

# Cross Section of a Solid Waste Landfill Cell 1

7 Gas Monitoring System

8 Groundwater Monitoring System  
Landfills are constructed above the water table to protect the groundwater

6 Gas Collection System

Leachate Pump Station  
Pumped to Waste Water Treatment Plant

Electric Generating Station

13 Waste

9 Interim Cover

3 Daily Cover

11 Lift

15 Working Face

14 Stormwater Drainage System

10 Leachate Collection System

Waste

12-24" Sand

6-8" Collection Pipe

Gravel

10 oz Geotextile

2 60 mil Flexible Membrane Liner

Geosynthetic Clay Liner

4 Geocomposite Drainage Layer

60 mil Flexible Membrane Liner

Geosynthetic Clay Liner

Subgrade Soils

**Double Composite Liner System**  
Used in landfills where an existing minimum 10' clay layer is not present

Grass

6" Top Soil

Gas Pipe

24" Erosion Layer (Soil)

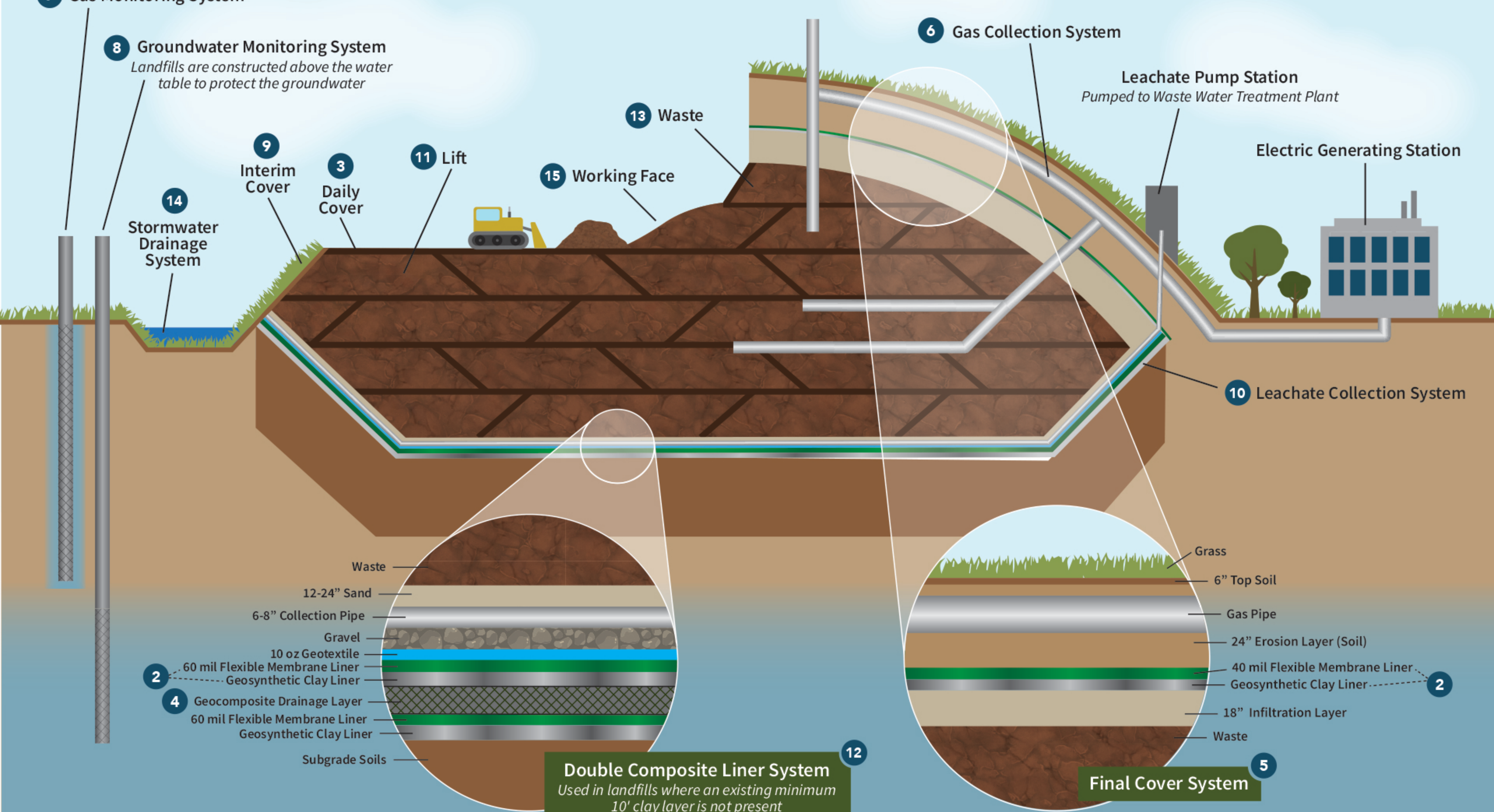
40 mil Flexible Membrane Liner

2 Geosynthetic Clay Liner

18" Infiltration Layer

Waste

**Final Cover System**



Today's landfills are entirely different than the old dumps. They are engineered structures, built into or on the ground, designed to hold and isolate the waste from the environment and personal exposure. There are different kinds of landfills subject to different regulations administered by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and the United States Environmental Protection Agency (U.S. EPA).

## GLOSSARY OF TERMS

- 1 Cell** – An open area in a landfill where waste is placed. Most landfills fill one cell at a time. When one cell is filled, a new cell is opened to accept incoming waste. Waste is placed and compacted in each cell in a manner that protects the landfill liner and the landfill gas and leachate collection systems.
- 2 Composite Liner** – The combination of a clay component directly overlain by plastic liner to prevent the movement of leachate and liquids (leakage from the landfill). A composite liner is 1,000 times more resistant to leakage than either component used alone.
- 3 Daily Cover** – A layer of soil placed on top of compacted waste at the working face at the end of each day. Daily cover functions to minimize odors, pests, and rodents. It also prevents waste from being blown out of the cell and reduces the amount of water that enters the cell. This reduces the amount of water that comes in contact with the waste and reduces leachate production.
- 4 Drainage Layer** – A layer in the landfill leachate collection system that is designed for the removal of liquids. Another drainage layer may be a component of the landfill leak detection system.
- 5 Final Cover System or Cap** – The system used to close a landfill or part of a landfill that is no longer accepting waste that is designed to keep waste in place and prevent water from entering the landfill. The final cover system includes a clay layer, a plastic liner, and a soil layer that is maintained with shallow rooted plants like such as grasses and wildflowers.
- 6 Gas Collection System** – A series of pipes and pumps used to collect and remove landfill gas from the landfill. Landfill gas is gas naturally created from bacteria decomposing the waste, made up of around 50% methane and 50% carbon dioxide.
- 7 Gas Monitoring System** – Gas sampling wells around the landfill that are monitored for methane to detect and prevent methane from moving below ground, through the soil, outside of the landfill. For landfills that have a gas collection system, the pipes throughout the landfill used to collect the landfill gas are also monitored to ensure the landfill gas collection system is operating properly and methane is not escaping the landfill.
- 8 Groundwater Monitoring System** - Groundwater monitoring wells around the landfill that are routinely sampled and evaluated to detect a release from the landfill.
- 9 Interim Cover** – One foot of compacted soil placed on top of cells where waste will not be placed in the landfill for 90 days (or more) with the purpose of preventing stormwater from coming into contact with the waste in the landfill.
- 10 Leachate Collection System** – A series of pipes and pumps used to routinely remove leachate settling on top of the primary liner in a landfill. A drainage layer is a part of the leachate collection system. Leachate is liquids released through the waste decomposition process and rainwater that has come in contact with the waste in a landfill.
- 11 Lift** – An 8- to 10-foot-thick layer of waste within a landfill cell.
- 12 Liner System** – The system of layers of protection that must be installed to protect groundwater and keep waste and leachate in the landfill.
- 13 Municipal Solid Waste** – Everyday household items we use and then throw away otherwise known as garbage.
- 14 Stormwater Drainage System** – The stormwater drainage system is designed to collect rainwater or snow melt that falls on parts of the landfill that have final and interim cover. The storm water drainage system may include plastic drainage pipes and ditches that collect and move the rainwater to a storm water storage pond. The Stormwater Monitoring Program designates specific locations in the drainage ditches and storm water ponds where samples are to be collected and routinely analyzed to detect a release from the landfill.
- 16 Working Face** – The area of the landfill within a specific cell where waste is currently being placed and compacted.

Visit [Michigan.gov/SolidWaste](https://www.michigan.gov/SolidWaste) for more definitions and information about how landfills work, and to learn more about solid waste and materials management in Michigan.

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