

GLOSSARY OF TECHNICAL TERMS

Abrasive Blasting - The operation of forcibly propelling a stream of abrasive material against a surface under high pressure to smooth a rough surface, roughen a smooth surface, shape a surface, or remove surface contaminants.

Acid-Base Accounting (ABA) - The balance between the acid-production and acid-consumption properties of mine-waste material. Minerals in waste material (mostly sulfides and pyrite) react with water and oxygen to produce sulfuric acid. ABA consists of measuring the acid generating and acid neutralising potentials of a rock sample.

Acid Metalliferous Drainage - The acid generated is completely neutralised by the dissolution of common carbonate minerals. Since the solubility of many toxic metals is pH-dependent, the neutralisation process can lead to precipitation of metals such as aluminium, copper and lead, and thus their removal from the drainage. However, at near-neutral pH, concentrations of toxic components such as zinc, arsenic, nickel, and cadmium can remain elevated. As with acid drainage, metalliferous drainage will also generally contain high (sulfate) salinity.

Non-acid metalliferous drainage is less common than acid drainage, due to the requirement for specific sulfide minerals and a local excess of carbonate neutralisation.

Acid Mine Drainage (AMD) – Also called acid rock water or acid rock drainage, refers to the outflow of acidic water from metal mines or coal mines. Acid mine drainage occurs naturally within most environments as part of the rock weathering process. However, this is exacerbated by large-scale earth disturbances characteristic of mining and other large construction activities, usually within rocks containing an abundance of sulfide minerals.

Acid Neutralising Capacity (ANC) – A measure of the buffering capacity or inherent neutralising ability of a material (often due to the presence of carbonate minerals).

Alkalinity - A pressure and temperature independent property of water that determines in part the carbon content.

Alluvial – Sand, silt, clay, gravel, or other matter deposited by flowing water, as in a riverbed, floodplain, delta, or alluvial fan. Alluvium is generally considered a young deposit in terms of geologic time.

Ambient Noise – The sum of (background) noise at a particular location.

ANABAT – Specialised electronic bat call recorder that allows for bats to be unobtrusively surveyed and identified by call.

Annual Recurrence Interval (ARI) – The expected period between exceedances of a given rainfall total, accumulated over a given duration. For example, if there is a 1 in 50 chance that 170 millimetres of rain will fall in a catchment in a 24-hour period during any given year, a rainfall total of 170 millimetres in a consecutive 24-hour period is said to have a 50-year ARI.

Anthropogenic – Produced by humans or human-related activity.

Aquifer – A geological formation bearing groundwater that is permeable (unconfined) or impermeable (confined) to the transmission of groundwater.

A-weighted – The filtering of sound to correlate to the frequency response of a human ear.

Batter – An upwardly receding slope of the face of a spoil dump.

Bedrock – The native consolidated rock underlying the Earth's surface.

Bench – A narrow ledge or shelf, along the top or bottom of a slope. A bench is essentially the same thing as a berm. They are narrow flattened areas that interrupt the slope of a spoil dump.

Borrow Material – Soil or sediment excavated for use in construction.

Brine – Water saturated with salt

Bund – Also called a bund wall or bunding, is an embankment that is constructed around an area and / or structure that is designed to prevent inflow or outflow of water.

Capping - Covering with material like clay to keep the water and air out.

Coal Seam– A bed or stratum of coal.

Conductivity - The ease with which a material transmits an electric current.

Cumulative Impact– The combined impact from the mining project as well as other projects occurring or proposed nearby.

Datum - A reference location or elevation which is used as a starting point for subsequent measurements. Sea level is a datum for elevation measurements.

Decant Pond - An open pond where waste or process water is allowed to stand while suspended materials settle out.

Decommissioning - Closing down a mine after mining has finished. This involves taking away buildings and equipment and rehabilitating the mine site area.

Demographic – A particular sector of a population.

Design Storage Allowance (DSA) – Excess water storage required at November 1 each year that will be filled by the process inputs and runoff from a critical wet period, should it occur.

Drawdown – A lowering of the water level of a confined or unconfined aquifer resulting from the pumping of groundwater.

Effluent - Water discharged into the environment from a man-made structure.

El Nino / Southern Oscillation - El Niño-Southern Oscillation (ENSO) is a global coupled ocean-atmosphere phenomenon. The Pacific Ocean signatures, El Niño and La Niña are major temperature fluctuations in surface waters of the tropical Eastern Pacific Ocean.

Elliot Trapping – Small metal folding traps baited with a mixture of oats and honey to catch small mammals and reptiles.

Energy Dissipation – The loss of kinetic energy of moving water due to internal turbulence, boundary friction, change in flow direction, contraction, or expansion

Environmental Authority – Licence or Approval issued under the *EP Act* to conduct specified 'Environmentally Relevant Activities'.

Environmentally Relevant Activities – Activities, as defined in the *Environmental Protection Regulation 2008*, that have the potential to release contaminants to the environment.

Ephemeral – Watercourse flows that are short-lived, occurring only after direct rainfall or runoff from a rainfall event.

Evaporation - The process of liquid water becoming water vapour. Includes vaporisation from water surfaces and land surfaces.

Exploration - The work of identifying areas that may contain viable mineral resources. This work can include surface mapping, remote sensing, exploratory drilling, geophysical testing, geochemical testing and other activities.

Exploratory Drilling - Drilling done to locate mineral deposits in an area where little subsurface data about those minerals is available.

Flotation - The process of separating different materials, especially minerals, by agitating a pulverized mixture of the materials with water, oil, and chemicals. Differential wetting of the suspended particles causes unwetted particles to be carried by air bubbles to the surface for collection.

Freeboard – The distance between the level of the water and the upper surface of a dam or storage facility, such as the tailings storage facility.

Gauging Station - A facility on a stream, lake, canal, reservoir or other water body where instruments are installed to automatically monitor the water. Measurements such as stage, discharge, water temperature and pH are automatically taken and transmitted to hydrologists via satellite, radio or telephone.

Geochemistry - Chemical composition and changes of the earth.

Geomorphology - The science of Earth's landforms, their description, classification, distribution, origin and significance.

Greenhouse Gases – Gases such as carbon dioxide and methane which, when dispersed in the atmosphere, tend to trap heat.

Groundwater - Water that exists below the water table in the zone of saturation. Ground water moves slowly in the same direction that the water table slopes.

Groundwater Recharge Area - A location where surface water or precipitation can infiltrate into the ground and replenish the water supply of an aquifer.

Grubbing – The removal of vegetation by the root

Hazard – The capacity of a substance, an activity or an event to produce an adverse health, safety or environmental effect.

Hazardous Waste - Any substance, whether liquid, solid or gaseous, derived by or resulting from, the process of minerals that tends to destroy life or impair or endanger health or the environment.

Hopper - A bin or funnel that is loaded from the top and which discharges through a door or chute at the bottom.

Hydraulic Conductivity - The ability of a porous material to transmit a fluid.

Hydrology - The science of Earth's water, its movement, abundance, chemistry and distribution on, above and below Earth's surface.

Impermeable Layer - A layer of rock, sediment or soil that does not allow water to pass through.

Infiltration - The movement of surface water into porous soil.

Interburden – Material of any nature that lies between two or more coal seams

L₁₀ – The L₁₀ is the A-weighted noise level which is exceeded 10% of the time.

L₉₀ – The L₉₀ is commonly referred to as the background noise level. The A-weighted sound pressure level that is equalled or exceeded for 90% of that part of the interval in which the investigated noise is absent.

L_{eq} - The L_{eq} is the energy average noise level containing the same acoustic energy as the actual fluctuating noise level.

Macroinvertebrate – An invertebrate large enough to be seen without magnification.

Net Acid Generation (NAG) – The NAG value measures the acidity after oxidation and is expressed as kilograms of sulphuric acid per tonne of rock.

Net Acid Producing Potential (NAPP) – This is also a theoretical calculation value commonly used to indicate if a material has potential to generate ARD. It represents the balance between the capacity of a sample to generate acid and its capacity to neutralise acid. It is expressed in units of kg H₂SO₄ per tonne.

Non Acid Forming (NAF) – Considered unlikely to be a source of acidic drainage.

Outcrop - An exposure of bedrock.

Overburden – Material that overlies a deposit of useful material such as coal.

Oxidation - A chemical reaction in which substances combine with oxygen.

Peak Particle Velocity – A measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres / second.

Permeability - A measure of how well a material can transmit water. Materials such as gravel, that transmit water quickly, have high values of permeability. Permeability is primarily determined by the size of the pore spaces and their degree of interconnection.

pH - A relative measure of the acidity or alkalinity of a water based upon a scale that ranges between 0 and 14 with 7 being neutral. Values of pH below 7 indicate acid solutions and values of pH above 7 indicate basic solutions.

Pit dewatering – The act of removing groundwater around the edges of the area to become an underground pit progressively as the pit is dug. This process keeps groundwater out of the pit so as mining can occur; often well below the water table.

Pitfall Trapping – Pitfall traps target small ground-dwelling fauna (reptilian, mammalian and amphibian). Each Pitfall trap line consists of a drift fence running along the ground and crossing the middle of a series of buckets buried flush with the soil surface.

PM₁₀ – Fine airborne particles with a diameter of less than 10 µm are small enough to be breathed into the lungs.

PM_{2.5} – Particles with an aerodynamic diameter of less than 2.5 µm

Potable water – water of sufficiently high quality that it can be consumed or used without risk of immediate or long term harm.

Potentially Acid Forming (PAF) –Material that has a significant sulphur content and is likely to generate acid in excess of its inherent neutralising capacity.

Process Water - Water out of the treatment plant which has chemicals in it.

Raw water - Fresh water that has not been used in the process and does not contain process reagents salts or fine particulates.

Recharge - Water added to an aquifer or other water body. An aquifer is recharged by precipitation in an area where the aquifer has a porous connection to the surface.

Reduced Level (RL) – Elevation relative to a specific datum point.

Regional Ecosystem – Vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil.

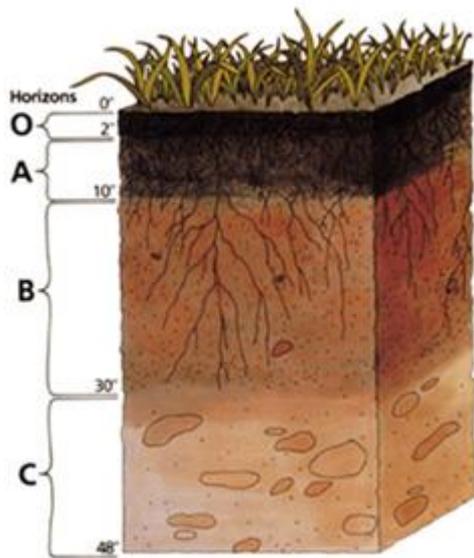
Run of Mine - Raw mined material prior to screening or processing

Reverse Osmosis - A treatment process used in water systems by adding pressure to force water through a semi-permeable membrane. Reverse osmosis removes most drinking water contaminants.

Screening - Way of sizing crushed rock into different sizes by shaking them through different screens which have different sized holes or gaps. The crushed rock that passes through the screens is called the undersize.

Sewage Treatment Plant- A facility designed to receive the wastewater from domestic sources and to remove materials that harms water quality and threaten public health and safety when discharged into receiving streams or bodies of water.

Soil Profile - Soil generally consists of visually and texturally distinct layers, which can be summarized as follows, from top to bottom:



O) Organic matter: Litter layer of plant residues in relatively undecomposed form.

A) Surface soil: Layer of mineral soil with most organic matter accumulation and soil life. This layer eluviates (is depleted of) iron, clay, aluminium, organic compounds and other soluble constituents. When eluviation is pronounced, a lighter coloured "E" subsurface soil horizon is apparent at the base of the "A" horizon.

B) Subsoil: Layer of alteration below an "E" or "A" horizon. This layer accumulates iron, clay, aluminium and organic compounds, a process referred to as illuviation.

C) Substratum: Layer of unconsolidated soil parent material. This layer may accumulate the more soluble compounds that bypass the "B" horizon.

Spillway – A structure designed to permit discharges from a dam when the water level rises above a predetermined level. The aim of a spillway is to prevent a dam from overtopping.

Spoil Dump– The area where mine waste (overburden or other waste material removed in mining, quarrying, dredging, or excavating) are disposed of or piled.

Sterilisation Drilling – Drilling holes to test areas for p. If the results reveal low prospective zones, the area will be declared sterile and infrastructure, such as spoil dumps and buildings, may be located in these sterile zones.

Subterranean Fauna – Fauna which live their entire lives (obligate) below the surface of the earth. They are usually divided into two groups: Stygofauna –aquatic and living in groundwater and Troglifauna – air-breathing and living caves and voids

Stygofauna– animals that live in groundwater.

Tailings – The solid residual material after the processing of ore.

Tailings Storage Facility (TSF) - An area used to confine tailings.

Total Suspended Particulate (TSP) – Tiny airborne particles that are less than 100 micrometers in diameter.

Transformer - an electrical device that transfers energy from one circuit to another by magnetic coupling with no moving parts. A transformer comprises two or more coupled windings, or a single tapped winding and, in most cases, a magnetic core to concentrate magnetic flux. A changing current in one winding creates a time-varying magnetic flux in the core, which induces a voltage in the other windings.

Uncertain Classification (UC) – Material that requires further investigation to determine their acid producing potential. **Void** – In a mining context, refers to a mined-out pit remaining unfilled after the cessation of mining.

Yield - The quantity of water or resource that can be produced from a deposit.