

# Preparing for a Sanitary Landfill: The First Steps



INTEGRATED SOLID WASTE MANAGEMENT

Notes 8-1999

Environmental Management



*Integrated solid waste management involves consensus on the use of sanitary landfill for disposing of waste that cannot be recycled. The landfill facility includes a series of ponds that treats the “leachate” or “katas ng basura” to reduce water pollution as shown in the top photo.*

## Choosing to Build a Landfill

Open dumps are a common method of waste disposal for urban communities, with open burning of waste a widespread practice. But these dumps attract rats, flies, and other disease-carrying organisms, cause air and water pollution, and are known to have aggravated the spread of contagious and water-borne diseases. Thus, dumpsites have become a focus of citizens’ complaints not only because they are unsightly, but also because they emit noxious odors and adversely affect public health.

For cities and metropolitan regions with a rapidly increasing rate of population growth, the sanitary landfill may seem to be the only practical waste disposal solution. It responds to the mandate of local government units (LGU) under the Local Government Code to promote safe, sanitary, effective, and efficient solid waste management. A modern sanitary landfill is a method of solid waste disposal that minimizes hazards to public health by preventing the breeding of disease-carrying vermin and contamination of ground or surface water.

While landfills require large capital investments—as much as P15 million per hectare in development costs—a way of sharing the construction and maintenance costs while spreading the benefits is for a group of LGUs to share a common landfill facility. The service life of the landfill can be extended by using it only for non-recyclable and non-reusable waste. The landfill must be operated properly to avoid health and environmental risks.

The challenge to LGUs is to start the process of preparing for a landfill. In doing so, LGUs open themselves to options and opportunities for sustainable solid waste management methods.

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# Technology

## Overview of Steps Involved

Preparing the studies and the plan for a sanitary landfill usually takes at least two years. Follow these basic steps:

1. Formulate an integrated solid waste management (ISWM) program which includes a sanitary landfill component in addition to waste reduction, segregation, recycling, and improved collection. As a component of an integrated approach, a sanitary landfill takes care of waste that cannot be recycled (as promoted by recycling programs). It complements other special facilities that would handle toxic and hazardous wastes. The ISWM program should be the result of a planning workshop with the participation of concerned sectors.

Read [Local Governance Technical Notes \(LGTN\) on Integrated Solid Waste Management \(ISWM\) Notes 1-1999 on Moving Towards an Integrated Approach to Solid Waste Management](#), [LGTN-ISWM Notes 3-1999 on Organizing Joint Action on Integrated Solid Waste Management](#), [LGTN-ISWM 4-1999 on Helping Citizens Earn from Solid Waste](#), and [LGTN-ISWM](#)

[Notes 5-1999 on Promoting Programs to Convert Solid Waste to Organic Fertilizer](#).

2. Review the Comprehensive Land Use Plan of the city or municipality to determine if the LGU has already identified landfill sites, and, if it hasn't, assign the Technical Working Group's Engineering Committee to identify two or three potential landfill sites using Department of Environment and Natural Resources (DENR) Administrative Order (AO) 98-50 as guide. Give priority to government-owned land.  
3. Request the DENR Mines and Geosciences Bureau to conduct preliminary hydrogeological studies and evaluation of potential sites.  
4. Select a site based on the criteria set by DENR AO 98-50.  
5. Contact the [National Economic and Development Authority \(NEDA\) Project Development Assistance Committee \(PDAC\)](#) for assistance in conducting a pre-feasibility study. Organize a core group of technical personnel led by the Municipal Planning and Development Coordinator to coordinate the study.  
6. Contract a consulting firm to make the project feasibility study

and the detailed engineering design. The terms of reference for the study may be prepared jointly by the LGU and the NEDA-PDAC.  
7. Engage a consulting firm to prepare the Initial Environmental Examination (IEE) if the landfill area is less than five hectares or an Environmental Impact Statement (EIS) if it is more than five hectares.

### Checklist for Selecting the Right Landfill Site

#### Key Considerations

- Public health and safety
- Environmental damage
- Social acceptability
- Cost of development

#### Preferred Location

- A government-owned land
- Within 15 kilometers or 30 minutes from where garbage is collected

#### Unsuitable Site

- Highly porous soil prone to erosion
- Steep slopes greater than 20 percent
- Prone to flooding, e.g., low-lying areas
- Within 500 meters of any declared environmentally critical areas like forest reserves and wetlands
- Within 500 meters of active fault lines
- Upstream and near the source of surface or ground water for drinking
- Within three kilometers from airports
- Within 250 meters of commercial, residential, and industrial developments
- Areas classified as prime agricultural land
- Areas with water, gas, electrical power, or communication transmission infrastructure

### What is a sanitary landfill?

One of the easily understood definitions is that of the American Society of Civil Engineers which defines it as a method of disposing of waste on land without creating nuisances or hazards to public health or safety by utilizing the principles of engineering to confine the refuse to the smallest practical volume and to cover it with a layer of earth at the conclusion of each day's operation.

How does a sanitary landfill differ from an open dump? Consider the following:

Some Attributes	Open Dump	Landfill
1. Environmental clearance	None	Required
2. Pest and odor control	Minimal	Required
3. Collection and treatment of leachate ( <i>katas</i> )	None	Required
4. Gas collection and control	None	Required
5. Air, land, and water quality monitoring	None	Required
6. Burning of refuse	Allowed	Not allowed
7. Scavengers and animals	Allowed	Not allowed



## Policy and Practice

### Enabling Framework

DENR Administrative Order (AO) 98-49 provides guidelines and a time frame for the gradual phase-out of dumpsites, upgrading of disposal facilities from open dumps to controlled dumps, and establishment of sanitary landfills over a 5-10 year period, depending on the LGU classification. DENR AO 98-50 specifies the site selection criteria for sanitary landfill facilities.

Republic Act No. 7160, the Local Government Code of 1991, mandates LGUs to deliver efficient solid waste management services to their constituents, including the proper use of disposal facilities.

Presidential Decrees 552, 825, 856 and 984 provide rules and penalties covering sanitation and disposal.

Municipal and city ordinances on comprehensive integrated solid

waste management should provide for improved maintenance of dumpsites. A good example is General Santos City's Ordinance No. 08, Series of 1997 which introduces immediately doable, good dumpsite-keeping practices such as installing a control gate and security fence, monitoring the entry of people and vehicles, and maintaining drainage systems.

### Practices That Are Working

It was in response to recommendations of a multi-sectoral planning workshop on solid waste management that the Municipal Government of San Jose del Monte, Bulacan decided to build a sanitary landfill. Pressure on the Municipal Government to pursue the project came from residents near the present dumpsite.

A 4.3-hectare private land that was identified was approved by the DENR Mines and Geo-sciences Bureau as a suitable landfill site. The Municipal Government acquired the land and conducted surveys to generate baseline information for use in the development of the sanitary landfill. The surveys were done with assistance from other government agencies. The NEDA-PDAC Region III planning team prepared the project pre-feasibility study.

The Mayor issued an executive order creating a Municipal Initial Environmental Examination Team to conduct the baseline data gathering. Subsequently, the Sangguniang Bayan passed a resolution authorizing the Mayor to engage the services of a contractor to prepare the

site development plans and the detailed design of the sanitary landfill. The landfill will also include composting and materials recovery facilities.

To address the concerns of the neighboring communities related to the present dumpsite, the Municipal

Government of San Jose has taken proper waste management actions. They continue to promote an ecological waste management program which includes waste segregation, recovery of recyclable materials, and conversion of biodegradable waste to compost.



*Through the recommendations made at an integrated solid waste management multi-sectoral planning workshop, the Municipal Government of San Jose del Monte, Bulacan decided to build a sanitary landfill.*



# LGU Action Agenda

## Other Initiatives

Several local governments are in various stages of planning and implementing their sanitary landfill projects. Their experience may help you decide if your community needs one.

General Santos City, Tagbilaran City, and Puerto Princesa City have availed of assistance from the Philippine Regional Municipal Development Project (PRMDP) of the [Department of Interior and Local Government \(DILG\)](#). You may call the Solid Waste Management Council or Environment and Natural Resources Office (ENRO) of General Santos City at (083) 553-3042.

The cities of San Fernando, La Union, Iloilo, and Naga are availing of support from the Solid Waste Environmental Enhancement Program (SWEEP) which is funded by the World Bank. You may write the Office of the Mayor of these cities for more information.

Dumaguete City and the Municipal Governments of Sibulan, Bacung, and Valencia in Negros Oriental working together to establish a common sanitary landfill. Assisted by the DENR Mines and Geo-sciences Bu-

reau, the LGUs conducted a geological survey applying the site selection criteria set by DENR AO 98-50. The Dumaguete City Planning and Development Office is a good source of information on site identification. You may call them at (035) 225-0368.

The Municipal Governments of Kiamba and Maitum in Sarangani phasing out their dumps and replacing them with sanitary landfills. They have requested for assistance from the [DENR Mines and Geo-sciences Bureau](#), Region XII to conduct initial

site evaluation based on DENR AO 98-50. The site identified by Maitum passed the DENR evaluation criteria. While the Maitum landfill project is now in its pre-feasibility and Initial Environmental Examination stages, the Municipal Government of Kiamba is still considering other sites upon the recommendation of the Mines and Geo-sciences Bureau. If you want to learn more from their experience, you may write to the Office of the Municipal Agriculturist of Maitum, Sarangani.



*Dumaguete City, Sibulan, Bacung, and Valencia in Negros Oriental have agreed to a joint project to build a common sanitary landfill.*

## Resources and References

The Philippine Regional Municipal Development Program (PRMDP), the Solid Waste Environmental Enhancement Project (SWEEP), and the [Presidential Task Force on Waste Management \(PTFWM\)](#) accredited agencies and consulting firms that perform detailed engineering designs and site development plans of sanitary landfills. For information on accredited firms with experience in conducting pre-feasibility and feasibility studies, IEE, and EIS of sanitary landfill projects, you may call the PTFWM at (02) 426-2524.

The PTFWM and the [NEDA](#) Regional Offices have information on sources of financing and getting support for preparing feasibility studies, detailed engineering designs, hydrogeological studies, and IEE.

The *Solid Waste Management for Local Governments* is a comprehensive guide that contains information on what a local government needs to develop its ISWM program. It is published by the Project Management Office of the Presidential Task Force on Waste Management.

### What You Can Do

- Review your solid waste program and assess the need to phase out the current dumpsite and to develop a sanitary landfill.
- Visit existing sanitary landfills. Draw lessons from experiences of existing projects. Identify gains, shortcomings, and ways to avoid mistakes.
- Discuss with neighboring LGUs the possibility of having a common sanitary landfill facility.
- Develop an action plan on the sanitary landfill project that follows the basic steps in preparing the studies and plan for a sanitary landfill as listed in this *Local Governance Technical Notes*.