



GAS COLLECTION AND ODOR CONTROL

Bacteria in the landfill break down the organic waste, producing landfill gas containing approximately 50 percent methane and 50 percent carbon dioxide with small amounts of nitrogen, oxygen and hydrogen sulfide. To control odors and greenhouse gas emissions, the methane is collected and destroyed.

To do this, an extensive series of pipes, under vacuum, are embedded horizontally and vertically within the landfill, capturing the gas which is then burned off. Other methods of odor control include properly covering the waste and spraying deodorants, enzymes and hydrogen sulfide neutralization materials on the waste.



LANDFILL GAS-TO-ENERGY

The gas extraction system is connected to a vacuum blower that “sucks” landfill gas out of the waste and conveys the landfill gas via a pipe system to the landfill gas management area. At the landfill gas management area, the landfill gas enters the landfill gas pre-treatment system for removal of hydrogen sulfide before being conveyed to the combustion devices.

The primary combustion device is the landfill gas-to-energy (LFGTE) facility which uses landfill gas as a fuel to create electricity that is distributed to the electrical grid.

TAKE A LANDFILL TOUR

Visiting the landfill can be a great learning opportunity for your school or organization. Our experienced guides will explain in detail how a modern day landfill works, showing how non-recyclable waste is properly managed in an environmentally safe way.

Schedule a tour for your group today! Please contact Tracy Markham at **774-364-1940** or email tracy.markham@casella.com



INNOVATION

At Casella, we’re developing and operating state-of-the-art disposal facilities that provide an innovative, responsible approach to protecting our natural resources and the environment.

COMMUNITY

Through sustainable environmental and economic development (SEED™), we’re taking a new look at the waste stream; reshaping the traditional role of a landfill—from a place where things go when we’re done with them—into a basis for building renewable energy sources that revitalize local economies.

WASTE NOTHING

We create partnerships that leverage our unique ability to link recycling and other sustainable environmental opportunities to meet the needs and expectations of the customers we serve.

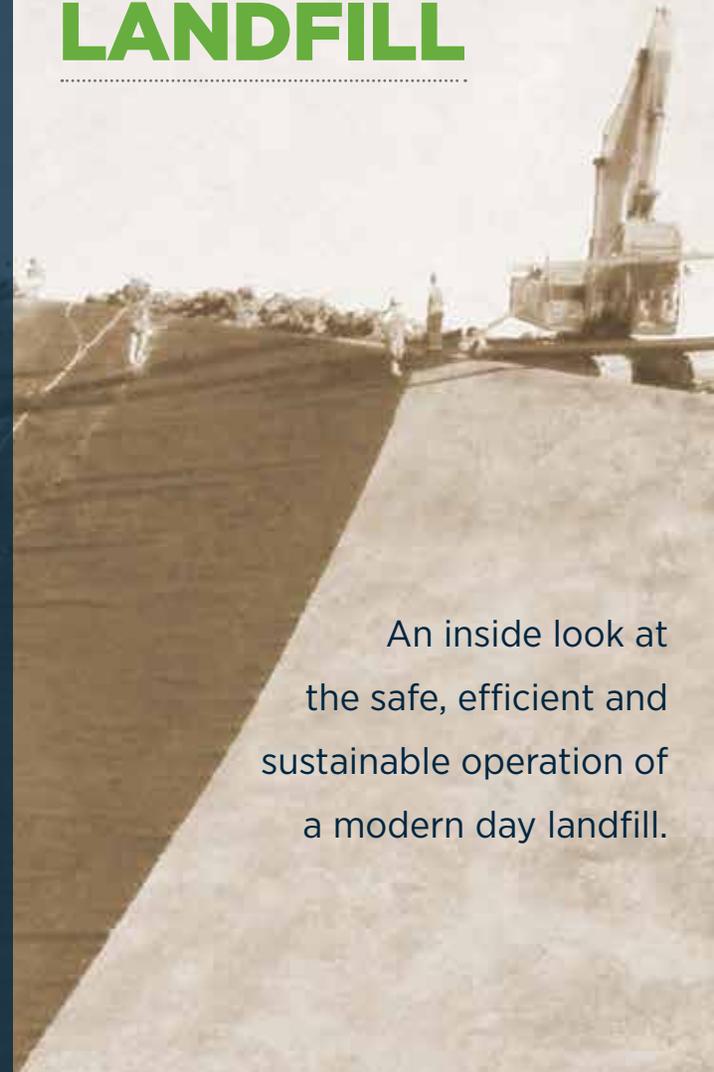
Call our staff today at **800-CASELLA** to assist you in creating a sustainable solution for all of your material disposal needs.



Giving resources new life®

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SOUTHBRIDGE LANDFILL



An inside look at the safe, efficient and sustainable operation of a modern day landfill.



Giving resources new life®

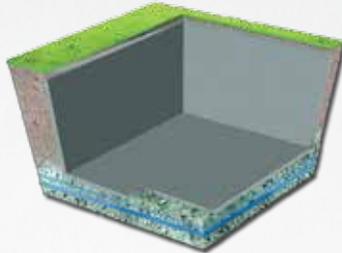
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EXPLORING THE SOUTHBRIDGE LANDFILL

We work closely with our customers to recover resources by diverting more and more material from the waste stream. Whatever is left over, we provide safe and responsible disposal solutions. These graphics help to explain the intricate systems that make up the modern day landfill disposal option.

Step 1: Excavation

The land is excavated to the native low permeable soils, also known as glacial till.



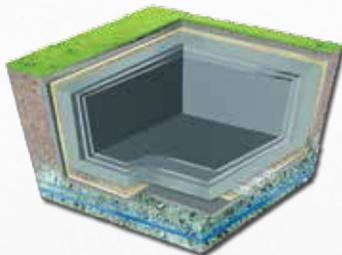
Step 2: Drainage

The underdrain system consists of perforated pipe surrounded by drainage stone wrapped in a felt-like geotextile. The underdrain keeps groundwater from collecting under the landfill.



Step 3: Liner System

Southbridge landfill utilizes a double composite liner system. The secondary liner consists of 24 inches of compacted clay, a layer of geosynthetic clay (*clay sandwiched between synthetic textiles*) a 60 mil. high density polyethylene plastic liner, and a geocomposite drainage layer (*plastic grid sandwiched between two fabric layers*).



The primary liner consists of another geosynthetic clay liner, a 60 mil. high density polyethylene plastic liner, and another geocomposite drainage layer. This liner acts like a giant bathtub under the landfill, keeping all liquids inside until pumped out.

Daily Cover

At the end of each day, refuse is covered with daily cover materials to prevent odor, litter and pests. This cover is removed or worked into the waste at the beginning of the next shift.

Gas Collection Wells

Gas collection wells, pipes sticking up out of the landfill, are placed across the landfill to collect gas generated by decomposing waste. Gas from the wells is conveyed directly to the landfill gas-to-energy engine and flares nearby. Gas wellheads are monitored and adjusted to match landfill decomposition.

Monitoring Systems

Extensive monitoring systems are utilized to ensure environmental integrity.

Waste

Leachate Collection Sand

Drainage Geocomposite

High Density Polyethylene Plastic Liner

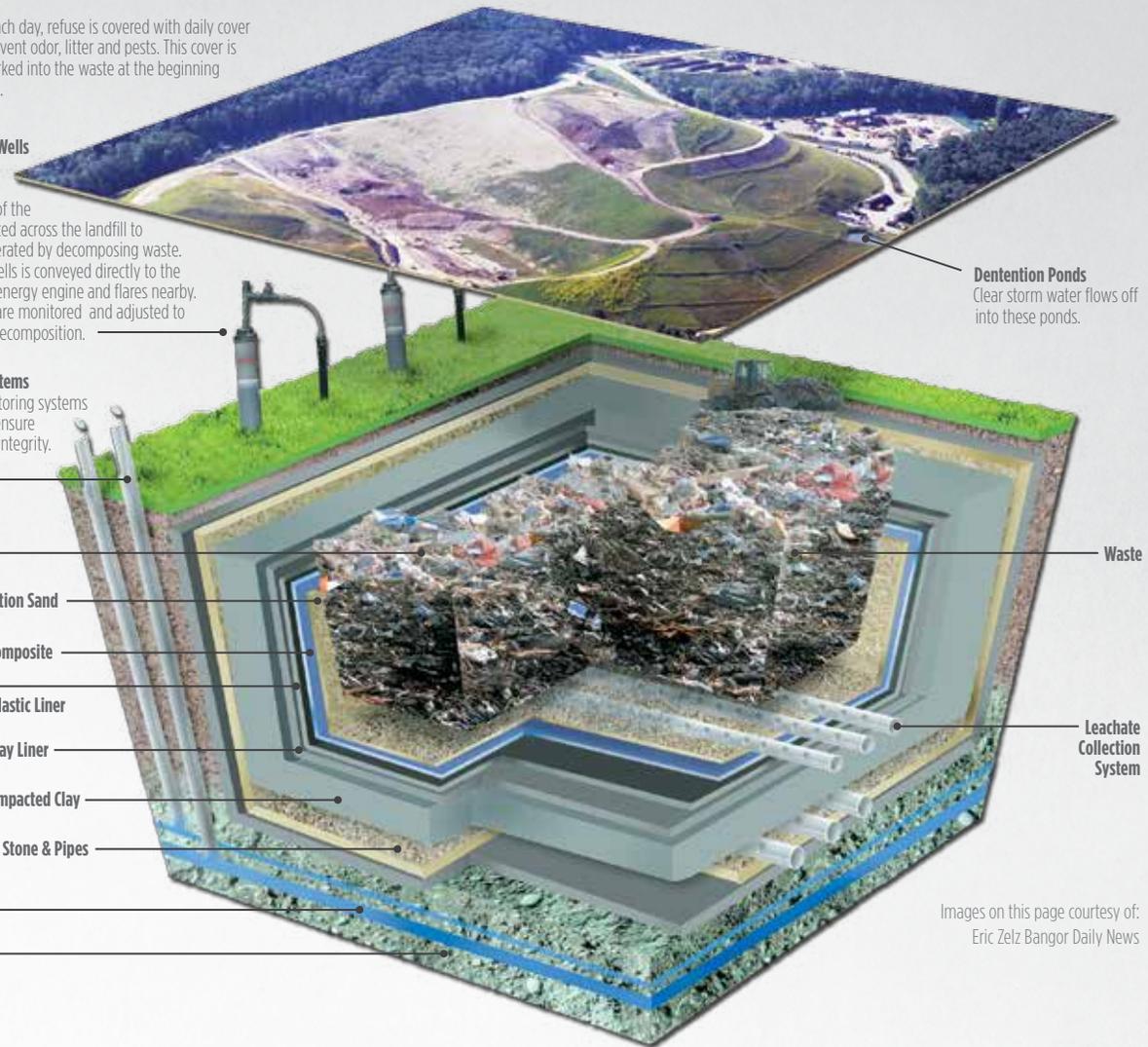
Geosynthetic Clay Liner

24 Inches of Compacted Clay

Drainage Sand, Stone & Pipes

Groundwater

Glacial Till



Detention Ponds
Clear storm water flows off into these ponds.

Images on this page courtesy of:
Eric Zelz Bangor Daily News

Step 4: Leachate Collection

Water percolates through the landfill like ground coffee in a coffee maker, picking up contaminants as it moves. This water is called leachate and is collected through perforated piping in the secondary and primary liner layers, stone, sand and a plastic and textile geocomposite. Sloped sand helps drain liquids away from the waste, while a felt-like fabric keeps sand from entering the drainage system. Leachate is collected and pumped into a storage tank with a 390,000-gallon capacity. It is then transported to a wastewater treatment plant for treatment.

Step 5: The Active Landfill

Waste is spread, compacted, and covered with daily cover material to reduce litter and limit pests. Collection wells and infrastructure are installed throughout the active life of the landfill. Intermediate cover is placed when grade is reached to further prevent gas migration and odor, and reduce leachate production.

Step 6: Closing The Landfill

When the site is filled to capacity, a final composite liner system will be placed over the waste.

Step 7: Post-Closure

Gases and leachate produced by the landfill will continue to be collected and gas will be used for energy production. For thirty years, the facility will be monitored to ensure environmental integrity.