphates and organic substances. It is expressed as an equivalent of calcium carbonate. The composition of alkalinity is affected by pH, mineral composition, temperature and ionic strength. However, alkalinity is normally interpreted as a function of carbonates, bicarbonates and hydroxides. The sum of these three components is called total alkalinity. |
| **Ambient** | The conditions surrounding an organism or area. |
| **Ambient Air** | The air in the surrounding area. |
| **Ambient Noise Level** | The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location. |
| **Ambient Sound Level** | All noises that exist in an area and are not related to a facility covered by Directive 38. Ambient noise includes sound from other industrial noise not subject to this directive, transportation sources, animals and nature. |
| **Anion** | A negatively charged ion. |
| **Aquifer** | A body of rock or soil that contains sufficient amounts of saturated permeable material to yield economic quantities of water to wells or springs. |

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| **Archaeology** | The scientific discipline responsible for studying the unwritten portion of man's historic and prehistoric past. |
| **Artifact** | Any portable object modified or manufactured by man. |
| **Aspect** | Compass orientation of a slope as an inclined element of the ground surface. |
| **Attenuation** | A reduction in sound level that occurs with sound propagation over distance by means of physical dissipation or absorption mechanisms, or a reduction in sound level that occurs by means of noise control measures applied to a sound source. |
| **Available Drawdown** | The vertical distance that the equipotential surface of an aquifer can be lowered; in confined aquifers, this is to the top of the aquifer; in unconfined aquifers, this is to the bottom of the aquifer. |
| **A-weighted sound level** | The sound level as measured on a sound level meter using a setting that emphasizes the middle frequency components similar to the frequency response of the human ear. |
| **Base Cation** | An alkali or alkaline earth metal cation ($Ca^{2+}$, $Mg^{2+}$, $K^{+}$, $Na^{+}$). |
| **Baseline** | A surveyed or predicted condition that serves as a reference point on which later surveys are coordinated or correlated. |
| **Basic Sound Level** | The allowable sound level at a residential location, as defined by the ERCB Directive 38, with the inclusion of industrial presence based upon dwelling unit density and proximity to transportation noise sources. |
| **Bedrock** | The body of rock which underlies gravel, soil or other superficial material. |
| **Benthic Invertebrates** | Invertebrate organisms living at, in or in association with the bottom (benthic) substrate of lakes, ponds and streams. Examples of benthic invertebrates include some aquatic insect species (such as caddisfly larvae) that spend at least part of their lifestages dwelling on bottom sediments in the river. These organisms play several important roles in the aquatic community. They are involved in the mineralization and recycling of organic matter produced in the open water above, or brought in from external sources, and they are important second and third links in the trophic sequence of aquatic communities. Many benthic invertebrates are major food sources for fish. |
| **Benzene** | A colourless, liquid, flammable, aromatic hydrocarbon that boils at 80.1°C and freezes at 5.4-5.5°C. |
| **Biodiversity** | The variety of organisms and ecosystems that comprise both the communities of organisms within particular habitats and the physical conditions under which they live. |

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| **Bitumen** | A highly viscous, tarry, black hydrocarbon material having an API gravity of about 9° (specific gravity about 1.0). It is a complex mixture of organic compounds. Carbon accounts for 80 to 85% of the elemental composition of bitumen, hydrogen - 10%, sulphur - 5%, and nitrogen, oxygen and trace elements the remainder. |
| **CALMET** | California Meteorological Model. Used to process meteorological data for input into the CALPUFF model. |
| **CALPUFF** | California Puff model, used to estimate ambient concentrations of substances in air, and deposition of those substances (e.g., acid deposition). |
| **Carcinogen** | An agent that is reactive or toxic enough to act directly to cause cancer. |
| **Carrying Capacity** | The maximum population size that can be supported by the available resources. |
| **Catchment** | A structure in which water is collected. |
| **Cation** | A positively charged ion. |
| **CEMA** | Cumulative Environmental Management Association – An association of oil sands industry, other industry, regional community representatives, regulatory agencies and other stakeholders designed to develop systems to manage cumulative effects associated with developments in the Oil Sands Region. |
| **Chert** | A fine-grained siliceous rock. Impure variety of chalcedony that is generally light-coloured. |
| **Closure** | The point after shutdown of operations when regulatory certification is received and the area is returned to the Crown. |
| **Community** | Pertaining to plant or animal species living in close association or interacting as a unit. |
| **Concentration** | Quantifiable amount of a chemical in environmental media. |
| **Confined Aquifer** | An aquifer in which the potentiometric surface is above the top of the aquifer. |
| **Conifers/Coniferous** | White and black spruce, balsam fir, jack pine and tamarack. |
| **Conservative Approach** | Approach taken to incorporate protective assumptions to ensure that risk will not be underestimated. |
| **Consolidation** | The gradual reduction in volume of a soil or semi-solid mass. |

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| **Contaminants** | A general term referring to any chemical compound added to a receiving environment in excess of natural concentrations. The term includes chemicals or effects not generally regarded as "toxic," such as nutrients, colour and salts. |
| **Daytime** | Defined as the hours from 07:00 to 22:00. |
| **dB (decibel)** | A unit of measure of sound pressure that compresses a large range of numbers into a more meaningful scale. |
| **DBA** | The decibel (dB) sound pressure level filtered through the A filtering network to approximate human hearing response.<br>See dB and A-weighted sound level. |
| **dBA (decibel A)** | Unit used for 'A-weighted' sound pressure levels. A-weighting is an adjustment made to sound-level measurement to approximate the response of the human ear. |
| **DEM (Digital Elevation Model)** | A three-dimensional grid representing the height of a landscape above a given datum. |
| **Deposit** | Material left in a new position by a natural transporting agent such as water, wind, ice or gravity, or by the activity of man. |
| **Detection Limit (DL)** | The lowest concentration at which individual measurement results for a specific analyte are statistically different from a blank (that may be zero) with a specified confidence level for a given method and representative matrix. |
| **Discharge** | In a stream or river, the volume of water that flows past a given point in a unit of time (i.e., m3/s). |
| **Diversity** | The variety, distribution and abundance of different plant and animal communities and species within an area. |
| **Drainage Basin** | The total area that contributes water to a stream. |
| **Drawdown** | Lowering of water level caused by pumping. It is measured for a given quantity of water pumped during a specified period, or after the pumping level has become constant. |
| **Ecodistricts** | Landscape units that represent similar geology, landform and vegetation characteristics that best reflect overall patterns of landscape features. |
| **Ecological Land Classification** | A means of classifying landscapes by integrating landforms, soils and vegetation components in a hierarchical manner. |
| **Ecoregion** | Ecological regions that have broad similarities with respect to soil, terrain and dominant vegetation. |

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| **Ecosection** | Clearly recognizable landforms such as river valleys and wetlands at a broad level of generalization. |
| **Ecosite** | Ecological units that develop under similar environmental influences (climate, moisture and nutrient regime). Ecosites are groups of one or more ecosite phases that occur within the same portion of the moisture/nutrient grid. Ecosite is a functional unit defined by the moisture and nutrient regime. It is not tied to specific landforms or plant communities, but is based on the combined interaction of biophysical factors that together dictate the availability of moisture and nutrients for plant growth. |
| **Ecosite Phase** | A subdivision of the ecosite based on the dominant tree species in the canopy. On some sites where the tree canopy is lacking, the tallest structural vegetation layer determines the ecosite phase. |
| **Ecosystem** | An integrated and stable association of living and non-living resources functioning within a defined physical location. |
| **Edaphic** | Referring to the soil. The influence of the soil on plant growth is referred to as an edaphic factor. |
| **Effluent** | Stream of water discharging from a source. |
| **ELC** | Ecological Land Classification. A system of mapping an area on the basis of vegetation composition and soil type. |
| **Energy equivalent sound level ($L_{eq}$)** | The $L_{eq}$ is a single-number average, A-weighted sound level that represents cumulative acoustical energy as measured over a specified time interval. This interval should be specified in brackets following the $L_{eq}$ (e.g.: $L_{eq}$ (9) is a nine-hour $L_{eq}$). |
| **Ephemeral** | A phenomenon or feature that last only a short time (i.e., an ephemeral stream is only present for short periods during the year). |
| **Equivalent land capability** | Means that the ability of the land to support various land uses after conservation and reclamation is similar to the ability that existed prior to an activity being conducted on the land, but that the individual land uses will not necessarily be identical. |
| **Erosion** | The process by which material, such as rock or soil, is worn away or removed by wind or water. |
| **Escarpment** | A cliff or steep slope at the edge of an upland area. The steep face of a river valley. |
| **Evaporation** | Evaporation is the process by which water is transferred from open water surfaces to the atmosphere. |
| **Evapotranspiration** | Evapotranspiration is the combined losses of water from the earth's surface to the atmosphere through evaporation and transpiration. |

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| **Exceedance** | An emission or ambient concentration whose measured value is more than that allowed by government regulations. |
| **Exposure** | The contact between a chemical and a biological system, or organism. |
| **Exposure Concentration** | The concentration of a chemical in its transport or carrier medium at the point of contact. |
| **Facies** | The overall characteristics of a rock unit that reflect its origin and differentiate the unit from others around it |
| **Fauna** | An association of animals living in a particular place or at a particular time. |
| **Flare** | A device for disposing of combustible gases from refining or chemical processes by burning in the open. |
| **Floodplain** | Land near rivers and lakes that may be inundated during seasonally high water levels (i.e., floods). |
| **Fluvial** | Relating to a stream or river. |
| **Fluvial Processes** | Natural processes involving the formation and evolution of stream and river channels and their floodplains. |
| **Forage Area** | The area used by an organism for hunting or gathering food. |
| **Forage Fish** | Small fish that provide food for larger fish (e.g., pearl dace, fathead minnow). |
| **Forb** | Broad-leaved herb, as distinguished from grasses. |
| **Forest** | A collection of stands of trees that occur in similar space and time. |
| **Forest Fragmentation** | The change in the forest landscape, from extensive and continuous forests. |
| **Forest Landscape** | Forested or formerly forested land not currently developed for nonforest use. |
| **Forest Succession** | The orderly process of change in a forest as one plant community or stand condition is replaced by another, evolving toward the climax type of vegetation. |
| **Fragmentation** | Fragmentation is the breaking up of contiguous natural areas by areas of human disturbance into smaller and more distinct or isolated patches. |

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| **Fugitive Emissions** | Substances emitted from any source except those from stacks and vents. Typical sources include gaseous leakage from valves, flanges, drains, volatilization from ponds and lagoons, and open doors and windows. Typical particulate sources include bulk storage areas, open conveyors, construction areas or plant roads. |
| **GIS** | Geographic Information System. Pertains to a type of computer software that is designed to develop, manage, analyze and display spatially referenced data. |
| **Glacial Till** | Unsorted and unstratified glacial drift (generally unconsolidated) deposited directly by a glacier without subsequent reworking by water from the glacier. Consisting of a heterogeneous mixture of clay, silt, sand, gravel and boulders (i.e., drift) varying widely in size and shape. |
| **Glaciofluvial** | Sediments or land-forms produced by meltwaters originating from glacier/ice sheet. |
| **Glaciolacustrine (or Glacio-Lacustrine)** | Relating to the lakes that formed at the edge of glaciers as the glaciers receded. Glaciolacustrine sediments are commonly laminar deposits of fine sand, silt and clay. |
| **Habitat** | The place where an animal or plant naturally or normally lives and grows, for example, a stream habitat or a forest habitat. |
| **Habitat Alienation** | The loss of habitat effectiveness as a result of sensory disturbances from human activities at disturbed sites. |
| **Habitat Effectiveness** | Including the physical characteristics associated with the suitability of a habitat, 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 Generalist** | Wildlife species that can survive and reproduce in a variety of habitat types (e.g., red-backed vole). |
| **Habitat Specialist** | Wildlife species that is dependent on a few habitat types for survival and reproduction (e.g., Cape May warbler). |
| **Habitat Suitability Index (HSI) Model** | Analytical tools for determining the relative potential of an area to support individuals or populations of a wildlife species. They are frequently used to quantify potential habitat losses and gains for wildlife as a result of various land use activities. |

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| **Habitat Unit (HU)** | Generally, used in HSI models. A habitat is ranked in regards to its suitability for a particular wildlife species. This ranking is then multiplied by the area (ha) of the particular habitat type to give the number of habitat units available to the wildlife species in question. |
| **Head** | The energy, either kinetic or potential, possessed by each unit weight of a liquid; expressed as the vertical height through which a unit weight would have to fall to release the average energy possessed. It is used in various compound terms such as pressure head, velocity head and loss of head. |
| **hectare** | An area measuring the equivalent of 100 m by 100 m or 10,000$m^2$ , one hectare = 2.4711 acres |
| **Historic Site** | Any location with detectable evidence of past human activity. |
| **Historical Resources** | Works of nature or by humans valued for their palaeontological, archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest. |
| **Hydraulic Conductivity** | The permeability of soil or rock to water. |
| **Hydraulic Gradient** | A measure of the force of moving groundwater through soil or rock. It is measured as the rate of change in total head per unit distance of flow in a given direction. Hydraulic gradient is commonly shown as being dimensionless, since its units are metres/meter. |
| **Hydraulic Head** | The elevation, with respect to a specified reference level, at which water stands in a piezometer connected to the point in question in the soil. Its definition can be extended to soil above the water table if the piezometer is replaced by a tensiometer. The hydraulic head in systems under atmospheric pressure may be identified with a potential expressed in terms of the height of a water column. More specifically, it can be identified with the sum of gravitational and capillary potentials, and may be termed the hydraulic potential. |
| **Hydraulic Structure** | Any structure designed to handle water in any way. This includes retention, conveyance, control, regulation and dissipation of the energy of water. |
| **Hydrogeology** | The study of the factors that deal with subsurface water (groundwater), and the related geologic aspects of surface water. |
| **In Situ** | Also known as “in place”, refers to methods of extracting deep deposits of oil sands without removing the groundcover. The in-situ technology in oil sands uses underground wells to recover the resources with less impact to the land, air and water than the traditional oil sands methods. |

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| **Infiltration** | The flow or movement of precipitation or surface water through the ground surface into the ground. Infiltration is the main factor in recharge of groundwater reserves. |
| **Injection well** | A well used for injecting fluids (air, steam, water, natural gas, gas liquids, surfactants, alkalines, polymers, etc.) into an underground formation for the purpose of increasing recovery efficiency. |
| **Inorganics** | Pertaining to a compound that contains no carbon. |
| **L/min** | Litres per minute |
| **Land capability** | Means the ability of land to support a given land use, based on an evaluation of the physical, chemical and biological characteristics of the land, including topography, drainage, hydrology, soils and vegetation. |
| **Landform** | General term for the configuration of the ground surface as a factor in soil formation; it includes slope steepness and aspect as well as relief. Also, configurations of land surfaces taking distinctive forms and produced by natural processes (e.g., hill, valley, plateau). |
| **Landscape** | A heterogeneous land area with interacting ecosystems. |
| **Landscape Diversity** | The size, shape and connectivity of different ecosystems across a large area. |
| **Leaching** | The removal, by water, of soluble matter from regolith or bedrock. |
| **Linear Corridor** | Roads, seismic lines, pipelines and electrical transmission lines, or other long, narrow disturbances. |
| **Littoral Zone** | The zone in a lake that is closest to the shore. It includes the part of the lake bottom, and its overlying water, between the highest water level and the depth where there is enough light (about 1% of the surface light) for rooted aquatic plants and algae to colonize the bottom sediments. |
| **$m^3/d$** | Cubic metres per day. |
| **$m^3/s$** | Cubic metres per second. |
| **Merchantable Forest** | A forest area with potential to be harvested for protection of lumber/timber or wood pulp. Forests with a timber productivity rating of moderate to good. |
| **Mineral Soil** | Soils containing low levels of organic matter. Soils that have evolved on fluvial, glaciofluvial, lacustrine and morainal parent material. |
| **Mixing Height** | The depth of surface layer in which atmospheric mixing of emissions occurs. |
| **Model Domain** | The region of interest for a numerical model. |

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| **Movement Corridor** | Travel way used by wildlife for daily, seasonal, annual and/or dispersal movements from one area or habitat to another. |
| **Nighttime** | Defined as the hours from 22:00 to 07:00. |
| **NOx** | A measure of the oxides of nitrogen comprised of nitric oxide (NO) and nitrogen dioxide ($NO_2$). |
| **Observation Well** | A constructed controlled point of access to an aquifer which allows groundwater observations. Small diameter observation wells are often called piezometers. |
| **Old Growth Forest** | Old growth forests are those forested areas where the annual growth equals annual losses, or where mean annual increment of timber volume equals zero. They can also be defined as those stands that are self-regenerating (i.e., having a specific structure that is maintained). |
| **Organic Soil** | Soils containing high percentages of organic matter (fibric and humic inclusions). |
| **Overburden** | The soil, sand, silt or clay that overlies bedrock. |
| **Overwintering Habitat** | Habitat used during the winter as a refuge and for feeding. |
| **PAH(s)** | Polycyclic Aromatic Hydrocarbon. A chemical byproduct of petroleum-related industry. Aromatics are considered to be highly toxic components of petroleum products. PAHs, many of which are potential carcinogens, are composed of at least two fused benzene rings. Toxicity increases along with molecular size and degree of alkylation of the aromatic nucleus. |
| **PAI** | The Potential Acid Input is a composite measure of acidification determined from the relative quantities of deposition from background and industrial emissions of sulphur, nitrogen and base cations. |
| **Paleozoic** | An era of geologic time, from the end of the Precambrian to the beginning of the Mesozoic, or from about 570 to about 225 million years ago. |
| **Peat** | A material composed almost entirely of organic matter from the partial decomposition of plants growing in wet conditions. |
| **Permissible Sound** | The allowable overall A-weighted sound level of noise from energy industry level sources, as specified by the ERCB Noise Control Directive, which may contribute to the sound environment of a residential location. |
| **Permissible Sound Level (PSL)** | The maximum sound level that a facility should not exceed at a point 15m from the nearest or most impacted dwelling unit. |

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| **pH** | The negative logarithm of hydrogen ion concentration. The pH scale is generally presented from 1 (most acidic) to 14 (most alkaline). A difference of one pH unit represents a ten-fold change in hydrogen ion concentration. |
| **Piezometer** | A pipe in the ground in which the elevation of water levels can be measured. |
| **Piezometric Surface** | If water level elevations in wells completed in an aquifer are plotted on a map and contoured, the resulting surface described by the contours is known as a potentiometric or piezometric surface. |
| **PM** | Particulate matter. May be relatively large and derived from crustal sources such as road dust (>10µm), or be relatively small and derived from combustion sources both natural and anthropogenic sources (2.5 to 10µm), or be derived through reactions in the atmosphere (secondary particulates; <2.5µm) |
| **$PM_{10}$** | Airborne particulate matter with mean diameter less than 10 µm (microns) in diameter. This represents the fraction of airborne particles that can be inhaled into the upper respiratory tract. |
| **$PM_{2.5}$** | Airborne particulate matter with mean diameter less than 2.5 µm (microns) in diameter. This represents the fraction of airborne particles that can be inhaled deeply into the pulmonary tissue. |
| **Productive Forest** | Forests on lands with a capability rating of equal to or greater than 3, and stocked with trees to meet the stocking standards of a merchantable forest. |
| **QA/QC** | Quality Assurance/Quality Control refers to a set of practices that ensure the quality of a product or a result. |
| **Receptor** | The person or organism subjected to exposure to chemicals or physical agents. |
| **Recharge/Discharge Area** | Recharge/Discharge Area are areas that either contribute (recharge) or take away (discharge) to/from the overall volume of groundwater in an aquifer. |
| **Reclamation** | The restoration of disturbed or wasteland to a state of useful capability. Reclamation is the initiation of the process that leads to a sustainable landscape (see definition), including the construction of stable landforms, drainage systems, wetlands, soil reconstruction, addition of nutrients and revegetation. This provides the basis for natural succession to mature ecosystems suitable for a variety of end uses. |
| **Reclamation Certificate** | A certificate issued by a Conservation, and Reclamation Inspector, signifying that the terms and conditions of a conservation and reclamation approval have been complied with. |

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| **Regeneration** | The natural or artificial process of establishing young trees. |
| **Riparian Area** | A geographic area containing an aquatic ecosystem and adjacent upland areas that directly affects it. |
| **Runoff** | The portion of water from rain and snow that flows over land to streams, ponds or other surface waterbodies. It is the portion of water from precipitation that does not infiltrate into the ground, or evaporate. |
| **SAGD** | Steam Assisted Gravity Drainage is an in-situ oil sands recovery technique that involves drilling two horizontal wells, one to inject steam and a second to produce the bitumen. |
| **Sediment Sampling** | A field procedure relating to a method for determining the configuration of sediments. |
| **Sedimentation** | The process of subsidence and deposition of suspended matter carried by water, wastewater or other liquids, by gravity. It is usually accomplished by reducing the velocity of the liquid below the point at which it can transport the suspended material. |
| **Sensory Disturbance** | Visual, auditory, or olfactory stimulus that creates a negative response in wildlife species. |
| **Sodium Adsorption Ratio (SAR)** | Concentrations of sodium, calcium and magnesium ions in a solution. |
| **Soil Inventory Level (SIL)** | The intensity of sampling required in areas to be developed (SIL1; 1 sample per 1 to 5 ha), near developing areas (SIL2; 1 sample per 2 to 30 ha) and in areas distant from the development but within the LSA (SIL3; 1 sample per 30 ha or more). |
| **Sound Level** | The contribution of noise from one or more sources to the overall sound level Contribution from all sources affecting a particular location. |
| **Sound power level** | The acoustic power radiated from a given sound source related to a reference power level (typically $10^{-12}$ watts) expressed in decibels. |
| **Sound pressure level** | The ratio, expressed in decibels, of sound pressure to a reference pressure equal to the human threshold of hearing. |
| **Sport/Game Fish** | Large fish caught for food or sport (e.g., northern pike, Arctic grayling). |
| **Stakeholder** | People or organizations with an interest or share in an undertaking, such as a commercial venture. |
| **Storativity** | Storativity is the volume of water an aquifer releases from or takes into storage due to pressure change. |

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| **Stratigraphy** | The succession and age of strata of rock and unconsolidated material. Also concerns the form, distribution, lithologic composition, fossil content and other properties of the strata. |
| **Succession** | A series of dynamic changes by which one group of organisms succeeds another through stages leading to a climax community. |
| **Successional Stage** | A stage or recognizable condition of a forest community that occurs during its development from bare ground to climax. |
| **Surficial Aquifer** | A surficial deposit containing water considered an aquifer. |
| **Surficial Deposit** | A geologic deposit (clay, silt or sand) that has been placed above bedrock. (See also "Overburden") |
| **Suspended Sediments** | Particles of matter suspended in the water. Measured as the oven dry weight of the solids, in mg/L, after filtration through a standard filter paper. Less than 25 mg/L would be considered clean water, while an extremely muddy river might have 200 mg/L of suspended sediments. |
| **Thalweg** | The (imaginary) line connecting the lowest points along a streambed or valley. Within rivers, the deep channel area. |
| **Till** | Sediments laid down by glaciers. |
| **Total Dissolved Solids (TDS)** | The total concentration of all dissolved compounds solids found in a water sample. |
| **Traditional Land Use** | Activities involving the harvest of traditional resources such as hunting and trapping, fishing, gathering medicinal plants and traveling to engage in these activities. |
| **Understory** | Those trees or other vegetation in a forest stand below the main canopy level. |
| **Uptake** | The process by which a chemical crosses an absorption barrier and is absorbed into the body. |
| **VOC** | Volatile Organic Compounds include aldehydes and all of the hydrocarbons except for ethane and methane. VOCs represent the airborne organic compounds likely to undergo or have a role in the chemical transformation of pollutants in the atmosphere. |
| **Water Table** | The shallowest saturated ground below ground level - technically, that surface of a body of unconfined groundwater in which the pressure is equal to atmospheric pressure. |
| **Watershed** | The entire surface drainage area that contributes water to a lake or river. |

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| **Wellpad** | An area associated with SAGD operations on which pairs of wells are drilled. The pairs of wells include a steam injection well and a production well. |
| **Worst-Case** | A semi-quantitative term referring to the maximum possible exposure, dose or risk, that can conceivably occur, whether or not this exposure, dose, or risk actually occurs is observed in a specific population. It should refer to a hypothetical situation in which everything that can plausibly happen to maximize exposure, dose, or risk does happen. The worst-case may occur in a given population, but since it is usually a very unlikely set of circumstances in most cases, a worst-case estimate will be somewhat higher than what occurs in a specific population. |
| **Xeric** | Referring to habitats in which plant production is limited by availability of water. |