



PRODIGY
GOLD INCORPORATED

Magino Gold Project

MAGINO GOLD PROJECT

Finan Township, Algoma District, Ontario

ENVIRONMENTAL IMPACT STATEMENT APPENDIX 5: GLOBAL GLOSSARY

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APPENDIX 5: GLOBAL GLOSSARY

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| Action | Any project or activity of human origin. |
| Acid Rock Drainage | When rock surfaces containing sulphides (sulfur compounds) are exposed to air and rain/snow a reaction can occur with the elements in the rock resulting in acidification of the water run-off, which in turn causes metals and various salts to dissolve in the water, potentially causing environmental harm. |
| Acute | A stimulus severe enough to rapidly induce a health effect (i.e., in the short-term). In the context of human health, acute health effects can include eye irritation, headache, coughing, or gastrointestinal upset. |
| Aboriginal peoples | The Constitution Act, 1982 specifies that Aboriginal peoples include Indian, Inuit and Métis peoples of Canada. |
| Adverse effect | Adverse effect in the context of the Human Health Risk Assessment means a harmful or undesired health effect on the receptor of interest. |
| Ambient | Surrounding natural conditions or environment at a given place and time. |
| Anthropogenic | Caused by human manipulation or activities; can be either constructional (e.g., artificial levee) or destructional (e.g., quarry). |
| Assessment Framework | A description of a process that organizes actions and ideas, usually in a step-by-step fashion. Frameworks help to guide practitioners in carrying out an assessment. |
| Background/baseline concentration | The ambient concentration of a chemical in the environmental media (e.g., soil, surface water, vegetation) in the local environment which is representative or typical of the conditions in that area. |
| Bedrock | The solid rock that underlies loose material, such as soil, sand, clay, or gravel. |
| Benthic | The collection of organisms living on lake bottoms. |
| Benthic Invertebrates | Organisms without backbones that live in or on the bottom sediments of rivers, streams, and lakes. |
| Bio-Oxidation | Bio-oxidation uses sulfur-consuming bacteria in a water solution to remove sulfur. |
| Bioaccumulation | When an organism stores within its body a higher concentration of a substance than is found in the environment. This is not necessarily harmful. |
| Bioavailability | The amount of chemical that enters the general circulation of the body following administration or exposure. |
| Bog | Peat-covered areas or peat-filled depressions with a high water table and a surface carpet of mosses, chiefly sphagnum. The water table is |

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| | at or near the surface in the spring, and slightly below during the remainder of the year. Bogs are generally highly acidic and low in biodiversity. |
| Boreal | Relating to the forest areas of the Northern Temperate Zone that are dominated by coniferous trees such as spruce, fir and pine. |
| Brownfield | Abandoned or underused industrial and commercial facilities available for re-use. |
| Candela | The luminous intensity of a lighting source and is measured in candelas (cd = lm/steradian). |
| Carbon in Column | Process for the carbon adsorption recovery of gold from solution in a series of columns. With carbon-in-column (CIC) operation, solution flows through a series of fluidized bed columns in an upflow direction. |
| Carbon in Pulp | The carbon adsorbs the gold from the slurry solution and is removed from the slurry by coarse screening. In practice, this is accomplished by a series of five or six agitated tanks where carbon and ore slurry are contacted in a staged countercurrent manner. This greatly increases the possible gold loading onto the carbon while maintaining a high recovery percentage. |
| Carcinogen | A chemical whose toxic mode of action is to act directly to cause cancer and does not have a threshold concentration, below which adverse effects are unlikely (i.e., exposure to any concentration is associated with some level of risk of developing cancer). |
| Chemical of Potential Concern (COPC) | Refers to any chemical for which the maximum concentration found at the subject site was above background concentration plus 10%, where applicable, and applicable screening criteria, and thus was further evaluated in the risk assessment. |
| Chemical Oxidation | Chemical oxidation is one half of a redox reaction, which results in the loss of electrons. One of the reactants in the reaction becomes oxidized, or loses electrons, while the other reactant becomes reduced, or gains electrons. In gold processing, chemical reaction for the dissolution of gold follows the Elsner Equation. In this redox process, oxygen removes, via a two-step reaction, one electron from each gold atom to form the complex $Au(CN)_2^-$ ion. The gold is then oxidized and the gold-bearing solution can be removed from ore through filtration. |
| Chronic | The development of adverse effects after extended exposure to a given substance (i.e., in the long-term). In the context of human health, chronic health effects can include decreased respiratory function, decreased kidney function, and cancer. |
| Climate | Represents the expected values for meteorological parameters. The climate of an area is described using climate normals. |
| Climatological | Relating to the meteorological study of climates and their phenomena. |

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| Concentration | Quantifiable amount of a chemical in environmental media. |
| Conceptual Site Model (CSM) | Information from the problem formulation stage is summarized in a CSM, which illustrates the source-pathway-receptor linkage; that is, the CSM shows how receptors on-site can come into contact with identified chemicals of potential concern in the relevant environmental media. |
| Cyanide Code | A voluntary initiative for the gold mining industry and the producers and transporters of cyanide used in gold mining. The code is intended to complement an operation's existing regulatory requirements. |
| Cyanidation | Cyanidation (also known as the cyanide process or the MacArthur-Forrest process) is a metallurgical technique for extracting gold from ore by converting the gold to a water-soluble coordination complex. |
| Daytime | Period from 7am to 7pm. |
| Delta-mag | A reduction in the sky quality or decrease in magnitude of "limit stars" as a result of sky glow. |
| Dewater | Remove water from sediment or waste materials. |
| Doré | A doré bar is a semi-pure alloy of gold and silver, usually created at the mine site. It is then transported to a refinery for further purification. |
| Dubreuilville | This is a town, approximately 14 kilometres (km) northwest of the Project site by road. |
| Earthquake magnitude | Used to add a number to help quantify the energy released by an earthquake. The Richter scale is a base-10 logarithmic scale, which defines magnitude as the logarithm of the ratio of the amplitude of the seismic waves to an arbitrary, minor amplitude. |
| Ecodistrict | Areas of land and water contained within an ecoregion that are defined by characteristic physical features, including bedrock and/or surficial geological features and topography. These physical features significantly influence successional pathways, patterns of species associations and habitats. Local climate patterns, such as lake effect snowfall area, characterize ecodistricts. |
| Ecoregion | Unique areas of land and water that are defined by a characteristic climate range and pattern, including temperature, precipitation and humidity. The climate within an ecoregion has an influence on the vegetation types, soil formations and other ecosystem processes and associated species that live there. |
| Effect | Any response by an environmental or social component to an action's impact [Under the <i>Canadian Environmental Assessment Act</i> , "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, |

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| | 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". |
| Electrowinning | Electrowinning involves passing an electric current through the pregnant (gold bearing) solution; the current causes the gold ions (ion solution) to plate out on steel wool cathodes as a recoverable solid. |
| Endpoint | An effect on a human receptor that can be measured and described in some quantitative fashion. |
| Environmental Components | Fundamental elements of the natural environment. Components usually include air, water (surface and groundwater), soils, terrain, vegetation, wildlife, aquatics and resource use. |
| Equivalent Noise Level | A logarithmic average (i.e., energy average) of the measured or predicted noise levels over a given period of time (T). An equivalent noise level measured or predicted over the night-time period would be referred to as $L_{eq,night}$. |
| Exposure assessment | The exposure assessment involves characterizing the degree to which receptors are exposed to COPCs for each relevant exposure pathway identified in the problem formulation. For people, the exposure assessment involves estimating the daily dose of a COPC. This permits the evaluation of exposure relative to toxicity values that are expressed in this way. |
| Exposure pathway or route | The route by which a receptor comes into contact with a chemical (e.g., ingestion, inhalation, dermal contact). |
| Felsic | A term used to describe light-coloured igneous rocks with low magnesium and iron content and which are enriched by lighter elements such as silicon, oxygen, aluminium, sodium, and potassium. The most common felsic rock is granite. |
| Fen | Carbon accumulating wetlands (either peat or marl), or wetlands on carbonate substrates, with a persistent groundwater supply and characterized by indicator plant and moss species with low tree cover. |
| Fines | Particles smaller than average in a mixture of materials varying in size. Fine material passes through a standard screen on which coarser fragments are retained. |
| Flotation | The flotation process consists of producing a mineral concentrate through the use of chemical conditioning agents, followed by intense agitation and air sparging of the agitated ore slurry to produce a mineral-rich foam concentrate. Specific chemicals are added to either float (foam off) specific minerals or to depress the flotation of other minerals. |
| Forage Fish | Forage fish serve as food for larger freshwater predators. Usually smaller than 15 centimetres (six inches) in length. |
| Frequency | Rate at which the effect occurs. |

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| Geographic Extent | Spatial scale of the effect. |
| Glaciofluvial | Glaciofluvial deposits consist of material that has been transported, sorted and deposited by melt water from a glacier or inland ice sheet. |
| Goudreau community | This community is located southwest of the Project; it consists of several cottages and cabins. |
| Hazard quotient | The ratio of estimated site-specific exposure to a single chemical constituent from a site over a specified period (e.g., estimated daily intake) to the estimated exposure level at which no adverse health effects are likely to occur (e.g., toxicity reference value). |
| Herman lake | This lake is located west of the Project area within the Project footprint. |
| Human Health Risk Assessment (HHRA) | The evaluation of the probability (including likelihood and severity) of adverse health consequences, and the accompanying uncertainties, to humans caused by the presence of a chemical at a given site. |
| Human receptor | A human that may be present at a given location which is identified as potentially experiencing adverse impacts from exposure to a chemical. |
| Hydrolysis | The chemical breakdown of a compound due to reaction with water. |
| Igneous Rock | Igneous (volcanic) rock is formed through the cooling and solidification of magma or lava. Igneous rock may form with or without crystallization, either below the surface as intrusive (plutonic) rocks or on the surface as extrusive (volcanic) rocks. |
| Illuminance/Illumination level | The total luminous flux incident on a surface, per unit area (i.e., lumens per m ²). It is a measure of the intensity of the incident light, wavelength-weighted by the luminosity function to correlate with human brightness perception and is the standard metric for lighting levels, measured in Lumens per metre squared (Lux). |
| Incremental Lifetime Cancer Risk (ILCR) | The risk associated with daily exposure to a carcinogenic chemical that is separate from the risk associated with assumed background exposures. |
| Indicators | Specific characteristics of the environment that can be measured qualified or determined in some way. |
| Inhalation Unit Risk (IUR) | The excess lifetime cancer risk estimated to result from continuous exposure to an agent at a specified concentration by the inhalation route of exposure. |
| Leaching | The extraction of certain materials from a carrier into a liquid. |
| Level of Noise | Expressed on a logarithmic scale, in units called decibels (dB). Since the scale is logarithmic, a noise that emits twice the noise energy as another will only be three dB higher. |
| Lichen | Numerous complex plant-like organisms made up of an alga and a fungus growing together on a solid surface. |

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| Light Trespass | The effects of light or illuminance that strays from its intended purpose and is measured in units of lux. |
| Limiting Magnitude | The brightness in Magnitude per square arc second ($\text{mag}/\text{arcsec}^2$) of the weakest star visible as seen with some viewing device, such as a telescope, binoculars, or the naked eye. Here wherever the term is used, it refers to the naked eye limiting magnitude. This value depends on many factors, including the viewer's age and observation experience. |
| Littoral | The part of a sea, lake or river that is close to the shore where light penetrates to the bottom. |
| Local Study Area (LSA) | Within the context of environmental impact assessment, the LSA is defined as the area which outside the Project boundary where there is a reasonable potential for direct effects on the environment from any phase of the Project, either through normal activities, or from possible accidents or malfunctions. |
| Lowest Observed Adverse Effect Level (LOAEL) | The lowest exposure level at which there may be biologically important increases in frequency or severity of adverse effects between the exposed population and its appropriate control group. Lowest observed adverse effect levels are typically reported for laboratory test species and uncertainty factors are applied to extrapolate effects to humans. |
| Low-grade ore | The portion of mined ore with a lower gold content. |
| Lumen | The unit of luminous flux produced by a source. |
| Luminaire | A lighting fixture. |
| Luminance | The perceived brightness of an object which has been illuminated by a source. The luminance of an object depends on its material characteristics and reflectance and is measured in cd/m^2 . |
| Mafic | A term used to describe dense, dark-colored minerals rich in magnesium and iron. |
| Magnitude per square arc second | A relative measure of the brightness of the sky. The natural background is 21.9, and the smaller the number the brighter the sky or celestial object. One magnitude level of difference corresponds to a factor of 2.5 change in brightness. |
| Make-up Water | Make-up water is all water that does not originate from either the pit or through recycling of plant operational water (i.e., fresh water). |
| Metamorphic | The original rock is subjected to heat (temperatures greater than 150°C to 200°C) and pressure causing profound physical and/or chemical change. |
| Metavolcanic | A type of metamorphic rock formed by a volcano, either as lava or tephra. Then, the rock was buried underneath subsequent rock and was subjected to high pressures and temperatures, causing the rock to recrystallize. |

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| Meteorological | Relating to the study of the atmosphere or weather. |
| Mitigation | The implementation of a strategy or measures to control or reduce the level of risk estimated by the risk assessment. |
| Moraine | Accumulation of rock debris of any size carried by a glacier and deposited upon melting, often in ridges. |
| Multi-media Assessment | Multiple exposure pathways, including air inhalation, water ingestion, food ingestion, incidental soil ingestion, dermal contact and dust inhalation, are evaluated in a multi-media risk assessment. Exposures to the chemicals of concern for each pathway are summed to determine total exposure for each chemical. |
| Nighttime | Period from 7 p.m. to 7 a.m. |
| No Observed Adverse Effect Level (NOAEL) | The highest exposure level at which there are no biologically important increases in the frequency or severity of adverse effect between the exposed population and its appropriate control; some biological effects may be produced at this level, but they are not considered adverse or precursors of adverse effects. No observed adverse effect levels are typically reported for laboratory test species and uncertainty factors are applied to extrapolate effects to humans. |
| Noise or Noise Levels | Refers to the levels that can be heard or measured at POR. |
| Non-carcinogen | A chemical that does not cause cancer and has a threshold concentration, below which adverse effects are unlikely. |
| Non-threshold | A non-threshold acting chemical is a carcinogenic chemical for which any level of exposure is associated with a certain level of risk. |
| Ore | A natural combination of minerals, from which a metal or metals can be profitably extracted. |
| Organic Deposits | Soils formed from decaying plant matter in environments where accumulation exceeds decomposition; peat. |
| Particulate Matter (PM) | A mixture of small particles and liquid droplets, often including a number of chemicals, dust and soil particles. |
| Peat | Organic soil. |
| Percentile Noise Level, Designated L _n | The noise level exceeds "n" percent of a specified time period and is measured in dBA. The L ₉₀ , for instance, is the noise level exceeded 90% of the time. It is a noise level index that commonly refers to the baseline noise level and is most often referenced in a rural setting. |
| Periphyton | A complex mixture of algae, cyanobacteria, heterotrophic microbes, and detritus that is attached to submerged surfaces in most aquatic ecosystems. It serves as an important food source for invertebrates, tadpoles and some fish. |
| Phytoplankton | Tiny photosynthetic organisms occurring in aquatic environments. |
| Plutonic | A term applied to igneous rocks formed beneath the surface of the |

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| | Earth, typically with large crystals due to the slowness of cooling. |
| Podzol | The typical soils of coniferous or boreal forests. |
| Point of Reception | A location where measurements and/or predictions of light levels are made. |
| Polishing Pond | Polishing ponds are designed to increase the environmental compatibility and quality of effluents from preceding treatments. Their primary purpose is to improve the quality of the water before it is recharged into natural stream and lakes. |
| Polycyclic Aromatic Hydrocarbon (PAH) | A group of organic compounds composed of at least two fused benzene rings. Receptors are formed from both natural and anthropogenic sources, including the incomplete combustion of organic matter in automobiles, incinerators and forest fires. |
| Portal | A physical structure that provides access to an underground mine from the surface. |
| Problem formulation | The problem formulation involves developing a focused understanding of how changes in environmental quality as a result of chemical releases from a project might affect the health of people, wildlife and aquatic life. The problem formulation identifies the following: a representative set of receptors (i.e., people, wildlife and aquatic life) that may be present near the Project; the chemicals released by the Project that may be present at levels harmful to receptors (i.e., Chemicals of Potential Concern [COPCs]); and the pathways by which receptors may be exposed to the COPCs (e.g., inhalation of ambient air by people, incidental ingestion of soil by wildlife and direct contact with surface water by aquatic life). The information from the problem formulation is summarized in a Conceptual Site Model (CSM) which illustrates the pathways of the COPCs from their sources, through the relevant environmental media to the identified receptors. |
| Process Plant | Facilities including buildings, grinding mills, pipes, tanks, chemical feed, and electrical and control systems used to extract the gold from the ore. |
| Project (the) | The activities associated with the preparation for development, production and closure of the Magino Gold Mines, Ltd. (Magino) gold mine as described in the project description. |
| Pyrite | Very common mineral, found in a wide variety of geological formations. Also known as fool's gold, it is an iron sulfide with the formula FeS ₂ . |
| Pyroclastic | A rock formed by the accumulation of fragments of volcanic rock scattered by volcanic explosions. |
| Quartz | The second-most-abundant mineral in the Earth's continental crust that consists of silicon dioxide (SiO ₂). |
| Receptor | Also known as POR. A location where vibration predictions are made. |

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| Reference concentration (RfC) | An estimate of a daily exposure (e.g., mg/m ³) to the general human population, including sensitive sub-groups, that is not associated with an appreciable risk of deleterious effects during a lifetime of exposure. |
| Region | Any area in which it is suspected or known that effects due to the action under review may interact with effects from other actions. This area typically extends beyond the local study area; however, as to how far will vary greatly depending on the nature of the cause-effect relationships involved. |
| Regional Study Area (RSA) | Within the context of environmental impact assessment, the RSA encompasses the area within which there is the potential for cumulative effects for components of the biological, physical or human environment. |
| Relative absorption factor | The ratio of the absorption efficiency of a chemical in the environmental exposure medium to the absorption efficiency in the test medium in the chemical-specific key toxicity study. |
| Riparian Vegetation | Plant life and the ecosystem that exists along the land-water interface. |
| Risk | The likelihood or probability that the adverse effect(s) associated with a chemical or physical agent will be produced in populations of individuals under their actual conditions of exposure. |
| Risk assessment | The scientific examination of the nature and magnitude of risk to human and other receptors exposed to chemical(s). The product of the risk assessment is a statement regarding the probability that populations or individuals that are exposed to chemicals of potential concern will be harmed and to what degree (risk characterization). |
| Risk characterization | The process of evaluating the potential risk to a receptor based on comparison of the estimated exposure to the toxicity reference value. |
| Scoping | A consultative process for identifying and possibly reducing the number of items (e.g., issues, VECs) to be examined until only the most important items remain for detailed assessment. Focussing ensures that assessment effort will not be expended in the examination of trivial effects. |
| Sediment | A naturally occurring material that is broken down by processes of weathering and erosion and is subsequently transported by the action of wind, water, or ice. |
| Semi-autogenous Grinding | Autogenous mills operate without grinding bodies; instead, the coarser part of the ore simply grinds itself and the smaller fractions. Semi-autogenous mills, 5 to 10 percent grinding bodies (usually metal spheres) are added. |
| Sky Glow | The result of stray light being scattered in the atmosphere brightening the natural sky background light level. Sky glow is typically described as percentage change in sky brightness. |

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| Sky Quality | A relative measure of the brightness of the sky in magnitude per square arc second (mag/arcsec ²). The natural background is 21.6 mag/arcsec ² . Stars or celestial objects have lower numbers, and the ability to see them in the night sky is a function of the sky quality. The higher the sky quality, the brighter the stars look in the night sky. Increased anthropogenic light reduces the sky quality number making it more difficult to see objects in the night sky. |
| Slurry | A fluid mixture of a pulverized solid with a liquid. Slurries behave in some ways like thick fluids, flowing under gravity and capable of being pumped. |
| Substrate | A surface on which an organism grows or is attached. |
| Tailings | The materials left over after the extraction and separation of valuable material from non-valuable material of an ore/rock. |
| Threshold | A limit of tolerance of a VEC to an effect, that if exceeded, results in an adverse response by that VEC. |
| Tourmaline | A crystalline boron silicate mineral compounded with elements such as aluminium, iron, magnesium, sodium, lithium, or potassium. Tourmaline is classified as a semi-precious stone and the gemstone comes in a wide variety of colors. |
| Toxicity | The inherent potential or capacity of a material to cause adverse effects in a living organism. |
| Toxicity assessment | The process of classifying chemicals by their mode of action (i.e., non-threshold or threshold) and determining the amount (concentration or dose) of a chemical to which a receptor may be exposed without the development of adverse effects (i.e., for non-threshold chemicals) or determining the amount of a chemical to which a receptor may be exposed that is associated with a given level of carcinogenic risk (i.e., for threshold chemicals). |
| Toxicity reference value (TRV) | For a non-carcinogenic chemical, the maximum acceptable dose (per unit body weight and unit of time) of a chemical to which a specified receptor can be exposed, without the development of adverse effects. For a carcinogenic chemical, the maximum acceptable dose of a chemical to which a receptor can be exposed, assuming a specified risk (e.g., one in 1,000,000). May be expressed as a reference dose for non-carcinogenic (threshold-response) chemicals or as a risk specific dose for carcinogenic (non-threshold response) chemicals. Also referred to as exposure limit. |
| Trophic Level | A group of organisms that occupy the same position in a food chain. |
| Uncertainty factor (UF) | One of several default factors used in operationally deriving a toxicity reference value from experimental data. The factors are intended to account for: a) variation in susceptibility among the members of the human population; b) uncertainty in extrapolating animal data to humans; |

- c) uncertainty in extrapolating from data obtained in a study with less-than-lifetime exposure;
- d) uncertainty in extrapolating from a lowest observed adverse effect level rather than from a no observed adverse effect level; and
- e) uncertainty associated with extrapolation when the database is incomplete.

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| Vantage Point | A location where something is viewed. |
| Valued Ecosystem Component (VEC) | Any part of the environment that is considered important by the proponent, public, scientists and government involved in the assessment process. Importance may be determined on the basis of cultural values or scientific concern. |
| Volatile organic compounds (VOC) | Volatile organic compounds include aldehydes and all of the hydrocarbons except for ethane and methane. Volatile organic compounds represent the airborne organic compounds likely to undergo or have a role in the chemical transformation of pollutants in the atmosphere. |
| Wawa | Community approximately 80 km southwest of the Project site by road. |
| Wetlands | A land area that is saturated with water, either permanently or seasonally, such that it takes on the characteristics of a distinct ecosystem. |
| White River | Community located approximately 90 km to the northwest of the Project site by road. |
| Zenith | An imaginary point directly "above" a particular location, on the imaginary celestial sphere. "above" means in the vertical direction opposite to the apparent gravitational force at that location. |
| Zooplankton | Tiny animals found near the surface in aquatic environments. |