3.27 FOTHER IMPACT CONSIDERATIONS

3.27.1 UNAVOIDABLE ADVERSE EFFECTS

The Council on Environmental Quality (CEQ) guidelines require agencies to evaluate "any adverse environmental effects which cannot be avoided should the proposal be implemented" (40 CFR 1502.16). Unavoidable adverse effects are those remaining after the project has complied with applicable stipulations and mitigation measures. This section summarizes unavoidable adverse effects of the proposed action and alternatives. A detailed discussion of beneficial and adverse effects is presented for each resource in Sections 3.1 through 3.26. Unavoidable adverse impacts to resources in the EIS Analysis Area are described below.

Geology and Soils – changes in landforms and reduction in mineral, soil, fossil-bearing bedrock, and aggregate resources. Surface and intrusive activities during Construction and Operations would affect the mechanical and thermal properties of the soil and would modify permafrost distribution.

Surface and Groundwater Hydrology – lowered water table in the vicinity of the mine site, average annual flow reduction in Crooked Creek, alteration of groundwater flow and elevation, and alteration of stream flow including the damming of Crooked Creek tributaries.

Water Quality – surficial pit lake water and drainages from the Waste Rock Facility (WRF), Tailings Storage Facility (TSF), Lower Contact Water Dam, and South Overburden Stockpile are predicted to exceed Applicable Water Quality Criteria for some constituents; however, the water from these mine facilities would be treated to meet the most stringent applicable water quality standards before discharge. Atmospheric deposition of mercury could create impacts to surface water quality depending on watershed location.

Vegetation and Wetlands – changes in vegetation and wetlands; potential introduction of nonnative and invasive species; and removal of vegetation (including rare/sensitive plants) and wetlands.

Wildlife and Threatened and Endangered Species – changes in habitat, direct habitat removal, disturbance, and risk of injury or mortality from collisions.

Fish – changes in habitat (including effects of wetland removal), direct habitat removal, stream flow and temperature changes, and sedimentation.

Visual Resources – facilities, infrastructure, equipment, and vegetation clearing would introduce contrast to the natural landscape. Impacts would persist following project closure.

Cultural Resources – changes to cultural landscape of the Iditarod National Historic Trail at a scale that would not reduce the scenic quality rating class, impact to sites not eligible for the National Register of Historic Places (NRHP), and loss of integrity or destruction of sites eligible for the NRHP.

Subsistence – disturbance and displacement from subsistence use areas, increased competition for resources, disturbance to subsistence fishing in narrow reaches of the Kuskokwim River, and potential or perceived contamination of waterfowl due to the tailings pond and pit lake.

Hazardous Materials and Spills – petroleum products, liquefied natural gas, cyanide, mercury, and mine tailings are hazardous substances that could be spilled as a result of the project. The

probability of spills of a magnitude that could adversely affect resources is low. Resources that could be adversely affected by spills include vegetation, fish, wildlife, water resources, subsistence harvest and uses, recreation, cultural resources, and the economy.

Climate Change – the proposed action and alternatives would contribute to global climate change, primarily through the release of greenhouse gases from the burning of fossil fuels. Climate change in turn will impact many aspects of the physical, biological, and social environment including precipitation patterns, permafrost distribution, vegetation, wildlife, fire regimes, and subsistence.

3.27.2 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The CEQ guidelines require an evaluation of environmental sustainability considering the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity (40 CFR 1502.16). This section provides a brief overview of the short-term effects of the proposed action and alternatives versus the maintenance and enhancement of potential long-term productivity of the environmental resources in the area. Generally, short-term is considered the life of the project and long-term refers to an indefinite period beyond the termination of the project.

This evaluation considers whether the proposed development options reduce the ability of the land and water to be used for other purposes. The project and proposed alternatives are consistent with the goals of the landowner to maximize economic benefits by producing gold to meet worldwide demand and provide local economic development. The land was selected under the terms of ANCSA due to the potential mineral development of the area. After project closure and reclamation, many elements of lost productivity may be restored for the long-term. Annual revenues and taxes resulting from the mining activity would cease upon the conclusion of project operations. The loss of these economic benefits could have long-term impacts to the local and regional economy if they are not replaced with other resource development revenues.

3.27.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The CEQ guidelines require an evaluation of "any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented" (40 CFR 1502.16). A commitment of resources is irreversible when the impacts of the proposed action or alternatives would limit the future options for use of the resource. This applies primarily to non-renewable resources or to processes or resources that are renewable over long periods of time. Irretrievable commitments apply to loss of production or use of renewable resources. These opportunities are foregone for the period of the proposed action, during which the resource cannot be used. These decisions are reversible, but the utilization opportunities foregone are irretrievable. This section summarizes the irreversible and irretrievable commitments of resources for the alternatives analyzed in this EIS.

Ground disturbance, particularly due to project construction and operations, would cause irreversible impacts including land to be permanently altered, soils and bedrock to be permanently displaced, vegetation to be permanently removed, and wetlands to be permanently altered or filled. Any inadvertent effects to cultural or paleontological resources would also result in an irreversible commitment of resources.

Incidental or induced mortality of fish and wildlife resulting from project construction and operations, as well as any reduction in habitat value, could result in localized irretrievable commitment of these resources during the life of the project. Subsistence harvesting and recreational activity in areas occupied by facilities would not be possible during the life of the project, resulting in an irretrievable commitment of related resources.

Funds and labor would be irretrievably committed for project permitting and development.

Consumption of renewable and non-renewable resources would be required for infrastructure development, including metals, aggregate, cement, wood, and other materials.

Non-renewable resources (including gasoline, diesel, natural gas, and electrical power generated from these fuels) would be irreversibly committed for project construction, operations, and closure. Fuels would be required to operate aircraft, motor vehicles, barges, machinery, and mining equipment.

Water would be irretrievably committed for milling and processing.