

# Inert (Construction & Demolition) Landfill Design and Operational Guidance

## General

Inert material (i.e. construction and demolition waste) is bulk refuse originating from construction, demolition, renovation and re-development projects. It does not include waste dangerous goods or material contaminated with waste dangerous goods. Inert material can be reused or recycled. You can find information on re-using and recycling inert material in the [Construction and Demolition Waste Management and Disposal](#) guidance document.

Inert material can only be disposed of in a landfill if there is no alternate use for it, or if several waste types are mixed together. However, keep in mind that disposal of inert material at a landfill can pose problems for landfill operators. Bulky loads of inert material are difficult to cover and compact, and having large volumes of inert material in a landfill cell reduces the amount of airspace (i.e. the volume available for waste disposal).

If you are a landfill owner, you may choose to construct a cell designated solely for inert waste either at an existing landfill or at a new site, due to the nature of certain inert materials. This can extend the lifespan of a municipal or industrial landfill cell by diverting these materials away from the main landfill site. Inert landfill cells have different requirements for design, construction and operation than municipal solid waste and industrial landfill cells. This results in less work to manage the waste, which could save municipalities money.

This document provides information required by the Ministry of Environment to complete the approval process for designing and operating an inert waste landfill. If you intend to establish an inert landfill, you must apply for a permit from the ministry.

Inert landfills must be designed to protect human health and the environment. Site suitability information is required in the design stage, including when you are altering or expanding existing landfills.

Non-municipal (or privately owned) inert landfill operators must submit a financial assurance plan to the ministry, as required by *The Environmental Management and Protection (General) Regulations*, section 8(2)(o) and 9(1).

## Application to Establish, Construct and/or Operate

If you are a landfill owner, you need to submit an application for a Permit to Establish, Construct and/or Operate a Waste Disposal Ground through the ministry's [online business portal](#). You will receive an automated email receipt of the document submission and the ministry will review the application within six to eight weeks. The application should include:

- A. Site Suitability Report – The site suitability report should describe the siting of the landfill and the technical investigation results. The technical investigation is used to fully characterize the site-specific design requirements and protect the environment. This information should also be used when preparing the operations plan for the inert landfill. The report should include:
  - a. A site plan that details the topography and surface water hydrology within 1,000 metres of the proposed site; and
  - b. A detailed description of the site's geological and hydrogeological conditions.
  
- B. Design Plan – The report should include a design that meets the requirements listed below and should:
  - a. Include the location and surrounding land use. Location setback distances must be maintained in accordance with *The Municipal Refuse Management Regulations*.
  - b. Identify the activities proposed, including volumes, types of waste and anticipated waste tonnage to be disposed of each year during the design lifespan.
  - c. Considering the results of the technical investigation, include final, sealed engineered drawings that consider construction quality control assurance procedures and incorporate environmental protection through:
    - A seepage barrier system
    - A surface water management system;
    - Leachate management (if applicable);
    - A groundwater monitoring system (if applicable); and
    - A final cover system.
  - d. Include a site plan showing:
    - The legal site boundary;
    - The location of site access, roads, earth works, buildings and infrastructure;
    - Hydrologic information and land use; and
    - Any other environmental information pertinent to the site plan.

## Design Requirements

The landfill design plan must be prepared by a person who has received a professional licence through the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGGS) or is approved by the ministry, and has the core skills and competencies to design a landfill. You must then construct the landfill according to the design.

The design plan must meet the following requirements.

- Groundwater must always be at least one metre below the base of the landfill liner.
- A minimum of one metre of soil with a hydraulic conductivity of not more than  $1 \times 10^{-5}$  cm/sec or a liner constructed of material that will meet or exceed the minimum requirement with ministry approval.
- A person who has received a professional licence through APEGGS, or is approved by the ministry, must determine if the proposed site is suitable for an inert waste landfill. Groundwater monitoring wells may be required depending on site conditions.

- Leachate collection is not required, but excess leachate in the cell may cause issues with compaction and covering of the waste. You should evaluate the option for leachate collection based on regional precipitation. Leachate design depends on the site suitability results.

## Construction Verification

Once you have completed construction, you must notify the ministry before starting operations. You must abide by all conditions outlined in the Permit to Establish, Construct and/or Operate a Waste Disposal Ground. Submit the construction verification through the ministry's [online business portal](#). The ministry will issue a Permit to Operate once you have met all permit requirements.

## Operational Requirements

You must have an operations plan in place no later than 60 days before completing construction of the inert landfill cell. The operations plan must include, but is not limited to, the following.

- A. A list of accepted inert materials, a waste screening program and an education program for the public;
- B. Operational procedures, such as waste control, surface water management, leachate management (if applicable), cover and compaction, and nuisance controls;
- C. Design criteria, including maximum waste contours and elevation for final cover and maximum freeboard;
- D. Details on maintaining operating records;
- E. A program for detecting and preventing hazardous and unauthorized waste disposal;
- F. Waste acceptance and placement procedures in the active landfill area;
- G. A monitoring and maintenance program;
- H. A surface and groundwater management and monitoring program, including compliance levels, if required;
- I. A remediation plan to deal with groundwater quality deterioration, if applicable;
- J. Details on environmental inspections and maintenance; and
- K. Anything else that could affect the operation of the waste disposal area.

Cover and compaction requirements are based on what materials are accepted and what litter is generated. Inert material can be harder to compact because of its bulky nature; regular compaction can help ensure that landfill airspace is not affected.

Inert waste often contains other materials, such as municipal garbage, which need to be removed before landfilling. It is important to educate contractors and have a screening program to ensure that prohibited materials are not mixed into the inert waste.

## Accepted Materials

Inert landfills are designed and authorized to accept inert materials only. The following materials are considered inert.

- Concrete, bricks, mortar;
- Rubble, construction debris;
- Wood scrap, trees, stumps;
- Minimal scrap metal;
- Non-recyclable plastics (film plastics are discouraged due to littering potential);

- Asbestos disposal in the inert landfill cell may be authorized if handling and disposal meet the [Policy on the Disposal of Waste Asbestos](#);
- Tiles, ceramics, glass; and
- Drywall.

## Prohibited Materials

Only inert material should be disposed of in an inert waste cell. The following materials are prohibited in an inert waste cell.

- Hazardous substances or waste dangerous goods, including lead-based materials and rail ties;
- Municipal waste, including liquid domestic sewage;
- Medical and biomedical wastes;
- Radioactive wastes;
- Explosives;
- Bulk liquids;
- Free liquids, as determined by an accredited standard;
- Motorized vehicles or other large metal objects;
- Petroleum, petroleum remains or by-products; and
- Putrescible waste (i.e. animal carcasses).

## Construction and Demolition Landfill Decommissioning and Reclamation Plan

Municipal landfill owners are required to have a landfill decommissioning and reclamation plan in place no later than 60 days after the completion of construction of the landfill. Private or non-municipal landfill owners must have a decommissioning and reclamation plan and financial assurance plan in place before the ministry will issue a permit to construct.

The plan must include, but is not limited to:

- a) Physical closure steps (e.g. interim cover, litter cleanup, removal of temporary storage areas);
- b) Design and implementation of a final cover system that follows best management practices;
- c) Post-closure care, including environmental monitoring and reporting; and
- d) Corrective action plan implementation (if necessary).

More information can be found in the ministry's [Landfill Closure Guidance Document](#).

## Post-Closure Care

You should follow best management practices for post-closure care to maintain public safety and protect the environment. Consult a person who has received a professional license through APEGS or is approved by the ministry to ensure you are following post-closure care in accordance with the decommissioning and reclamation plan and corrective action plan (if applicable).

## Definitions

**Landfill** – A facility at which solid waste is permanently disposed of by placing it above or below ground (also waste disposal ground).

**Best management practice** – A technique or methodology proven as the best to use in a particular business or industry; usually described formally in regulations or guidelines.

**Site assessment** – An investigation and report (equivalent to a Phase II Environmental Site Assessment (ESA) for an *acceptable solution*) used to characterize physical site conditions and identify potential or existing environmental impacts. According to the Canadian Standards Association, the results of the Phase II ESA Standard are used to determine design specifications, ongoing monitoring requirements and corrective action.

**Design plan** – Project planning for the construction of a new landfill or alteration of an existing landfill, based on site characteristics.

**Owner of a landfill** – A government agency or municipality, or private owners.

**Municipality** – A municipality as defined in *The Interpretation Act, 1995*, including the Saskatchewan portion of the City of Lloydminster.

**Private owner of a landfill** – A person, other than a government agency or municipality, that owns or is in control of land that a landfill is being operated on.

**Corrective action plan** – A plan that details the methods to prevent, minimize, mitigate, remedy or reclaim adverse effects.

**Decommissioning** – The dismantling of infrastructure, land reclamation and remediation of a facility undertaken once the landfill has stopped accepting waste.

## Contact and References

Saskatchewan Ministry of Environment

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