FreshkillsPark / Landfill Infrastructure

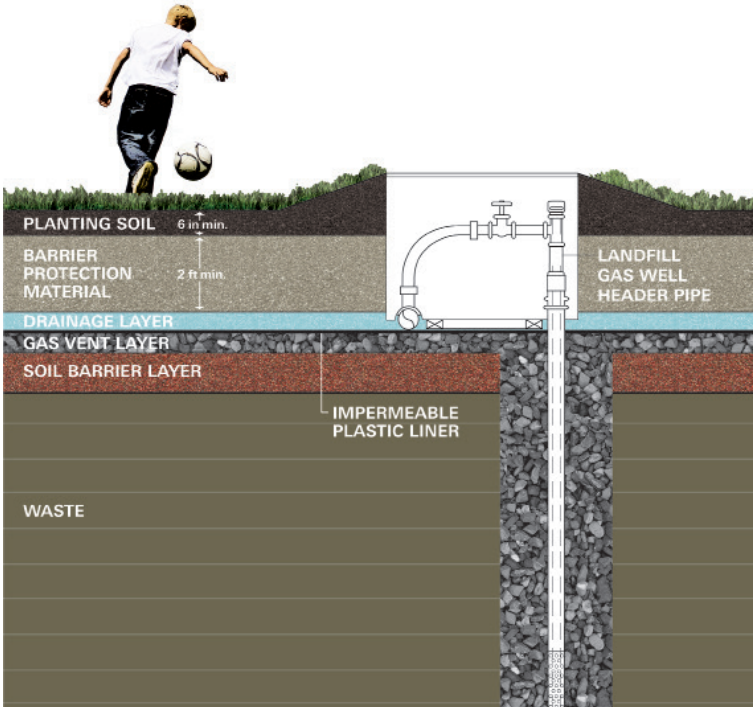
New York City first processed waste at Fresh Kills in 1914 at a plant that converted trash into fertilizer, glycerin, and grease until 1918. The city used incinerators and dumped trash illegally into the ocean to dispose of waste, until 1934 when the Supreme Court ruled the city to stop. In 1938 Parks Commissioner Robert Moses proposed a landfill at the then remote Fresh Kills as a solution. The site's wetlands were considered to be a nuisance at the time and Moses planned to fill them in for three years and then make a profit from the land through developments. The landfill remained open for 53 years. The first scrow of garbage arrived at Freshkills in 1948 and by 1955 Fresh Kills became the largest landfill in the world and it served as the principal collector of household garbage discarded in NYC. At its peak the landfill collected 29,000 tons of garbage per day.

Strong community pressure resulted in a 1996 law that required the landfill to stop accepting waste by December 31, 2001. By 1997, two of the four mounds were closed and covered with a thick impermeable cap and Fresh Kills landfill received its last barge of garbage on March 22, 2001. After the landfill officially closed, the city started to consider the site as a park. The former landfill presented unique potential for open space in NYC. An international design competition was held in 2001 to encourage designers to create innovative ways for planning the site's transformation. James Corner Field Operations was chosen to draft the master plan.

Today, the capping of the final mound (West Mound) is in progress, by-products of the landfill are harnessed, purified, and reused, and construction of the park has begun. Two projects, Schmul Park and Owl Hollow Soccer Fields, are open to the public and construction of the New Springville Greenway is underway.

Landfill Layers

West Mound is expected to be capped by 2019, completing the landfill capping at the Freshkills site. The final cover is constructed in phases, with the essential design goals of hydraulic performance, slope stability, and long term durability of the landfill and its systems. These are achieved by minimizing surface water infiltration, preventing erosion, promoting proper surface water drainage, and separating the waste layer from the environment to protect public health. The final cover also captures and prevents the emission of air–polluting gases. The final cover is made of a series of layers, each with distinct functions.



Planting Soil Layer

The Planting Soil Layer is at least 6" thick. The soil is selected for its potential to prevent erosion and provide growing material for plantings, which protect the integrity of the final cover. A network of plant roots hold onto the soil, providing stability.

Barrier Protection Material

The Barrier Protection Material protects underlying layers that could be compromised by weather extremes. This layer stores excess water until it is used by overlying plants or drained off. It is composed of soil and has a minimum thickness of 24".

Drainage Layer

The Drainage Layer reduces water pressure on the Impermeable Plastic Liner and increases friction, to mitigate the risk of sliding. It drains the overlying layer by increasing water storage capacity and reducing the risk of over-saturating the cover soils.

Impermeable Plastic Liner

The Impermeable Plastic Liner is the most crucial part of the final cover. It prevents water from entering the waste by stopping the flow of water and promoting the storage or drainage of water in the above layers. This layer also prevents the upward flow of gas into the atmosphere.

Gas Venting Layer

The Gas Venting Layer is constructed of a geo-composite to facilitate the movement of landfill gas toward the landfill gas vents or extraction wells.

Soil Barrier layer

The Soil Barrier Layer is laid over the solid waste, then graded and compacted to the appropriate angles to maintain slope stability and promote proper drainage.

Waste Layer

The mounds are composed of 50 years worth of NYC's waste.

NYC Parks

Landfill by-products

Leachate

Leachate is created when water percolates through decomposing household waste. Once the landfill is capped the quantity of leachate diminishes because the amount of water that comes in contact with waste is minimized. The goal of the leachate management system is to remove pollutants by containment, collection, and treatment of leachate before it reenters the environment. All treated water is cleaner than the nearby Arthur Kill.

Landfill Gas

Landfill gas (LFG) is comprised of methane, carbon dioxide, water and other organic compounds. The LFG System on site collects and controls gas emissions through a network of wells connected by pipes below the surface that convey the gas through a vacuum. Once collected, the gas is purified at an on-site LFG recovery plant. Gas emissions, non-methane organic compounds and other hazardous pollutants are reduced by almost 100%. LFG and its odor are prevented from entering the atmosphere. In addition to this active gas collection and recovery system, an additional safety system is in place to prevent the migration of gas off site.

Infrastructure Features

Gas Well Head

The gas well heads assist in moving the landfill gases to the on-site purification facility and are monitering touch points. An additional system is in place to prevent the migration of gas off-site.

Flare Station

When portions of the gas treatment system need to be repaired, gas is sent to one of three flare stations, where the gas is burned off in a safe and controlled environment.

Leachate treatment plant

The plant has the capacity to treat up to 600,000 gallons of leachate per day and uses physical, chemical, and biological processes to treat the leachate, including bacteria that break it down.

"Goose neck" Gas

These "candy cane" pipes are not currently in use, but are in place for when gas production is low enough that it will be passively vented.

Frequently Asked Questions

Where does New York City's trash go now?

New York City's waste is now exported by private companies contracted by the Department of Sanitation. Staten Island's waste is sent to DSNY's Staten Island Transfer Station, a 79,000 sq. ft. facility adjacent to the Freshkills Park site, where it is compacted, sealed into shipping containers and railed by a private contractor to a landfill in South Carolina. Waste from the Bronx and Brooklyn is railed to a landfill in Virginia; a similar system will be established for western Queens. Much of Manhattan's waste is trucked to a waste-to-energy plant in New Jersey.

Why don't I smell the landfill anymore?

Since the landfill stopped accepting garbage in 2001, the Department of Sanitation began the process of 'capping' the landfill. Each of the four mounds has been completely covered; North and South Mound are covered with clay caps; East Mound is covered with a thick plastic cap; West Mound is in the final process of being capped with the same plastic liner. These covers prevent the garbage from being exposed to air so odors of decomposition are now contained within the hills.

Are Freshkills Waterways safe?

Freshkills Park's waterways are rated appropriate for secondary contact. This means that activities such as boating, kayaking, and fishing are permitted. Just like the East River, Hudson River, and New York Bay; it is not recommended to swim or bathe in the water, or eat fish you find there. New York City continues to be an industrial port, and that means jobs for our economy. It also does mean that our water could be cleaner, as the port activities and waterfront industry on the shores of New Jersey and New York are not the most environmentally friendly neighbors. Like other projects in the Hudson Rive Valley (Baykeeper, BillionOyster Project, and Harbor School) the Freshkills Park Alliance is exploring the use of shellfish to clean our waterways and reach a threshold where we can positively impact the harbor too!

Can some things not be built at the site because of the Landfill Infrastructure?

It's true that not everything is right for Freshkills Park. We're proud that our site is unique, and there are many different regulations governing it to make sure the site is consistently safe and in good order. Keeping in line with regulations, structural requirements, and landfill engineering there are some of the ideas we won't be able to implement because they may cause erosion, damage to the landfill, and brush fires. Some examplse are: Mountain Biking, ATVs/Dirt Bikes, Waterslides/Pools, Fire Pits, and Barbeques.

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