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D'APPOLONIA
ECMG

REPORT OF THE

**EXTERNAL COMPLIANCE
MONITORING GROUP (ECMG)**

**FIFTH SITE VISIT
APRIL 2009**

Ahafo South Project, Ghana

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SUBJECT: FIFTH SITE VISIT OF THE D'APPOLONIA ECMG TO THE AHAFO SOUTH MINING PROJECT, GHANA, APRIL 2009

Introduction and Executive Summary

This report summarizes observations made during the fifth site visit (April 27 – 30, 2009) by D'Appolonia S.p.A., Italy (D'Appolonia), serving as the External/Independent Environmental, Health and Safety (EHS) Compliance Monitoring Consultant (referred to as the External Compliance Monitoring Group – ECMG) for the Ahafo South Mining Project, Ghana (“the Project”).

This External Compliance Report is broken down into three key subject areas, as follows:

- Compliance with International Finance Corporation (IFC) Policies and Guidelines;
- Compliance with the Environmental and Social Impact Assessment (ESIA) documentation; and,
- Recommendations for Improvement based on D'Appolonia's experience.

ECMG observations that require action and will be reviewed in subsequent assessments have been collated in Table 1 – Follow-up Issues. Table 1 will be updated by the ECMG following each site assessment. The ECMG has also provided recommendations for improvement based on the collective experience and expertise of the team members. These recommendations are not considered compliance requirements and there is no onus on the operation for implementation. ECMG, however, encourages the Project to consider the usefulness of the recommendations and incorporate them, as appropriate, into management activities.

Newmont Ghana Gold Limited (NGGL), a wholly owned Ghanaian subsidiary of Newmont Mining Corporation (Newmont), is developing gold reserves with mining and milling operations located along a mineralized zone that extends approximately 70 kilometers (km) in the Brong Ahafo Region of Ghana, West Africa. The Project is an open cast gold mine and associated facilities. Construction initiated in April 2004 and mining started in January 2006 with the pouring of first gold in July 2006. Ahafo South sold 520,800 ounces of gold in 2008. The Ahafo South Mining Project is expected to add an additional 5.4 million ounces to Ghana's overall export of gold during the life of the mine.

Mining is currently conducted in three areas, the Subika, Apensu and Awonsu pits. The current NGGL workforce totals about 1378 permanent Ghanaian workers and approximately 79 expatriates. Contractors augment this workforce by an additional 1,468 workers to provide security, laboratory, vehicle and equipment maintenance, construction, catering, and transport services.

In January 2006, the IFC approved financial assistance in the form of a loan to NGGL to continue development of the Project, approximately the southern half of the overall Ahafo mineralized zone. NGGL committed to apply the IFC Social and Environmental Safeguard Policies and Guidelines (as applicable in 2006) to the design, construction, operation, and closure of the Project.

IFC involvement and financing require both pre-finance project due diligence and post-finance project assurance related to the various social, environmental, and health and safety IFC Safeguard Policies relevant to the Project, as presented in the ESIA, which was disclosed on August 29, 2005. NGGL has committed to external/independent social, environmental, and health and safety compliance monitoring to provide an additional level of transparency to the implementation of social, environmental and health & safety management programs. Social compliance is independently evaluated and reported by other external assessors¹ outside of the D'Appolonia ECMG organization. Public disclosure documents, including the independent ECMG reports are available on the Newmont Ahafo web site at <http://www.newmont.com/africa/ahafo-ghana/public-disclosure-documents>.

D'Appolonia's scope of work is to conduct semiannual visits to the Project in order to:

- Identify areas and degrees of compliance with IFC/World Bank (WB) Policies and Guidelines:
 - IFC Operational Policy (OP) 4.01 - Environmental Assessment (October 1998),
 - IFC OP 4.04 - Natural Habitats (November 1998),
 - IFC OP 4.37 - Safety of Dams (September 1999 Draft),
 - IFC Hazardous Materials Management Guidelines (December 2001),
 - IFC Occupational Health and Safety (OHS) Guidelines (June 2003),
 - WB Operational Policy Note (OPN) 11.03 - Management of Cultural Property in Bank-financed Projects (1986, reprinted August 1999),
 - WB Pollution Prevention and Abatement Handbook (PPAH) General Environmental Guidelines (July 1998),
 - the WB EHS Guidelines for Mining and Milling - Open Pit (August 1995);
- Provide practical guidance and advice to Project's field teams; and
- Identify specific EHS issues and conduct follow-up and closure of issues.

¹ The Independent External Social Compliance Monitoring Reports are publicly available at <http://www.newmontghana.com/> in their section entitled Ahafo: Public Disclosure Documents.

The Focus Areas of the EHS reviews are the following:

- EHS Management performance;
- EHS compliance (versus Ghanaian and International standards as presented in ESIA);
- Compliance with IFC EHS Safeguard Policies;
- Facility review;
- Biodiversity Management Plan performance (as appropriate);
- Implementation of the Environmental and OHS Action Plans (as presented in ESIA); and
- Hazardous Material and Transportation Management.

During this visit, D'Appolonia also received information from NGGL for an associated facility, the Volta River Authority's (VRA) Kumasi-Sunyani Transmission Line. A review of this component based on this documentation is included as part of this report.

Specific activities conducted during this site visit included the following:

- Evaluation of implementation of the commitments contained within the Environmental and Social Action Plan (ESAP) of the ESIA. Items addressed in the ESAP include: air quality, surface and ground water resources, soil resources, natural resources (flora and fauna, including aquatic organisms) and wetlands, noise and vibrations at off-site receptors, waste management, and cultural resources;
- Evaluation of implementation of the commitments contained within the OHS Action Plan. Items addressed in the OHS Action Plan include:
 - Hazardous materials and transportation management, including cyanide,
 - OHS monitoring, including noise and vibrations,
 - OHS statistics, and
 - Bilharzias, malaria and HIV/AIDS programs;
- Evaluation of compliance with IFC Policies and Guidelines, as above;
- Visit to the sites of the Project facilities (including the operating Apensu, Subika and Awonsu Pits; Water Storage Facility (WSF); Tailings Storage Facility (TSF); and associated infrastructure);
- Meeting with the Project teams responsible for EHS compliance monitoring and review relevant plans, procedures and monitoring records;
- Meeting with Project team members and with Conservation International (CI) to discuss NGGL's on-going partnership;
- Limited review of documentation provided by NGGL specifically related to with respect to the VRA's Kumasi-Sunyani Transmission Line;
- Conducting a closeout meeting with NGGL EHS and management personnel focusing on key findings, correction of any factual inaccuracies and possible corrective/upgrade actions.

The closeout meeting was conducted at the Ahafo South Mining Project on April 30, 2009 and the information presented in this meeting has formed the basis for this report. The information, observations, and opinions presented in this report are those of D'Appolonia and are independent of those of NGGL and the IFC.

The Ahafo South Mining Project is in operation and its facilities continue to appear to be designed, operated and maintained according to good industry practice. Although evaluation of design, construction and operations aspects is not part of the ECMG scope of work, the organization was found to competently operate the site, which is well maintained and equipped with good facilities, campsites, workshops, equipment and machinery.

The most fundamental observation made from the fifth visit is that NGGL can demonstrate that plans are in place or corrective actions are ongoing to address the gaps previously identified where their operations are not fully compliant with IFC environmental policies and guidelines. The most significant progress includes:

- Continued development of EMS Management system as part of ongoing efforts towards ISO 14001 and OSHAS 18001 certifications;
- Improvements to both occupational health and environmental monitoring procedures and enforcement;
- Preparation of an Emergency Preparedness Plan in draft form for the Tailings Storage Facility and the Water Supply Facility.

The following discussion amplifies these main points and provides additional observations.

One of the most significant developments over the past year has been the development of most of the plans and procedures needed to constitute a complete EMS system as part of NGGL's efforts to achieve ISO 14001 and OHSAS 18001 certifications. The current schedule is for the first stage ISO/OSHAS audit to take place by the end of 2009 and the final audit to take place by the end of Q2 2010. The basic Integrated Management System (IMS) documents are nearly all finalized and site-specific plans and procedures have been largely developed. Although the ISO/OSHAS certification process is not complete, the EHS organizations are functional and fully mature in terms of their actual activities. This is a major improvement from conditions encountered during the first ECMG audit, where plans and procedures were developed only at the level of general Newmont policy, EHS staffing was not complete and substantial training was required before effective programs could be implemented.

From an environmental standpoint, the Counter-Current Decantation (CCD) plant continues to reduce the concentration of Weak Acid Dissociable (WAD) cyanide by washing the tailings before they are discharged into the TSF. Approximately 95% of the daily samples of the influent to the TSF are below 50 milligrams per liter (mg/l) WAD cyanide and the actual WAD cyanide in the actual tailings reservoir as represented by the decant water is typically only about 2 mg/l, below the level of concern to wildlife. The few slight excursions of the WAD cyanide entering the TSF appear to be associated primarily with power outages that prevent the efficient operation of the plant.

NGGL continues to operate with waste management practices previously identified as not being consistent with good practice during previous ECMG visits, but NGGL was able to demonstrate that they are progressing in improving their waste management. A Waste Management Plan is now a final document. An additional step forward is the development of an Integrated Waste Management Facility (IWMF) that has been

established with an area for managing hydrocarbon contaminated soils. This facility is expected to have the capability for composting by the end of July, which will eliminate kitchen waste and sewage sludge as problem waste streams. Additional effort is still needed to eliminate the use of the Kumasi municipal facility for certain hazardous waste streams, but it is expected that the installation of an aerosol aspirator and a used oil filter crusher at the IWMF will reduce the quantity of this type of waste stream. Equipment procurement difficulties are causing a delay in upgrading the existing wastewater treatment plant, but the design effort is complete and it is expected that the new construction along with the completion of the new composting facility will eliminate the need to send sewage wastewater and sludge to the Kumasi municipal facility. As previously reported, most effluent is treated on-site and the final treated wastewater is sent to the TSF, but some sewage waste streams from Kenyase and Rank Camps is still sent to the municipal Kumasi facility.

The monitoring of ambient air, surface water and groundwater continues to be a routine aspect of environmental management and the results of monitoring are reflected in terms of improved field operations, such as observed with improvements to the ECDs and the construction of a containment berm to reduce runoff from the excavation of the Awonsu pit. Groundwater modeling has been updated to reflect the actual results of pit dewatering. The new results show that the potential does exist for community wells to be impacted, but potentially impacted wells are being identified and NGGL has plans to prevent community water supplies from being adversely impacted.

Ambient noise monitoring continues to show results similar to those previously recorded. Daytime ambient noise levels in local communities are generally within the World Bank – IFC residential standard of 55 dB (A), but night time values are actually higher than the daytime noise. As it is not clear if NGGL activities actually contribute to the elevated night time noise, this is an issue that NGGL still needs to evaluate. Monitoring continues to be conducted with respect to the effects of pit blasting (vibrations) on local communities and vibrations have been within conservative NGGL limits around all three pits. The NGGL standard of 115 dBL for air overpressure on a few occasions was exceeded at villages next to the Awonsu and Apensu pits, but it should be noted that this is a conservative standard and within IFC limits.

The ECMG's biodiversity and natural resource management specialist joined the team during this visit to obtain an update on the project's related field activities. An important focus topic was the status of NGGL's partnership with CI, which is still thriving. Two of the most notable accomplishments of this partnership include the Community Use Biodiversity Assessment and the follow-up establishment of a medicinal herbal gardens/farm in each of the project's two resettlement sites. Conservation International has also organized a number of stakeholder engagement activities involving national and local governmental officials, traditional leaders, local community members, CI and NGGL project staff. Regarding the Ahafo Biodiversity Management and Monitoring Plan (ABMMP), it could still be improved with little additional resources on the part of NGGL. NGGL is developing an Action Plan to accompany its ABMMP, which involves defining the linkages between the ABMMP and natural resource management commitments contained in related documents such

as the project's invasive species strategy and erosion control and revegetation procedures.

The Health and Safety program continues to improve. Accident rates have continued to drop over the past two years and are now in the general range of target values with statistics showing that workplace safety is close to as good as can be expected. The Emergency Response Plan still needs to be finalized, but as noted during the fourth mission, the document in its current condition provides a sound basis for defining procedures to be followed during most emergencies. A deficiency recognized by HSLP department is with respect to their ability to respond to chemical spills. Nevertheless, the HSLP department did appropriately respond to a small leak from one of the tanks used for the transport of cyanide and this contributed to an international-level review of the similar tank designs and appropriate corrective actions taken.

From the standpoint of health, special mention needs to be made with respect to the malaria control program being implemented by NGGL. NGGL has an aggressive program to ensure the use of malaria prophylaxis by their non-immune employees and significant effort is made to engineer earthworks and drainage in such a way as to eliminate potential breeding grounds. The HSLP department also undertakes periodic outdoor space spraying, using substances approved by the World Health Organization, to further reduce the mosquito population. These efforts are showing a marked decline in incidence of malaria in the workplace. NGGL has also recently embarked on a community program in conjunction with the existing district health malaria control program and through consultation with the local community.

The TSF appears to be competently designed and is being constructed within the established design criteria. The one deficiency with respect to this facility identified in previous ECMG reports has been the lack of a detailed Emergency Preparedness Plan (EPP) with maps of potentially inundated zones. A positive step has been the preparation of a draft EPP that does identify populated areas that could be affected by very low probability failure modes for both the TSF and the WSF. It is expected that the EPP will be finalized and that the overall operation of these facilities will be reviewed to minimize their potential for failure. It is emphasized that significant failure scenarios are only associated with the last stages of TSF development, not with current conditions.

Archaeological surveying in the Ahafo South area was completed with the submission of site excavation reports in July 2008. Chance finds have not been recorded since that time. Although it may be that ongoing clearing and topsoil stripping has not affected any archaeological sites, monitoring of these activities is not being conducted by trained individuals. Accordingly, NGGL needs to improve their personnel training such that the Cultural Resource Management (CRM) Plan prepared in February 2008 can effectively be implemented for the identification and management of chance finds. A Cultural Resource Manager should be designated with responsibility for implementing the CRM Plan.

Table 1
Follow-up Issues

Mission/ Issue No.	IFC Policy / ESIA Compliance	Opening Date	Closing Date	Description	Status	Comments
<i>EHS Management</i>						
M1.1	IFC (IFC OP 4.01 Annex C (January 1999) – requirements of content of EMP	Dec 06		NGGL should finalize all EHS related plans and procedures as soon as practical.	Pending	This process is nearly complete as part of NGGLs effort to achieve ISO 14001 and OSHAS 18001 certifications.
M1.2	IFC (IFC OP 4.01 - Environmental Assessment [October 1998], paragraph 18)	Dec 06		Include reference to the applicable IFC Guidelines into the plans and procedures under finalization. The applicable and relevant IFC Guidelines are presented in Section 1 of the ESIA.	Pending	This process is nearly complete as part of NGGLs effort to achieve ISO 14001 and OSHAS 18001 certifications.
M1.3	ESIA Chapter 2 – Environmental Management (p 2-43)	Dec 06	May 09	Monitoring and assessment of compliance with ESIA commitments is an important part of the Project. A specific procedure should be developed and implemented as soon as practical, including the monitoring of Contractors and subcontractors involved during Project development. It is recommended that levels of non-compliance be clearly defined based on potential or actual threat, damage or irreversible impact to a sensitive or important resource. An EHS non-compliance register should be maintained by the Environmental and HSLP Departments.	Closed	An Environmental Corrective Action Register is being maintained that demonstrates the effectiveness of the EHS team in identifying and closing environmental non-compliances. Safety issues are also addressed within this register.
<i>Surface Water and Groundwater</i>						
M3.1	ESIA Chapter 4, page 4- 133, para. 3, Chapter 5 – EMP p. 5-33, ESAP – basic commitment to eliminate or offset impacts from mining	Dec 06	May 09	Calibrate the groundwater model prepared to evaluate the effects of pit dewatering on the basis of additional measurements of drawdown and studies to determine the connectivity between shallow and deep groundwater regimes. Consider increasing the monitoring program applicable to mine dewatering activities and then develop mitigation measures for community wells and wetlands as appropriate.	Closed	The groundwater model has been calibrated and potentially affected communities have been identified. NGGL was able to demonstrate their commitment to preventing adverse community impacts from pit dewatering.

Mission/ Issue No.	IFC Policy / ESIA Compliance	Opening Date	Closing Date	Description	Status	Comments
<i>Biodiversity and Ecological Management</i>						
M2.1	ESIA (Chapter 5 [ESAP]; Table 5-3 -in DRAFT Biodiversity Management Plan)	July 07		The multi-taxa biodiversity monitoring program should be developed and made available.	Pending	Considering the lifespan of the mine site, it is recognized that monitoring is a long-term endeavor with the principle objective of restoring project-affected areas to their pre-disturbed condition in terms of biodiversity value and use to local communities. The Project is taking steps towards developing a monitoring program to fit this purpose.
M3.2	ESIA (Chapter 5 [ESAP]; Table 5-3)	Feb 08		The Biodiversity Management Plan (BMP) should be finalized.	Pending	The ABMPP will be considered final when it is developed as a stand alone implementable plan.
M5.1	ESIA (Chapter 5 [ESAP]; Table 5-3)	April 09		A separate evaluation should be conducted (apart from aquatic monitoring) to determine if the WSF will indeed serve as a viable long-term wetland habitat as was originally envisioned in the ESIA.	New	
<i>Waste Management</i>						
M1.10	ESAP – Table 5-5, p 22	Dec 06	May 09	Finalize the general Waste Management Plan.	Closed	NGGL has finalized the Waste Management Plan – what remains is for this document to be effectively implemented and disposal practices not considered to be good practice eliminated.
M5.2	IFC General Environmental Guidelines ESIA Chapter 5, Hazardous Waste Management Program	May 09		Eliminate the use of the Kumasi Municipal Landfill for the disposal of hazardous waste.	New	The disposal of hazardous waste in a facility where leachate flows to the surface water regime is not what was anticipated in the ESIA and contradicts good practice as defined in the General Environmental Guidelines.

Mission/ Issue No.	IFC Policy / ESIA Compliance	Opening Date	Closing Date	Description	Status	Comments
<i>Hazardous Materials Management</i>						
M1.12	IFC (IFC Hazardous Materials Management Guidelines [December 2001]; Requirement #2 – <i>Hazardous Materials Management Program</i>) ²	Dec 06	May 09	Expedite the finalization of all plans and procedures related to the management of hazardous materials.	Closed	This process is effectively complete as part of NGGLs effort to achieve ISO 14001 and OSHAS 18001 certifications. Good practice with respect to the handling of hazardous materials was observed in the field.
<i>Noise and Vibrations</i>						
M3.3	IFC	Feb 08		Assess background noise in residential areas and ensure that Project activities do not produce noise levels that exceed limits provided in the WB's General Environmental Guidelines (July 1998).	Pending	The situation continues as identified in the 4 th ECMG report. Daytime ambient noise levels in local communities are generally within the World Bank – IFC residential standard of 55 dB (A), but nighttime values are higher than the daytime noise. As it is not clear if NGGL activities actually contribute to the elevated nighttime noise, this is an issue that NGGL still needs to evaluate.

² Also see Guidance Note A: *Outline of a Hazardous Materials Risk Management Plan* in this Guideline, and, specifically the bullet on 'Operating Procedures'.

<i>Emergency Preparedness Planning</i>						
M1.19	IFC OP 4.37 and Annex to OP 4.37, where the contents of an EPP are defined	Dec 06		Prepare Emergency Preparedness Plan (EPP) for the potential failure of the Tailings Storage Facility (TSF) that clearly defines potentially affected areas based on potential release scenarios as determined on the basis of an Impact Analysis and contains notifications and chain-of-command procedures. Environmentally sensitive areas and receptors should also be identified on the maps of areas with potential impact.	Pending	A draft EPP has been prepared that needs to be finalized.
<i>Cultural Resource Management</i>						
M5.3	NGGL Cultural Resource Management Plan (August 06)	May 09		The Cultural Resource Management (CRM) Plan (Revision 1) prepared in February 2008 provides general guidelines for the identification of cultural properties and indicates that work will stop and appropriate procedures followed should chance finds be made. Field personnel do not have the training and procedures are not in place for this Plan to be implemented. Designate a Cultural Resource Manager (CRM) to be responsible for Plan implementation.	New	Make sure that the Cultural Resource Management Plan is fully implemented. It is recommended that those individuals already involved with monitoring field activities, especially the environmental field monitors receive appropriate training in chance finds protocols and that archaeological baseline assessments take place at the time vegetation is cleared. Keep archaeologists on retainer such that they can quickly respond to a chance find.

1 EHS Management

1.1 Plans and Procedures

Project Strategy:

NGGL EHS and social commitments are contained in the disclosed documents: ESIA, the Resettlement Action Plan and the Public Consultation and Disclosure Plan.

The ESAP, presented in Section 5 of the ESIA (available at www.newmontghana.com), is an integral component of Ahafo South Mining Project's overall planning, design, budget, and implementation. It identifies the Project management programs and specific mitigation measures expected to reduce potentially adverse impacts to acceptable levels. The ESAP includes a requirement for environmental monitoring to verify the effectiveness of mitigation during all phases of the Project. The ESAP also specifies institutional responsibilities, an implementation schedule, and cost estimates. The Plan provides for modifications over time if information shows that changes should be implemented. An ESAP update was published in April 2006.

NGGL has committed to achieving the highest standard of performance in areas of Community and External Relations, Environmental Stewardship, and HSLP through responsible management of activities throughout various stages of the Project. At the time the ESIA was written, the Newmont Mining's Five Star Management System, a global management system developed in-house by Newmont, was the applicable System. Over the past year this system has been phased out in anticipation of certification under ISO 14001/OHSAS 18001. There has been some slippage with respect to the expected schedule for certification from what was presented in the 4th ECMG report, as the final certification audit is now schedule for Q2 2010.

Newmont is implementing the International Cyanide Management Code (ICMC), a voluntary industry program for companies involved in the manufacture and transport of cyanide and the production of gold. The ICMC covers the lifecycle of cyanide management and defines a series of principles and objectives that cover production of cyanide, transportation, handling and storage, operations, decommissioning of facilities, worker safety, emergency response, training and communications with the public.

Observations:

The Integrated Management Systems (IMS) Procedures are currently up-to-date or in the process of finalization as a part of the ISO/OHSAS certification effort. Of the 16 general standards 13 are complete and 3 are currently in various stages of draft (Behavior and Observation, Emergency Preparedness and Contractor Selection and Control). All of the 10 Environmental Management System Procedures had been finalized at the time of the October 2008 mission. Of the 15 HSLP procedures (i.e., Occupational Health and Hygiene, Hazardous Materials, Surface Ground Control, Surface Fire Prevention, Energy Isolation, Mobile Equipment, Electrical Safety, Work Permit Systems, Machine Guarding and Conveyors, Explosives, Light Vehicles and Road Safety, Working at Heights, Pressurized Systems, Cranes and Lifting Equipment, and Medical Programs), all but Surface Ground Control have been finalized. These basic standards form the basis for the development of site-specific

Standard Operational Procedures (SOPs). SOP development for significant HSE risk areas is about 70% complete and is expected to be complete at the end of Q3 2009.

An Environmental Incident Register (EIR) continues to be available that includes the list of all spills reported on site relevant to different substances and the relevant amounts of contaminated soil cleaned. Since the October 2008 ECMG visit, 25 spills have been recorded and classified according to a scale of severity levels from 1 (least significant), to 5 (most significant): the largest was a single Level 2 incident associated with the spill of 800 liters of hydraulic fluid in the Apensu pit. Contaminated rock from this incident was observed to be treated within the new Integrated Waste Management Facility. One incident classified as a Level 1 spill occurred on November 20 where during washing of a bulk ISO container after offloading cyanide through the sparging process at the reagent shed, cyanide solution was noticed dripping from a safety plate pasted on the container. This small spill proved to be highly significant in that it identified a design flaw in the bulk ISO containers and represents a good example of NGGL response to a cyanide incident as further discussed in Section 3.2.

One of the non-compliances previously identified by the ECMG with respect to EHS procedures since December 2006 has been the lack of an EHS non-compliance register. This issue is now closed. The register submitted to ECMG provides documentation that EHS teams do regularly inspect project activities, report deficiencies, and document corrective actions. Issues of safety are also reported within this register.

Monthly environmental reports continue to be submitted to the EPA in accordance with EPA Act 490, but there appears to be some inconsistency with what is reported to the Ghana EPA in terms of incidents when compared to the EIR. Based on the individual monthly reports for 2008, there was only one reportable incident, a fuel spill from November, which was indicated not to be reportable to the Ghana EPA in the EIR. A similar level of spill February 2009 was indicated in the EIR to be reportable, but it is not mentioned in the February 2009 EPA report. In the case of the 2008 incidents, however, they are all (both Level 1 and Level 2) reported in the 2008 Annual Report, with descriptions provided for the Level 2 incidents that are sometimes in greater detail than the EIR. Exceedances of blast overpressure are always shown to be non-reportable in the EIR, but they are actually all reported to the EPA.

IFC Policy Action Items

- M1.1 NGGL should finalize all EHS related plans and procedures as soon as practical.
- M1.2 Include reference to the applicable IFC Guidelines into the plans and procedures under finalization. The applicable and relevant IFC Guidelines are presented in Section 1 of the ESIA.

<i>ESIA Action Items</i>

Nil

Recommendations for Improvement

- i) The non-compliance register could benefit from defining degrees of non-compliance to ESIA policies and commitments. The register has a column labeled “classification” where the degree of non-compliance could be assigned, but information is not provided. For example, the incorrect use of a waste bin could be a Level 1 (minimal) non-compliance with commitments made in the Waste Management Plan, whereas this type of problem could constitute a Level 2 if it is identified repeatedly. A Level 2 could also be a situation which if untended could result in serious environmental and human impact, such as a small cyanide leak that represents a system flaw. A Level 3 non-compliance could be a serious impact, such as a major cyanide spill that resulted from not attending to the small leak. The assigning of degrees of non-compliance can serve as flags to management for action. If non-compliances are reported to management, it is human nature that the most serious situations will be taken care of first, but only if it is obvious which situations are actually the most serious. Level 3 non-compliances will probably never need to be assigned, but if such situations do arise, many large projects require Lender notification.
- ii) Make sure there is a consistency between what is reported to the EPA and what is presented in the EIR and that there is consistency between the monthly and annual EPA reports.

2 Environment

2.1 *Environmental Organization and Staffing*

Project Strategy:

The Ahafo Environmental Department has essentially maintained the same organization as observed during the February trip structured into three main divisions: Compliance, Monitoring, and Reclamation. At the head of the department is the Environmental Manager, who reports to the General Manager for Environmental and Social Responsibility (ESR), responsible for compliance with IFC, Ghanaian, and corporate environmental requirements. The General Manager - ESR is supported by one administrative assistant, and an Environmental Manager based on the project site. The Director of Environmental Affairs, based in Accra, provides support to the Ahafo Environmental Department and, the General Manager- ESR, and both report to the Regional ESR Director, who in turn reports to the Regional Vice President. The site Environmental Manager, supported by one administrative assistant recently appointed and by three Superintendents, respectively for Compliance, Monitoring, and Reclamation, reports directly to the ESR General Manager.

Observations:

The current environmental management structure is consistent with ESIA commitments and now all the key managerial positions have been filled including the reclamation superintendent, the only position not filled at the time of the October 2008 audit. Turnover has not been a significant issue over the past 6 months and it is expected that the organization is sufficiently mature that managerial changes will not

have an overly adverse impact to the organization's ability to function, which might have not been the case two years ago. Of this group of about 65 individuals, only the manager is an expat and he reports to a Ghanaian national. Training is always an ongoing aspect of work, but the lack of training is not an issue to the ability of the organization to perform. Accordingly, environmental organization and staffing is not a topic that will be addressed in future ECNG reports, unless changes take place such that the ability of the organization to properly function is compromised.

<i>IFC Action Items</i>

Nil

<i>ESIA Action Items</i>

Nil

2.2. Air Quality

Project Strategy:

The environmental control measures indicated in the ESIA refer to the management and mitigation of both fugitive dust emissions and gaseous emissions. Fugitive dust is associated with mine operations including blasting, ore and waste rock hauling, dumping, grading, backfilling actions, as well as from increased vehicular traffic in the area. Gaseous emissions are generated from operation of mine equipment, combustion sources, and vehicular exhausts.

The control measures to mitigate fugitive dusts include watering or use of other surface binding and/or wetting agents, reclamation and revegetation, vehicular speed control, road maintenance, and use of dust suppression sprays or dry dust collection systems on ore crushing circuits and transfer points at the processing plant. Gaseous emissions are mitigated through proper operation and equipment maintenance, as well as specific end-of-pipe treatments, including scrubbing of emissions from the carbon regeneration kiln at the processing plant.

The Project has committed to implement dedicated air monitoring programs for both dust and gaseous emissions control.

Observations:

According to the data made available during the fifth site visit, the monitoring of air emissions from operations to the ambient air continues to be implemented consistently. The SOP for air monitoring has been finalized.

Ambient air continues to be monitored for CO, NO, SO₂, NO₂, and NO_x at nine locations in the general area of mining, as well as at camps and local communities. None of the test results suggest problems that need to be addressed and all are within applicable standards.

As observed during the previous visits, monthly monitoring for the Ahafo South mine Total Suspended Particulate Accumulation (TSP) continues to be conducted at five (5)

dust monitoring gauges located within or nearby the Ahafo mine operations area (Ntoroso Township, Rank Camp, Kenyase Town, Plant Site, and Mensah Kumtah camp (formerly Senior Staff Village). Monthly average results for thirty (30) days sampling were provided to the ECMG for the period October 2008 through February 2009. NGGL is also responsible monitoring PM₁₀ particles over a 24hr period on a weekly basis and samplers are located at Mensah Kumta Village and Rank Camp. The results of the weekly monitoring for the period October - December 2008 were always below the guidance limit of 70 µg/m³, assumed by WB/IFC General Environmental Guidelines as reference concentrations immediately outside the project property. The January - March monthly averages have exceeded 70 µg/m³, with the January average 187.63 µg/m³ at Rank Camp and 155.16 µg/m³ at Mensah Kumta Village. These high values are not believed to be associated with NGGL operations, but rather influence of the Harmattan during dry season and bush fires. NGGL was observed to be implementing an aggressive dust suppression program and since January 2009 has started to use a synthetic dust suppressant product called DusTreat, which is an organic binder with surfactant properties that help to reduce the fugitive dust emissions that are caused by vehicular traffic.

In order to meet legal requirements and commitments stated in the Environmental and Social Impact Assessment (ESIA) and in the Environmental Management Plan (EMP) approved by the Ghanaian Environmental Protection Agency (EPA), an inventory and characterization program of all gas emission point sources at Ahafo site operation facilities is required. This stack emissions testing, originally planned for first quarter 2007, still has not started. Nevertheless, progress is being made in terms of preparing an inventory identifying all point sources of gas emissions, registering their location in coordinates and elevation, and assessing the existing physical condition to determine the requirements for proper accessibility (ports) to conduct the regular monitoring measurements according the adopted methods. Current plans are to conduct the stack emissions Q3 2009.

<p><i>ESIA Action Items</i></p>

<p>Nil</p>

Recommendations for Improvement:

- i) Develop a dust deposition / ambient air quality / emissions monitoring data register, consistently presenting all results obtained from direct measurements and laboratory testing (*repeat recommendation*).

2.3 Surface and Groundwater

Project Strategy:

The ESIA defines the need for the Project to construct a water storage facility (WSF), several environmental control dams (ECDs) designed for sediment control as well as Best Management Practices for erosion control, waste rock facilities, and a tailings storage facility (TSF). Aquifer characterization in the mine pits, pit-lake studies, and geochemical analyses of potential acid generating rocks have also been identified as necessary studies to be conducted. No releases of effluents containing cyanide or other chemicals to the environment will be allowed, except possibly under

accidental/emergency conditions. A water/chemical solution recycle strategy is adopted by the Project.

Surface water control ditches are constructed as necessary to intercept and divert potential run-on water from flowing into mine pits, the TSF, or onto waste rock disposal facilities and ore stockpiles. These channels divert uncontaminated run-on water back into natural drainage downgradient from disturbed areas or into ECDs. Target release criteria for the sediment control system (ECDs) are 50 mg/l total suspended solids (TSS) for a maximum storm event of 25-year, 24-hours precipitation.

As Project policy, no discharge to the environment will occur if applicable standards are not met for precipitation events consistent with the ECD design storm event criteria. In particular, target release criterion for TSS at the ECDs is set at 50 mg/l (WB EHS Guidelines Mining and Milling - Open Pit [August 1995]). No water discharge is allowed from the TSF.

Water quality monitoring program includes the sampling of the surface water streams in the surroundings of the mining operations, at the ECDs and any other Project water management structures. Twenty three surface water monitoring points have been selected, including locations at the ECDs and WSF. Water quality monitoring also includes the installation and periodic sampling and testing of nineteen groundwater monitoring points located upstream and downstream of the Project area, and eight wells located in the surroundings of the TSF. The groundwater monitoring points are nested wells at two different depths: shallow (around 30 to 35 meters deep) and deep wells (around 85 to 90 meters deep). Testing includes water table elevation data and a large set of physical and chemical parameters to fully characterize water quality. Pump-back wells are planned around the TSF as an additional measure to control potential unexpected impacts to groundwater.

The following table summarizes the ongoing surface and groundwater monitoring.

Table 2 – Ongoing Surface and Groundwater Monitoring

Type of Monitoring	Number of Locations/Points	Frequency
Surface Water -Ahafo South	25	Quarterly
Groundwater Monitoring - Ahafo South	19	Quarterly
Dewatering Wells	7	Monthly
NGGL Potable	8	Monthly
Community Potable Wells	22 (2 additional planned)	Quarterly
TSF Piezometers	10	Weekly
TSF Wells	8	Monthly

Water from mine pit dewatering will be not discharged from the site, unless it meets water quality standards and conditional to Ghana EPA approval. Mining in Subika and Apensu pits is presently around 100 m below the pre-mine groundwater surface and combined dewatering rates average around 140 l/s with this water pumped to the WSF. The Awonsu pit will also be mined below the water table and will require dewatering. Potable water testing is planned for both raw water and treated water. Twenty community wells are included in the sampling plan.

*Observations:*Surface Water

An ongoing issue with respect to surface water has been sediment loading from runoff associated primarily with the ongoing excavation of the Awonsu pit, as reflected in some high total suspended solid (TSS) readings, especially at ECD 2. A report to NGGL to EPA in September 2008 outlined actions planned to mitigate discharge from the ECD2 to the environment. Interventions are now complete and have included:

- Placement of wooden log barriers on land potentially prone to erosion;
- Erection of silt fences across all small drainage lines in the cleared area;
- Construction of source control dams with stones;
- Flocculation of ECD2 water (with alum) to acceptable quality for discharge;
- Installation of a valve on the decant pipe of ECD2 to minimize leakages from the dam; and
- Sealing of leakage in decant tower.

The dry conditions have precluded the need to discharge from ECD2, but the flocculation tests are promising that it will be practical to limit discharges to less than 50 mg/l TSS. ECD4 was decanted on January 23, 2009 for a period of 3.5 hours with a slightly elevated TSS of 57 mg/l under conditions that were communicated and approved by Ghana EPA.

Mine dewatering continues to be producing water with anomalously high sulfate values (discharge standard 250 mg/l) and occasionally elevated nitrate (discharge standard 10 mg/l). This water sometimes has exceeded 1000 mg/l sulfate, especially from Subika pit dewatering, and 80 mg/l nitrate from Apensu pit. The water from the different pits is mixed before it is discharged to the WSF, such that environmental discharge standards are met, but there is an upward trend to the concentration of sulfate/nitrate. In response to this situation NGGL is in the process of constructing two storage ponds that will allow for the most contaminated water to be diverted to the processing plant. These ponds are expected to be operational before the end of Q4 2009. Cyanides within the dewatering discharge are mostly below their detection limit of 0.01 mg/l WAD Cyanide and always well below the IFC Mining and Milling – Open Pit guideline discharge value of 0.5 mg/l.

Groundwater

As noted above, groundwater extracted during pit dewatering has levels of sulfate and nitrate that are higher than NGGL levels for these parameters. Elevated sulfate (486.4 mg/l) is also being detected in shallow groundwater in well GWC3S next to ECD6. The initial results from 2008 geochemistry studies have determined that the elevated sulfates are due to pyrite oxidation in the area of Subika, but it is not clear if dewatering is contributing to the shallow sulfates being encountered near ECD6. A water sample from ECD6 itself tested 263.5 mg/l in October 2008, and samples from September and October 2008 tested in excess of 20 mg/l nitrate, but tests of discharge from this ECD have not yet shown discharge above allowable limits.

The monitoring wells in the area of the TSF continue to be regularly sampled, and the results obtained do not suggest any adverse impact to local groundwater conditions

resulting from Project activities. Exceedances to Ghana EPA standards (applied by NGGL for groundwater, because the Ghana EPA does not have groundwater standards) are commonly observed for total iron, total manganese, and sometimes aluminum, which are likely to be natural and not related to Project activities. There is a persistent situation with anomalously low pH water (lower than pH = 6) in several of the wells, especially MB3, MB4 and MB5. The March 2009 sample taken from MB7 also had an anomalously low pH (5.1), although the water from this well is normally neutral. The cause of this situation is not obvious and should be investigated.

Water supplies for the camps are reported within WHO standards through April 2009. Results from samples collected at some community wells throughout 2008 generally show values within WHO guidelines for potable water, although microbiological contamination including high total and fecal coliforms are persistently detected at several wells, in particular wells OLA-RE (Kenyase II resettlement village), ECD2-BH1 (near Rank Camp), ECD4-BH1 (near village of Morokrom), ECD4-BH2 (near village of Kantinka), GydDBH (Gyedu Clinic at Ntorotoso), MSDBH (near Manu Shed), all of the Ntorotoso community wells, and well DKDBH (village of Dokylkrom). The contamination of domestic wells is possibly related to local activities such as animal husbandry, agriculture, and/or human contamination.

Geomatrix has calibrated their groundwater model to reflect the actual results of pit dewatering. The new results show that the potential does exist for community wells to be impacted. However, potentially impacted wells are being identified and NGGL has plans to prevent community water supplies from being adversely impacted.

IFC Policy Action Items

Nil

ESIA Actions Items

Nil.

Recommendations for Improvement:

- i) Finalize a Water Management Plan that includes all of the components that will be required for surface and groundwater monitoring, especially taking into account the probability that the pit dewatering may have an impact to community wells and surface water (*repeat recommendation, but it is understood that the planning process is underway*).
- ii) Provide the local authorities and communities with the water quality results when samples from community wells and surface water bodies are collected, particularly should WHO guideline exceedances be found. Consider working with local communities to eliminate microbiological hazards that persistently are present in community well water, considering that this water is also routinely consumed by NGGL workers.
- iii) Evaluate if the high sulfate values currently being encountered in ECD6 and within the groundwater at ECD6 have any relationship to mining activity.

Develop a contingency plan to prevent the release of high sulfate water from ECD6.

- iv) Evaluate the presence of low pH water in monitoring wells surrounding the TSF by comparing the recent results with past measurements to determine if there are any trends and if the current results are similar or dissimilar from baseline conditions.

2.4 Reclamation, Revegetation, and Topsoil Management

Project Strategy:

The ESAP defines measures to prevent and mitigate the impacts on soil resources. Potential impacts of concern include reduction of topsoil fertility and increased erosion due to surface disturbance, vegetation removal, and lack of adequate reclamation. NGGL is committed to implementing actions to protect and preserve the topsoil in the mining area and to reuse it during reclamation. Other important actions are related to erosion minimization through temporary and permanent erosion control measures in disturbed areas. These will include sediment traps, fences and barriers, and stormwater management through drainage collection structures, including berms and other drainage, the most important of which are the four ECDs (ECDs 2, 3, 4, and 6). The ECDs have been designed and constructed to contain at least a 10-year, 24-hour precipitation event assuming a drained condition and minimize potential erosion and sedimentation downstream of the mining area by collecting, settling, infiltrating, and evaporating run-on/run-off water from areas disturbed by mining operations.

NGGL is committed to reclaiming all surface disturbances in accordance with applicable Ghanaian regulations and Newmont's Standards for closure and reclamation of mining facilities. A responsibility of the Reclamation team is to conduct and monitor all soil resource protection activities. As part of its commitments, this team conducts inspection of reclaimed and revegetated areas to monitor the success of the reclamation activities and ensure the minimization of erosion and sedimentation impacts. Vegetation monitoring, including visual inspection, noxious weed identification and annual sampling for plant community characteristics, is expected to continue for five years after final reclamation.

Observations:

NGGL continues its commitment to investigate and implement best practices in erosion control and interim reclamation measures. On-going interim reclamation and revegetation activities on localized areas within the mine site are important as the lessons learnt from these exercises will be essential in the development of eventual large-scale reclamation measures for the mine site. Erosion control is being carried out on an as-need basis primarily using revegetation techniques in combination with jute-matting, gabions, rock dams and silt fencing. The project will also soon experiment with using vetiver [*Chrysopogon zizanioides* R] shrubs in place of silt fencing.

During the September 2008 field visit, the ECMG raised the issue of procedures required to achieve suitable reclamation of the various situations left by mining, especially the reclamation of the waste rock piles. NGGL has followed through on its planning and has now developed four trial waste rock reclamation sites, totaling 4-

hectares, on the Apensu South waste rock pile. The approach is an experimental one in that a 1-meter layer of varying proportions of topsoil and saprolite is spread over waste rock piles. Revegetation of each of the various test plots is taking place mainly by hand-planting seedlings of Bahama grass (*Cynodon dactylon*), a naturalized non-native species, and macuna beans (*Mucuna pruriens*), a native nitrogen-fixer. The project will determine which combinations of topsoil/saprolite are adequate for revegetation purposes. If the larger proportions of saprolite show some revegetation potential, the project may be able to conserve its topsoil reserves for spreading in many more project-affected areas.

In the past the project had avoided using commercial seed mixes, preferring locally sourced seeds. For the waste rock pile experimental trials, the project was leaning towards single seed commercial mixes (i.e., Bahama grass and macuna beans), as initial results from the first round of trials showed little success.

Regarding topsoil management, NGGL has decided to interrupt its contract with the University of Ghana. As previously reported, the project has long been aware of the development of anaerobic conditions within thick topsoil stockpiles. As previously discussed in ECMG reports, the University of Ghana was also exploring methods to promote the aeration of such stockpiles and was also conducting experiments using different revegetation techniques (e.g., nutrient content associated with Bahama grass / vetiver combinations). The Reclamation team feels that they have gained a substantive amount of information on these topics over the course of the past several years and will continue conducting similar types of experiments on their own. Regarding topsoil management, the project will be mechanically mixing topsoil before spreading for revegetation purposes. As reported in Section 2.7 of this report, NGGL is expected to have procured equipment for the composting of food wastes by the end of July. Compost will eventually be used to supplement topsoil, and it is expected that this will further revegetation potential.

With respect to invasive species, the biggest threat to contend with is elephant grass (*Pennisetum purpureum*), which is non-native to the Brong Ahafo region. The project is studying how to combat this species in sites where interim reclamation measures are being carried out. The lessons gained will eventually be essential to the final reclamation of the mine site. Methods include active planting of other species, mechanical removal and herbicides. As reported in the ECMG's report for the September 2008 site visit, NGGL has developed the Strategic Plan for the Management of Invasive Species at the Ahafo Project (prepared by Africa Conservation Advocates, Accra). This strategy document has now been supplemented with an Implementation Plan for Noxious Weed Management that details project-related activities for 2009.

Regarding the Ahafo nurseries, NGGL has decided to mainly rely on the well-established Ahafo North nursery for future revegetation purposes, which now contains ~45,000 seedlings of its eventual 60,000 seedling target. The smaller Ahafo South nursery is currently being used to help seedlings recover from transport from Ahafo North nursery before final transplantation in mine site. The nursery will remain in use until the area is required for expansion of the Apensu pit. NGGL is still donating seedlings from the Ahafo North nursery to local communities as a goodwill measure.

IFC Policy Action Items

Nil

ESIA Action Item

Nil

Recommendations for Improvement:

- i) The ECMG encourages continued repetitive trials of local seedmix as numerous variables may have caused the ineffectiveness of the local seedmix in this first trail round (e.g., condition of topsoil, water application, time of year, etc.).

2.5 Biodiversity and Ecological Management*Project Strategy:*

The ESIA presents a discussion of the potential impacts on flora, fauna, wetlands, aquatic organisms, and forest reserves associated with project activities in the Ahafo South project area. The Project's ESAP outlines a series of commitments, environmental control measures and additional actions for these natural resources. These control measures (e.g., noxious weed monitoring and control plan, fencing around mine pit rims, policies for employees and contractors, reclamation of certain facilities, and sediment and surface water control and management) are primarily designed to address direct impacts.

NGGL has strived to build alliances with local communities and with NGOs. As part of this effort, the Project has entered into a biodiversity partnership with CI, an internationally recognized NGO and leader in global conservation (referenced in this report as the NGGL-CI Partnership). Conservation International officially entered into partnership with NGGL in 2006, and their current partnership memorandum of understanding is due to expire in February 2010.

Observations

The ECMG's biodiversity and natural resource management specialist joined the team to obtain an update on the project's related field activities. The last time the ECMG covered this topic in detail was in their report developed for the February 2008 site visit. The focus topics of this visit were on the status of the NGGL-CI partnership, the Biodiversity Management Plan and the project's related (on-going) direct mitigation measures (e.g., flora, fauna, wetland).

NGGL-CI Partnership

An important focus topic during this mission was the status of NGGL's partnership with CI. The director of CI-Ghana had changed in recent months, but since the new director has been established, both NGGL and CI have resumed their joint biodiversity-related activities. Conservation International has informed the ECMG that a CI staff member is dedicated to the Ahafo South project and spends at least 5 days per month on site.

Conservation International has performed a good deal of activities in recent months including the following:

- Community Use Biodiversity Assessment;
- Development of two medicinal herbal community gardens in each of the resettlement sites;
- Seed-hunting gangs of individuals from local communities that collect local seeds to be used for reclamation purposes;
- Stakeholder engagement activities;
- On-going advisory services for the Biodiversity Management and Monitoring Program and other related natural resource management activities.

One of the most notable accomplishments of the partnership to date is the Community Use Biodiversity Assessment of the Ahafo South project area completed in 2008. The assessment was conducted over a three-month period in communities located within a five-kilometer radius of the Ahafo South project area. The main communities surveyed were Kenyase 1, Kenyase 2, Ntotroso, Wumahinso, Dokyikrom and Yawowusukrom. The assessment focused on three main areas: 1) identification of the various uses of biodiversity resources for subsistence, economic, social and cultural purposes; 2) identification of behavior patterns that impact on biodiversity (e.g., attitudes toward biodiversity 'conservation', values system, sustainable or exploitive patterns of use); 3) discussions to determine the perceived impact of mining operations on local biodiversity and determination of restoration priorities for mine closure. The key findings indicate that the communities' expressed concerns are focused on the potential loss of wildlife due to mining activities, the loss of herbal medicinal plants and the loss of agricultural lands and livelihoods. To the contrary, NGGL reports that they observe more birds and small mammals in the mine area as there is no hunting. Without a quantitative biodiversity monitoring program in place it is not possible to determine the reality of the situation.

The final section of the report makes a number of recommendations to ensure the long-term restoration of the mine site; these are as follows:

- 1) Establish ecological corridors and buffer zones to prevent species extinctions;
- 2) Establish Community Resource Management Areas;
- 3) Develop a restoration plan for the degraded mine areas (which is an on-going project initiative);
- 4) Establish community and ecology demand-driven seed nursery;
- 5) Establish herbal plants propagation demonstration farms;
- 6) Carry out ornamental landscaping with native species;
- 7) Carry out biodiversity awareness program;
- 8) Establish horticultural crops farm.

Since the Community Biodiversity Use Assessment, NGGL and CI have made considerable progress on the establishment of two medicinal herbal gardens/farms in each of the project's two resettlement sites. The process of land acquisition had begun in December 2008 and permission had finally been granted by local authorities in February 2009. The ECMG visited the garden at the Ola Resettlement site and discussed progress of the garden with individuals from the Ola site that have been trained to establish the site and act as facilitators. Land has been cleared and prepared at both sites, and some planting has begun. The overall goal is to create a garden for

ready access to the most important medicinal herbal plants and eventually to transfer its ownership to individuals within the local communities to manage for themselves. One observation was the lack of PPE for community members working in the garden. NGGL would do well to provide supplies to these individuals, which were recruited to carry out project-related activities.

Conservation International has organized a number of stakeholder engagement activities involving national and local governmental officials, traditional leaders, local community members, CI and NGGL project staff. The main objectives of these meetings are to inform stakeholders of NGGL's commitment to biodiversity conservation by describing the NGGL-CI partnership, the types of activities being carried out as part of this partnership and to elicit comments from these various groups. Notably, CI held a two-day workshop (Dec 4-5, 2008) that attracted over 36 participants from local government, government agencies, the regional EPA, traditional leaders, community members and NGGL project staff. The objective of the workshop was to update stakeholders on the current achievement of the NGGL-CI collaboration and its future direction. A video-recording was made of the event, and senior NGGL management attended.

On a general note, NGGL senior management has been involved in the NGGL-CI partnership, tracking its progress and related activities.

Biodiversity Management Plan

NGGL continues to progress in its biodiversity management activities. As mentioned in the ECMG's report for the September 2008 site visit, the project had developed an Ahafo Biodiversity Management and Monitoring Plan (ABMMP) (final draft) (prepared by AMEC – Geomatrix) in August 2008. Conservation International acted as a reviewer to this Plan.

The ABMMP was considered to be in a 'final draft' stage in September 2008. In the ECMG's last report, it was noted that this document provides an overall outline for biodiversity-related activities but is insufficient as a stand-alone plan. Indeed the project itself recognized that this plan functions more as a 'strategy' document. NGGL is now developing an Action Plan to accompany its ABMMP. Based on discussions with project staff, NGGL appears to have dedicated a good deal of person-hours to sift through biodiversity and natural resource management commitments contained in related documents such as the project's invasive species strategy and erosion control and revegetation procedures. The project has begun defining the linkages between these various plans.

The actual ABMMP itself could still be improved with little additional resources on the part of NGGL. While the document contains a 'goals and objectives' section, the actual real objectives of biodiversity management are elusive unless these issues are discussed directly with project staff. The current wording of the objective 'early warning system to foresee future adverse ecological changes' does not reflect the true intention of NGGL's biodiversity program and could be substituted with something more specific to the Ahafo South site. For example, it was clear when discussing this topic directly with project staff that one of the main objectives of biodiversity management is to ensure that biodiversity considerations are consistently incorporated into the project's long-term mine reclamation activities, including final closure

criteria within the overall Reclamation and Closure plan. Reading the ABMMP does not convey this message.

In the ECMG's close-out presentation, some examples were provided of the types of information that the Management Plan/Action Plan should contain; in addition to the 'Goal/Vision' and 'Objectives', these include 'Activities' and 'Tasks' that specify who will accomplish the task, how, when, where and a budget associated with each task. More precisely, as presented above, the Community Biodiversity Use Survey provides a list of eight recommendations. These would serve as an excellent list of 'Objectives' or 'Activities' and would serve well to strengthen the overall framework of the ABMMP to better guide activities in the field. The end result should be a well-developed plan capable of driving field activities rather than vice versa. This type of plan would also help external stakeholders understand the many activities that NGGL is carrying out on this topic in the field.

The current document should also make clear that its focus is the Ahafo South project area (i.e., and not the Ahafo North area, if that is indeed the case). Maps would be useful, especially if the plan is expected to be informative to external stakeholders.

Regarding biodiversity monitoring, the NGGL articulated their long-term approach (i.e., every five years), which, given the lifespan of the project, is reasonable, as long as adequate indicators are developed. The project is planning to develop its set of biodiversity indicators this year.

The Project also provided an update of the status of particular biodiversity related commitments specified in Chapters 4 and 5 of the ESIA. Activities are either completed or on-going.

Direct Mitigation Measures

Consistent with observations made on this topic during the February 2009 site visit, NGGL continues to implement a series of fauna mitigation measures in association with cyanide management and treatment in the TSF in accordance with ESIA/ESAP commitments. A summary of these is as follows:

- Fencing is still in place around the TSF to deter wildlife from entering the premises;
- Grasses are still being cut before seeding to discourage proliferation of food source and discourage wildlife from drinking from the TSF;
- The two-person environmental surveillance team (separate from process team) is still in place to chase animals from site, rescue wildlife, and report wildlife mortality;
- Tilapia in WSF (mosquito larvae vector control) is still thriving

Propane guns, which lined the periphery of the TSF and were fired at regular intervals, are no longer used to deter wildlife. As reported in Section 2.8 of this report, cyanide levels have dropped to less than 4 mg/l and more typically less than 2 mg/l in the decant reservoir due to the construction of the Counter Current Decantation (CCD) plant.

An issue that remains unresolved is the ability of the WSF to compensate for the lost wetlands/swampy drainage areas that were previously located in the vicinity of the

project area now occupied by the TSF (see 'Subri drainage area', page 4-80 of the ESIA; no ecological description provided). The ESAP states, "New wetlands will be created by the water storage facility and possibly environmental control dams. The net effect is likely that more wetlands would be created than destroyed." (p. 5-27). The ECMG understands that the project plans to conduct biodiversity for aquatic organisms in the WSF, but monitoring should be accompanied by some type of evaluation, by a wetland restoration specialist, on the potential of this area to support viable wetland habitat in the future. In the previous reports, the ECMG suggested a 'feasibility study'. This type of evaluation could take many forms.

IFC Policy Action Items

Nil

ESIA Action Items

- M2.1 The multi-taxa biodiversity monitoring program should be developed and made available.
- M3.2 The ABMPP should be developed as a stand-alone implementable plan. It is understood that the project's development of an accompanying Action Plan will help achieve this.
- M5.1 A separate evaluation should be conducted (apart from aquatic monitoring) to determine if the WSF will indeed serve as a viable long-term wetland habitat as was originally envisioned in the ESIA.

Recommendations for Improvement:

- i) NGGL provide PPE to community members working on medicinal herbal gardens, e.g., gloves, boots, safety glasses as well as new machetes for efficiency.
- ii) Maintain (NGGL and/or CI) a simple register of the official documents and information/advice transferred between the two parties so that the various outputs generated from this partnership are readily retrievable for monitoring purposes.

2.6 VRA Transmission Line – Associated Facility

Project Strategy:

A new VRA 161kV overhead power transmission line between Kumasi and Sunyani substations has been planned for some years. The NGGL project provided the impetus to start construction since NGGL requested that VRA realign the originally planned route of the transmission line so that it could provide a stable source of electricity to the mine site. VRA and NGGL entered into a Memorandum of Understanding whereby NGGL would finance the realignment. The line was thus identified as an associated facility in the project's ESIA. The powerline is being constructed in a 30-meter wide right-of-way (ROW), extending 154-km and totaling an approximate 470-hectares, including access tracks³.

³ 472-hectares is the figure provided on page 4-155 of the Ahafo South Mine Project ESIA; the first inspection report for monitoring of the VRA ROW, produced by NGGL in August 2007, estimates 380-hectares.

In addition to supplying electricity to the mine site, the transmission line will provide an alternative power supply route to the load centers located in Brong Ahafo, Northern, Upper East, and Upper West Regions of Ghana. As the IFC considers the VRA transmission line an associated facility to the Ahafo South Project, gross compliance with applicable Operational Policies is required.

The realigned ROW crosses four forest reserves (i.e., Gyemera, Offin, Tano Offin, and Amama). In the Tano Offin Forest Reserve, the Forest Service Division identified Compartment 98 (72-km from the Kumasi Substation) as a 'Globally Significant Biodiversity Area' due to the occurrence of endemic and rare species (i.e., Ghana 'Black Star' rated species), and the IFC also considers this area Critical Habitat as defined by OP 4.04 - Natural Habitats (November 1998). A legal logging road crosses through Compartment 98, and the area is threatened by illegal logging off this route as well as by the clearing of land for agricultural purposes. In response to these findings, the ROW was routed to the south of this sensitive area.

A Gap Analysis was conducted by an independent consultant in August 2006 to determine if there were any gross policy violations of the IFC's Operational Policies, including OP 4.04 - Natural Habitats, among others. In the Final Report produced from this exercise, it was determined that there were no gross policy violations at the time of writing; however, a series of recommendations were made to ensure future compliance. Those relevant to OP 4.04 include further measures to reduce impact on critical habitat identified within the Tano Offin Forest Reserve. NGGL committed to conduct biannual inspections of the ROW to monitor any potential encroachment in the vicinity of Compartment 98.

Observations:

NGGL continues to conduct biannual monitoring of the VRA transmission line ROW. The third biannual inspection was conducted in September 2008, and the next event will be in May 2009. The inspection was conducted through interviews held with resettled property owners within the ROW and by visual surveys from vehicles and on foot; findings were documented with the digital camera.

The focus areas of the inspection were as follows:

- Status of stringing of transmission lines;
- Safety issues pose by the towers or the transmission lines;
- Soil erosion within the ROW;
- To check if materials for the construction of power line were either imported or locally made;
- Status of vegetation within the ROW (must remain trimmed);
- Encroachment on the ROW (e.g., slash and burn agriculture, monitoring of access routes created in Compartment 98, evidence of logging/hunting);
- Grievances related to resettlement compensation.

The relevant findings with respect to environmental management are as follows.

- Between Towers 154 and 155, one plant species (*Trema orientalis*) reached some of the transmission lines, which caused the insulators on these towers to shatter;
- No erosion issues;
- No signs of agricultural activity in the ROW;

- There were no signs of poaching (snares, etc) in Compartment 98;
- No signs of logging within Compartment 98 except at the fringes of the Compartment where chain saw operators had cut some timber. The monitors expressed concern about these activities progressing further into this sensitive area.

The Inspection Report did not specifically mention if any new access paths or trails were noticed in Compartment 98, but based on other findings, it is assumed that they were not.

On this visit, the ECMG learned that CI has initiated outreach activities to VRA regarding biodiversity management of Compartment 98. Conservation International has met with VRA senior management to inform them of the importance of biodiversity conservation in general. In a report provided to the ECMG describing some of CI's recent outreach activities to different agencies, CI recommended low growing plants between forest fragments to promote connectivity, ROW restoration activities that avoid plants that are flammable in dry season, community awareness and collaboration as a means to prevent potential increased access on the ROW, further awareness raising with VRA staff.

As mentioned in the ECMG's report for the February 2008 site visit, the Gap Analysis conducted in 2006 recommended that the VRA develop an Access Management Plan for Compartment 98. While it is clear that NGGL does not have control over VRA's management system, there was some expectation that NGGL might engage VRA and/or encourage them to develop an Access Management Plan, as gross compliance with IFC's O.P. 4.04 is warranted. An Access Management Plan may or may not be necessary, but in either case, NGGL could consider providing support to CI in their VRA related initiatives if these initiatives could further establish gross compliance with OP 4.04.

In addition, traditional community leaders that attended CI's two-day stakeholder workshop as described in Section 2.5 of this report, expressed concern about the presence of illegal loggers along certain portions of VRA ROW.

<i>IFC Policy Action Items</i>

Nil

<i>ESIA Action Items</i>

Nil

Recommendations for Improvement:

- i) In the future Inspection Reports, specifically mention if any new access trails/paths were identified in Compartment 98.
- ii) Recommend that NGGL provide some support to CI in their activities to build capacity in VRA and work with local communities to develop local stewardship of the ROW.

2.7 Waste Management

Project Strategy:

According to the ESIA, “Non-hazardous waste disposal will be conducted in accordance with Ghanaian requirements and NGGL’s waste disposal protocols. NGGL will monitor waste generation and disposal conditions during construction, operation, and closure. Should conditions warrant, NGGL will implement additional waste minimization, treatment, and disposal measures beyond those currently identified”.

Observations – Solid Waste:

Although the ECMG recognizes the construction of the IWMF represents significant progress and that plans and projects are under development to improve overall waste management on site, the general waste disposal practice has not significantly changed since the last ECMG site visit.

The general Waste Management Plan is now a final document and provides procedures for managing solid and hazardous waste streams generated at the Site. It includes a review of legal and other requirements for solid and hazardous waste handling, treatment, and disposal; waste identification, characterization, analysis and designation; storage and plans for shipping container management; a Preparedness and Prevention Plan; re-transport requirements; personal training; a Contingency Plan and Emergency Procedures; and a Waste Minimization (Pollution Prevention) Plan. Although the Waste Management Plan is considered a final document, there are several aspects of this document that could benefit from clarification:

- Some hazardous waste streams are stated to require disposal according to RCRA: 40 CFR 273 (universal waste) and/or 40 CFR 261 Subpart C (characteristic hazardous waste). Although the document indicates that these USEPA rules are used as Best Management Practices at Ahafo, the document does not provide guidance as to how these standards are to be achieved in an environment like Ghana;
- Oily rags and other contaminated absorbent materials are proposed to be made non-hazardous by squeezing out the excess oil. A reference for this practice should be provided. The plan does not evaluate the possibility of laundering oily rags as a treatment solution or possibly incineration, after the oil has been squeezed out;
- When a waste needs to be “disposed of off site at an appropriate receiving facility” there is no discussion of what constitutes an “appropriate receiving facility” in Ghana. There is no evaluation of the acceptability or non-acceptability of using an offsite facility such as the Kumasi landfill;

- Used heavy equipment tires are reported to be stored on site while an appropriate recycling option can be identified, yet. Used Light (LV) Vehicle tires are disposed of on site in the solid waste landfill. A final disposal solution for the heavy equipment tires should be defined.

A general observation from the Waste Management Plan in its current form is that it is not clear whether or not the procedures for waste characterization referred to in the document, including testing procedures to determine if wastes should be considered as hazardous, can actually be implemented at the Ahafo South Mining site or in Ghana in general. According to the information provided during the visit, for the waste still to be characterized, the use of in-country or outside Ghana laboratories will be defined on case by case by the NGGL Environmental Department.

Waste quantities are appropriately tracked. The Hazardous Waste Tracking Register and the Inert Waste Register are being constantly updated.

A significant advancement since the October ECMG mission is the construction of an Integrated Waste Management Facility (IWMF) that has been established with an area for managing hydrocarbon contaminated soils and a metal scrap yard. This facility is expected to have the capability for composting by the end of July, which will eliminate kitchen waste and sewage sludge as problem waste streams. The IWMF is also associated with the relocation of the Hazardous Storage Shed and there are plans to install an aerosol aspirator, a used oil filter crusher, and an electronic wastes container. It is expected that the aspirator and crusher will significantly reduce the amount of hazardous waste.

Domestic putrescible waste continues to be placed in the inert landfill, which was observed not to be well managed (pit unlined with no leachate control; waste not covered; good wood that should have been recycled in the pit; flies and birds representing the potential for the transmission of disease around the waste). This is a situation expected to end with the start of composting by the end of July. Activated sewage sludge continues to be sent to the Kumasi Municipal Landfill. This is a legally operated facility, but as pointed out in previous ECMG reports, the use of this facility does not represent good practice, because it does not have a means to process leachate, which is released directly to surface water (ECMG Second Site Visit Report, July 2007).

The main difficulty with the use of the Kumasi Landfill is with respect to hazardous waste. Waste oil and grease continue to be sold to manufacturing companies in Tema and Aura for use in firing steam boilers while spent batteries are recycled and reused by a contractor (Presank), but since January 2008, the NGGL waste tracking spreadsheet indicates that 154 metric tons of hazardous waste has been sent to Kumasi. The type of waste sent to Kumasi includes oily rags, batteries, fluorescent lights, aerosol cans, filters and spent hoses and possibly other non-recyclable waste. Hazardous waste disposal where there is no control of leachate is non-compliant with IFC requirements⁴, where requirements are the same as for liquid effluent from a sewage treatment plant. The elimination of filters and aerosol cans in the near future

⁴ World Bank Group, 1998, General Environmental Guidelines

will represent a major reduction in the hazardous waste stream, but waste will still be sent to Kumasi.

According to the Waste Management Plan, medical waste are segregated in yellow sealed/tied biohazard polyethylene bags in labeled yellow wheelie bins at the Ahafo Site Clinic before transporting by ISOS staff and incinerated offsite at the Sunyani Regional Hospital.

Observations – Wastewater Treatment:

The two permanent packaged Sewage Treatment Plants (STPs) are installed at the plant site and at the Mensah Kumta Camp. Treated effluent from both facilities is sent to the TSF where it is mixed with tailings decant water and recycled for processing. Excess sludge from the plants as well as the raw sewage from the Rank and the Kenyasi septic tanks is hauled by truck to the Kumasi Metropolitan landfill by a contractor, but this practice is expected to end by the end of July with the installation of the composting facility. The existing facilities continue to be well managed, but they are close to exceeding their capacity. Plant design modifications identified to convert the current plants to permanent facilities have been delayed due to equipment procurement problems, but are expected to be implemented in the near future. Improved components are designed to include: a raw wastewater screen; additional process tanks; aeration tank converted to an anaerobic basin; new aeration basins; and a new aeration system.

IFC Policy and ESIA Action Items

M5.2 Eliminate the use of the Kumasi Municipal Landfill for the disposal of hazardous waste.

Recommendations for Improvement:

- i) Reconsider the procedures for management of oily rags and absorbent materials defined in the WMP. Pressing the oil out of the material might not make them non-hazardous, unless the process is coupled with a testing program.
- ii) Once the new IWMF has provided a solution for putrescible waste, sewage sludge, and also offers the potential for significantly reducing the quantity of hazardous waste, consider the development of a small, controlled landfill for the remaining hazardous waste. Alternatively, the waste could be temporarily stored until an alternate solution is developed in Ghana. There appears to be considerable uncertainty in the WMP regarding what can actually be accomplished with respect to the hazardous waste streams.
- iii) Ensure that the Sunyani Regional Hospital incineration used for the disposal of medical waste is well operated and sufficient safeguards are implemented, according to applicable and relevant regulations (*repeat recommendation*).

2.8 Hazardous Materials Management

Hazardous Material Transport, Storage, Use and Disposal

Project Strategy:

The basic procedures developed by NGGL for the management of hazardous materials are outlined in the ESIA under the title of "Material Handling" specific to chemicals and other materials located on NGGL properties and cover the following materials and activities:

- Cyanide transportation, storage, handling and mixing;
- Caustic soda transportation, storage, handling and mixing;
- Sodium hypochlorite transportation, storage, handling and mixing; and
- Explosives and accessories handling, storage and use.

Specific procedures developed with regard to material handling, include the following:

- Spill response actions;
- Disposal of shipment containers;
- Emergency evacuations;
- Mixing and usage precautions;
- Personnel protective equipment (PPE) requirements;
- First-aid procedures; and
- Labeling of materials and posting of Material Safety Data Sheets.

The NGGL training programs cover the management of hazardous materials.

The ESAP defines an additional goal of hazardous materials management associated with community safety to be "reduction in conflicts during transportation of hazardous materials on roads; increase in safety of public and workers during transport of materials."

The applicable and relevant IFC guidelines are the following: WB EHS Guidelines Mining and Milling - Open Pit (August 1995); IFC Hazardous Materials Management Guidelines (December 2001); and IFC Environmental and Social Guidelines for OHS, (June 2003).

Observations:

As noted in the October 2008 ECMG report, most HSLP plans and procedures are completed or underway for completion under the framework of the ISO14001/OSHAS 18001 certification, now planned for Q2 2010. A specific NGGL Hazardous Materials Management procedure has been finalized and details the responsibilities of the various departments and functions with respect to Hazardous Materials transportation and management. Audits continue to be performed by the NGGL HSLP Department on contractors handling hazardous materials.

Transportation of hazardous materials is one of the activities associated with the greatest hazard. Companies like Orica (cyanide transport) and Shell (fuel transport) have well-developed procedures to minimize the potential for accidents. Other

transporters of hazardous materials may not have the same degree of controls as these two companies, but also transport hazardous materials, such as sodium hydroxide or hydrochloric acid, that represent significant hazard should there be a vehicular accident. The HSLP group recognizes that additional safeguards may need to be incorporated with respect to some of the hazardous materials transporters.

Training, both for NGGL and Contractors' personnel, is continuing under NGGL's Maintenance Department responsibility, as noted during the third ECMG visit. The Contractors' procedures for handling hazardous substances and segregation and management of hazardous substances are fully in place. A deficiency identified with respect to training identified internally by the HSLP group is with respect to response to spills of hazardous materials. This is a current focus of that group.

Hazardous material storage in designated, paved and bermed area has been observed to be overall good. However, the ECMG team has observed some drums containing hazardous material staged over wood pallet around the maintenance area.

<i>IFC Compliance Action Items</i>

Nil

<i>ESIA Action Items</i>

Nil

- i) Consider roofing the lubricants storage area and the light vehicle fueling area at the Shell workshop to minimize the amount of potentially contaminated runoff generated at these two sites (*repeat recommendation*).
- ii) Ensure that all hazardous material is properly stored in designated, paved and bermed areas.

Cyanide Management

Project Strategy:

Cyanide is the means for extracting gold from the mined ore. The ore is first subject to crushing, grinding and milling and then processed with carbon-in-leach cyanidation, which is then followed by elution and refining for gold recovery. There is a secondary gravity flotation circuit for collecting gold concentrates for intense cyanidation and electrowinning prior to refining and gold recovery. Cyanide is delivered to the site as solid sodium cyanide in a truck-mounted isotank for solid-to-liquid sparging, which allows the cyanide supplier to mix the solid sodium cyanide with water at the site to achieve the required 30-percent strength for offloading in a designated mixing tank. The cyanide solution is conveyed from the mixing tank in use to storage tanks for delivery to the processing circuit. The cyanide solution conveyances are within double containment and pumped within instrumented and monitored pipelines.

After completion of the processing, the cyanide within the tailings is recycled within the recently installed Counter-Current Decantation (CCD) plant to achieve acceptable wildlife and livestock contact concentrations (WAD – cyanide concentration <50 mg/l) in the TSF, where the tailings are piped. The Project has committed not to discharge cyanide contaminated water into any stream within any receiving water body. The tailings water is decanted and conveyed back to the process facilities for re-use. As defined by the relevant WB guidelines (EHS Guidelines Mining and Milling - Open Pit [August 1995]), measures to prevent access by wildlife and livestock are required for all open waters (including tailings impoundments) where WAD cyanide is in excess of 50 mg/l. A hydrogen peroxide (H₂O₂) cyanide destruction unit is available on site for emergency use.

NGGL has an operational Ahafo Cyanide Management Plan (February 2008) that describes the measures that the Project will implement to minimize the risks to employees, communities and the environment from its use of cyanide, as well as NGGL's commitment to programs for employee safety and training and its plans and procedures for responses to cyanide exposures and releases. The Plan also includes NGGL's commitments to the public disclosure of cyanide-related information.

On October 4, 2006, the pre-operations phase of the Ahafo Project was certified under the ICMC. Substantial Compliance was achieved in February 2008 based on an external third-party audit initiated in August 2006. Full compliance was achieved in July 2008 following an audit in June 2008 confirming completion of items identified under the Substantial Compliance period. The ICMC, also known as the Cyanide Code, is a voluntary industry program for the gold mining industry to promote:

- Responsible management of cyanide used in gold mining;
- Enhance the protection of human health; and
- Reduce the potential for environmental impacts.

Companies that become signatories to the Code must have their operations audited by an independent third party to demonstrate their compliance with the Code.

Observations:

NGGL operations continue to be certified to be in Full Compliance with the ICMC Code. The requirements of the Code are associated with comprehensive requirements for cyanide transport. A deficiency with respect to the Isotainers used to transport cyanide was made evident by the occurrence of a small leak detected by NGGL. The emergency response undertaken by NGGL (further described in Section 3.2) has led to design improvements for the Isotainers used by Orica worldwide.

TSF decant water is also monitored and the results indicate that WAD cyanide entering the TSF has been reduced by approximately a third since the startup of the CCD plant on March 19, 2008 with values normally below 50 mg/l. For 2009 (up to April 14) about 5% of the measurements exceed the standard of 50 ppm at the spigot, but the highest value recorded was only 70 ppm. Decant water is typically less than 2 ppm WAD cyanide and since the startup of the CCD plant the decant water has not exceeded 4 ppm.

During the fifth site visit, no cyanide unloading operations were observed.

IFC Policy Actions

Nil

ESIA Action Items

Nil

Recommendation for Improvement:

Consider if NGGL is trying to operate with too great an efficiency for the operation of the CCD plant in the sense that power outages can allow for occasional exceedances of WAD cyanide entering the TSF. Has an assessment been made to determine if there is a way to operate the CCD plant that minimizes this situation?

Flammable Materials Management

Project Strategy:

Flammable Materials (fuels and lubricants) are used at the site for vehicle supply. These materials are transported to the site from the Tema refinery (distance approximately 400 km). Fuel is stored in two tanks in a dedicated area managed by Shell. In the same area a storage area for storing of drums of lubricants is present. The operations of transporting, unloading and distributing the fuel to the users are under the responsibility of Shell.

Observations:

The fuel and lubricant storage area was visited by the ECMG and found to be at the same overall high standards as described in the previous visits.

The Shell HSE procedure “*Road Transport of Goods, Equipment and Products*” (November 2003) and the Site-Specific Operating Manual detailing the Emergency Plan (December 2007), provided to the ECMG during the July 2007 site visit, are still in place.

The Shell flammable substances depot has been observed to be in good condition although it still lacks roofing. The big truck loading area and the above ground storage tank (AST) truck upload area are paved but are not provided with berms to contain any potential tanker spills. Furthermore, the small fuel dispensing are located adjacent to the AST area is neither paved nor bermed. The ECMG had made the recommendation in the past to roof the area containing the low hazard substances, which would also reduce the need for the oil water separator to treat potentially contaminated rainwater; this roofing has not been installed yet and the ECMG considers this recommendation still to be a point to be considered. In addition, the Project should ensure that all fuel tankers/vehicles (un)loading areas are paved and provided with berms to contain any potential spills.

<i>IFC Policy Action Item</i>

Nil

<i>ESIA Action Item</i>

Nil

Recommendation for Improvement:

- i) Consider roofing of the Shell low hazard storage area (*repeat recommendation*).
- ii) The project should pave and berm all fuel tankers/vehicles (un)loading areas.

Occupational Health and Safety

3.1 Occupational Health & Safety Management

Project Strategy:

The Project policy was described in the ECMG's report for the first site visit (December 2006), as follows:

“NGGL currently maintains and actively manages an extensive occupational health and safety program (“Loss Control”) at the Ahafo South Project site. The program, including appropriate training and monitoring procedures, will continue once operations commence to ensure high standards of health and safety are maintained.”

The policy and principles as evidenced in the first visit have not been modified and are still valid. The HSLP organization in place at the first visit time is still operational. As noted in Section 1.1 of this report, NGGL is planning to obtain certification under the OHSAS and ISO14001 standards, which will replace the current Newmont Five Star system.

Observations:

Staffing is effectively complete within the HSLP Department and functions effectively. The proof of the effectiveness of the HSLP is reflected in the accident statistics. Over the past year the total recordable accident frequency ratio (TRAFR) 12-month moving average has dropped from 0.63 to a fairly constant 0.29 – 0.32, effectively within target values for this indicator. More evidence of the maturity of the HSLP organization is reflected in the capabilities of the organization to respond to emergencies, as further discussed in Section 3.2

Accidents are recorded, a procedure for accident investigation is in place and corrective actions are identified. According to the data provided to the ECMG during this visit, over the past year accident follow-up has improved from 70% a year ago to 90% currently. The accidents where follow-up is incomplete are all minor. One accident occurred shortly before the ECMG mission where an NGGL Exploration vehicle had an accident where there were deaths in a local community. This incident is not associated with the NGGL Ahafo project and is not recorded within their accident statistics, but NGGL Ahafo has participated with follow-up investigation and

helped to define lessons learned. This type of accident highlights that traffic accidents with project vehicles represents one of the greatest threats to local communities that can be associated with the project.

Workplace inspections continue to be routinely performed and inspection reports detailing the required corrective actions, responsibilities for implementation and expected completion dates are issued.

The generally positive attitude of the management and staff towards HSLP issues and the level of safety performance in practice noted during the last ECMG visit continue to be observed.

<i>IFC Policy Action Items</i>

Nil

<i>ESIA Action Items</i>

Nil

Recommendation for Improvement:

- i) The HSLP department is now a fully functioning organization and the attention now paid to occupational health and safety within the workplace of the mine is now industry standard. A remaining concern regarding safety is with respect to “outside the fence” accidents – this is exemplified by the recent community deaths from a traffic accident with a Newmont Exploration subcontractor vehicle. Focus now needs to be placed on reducing this type of accident. Evaluate if supply trucks bringing supplies to the Ahafo project have the same control as the same trucks when they leave the project.

3.2 Emergency Preparedness and Response

Observations:

The HSLP organization has made possibly their greatest progress in terms of emergency response. The ECMG finding during the first trip in December 2006 was summarized as follows:

The overall situation with respect to emergency response is that the HSLP organization is just starting to develop capabilities and NGGL should not consider that the Emergency Response system would be adequate to promptly and effectively respond to a serious emergency.

This situation no longer exists. The ERT staffing is complete, equipped and trained. Drills are conducted. The only area where the ability of the team to respond to an emergency is considered limited is with respect to hazardous materials spills. This is currently the focus of the HSLP department, which is now procuring additional equipment and initiating specialized training to improve their capabilities in managing incidents associated with hazardous materials.

Although hazardous material response is an area where improvement is recognized to be needed, it should be noted that the ERT staff did appropriately respond to a cyanide emergency that took place on November 28. At the time the sparging of solid cyanide to liquid within Orica Isotainer was taking place it was observed that an unidentified liquid solution was spraying apparently under pressure from the head stand of the Isotainer. NGGL made a good decision to not let the truck with the Isotainer leave the bunded containment area until representatives of Orica Barbex had completed their inspection. Orica Barbex did not have staff in Ghana that could conduct a suitable investigation and considerable testing was required to determine that the problem was a systemic design flaw with the Isotainer. If the decision had not been made to keep the truck contained, a dangerous situation might not have received the attention it deserved.

<i>IFC Policy Action Items</i>

Nil

<i>ESIA Action Items</i>

Nil

Recommendations for Improvement:

- i) Continue to focus on practical training of the ERT (*repeat recommendation*).

3.3. Noise and Vibrations

Project Strategy:

Sources of noise and vibrations include machinery, generators, the overall processing plant, vehicular traffic and blasting. Given that noise and vibrations can adversely affect both community and workplace environments, there are requirements for monitoring within the Project social staff, as well as with the HSLP department. The ESAP and ESIA indicate a requirement for noise and vibrations monitoring only within the context of the potential impact to the local community. Noise and vibrations are, of course, a normal part of industrial hygiene in the workplace and the HSP department has SOPs related to noise management and exposure guidelines. The applicable and relevant guidelines are the following: WB EHS Guidelines Mining and Milling - Open Pit (August 1995), and IFC Environmental and Social Guidelines for OHS (June 2003).

For the ambient noise in community areas, reference is made to the WB's General Environmental Guidelines (July 1998) that require for Ambient Noise in residential areas outside project property boundaries a limit of 55 dB(A) at daytime and 45 dB(A) at nighttime. The ESAP refers only to compliance with Ghana residential standards that are the same as the WB standards, but it is understood that an industrial/commercial standard of 70 dB (A) for both day and night is what has been approved by the Ghana EPA for the area surrounding the mine.

*Observations:*Community Monitoring

Noise and vibrations from blasting are being monitored under the requirements of the Social Action Plan. The Project has established limits for vibration compliance to be compliant limits of 5mm/s peak particle velocity (ppv) and 115 dB(L) for the blast overpressure. As described in greater detail in the December 2006 ECMG report, these standards are very conservative in terms of what constitutes best practice and effectively represent a comfort level, rather than what could cause actual damage or represent public harm.

Blasting is now taking place at all three pits. Blast monitoring data through March 31, 2009 were reviewed and found to be consistently within project conservative standards for vibrations. There continues to be a few small excursions above the project overpressure standard reported to the Ghana EPA, associated mainly with the blasting at the Apensu pit. After attributing the overpressure exceedances from the Apensu pit to various unusual situations, the NGGL mining department has initiated several measures to prevent the occurrence of overpressure exceedances from the Apensu mining:

- No blasts of more than 200 holes will be carried out in the southern part of Apensu Pit
- Blasts are delayed 20 seconds apart if more than 1 blast is initiated per pit.
- Improve QA/QC checks during charging and stemming to prevent overloading of any blast holes.
- Blasts will be limited to no more than 200 holes in the Awonsu pit in the “known drainage area” to control vibration levels.
- Improve QA/QC measures during charging and initiation of oversize and other secondary blast applications.

Noise for residential communities continues to be reported in terms of the Ghana (and IFC) standard of 70 dB(A) applicable to industrial settings for both day and night. As previously reported, ECMG does not consider this standard to be appropriate as the ESIA refers to the application of IFC and Ghana EPA residential standards of 55 dB(A) daytime and 45 dB(A) nighttime. Actual noise values for the communities monitored are generally compliant with daytime values of 55 dB(A), but nighttime noise is frequently higher than daytime noise and well above the residential limit of 45 dB(A). As previously noted in other ECMG reports, Newmont could be considered compliant with residential noise standards if evidence is presented that the nighttime noise is not related to NGGL's activities.

Workplace Monitoring

Noise surveys are still being performed, adopting individual means of measurements to assess the noise dose received by individual workers. As previously observed and reported, occupational noise is being addressed and appropriate actions are in place to control the working environment.

IFC Policy Action Items

M3.3 Assess background noise in residential areas and ensure that Project activities do not produce noise levels that exceed limits provided in the WB's General Environmental Guidelines (July 1998).

ESIA Action Item

Nil

Recommendations for Improvement:

- i) It is recommended that NGGL better document sources of community noise and verify that anomalous noise levels are not associated with project activities (*repeat recommendation*).

3.4 Occupational Health*Project Strategy:*

NGGL has principles for occupational health and hygiene that are well established at the Corporate level within their Five Star Program, specifically the HSLP Standard 30 titled "Occupational Health and Hygiene," which has the stated intent "*to anticipate, recognize, evaluate, and control occupational exposures to levels which potentially eliminate occupational disease by minimizing occupational health risk.*" This intent is reflected in the procedures defined in the ESIA, in particular for malaria and HIV/AIDS.

The applicable and relevant IFC guidelines are the following: WB EHS Guidelines Mining and Milling - Open Pit (August 1995); and IFC Environmental and Social Guidelines for OHS (June 2003).

Observations:

An Occupational Health and Hygiene Management System Procedure is in place, approved in April 2008. The procedure describes responsibilities, exposure limits, type of characterizations, exposure assessments whose frequency is based on the risk rating attributed to each SEG (Similar Exposure Group). Workers' exposure is controlled through a program of monitoring. Based on this monitoring, lead exposure is of concern in certain areas, and specific protection measures have been defined. An example was provided to demonstrate the effectiveness of this health monitoring for a worker with exposure to lead. In this example, the worker's blood levels were routinely monitored for lead. When test results showed an unacceptably high lead level in this individual, he was removed from that job, his blood levels continued to be monitored and verified to return to acceptable levels. In parallel to this situation, procedures to improve worker protection to lead have been developed.

Malaria Prevention and Control

NGGL continues to place a significant effort in eliminating malaria in the workplace. A key aspect of effort continues to be monitoring pools and puddles of water bodies within the control zone treating them with larvicide, as appropriate. The total malaria cases for Ahafo in March 2009 were 49, representing an incidence of 1.4% compared

to the 2.7% incident in March 2008. There was one reported malaria case within the control zone compared to 17 cases in March 2008. Again, there was one expatriate malaria case recorded compared to 13 in March 2008. It is estimated 95% of the malaria cases are from the outside communities (the single expatriate case of malaria took place when the individual was working in a poorly controlled village area). Accordingly, NGGL has now adopted a new community-based program to eradicate malaria in the villages that was initiated during the ECMG visit. This program will involve education through the same individuals involved with HIV awareness, provision of bed nets, and equipping a health center for malaria testing in cooperation with local government.

HIV and Other Disease Control

The HIV/AIDS program, mainly addressed to community education and distribution of condoms to prevent the spread of HIV/AIDS, continues to be developed as part of NGGL's community health program. NGGL is also planning to initiate another community health program in June to help reduce childhood illnesses.

<i>IFC Policy Action Item</i>

Nil.

<i>ESIA Action Item</i>

Nil

4 Cultural Resource Management

4.1 Cultural Resource Management Surveying and Planning

Project Strategy:

The ESIA defines NGGL's commitment for cultural resource management to be WB OP 4.11, Safeguarding Cultural Property in an IFC-Financed Project. Actually, the title of OP 4.11 is "Physical Cultural Resources" and the appropriate reference is OPN 11.03 Management of Cultural Property in Bank-Financed Projects, which is an international good management practice that requires developers to identify and preserve archaeological (prehistoric), paleontological, historical, religious resources, and unique natural features. The IFC currently supplements OPN 11.03 with Performance Standard 8, Cultural Heritage (April 2006). As part of the ESIA preparation process, a survey entitled "*Newmont Ghana Gold Limited, Cultural Heritage Survey at Ahafo, Ahafo Gold Project, Reference – B333, Version 1.0 dated March 2005*" was prepared by SGS Environment. The survey identified 18 sites including cemeteries, shrines, water bodies, a tree, and a hill. Subsequent to this survey, a Cultural Resource Management Plan dated August 2006 was prepared. This document references IFC Performance Standard 8.

Observations:

Archaeological studies have been completed for the Ahafo South project under the management Geomatrix working with of Prof. Yaw B. Mensah of the University of Ghana with 10 sites identified in Ahafo South area. The overall survey is presented in a report issued February 2008. The excavations undertaken at two sites in the

Awonsu pit area discussed in the February 2008 ECMG trip report are now fully studied, both in the field and in the laboratory with the results presented in a report issued in July 2008. This report confirms the significance of these sites in terms of their association of peoples of Kintampo culture (3,000 – 4,000 years ago).

Since the time of this effort, there have been no chance finds, although most archaeological discoveries in highly vegetated tropical areas commonly occur through the chance find process. The apparent reason for this discrepancy is that trained people are not monitoring the ongoing clearing and topsoil stripping activities. Environmental monitors could be performing this work, but they are not trained to do this.

The revised Cultural Resources Management Plan (CRMP) dated February 2008 covers the procedures for protecting archaeological sites, including a chance find protocol. One of the provisions of this plan is that NGGL assign an individual to serve as the Cultural Resource Manager (CRM) to coordinate and implement this Plan. ECMG was not provided with an organization chart to indicate that this is a position that has been filled.

IFC Policy Action Items

Nil

ESIA Action Item

M5.3 The Cultural Resource Management (CRM) Plan (Revision 1) prepared in February 2008 provides general guidelines for the identification of cultural properties and indicates that work will stop and appropriate procedures followed should chance finds be made. Field personnel currently do not have the training and procedures are not in place for this Plan to be implemented. Designate a Cultural Resource Manager (CRM) to be responsible for Plan implementation.

Recommendations for Improvement:

- i) Make sure that the materials excavated from the sites that have been mitigated are properly curated and that the information from the excavations is publicized.

5 Tailings Storage Facility (TSF)

5.1 Design and Construction Update

Project Strategy:

The TSF was designed by Knight Piésold Pty Ltd (KP) in 2004. The design of the tailings pumps, pipework and return water system were carried out by Lycopodium Engineering Pty Ltd (Lycopodium). Construction management is currently being self-performed by NGGL, supported by design and QA/QC services provided by Knight Piésold for the current phase of the facility expansion. The current phase of construction will provide tailings capacity until approximately 2Q 2010.

The TSF has been started as a single main embankment at the south end of the Subri River (South Embankment). The upstream limit to tailings deposition is the WSF dam (North Embankment). The facility is planned to ultimately comprise a four-sided

main embankment constructed in annual stages over 11 years utilizing mine waste rock and, if necessary, fill from designated borrow areas. The plans for final completion of the TSF are not yet finalized, pending decisions yet to be made for mining associated with the Ahafo North area. The TSF is operated as a “zero discharge” facility, with all water returned for use in the ore processing circuit, and no water discharged to the environment.

The basic design characteristics of the TSF are tabulated in the December 2006 report and are not repeated here. The applicable and relevant IFC guideline is OP 4.37 - Safety of Dams (September 1999 Draft).

Observations:

The TSF appears to be designed and constructed within the established design parameters. Phase 5 is to begin construction prior to the end of 2009. Ongoing activities are topsoil stripping in anticipation of this construction effort. Monitoring data do not indicate instability or leakage and the latest inspection conducted by Knight Piésold Pty Ltd in July 2008 confirms the generally good condition of this facility. An uncertainty with the inspection report is with respect to the amount of allowable freeboard. Figure 3.13 indicates that current freeboard (July 2008) is about 1.5 – 2 meters below the spillway, but Table 3.12 indicates that this freeboard is 8.2 meters. The report does not compare actual versus allowable design freeboard.

As noted in the previous ECMG reports, the design criteria are based on the hazard classification of the TSF, which is classified as “significant” according to ICOLD (International Committee on Large Dams) Guidelines, where there are three classifications: low, significant and high. Dams assigned the significant or medium hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. The basis for the “significant” classification for the Ahafo TSF is not provided in either the ESIA or the Operating Guidelines for the TSF. As discussed in greater detail in Section 5.3 of this report, the draft EPP does define areas of potential human impact from dambreak events.

<i>IFC Policy Action Items</i>

Nil

<i>ESIA Action Items</i>

Nil

Recommendation for Improvement:

- i) Re-consider the hazard classification of the TSF. Conventional practice as defined by guidelines such as ICOLD would classify a large dam as high hazard if people live in the inundation area.

5.2 *Operations and Maintenance Planning*

Project Strategy:

At the time of the December 2006 ECMG visit, a document entitled “*Ahafo Project, Tailings Storage Facility, Operations Manual*” had been prepared for the TSF, as required by the IFC OP 4.37 - Safety of Dams. This manual described the design in detail and presents operational and emergency procedures for the management of the facility. This document has been supplemented by a revised document entitled “*Ahafo Tailings Management Plan*” dated November 2007, which overlaps with the “*Operations Manual*.”

Observations:

As previously noted in past ECMG reports, the designer and construction manager, Knight Piésold also has the responsibility for conducting annual inspections of the TSF. A requirement of OP 4.37 is that dam inspections be conducted by independent dam specialists, although the IFC may accept assessments of dam safety if full-level inspections and dam safety assessments that are acceptable to the IFC have already been conducted and documented. The initial design of the TSF was independently reviewed by Chlumsky, Armbrust and Meyer (CAM) in 2005, but this firm was not retained to conduct any follow-up inspections. Again as previously noted, the current situation is not a clear non-compliance with OP 4.37, but is something that NGGL may need to revisit with the IFC. As the time of this visit, the ECMG was not provided information to indicate whether there has been any resolution of this issue.

<p><i>IFC Policy Action Items</i></p> <p>Nil</p>
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<p><i>ESIA Action Items</i></p> <p>Nil</p>
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Recommendation for Improvement

- i) Evaluate the need for contracting for independent TSF inspections in consultation with the IFC.

5.3 *Emergency Preparedness Planning*

Project Strategy:

The Project description for the TSF states the following commitment: “*The tailing storage facility will be state-of-the-art using rotational, subareal tailing deposition and designed, constructed, and operated in accordance with Newmont’s Standards for Tailing Management and relevant sections of the Ghana Minerals and Mining Law, 1986, Ghana Mining Environmental Guidelines, Final Draft, 1994; State of Nevada (U.S.) Administrative Code Chapter 445A, which governs design, construction, operation and closure of mining facilities; and IFC Operational Policy 4.37.*”

Observations:

In terms of emergency preparedness, OP 4.37 requires that if the dam is large (15 meters or more in height) it requires the preparation of an Emergency Preparedness Plan (EPP). A significant accomplishment since the last ECMG visit in October 2008 is the completion by Amec – Geomatrix Consultant in April 2009 of a draft EPP that does identify populated areas that could be affected by very low probability failure modes for both the TSF and the WSF. The contents of the EPP are consistent with IFC requirements and general good practice. It is expected that the EPP will be finalized and that the overall operation of these facilities will be reviewed to minimize their potential for failure. It is emphasized that significant failure scenarios are only associated with the last stages of TSF development, not with current conditions. This action item will be removed as a situation non-compliant with IFC policy when this plan is issued as a final document, which is expected in the near future.

IFC Policy Action Items

M1.19 Prepare an EPP for the potential failure of the TSF that clearly defines potentially affected areas based on potential release scenarios as determined on the basis of an Impact Analysis and contains notifications and chain-of-command procedures. Environmentally sensitive areas and receptors should also be identified on the maps of areas with potential impact.

ESIA Action Items

Nil

Recommendation for Improvement:

- i) Involve the HSLP group with the emergency planning for the TSF facility (*repeat recommendation*).

List of Acronyms and Abbreviations

ABMMP:	Ahafo Biodiversity Management and Monitoring Plan
ARD:	Acid Rock Drainage
AST:	Above Ground Storage Tank
BMP:	Biodiversity Management Plan
BOD:	Biological Oxygen Demand
CBOD:	Carbonaceous Biochemical Oxygen Demand
CCD:	Counter-Current Decantation
CI:	Conservation International
COD:	Chemical Oxygen Demand
CRM:	Cultural Resource Management
ECD:	Environmental Control Dams
ECMG:	External Compliance Monitoring Group
EHS:	Environmental Health and Safety
EMP:	Environmental Management Plan
ESIA:	Environmental and Social Impact Assessment
EPA:	Environmental Protection Agency
EPP:	Emergency Preparedness Plan
ERP:	Emergency Response Plan
ERT:	Emergency Response Team
ESAP:	Environmental and Social Action Plan
ESR:	Environmental and Social Responsibility
H&S:	Health and Safety
HSE:	Health, Safety and Environment
HSLP:	Health, Safety and Loss Prevention
ICMC:	International Cyanide Management Code
IFC:	International Finance Corporation
IMS:	Integrated Management System
IWMF:	Integrated Waste Management Facility
KPI:	Key Performance Indicator
LI:	Legislative Instrument
LTA:	Lost Time Accident
LTAFR:	Lost Time Accident Frequency Ratio
MSDS:	Material Safety Data Sheet
MoC:	Management of Change
NGGL:	Newmont Ghana Gold Limited
NGO:	Non-Governmental Organization
OHS:	Occupational Health and Safety
OP:	Operational Policy
OPN:	Operational Policy Note
PPAH:	Pollution Prevention and Abatement Handbook
PPE:	Personal Protective Equipment
ROW:	Right-of-Way
SEG:	Similar Exposure Group
SOP:	Standard Operating Procedure
SSV:	Senior Staff Village
STP:	Sewage Treatment Plant
TRAFR:	Total recordable Accident Frequency Ratio
TSF:	Tailings Storage Facility

TSS: Total Suspended Solids
VRA: Volta River Authority
WAD: Weak Acid Dissociable
WSF: Water Storage Facility
WB: World Bank
WHO: World Health Organization