Chapter 7. Glossary

A

Acid Rock Drainage—The formation of sulfuric acid due to the oxidation of sulfide minerals assisted by naturally occurring bacteria that is in excess of the capacity of the rock to neutralize the acid. The produced acid may liberate contaminants and, if assisted by infiltrating precipitation or other sources of water, transport the acid and contaminants to the surrounding environment.

Acid-Base Accounting—A screening test for potential acid rock drainage that relies on a comparison between the theoretical amount of sulfuric acid that could be produced from the sulfur contained in the rock and the amount of acid neutralization available in the rock.

Affected Environment—The resource values potentially affected by the proposed action and alternatives analyzed in a National Environmental Policy Act document.

Acre-Foot or Acre-Feet—The volume of water that covers an area of 1 acre to a depth of 1 foot (43,560 cubic feet or 325,851 gallons).

Allotment—See *Grazing Allotment*.

Alluvial—Pertaining to or composed of alluvium, or deposited by a stream or running water.

Ambient Air—The portion of the atmosphere, external to buildings, to which the public has general access (40 Code of Federal Regulations 50).

Ambient Concentration—The mass of a pollutant in a given volume of air, typically measured as micrograms of pollutant per cubic meter of air.

Ambient Standards—The absolute maximum level of a pollutant allowed to protect either public health (primary) or welfare (secondary).

Ammonium Nitrate and Fuel Oil—Primary blasting agent used in open-pit mining; a mixture of solid ammonium nitrate and liquid fuel oil.

Andesite—A dark-colored, fine-grained extrusive rock.

Angular Unconformity—Unconformity in which horizontally parallel strata of sedimentary rock are deposited on tilted and eroded layers, producing an angular discordance with the overlying horizontal layers.

Animal Unit Month—Amount of forage required to sustain a cow/calf unit (one cow and one calf) or equivalent for 1 month.

Aplite—Light-colored igneous rock characterized by a fine-grained texture.

Arenite—A general name for sedimentary rocks composed of sand-sized fragments, irrespective of composition.

Argillaceous—Containing clay-sized particles or clay minerals.

Arkosic—Having the character of arkose, feldspar-rich sandstone.

Attainment Area—Geographic area identified in regulations as being in compliance with National Ambient Air Quality Standards (Arizona Revised Statutes 49-401.01.6).

Aquifer—A water-bearing body of permeable rock, sand, or gravel. A formation, group of formations, or part of a formation that contains sufficient saturated permeable material to conduct groundwater and yield quantities of water to wells and springs.

Azurite—A monoclinic mineral, $2[Cu_3(OH)_2(CO_3)_2]$, vitreous azure crystals, supergene mineral in oxidized parts of copper deposits associated with malachite.

B

Background Concentration—The existing levels of air pollutant concentration in a given region. In general, it includes natural and existing emission sources but not future emission sources.

Barren Solution—Solution applied to ore to dissolve mineral commodities. Leaching operations in arid climates such as Arizona are usually a closed-loop, recirculating system in which the barren solution is reconstituted from pregnant solution after processing, with make-up water added as necessary. See *Raffinate*.

Basin-fill—Unconsolidated material such as sand, gravel, and silt eroded from surrounding mountains and deposited in a valley.

Beach—The sloping surface of hydraulically deposited tailings material.

Best Available Demonstrated Control Technology—Processes, structures, operating methods, or other alternatives developed by the U.S. Environmental Protection Agency and, in Arizona, Arizona Department of Environmental Quality, used to design, construct, and operate a facility in such a way that ensures the greatest degree of discharge reduction achievable, including, where practicable, a technology permitting no discharge of pollutants.

Best Management Practices—Measures that are installed on the land to reduce erosion and sedimentation before undertaking and during ground-disturbing activities. Measures used are those demonstrated to be the best available for the site that apply controls, technology, processes, measures, and operating methods that are socially, economically, and technically feasible for controlling soil loss and protecting water quality.

Bevill Amendment—The 1980 amendment to the Resource Conservation and Recovery Act that excludes “solid waste from the extraction, beneficiation, and processing of ores and minerals” from regulation as hazardous waste under Subtitle C of the Resource Conservation and Recovery Act.

Bioturbated—Sediments that have been disturbed by animals or plant roots while still in the soft sediment phase of their formation.

Blasting Delay—A device used to sequence the detonation in a series of blast holes to reduce the instantaneous energy release.

Bornite—An isometric mineral, $1[Cu_5FeS_4]$, brownish bronze, tarnishing to iridescent blue and purple.

Brachiopod—Mollusk-like marine animal.

C

Calcsilicate Hornfels—Fine-grained metamorphic rock containing a high percentage of calcsilicate minerals.

Candidate species— Sensitive wildlife species currently under consideration for inclusion in the federal list of threatened or endangered species.

Carbonate—A compound containing CO_3.

Cathode—The result of the electrowinning process is cathode copper (or a cathode) that is generally 99.99 percent copper or higher in grade. The cathode starter sheet (either stainless steel or a copper blank) is placed into the electrowinning solution and a DC charge is passed through the system. The cathodes are negatively charged and attract the positively charged cathode ions, causing them to adhere to the starter sheet and create a copper cathode.

Cenozoic—Pertaining to the present era, beginning 65 million years ago.

Cienega—A marshy area where the ground is wet due to the presence of seeps or springs, often with standing water and abundant vegetation. The term is commonly used in arid regions of the southwestern United States.

Chalcocite—A monoclinic mineral, 96[Cu_2S], metallic gray with blue to green tarnish, important source of copper.

Chert—Hard, dense, dull to semivitreous, microcrystalline or cryptocrystalline sedimentary rock.

Chrysocolla—Monoclinic mineral, $(Cu,Al)_2H_2Si_2O_5(OH)_4.nH_2O$, soft, bluish green to emerald green.

Clasts—Fragments of preexisting rock.

Clast-Supported—Clasts in sediment, i.e., pebbles, rocks, etc., are touching and supporting each other.

Clean Air Act of 1972, as amended—Federal legislation governing air pollution. The Clean Air Act established National Ambient Air Quality Standards for carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead (42 United States Code 7401 et seq.).

Clean Closure—Implementation of all actions specified in an aquifer protection permit, if any, as closure requirements, as well as elimination to the greatest degree practicable of any reasonable probability of further discharge from the facility and of exceeding aquifer water quality standards at the applicable point of compliance. Clean closure can also mean postclosure monitoring and maintenance are determined to be unnecessary to meet regulatory requirements (Arizona Revised Statutes 49-201.5).

Code of Federal Regulations—The compilation of Federal regulations adopted by Federal agencies through a rule-making process.

Concentrator—Facility where ore is crushed, ground, and separated to produce a highly concentrated ore.

Concern Level—Measure of degree of public importance placed on landscapes (scenery) viewed from travel ways and use areas. There are three categories: 1 (High), 2 (Moderate), and 3 (Low).

Contact Metamorphism—Process taking place in rocks at or near their contact with a body of igneous rock. Metamorphic changes are affected by the heat and materials emanating from the magma.

Contact Water—Storm water, or potable wash water, that has come into contact with process materials or mining areas.

Contrast Analysis—A method for assessing potential project related changes to the landscape. A project could produce visual contrasts on the existing landscape. These imposed contrasts can be measured by comparing the project's features with the major features and existing contrasts in the landscape. The measured differences between the existing landscape contrasts and those created by a project are used to determine the level of landscape change and whether the additional project contrasts meet or exceed acceptable levels.

Control Network—A group or series of interconnected survey lines and monuments that provide position data for fixing the position of corners and monuments that control property boundaries between National Forest System land and private lands or that are needed for current and future administrative or management purposes.

Cordillera—A comprehensive term for an extensive series of more or less parallel ranges, systems, and chains of mountains.

Corner—A point on the surface of the earth, determined by the surveying process, that defines an extremity on a boundary of the public lands (Glossaries of Bureau of Land Management Surveying and Mapping Terms).

Corner Accessories—Nearby physical objects to which corners are referenced for their future identification or restoration. Accessories include bearing trees, mounds, pits, ledges, rocks and other natural features to which distances or directions (or both) from the corner or monument are known. Such accessories are actually a part of the monumentation.

Council on Environmental Quality—An advisory council to the President of the United States established by the National Environmental Policy Act of 1969. It reviews Federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

Criteria Pollutants—Air pollutants for which the U.S. Environmental Protection Agency has established State and National Ambient Air Quality Standards. These include particulate matter, nitrogen oxides, sulfur dioxide, carbon monoxide, and volatile organic compounds.

Cultural Resources—Areas, properties, or sites of importance to cultural groups. In addition to areas of importance for traditional uses or products, they include the remains of human activity, occupation, or endeavor, as reflected in districts, sites, buildings, objects, artifacts, ruins, works of art, architecture, and natural features important in human events.

Cumulative Effects—The impacts to the environment that would result from the incremental effect of the proposed action when added to other past, present, and reasonably foreseeable future actions,

regardless of who undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Cut-Off Grade—The lowest grade of mineralized material considered economic; used in the calculation of the ore reserves in a given deposit.

Cyclone—A cone-shaped device used to separate granular solids by size in a water slurry.

D

Dependent Resurvey—A retracing and reestablishment of the lines of the original survey in their true original positions according to the best available evidence of the positions of the original corners. It includes the restoration of lost corners in accordance with procedures described in the *Manual of Surveying Instructions* (Glossaries of Bureau of Land Management Surveying and Mapping Terms).

Devonian—The fourth period, in order of decreasing age, of the periods making up the Paleozoic era.

Dewatering—Process of removing water from a slurry.

Diopside Skarn—A monoclinic mineral, $CaMgSi_2O_6$, white to light green, in metamorphic rocks.

Diorite—Group of plutonic rocks intermediate in composition between acidic and basic, characteristically composed of dark-colored amphibole, acid plagioclase, pyroxene, and sometimes a small amount of quartz.

Direct Impacts—Impacts that are definitively a result of an action and that occur at the same time and place. Synonymous with *direct effect*.

Discovery—In mining, defined as knowledge of the presence of the valuable minerals within the lines of a location.

Distance Zones—Landscape areas defined as specified distances from an observer and used as a reference to describe landscape character, scenic, quality, scenic integrity, and potential impacts to the landscape, as follows:

- Foreground – The distance zone within which landscape is viewed from the observation point to 0.5 mile away.
- Middle ground – The landscape distance zone between the foreground and background, from 0.5 mile to 4 miles from the observer.
- Background – The landscape distance zone located at 4 miles to the horizon from the observer.

Dolomitic—Dolomite bearing.

Dolostone—Rock consisting primarily of the mineral dolomite.

Dry-Stack Tailings—Term referring to the disposal of mineral processing tailings with a water content less than saturation. In general, the water is removed from the tailings with mechanical filters, creating a tailing the consistency of moist, fine-grained sand that can be transported on conveyor belts and placed using conventional earth-moving machinery.

E

Ecotone—The transition zone between two major ecological communities in which one does not merge gradually into the other; for example, that between grassland and woodland.

Electronic Blasting—A method of detonating a mine blast that uses sequencing to reduce instantaneous energy release.

Electrowinning (Electrometallurgy)—Process by which electrical current is passed through a metal-bearing aqueous solution resulting from leaching. The current causes metal ions to deposit on a salable, almost pure, metal cathode.

Emission—Effluent discharge into the atmosphere, usually specified by mass per unit time.

Endangered Species—Any animal or plant species in danger of extinction throughout all or a significant portion of its range, identified by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

Environmental Impact Statement—A document prepared to analyze the impacts to the environment of a proposed action and released to the public for review and comment. An environmental impact statement must meet the requirements of the National Environmental Policy Act and Council on Environmental Quality, as well as the directives of the lead Federal agency responsible for the proposed action.

Ephemeral Stream—A stream or portion of a stream that flows briefly in direct response to precipitation in the immediate vicinity and whose channel is at all times above the water table.

Existent Corner—A corner whose position can be identified by verifying the evidence of the monument, or its accessories, by reference to the description that is contained in the field notes, or where the point can be located by an acceptable supplemental survey record, some physical evidence, or testimony (Glossaries of Bureau of Land Management Surveying and Mapping Terms).

Extension—Part of and physically associated with a known mineral deposit, but outside the identified parts.

F

Feldspathic—Rock or other mineral aggregate containing feldspar.

Flotation—The general term for the system of achieving separation of metallic mineral grains from ground-up ore using the mineral's tendency to adhere to air bubbles in a water bath. Air is bubbled through the ground ore slurry and metallic mineral grains adhere to the air bubbles and are skimmed off the surface of the slurry. Various chemicals (called reagents) are used to enhance the process.

Forage—All browse and herbaceous foods available to grazing animals for feeding.

Fragmentation—See *Habitat Fragmentation*.

Fugitive Dust—Airborne particles emitted from any source other than through a stack or vent.

G

Geotechnical—The application of scientific methods and engineering principles to the acquisition, interpretation, and use of knowledge of materials of the Earth's crust for the solution of engineering problems; the applied science of making the Earth more habitable. Embraces the fields of soil mechanics and rock mechanics and many of the engineering aspects of geology, geophysics, hydrology, and related sciences.

Granodiorite—A group of coarse-grained plutonic rocks intermediate in composition between quartz diorite and quartz monzonite.

Grazing Allotment—An area designated for the use of a prescribed number and kind of livestock under a plan of management developed by an authorized agency.

Grazing Permittee—An individual who has been granted written permission to graze a specified number, kind, and class of livestock for a specific period on a grazing allotment.

Grazing Season—A period of grazing to obtain optimum use of the forage resource; an established period for which grazing permits are issued.

Grinding Media—Material used to more finely grind ore material to a size that allows recovery of the desired contained material(s).

Gypsum—Monoclinic mineral, 8[$CaSO_4.2H_2O$], colorless to white in crystals, most common natural sulfate.

H

Habitat—A specific set of physical conditions in which a single species, a group of species, or a large community lives. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Habitat Fragmentation—The disruption (by division) of habitats into smaller habitat patches. The effects of habitat fragmentation include loss of habitat area, increased edge area, and the creation of smaller, more isolated patches of remaining habitat.

Habitat Type—A habitat type is the basis of a forest ecosystem classification system. It is an aggregation of all land areas potentially capable of producing similar plant communities at climax. Habitat types are usually named for the most shade-tolerant tree species that will grow on the site and an understory plant that is represented with a high degree of constancy.

Haul Truck—Extremely large dump truck used to transport ore and waste rock from the mine pit. Haul trucks are too large to operate on public highways and only operate on mine property.

Heap Leach—The process of recovering metals from predominantly oxide ores by leaching ore that has been mined and placed on a specially prepared pad. A chemical solution is applied through low-volume emitters, and the metal-bearing leachate solution percolates downward and is collected.

Heritage Resources—See *Cultural Resources.*

Hornfels—A fine-grained rock composed of a mosaic of equidimensional grains without preferred orientation and typically formed by contact metamorphism.

Hydraulic Sink—Typically used to describe a passive containment created by an open pit that is hydrologically isolated to the extent that it does not allow migration from the capture zone. The sinks operate without continuous maintenance.

I

Ichnofossils (Trace Fossils)—Geological records of biological activity, such as burrows, borings, footprints, or feeding marks.

Igneous Rock—Rock formed from cooling and solidification of magma (molten rock).

Impact—A modification of the existing environment caused by an action (such as construction or operation of facilities).

Indirect Impacts—Impacts that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable (40 Code of Federal Regulations 1508.8). Synonymous with *indirect effects*.

Infrastructure—The basic framework or underlying foundation of a community or project, including road networks, electric and gas distribution, and water and sanitation services and facilities.

Interdisciplinary Team—A team composed of specialists in different disciplines. An interdisciplinary team is assembled because no single scientific discipline is sufficient to adequately identify and resolve issues and problems. Team member interaction provides necessary insight to all stages of the assessment.

Intermediate—Igneous rock that is transitional between basic and silicic, generally having a silica content of 54 to 65 percent.

Intermittent Stream (or Channel)—A stream, arroyo, or channel that flows only in direct response to precipitation.

Intrusive—Of or pertaining to intrusion (both the processes and the rock formed).

Irretrievable—Applies to the loss of production or commitment of renewable natural resources.

Irreversible—Applies primarily to the use of nonrenewable resources, such as minerals, cultural resources, or wetlands, or to those factors that are renewable only over long time spans, such as soil productivity. Also includes loss of future options.

Issue—A subject or question of widespread public interest relating to management of the National Forest System (36 Code of Federal Regulations 219.3).

J

Jurassic—Pertaining to a period of the Mesozoic Era, occurring from 190 million to 140 million years ago.

Jurisdiction—The legal right to control or regulate use of land or a facility. Jurisdiction requires authority but not necessarily ownership.

K

Karst—Type of topography that is formed on limestone, gypsum, and other rocks by dissolution and that is characterized by sinkholes, caves, and underground drainage.

L

Landscape—An area of repeating and similar geology, soils, land use, climate, biological systems, human influences, and interacting ecosystems.

Landscape Character—The combination of physical, biological, and cultural features that makes each landscape visually identifiable and unique.

Landscape Color—The colors and hues of a landscape or object.

Landscape Form—The structure, mass, or shape of a landscape or object.

Landscape Line—The path, real or imagined, that the eye follows where there are abrupt differences in landscape form, color, or texture, or when objects are aligned in a sequence.

Landscape Texture—The regular and irregular variations or patterns visible on the landscape surface.

Latite—A porphyritic extrusive rock having phenocrysts of plagioclase and potassium feldspar in near-equal amounts.

Leaching—The process by which a soluble metallic compound is extracted from ore by dissolving the metals in a solvent.

Leakage—The discharge of water or process solution from a facility or engineered containment.

Lithic Scatter—An archaeological site type characterized by a surface scatter of artifacts that consists entirely of lithic (i.e., stone) tools and chipped stone debris.

Limestone—A sedimentary rock consisting chiefly (more than 50 percent by weight) of calcium carbonate, primarily in the form of the mineral calcite.

Locatable Mineral—High-value, rare minerals, including metals and uncommon varieties of nonmetallic minerals such as calcium carbonate suitable for cement manufacturing. Locatable minerals are public domain (free to anyone and not allowed to be sold or leased) and are subject to mining claim location for sole ownership of the rights to the mineral.

Lost Corner—A corner whose position cannot be determined, beyond reasonable doubt, either from traces of the original marks or from acceptable evidence or testimony that bears on the original

position, and whose location can be restored only by reference to one or more interdependent corners (Glossaries of Bureau of Land Management Surveying and Mapping Terms).

Lower Cretaceous—Pertaining to a period of the Mesozoic Era, from 140 million to 65 million years ago.

M

Mafic—Composed predominantly of ferromagnesian rock-forming silicates.

Malachite—A monoclinic mineral, $Cu_2CO_3(OH)_2$, bright green, occurs with azurite in oxidized zones of copper.

Management Indicator Species—A wildlife species whose presence in a certain location or situation at a given population level indicates a particular environmental condition. Population changes are believed to indicate effects of management activities on a number of other wildlife species.

Megafauna—Large land animals.

Mesozoic—Pertaining to an era occurring between 230 million and 65 million years ago.

Metamorphic—Any rock derived from preexisting rocks by mineralogical, chemical, and/or structural changes in response to changes in temperature, pressure, shearing stress, and chemical environment.

Micritic—Limestone consisting dominantly of a micrite matrix.

Migratory Birds—Species that migrate north each spring to breeding grounds in the United States and Canada, then fly south to spend the bulk of the year in Central or South America. Many common songbirds are neotropical birds.

Mine Plan of Operations—A description of proposed mineral exploration or mining, including name and address of the operator, location of the operation, access to the operation, the period in which the operation would take place, and other information as required by the U.S. Forest Service in accordance with agency regulations at 36 Code of Federal Regulations 228.4.

Mineral Entry—Authority to enter public lands for the purpose of developing minerals in an orderly, organized manner.

Mineral Reserves—Known mineral deposits that are recoverable under present conditions but are as yet undeveloped.

Mineral Rights—An ownership interest in minerals that may or may not be owned by the person or party having title to the surface estate.

Mineral Survey—A cadastral survey of a lode claim, placer claim, or millsite with all its notes and plats. This type of survey is executed by a U.S. mineral surveyor for the purpose of marking the legal boundaries of mining claims on the public domain prior to conveyance of by patent. The location and estimated value of mining improvements are returned by the survey but no reference is made to mineral deposits (Glossaries of Bureau of Land Management Surveying and Mapping Terms).

Mineral Survey Fractions—Small parcels of National Forest System lands interspersed with or adjacent to lands transferred out of Federal ownership under the mining laws (36 Code of Federal Regulations 254.31, Definitions).

Mineral Withdrawal—An action that withdraws Federal public domain land from any mining and mineral development activity or staking of a mining claim within the boundaries of the designated area, excluding areas with valid prior existing rights.

Mississippian—A period of Paleozoic era (after the Devonian and before the Pennsylvanian), thought to have covered the span of time between 345 million and 320 million years ago.

Mitigate, Mitigation—To cause to become less severe or harmful; actions to avoid, minimize, rectify, reduce, eliminate, or compensate for impacts to environmental resources.

Molybdenite—A hexagonal and trigonal mineral, MoS_2, soft, metallic lead gray.

Monument—A physical structure, such as an iron post, marked stone or tree in place, that marks the location of a corner point established by a cadastral survey. Objects to be ranked as monuments should have certain physical properties such as visibility, durability, and stability, and they must define location without resorting to measurements. *Monument* and *corner* are not synonymous, although the two terms are often used largely in the same sense (Glossaries of Bureau of Land Management Surveying and Mapping Terms).

Monzonite—A granular plutonic rock containing approximately equal amounts of orthoclase and plagioclase.

Multiple Use—The concepts under which the National Forest System lands are administered and that involve managing resources in combinations that will best serve the public.

N

National Ambient Air Quality Standards—The allowable concentrations of pollutants in the air as specified by the Federal Government. The air quality standards are divided into primary standards (based on the air quality criteria and allowing an adequate margin of safety required to protect the public health) and secondary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public welfare) from any unknown or expected adverse effects of air pollutants.

National Environmental Policy Act of 1969—The national charter for protecting the environment. The National Environmental Policy Act establishes policy, sets goals, and provides means for carrying out the policy. Regulations from 40 Code of Federal Regulations 1500 to 1508 implement the act.

National Forest Management Act—A law passed in 1976 that amends the Forest and Rangeland Renewable Resources Planning Act and requires the preparation of forest plans.

National Register of Historic Places—A listing of architectural, historical, archaeological, and cultural sites of local, state, or national significance. The list of sites was established by the National Historic Preservation Act of 1966 and is maintained by the National Park Service.

No Action Alternative—The most likely condition expected to exist in the future if current management direction were to continue unchanged.

Notice of Intent—A notice published in the Federal Register to announce the intent to prepare an environmental impact statement.

Noxious Weed—An undesirable weed species that can crowd out desirable species.

O

Obliterated Corner—An obliterated corner is one at whose point there are no remaining traces of the monument, or its accessories, but whose location has been perpetuated, or the point for which may be recovered beyond reasonable doubt, by the acts and testimony of the interested landowners, competent surveyors, or other qualified local authorities, or witnesses, or by some acceptable record evidence (Glossaries of Bureau of Land Management Surveying and Mapping Terms).

Ore—Naturally occurring material from which a valuable mineral or minerals can be economically extracted.

Orogeny—The process by which structures within fold-belt mountainous areas were formed.

Overburden—Rock and soil cleared away prior to mining.

Oxide—A compound of oxygen with another element.

P

Packstone—Grain-supported carbonate rocks.

Paleozoic—Pertaining to an era occurring between 570 million and 230 million years ago.

Particulate Matter—Particulate matter is regulated under the Clean Air Act. Particulate matter 10 is particulate matter that is 10 microns or less in effective diameter (also called fine particulate matter). Particulate matter 2.5 is particulate matter that is 2.5 microns or less in diameter.

Patent—A document by which the United States conveys, to those entitled thereto, legal title to some portion of the public lands (Glossaries of Bureau of Land Management Surveying and Mapping Terms).

Patented Claims—Private land that has been secured from the U.S. Government by compliance with laws relating to such lands.

Pennsylvanian—Pertaining to a period of the Paleozoic Era, occurring from about 310 million to 280 million years ago.

Percent Slope (Gradient)—A measurement of the steepness of a slope determined by dividing the vertical difference in elevation by the horizontal distance traveled. A 100 percent slope is equal to a 45-degree slope.

Perennial Stream—A stream or reach of a stream that flows throughout the year.

Permian—Pertaining to a period of the Paleozoic Era, occurring from about 280 million to 230 million years ago.

Petroglyph—Literally, a rock carving; petroglyphs usually exclude writing and are of prehistoric or protohistoric age.

Phanerozoic—The eon comprising the Paleozoic, Mesozoic, and Cenozoic Eras.

Pit Lake—Temporary or permanent body of water that may accumulate in the bottom of an open-pit mine; typically present only after mine closure.

Plan of Operations—See *Mine Plan of Operations.*

Planolites—Feeding or burrowing marks made by a worm-like animal.

Porphyry—An igneous rock of any composition that contains conspicuous phenocrysts in a fine-grained ground mass.

Preferred Alternative—The alternative recommended for implementation by the proponent based on the evaluation completed in the planning process.

Pregnant Leach Solution—An acidic copper-laden solution recovered from a leaching operation. The copper is recovered from the solution by electrowinning.

Prevention of Significant Deterioration—A regulatory program based not on the absolute levels of air pollution allowable in the atmosphere but on the amount by which a legally defined baseline condition will be allowed to deteriorate in a given area. Under this program, geographic areas are divided into three classes, each allowing different increases in nitrogen dioxide, particulate matter, and sulfur dioxide concentrations. Prevention of significant deterioration above legally established levels includes the following, used to classify a region:

- Class I—minimal additional deterioration in air quality (certain national parks and wilderness areas).
- Class II—moderate additional deterioration in air quality (most lands).
- Class III—greater deterioration for planned maximum growth (industrial areas).

Prill—Ammonium nitrate in bead form; used in the ore blasting process.

Primary Crusher—The first-stage crusher used to reduce the size of the run-of-mine ore prior to entering the milling circuit.

Primacy State—A state of the United States authorized by the U.S. Environmental Protection Agency to administer portions of the Clean Water Act; Arizona is a primacy state.

Property Boundary—A landownership division line between two parcels of land. A separation of real property rights (Forest Service Manual 7151.05, “Definitions”).

Property Controlling Corner—A survey corner that is not on a property boundary but that influences or fixes the location of one or more property corners (Forest Service Manual 7151.05, “Definitions”).

Proposed Plan of Operations—See *Mine Plan of Operations.*

Propylitic—Hydrothermally altered andesite resembling a greenstone.

Process Solution Pond—A pond that contains pregnant, barren, or recycling process solutions. An overflow pond that continually contains process solution as a normal function of facility operations is also considered a process solution pond.

Process Water—Water that has been used in the processing of an ore and that may, in varying degrees, contain chemicals used in processing or constituents derived from the ore.

Project Alternatives—Alternatives to the proposed project developed through the National Environmental Policy Act process.

Proterozoic—Pertaining to the latter half of the Precambrian Era, about 2.5 billion to 570 million years ago.

Pushback—The slice of earth and rock removed to horizontally expand an open-pit mine.

Q

Quarter-Section Corner—A corner at an extremity of a boundary of a quarter section. Written as quarter-section corner, not as one-fourth section corner.

Quaternary—The younger of the two geological periods in the Cenozoic Era. The Quaternary encompasses the past 2 million years.

Quartzite—A metamorphic rock consisting mainly of quartz and formed by recrystallization of sandstone.

Quartzose—Of, pertaining to, or consisting of quartz. Containing quartz as a principal constituent.

R

Radial Stacker—Used to describe a conveyor system that radiates out from a fixed position to distribute material.

Raffinate—Barren process solution used in the leaching process. Raffinate solutions are generally refortified before being used in the leaching process. In Arizona, these solutions generally come from the solvent extraction process and are produced when the mineral to be recovered has been removed from solution.

Rangeland—Land used for grazing by livestock and big-game animals on which vegetation is dominated by grasses, grass-like plants, forbs, or shrubs.

Ranger District—Administrative subdivisions of the forest supervised by a district ranger, who reports to the forest supervisor.

Reagent—A chemical used in the mineral recovery process.

Reclamation—The process of contouring, stabilizing, and/or revegetating to convert disturbed land to its former use or other productive uses.

Reconstruction—Road or trail construction activities that take place on an existing road or trail, usually to raise the standard of the road or trail.

Record of Decision—A document separate from, but associated with, an environmental impact statement that publicly and officially discloses the responsible official's decision on the proposed action. In addition to the decision, the record of decision states the alternatives considered, the environmentally preferable alternative or alternatives, factors considered in the agency's decision, and mitigation measures that will be implemented and identifies any applicable enforcement and monitoring programs.

Rectangular System of Surveys—A system inaugurated by the Continental Congress on May 20, 1785, for the survey of the public lands of the United States. Its distinguishing characteristic is that in the main, and in all cases where practicable, its units are in rectangular form.

Region 3—A Forest Service organizational unit—the Southwestern Region—consisting of all national forests in New Mexico and Arizona, plus four national grasslands in Texas, Oklahoma, and New Mexico.

Right-of-Way—The legal right for use, occupancy, or access across land or water areas for a specified purpose or purposes.

Riparian Area—Land areas that are directly influenced by water. They usually have visible vegetative or physical characteristics showing water influence. Stream sides, lake borders, and marshes are typical riparian areas.

Road Closure—Not allowing motorized vehicles on a road by physically blocking access and/or posting notices and/or signs. The road remains on the forest transportation inventory system with the intent of reusing the road at a future time.

Road Density—The number of miles of road per square mile.

Road Effect Zone—The area of influence on edge environments parallel to roads.

Road Obliteration—Eliminating an unneeded road and returning the land it occupies to production or to another use. The road is removed from the forest transportation system. When needed for resource protection or to adhere to the forest plan, additional measures such as scarification, seeding, or possibly elimination of all roadway features will be done.

Run-of-Mine Ore—Uncrushed ore in its natural state, after being first blasted and then removed from the mine.

Runoff—Precipitation that is not retained on the site where it falls and that is not absorbed by the soil.

S

Safety Bench—The horizontal benching cut in the slope of an open-pit mine. Safety benches are required by Federal mine safety law to help catch falling rock and promote worker safety.

Safety Berm—Earth berm along haul and other mine roads used to prevent vehicles from accidentally leaving the road. Safety berms are required by Federal mine safety law and must be at least half the height of the largest tire operating on the road.

Scenic Integrity—The degree to which the landscape character is, or appears to be, intact, unaltered, and natural appearing. High scenic integrity means the human activities and impacts are not obviously visible in the landscape; low scenic integrity means that the landscape has been obviously altered and impacted by human activity.

Scenic Quality—The attributes of a landscape that, when viewed by individuals, can elicit a sense of the beauty of nature and a sense of pleasure. This response to the landscape can help to produce and maintain psychological and physical health.

Scoping—A term used to identify the process for determining the range of issues related to a proposed action and for identifying significant issues to be addressed in an environmental impact statement. Scoping may involve public meetings, field interviews with representatives of agencies and interest groups, discussions with resource specialists and managers, and comments received by the lead Federal agency in response to news releases, direct mailings, articles, and Internet postings about the proposed action.

Secondary Crusher—The second-stage crusher used to reduce the size of the ore from the primary crusher prior to entering the semiautogenous grinding mill.

Section Corner—A corner at the extremity of a section boundary.

Sediment—Soil or mineral particles transported by moving water, wind, gravity, or glaciers and deposited in streams or other bodies of water or on land.

Sediment Yield—The amount of sediment reaching a stream or other drainage way, expressed in tons, acre-feet, or cubic yards of sediment.

Sedimentary Rock—Rock formed from consolidation of loose sediment that has accumulated in layers.

Seepage—The discharge of water from an unlined facility.

Semiautogenous Grinding Mill—A mill in which rock is reduced to smaller particles by grinding against other pieces of rock as well as a grinding media (generally steel balls).

Sensitive Species—Any taxon on the Regional Forester's Sensitive Species list (2007 is the latest version) or Sensitive Species List for the Bureau of Land Management.

Significant—As used in National Environmental Policy Act determination of significance, requires consideration of both context and intensity. *Context* means that the significance of an action must be analyzed in several contexts, such as society as a whole and the affected region, interests, and locality. *Intensity* refers to the severity of the impacts (40 Code of Federal Regulations 1508.27).

Siliceous—Containing or resembling silica or silicate.

Skarn—A metamorphic calc-silicate rock, formed by the infiltration and diffusion of metasomatic fluids into carbonate rocks from an adjacent intrusive body.

Slope—The degree of deviation of a surface from the horizontal.

Soil Loss Tolerance—See *Tolerance, Soil Loss*.

Soil Productivity—The capacity of a soil to produce a plant or sequence of plants under a system of management.

Soil Texture—The relative proportions of sand, silt, and clay particles in a mass of soil. Basic textural classes, in order of increasing proportions of fine particles, are: sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, silty clay loam, clay loam, sandy clay, and clay.

Solvent Extraction—A process for separating the components of a liquid solution.

Spiculite—Sedimentary rock or sediment composed largely of sponge spicules.

Stand—A community of trees possessing sufficient uniformity of composition, constitution, age, spatial arrangement, or condition, to be distinguishable from adjacent communities, forming a silvicultural management entity.

Stocks—Rarely used term for chimney-like orebody.

Stratigraphy—The arrangement of rock strata, especially as regards geographic position and chronological order of sequence.

Subarkosic—Sandstone that does not contain enough feldspar to be considered arkose.

Sulfides—Compounds of sulfur with other metallic elements.

Supergene—Said of a mineral deposit or enrichment formed near the surface, commonly by descending solutions.

T

Tailings—Waste material remaining after crushing, grinding and floating ore to create a metals concentrate.

Tectonic—Pertaining to forces involved in, or the resulting structures or features of, tectonics.

Tenorite—Monoclinic mineral, CuO, occurs in gray scales, black powder or earthy masses, in oxidized zones of copper deposits.

Terrestrial Ecosystem Survey—A systematic inventory based on the concept that within the landscape there are naturally occurring ecosystems with unique sets of properties. These terrestrial ecosystems form a continuum and can be recognized at different levels in classification systems. The soils component of the ecosystem is inventoried through the use of “Soil Taxonomy,” U.S. Department of Agriculture Soil Conservation Service Handbook No. 436, and the “Terrestrial Ecosystem Vadose and Phreatic Survey Procedure,” a Forest Service handbook. The vegetation component of the ecosystem is inventoried through use of the International Classification and Mapping of Vegetation, United Nations Educational, Scientific, and Cultural Organization, and the above-mentioned Forest Service handbook.

Tertiary—The older of the two geological periods, from 62 million to 2 million years ago, that form the Cenozoic Era; also, the system of rock strata deposited during that period.

Threatened and Endangered Species—Animal or plant species afforded protection under the 1973 Endangered Species Act (federally listed). An "endangered" species is one that is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered in the foreseeable future.

Thrust Fault—A fault with a dip of 45 degrees or less over much of its extent.

Tolerance, Soil Loss—The maximum rate of soil loss that can occur while sustaining inherent soil productivity.

Ton—A short ton (2,000 pounds).

Tonne—A metric tonne (2,204.6 pounds).

Total Exclusion Area—The area of the mine site within which only authorized personnel are permitted entry.

Total Suspended Particulates—All particulate matter less than 70 microns in effective diameter that is suspended in water resources.

V

Viable Populations—A population that has the estimated numbers and distribution of reproductive individuals to ensure the continued existence of the species throughout its existing range (or range required to meet recovery for listed species) within the planning area.

Viewpoint—A carefully selected point of view from which, using contrast analysis, existing landscape character and existing landscape contrasts are documented and potential project related impacts are assessed.

Viewshed—The total visible area as seen from a single observation point or from multiple observation points.

Visual Contrast—The obvious differences and effects in form, color, line, and texture of a landscape.

Visual or Scenic Resources—Used to describe the landscapes and scenery in a given area. Visual resources encompass all the visible natural features in the landscape, such as mountains, forests, rocks, open water, estuaries, and streams. Visual resources also include the existing man-made structures on the landscape, such as cabins, houses, commercial buildings, utility corridors, and roads.

Visual Priority Routes and Use Areas—Locations where the U.S. Forest Service places the greatest emphasis on selecting viewpoints to assess visual character.

Visual Quality Objectives—The degree of acceptable alteration of the characteristic landscape.

Visual Resources—The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

Visual Sensitivity—Areas or landscapes that are most interesting and appealing to the public and whose changed scenic values would be of concern to the public.

Volcaniclastic—Volcanic material that has been transported and reworked through mechanical action, such as by wind or water.

Vuggy—Pertaining to a vug or having numerous vugs. A vug is a small cavity in a rock, usually lined with crystals of a different mineral composition than the enclosing rock.

W

Wackestone—Matrix-supported carbonate rock.

Waste Rock—Non-ore rock that is extracted to gain access to ore. It contains no ore metals or contains ore metals at levels below the economic cutoff value and must be removed to recover the ore.

Watershed—The entire land area that contributes water to a drainage or stream.

Waters of the United States—These are defined as follows:

1) All waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;
2) All interstate waters, including interstate wetlands;
3) All other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce, including any such waters:
    a. That are or could be used by interstate or foreign travelers for recreational or other purposed; or
    b. From which fish or shell fish are or could be taken and sold in interstate or foreign commerce; or
    c. That are used or could be used for industrial purposed by industries in interstate commerce;
4) All impoundments of waters otherwise defined as waters of the United States under this definition
5) Tributaries of waters identified in paragraph(s) (1) through (4) of the section;
6) The territorial sea;
7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraph(s) (1) through (6) of this section.
8) Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area’s status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the U.S. Environmental Protection Agency.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of Clean Water Act (other than cooling ponds as defined in 40 Code of Federal Regulations 423.11(m)

that also meet the criteria of this definition), are not waters of the United States. See 33 Code of Federal Regulations 328.3(a) for more information.

Water Table—The elevation of water at saturation in subsurface materials, whether permeable, porous, or not. Typically, it is the level of the groundwater in a given location.

Wetlands—Areas that are inundated or saturated by surface or groundwater at the timing, frequency, and duration sufficient to support a prevalence of vegetation typically adapted to saturated soil conditions.

Wildfire—Any fire on wildlands that was not intentionally set for management purposes and confined to a predetermined area.

Wind Rose—Any one of a class of diagrams designed to illustrate the distribution of wind direction experienced at a given location over a given period of time. Wind roses may also give information concerning distribution of wind speed, stability, or other meteorological parameters.