



Amulsar Gold Project

Integrated Waste Management Plan

Version 3

May 2016

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Revision	Date	Details	Prepared	Checked	Approved
Draft 1E	10 Jul 13	Initial draft for circulation and comment	CN	CAB	
V2E	31 Jul 13	Revision incorporating Initial Feedback	CN		
V3E	14 Aug 2014	Revision for new project layout and revised ESIA	CN	CPB	
V4	4 Feb 15	Revision incorporating feedback from Lenders	CN		
V5	16 November 15	Update and review and rename to integrated Waste management Plan	US	AS	
V6	31 January 16	Full revision to include ESIA findings, CR commitments and ESMS planning		DF	

Glossary

ADR	Adsorption, Desorption and Recovery
BRSF	Barren Rock Storage Facility
CR	Commitment Register of the ESIA
EBRD	European Bank for Reconstruction and Development
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
EU	European Union
EWC	European Waste Catalogue
HDPE	High Density Poly Ethylene
HLF	Heap Leach Facility
HSEC	Health and Safety, Environmental and Community
Geoteam	Geoteam CJSC
GIIP	Good International Industry Practice
g/t	grams per ton
kg/y	kilograms per year
IFC	International Finance Corporation, a member of the World Bank Group (WBG)
LLDPE	Linear Low Density Poly Ethylene
Lydian	Lydian International Ltd
MSDS	Materials Safety Data Sheets
PPE	Personal Protective Equipment
RA	Republic of Armenia
OPs	Operating Procedures

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SPZs	Sanitary Protection Zones
WAI	Wardell Armstrong International Ltd
WHO	World Health Organisation

Definitions

- Management Plans (MPs): Establishes specific requirements for various important environmental and social disciplines such as water, air and waste management, spill prevention, progressive site rehabilitation/closure, stakeholder engagement, cultural heritage protection, biodiversity preservation, etc. The main users of Management Plans are the department heads, superintendents and supervisors who track action implementation and translate specific actions to workers as necessary to ensure work is conducted in a responsible manner.
- Operating Procedures (OPs): Provide details on how to manage a specific environmental or social issue or area of risk. The main users of Operating Procedures are operations superintendents, supervisors and workers.
- Work Instructions (WIs): Define specific tasks to be conducted by workers to ensure effective controls are in place related to their work activity. The main users of Work Instructions are supervisors and workers who need to understand the risks associated with their work and how to control the associated risks.
- Forms / Templates / Checklists: Provide the means for ensuring effective management and control of documented information.

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1 INTRODUCTION

Lydian International Ltd (Lydian) and its wholly owned Armenian subsidiary, Geoteam CJSC (Geoteam), is currently developing the Gold Amulsar Project (the Project), located in the central part of the Republic of Armenia (RA). The proposed Project will exploit the gold deposit via open-pit mining and heap-leach processing using dilute cyanide solution.

A Mining Right (MR) for the Project was granted by the RA government in November 2014. This was based, in part, on the approval of the regulatory Environmental Impact Assessment (EIA) for the Project in October 2014. Some permits also exist for ongoing exploration and development activities with additional permits required for the construction and operation phase. The Project is currently in the early stages of development, with construction activities planned to start during the second quarter 2016 subject to financing.

In parallel with the EIA, an Environmental and Social Impact Assessment (ESIA) was undertaken in compliance with, amongst others, the Performance Standards (PS) of the International Finance Corporation (IFC) and the Performance Requirements (PR) of the European Bank for Reconstruction and Development (EBRD).

In mid-2015, a Value Engineering (VE) and Optimization process was initiated, with Lydian commissioning Samuel Engineering Inc. (Samuel) and other consultants to perform engineering design on several identified VE and Optimization concepts. The objective was to reduce capital expenditure without increasing operating costs or increasing environmental and social impacts. The results from this work done in 2015, which were published in the NI “43-101 Technical Report: Amulsar Value Engineering and Optimization” in November 2015, included reduced capital and operational costs, making the Project more viable in a challenging economic environment.

Changes to the Project design as a result of the VE and Optimization work have resulted in the need to prepare a revision to the new EIA approved in October 2014 and amend the ESIA completed and disclosed in April 2015. Lydian is in the process of preparing a new EIA and to apply to government for a new MR, both expected for approval in the second quarter of 2016.

The Project is subject to various health, safety, environmental and community/social (HSEC) commitments arising from the ESIA undertaken in compliance with the IFC PS and EBRD PR. The draft final version of the ESIA, denoted v10, was published for public review and comment in March, 2016 with a series of public consultation and disclosure meetings planned for March to May 2016.

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Both the EIA and ESIA make a number of commitments pertaining to the mitigation and management of E&S impacts. These commitments and requirements must be fulfilled as the Project moves forward. To facilitate implementation, all commitments made in the ESIA have been compiled into a full Commitments Register (CR) which will be used by Lydian for tracking purposes throughout the Project. Although many of the commitments apply to E&S management during Project implementation (construction, operation and closure), some apply to the Project design and engineering phase and must be addressed before construction work starts on site. The implementation of many of the commitments depends not only on the actions of full Project team.

E&S commitments are being managed by Lydian and Geoteam using the Environmental and Social Management System (ESMS). The ESMS includes the Management Plans (MPs), such as this one, that detail requirements that Geoteam and its contractors will follow in order to fulfil the Project's environmental and social commitments. For the purpose of this MP, "Contractor" means any all project participants, including contractors working in the field on the project including but not limited to drilling contractors, construction contractors, camp service contractors, engineers, fabricators, suppliers, etc. Contractors should implement parts of the plans relevant to their activities, issuing their own management plans in line with the Geoteam ESMS.

1.1 Commitments

ID.	Condition/actions	Public Commitment	Monitoring and compliance	Cross references and documentation	Responsibility
IWMP 1	During the life of the construction/operation activities, appropriate arrangements will be made for collection, handling and disposal of waste in accordance with the operating procedures of this plan.	-	Monthly waste reports will be generated (	Construction Phase: PEP, Operations: Cyanide Management Plan (CMP), Mine Plan	Site Environmental Manager Report to: Geoteam Project Director

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ID.	Condition/actions	Public Commitment	Monitoring and compliance	Cross references and documentation	Responsibility
IWMP2	Mercury generated in the ADR plant will be kept safely in a closed container and disposed of at an appropriate certified hazardous waste disposal facility in country or abroad.	-	The quantities of mercury stored at site and disposed of will be provided in the monthly waste reports.	Construction Phase: PEP, Operations: Cyanide Management Plan (CMP), Mine Plan	Site Environmental Manager
IWMP3	Waste disposal facilities will be operated so that all exposed refuse is regularly covered with soil or gravel to reduce exposure to animals such as Brown Bear and birds such as Egyptian vulture that regularly forage in waste dumps.	-	Visual inspections will be carried out daily to ensure all exposed refuse is covered.		Contractor Site Environmental Manager
IWMP4	Sewage treatment facilities will be operated according to GIIP and monitored for operational performance, including nuisance odours.	-	Regular monitoring of operational performance of sewage treatment facilities.	Surface Water Management Plan (SWMP)	Site Environmental Manager
IWMP5	Sewage and solid waste generated by the potential construction camp and the hotel accommodation will be treated and/or disposed of in accordance with the most stringent between WBG EHS guidelines and RA requirements.	-	Details of solid waste disposal will be included in the monthly waste reports.	Workers Accommodation Plan (WAMP)	Site Environmental Manager

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1.2 Scope of the Management Plan

This Integrated Waste Management Plan (IWMP) has been prepared to define how waste management activities of the Project will be managed during construction and operation of the mine. The IWMP applies to all aspects and activities being undertaken during construction, operation and closure of the Project. The IWMP addresses management procedures and application of relevant mitigation measures identified in both the EIA required for state approval, and the ESIA recently undertaken.

It also provides a mechanism for assessing the HSEC performance and for maintaining records of any changes in the scope of the Project. It aims to record data that is required for inclusion in the Amulsar Annual Monitoring Report (AMR) and the forthcoming Lydian Sustainability Report, regarding HSEC performance on a yearly basis.

This current version is focused mainly on construction phase of the Project based on the description in the Project Execution Plan (PEP) and impact assessment and the mitigation measures identified in the ESIA. The outlines the identification of issues and management practices for wastes generated by the Amulsar mine. It does not include mineral waste, such as waste rock or spent ore facilities, nor the management of liquid effluents from these facilities. The IWMP is applicable principally to the construction and development phases of mine development, although many of its principles will be relevant to closure and post-closure. It has been prepared in accordance with the ESIA findings v10 in particular the Commitment Register (CR) and the regulatory requirements of the Republic of Armenia (RA) as included in the Legal Register of the ESMS.

For the purpose of this ESMS, contractor means any contractor working in the field on the project including but not limited to drilling contractors and camp service contractors. They should implement parts of the plans relevant to their activities. The plan and all supporting documents will be made available in both English and Armenian.

The project requirements are identified in the CR and the EIA Approval and have been incorporated in all management plans as part of the ESMS.

1.3 Objectives and Goals

This IWMP has been prepared to ensure that non-mineral wastes generated by the Project are handled, stored, and disposed of in an environmentally responsible manner. A key objective of this

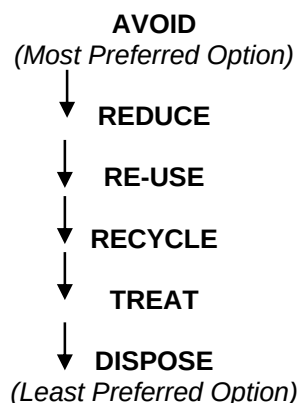
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plan is to reduce, reuse or recycle as much waste as possible. Disposal to landfill should only be used if there are no alternatives available. The company has a proactive attitude to waste minimization and re-use/re-cycling strategies and/or incineration. For the purposes of this plan, it is assumed that Geoteam will manage all waste operations at the mine, directly employing contractors and subcontractors. All contractors will be made aware of the responsibilities regarding waste management and provisions will be made for segregation and collection of waste in order for easy handling and transport. Local contractors will be used as much as practical.

The objectives of this plan are to ensure that GIIP is implemented to reduce impacts resulting from Project wastes and that the Project complies with all RA national legislation, EBRD Performance Requirements and IFC Performance Standards as well as the WBG EHS Guidelines and EU Directives.

Under the ESMS, this plan has been formulated as a procedural and reference document for use and implementation by Geoteam and contractor personnel. It will also be relevant to all appropriate sub-contractors associated with the Amulsar mining project. This plan should be treated as a 'Working Document' that will be periodically revised and expanded as required. The overall approach is broad and encompasses a cradle to grave approach and takes into account the waste management hierarchy as illustrated in Figure 1.

Figure 1: Hierarchy of Waste Management



Thus the main Objectives of Amulsar Integrated waste management are to:

- Minimise or prevent the production of waste;
- Encourage the recovery of waste by means of recycling, reuse or reclamation or any other process with a view of extracting secondary raw materials;

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- Ensure waste is recovered or disposed of without endangering human health or the environment and, in particular, without
 - o Risk to water, air, soil, plants and/or animals,
 - o Causing nuisance through noise or odours.
- Adversely affecting the environment, biodiversity and herders or places of special interest;
- Establish an adequate network of waste disposal facilities, taking account of the best available technology which results in non-toxic compounds; and
- Adhere to the legal requirements & licence conditions per the Legal Register.

1.4 Content of Management Plan

This plan details requirements for the collection, segregation, storage, recycling/re-use/treatment, transport, disposal and recording of Project industrial and domestic wastes, but excluding any mineral waste, drilling wastes and air emissions. Mineral wastes, such as low grade ore, barren rock and effluent from the BRSF, are managed as part of the mine plan. Industrial and domestic waste (non-mineral wastes) include hazardous and non-hazardous solid wastes, hazardous liquid wastes, sewage/sanitary discharges, grey water, and medical wastes. The plan applies to all areas of the Project that may be impacted, including access roads, temporary construction areas, material and waste storage areas, and public roads used or crossed as part of the development of the Project.

Waste ‘activities’ principally include waste handling/collection, storage/containment and the transport of waste from the Project facilities to appropriate waste recycling, storage, treatment, or disposal facilities. The waste streams dealt with by this plan include all wastes produced directly by the Project in the course of construction and operation, with the exception of mineral wastes that are managed through the mine plan. The IWMP also provides initial guidance on the storage, handling and disposal requirements for potentially hazardous liquid wastes, which are not to be released to the environment unless permitted by the Armenian regulatory authorities. The type, quantity and composition of any permitted liquid discharges will be governed by the requirements of the Armenian authorities and should conform to internationally recognised standards.

The IWMP is to be read in conjunction with the Cyanide Management Plan (Appendix 8.11) and the Emergency Preparedness Response Plan for handling of hazardous liquids. Non-contact waters are not hazardous liquids and will be managed in accordance to the Surface Water Management Plan

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(Appendix 8.22). This plan references these reports and any other relevant ESMS documents as required.

It should be noted that regardless of the individual handling requirements specified for waste types in this plan, all persons handling wastes should be equipped with standard PPE (i.e., hard hat, face mask, steel-toed and mid-sole boots, safety glasses/goggles and appropriate gloves).

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2 ROLES AND RESPONSIBILITIES

Geoteam is responsible for the storage, transport and disposal of waste, either directly or indirectly through waste management contractors. Geoteam will also be responsible for:

- Communicating the IWMP and specifying the Project's waste management commitments and requirements to all staff and contractors;
- Ensuring that adequate resources for waste storage, re-use, recycling and disposal are available, including a sufficient supply of containers appropriate for the types of waste produced and stored;
- Ensuring that appropriate PPE is provided and used during handling of waste;
- Organising and ensuring that the removal of waste from temporary storage facilities is conducted by approved, licensed waste services providers and goes to sites suitable to receive the type of waste concerned;
- Compiling monthly waste reports on waste status (including type and quantity of waste generated and any community feedback);
- Implementing audits and inspections of waste management, and maintaining a system to track progress on actions to correct any failures to manage waste effectively in accordance with the Compliance Assurance Plan (Ref GEOTEAM-ENV-PLN0226) and the Non-conformance and Corrective Action Plan (Ref GEOTEAM-ENV-PLN0235); and
- Geoteam will ensure that Project waste management complies with relevant national legislation, regulations and policies, permits, codes and orders at a minimum. In addition, the operation will comply as far as possible with international best practice, as detailed in this Plan.

Specific responsibilities for Geoteam personnel relating to this plan are as follows:

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Project Director	- Responsible for ensuring that the Amulsar project complies with the requirements of this plan - Ensuring that designated managers understand their responsibilities and that they have sufficient resources to carry out their functions effectively - Reviewing all risk assessments with regard to waste management and ensure that any resulting recommendations are duly implemented
Site Senior Health ,Environmental ,Safety and Security Manager	- Responsible for monitoring compliance with procedure and develop training and auditing tools that will raise awareness. - Ensuring that all employees and contractors undergo environmental and health and safety inductions - Ensuring that appropriate records and documentation maintained for all areas of work - Responsible for the preparation, review and update of this management plan in order to ensure its on-going compliance with the requirements of the mine's licence to operate and other applicable RA legislation and to ensure it contains up-to-date qualitative and quantitative information on the mine's waste streams - Participation in risk assessments (MSDS evaluation) - Coordinating audits of waste management - Responsible for liaison with the competent authorities, including periodic/routine reporting and incident notifications - Responsible for dissemination of information and instructions to all TMLSA staff and contractors re. waste disposal procedures and for encouraging proper waste disposal - Responsible for ensuring that all contractors are aware that burying or burning or otherwise disposing of waste by other means is not permitted at the site - Providing suitable training – including emergency response training - on the intent and requirements of this waste management plan. Record the training undertaken and monitor training records to ensure that training is updated at regular intervals (e.g. refresher training at least every 6 months) - Reporting outcomes to the Project Director
Environmental manager and Health and Safety Officers	- Following and implementing this plan and any related procedures - Ensuring that reports and contractors under supervision follow this plan and related procedures, and maintain safe working practices

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Heds of Department	• Training personnel in this plan and related procedures • Responsible for ensuring that wastes are duly segregated, stored and transferred for disposal in accordance with the requirements of this management plan • Participation in Risk Assessments • Reporting any unsafe or unsatisfactory conditions to the HESS Manager • Initiating incident response actions in accordance with this plan
Mine Admin Department/Technical Services Manager	• Responsible for managing the landfill site and waste water treatment plants
Site Environmental manager	• Responsible for managing waste collection from the site (both temporary and operations) and administration areas and workshops • Responsible for managing the performance of the landfill and the waste water treatment plants • Responsible for ensuring that n burying or burning of waste is carried out on site • Responsible for ensuring that domestic wastes are duly segregated, stored and transferred for disposal in accordance with the requirements of this management plan • Reporting any unsafe or unsatisfactory conditions to the HESS Manager and Project Manager

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Contractors	• Reading and understanding the waste management plan and Geoteam requirements and commitments, with regard to waste management as defined in this Plan, and all relevant laws, regulations, standards and policies • Communicating the contents of the waste management plan to their workforce and training all workers and subcontractors to ensure they understand their responsibilities with respect to waste management • Ensuring that the procedures established in the waste management plan are complied with by their workers and subcontractors • Ensuring that no waste is buried or burned on site • Implementing effective daily monitoring of onsite waste collection and storage arrangements (see the Monitoring Plan (Ref GEOTEAM-ENV-PLN0225) for details) • Ensuring that all environmental incidents are reported and dealt with effectively and that lessons are learned in accordance with the Incident Reporting and Investigation Procedure • Keeping Geoteam fully informed of any site issues related to the waste management • Training personnel in Geoteam's requirements and commitments, with regard to spill prevention, control and management as defined in this plan, and all relevant laws, regulations, standards and policies • Undergoing compulsory environmental and health and safety inductions • Reporting any unsafe or unsatisfactory conditions to the Site Environmental, Health and Safety Manager
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3 CLASSIFICATION OF WASTE

3.1 National Classification

The appropriate categorisation of waste is necessary to establish proper storage, handling, transportation, treatment and final disposal route and also for the creation of a site specific waste management system.

In accordance with RA legislation (Waste Law, 2004), waste is typically classified into five hazard classes (Table 3.1). A dash board system has been assigned to the hazard classes for clarity. However, the use of this system can be ambiguous and demands a considerable degree of subjective judgement between the varying degrees of hazard (Extremely Hazardous, Highly Hazardous etc).

Table 3.1: Armenian Waste Hazard Class Classification (Decree N 120 of the Ministry of Nature Protection on 5 December 1996)	
Class Classification Waste Type	Examples
I - Extremely Hazardous	Chlorine benzyl, perchlorcarbon, thorium, organochloride compounds, sulphuric and phosphoric acids, mercury , insecticides, etc
II - Highly Hazardous	Petrochemical catalysts, copper mining residues, bromine compounds, arsenic, aniline dyes, synthetic glues, etc
III - Moderately Hazardous	Used catalysts, hydrochloric acid, semiconductor waste water, titanium and wolfram reprocessing wastes, lacquer and dye wastes, etc.
IV - Least Hazardous	Wastes from galvanic processes, semiconductor wastes, chemical and metallurgical wastes, etc
V - Non Hazardous	All non-hazardous substances not included in the fourth item

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3.2 International (European) Classification

Categorisation of waste within the European Union is encompassed within Commission Decision 2000/532/EC which establishes a list of wastes that are considered to be hazardous and a list of wastes other than hazardous waste. Appendix 1 summarises the process for assigning categories to wastes and potential management techniques for various Hazardous Waste streams. Geoteam's waste management strategy has been developed following guidelines from relevant EU Directives, such as:

- Directive 2008/98/EU - Waste Framework Directive: sets legislative framework, establishes the key concepts in the definition of waste and the waste hierarchy with landfill disposal considered as the option of last resort; and
- Directive 1999/31/EC - Landfill Directive: establishes regulatory standards against which Member States are obliged to legislate for the permitting, construction, operation and closure of landfill facilities for Hazardous, Non-Hazardous and Inert Waste. It also lays down minimum standards of environmental protection to be incorporated into the engineering design of these facilities throughout construction, operation, closure and post closure phases.

The Mining Waste Directive (Directive 2006/21/EU) applies to extractive waste produced by a mining operation, such as overburden and waste rock (i.e. mineral wastes), thus is not referred to further.

The European Union Directives classify wastes as Hazardous, Non-Hazardous or Inert. Hazardous Waste is defined by EU Directive 91/689/EEC (The Hazardous Waste Directive), which uses a general classification of hazard categories (such as ecotoxic, mutagenic, carcinogenic etc) of particular substances and then uses an assessment of the limiting concentrations of a substance in waste. Thresholds are identified for specific known hazards, above which special controls applicable to Hazardous Wastes should be applied. A waste which consists of or contains these contaminants above threshold limits is, by definition, Hazardous Waste.

For the purposes of the Project, this IWMP uses the EU waste categorization system plus the guidance provided within EU Council Decision 2000/532/EC, establishing the European Waste Catalogue.

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Inert Waste

Inert Waste is defined by Directive 1999/31/EC – The Landfill Directive, as waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact. The total leachability and pollutant content of the waste and ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater. Examples of inert waste are concrete, general civil construction materials and debris and glass.

Non – Hazardous Waste

The EU Waste Directive defines non-hazardous waste as waste which is not covered by the definition of hazardous waste. Non-hazardous waste generated during the construction phase of the project will be a combination of bulk wastes specific to the scale and type of construction and installation activities (particularly civil construction activities) and wastes associated with the workforce employed. Bulk non-hazardous wastes from site-specific construction activities typically constitute the largest volumes and include:

- Cleared Vegetation;
- Overburden (soils and rock) (managed through the mine plan);
- Scrap metal and welding wastes;
- Rubber (e.g. end-of-life tyres);
- Glass;
- Concrete, excess spoil and other inert wastes;
- Biodegradable waste – such as food wastes (excluding raw meat products);
- Bulk packaging (plastic and wood); and
- Workforce-related wastes (domestic and sanitary wastes, such as polystyrene, cardboard packaging, paper, etc.).

Non-hazardous wastes will be primarily generated from the administration, catering and ablution facilities. The quantities will vary at different stages of the project as the workforce fluctuates, and will include material such as domestic waste, waste food produced at the canteen facilities, general office wastes etc. The estimated quantity of domestic waste generated used in this document are based on the generation of 1.6kg/day for each full time employee and 0.88kg/day for each part time employee.

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The accepted nature of waste generated by domestic activity includes elements which, if categorised individually, would be classified as Hazardous Waste e.g. scrap batteries, medical products, empty containers used for domestic type products (such as bleach and other cleaning materials), etc. They are likely to be present but only in minimal quantities. Non-infectious medical waste will also be managed as part of the domestic waste stream.

Hazardous Waste

Hazardous wastes generated during construction of the Amulsar project will be a combination of those produced by large-scale construction and operational activities as well as those produced by the specialist technologies used, and some types of waste generated by the personnel.

Hazardous wastes produced by construction and operational activities will typically be associated with consumables from motorised vehicles and equipment operation, principally involving:

- Hydrocarbon waste – mineral, lubricating, hydraulic oils and filters from vehicle and plant maintenance;
- Hydrocarbon contaminated materials, including oily rags;
- Packaging/containers used in the supply of sodium cyanide;
- Consumer (domestic) hazardous wastes, including batteries, fluorescent light bulbs and medical wastes;
- Raw meats wastes, such as bone marrow and offal;
- Hazardous workforce-related waste, including wastewater treatment products, and mechanical wastewater treatment plants;
- Volatile wastes, such as paints and paint containers and used solvents;
- Cleaning wastes;
- Infectious medical wastes (see below);
- Others – such as notionally empty reagent containers (acid and alkaline), antifreeze solutions from vehicle and plant maintenance, and sodium / mercury lamps.
- (Elemental) Mercury produced in the ADR plant – see section 5.6.

Medical Waste

Geoteam management will establish procedures for the handling and disposal of infectious medical waste as detailed by relevant RA Law. The Site Health, Environmental, Safety and Security Manager is responsible for the proper storage of on-site medical waste and will arrange for safe

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disposal according to GIIP. The disposal of such waste will be managed by Geoteam and/or contracted out to a local Armenian company for disposal and incineration. A chain of custody as well as the efficiency and compliancy of incineration will be investigated and checked at regular intervals by Lydian. Routine checks will be carried out to confirm the effectiveness of implementation.

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4 WASTE MANAGEMENT PROCESS

4.1 Approach

As the operation develops, the approach will be revised by the HESS department to provide updated volumes and designated classifications. The information will be subject to regular review per the ESMS to verify its accuracy and relevance and to identify potential areas of improvement. Different types of waste at site will be segregated separately per below:

- Hazardous waste will be temporarily stored in an appropriate impervious impoundment adjacent to the HLF out of the Lake Sevan catchment area. An Armenian company specialising in the disposal of such waste will be engaged and will collect such waste on a regular basis assuming it meets IFC/EBRD requirements. Otherwise these will be stored on site until an acceptable final disposal option is available in country.
- An onsite landfill will be developed for Non Hazardous waste next to the BRSF. Subject to further detailed design, a contained non-hazardous landfill cell may be constructed between the HLF and truck load out area. The design of the landfill will be based on RA, IFC/WBG and EU requirements. Such Landfill site will only contain non-hazardous materials and inert wastes.

All waste will be assessed during all stages of the project to determine the most appropriate disposal method for each waste stream. This disposal method will be determined based on the following requirements:

- Handling procedures – relating to the identification and storing of waste pending collection/transfer for re-use, recovery, recycling, treatment, and (if appropriate) storage prior to final disposal;
- Reduction of hazardous wastes by substituting non-hazardous materials in processes where possible;
- End-use management – dependent on whether the waste is re-used, recycled or disposed of in an appropriate manner; and
- Personnel Management – delineation of roles and responsibilities, training, etc.

Waste management is also required to minimise the risk of pests spreading through the Project area. Reduction of waste and suitable storage will be important measures to prevent pests such

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as birds and rodents, and additional control measures will be developed and implemented as required.

4.2 Waste Segregation

Per the RA requirements, the Project is using a traffic light system for categorisation/labelling of particular hazardous wastes. Although recycling opportunities are limited in Armenia, waste will be separated so as to generate and encourage recycling initiatives. Waste will be segregated according to hazard classification per Table 3.1 and end use type (e.g. recyclable/non-recyclable), labelled appropriately and stored in suitable receptacles. Where possible, all waste shall be identified at source, and will be accomplished by providing separate waste containers for these waste streams. Any waste that cannot be clearly identified as non-hazardous shall be labelled as hazardous waste until confirmation of correct classification. Reference to the relevant MSDS shall always be done based on the type of waste.

Waste is separated at point of generation into colour coded transit skips and/or silo style bins (generally for medical waste only). For hazardous waste, excluding hydrocarbons and medical waste, specific conditions will be developed for each product as required. It also includes explosive waste together with waste from the analytical and various laboratories. This will be achieved with relevant OPs to bring new chemicals to site which will specify how a product or its waste components (either or both of which may be considered hazardous) are to be disposed.

4.3 . Waste Containers

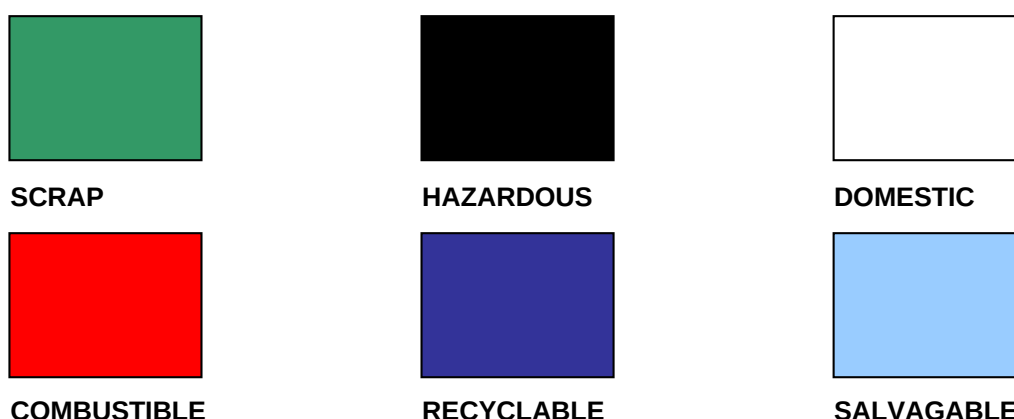
Waste containers shall be rigid walled vessels (e.g. rolloffs, skips or drums). Such containers will be distributed based on the types of waste generated at the various areas as indicated in the Waste Inventory Database OPs. The Waste Inventory Database shall be reviewed following changes in operational activities. For example, domestic skips will be located near to mess areas and offices/administration areas and hydrocarbon skips near workshop areas. All skips shall be numbered for accountability purposes & frequency of emptying of the skips solely depends on the rate of generation of waste as well as the chemical, physical and/or biological properties of the waste. A schedule for emptying the various skip bins shall be regularly compiled and used based on the rate of generation of waste in the specific areas. The HESS Department shall be responsible for regular maintenance of skip bins (or other waste receptacles) at least twice a year. Separate containers will be supplied for recyclable wastes and for mixed general waste. All waste

material will be stored in methods that avoid attraction of and access by wildlife. All containers will be closed when not in use. Information posters shall be posted at strategic locations, such as dining areas and kitchens to explain appropriate waste disposal to prevent poor waste management practices.

Geoteam has established a simple colour code system for waste containers per Figure 4.1 below. This system distinguishes hazardous wastes, recyclable materials (general by type) scrap materials, combustible, domestic and salvageable wastes. A standard system will be used throughout the site to avoid confusion. However, some wastes will need to be re-sorted by the waste handling team in order to comply with Armenian waste regulations as per Table 3.1.

Each waste container will be clearly labelled to indicate the type of waste that is placed into it. Hazardous waste shall be labelled in accordance with the relevant MSDS that shall be available at each site where they are stored.

Figure 4.1 Coding for Waste Streams



Non hazardous and domestic waste will be stored such that it will become inaccessible to wildlife and will not be allowed to pile up or decompose. No food, garbage, or dog food (for guard dogs) shall be left outside unattended.

Hazardous waste shall be stored in receptacles that prevent spillage (e.g. drums with clip-top lids). Wastes with the potential for leaks or spills (e.g. waste fuel or oils) shall be stored in an impermeable area that can contain 110% of the total inventory stored.

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4.4 Waste Collection

Waste management is the responsibility of everyone on the project. Supervisors will be responsible for daily waste management activities, including the collection and transfer of waste to a designated waste storage area and for housekeeping of their work areas. All domestic waste, such as food waste and plastic bottles, shall be removed immediately and placed in suitable containers. Hazardous or harmful waste, including choking hazards for wildlife, is also to be placed in suitable containers immediately after use.

All departments shall exercise good housekeeping to remove waste and ensure that all temporary working areas, including camp, maintenance areas, access roads and laydown areas are tidy and well-maintained. Rubbish shall not be disposed of outside the Project area, unless in accordance with approved procedures and/or by authorised waste disposal contractors. Any worker found littering work areas or access roads may be subject to disciplinary action or removal from the Project.

Locations for waste bins will be identified and reviewed periodically. Geoteam will supply the appropriate numbers and types of containers to be deployed to adequately contain the anticipated wastes generated from each facility. Secure on-site storage and containment facilities for hazardous wastes prior to transfer to long-term storage or treatment will also be demarcated. Rigid containers such as roll offs or drums shall be used and the storage of waste directly on the ground surface shall be prohibited at any time. Waste containers should be secure to avoid wildlife or domesticated animals from spilling or reaching the waste.

All waste containers will be emptied on a regular basis and transported to the demarcated landfill site. Only approved vehicles shall be utilized for transporting wastes from work areas to waste storage or disposal areas. These vehicles shall be covered to prevent loss of wastes during transit.

4.5 Waste Storage

All waste storage areas (either temporary or permanent) will be sited away from working, accommodation and administration areas. The type and design of these areas will reflect the waste type, classification, volume and duration of waste to be stored. The term storage will also include the collection containers used for collection, segregation and storage of non-hazardous waste destined for landfill disposal, such as domestic wastes. Hazardous Waste (RA

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Classification I & II) will be stored separately and immediately in the hazardous waste impoundment. During storage, all wastes will be:

- Contained in sealed drums, appropriate to the type of waste or equivalent (loose, liquids or sludges);
- Contaminated metal drums will be pre-crushed prior to storage;
- Clearly labelled as to their contents (using the traffic light system as appropriate, see section 3.1 above); and
- Clearly identified as to their intended fate (reclamation, re-use, long term storage, landfill on site).

Storage areas will be purpose built on impervious foundations, sealed and will be bunded to contain spillage. The areas will be covered to protect from rain, snow and direct sunlight, but will be well ventilated.

4.6 Waste Treatment and Material Re-Use

A key principle of any waste management strategy is to aim to re-use materials, where appropriate. Some materials used at the mine can be sold or donated for re-use, such as clean containers (glass/plastic) and timber, which can benefit the local economy and welfare of the local population. Wherever possible, these materials should be returned to the provider if no local use can be found. The provider can then re-use or appropriately dispose of the materials.

The Project will incorporate as many on-site environmentally friendly and sound waste treatment processes as possible. These may include:

- Domestic sewage and wastewater treatment and recycling;
- Bio-treatment of sewage wastes and oil contaminated materials;
- Re-use of benign overburden and rock debris for landscaping and haulage roads, when it can be ensured that material is not acid generating (see Geochemical Testing Procedure, Ref GEOTEAM-ENV-PRO0229); and
- Composting of vegetable waste and other food waste to produce top soil.

Furthermore, an Armenian company specialising in the recycling of used hydrocarbons and old tyres will be contracted.

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Clean Specialist Plastics

Large quantities of imported LLDPE geomembrane will be required for the HLF and other purposes. Excess liner will be stored carefully to prevent rupture and degradation until such a time that it is required for any HLF extensions. Excess liner can also be considered for possible re-use for sealing lined systems within the mine. Examples of such use for excess material are temporary bunds for hydrocarbon storage and other hazardous wastes, water containment ponds and surface water drainage systems.

There will also be excess plastic pipework, which can be used for drainage purposes.

Timber and Vegetation

Sources of timber and vegetation wastes at the site will include construction materials, delivery palettes and some (raw) food wastes. The Project will manage timber and vegetation wastes in accordance with RA regulations and will prioritise the re-use of this waste stream. Options may include:

- Re-use or salvage of commercial timber;
- Preparation of timber as heating fuel and delivery / resale to the local community;
- Size reduction, shredding and mulching of remaining timber components;
- Composting scheme for scrap food products; and
- Land spreading of chipped or shredded vegetation for decomposition as a means of promoting soil improvement and as part of re-vegetation measures.

4.7 Wastes from Water Treatment Plants

No domestic wastewater will be disposed without prior treatment and the necessary RA permits in place. Wastewater from the hotel accommodation in Jermuk will be diverted to the municipal system for treatment and disposal. The treatment system and final discharge need to meet GIIP, in particular WBG EHS guidelines. This is subject to verification during the engineering work in 2016.

Additional systems will be required at the temporary construction camp, ADR process plant, crushing plant, truck shop, warehouses and administration block. Each area will have a dedicated septic sewage system to treat water and dispose to ground. The resulting treated

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water should meet the national standards for irrigation water, and is discharged on soil. All sludge will be removed from any sewage treatment systems in accordance with manufacturers' recommendations and disposed in accordance with this GIIP. At closure the systems will be rinsed, sterilised and decommissioned.

From the onsite canteens, sufficiently sized grease traps will be installed to prevent greases and fats from entering the sewage treatment stream. The sediments from these traps will be disposed of in conjunction with the sludge from the septic tank systems.

4.8 Waste Transport

Materials identified for re-use on the Project shall remain within the storage areas until they are required. Whenever needed, reusable materials shall be transferred and distributed for re-use to the appropriate Project location. No materials intended for reuse shall be allowed offsite except for transfer to another Project location.

Wastes transported offsite, either for disposal or recycling, shall be done by a licensed company in accordance with national legislation and GIIP. Waste will be transported in enclosed or covered vehicles, to minimise losses. Procedures for safe loading and unloading of waste will be developed and implemented. All vehicles used by waste carriers may be inspected by the HSSE department to ensure that they are appropriate for the type of waste transported and that they do not exceed the load capacity. Vehicles used to transport liquid wastes must also have appropriate spill kits.

All waste transported off site will be tracked, to ensure compliance with RA regulations and for auditing purposes (see Section 6 below).

4.9 Hazardous Liquid Wastes

Liquid waste streams (effluents and residual liquids) will not be released to the environment unless permitted by the RA regulations and permits as well as WBG EHS guidelines. The type, quantity and composition of any permitted liquid discharges will be governed by permitting and IFC/EBRD requirements, whichever is the most stringent.

As such, hazardous liquid waste storage areas will be required in designated locations. For hazardous liquid wastes, the following guidelines shall be applied to the design and construction of storage areas:

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- Used lubricant oils, hydraulic liquids and solvents shall be collected in tanks, cans, metal barrels or other approved containers, which shall be placed within an impermeable secondary containment system installed at the landfill site. These containers shall be stored in a covered area with proper runoff controls until transported for recycling or other treatment. The containment berm will be large enough to contain 110% of the volume of the largest container plus 10% of the aggregate volume of containers within the containment area. It shall also contain a sump allowing any liquids to be pumped out. Any contaminated rainwater or spills within the berm must be collected and stored in accordance with Section 4.5;
- Spill response equipment and materials will be provided;
- Oil or lubricant changes shall be prohibited within the Project area and shall only be allowed in designated areas by competent personnel; and
- Paint residues, asphalt emulsions, etc. resulting from products utilized in the work areas shall be put into tightly closed containers and transported to the landfill site.

The liquid wastes described above shall not be stored in open containers or in areas without secondary containment.

4.10 Medical Wastes

Infectious medical waste will be segregated and contained in identifiable waste disposal containers for transportation to approved disposal sites. These may include local hospitals or laboratories upon written agreement and where appropriate. Final disposal or incineration will be done in accordance with RA regulations and WBG EHS guidelines. Alternative methods for containment, such as sealing sharps in concrete, will only be used upon agreement with the relevant authorities. Non-infectious waste will be managed within the non-hazardous domestic wastes.

4.11 Recycling

Recycling in Armenia is a growing industry, with plastic, glass and paper recycling facilities available. Recycling initiatives at Amulsar include vegetation wastes, industrial packaging, paper/cardboard, metals, plastics, glass, wood and potentially recyclable construction/camp waste streams. The Project will initiate contacts within recycling companies and CSOs, and will employ a range of solutions based around waste source separation and volume reduction, to maximize recycling for appropriate waste streams.

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No recyclable waste will be disposed of in landfill unless there is no suitable facility available or in the event that the only outlet available is non-licensed or unapproved. Scrap metal waste will only be disposed of at landfill as a last resort and in the absence of a viable outlet. Scrap metal may be stockpiled on-site for future sale or recycling options.

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5 SPECIFIC MEASURES FOR HAZARDOUS WASTE

5.1 Waste Storage Facilities

A specific area at the HLF will be dedicated to the storage of hazardous waste for the Project. Any temporary storage areas will be appropriately signed, clearly marked in both English and Armenian and identifying the type of waste being stored in each area.

Geoteam is examining the possibility of installing an incinerator to treat hazardous and bulk wastes. A suitable incinerator would be capable of dealing with oily wastes (including hydraulic hoses and oil filters) and cyanide packaging. An options study is assessing the appropriate size of potential incinerators, as well as operational procedures and layout options.

5.2 Containers and Packaging Used for Supply of Cyanide

Cyanide management at the mine site is detailed in the Cyanide Management Plan. The main waste generated is cyanide supply packages. Lydian will purchase sodium cyanide from suppliers who will retain responsibility for all packaging materials. All empty containers will be transported back to the supplier that delivered the material to the site.

Where this is not possible, cyanide packaging will be open burnt and the ashes buried. Based on Project estimates, approximately 2,600 waste cyanide boxes will require disposal.

5.3 Waste Oils / Oily Wastes

There are likely to be significant quantities of waste oils generated from the site. Used waste oils will be stored either:

- In bulk tank(s) of a suitable design and specification for the material to be contained, clearly labelled as to their content (using traffic light system as appropriate). Each tank will be equipped with site glasses to give clear, immediate indication of status and capacity. Tanks are to be double skinned, or of self-bunded construction. Alternatively, tanks may be contained within impermeable sealed bunds of capacity equivalent to 110% of the volume of

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the tanks or, in the case of multiple tanks in the same area, a bund capacity equivalent to the total capacity of the largest tank, plus 10% or 25% of the total capacity of all tanks, whichever is the greater;

- In drums of maximum capacity of 200 litres, clearly labelled as to the nature of their contents again using the traffic light system where appropriate. Drums of waste oil will be stored on impermeable hard standing protected by raised curbs to prevent run off in the event of rupture or spillage and housed within a weatherproof structure/building; or
- Incinerated – should the options study determine an incinerator is suitable for the site.

Small quantities of waste oil will be re-used on site for general plant maintenance/lubrication of conveyors and the like.

In the absence of suitable facilities for the management of oily wastes in the area, a combination of reuse, recovery and long term storage and disposal on site will be required for the overall management of this waste. In the case of liquid oils, they may be combusted in small combustion units (e.g. with a rated capacity of 3 mega watts or less and suitable controls). These units could be placed within for example, workshop areas and used to provide space heating.

Oily wastes, contaminated soils, rag, filters, spillage clean up residues, will be stored within 200 litres drums (full end plate opening type) for disposal within the onsite hazardous waste storage area in a dedicated cell for hydrocarbons. Geoteam will investigate the possibility of sending waste oils to a refinery for reuse and recycling.

5.4 Tyres

Tyres will be retained on site for return to the supplier(s) for re-processing or disposal. Alternative recycling options within the country shall be considered if and when they arise. Volumes of waste tyres will depend upon tyre quality and driver ability. Further investigations will be conducted for the use of tyres in the production of heat. The used tyres will be stored in an adequate area and all safety precautions will be taken for the prevention of fires. A local Armenia company is currently being checked for possible engagements and ultimate disposal of old /used tyres.

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5.5 Chemicals

In addition to sodium cyanide for use in gold extraction at the HLF, other chemicals used on site will include, but not be limited to:

- activated carbon;
- hydrochloric acid;
- sodium hydroxide;
- caustic soda;
- lime; and
- diesel oil.

Acid and alkaline residue will be retained on site until either a suitable waste handling facility is provided / identified in Armenia or until mine closure when arrangements will be made for its safe, authorised disposal, as part of the mine closure process. Storage containers will require handling, storage and disposal in accordance to their individual Materials Safety Data Sheets (MSDS). Where possible, empty containers will be recovered as scrap or re-used, otherwise they will be crushed and disposed of to the hazardous waste landfill cell on site.

5.6 Elemental Mercury

A small amount of mercury is present in the ore and reports with gold and/or silver at the electrowinning stage. Bullion is further refined by removing mercury in a retort and storing mercury in a secure location on site in the gold refining area. It is expected that approximately 60kg/y of mercury will be collected and dealt with as hazardous waste. Mercury waste will be stored in a secured area, which can be locked when not in use and not exposed to weather. Waste will be stored in sealed containers, which are structurally sound and compatible with the waste (i.e. glass or iron containers). Each container must be labelled with the date mercury waste was first collected (accumulation start date), and the date the container becomes full, if mercury wastes are to be stored for more than 365 days. These containers must be packed in containers with packing materials adequate to prevent breakage during storage, handling and transportation. Full mercury waste containers must be sealed securely around box openings. Any waste containers must immediately be sealed if incidental breakage occurs, using suitable PPE to handle waste and minimize exposure.

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Disposal of waste mercury will involve transport to an appropriate off-site treatment facility in Armenia or abroad. This off-site facility will either dispose of the mercury in an internationally acceptable manner or will use the mercury for a beneficial use such as the production of scientific or medical instruments, the production of florescent lights or some other productive use. Special care will be used when transferring the mercury and a pursuit vehicle will be used during the shipment with trained personnel and equipment in the pursuit vehicle for the clean-up of mercury in case of any spills during the transportation to the off-site facility.

5.7 Battery Accumulators, Fluorescent Tubes, Vapour Discharge Lamps

Accumulators will be drained of their electrolyte which will be directed to the BRSF toe pond for disposal. Batteries and empty accumulators will be held in separate, labelled secure containers and stored as specified for oil in drums. Fluorescent tubes and vapour discharge lamps will be crushed in purpose built crusher that captures mercury vapours. This waste will be treated as mercury waste and disposed of as hazardous waste.

5.8 Slag

Slag from the smelting process will be securely stored in drums on site for sale for metal recovery processing.

5.9 Carbon Sludges and Re-activation of Carbon Columns

Small quantities of fine sludge will be generated by the carbon re-activation process. This will be placed in drums or bulk containers prior to storage in the hazardous waste storage impoundment. Leaching test could be carried out to check toxicity.

6 PERFORMANCE MONITORING

6.1 Scope

Geoteam staff will monitoring regularly the implementation of the IWMP in the framework of the ESMS. Each department will also be regularly monitored for best practise in waste

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minimisation. Geoteam will develop waste targets and implement new initiatives as the project develops.

6.2 Documentation and Training

6.1.1 Waste Record and Tracking System

Geoteam will establish and maintain a waste record system to track waste generation, storage, transport and final disposal. The aim of this system is:

- To act as a management tool, providing information on the characteristics and volume of waste that is being generated;
- To provide a control mechanism for the safe handling, transport, treatment and disposal of wastes and a means by which environmental, health and safety compliance can be demonstrated; and
- To monitor wastes in a consistent manner.

The system will be based on the following documents:

- A waste inventory, identifying the quantity of each type of waste held at each waste storage area;
- Information on fate of wastes (recycling/re-use/treatment or long-term storage of waste streams);
- Records of transport to final disposal points; and
- Records of final waste locations.

6.1.2 Documentation

Copies of the following documentation are to be kept in accordance with the Document Control Procedure (new one forthcoming, old one Ref GEOTEAM-ENV-PRO0210) and will form the base of the Chain of Custody- Waste Tracking System (WTS):

- Waste carriers' authorizations to transport waste;
- A certified copy of each permit or other authorization pertaining to the operation of the treatment or disposal facility to which waste is taken;

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- All signed Waste Manifests and copies returned by waste disposal sites demonstrating receipt of waste;
- Permits for the sewage treatment plant including discharge permits; and
- ESIA v10 Commitment Register, February 2016.

Waste Manifests will be completed for each hazardous/special waste transfer and shall record at least:

- The time and date of the transfer;
- The type and category of waste;
- The quantity of waste;
- Details of the carrier and the vehicle; and
- The destination of the waste.

One copy of the Waste Manifest shall be signed by the authorized waste representative and will be kept on site. Another copy shall be signed by the carrier and a third copy by the receiving site. A copy of the Manifest is to be signed by the receiving site and returned to Geoteam to prove receipt of the waste. This will form the chain of custody for handling and disposal of any waste.

6.1.3 Training

All employees and contractors who handle or have responsibility for managing any waste, in particular hazardous wastes, will be trained on proper handling and emergency procedures.

All workers involved in waste handling and management operations will be trained in the identification, handling, storage and documentation of solid and liquid wastes. Training shall be in accordance with the ESMS, to include any RA regulatory requirements and shall include, as a minimum, the following topics:

- Importance and goals of the IWMP;
- Waste handling and disposal techniques (including reduction and minimization, waste sorting and segregation requirements, waste re-use and recycling);
- Identification, evaluation and control of hazardous wastes;
- Personal Protective Equipment (PPE), including face mask or respiratory protection;
- Hazard communication;

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- Waste related documentation requirements; and
- Monitoring and inspection of waste storage facilities.

New workers shall be trained before beginning work or work under direct supervision until training is completed.

6.1.4 Employee Awareness

Geoteam will expect all employees and contractors to actively participate in the success of this plan and dispose of waste responsibly. Geoteam also expects that where waste can be minimised, this will be prescribed by individuals and departments. Geoteam will include 'waste' as an induction topic, to cover:

- Importance of being waste aware;
- Different waste types;
- Disposal routes of waste;
- Waste safety;
- Company responsibility;
- Reuse and recycling; and
- Where to seek assistance.

6.1.5 Audits and Inspections

All activities related to waste management will be subject to regular audits per the ESMS, with a minimum frequency of at least twice annually.

Geoteam will also inspect waste transport contractors and any off-site waste disposal/recycling facilities. The WTS governing all hazardous and non hazardous waste transfers will be implemented, which will ensure compliance with the ESMS and create an auditable trail of documentation. Additionally, a focus will be to monitor both hazardous and non-hazardous waste movements and disposal to ensure that this is being undertaken legally and in accordance with the contractual arrangements set up.

7 Appendices

Appendix 1.

8 Definitions

See also *Lydian HSEC STA 02 Glossary of HSEC Terms and Acronyms*.

9 References

- British Standards Institute OHSAS 18001:2007 Occupational Health and Safety Management Systems – Requirements
- International Organization for Standardization ISO 14001:2015 Environmental Management Systems – Requirements with Guidance for Use
- International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability, 2012.

10 Revision Control

REVISION CONTROL TABLE				
Version No.	Date	Pages(s)	Section(s)	Purpose of the Modification
Initial Release	February 2, 2016	All	All	Initial version compiled by Didier Fohlen for review by WAI
1				
2				

11 Authorization

Approved By: _____

Executive Vice President Sustainability

Date

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APPENDIX 1 - WASTE INFORMATION

Categorisation of waste within the European Union is encompassed within Commission Decision 2000/532/EC which establishes a list of wastes that are considered to be hazardous and a list of wastes other than Hazardous Waste. The Decision establishes the accepted standard of the European Waste Catalogue (EWC) within which wastes are assigned a six digit code, suffixed in appropriate cases with an asterisk to indicate the status of particular wastes as Hazardous Wastes.

The first two digits identify the 'Chapter' i.e. description of the overall activity from which the waste is produced. For the purposes of example:

Chapter 01 – Deals with waste from exploration, mining, quarrying and chemical treatment of minerals.

In each 'Chapter' there then follows sub divisions denoted by the next two digits.

Chapter 01 01 – waste from mineral excavations.

Chapter 01 03 – wastes from physical and chemical processing of metalliferous minerals, and so on.

The final, (5th and 6th), digits identify individual wastes.

Chapter 01 01 01 – wastes from mineral metalliferous excavation.

When hazardous wastes are identified, the six digit code has an asterisk applied as a suffix. e.g. 01 03 04* - denotes acid-generating tailings from processing of sulphide ore.

All of the above examples centre on the overall categorisation of waste from mining.

There are 20 chapters within the EWC with the codings used within EU states in all areas of waste management.

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Liquid Wastes						
Type	RoA and EU Classifications	Source(s)	Collection and Storage Details	Safety/Handling Requirements	Disposal	Comments
Acid/Caustic Solutions	EWC 06-01-06 Other acids 06-02-05 Other bases 16-06-06 Collected electrolyte from batteries and accumulators. RoA Classes I to III	Acid from spent batteries. Spent/used caustic cleaning solutions. Generated at camp sites, vehicle maintenance areas and work sites. Reagents used in WWT Plant for neutralisation of acid drainage as part of treatment process.	Collect in properly labelled plastic drums placed at designated/ strategic locations. Store in sealed, properly labelled and segregated plastic drums placed in a closed container located within the designated hazardous waste storage facility/area.	Consult MSDS of Original material. Segregate acid and caustic solutions. Avoid skin contact or ingestion. Avoid acid/caustic fumes. Wear standard PPE potentially supplemented with acid/caustic-resistant gloves, acid/caustic-resistant apron, and/or face shield when handling this waste.	Drums cleaned and residues put through WWTP. Drums for re-use or scrap metal. Small arising of acid electrolyte from accumulators put through WWTP with acidic drainage materials for treatment.	Neutralizing materials must be readily on hand in the event of an accident or spillage. Drums containing waste acid/caustic solutions must be transported in over- packs or other container that provides secondary containment.

Liquid Wastes						
Type	RoA and EU Classifications	Source(s)	Collection and Storage Details	Safety/Handling Requirements	Disposal	Comments
Glycol and Antifreeze	EU: 16 01 14* Antifreeze fluids containing dangerous substances. 16 01 15 Antifreeze substances other than those mentioned in 16 01 14.	Vehicle/engine maintenance. Dehydrators.	Collect in properly labelled plastic or metal drums placed at designated/strategic locations. Store in sealed, properly labelled metal or plastic drums placed in a closed container located within the designated hazardous waste storage facility/area.	Consult MSDS of original material. Avoid skin contact or ingestion. Wear standard PPE, safety glasses/goggles, potentially supplemented with disposable coveralls, chemically resistant gloves, chemically resistant apron, and/or activated carbon- equipped breathing protection device when handling this waste.	This material will be recycled where possible. Material that is not recycled shall be temporarily stored on site until it can be collected by a licensed contractor for off site disposal at an appropriate facility or stored on site in sealed drums for return to supplier.	Drums containing waste glycol /antifreeze if removed from site, must be transported in over- pack containers or in containers that provide secondary containment.

Liquid Wastes						
Type	RoA and EU Classifications	Source(s)	Collection and Storage Details	Safety/Handling Requirements	Disposal	Comments
Solvents	EWC 14-06-03* Other solvents 14 06 03* RoA Classes I to III	Cleaning operations. Plant maintenance.	Store in original (manufacturer's) container(s) or in sealed, properly labelled metal or plastic drums placed in a closed container located within the designated hazardous waste storage facility/area.	Consult MSDS of original material. Avoid skin contact or ingestion. Wear standard PPE potentially supplemented with disposable coveralls, chemically resistant gloves, and / or activated carbon-equipped breathing protection device when handling this waste. Supplied air may be required depending waste characteristics. Consult with the facility safety officer to assist with PPE selection.	Store in drums for return to supplier for recovery or held in secure hazardous waste drum storage area pending identification of in Country recovery/disposal facility.	Includes petroleum- based waste solvents such as kerosene, paint thinner or stripper, gasoline, toluene and xylene. Drums containing waste/ used/spent solvents of transported off site, will be contained in over-packs or other container that provide secondary containment.

Liquid Wastes						
Type	RoA and EU Classifications	Source(s)	Collection and Storage Details	Safety/Handling Requirements	Disposal	Comments
Hydrotest Fluid	EWC 16-10-02 RoA Classes III to IV	Integrity testing of pipelines, tanks, vessels.	N/A Hydrotest fluids containing corrosion inhibitors and/or other chemical additives must be retained in a tank or lined? excavation prior to being discharged in order to allow for the required sampling, analyses, and potential pre-release treatment(s).	Wear standard PPE potentially supplemented with rubber gloves, when handling this waste.	Retention in bulk storage tanks or drums dependent upon quantity. Re-use where possible. Assessment of actual quantity and suitability for treatment in WWTP.	Hydrotest fluids discharged to a surface water body must meet the effluent discharge quality standards presented in Mining Water Management Plan.

Liquid Wastes						
Type	RoA and EU Classifications	Source(s)	Collection and Storage Details	Safety/Handling Requirements	Disposal	Comments
Paint (and Other Coating) Waste	EWC 08-01-11 08-01-12 RoA Classes I to III	Notionally empty paint and coating containers.	Store in sealed, properly labelled metal or plastic drums placed in a closed container located within the designated hazardous waste storage facility.	Consult MSDS of original material. Avoid skin contact and ingestion. Wear standard PPE potentially supplemented with disposable coveralls, rubber gloves, and/or activated carbon- equipped breathing protection device when handling this waste.	Metal containers to be emptied or free content – prior to drum crushing and disposal as scrap metal. Liquid content to be stored in 200 litre drums for return to supplier.	Drums containing liquid residue of paint / coatings will be transported in over-pack containers or other container that provides secondary containment. Note: empty paint or coatings containers, brushes, rags, etc having only thoroughly dried (not simply surface dried) material can be disposed of as non-reusable, non- recyclable, non- hazardous waste.

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Construction and Building Waste						
Type	RoA and EU	Source(s)	Storage Details	Safety/Handling	Disposal	Comments
Asbestos containing material	EWC 17-06-05* Construction material containing asbestos RoA Classes I to II	Asbestos containing products will not be used on site. Only asbestos free materials will be sourced.	Store in sealed, properly labelled metal or plastic drums or in thick plastic bags (double bagged) placed in a closed container located within the designated hazardous waste storage facility/area.	Avoid skin contact or ingestion. Wear standard PPE (i.e., hard hat, face mask, steel-toed shoes/boots, safety glasses/goggles) potentially supplemented with rubber or leather gloves, disposable coveralls, and appropriate breathing protection device when handling this waste. Do not break apart asbestos-containing materials.	If encountered material will be disposed of to disposal Hazardous Waste landfill cell.	Keep asbestos containing materials moistened with water if possible.
Cement and Concrete waste (including cement contaminated soil)	EU 17 01 Concrete, bricks, tiles and ceramics. 17 05 Soils (including excavated soil from contaminated sites), stones and dredging spoil. RoA Classes III to V	Excess liquid cement not used during cementing operations, loose fragments of solidified cement, concrete debris from camp construction operations and pipe segment coating and soil containing cement.	Stockpile or store in an appropriate location. This waste is typically not containerized.	Wear standard PPE and leather gloves when handling this waste.	Dispose of to on site non-hazardous waste landfill cell.	

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Construction and Building Waste						
Type	RoA and EU	Source(s)	Storage Details	Safety/Handling	Disposal	Comments
Construction debris	EU: 17 Construction and Demolition Wastes (including excavated soil from contaminated sites) RoA Classes II to V	Wood, metal, glass, insulation, and other waste and debris associated with construction of facilities, buildings, pipelines, roads, etc.	Uncontaminated, reusable/recyclable, combustible and non- combustible materials: bulk storage in a suitable location at or store in sealed, properly labelled containers placed in an appropriate designated non-hazardous waste storage area. Hazardous materials: store in properly labelled, covered bins placed within a bermed area, and underlain by an impervious liner or in suitable, labelled, sealed containers placed in a closed container located within the designated hazardous waste storage facility / area.	Wear standard PPE and leather gloves when handling this waste.	Re-use on site as hard core for roads etc, remainder to non-hazardous waste landfill cell. Hazardous material to be transferred to on site Hazardous Waste landfill cell.	Potentially Re-usable /Recyclable material. Segregate metals, glass, and other recyclable materials identified in this table into appropriate storage areas.

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Construction and Building Waste						
Type	RoA and EU	Source(s)	Storage Details	Safety/Handling	Disposal	Comments
Contaminated Soil (Hydrocarbons)	EWC 17-05-03* Soils and stones containing dangerous substances RoA Classes I to III	Spilling and accidental release of fuels and oils.	Option A: Store in sealed, properly labelled metal or plastic drums placed in a closed container located within the designated hazardous waste storage facility/area. Option B (large quantities): Store in tarp- or thick plastic sheet-covered roll- off bins placed on temporary bermed pads underlain by an impervious liner.	Arise in small quantities – excavated sent to rock dump.	This material could be re-cycled where possible, using bio- remediation Large quantities of material will be collected and delivered to the Hazardous Waste landfill cell. Small quantities of contaminated soil will be containerized and delivered to the Hazardous Waste landfill cell.	

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Oil Wastes						
Type	RoA and EU	Source(s)	Storage Details	Safety/Handling	Disposal	Comments
Used motor or lubricant oil	EWC 13-01-13* 13-02-08* RoA Classes II to III	Vehicle and equipment maintenance.	Collect in properly labelled metal or plastic drums placed at designated/ strategic locations. Store in a designated, properly labelled steel tank placed within a bermed area underlain by an impervious liner or in sealed, properly labelled metal or plastic drums placed in a closed container located within the designated hazardous waste storage facility/area.	Consult MSDS of original material. Avoid skin contact or ingestion. Wear standard PPE potentially supplemented with disposable coveralls, chemically resistant gloves, and/or activated carbon - equipped breathing protection device when handling this waste.	Bulk, banded storage/200 litre drums. Transfer to the recovery site if available in Country – return to oil suppliers or combustion on site in an appliance with a robust capacity of 3 megawatts or less – heat generation to be used for space heating in workshop areas and the likes.	Re-usable/Recyclable material. Drums containing used lube / motor oil will be transported in over- packs or other container that provides secondary containment.
Oil Filters and Oil Filter Sludge	EWC 16-01-07* RoA Classes II to III	Vehicle/plant maintenance.	Collect in properly labelled metal or plastic drums placed at designated/ strategic locations. Store in sealed, properly labelled metal or plastic drums placed in a closed container located within the designated hazardous waste storage facility/area.	Avoid skin contact with or ingestion of oil. Wear standard PPE potentially supplemented with disposable coveralls, chemically resistant gloves, and / or activated carbon- equipped breathing protection device when handling this waste.	Drain free oil and transfer to drum storage. Remaining oil contaminated material to be placed in 200 litre drums and transferred to Hazardous Waste landfill cell.	Drain all free liquids from filters prior to placement in a storage drum with HDPE bag liner. Recover drained liquids and manage as Lube Oil / Motor Oil.

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Oil Wastes						
Type	RoA and EU	Source(s)	Storage Details	Safety/Handling	Disposal	Comments
Oily Debris	Absorbents, wiping cloths and protective clothing contaminated by oils, including hydraulic hose. EWC 15-02-02* 15-02-03	Oils rags from maintenance of vehicles, equipment. Oils absorbents/materials from maintenance shop and spill clean-up activities.	Collect in properly labelled metal or plastic drums placed at designated/ strategic locations. Store in sealed, properly labelled metal or plastic drums placed in a closed container located within the designated hazardous waste storage facility/area.	Avoid skin contact with or ingestion of oil. Wear standard PPE (i.e., hard hat, face mask, steel- toed shoes/boots, safety glasses/goggles), potentially supplemented with disposable coveralls, chemically resistant gloves, dust mask and/or activated carbon- equipped breathing protection device when handling this waste.	Contained within sealed drums and transfer to Hazardous Waste landfill cell.	

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Recyclable Wastes						
Type	RoA and EU	Source(s)	Storage Details	Safety/Handling	Disposal	Comments
Plastic and Rubber	EU: 15 01 02 Plastic packaging 20 01 39 Plastics (household waste) RoA Classes IV to V	Packaging. Consumables and domestic products. Repair/replacement of rubber or plastic parts. Plastic drinking water bottles.	Collect in properly labelled metal or plastic drums or other suitable containers placed at designated/ strategic locations. Store in sealed, properly labelled containers direct to non-hazardous waste streams.	Wear standard PPE (i.e., hard hat, face mask, steel-toed shoes/boots, and safety glasses/goggles) when handling this material.	This material will be re-cycled where possible. Material that cannot be re-cycled shall be directed to non-hazardous landfill cell.	Possible re-usable/ Recyclable material.
Scrap Metal	EU: 16 01 04* End-of-life vehicles. 20 01 40 Metals (household waste)	Camp construction and maintenance. Vehicle/equipment repair and maintenance. Pipeline construction.	Bulk storage (potentially using a roll- off bin) in an appropriate location at a designated area for reusable/recyclable materials.	Wear standard PPE (i.e., hard hat, face mask, steel- toed shoes/boots, safety glasses/ goggles) and leather gloves when handling this waste.	This material will be re- cycled where possible. Material that cannot be re-cycled shall be Disposed of as non-hazardous waste.	Re-usable/Recyclable material. Contaminated scrap metal if not suitable for recycling to be directed to Hazardous Waste landfill cell.

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Recyclable Wastes						
Type	RoA and EU	Source(s)	Storage Details	Safety/Handling	Disposal	Comments
Glass	EU: 16 01 20 Glass (vehicles) 20 01 02 Glass (household waste) RoA Classes IV to V	Plate glass from housing and vehicle windows, bottles, jars, human consumables, and "household products".	Segregate for subsequent re-use / recycling or disposal. Collect in properly labelled metal or plastic drums or other suitable containers placed at designated/strategic locations. Store in properly labelled containers placed in an appropriate designated non-hazardous waste storage area.	Wear standard PPE and leather gloves this handling when waste.	Directed to non-hazardous landfill cell. Intact articles recycled to local community where possible.	Re-usable/Recyclable material. No broken glass will be recycled to local communities or individuals.

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Type	RoA and EU	Source(s)	Storage Details	Safety/Handling	Disposal	Comments
Barrels ,Drums, Containers and Gas Cylinders (Empty)	EU:15 01 04 Metallic packaging 15 01 10 * Packaging containing residues of or contaminated by dangerous substances. 16 05 Gases in Pressure containers and discarded chemicals. RoA Classes II to V	Construction operations: generated at campsites, vehicle maintenance areas, work sites, etc.	Containers that held foodstuffs or non- hazardous material: store in appropriate designated non-hazardous waste storage area. Containers that held hazardous/ dangerous/toxic materials: store in tarp-or thick plastic sheet -covered properly labelled roll-off bin placed within a bermed area underlain by an impervious liner or in suitable, labelled, sealed container placed in a closed container located within the designated hazardous waste storage facility/area. Empty gas cylinders: properly secure and store in designated empty gas cylinder storage area.	Consult MSDS of original material stored in the drum/barrel/container. Avoid physical contact with residues in empty containers, especially those that contained hazardous/dangerous/toxic materials. Wear standard PPE and appropriate protective gloves (leather, chemically resistant rubber) when handling this waste.	This material will be recycled at site where possible or returned to the provider for recycling or disposal. Drums and barrels washed out where possible and residues to WWTP. Clean barrels/drums for re-use on site or crushed for scrap metal. Non cleansed or unsuitable containers to Hazardous Waste landfill cell. Empty gas containers returned to suppliers.	Metal containers that have come into contact with hazardous chemicals or oily materials are to be used for storage of similar hazardous materials or stored for eventual disposal in an approved hazardous waste-capable waste management facility.

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Storage and Workshop Wastes						
Type	RoA and EU	Source(s)	Storage Details	Safety/Handling	Disposal	Comments
Batteries: Vehicles, Acid-Cell or Instrument	EWC 16-06-01* 16-06-02* 16-06-04 16-06-05 RoA Classes I to II	Electrical and electronic equipment. Domestic applications.	Store in sealed, properly labelled and segregated plastic drums or containers equipped with suitable absorbent and neutralizing material(s) and placed in a closed container located within the designated hazardous waste storage facility/area.	Avoid skin contact with or ingestion of acid. Avoid acid fumes. Wear standard PPE potentially supplemented with acid/caustic-resistant gloves, acid/caustic-resistant apron, and/or face shield when handling this waste. Do not damage or crack batteries.	Drained of electrolyte to WWTP. Battery disposal as scrap if supplier available or returned to original supplier.	Re-usable/Recyclable material. Includes spent lead acid, Nickel, cadmium, lithium, and mercury-cell batteries. Neutralizing materials must be readily on hand in the event of an accident or spillage.
Tyres	EU: 16 01 03 End-of-life tyres RoA Classes III to IV	Maintenance of automobiles, trucks, and heavy equipment.	Segregate for recycling; store tyres in a covered area to prevent accumulation of rainwater or facility cleaning water on the inside of the tyres.	Wear standard PPE potentially supplemented with leather gloves when handling this waste.	These should be returned to the manufacturer where possible. May be used as drainage material or on site landfill cells. Tyres over 1,400mm old to non-hazardous landfill cell if not suitable for return to supplier.	Re-usable/Recyclable material. Ensure that stored tyres do not collect water and form a habitat for mosquitoes and that tyres recycled to local communities are not intended for burning.

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Domestic Waste					
Source(s)	RoA and EU Classifications	Storage Details	Safety/Handling Requirements	Disposal	Comments
Discarded items from the kitchens, living quarters, bathrooms, laundries, warehouses, offices etc.	EU: 20 Municipal Wastes (Household waste and similar commercial, industrial and institutional wastes) including separately collected fractions. RoA Classes III to V	Collect in properly labelled bins/containers placed at designated/strategic locations. Segregate re-usable/recyclable materials using separate, labelled containers. Store in sealed, properly labelled containers placed in an appropriate designated non-hazardous waste storage area.	Wear standard PPE (i.e., hard hat, face mask, steel- toed shoes/boots, safety glasses/goggles) and leather gloves when handling this waste.	Non-recyclable, non- hazardous to on site non-hazardous landfill cell.	Potentially Re-usable Recyclable material. Segregate re-useable/recyclable materials to appropriate areas. Dispose of remainder. Refer to CSoWaMP.
Fluorescent Tubes & Discharge Lamps	EWC 20-01-21* RoA Classes –II to III	Secure closed containers stored in hazardous waste storage area.	Wear standard PPE (i.e., hard hat, face mask, steel- toed shoes/boots, safety glasses/goggles) and leather gloves when handling this waste and keep articles intact.	Stored on site pending in country disposal outlet otherwise to be dealt with as part of closure procedure.	

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Medical Waste					
Source(s)	RoA and EU Classifications	Storage Details	Safety/Handling	Disposal	Comments
Waste generated by medical procedures, first aid, and routine clinical procedures.	EU: 18 01 Wastes from natal care, diagnosis, treatment or prevention of disease in humans. RoA Classes I to III	Sharps: Collect in special designated/properly labelled sharps disposal container. Non-sharps: Collect in special designated/properly labelled biohazard bag. Store both in an onsite medical clinic until time of disposal or in sealed, properly labelled containers placed in the designated hazardous waste storage facility/area.	Wear disposable latex gloves when handling this waste.	Amulsar Mine management will dispose of infectious medical waste through one of the two appropriate disposal facilities, either in Echmiadzin City or at the Medical University. Non-infectious medical waste to non-hazardous landfill cell.	