

**Nkamouna Project
Environmental and Social Assessment
Executive Summary**

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Prepared for

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List of Abbreviations and Acronyms

CDP	Community and Indigenous Peoples Development Plan
CPR	cardiopulmonary resuscitation
cm	centimeter(s)
°C	degrees Celsius
ERCP	Emergency Response and Contingency Plan
ESA	Environmental and Social Assessment
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
GeoCam	Geovic Cameroon PLC
ha	hectare(s)
HIV/AIDS	Human Immuno-virus/Acquired Immunity Deficiency Syndrome
IFC	International Finance Corporation
IUCN	The World Conservation Union
km	kilometer(s)
m	meter(s)
mamsl	meters above mean sea level
mm	millimeter(s)
MRCP	Mine Reclamation and Closure Plan
NCTSF	Napene Creek Tailing Storage Facility
NGO	non-governmental organization
NTFP	non-timber forest product
OP	Operational Policy
OPN	Operational Policy Note
OD	Operational Directive
PCDP	Public Consultation and Disclosure Plan
PLS	pregnant leach solution
PUG	physical upgrade
UNDP	United Nations Development Program
WHO	World Health Organization
WMP	Waste Management Plan



Corporate Commitment

Geovic Cameroon (GeoCam) is committed to sustainable development, social responsibility and excellence in environmental management. This commitment encompasses the following values:

- Treating all parties with equity and respect.
- Promoting transparent business relationships.
- Building trust through partnerships with stakeholders.
 - Understanding and respecting the rights of indigenous peoples to retain their culture, identity, customs and traditions.
 - Developing self reliability through appropriate education and training.
 - Minimizing and mitigating potential adverse environmental impacts of its activities.
 - Promoting rational and efficient natural resource use.
 - Demonstrating creativity, integrity and excellence in all endeavors.

GeoCam pledges to conduct activities in a manner that safeguards all the resources under GeoCam's stewardship, whether they are minerals, forests, fauna, water, land or air.

As a good corporate neighbor, GeoCam intends to do the following:

- Conduct its business at a profit.
- Respect diversity and cultural differences.
- Educate its workers on health, safety, social, community, and environmental issues.
- Provide safe working conditions for its employees.
- Protect the environment from undue degradation.
- Communicate with and involve the public on its project plans and activities.



- Solicit input and assistance from the Government of Cameroon and non-government organizations (NGO).
- Invest a part of its profit into the communities, with assistance and implementation from the Government of Cameroon and NGOs, to develop skills and opportunities that can be carried forward without dependence on the economies of the Nkamouna Project.

GeoCam is committed to the long-term involvement of protecting the environmental quality and human interests in Cameroon. GeoCam's environmental and social programs aim to continually improve environmental and safety performance in the workplace, maintain multi-directional communication among the company, local communities and interested stakeholders, and limit the local community dependence on the Nkamouna Project. GeoCam has established two distinct policies that define the company's corporate commitment, policy and specific goals. These policies include the following:

- Environmental, Social, Health and Safety Policy.
- Community Development Policy.



Environmental, Social, Health and Safety Policy

The Environmental, Social, Health and Safety Policy commits to long-term protection of environmental quality, human health, and safety by providing sufficient financial support for environmental and social programs, educating and training employees on these programs, and multi-directional communication with the surrounding communities and other interested stakeholders.

Community Development Policy

GeoCam is committed to sustainable development and social responsibility. By this, GeoCam means that its long-term welfare is directly related to the welfare of the people and communities in the areas where it operates. In the end, these are the people who should be the main beneficiaries of GeoCam's activities. GeoCam expects to leave behind the capacity for a better future for the host populations. This commitment encompasses the following values:

- Treating all parties with equity and respect.
- Promoting transparent business relationships.
- Building trust through partnerships with stakeholders.
- Understanding and respecting the rights of indigenous peoples to retain their culture, identity, customs, and traditions.
- Developing self reliability through compassionate education and training.
- Demonstrating creativity, integrity and excellence in all endeavors.

GeoAid:

GeoAid Cameroon's mission is to implement an industry model for sustainable development by providing opportunities to alleviate poverty for impacted rural communities within S.E. Cameroon. GeoAid is committed to the development of policies and programs that enhance self-reliability, personal development, public health, environmental stability, socioeconomic and community development. GeoAid's goal is to harness the energy, imagination and ingenuity of the local community of people and NGO's in partnership with its own resources to protect and/or enhance biodiversity, livelihoods and human health.

Nkamouna Project Environmental and Social Assessment Executive Summary

1.0 Introduction

Geovic Cameroon PLC (GeoCam) is the sponsor of the Nkamouna Project, located in the Eastern Province of Cameroon approximately 400 kilometers (km) southeast of the capital Yaoundé and 640 road km from the main seaport, Douala (Figure 1). The Project area lies within the Lomié Subdivision of the Haut-Nyong Division, approximately 26 km east northeast of the town of Lomié. The Project proposes to begin construction in 2008, then to start mining shallow cobalt-nickel laterite hosted ore in 2009 and treat it in a multi-stage process involving physical upgrading by size, acid leaching, solvent extraction, and pyrohydrolysis to produce high-grade cobalt and nickel oxides.

The Nkamouna Project is poised to become a world-class producer of cobalt with nickel and possibly manganese as byproducts. Cobalt is primarily used in special alloys in jet engine and power generation turbines. However, future demand is likely to accelerate as demand for batteries for hybrid or completely electric vehicles rises. Cobalt is generally produced as a byproduct of the treatment of copper and nickel ores. The Nkamouna Project is the exception to this rule with cobalt set to be the dominant product of the mine.

Exploration conducted by the United Nations Development Program (UNDP) in Cameroon in the 1980s revealed the presence of low-grade nickel laterite deposits in the Nkamouna area. However, it was only in 1994 that GeoCam recognized the cobalt potential of the deposits and began to conduct systematic exploration in the area. Geovic Cameroon S.A was incorporated in order to develop the deposits and in August 2002 signed a mining convention with the Republic of Cameroon. The President of Cameroon issued the Mine Permit in April 2003, granting GeoCam the exclusive right to exploit the deposits.

In addition to Nkamouna, there are six other mineralized areas within the boundaries of the Mine Permit: Mada, Rapodjombo, North Mang, South Mang, Messea, and Kondong (Figure 1). The total resource for Nkamouna and part of the Mada deposit is estimated to be about 230 million tonnes, averaging 0.25 percent Cobalt and 0.52 percent Nickel. Total mineral resources for the Mine Permit area exceed one billion tonnes at approximately the same mineral grade. The ore reserves at Nkamouna are currently estimated to be 52 million tonnes, averaging 0.24 percent Co and 0.72 percent Ni.

As part of a bankable feasibility study and as required by Cameroonian legislation, GeoCam commissioned this Environmental and Social Assessment (ESA) to document the specific environmental, social, health, and safety programs that GeoCam will implement with commencement of construction and mining activities and also to assure that sufficient provision for those programs has been allocated in the Project financial analyses. Environmental baseline information establishes the basis against which project impacts can be compared. The baseline data used in the development of the ESA is based on site-specific field reconnaissance carried out between May and August 2004 by Rainbow Environment Consult and Knight Piésold and more recent updates, which complemented the information presented in the Preliminary Environmental Assessment prepared by URS Clyde Woodward in 2001, and data collected by GeoCam at its exploration camps. The ESA feedback meetings in April 2006, details of which are presented as an appendix to the ESA, have been incorporated into the study. The Nkamouna Project ESA comprises three main documents:

- *Executive Summary* – The Executive Summary presents a concise overview of the significant findings, recommendations, and actions contained in each of the volumes of the ESA.
- *Volume 1, Environmental and Social Impact Assessment (ESIA)* – The ESIA identifies the regulatory framework under which the project will operate and describes GeoCam’s development and operating plans. It also documents the current site conditions, identifies engineering and environmental systems that will be used to control environmental and social impacts, and identifies the project effects and residual impacts on environmental resources and on the social milieu. It addresses the cumulative impacts of project development and also evaluates plausible alternatives.
- *Volume 2, Environmental and Social Action Plan (ESAP)* – The ESAP contains goals, requirements, implementation procedures, and schedules for the environmental and social programs at the mine. It also includes environmental and social component plans and implementation plans for those environmental and social programs. The component plans of the ESAP are the Waste Management Plan (WMP), Emergency Response and Contingency Plan (ERCP), the Mine Reclamation and Closure Plan (MRCP), the Community and Indigenous Peoples Development Plan (CDP), and the Public Consultation and Disclosure Plan (PCDP).

These documents present what GeoCam believes is the necessary level of environmental and social responsibility for this project. The Volume 2 reports are living documents that will be updated from time to time to reflect the current situation and knowledge base for the Project. Effective implementation of these plans and actions, as defined in the ESAP, will ensure that the environmental and social standards achieved are in line with generally accepted international mining best practice.

2.0 Environmental and Social Impact Assessment

The ESIA contains the regulatory framework under which the ESA was carried out and a description of the project in its geographic, ecological, social, and temporal context. It includes baseline data describing the relevant physical, biological, and historical conditions and the environmental effects associated with project implementation. Mitigation measures needed to control those effects to acceptable levels are presented as well as an assessment of the reasonably foreseeable cumulative impacts of the project. It also analyzes plausible alternatives, including the “no project” alternative.

2.1 Background

The cobalt-nickel occurrences in the Lomié area were discovered in a UNDP-funded program between 1981 and 1988. This program concentrated on Nkamouna, which is the most accessible of the mineral occurrences in the area.

Although GeoCam originally showed an interest in the Eastern province of Cameroon in 1986, it was only in 1994 that GeoCam’s management realized the cobalt potential and incorporated Geovic, Ltd. in Oregon U.S.A. Geovic Cameroon S.A., which is 60.5 percent owned by Geovic, Ltd. and Geovic management, with the remainder being held by Cameroon interests, was incorporated in 1995. Exploration, carried out by digging shallow pits and trenches and air core and core drilling, confirmed the presence of economic cobalt-nickel mineralization in the Nkamouna area. On August 1, 2002, the Republic of Cameroon and GeoCam signed the Mining Convention assigning the mining rights, and on April 11, 2003, the President of Cameroon issued the Mine Permit by decree allowing the company to move forward with its project development initiatives.

The Nkamouna Project is expected to contribute a minimum of about 7.8 billion F.CFA (US\$ 15,000,000) in treasury revenues and 55 billion F.CFA (US\$100,000,000 U.S. dollars) to Cameroon’s GDP annually over the life of the project, which will directly employ at least 300 people. Indirect employment related to project development has not been calculated, but similar projects have seen job multiplier effects of 4.1 (Ahammad, 1996).

2.2 Regulatory Framework

The policy, administrative, and legal framework applicable to prospecting, exploring, and mining operations includes site-specific, national, and international regulations and guidelines as well as international conventions to which Cameroon is signatory. GeoCam has voluntarily agreed to apply international standards and the Mining Convention stipulates that

World Bank Group standards and guidelines be applied to its operations at Nkamouna, although GeoCam does not currently intend to seek financing from the International Finance Corporation (IFC). However, as capital development costs will exceed US\$50 million, lending institutions will apply the Equator Principles when considering financing for the project. The environmental and social policies and guidelines of the IFC have therefore been factored into the development of the ESA.

The specific regulatory framework for this project includes:

- Cameroon Laws and Regulations:
 - Law No. 96/12 Relating to Environmental Management
 - The Mining Code of 16 April 2001.
 - Law No. 94-01 of 20 January 1994.
 - Law 89/027.
 - Law No. 98/005.
 - Law 98/015 of 14 July 1998.
- Site-Specific Agreements:
 - The Mining Convention of 1 August 2002.
 - Terms of Reference for the ESA agreed by the State.
 - The Mining Permit of 11 April 2003.
- International Conventions:
 - Yaoundé Declaration (1999) for forest conservation and sustainable forest management.
 - United Nations Convention to Combat Desertification (Paris, 1994).
 - African Timber Organization (Libreville, 1993).
 - Convention on Biological Diversity (Rio de Janeiro, Nairobi, 1992).
 - Framework Convention on Climate Change (New York, 1992) and the Kyoto Protocol (1997).
 - Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movements and Management of Hazardous Wastes within Africa (1991).

- Convention for the Protection of the Ozone Layer (Vienna, 1985) including the Montreal Protocol on Substances that deplete the Ozone Layer (1987) and its London (1990) and Copenhagen (1992) amendments.
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989).
- International Tropical Timber Agreement, 1983.
- Accord for cooperation and consultation among central African states relating to wildlife conservation (Libreville, 1983).
- Bonn Convention on the Conservation of Migratory Species (Bonn Convention, 1979).
- Convention on International Trade of Endangered Fauna and Flora Species (Washington, 1973).
- African Convention on the Conservation of Nature and Natural Resources, (Algiers 1968).
- Lending Institution Policies and Guidelines:
 - Procedure for Environmental and Social Review of Projects (1998).
 - Good Practice Manual, Doing Better Business through Effective Public Consultation (1998).
 - Policy on Disclosure of Information (1998).
 - Pollution Prevention and Abatement Handbook (1998).
 - Guidance Note G: Assessment and Management of Cumulative Impacts (2001).
 - Operational Policies (OPs), Operational Policy Notes (OPNs), and Operational Directives (ODs) including Operational Policy OP 4.01 – Environmental Assessment; OP 4.04 – Natural Habitats; OD 4.10 – Indigenous Peoples; OP 4.37 – Safety of Dams; and OPN 11.03 – Cultural Property.
 - Investing in People: Sustaining Communities through Improved Business Practice: A Community Development Resource Guide for Companies (2000).
 - World Bank Environment, Health and Safety Guidelines: Mining and Milling – Open Pit (1995).
 - Equator Principles.

Numeric compliance targets are identified in some of the Cameroon laws and regulations and lending institution policies and guidelines, and some are simply set by generally accepted

international mining practices. It is noted that some of these limits are legally enforceable while others are established as guidelines that allow due consideration for site-specific conditions. The numeric limits establish the basis against which GeoCam's environmental performance will be measured. Project monitoring programs and the processes for environmental and social performance evaluation have been developed with references to specific action levels and compliance targets.

2.3 Project Description

Mining at Nkamouna will involve surface extraction methods using a small fleet of conventional earth-moving equipment; the need for blasting is not anticipated, but dozing, ripping and free digging will be used to facilitate ore and overburden excavation. Mining operations will proceed with the excavation of contiguous, 14-m deep open pits. As mining advances in the individual pits, each pit will be backfilled with overburden and selected waste streams from the Physical Upgrade (PUG) and Leach Plants thus achieving the objectives of backfilling the mined pits and leaving the post-mining topography as a stable landform. This also provides for concurrent reclamation of the tailing repositories following completion of each panel.

Fine tailings from the PUG and Leach Plants will be disposed of in a dedicated stand-alone, conventional tailing storage facility in the headwaters of Napene Creek (the Napene Creek Tailing Storage Facility or NCTSF), located immediately north of the plant.

The following discussion presents an overview of the mining through tailing storage and reclamation processes at Nkamouna.

2.3.1 Mine Plan

GeoCam prepared a mine plan for the ESA in which ore grade and years of production were the key drivers to its development. The parcels were further divided into panels, to represent the separate pits that will be mined and concurrently backfilled with waste and middlings. The individual pits, or panels, are sized to accommodate the anticipated production rates and in consideration of practical limitations relative to construction. Generally, the mining of each panel will be completed in about a 180-day cycle. The panel layout will be refined as mine planning progresses.

In years one and two of production, mining will disturb an average of 30 hectares (ha) per year with mining beginning at an annual production rate of 7,000 dry tpd of ore and 11,000 dry tpd of waste and low grade material. Mining will increase to 60 ha per year should

production rates double in subsequent years based on increases in cobalt demand. During the 21-year mine life, about 6.3 square km of land will be mined and backfilled.

Mining materials are generally divided into overburden, underlying ore and interbedded waste. The ESA mine plan and the prefeasibility-level tailing storage facility design are based on an average mining depth of 14.1 m with the upper 8 m consisting of units collectively termed overburden and the lower 6 m consisting of units collectively termed ore. The resulting overburden (waste)-to-ore ratio is approximately 1.6:1. Zones of sub-economic mineralized material will not be mined and will be left as islands within the mine plan.

2.3.2 Open Pit (Panel) Development

Surface mining at Nkamouna will be carried out on a panel-by-panel basis with the typically 14-m-deep panels generally following topography because the base of the ore approximately parallels the site topography.

Typical panels about 150 m wide at the ground surface and 400 m long have been developed for the pre-mining ground surface based on production rates and practical limitations such as the pre-mining topography. The terrain commonly slopes at between 3 and 14 percent across individual panels.

2.3.3 Napene Creek Tailing Storage Facility

Approximately 46.4 million tonnes of flocculated PUG and leach plant tailing will be stored in the Napene Creek Tailing Storage Facility, a standalone embankment dam about 66m high and with a footprint of 1.64 km². The NCTSF embankment is planned as a zoned earthfill structure that will be constructed from materials obtained from the reservoir area or overburden from the mining operation.

Since the water used to transport the tailing to the facility meets or exceeds drinking water quality standards, provisions to reduce flows through and beneath the facility have not been included in the design concept except as needed to provide a structure with a high degree of safety and security.

2.3.4 Mined Out Panel Perimeter Embankment Construction

Approximately 86% of the mined waste will be used for backfilling approximately 91% of the area to be mined. Manganese precipitates, unless otherwise sold, will backfill 6% of the mined area and PUG middling concentrates will fill the remaining 3% of the mined area.

For those select panels to be backfilled with manganese precipitate, an embankment, designed according to current safety criteria, will be constructed in controlled lifts, moisture conditioned as needed, and compacted by truck traffic and other equipment. The resulting embankment will be built inside the mining panel and then lined with a low permeability clay liner or synthetic membrane to retain all solution with the precipitate in the facility and prevent ground water from entering the fill.

2.3.5 Mineral Processing

Ore will be trucked to the processing plant where a Physical Upgrade Plant (PUG Plant) will crush, scrub, and separate by size a fine waste reject, a low-grade middling (medium-grained concentrate) and a coarse ore concentrate. The high-grade ore concentrate, +48 mesh size fraction will be ground in a mill to 80 percent at -100 mesh and pumped as a slurry to the Leach Plant for further processing.

Leaching will occur in five agitated tanks at 70 degrees Celsius (°C) and atmospheric pressure using sulfurous acid. The pregnant (metal-bearing) leach solution (PLS) will then be purified in a two-stage solvent extraction process to form cobalt and nickel chlorides. These metal chlorides will be converted into high-grade oxides (+75 percent metal) by pyrohydrolysis. The resulting barren leach solution containing elevated manganese will be neutralized with lime, producing an alkaline solution and a manganese-bearing precipitate.

Rejects and residues from the PUG and Leach Plants are: a fine waste tailing, a sandy, low-grade middling, a leached tailing, and the Manganese raffinate precipitate. Tailing management and storage is described below.

2.3.6 Tailing Management and Storage

Waste characterization tests carried out on overburden, PUG fines, leach tails, and middlings concentrate streams indicate that these are stable under existing conditions on site and that generated solutions do not exceed WHO drinking water guidelines. Thus the NCSTF and those panels to be backfilled with PUG middlings or overburden are designed without further measures to limit seepage.

Studies of the manganese raffinate precipitate indicate that it will remain under conditions that will prevent re-solubilization of the manganese in a mine backfill repository. Furthermore, the manganese precipitate will be disposed in a separate lined panel and will be surrounded by other mining panels backfilled with mine waste, which will prevent manganese from leaving the mine backfilled area.

The four tailing streams will be pumped from the PUG or Leach Plants for ultimate storage in mined out panels and the NCSTF. The tailing from the PUG and leach plants will be commingled and flocculated and pumped to the NCSTF. The addition of a flocculant solution to the tailing will accelerate sedimentation and recovery of decant water, reducing the required tailing storage capacity, embankment height and facilitate reclamation efforts.

The sandy, low grade middling will be pumped to separate panels or compartments of a panel to allow for potential future retrieval and processing of the middlings.

The manganese raffinate precipitate will be stored in up to three separate lined mined out panels near the Leach Plant.

Tailing will be deposited in the NCTSF from fluted pipe set along the fall line of the dam embankment. The tailing will be deposited from the embankment crest, and the supernatant (decant water above-tailing-surface) pond will form upstream in the Napene drainage. Decanted supernatant will be recycled to the plant using a barge mounted pump. It is anticipated that the PUG fines and leach tailing will spread laterally, producing a nearly level surface. Formation of a tailing beach is not anticipated in this waste stream, and the deposition system, decant system, and embankment construction will account for this.

Pond management will be an integral part of the tailing management. It is preferred to maintain as small an operating pond surface of the tailing facility as practical to maintain a low phreatic surface and thus promote embankment stability.

Reclamation activities in the NCTSF and mined out panels are described in Section 3.2.1.

2.3.7 Other Facilities

Other facilities required for the Nkamouna Project include roads, power lines, and water supply and sewage disposal systems. The water and power systems will be provided and maintained expressly by and for GeoCam operations. Roads to the project area are either public roads or private logging roads. In the case of the former, GeoCam will work with the Government of Cameroon to assure adequate maintenance of roads.

2.4 Environmental Conditions

Environmental baseline studies were conducted to document the existing conditions within the Nkamouna Project area. The baseline conditions were characterized in order to establish a basis against which project impacts could be compared. Baseline information was gathered

through field investigations between May and August 2004 and was supplemented by environmental information collected by URS in 2001 and by GeoCam during exploration operations. The baseline studies include climate, air quality, noise, topography, visual resources, geology, soils, surface water, groundwater, flora, fauna, and cultural resources.

The Nkamouna Project is located at the limit of the tropical wet and tropical wet and dry climatic zones, which has two distinct wet and dry seasons. Average annual rainfall is approximately 1,760 millimeters (mm), and temperatures vary between 17 °C and 35 °C over the year. There is little variation in average humidity throughout the year. Air quality varies significantly between the wet and dry seasons primarily due to the practice of slash and burn agriculture and, to a lesser extent, road dust during the dry season. Thick smoke and haze is common toward the end of the dry season from the burning which results in significant airborne particulate load. Air quality is typically good during the wet season.

Noise levels are low due to the lack of industrial activity in the area. Noise sources at present are from logging truck and light vehicle traffic.

The project area consists of an undulating peneplain incised by the local streams and rivers. Elevations vary between approximately 600 and 770 meters above mean sea level (mamsl).

The cobalt-nickel deposits are hosted in soils derived from underlying extensively lateritized (weathered) serpentinites, which are surrounded by schists and associated barren rocks. Lateritization is a common process in the humid tropics whereby metals – in this case cobalt, nickel, and manganese – are leached downward and enriched near the water table.

The soils in the mine area are dominated by infertile latosols characterized by little or no humus, low bacterial activity, and depleted nutrient contents. The topsoils in the Nkamouna area, which are less than 15 centimeters (cm) thick, are acidic due to the presence of humus while subsurface soils are only weakly acidic to neutral.

The Nkamouna area is the source for four water courses that drain into the Edjé River that borders the deposit to the west. Groundwater is largely confined to the laterite units overlying the serpentinite and is directly recharged by direct infiltration of rainwater into the laterite units.

Groundwater in the Nkamouna area is a magnesium bicarbonate type with the general water quality being fair to good. In background areas, ground and surface waters have similar

chemistries. Surface waters have near neutral pHs and are low in dissolved metals. This is consistent with the quality that should be expected in a laterite-hosted environment where the soils are, by definition, thoroughly leached of virtually all soluble constituents. The water contains very low concentrations of most major constituents, including constituents with buffering capacity that would tend to neutralize acidity. However, it does not meet World Health Organization (WHO) guidelines for drinking water due to the presence of *E. coli*.

The Nkamouna Project is located in tropical forest, which was logged beginning in 1999. The flora is highly diverse, as is the case over most of East Cameroon. Fifty (50) percent of the 197 identified species belong to four families: *Euphorbiaceae*, *Annonaceae*, *Olacaceae* and *Rubiaceae*. Plants used by the local population for their non-timber products and/or medicinal properties are common and readily available in the areas surrounding the Nkamouna site. One critically endangered, five endangered, and 15 vulnerable species listed by The World Conservation Union (IUCN) were identified in the Nkamouna area. Two species protected under Cameroon law were also identified.

Numerous fish, amphibian, reptile, bird, and mammal species are represented in the Nkamouna Project area. Fourteen species of mammal listed as sensitive by the IUCN, Convention or the International Trade in Endangered Species (CITES) or the Government of Cameroon were identified in the Nkamouna area either directly or through traces. Three species of reptile, one amphibian, and two species of bird that are listed as sensitive by the IUCN could possibly be present in the Nkamouna area, but they were not identified during field work.

No historical or archaeological sites were identified within the Project area.

2.5 Social Baselines

Social baseline studies document the existing social and economic conditions in the area between Lomié and Mpane Kobera (about 30 km either side of the Nkamouna site with particular emphasis on the three closest villages – Kongo, Ngola and Ngola Baka). These baselines were also established to define a basis against which project impacts could be measured. Information in the baseline was gathered through field investigations performed by a team led by a qualified sociologist specialized in rural economics and participatory diagnosis in Cameroon. The team included a political anthropologist specialized in the pygmy populations of Cameroon. The field data were collected in May and June 2004 and included background information on demographics, social and political organization, natural resource management, livelihood systems and employment opportunities, social services and

infrastructure, public health, vulnerable and disadvantaged groups, indigenous peoples, and cultural property.

The Pohempoum I-Mpane Kobera corridor, in which the Nkamouna deposit is situated, has a population of nearly 5,000 people. In the immediate vicinity of the Nkamouna Project, the Nzimé people predominate, comprising about 83 percent of the population. The Baka, an indigenous people, comprise about 10 percent. Other ethnic groups in the area are the Haoussa, Bamiléké, Boulou, Kaka, Mpoubieng, and Ngoumba.

Twenty-four major African language groups are spoken within Cameroon. French and English are the official national languages; however, the use of French is more widespread. Nzimé is the main vernacular spoken in the Nkamouna area.

The predominant religions are Christian and indigenous beliefs. Islam is a minor religion in the area.

Cameroon has a hierarchical system of government combining both traditional and official authorities to maintain law and order. The relationships between the central government and traditional authorities are shown in Table 1.

Sub-Prefects, appointed by the Minister of Territorial Administration, administer the subdivisions. The Sub-Prefect is the link between the central government and the people in the subdivision and chiefdoms. Traditional authorities in the Pohempoum I-Mpane Kobera corridor include third-degree chiefdoms under the authority of the second-degree chiefdoms of Pohempoum II and Zoulabot I. Their role is to assist the Sub-Prefect and local authorities in running the district by maintaining law and order, collecting taxes, and ensuring the implementation of administrative directives.

At the village level, social and political organization is a function of the identity of the two main ethnic groups in the area, the Nzimé and the Baka. Nzimé villages consist of several lineage segments made up of family groups each with a family head or elder. Family groups comprise several families each of which forms a household, the basic social unit. Political power is age-based and is exercised by the elders of each lineage segment and the village chief, who are involved in both administration and conflict resolution.

Social organization among the Baka is based on the family, the lineage, the sub-clan, and the clan. Clans, represented by totem names and symbols, are governed by sets of rules and

include taboos on consumption of totem animals and marriage within a clan and by collective responsibility. Political organization is age-based but is underlain by traditional beliefs in fetishes, local gods, and the affirmation of the power of women.

Land in Cameroon falls in one of three categories: the State's domain, the national domain, or private property. However, customary land rights remain the *de facto* form of land tenure. In the Nzimé villages, households can obtain agricultural land subject to ensuring that no one else has a prior claim to the land and with authorization by the village chief and/or council. Land over which there are no individual claims is considered communal.

Traditionally, the Baka do not own land directly, but each clan has right to a geographical area (hunting ground). In the 1970s, the government introduced a policy of settling the Baka in villages. However, they have yet to be formally recognized by either the state or their Nzimé neighbors.

Slash and burn agriculture is the predominant land use in the area with both subsistence and cash crops being grown. Owing to the lack of transport to markets, produce is generally sold in front of the household. Hunting is the major protein supply for the local population. All species, including IUCN-listed species and species protected by Cameroon law, are hunted. Non-timber forest products (NTFPs) are harvested for their food, medicinal, and use values. Fishing is also carried out in the local streams using hooks, basket traps, static traps, and rods.

An integrated health center at Zoulabot I, which is in poor condition, provides public health care in the Nkamouna area. There is a health house at Ngola I, but it does not function. The local population dominantly relies on traditional remedies as the clinic at the Bosquet mission and the hospital in Lomié are too distant. The Lomié hospital dates from the German colonial era and is in need of renovation. Pharmaceuticals are in short supply, and there is no ambulance.

The baseline inventory documented that the most common health problems are, in order of frequency of response, malaria, sexually transmitted diseases including HIV/AIDS, diarrhea, waterborne stomach intestinal parasites, hernia, and tuberculosis.

Housing in the Project area mostly comprises traditional structures. None of the villages has access to the national power grid, running water, or sewage disposal. While road transportation exists in the area, most local residents do not have access to motorized vehicles and therefore travel on foot.

2.6 Project Impacts and Mitigation

Mining projects inherently affect environmental and social resource values. The ESIA includes a discussion of the potential environmental and social impacts associated with the development of the Nkamouna Project and presents the mitigation measures that are needed to prevent or minimize those impacts.

Environmental and social impacts were analyzed by overlying the project development plan onto the existing baseline conditions. After identification of the potential impacts associated with the proposed operations, mitigation measures were designed to prevent or minimize those impacts to acceptable levels. An impact ranking was developed for no mitigation, short-term with mitigation, and long-term (residual) with mitigation.

Project impacts and associated mitigation measures are presented in Table 2. The ESIA identified numerous potential environmental and social impacts to specific receiving media including floral and fauna biodiversity, air quality, and water quality, which can be broadly categorized into several priority areas. Each of the impacts and mitigation measures presented in Table 2 are discussed in the ESIA. The five impacts presented in Table 2 are considered to be the most significant in terms of the future success of the Nkamouna Project.

In order of importance, they are impacts to flora and fauna due to land disturbance, increased pressure on flora and fauna due to population influx, impacts to livelihoods and food supply due to immigration and loss of forest resources, greenhouse gas emissions related to burning wood-chip fuel, and impacts to water resource quality.

As laid out in the ESIA, proposed mitigation measures would require specific actions to ensure their implementation and monitoring to document their performance. These actions are further developed in the ESAP (Section 3.0).

2.7 Cumulative Impacts

The cumulative impact analysis considers those projects or potential developments that are reasonably foreseeable at the time the ESA was undertaken. Past and future projects that have taken or will take place within the project area are basic to establishing the spatial and temporal limits for analysis. Past activities in the area have been confined to commercial logging in which valuable timber species with a minimum diameter of 80 cm at breast height were selectively harvested. Reasonably foreseeable future impacts are associated with the development of the Mada deposit located to the north of the Nkamouna deposit and the other deposits in the mine permit that may be produced over the next 100 to 200 years (Figure 1).

Ore from the southern Mada deposit would be processed at the Nkamouna Plants whereas exploitation of the other deposits will require the construction of new processing plants closer to these deposits.

Assuming that these deposits would be developed in a similar manner to the Nkamouna deposit, concurrent reclamation to forest/wildlife habitat would keep the total annual land disturbance down to about 160 ha. If all the deposits are developed, the total land disturbance over a 100- to 200-year period could be as much as 200 km², which is about 15% of the annual land disturbance caused by slash and burn agricultural practices in southern Cameroon.

Perhaps the most significant cumulative impact of adding the other deposits to the current project plan is the addition of between 80 and 180 years of mine life. This will result in prolonged employment for the mine work force and will continue GeoCam's contributions to sustainable economic and community development initiatives in the local communities (Section 4.2). GeoCam will continue its financial support to GeoAid (Section 4.2), which will in turn invest in the local communities in beneficial and sustainable ways. This will be a very favorable benefit of the cumulative project.

To ensure that the cumulative impacts of the addition of the remaining deposits are adequately analyzed and that suitable plans are developed and implemented to prevent or mitigate potential impacts, GeoCam will prepare for each unit constructed in addition to that at Nkamouna:

- Comprehensive ESAs for each new production unit in full conformance with GeoCam's Environmental, Health and Safety, and Social Policy and Cameroon legislation.
- CDPs for the villages near the expansion areas that are in full conformance with GeoCam's Community Development Policy.
- Effective MRCPs that outline the program for reclaiming project disturbances to income generating post-mining land uses.

Finally, the cumulative mining by GeoCam will affect local land uses and biodiversity in the area. GeoCam, through GeoAid, will continue to work with government agencies and appropriate non-governmental organizations (NGOs) to participate in the planning, design, implementation, and long-term management and monitoring of biodiversity conservation and development areas in the Lomié Subdivision. GeoCam will also prepare a Biodiversity

Conservation and Development Strategy for reclaimed areas and forest areas in the immediate vicinity of the Nkamouna deposit. GeoCam will promote a participatory approach with the surrounding villages, government representatives, and NGOs to assure that stakeholder interests are factored into the planning and development process.

2.8 Alternatives

Alternatives analyses are conducted to evaluate the various siting, mining, and processing options relative to their direct and indirect effects on environmental and social circumstances. Siting options in mining operations are constrained by the physical location of the deposit and do not allow development of different scenarios. The options considered for the alternatives analysis are all plausible and feasible options, which could be acceptable for development of the Nkamouna Project.

The alternatives analysis therefore studies the two main options: the Current Project Plan and the No Action Alternative. The No Action Alternative maintains the status quo and considers no further GeoCam involvement with the project. The baseline studies describe the lack of social infrastructure for health care and education and the lack of economic opportunities for the local population. The No Action Alternative would do nothing to improve the situation as far as these issues are concerned.

Alternatives within the Current Project Plan, including processing, tailings disposal, power generation, reclamation and water supply alternatives, were also analyzed. Table 3 summarizes the key differences between these alternatives.

The alternatives analysis was based on a quantitative matrix analysis in which environmental, compliance, constructability, and cost factors came into play. In most cases, the preferred alternatives satisfy the analytical criteria better than the alternative(s). The Diesel Power and Combined Heat and Power alternatives can only be separated on the basis of their cost score, however, the latter is favored because it is anticipated that there will be a ready supply of biomass fuel requiring less transport than for diesel fuel. In addition there is no viable alternative to CHP units for generation of steam energy. The well field water supply option scores better than the well field supplemented by water from the NCTSF, but the latter is favored as it reduces the potential for social conflict between the mine and downstream users.

3.0 Environment and Social Action Plan

The ESAP for the Nkamouna Project defines the management, mitigation, monitoring, and institutional measures to eliminate, offset, or reduce the environmental and social impacts of the project to acceptable levels. The ESAP defines specific actions that GeoCam will undertake to implement these measures and to document their environmental and social performance. It has been prepared in accordance with applicable laws and regulatory requirements of the Government of Cameroon as well as the various environmental and social policies and guidelines established by the IFC.

3.1 Management

The proposed environmental and social programs aim to continually improve GeoCam's workplace performance, maintain an open dialogue with the community and other interested stakeholders, and limit the direct dependence of the local economy on the mining project. GeoCam will implement two key policies established at the highest levels in the organization. These Policies establish the framework for how GeoCam will conduct its business in these areas. These Policies, along with the corporate commitment and identification of specific implementation goals, are presented on the opening pages of this Executive Summary. GeoCam's Policy in the following areas is:

- Environmental, Social, Health and Safety Policy – to conduct business in a responsible manner designed to protect and develop our employees, the environment, and the surrounding communities.
- Community Development Policy – to make sustainable contributions to the physical and economic development of proximate communities and to limit their economic dependence on GeoCam's operations.

The management of environmental, social, and health and safety programs is critical to the successful implementation of mitigation measures that prevent or minimize project impacts. The Nkamouna Project will be administered through a management system that includes corporate oversight, site management, local employees, and contractors (Figure 2). The GeoCam Board of Directors and executive management will appoint experienced managers for key positions at the Nkamouna Project. These managers will be responsible for:

- Meeting or exceeding the goals established in the Policy statements.
- Complying with local, national, international, and financial lending institution laws, regulations, policies, and guidelines, as appropriate.

- Ensuring that the required environmental and social management activities are implemented and maintained.
- Reporting on the effectiveness of such activities to executive management and the GeoCam Board of Directors for review and corrective action as necessary.

The General Manager is responsible for all employees and activities at the Nkamouna Project. GeoCam will retain a qualified professional with international experience to fill the role of Environmental, Health and Safety Manager. The Environmental, Health and Safety Manager will be responsible for the planning, design, development, implementation, monitoring, and reporting of all environmental, health, safety, and community development programs for the Project. However, the planning, design, and development of community development programs will be implemented and accomplished by GeoAid, a non-profit humanitarian NGO.

GeoAid will define, prioritize, select, and implement projects as well as manage, administer, and disburse funds for community development initiatives. The GeoAid Programs Director will have responsibility for managing the social program logistics and fund management of GeoAid Cameroon. In addition, he will have responsibility for implementing the community development initiatives at the local level and will work closely with the Environmental, Health and Safety Manager, who is responsible for monitoring the success of those programs through the public consultation process.

The ESAP assigns a significant amount of responsibility to the Environmental, Health and Safety Manager. GeoCam will support this responsibility by budgeting for sufficient staff to administer the health, safety, environmental, social, and community development program implementation. This staff will include a Community Development Officer, who will be a key player in the success of public consultation and community development programs. The ideal individual to fill this position will be a person experienced in integrated rural development, agricultural systems, small-scale enterprises, and organizational and institutional development and who has strong skills in public consultation and conflict resolution.

All GeoCam employees will periodically receive general health, safety, environmental, and social awareness training that emphasizes each employee's responsibility for complying with the environmental and social laws, regulations, commitments, and policies and guidelines. In addition, GeoCam employees will receive safety training in programs such as hazard recognition, first aid, and cardiopulmonary resuscitation (CPR), emergency response

procedures, job-specific health hazards, and legal and regulatory requirements applicable to the Nkamouna Project.

3.2 Mitigation

The ESIA has identified several potential environmental and social impacts that may result from mining operations and the mitigation needed to reduce the impacts to acceptable levels. These mitigation measures may be broadly categorized as reclamation, biodiversity conservation, carbon sequestering, sustainable community development, and water supply assurance.

3.2.1 Reclamation

Development of the Nkamouna Project will impact 990 ha of forest over a 21-year mine life. Natural forest resources in the mine area will not be available to the local populations during operations. However, as presented in the Mine Reclamation and Closure Plan (MRCP), GeoCam plans to concurrently rehabilitate disturbed areas to forest/wildlife habitat, thereby limiting total annual land disturbance to about 160 ha and new annual land disturbance up to 60 ha. Flora species with high use and nutritional values will be preferentially planted during revegetation of reclaimed areas.

As mining advances, concurrent backfilling of mined out panels will involve establishing a vegetative cover and stabilizing the backfilled surface. It is currently intended to provide a layer of growth media in the backfilled panels by adding mine waste and wood chips or ash into the upper portion of backfill material as the individual panels near their capacity. By doing this, a portion of the reclamation work will be an operations effort. Seeding the panel surface will follow, with additional vegetation including planting of trees to proceed after an adequate vegetative cover has been established.

Sections of perimeter embankment crests in the panels' backfilled with manganese precipitate will be removed to allow drainage of precipitation and runoff from the reclaimed tailing surfaces. These sections will be sufficiently wide to permit low-velocity flow through them and over the revegetated embankment slopes. Channels needed to remove this water will be sized to handle expected flows and will be lined or otherwise protected against erosion. Runoff will be directed through the site erosion and sediment control system.

Reclamation of the NCTSF would be initiated during the last months of deposition to include placement of growth media in the last several meters of deposited tailing. The growth media will likely be a mixture of wood ash from the CHP units, compost and mine waste. Then,

once sufficient volunteer vegetation has established itself, tree seedlings grown in GeoCam's nursery and from other sources will be planted. It is anticipated that this process will begin around the outside edge of the deposited tailing and continue to move to the center of the area as the vegetation establishes itself.

Backfilling of mined out panels will in general have been carried out so that the resulting surfaces slope from the upgradient to downgradient sides of the facilities, similar to the existing, pre-mining topography. With vegetation established on this very gently sloping surface, this will provide excellent protection against erosion and allow for low-velocity flows of runoff across the tailing surface to promote drainage.

At the end of mining and reclamation activities in Nkamouna, the terrain will resemble the pre-mining topography, with the exception of the 66-m high NCTSF in the headwaters of Napene Creek.

It is the responsibility of the Environmental, Health and Safety Manager to oversee the effective implementation of reclamation programs, to evaluate the performance of the various reclamation initiatives, to improve reclamation procedures over time with an aim toward increased productivity, and to provide the required updates to the MRCP.

3.2.2 Biodiversity Conservation

The cumulative impacts of mining by GeoCam will be mitigated by reclamation. However, as it will not be possible to reconstitute the forest as it exists, GeoCam will implement additional measures aimed at mitigating habitat degradation and potential loss of biodiversity. GeoCam will strongly support protection and management of reclaimed areas and the forests adjacent to the Nkamouna site through partnerships with actors in these domains. Practical guidelines on the management or conservation of these areas will be drawn up. Using the International Council on Mining and Metals' (ICMM) best practice guide for mining and biodiversity, Geocam's strategic response is based on partnership development with major NGOs so as to be able to provide a conservation perspective on the opportunities and challenges raised by the mining process. Areas of collaboration would include wildlife law policing, ecological monitoring and environmental education.

GeoAid will also contribute to biodiversity conservation by supporting government agencies and appropriate NGOs to participate in the planning, design, implementation, and long-term management and monitoring of conservation areas as well as the management and improvement of critical habitat for important fauna species.

All aspects of the reclamation area management program, including coordination, preparation, administration and liaison with stakeholders, will be the responsibility of the Environmental, Health and Safety Manager. The GeoAid Programs Director will be responsible for programs related to conservation areas in the Lomié Subdivision.

3.2.3 Greenhouse Gas Emissions

Greenhouse gas emissions were identified in the ESIA as one of the potentially significant impacts of the Nkamouna Project. GeoCam will evaluate the feasibility of carbon sequestering to offset these emissions. The Environmental, Health and Safety Manager will be responsible for any carbon sequestration program subsequently implemented at Nkamouna.

3.2.4 Water Supplies

Many of the local villages in the mine area abstract their drinking water supplies from shallow groundwater sources. Owing to the distance separating Nkamouna from the nearest communities, the potential for impacts on groundwater quality and supply is considered to be low; therefore, GeoCam has not opted to conduct comprehensive water supply investigations. However, local drinking water supplies will be monitored on a regular basis and mitigation measures, such as replacing those supplies, will be implemented if necessary.

The Environmental, Health and Safety Manager is responsible for implementing the monitoring program described in Section 3.3 as well as the public consultation program. He will be responsible for analyzing, interpreting, evaluating trends, identifying inconsistencies and, if problems or concerns with the data exist, developing additional mitigation measures to limit them. The Environmental, Health and Safety Manager is responsible for identifying when mitigation measures are needed through monitoring, and the Technical Services Manager is responsible for physically implementing those mitigation measures.

3.2.5 Sustainable Community Development

The social impact analysis suggests that project development, operation, and closure will affect local communities and the region as a whole. Positive effects of the project include direct and indirect financial benefits, increased and more diversified economic activity, improved medical services in the area, possible establishment of fisheries providing a supplementary source of dietary protein, improvement in employee and community skill sets and education, and reduced isolation of the region. Principal negative impacts include the potential for food supply shortages, risk of contamination of water, increased traffic and risk

of accidents, influx of people looking for work (pressure on natural resources and conflict with existing residents), and introduction and spread of certain diseases due to foreign staff and products.

Mitigation measures to limit the potential negative impacts and enhance positive effects include:

- Maintaining effective and ongoing public consultation.
- Providing land lease payments for use and loss of land.
 - Implementing effective economic diversification models and alternative income strategies.
 - Controlling the likely influx of job seekers to the area.
 - Reclaiming the mine disturbances to income-generating post mining land uses.
 - Providing employee and community skills training and education programs.
 - Establishing a non-profit foundation and administrative body to define, prioritize, select and implement projects as well as manage, administer, and disburse funds for sustainable community development initiatives.
 - Implementing sustainable community development initiatives.

The GeoAid Programs Director is responsible for implementing mitigation programs regarding community development. He will work closely with the Environmental, Health and Safety Manager, the Manager External Affairs, and the Community Development Officer on matters pertaining to sustainable community development.

3.3 Monitoring

Table 4 summarizes the impacts and mitigation measures and recommends the implementation of monitoring programs that will document the ongoing environmental, social and occupational health and safety conditions for the Project. The specific monitoring programs are summarized in Table 5. These monitoring programs will provide information for the further refinement of mitigation strategies. Based on the environmental and social effects that were predicted and the mitigation measures that are identified to reduce those impacts to acceptable levels, certain monitoring must be conducted in order to demonstrate that project components will function within the limits of the ESA. If the conditions identified through monitoring are outside established limits, then additional impact evaluation and mitigation programs may be required.

The monitoring programs are intended to track the performance of the various project components and mitigative systems. When these programs are implemented at the site, they will provide the data and information needed to identify, anticipate, and further mitigate the changing environmental and social conditions at the site over time. The specific programs are summarized in Table 5 and will generally include:

- Continued monitoring of climate, air, and water during construction.
- Construction monitoring of contractors, embankments, and facility siting.
- Monitoring of the commissioning of facilities.
- Operational monitoring of embankments, tailings production, and engineered control systems.
- Environmental monitoring during operations for climate, air, water, waste characteristics, reclamation success, community development programs and the health and safety of employees.

The Environmental, Health and Safety Manager is responsible for implementing the monitoring programs and maintaining records. Annual reports will be prepared that document the project monitoring program and conformance of the results with the environmental and social conditions and predictions made in the ESA. The Environmental, Health and Safety Manager will also collaborate with the government authorities and project lenders to arrange for external audits of the company's environmental and social program performance on an as-needed basis.

3.4 Transparency

Transparency of the health, safety, environmental, and social aspects of the Nkamouna Project is important in maintaining public confidence. The PCDP is an important tool for disseminating information and demonstrating transparency to project stakeholders. GeoCam will proactively solicit input from local communities and other interested stakeholders through the effective implementation of its public consultation program.

In addition, the annual report will disclose significant environmental, health and safety, and social incidents that occurred during the reporting period and will reconcile the performance of monitoring programs, compliance issues, and anything that may be considered important to understanding the activities and performance of these programs. This report will be distributed to government agencies, project lenders, and interested stakeholders and may be

posted on the company web site. The general information contained in the annual report will also be articulated to the public through its annual public consultation meeting and its more frequent local village consultation program.

3.5 Implementation

An implementation schedule and budget are presented in Table 6 that have been developed so that mitigation programs occur at the appropriate times and to assure that adequate resources are allocated to mitigation and monitoring programs. The ESAP will be integrated into the overall project planning, scheduling, and budget decisions to help assure that adequate levels of funding and supervision are allocated to each program.

4.0 ESAP Component Plans

The ESAP incorporates a number of documents for developing, managing, and reclaiming the mine. These component plans are described in the following sections and include:

- Waste Management Plan (WMP).
- Emergency Response and Contingency Plan (ERCP).
- Mine Reclamation and Closure Plan (MRCP).
- Community and Indigenous Peoples Development Plan (CDP).
 - Public Consultation and Disclosure Plan (PCDP).

4.1 Waste Management Plan

The WMP details the handling, storage, and disposal of wastes at the Nkamouna Project. It also provides procedures for the storage and disposal of wastes produced at the Nkamouna Project, including management of tailing in the NCTSF, the PUG and Leach Plants, central powerhouse and workshop, offices, and other facilities. The WMP also addresses the management of wastes designated for special handling including sewage, medical wastes, hazardous wastes, and emergency response wastes. The plan also considers waste minimization techniques through composting and recycling programs. The WMP will require updating as the Nkamouna Project progresses to reflect site-specific conditions.

Specific items described in the WMP include the siting, design, installation, operation, and closure of:

- A domestic waste landfill, including the development plans for operating procedures.
- A hazardous waste landfill, including the development of hazardous waste handling procedures.
- A composting facility for commissary wastes that will assist in creating soil amendments for use during reclamation.

The WMP calls for appropriate monitoring of each facility according to the engineering designs and regulatory commitments as well as record keeping and reporting the monitoring results in the Project annual report. It also calls for maintaining secure areas for waste disposal facilities.

The Environmental, Health and Safety Manager, in collaboration with the General Manager, is responsible for updating, finalizing, and carrying out the actions defined in the WMP.

4.2 Emergency Response and Contingency Plan

The ERCP provides specific emergency response guidelines for employees and management of GeoCam. Emergencies may result from accidental spills and releases, fire, explosions, flooding, or medical emergencies. The ERCP has been designed to minimize employee exposure to risk and injury and limit potential impacts to the environment in the event of an accidental spill or release. The ERCP identifies training programs for emergency recognition and prevention, methods and procedures for alerting on-site employees and communities, resources for medical and emergency treatments, procedures for containment and clean-up of accidental spills, and transportation.

The Environmental, Health and Safety Manager will be responsible for management of the emergency response program and record keeping related accidental spills and releases. The Environmental, Health and Safety Manager will be responsible for the appropriate cleanup and disposal of accidental spills and wastes generated in responding to emergencies and will oversee the personnel emergency response and health and safety training programs.

4.3 Mine Reclamation and Closure Plan

The MRCP outlines the general program for stabilizing and revegetating the Nkamouna Mine. Concurrent with and following cessation of mine operations, disturbed areas will be reclaimed to land uses that will provide income opportunities for local communities. While the final land use options will be determined through public consultation, for planning and budgetary purposes, it is assumed that the final land uses will include forest/wildlife habitat. The mine closure plan will build on the programs established by the CDP (Section 4.4) to further contribute to effective sustainable development in the region.

Procedures have been established in the MRCP for closure activities, including site demolition and disposal, site grading, reestablishing drainage channels, and providing for runoff and sediment control. Reclamation procedures include soil placement, seedbed preparation, seeding and planting, soil amendments, and monitoring of revegetation success.

Reclamation elements are described for each major project component that exists at the site or that will be developed as part of the current project plan based on the general strategies defined for closure and reclamation. Each of these is described in sufficient detail as to understand the cost elements that have gone into the Project reclamation budget. Based on the

current land disturbance and planned project expansion, this budget has been estimated at US\$14 million. It is important to note that the monies that will be committed to the reclamation program will be accrued annually as required by Cameroon legislation to ensure that there will be sufficient funds to reclaim and close the facilities post-mining. The funds deposited will be adjusted to account for reclamation that has been completed during operations.

A number of GeoCam staff will be involved in closure and reclamation activities, but all reclamation and closure activities, including planning, design, implementation, monitoring and reporting, will be under the responsible charge of the Environmental, Health and Safety Manager.

4.4 Community and Indigenous Peoples Development Plan

The CDP presents the actions that will be undertaken to further sustainable community development opportunities in the area. GeoCam recognizes that contributing and assisting local community development is not only a part of its corporate responsibility, but that is also benefits the company through improved community relations.

An effective community development program is essential to ensure that local communities do not become dependent on the mining economy but rather have a sustainable economy following mine closure. To this end, GeoCam community development programs will be designed to meet the following objectives:

- Projects which complement the mitigation measures being implemented to address potential social and economic impacts from mine operation.
- Projects which are not linked to potential impacts but which can effect overall improvement and sustainable development of communities.

GeoCam has established GeoAid Ltd., which will assume the responsibility for developing and delivering the company's entire community development program. GeoAid will grow into an autonomous organization with full fundraising and implementation capabilities. Participation of the local communities at all stages from identification of potential projects through detailed planning and implementation will be a key aspect of achieving an effective and sustainable program.

During the first five years of operation GeoCam will contribute an annual amount to GeoAid for furthering sustainable community development initiatives that are consistent with its

Community Development Policy included at the front of this document. GeoAid has identified the target stakeholders for community development programs as well as a number of initiatives that were identified through the stakeholder consultations. These programs were prioritized into specific pilot projects that will be financially supported and implemented in the first two years of the project.

Estimated budgets for the pilot projects to be implemented in the first two years of operations are summarized in Table 7. The expenditure schedule has been set based on the assumption that the contributions for the first two years will total US\$570,000.

It is noted that in addition to the community development initiatives that will be implemented in the mine area under this CDP and future CDPs, GeoCam is committed to employee training programs that will provide valuable, marketable job skills to local residents.

4.5 Public Consultation and Disclosure Plan

The PCDP articulates how GeoCam intends to establish multi-directional communications among local residents, NGOs, government, and other interested parties. The PCDP provides for public meetings for stakeholders to voice their concerns and to ensure that expectations are in line with project plans.

Public concerns and comments identified during the PCDP will be integrated into the future revisions of the ESAP and other documents. The PCDP specifically provides for the following:

- An outline of financial lending institutions requirements for public consultation and disclosure.
- Identification of key stakeholders in the Nkamouna Project.
- A description of the resources and the responsibilities of PCDP implementation, including receipt and response to grievances.
- A description of how data will be collected and maintained in order to adequately monitor and report the effectiveness of the PCDP.

5.0 Conclusions

This Executive Summary presents the results of the Nkamouna Project ESA and identifies the specific actions required to assure that the health, safety, environmental, and social program performances are in line with international mining best practice.

The ESIA has identified several potential environmental and social impacts for which the mitigation measures may be broadly categorized as reclamation of disturbed land to forest/wildlife habitat, protecting and enhancing biodiversity, offsetting greenhouse gas emissions, ensuring adequate water supplies, and economic diversification and sustainable community development. The ESAP has defined the specific actions that must occur to implement these mitigation measures and who is responsible for their implementation. It also defines specific monitoring programs aimed at documenting the implementation and adequacy of control systems and mitigation measures and the reporting that is required to assure transparency.

With the effective implementation of the mitigation measures and monitoring programs defined herein and with periodic updates to the ESAP and selected component plans, GeoCam can prevent or minimize its project impacts.

6.0References

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Tables

Figures