

REPUBLIC OF RWANDA



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STANDARDS ON THE MANAGEMENT OF WASTE DISPOSAL SITE (LANDFILL)

Pursuant to the Law n° 39/2001 of 13 September 2001 establishing the Rwanda Utilities Regulatory Agency (RURA) of certain Public Utilities, in its ARTICLE 1 highlighting its mandate to regulate sanitation services, and based on the responsibilities of a Regulatory Agency of:

- Ensuring that certain utilities provide goods and services throughout the country to meet in transparency all reasonable demands and needs of all natural persons and organizations;
- Ensuring that all utility suppliers have adequate means to finance their activities;
- Continually promoting the interest of users and potential users of the goods and services provided by utilities so that there is effective competition when competition is introduced in each utility sector and protection of users from abuses of monopoly positions is ensured due to the fact that certain Public utility sectors have a monopoly over the market ;
- Facilitating and encouraging private sector participation in investments in public utilities;
- Ensuring compliance by public utilities with the laws governing their activities;

Considering the need of having regulatory tools so as to improve the delivery of sanitation services in terms of waste disposal, the management of RURA Hereby issues the following Directions:

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STANDARDS ON THE MANAGEMENT OF WASTE DISPOSAL SITE (LANDFILL)

The following standards shall apply to the establishment, maintenance, and operation of solid waste disposal sites (landfill sites) within the country.

1. DEFINITIONS

- **Aquifer:** A water-bearing strata of fractured or permeable rock, sand or gravel;
- **Active Landfill:** A landfill that is accepting solid waste for disposal
- **Closed Landfill:** A landfill which is no longer accepting solid waste for disposal and has documentation that closure was conducted in accordance with the applicable statutes, regulations, and local ordinances in effect at the time.
- **Regulatory Agency:** The Agency for the Regulation of certain public utilities established by Law n° 39/2001.
- **Effective fence** is a fence constructed and erected in order to:
 - (a) prevent any unauthorized or illegal access and dumping at the site;
 - (b) prevent removal of waste from the site;
 - (c) prevent access of milk or meat production animals to the site; and
 - (d) curtail the spreading of wind-blown paper and plastic material;
- **Landfill:** Any location within a solid waste disposal site used for the permanent disposal of waste where the organic portion of the waste is subject to natural processes of aerobic and anaerobic decomposition
- **Landfill Gas:** Any untreated, raw gas derived through a natural process from the decomposition of organic waste deposited in a solid waste disposal site or from the evolution of volatile species in the waste.
- **Leachate :** An aqueous solution with a high pollution potential, which mainly results when water is permitted to percolate through decomposing waste. It contains final and intermediate products of decomposition, various **solutes** and waste residues;
- **Inactive Landfill:** A landfill that is no longer accepting solid waste for disposal
- **Registered person:** Refers to the person who has been registered by the Competent Authority and who is legally responsible for the site, both during operation and after closure;
- **Solid waste:** All putrescible and nonputrescible solid and semisolid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid or semisolid wastes, and other discarded solid and semisolid wastes or animal solid and semisolid wastes, and other discarded solid and semisolid wastes.



- **Non-decomposable Solid Waste:** Materials which do not degrade biologically to form landfill gas. Examples include, but are not limited to, earth, rock, concrete, asphalt paving fragments, clay products, inert tailings, inert plastics, plasterboard, vehicle tires, glass, inert slag, asbestos, and demolition materials containing minor amounts (less than 10 percent by volume) of wood and metals.

2. GENERALS

- No city, district, sector, cell, public/private or municipal corporation shall acquire and operate, or cause to be acquired and operated, a dump or site for the disposal of garbage or refuse, or a transfer station or collection point for garbage or refuse, within the country without the consent of the Regulatory Agency
- The technical design of the landfill shall meet the standards required by the Regulatory Agency (RURA) to ensure that the operation of the facility does not cause an adverse effect or give rise to a significant risk of a potential adverse effect occurring.
- These directions do not exempt the registered person from any other relevant legislation. Proof of exemption must be submitted to the Regulatory Agency
- If the Site is an existing Site and not zoned for waste disposal, and if consent cannot be provided by the Regulatory Agency for waste to be disposed on the Site, the registered person must within a period of 60 days following the application for registration, apply for the rezoning of the Site for waste disposal purposes.
- The registered person must take all measures to ensure that no hazardous, medical and scheduled pharmaceutical products waste is disposed of on the Site

3. LOCATION

1. The location of the landfill should not give rise to any adverse effects or a significant risk of any adverse effects occurring.
2. Solid waste landfills shall meet the following minimum technical location standards:
 - a. The bottom of the landfill shall be at least 3 meters above the seasonal high ground water level;
 - b. The maximum height of the Site above ground level must not exceed three (3) meters.
 - c. The slope of the sides of the Site must be constructed in such a manner that little or no erosion occurs.

- d. The edge of the landfill shall be not closer than sixty (60) meters to a surface water body and hundred (100) meters upstream from a public water supply well;
- e. The landfill shall not be located in aquifer recharge areas or public water supply catchment areas unless there are no other feasible alternatives, in which case the landfill shall be lined with appropriate material and subject to additional water quality monitoring.

4. LAND USE IMPACTS

1. No landfill site shall be located in any area where it is likely to have a significant negative impact on existing land uses.

2. All new landfill sites shall meet the following criteria:

- a. The site shall not be closer than three thousand (3,000) meters from an airport, airfield or site reserved for the construction of an airport or airfield;
- b. The site shall be located and operated in such a manner that it does not create significant negative impacts on flora and fauna on adjoining land;
- c. The site shall not be closer than four hundred (400) meters from an existing residential development;
- d. The edge of the landfill shall not be closer than hundred (100) meters from an area to which the public have access, a national park, protected area or an area having national historical or archaeological significance;
- e. There must be a buffer area around the landfill of at least twenty (20) meters to allow provision for visual screening from adjoining properties.
- f. Landfill access roads shall be located and constructed so as to have a minimum impact on adjacent residents.

5. LANDFILL DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE REQUIREMENTS

- The following are the provisions that are designed to improve landfill safety and provide operational flexibility:
 - All new phases of landfills should be constructed with double composite liner systems. This type of liner provides secondary containment for leachate and, through a collection system installed between liner layers, detects leakage before it enters the groundwater underneath the landfill. Double liners may not be required where a landfill is expanding vertically over an area that is already lined, depending on the type and quality of the existing liner, the type of waste that will be placed in the expanded area, and the length of time that the expanded area will be used.

- While designing a landfill, should be a point of compliance for groundwater standards, one hundred and fifty (150) meters from the edge of the system designed to control waste or the property line (whichever is less). Groundwater contamination from a landfill that extends beyond the point of compliance must be assessed and remediated (if necessary).
- Landfills will be allowed to recirculate leachate at landfills with double liners. This speed up the decomposition of a landfill and allow it to stabilize over a shorter time period than would be needed if leachate is discharged to a wastewater management system.
- New sites must comply as follows:
 - (a) Before disposal may commence on the Site after construction of the Site, the Regulatory Agency (RURA) must be notified and the Registered Person must submit a letter indicating that the construction of the Site is in accordance with recognized civil engineering practice.
 - (b) The completed construction works of the Site must be inspected by an official from the Competent Authority
 - (c) If the Regulatory Agency is satisfied with the construction of the Site, the registered person may use the Site or any further development within the Site for the disposal of waste.
- Works must be constructed and maintained on a continuous basis by the registered person to divert and drain from the Site all runoff water arising on land adjacent to the Site and to prevent such runoff water from coming into contact with leachate from the Site.
- Adequate provision must be made on Site for drinking water, sanitation and other necessary facilities for workers

5.1 Screening: The site shall be reasonably screened from adjoining developing properties and public streets or highways by placement of landscaped area and areas adjacent to every property line, within which yard or area will be placed an ornamental fence, wall or hedge or landscape berm. This shall be in addition to such desirable vegetation as may exist within the landscaped area.

5.2 Access Roads: All access to the site shall be by a route

5.3 Control of Operation Time: A limit shall be placed on the operating time from 6:00 a.m. to 6:00 p.m. This limitation on operating time may be waived by the Regulatory Agency (RURA) in times of public or private emergency for the duration of such emergency.

6. OPERATION

- Waste disposed of on the Site must be compacted and covered on a monthly basis with a minimum of 150 millimetres of soil
- Burning of waste on the Site will only be allowed under the permission of the Regulatory Agency confirming that it does not have a detrimental impact on the environment and operation of the Site.
- Disposal of dead animals, rejected carcasses, parts of dead animals, contaminated food, food rests or any edible material must be immediately carried out when brought onto the Site by burying it in trench and covered with at least 500 millimetres soil
- The registered person must take steps to ensure that the Site is operated in a manner that will prevent the creation of nuisance conditions or health hazards.
- The registered person must apply sufficient dust control measures to prevent wind-blown dust from causing nuisance conditions or health hazards.
- Wind-blown litter leaving the Site must be collected on a daily basis.

7. LANDFILL REHABILITATION AND RESTORATION

- The purpose of this section is to insure the future use of a site after its use as a solid waste disposal site has been completed. A restoration plan shall be consistent with the land use planning policies of Rwanda.
- The landowner and the holder of any permit to operate the site shall be jointly and severally liable for the eventual site restoration as described in the plans submitted with the permit application.
- Upon completion of the use of the site for solid waste disposal according to the permit and plan, or upon economic abandonment of the site as a disposal site, the landowner and the holder of any permit to operate the site shall have a reasonable time to rehabilitate and restore the site as described in the business plan.
- All excavations and pits shall be backfilled, leveled, contoured, or both, for the uses shown on the restoration plan and shall be compatible with the final depth and slope of the site.
- Filled landfills offer opportunities for landscaping and development of public open space in areas of former industrial or mining dereliction. Thousands of trees should often be planted on the perimeter of a large modern site. Top soil shall be replaced to sufficient depth to allow landscaping material to be installed.
- When appropriate, the Regulatory Agency may specify a schedule of rehabilitation for portions of the property as their use for solid waste disposal operations is completed or terminated. The schedule shall be considered part of the rehabilitation or restoration plan.

8. PROTECTING THE WATER TABLE

Before any waste enters the site, an engineered pit lining system is constructed to seal it from the surrounding rock, soil strata and water table. State-of-the-art landfill sites are designed to ensure that water entering the site is contained within the mass of materials stored. During use capping systems and small working faces limit the ingress of rain water.

9. SAFETY PROCEDURES REQUIRED DURING THE ACTIVE LIFE OF A LANDFILL SITE

- **Deposit**

Rubbish should be deposited in consistent even layers according to strict engineering procedures.

These ensure safe decomposition and a stable body of refuse.

- **Monitoring**

Decomposing waste can generate landfill gas (LFG) and noxious liquid (leachate). A professionally administered landfill should be checked for potentially explosive gas migration. Ground water quality should be also regularly monitored.

- **Methane from landfill**

LFG is predominantly methane. Currently about 70% escapes into the atmosphere and the rest is either flared off or used for power generation.

- **After-care for full sites**

Landfill operators should not only have to provide reassurance of minimal impact on local communities during a sites' productive life, but for many years after it is full.

- **Risk responsibility**

Legislation should provide for the original operator to be held liable if a closed site develops problems.

- **Weight for wastes at landfill site**

Weighbridge should be provided at all landfill, and they must be calibrated twice a year.

10. ACCESS CONTROL

1. Weatherproof, durable and legible notices in the official languages applicable in the area must be displayed at each entrance to the Site which prohibits unauthorized entry and include the hours of operation, the name, address and telephone number of the registered person and the person responsible for the operation of the Site.
2. The Site must be effectively fenced or otherwise secured to prevent unauthorized entry.
3. The registered person must:
 - a. Take steps to maintain service roads in a condition which ensures unimpeded access to the Site for vehicles transporting waste and to keep the roads free of waste;
 - b. Ensure that all entrance gates are locked outside the hours of operation;
 - c. Ensure effective access control; and
 - d. Take all reasonable steps to prevent the disposal of waste on the Site for which the Site has not been approved.

Kigali, on 11/11/2009

...Signed.....

MUKASINE Marie Claire

Chairperson