

# fresh perspectives



FreshkillsPark Newsletter — Winter/Spring 2011



## Dynamic South Park design now nearing completion

Landscape architects at James Corner Field Operations are hard at work completing construction drawings for the first phase of development in the South Park section of Freshkills Park. This area of South Park will span 20 acres of the site and will be the first piece of parkland atop one of the site's six landfill mounds.

The 2006 Draft Master Plan for Freshkills Park identified the 425-acre South Park as a hub for recreational amenities and a network of paths winding through diverse habitats and providing extraordinary views. Phase One has been designed to maximize visitors' experience of the site, even though the project covers only a fraction of South Park's total area. A 2.4-mile pathway for bikes and pedestrians will connect the site's amenities: softball and little league fields; play areas and a lawn; an expansive area for races and games; a picnic grove; and a large, flowering meadow and event space on the slope of the site's central mound. Benefiting from a variety of topography and with access from both local roads and the West Shore Expressway, South Park Phase One will provide a glimpse of the full promise of Freshkills Park.

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**Above:** A rendering of the 50-foot wide Backstretch, which has been designed to accommodate cyclists, runners, games and more.

# South Park Phase One to host a variety of activities and landscapes

## FROM PAGE 1 ACCESS

Visitors to South Park will enter via either the western or southern edges of the site. At the western edge, park users will find a 150-space parking lot accessible from the northbound West Shore Expressway. At the southern edge, patrons will enter a local entrance and 40-space parking lot off of Arthur Kill Road in the Arden Heights neighborhood. The bigger lot will be situated beside a pair of softball/little league fields and a picnic area with new native plantings. The smaller lot, adjacent to a small play area, will be nestled inside an area of existing vegetation. Native plants including serviceberry, red chokeberry, sweet pepperbush, silky dogwood and witch hazel will be planted for color and variety.

## MILLIONTREES PICNIC GROVE

Just beyond the Arthur Kill Road parking area will be the MillionTrees Picnic

Grove. MillionTreesNYC is a citywide initiative seeking to plant and care for one million trees throughout New York City over the next decade. Through the project, 950 saplings have already been planted in this portion of South Park. Next to this young forest, visitors will be able to picnic and play in a shaded grove planted with shagbark hickory, American sweetgum, sassafras, ironwood, swamp white oak and other species.

At the northern edge of the Picnic Grove, a comfort station will provide two composting toilets (see the article on page 6 for more information) and derive power for its interior lighting from solar panels on the comfort station's roof. Adjacent to the comfort station will be a bicycle maintenance post, with amenities for cyclists entering or leaving the site, including bike racks, air pumps and repair stations.

## MULTI-USE PATHWAY

From the Picnic Grove, multi-use paths will provide access to destinations

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## Freshkills Park Team

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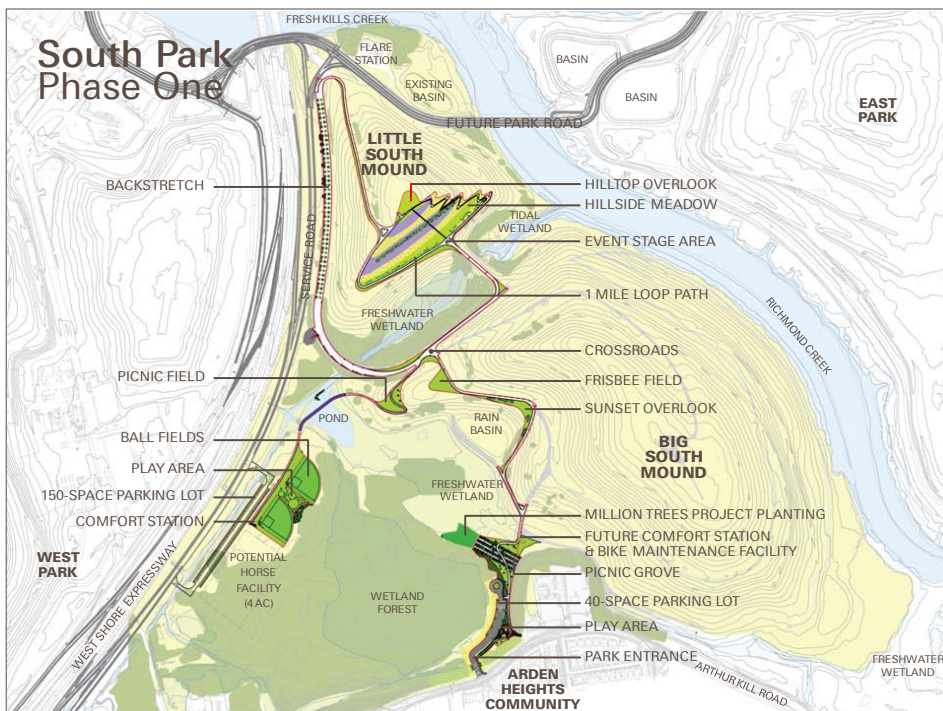
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## Mission

As Freshkills Park moves from the planning stages to implementation, we strive to keep community members informed of the progress in bringing this innovative project to reality. Building this park requires many coordinated activities including the planning and design of the park, engineering for roads and other technical aspects of the park design and environmental assessment and regulatory permitting. The purpose of the Fresh Perspectives newsletter is to provide updates about the project's progress as well as information about its history and some of the unique features, resources and complexities of the site.





**Top:** From the entrance at Arthur Kill Road, visitors will access the MillionTrees Picnic Grove, a formal picnic and play area that will serve as a threshold to the rest of the site and to the main path coursing through the wilder landscape.

**Above:** The view south from the summit of Little South Mound will encompass the 4.5-acre hillside wildflower meadow as well as the peak of Big South Mound.

**Left:** The lower end of the hillside meadow will be able to host outdoor events, screenings and concerts.



# Recreation, event spaces and habitat improvements are South Park focus

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throughout the expansive landscape of South Park. At the Sunset Overlook, visitors will be able to enjoy views overlooking a restored dry prairie meadow and the West Mound. Crossing the thin strip of land that connects the larger and smaller mounds of South Park provides a unique vantage point. With a tidal marsh on one side and a freshwater wetland on the other, visitors will be able to observe a wildlife corridor traversed by a wide variety of mammals and birds.

## HILLSIDE MEADOW

At the heart of this phase of South Park is 4.5 acres of hillside meadow. The pathway will lead visitors across a land bridge to the smaller of the two mounds that make up South Park. On the southeastern slope of the smaller mound, visitors will be able to enjoy panoramic views of the Freshkills Park site, including Richmond Creek and its adjacent wetlands and views of surrounding Staten Island. A variety of pathways will weave up to the mound's 96-foot summit, and visitors

will be free to explore, relax and enjoy the restored wildflower meadow. This amazing setting is the perfect place for year-round activities: bird watching, kite flying and picnicking in the summer, and sledding, snowshoeing and skiing in the winter. A moveable stage will be installed periodically at the base of the slope to host concerts and festivals.

## THE BACKSTRETCH

As the path makes a hairpin turn at the northern edge of the mound, it will become a 50 foot-wide multi-laned boulevard for all types of recreation. Two rows of planted trees will break the boulevard into three sections: a bike path; a walking and sitting area; and five middle lanes designed for flexibility of use and the ability to accommodate runners and bikers as well as learn-to-bike classes, relay races, portable climbing walls or skate-dancing sessions.

Exiting the backstretch, visitors will be able to get up close and personal with a Sanitation dinosaur: one of the big blue excavators that were used to unload garbage from barges during

landfill operations. It will be sited just next to the pathway, supporting a large sign announcing the park to drivers headed northbound along the West Shore Expressway.

## THE POND AND BALLFIELDS

The pathway will continue across a pond that was created through the course of landfill operations, where ecologists will be working to restore a small habitat island with robust and native plantings. This will become a popular spot for birders and wildlife enthusiasts.

At the end of the path (or the beginning, for visitors entering via the West Shore Expressway parking lot), visitors will arrive at two clay-infield softball/little league fields. The area around and between the fields will be planted and restored. A comfort station adjacent to the ballfields will feature composting toilets and solar panels, as with the other comfort stations in South and North Parks.

## SIGNIFICANCE

Each construction project at Freshkills Park carries particular weight. Construction of Schmul Park and Owl Hollow Fields, at the northern and southern perimeter, respectively, emphasizes the site's connection to local communities. Phase One of North Park and its wildlife observation tower, seed farm and tree nursery represents an effort to repair a relationship between the landfill and the environment. At South Park, the design team was tasked with envisioning a project which, despite a limited physical footprint, would provide a rich taste of the variety of activities and the breadth of awesome landscapes and vistas it is possible to experience at Freshkills Park. South Park Phase One is meant to impress, and to establish the park as a major destination within New York City.



**Left:** Development at South Park will include construction of two clay-infield softball/little league fields. **Right:** The paths winding through South Park will be ideal for winter activities like cross country skiing.



# Understanding wetlands, at Fresh Kills and elsewhere

## Main Creek Wetland Restoration Project

With the support of a grant from New York Department of State Office of Coastal, Local Government & Community Sustainability, the Department of Parks & Recreation is undertaking a two-acre wetland restoration project along the shore of Main Creek in the northern section of the Freshkills Park site.

The proposed work is anticipated to create a wider band of salt marsh habitat and a mosaic of coastal habitat, including coastal grassland, for a variety of marine, avian and wildlife species. The project will stabilize the shoreline to provide additional protection for habitat under potential climate change and sea level rise, improve water quality through greater interface between coastal plants and tidal waters, and provide additional recreational and scientific research opportunities on site.

After landfilling operations began at Fresh Kills in 1948, one reporter commented that the project was effectively “creating 2,000 acres of useful land on what was once swamp and creek.” We now know that the transitional ecosystems being referenced by the reporter are collectively called *tidal wetlands*: lands whose soil is saturated with moisture either permanently or seasonally from the influence of tidal bodies of water. We also have a much clearer sense today of the enormous value of tidal wetlands. They improve water quality by trapping nutrients, sediments and heavy metals, as well as buffering storm and wave energy. They stabilize shorelines and buffer erosion. They provide habitat, nesting, feeding and refuge areas for shorebirds, serve as a nursery ground for larval and juvenile forms of many marine organisms and provide significant habitat for shellfish. They are far from useless.

## HOW WETLANDS FORMED AT FRESH KILLS

Between 8,000 and 10,000 years ago, the Wisconsin glacier began to recede. Its endpoint, or terminal moraine, melted to form Glacial Lake Hackensack. Silt, clay, sand, gravel and other sediment accumulated within this large, flat expanse, creating mudflats along the coast of what would eventually become the Arthur Kill, a tidal straight that separates Staten Island from New Jersey. Over time, the bare mudflats started to grow different species of marsh grass, which stabilized the muck underneath. The wetlands at Fresh Kills developed through this gradual process for hundreds of years, until they created an expansive estuary: a partially enclosed complex of coastal streams and wetlands with a connection to the sea.

## TODAY'S WETLANDS

In 1948, the Freshkills Park site was almost entirely comprised of tidal wetlands, fed by tidal inundation of saltwater. Even though landfilling significantly reduced the site's supply of wetlands, they still make up a sizeable acreage today. Salt marshes can be found throughout the Freshkills Park site, particularly along Fresh Kills, Main and Richmond Creeks. They are typically divided into three zones: low salt marsh,

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# Composting toilets lower waste management impact

## How safe is composted human waste?

Compost produced from decomposed waste is very similar to topsoil. It can be safe for use even on edible crops if handled correctly and if the compost has heated up sufficiently or cured long enough to destroy potential pathogens. No compost is removed until at least a year after it has entered the system, and it is often several years before any is taken out of the compost tank.

In the United States, state and local laws vary on the use of compost derived from composting toilets. The New York State Department of Health requires that such compost either be disposed of in a landfill or mixed into soil distant from food crops, water supply sources or watercourses (presumably to protect against improper handling or collection of composted waste). Compost from the toilets at Freshkills Park will be collected and deposited off-site by a private contractor.

The first phase of development in North and South Parks at Freshkills Park will include a number of environmentally progressive features: solar panels to power lights in the parking lots; a tree nursery to grow saplings to size for transplanting; a farm growing seed to be harvested for native meadow restoration.

But perhaps the most provocative of the project's sustainable features is also its most pedestrian: the toilets.

Comfort stations in both North and South Parks will feature composting toilets, which operate without the use of traditional plumbing. Instead, the toilets collect human waste and convert it into safe, odorless, nutrient-rich compost through a process of natural decomposition.

The use of composting toilets at Freshkills Park is practical. Many comfort stations will be sited far from existing sewage systems and separated from them by stretches of elaborate underground landfill infrastructure and garbage; composting toilets circumvent enormous costs and challenges. They also save water by eliminating flushing, require less energy than systems connected to wastewater treatment facilities and result in far less nutrient flow into local bodies of water. Their installation is not yet common in New York City parks but has been very successful in places like the Bronx Zoo and the Queens Botanical Garden.

## HOW THEY WORK

Composting toilets use a combination of various agents including bacteria, fungi, insects and compost worms to manage waste on site. They represent an ecological alternative to traditional waste management, which uses a significant amount of water to transport waste from the toilet to a large water treatment facility. In a composting toilet, a self-contained 'compost chamber' collects human waste from the toilet.

Liquid waste is diverted to a separate holding area where bacteria convert it to nitrate and nitrite, two forms of nitrogen that can be repurposed as a nutrient rich plant fertilizer. Solid waste is dehydrated and decomposed by the various organisms. The final product is nutrient-rich compost resembling topsoil that can be applied to tree and flower beds. Composting toilets are clean and odorless, and the only gases released through their operation are carbon dioxide and water vapor. The Department of Parks & Recreation is excited to feature these innovative toilets at Freshkills Park. They offer a perfect example of turning waste into a valuable, reusable resource, while reducing our ecological footprint.

## INSIDE THE COMPOSTING UNIT

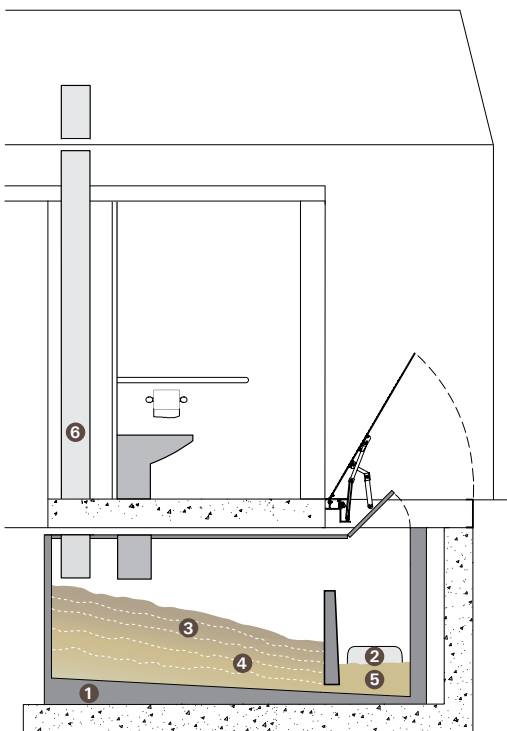
Composting toilets use aerobic (oxygen-rich) decomposition to slowly break down solid and liquid waste into stable compounds within a hidden polyethylene composting unit. ① The sloped design of the unit separates solid and liquid waste.

As liquid waste moves by gravity to the lowest point of the composting unit, bacterial action causes a chemical transformation that converts the chemically unstable components of liquid waste (urea and ammonia) into a liquid end-product containing nitrite and nitrate. This end-product is biologically and chemically stable and contains nutrients which are valuable for fertilizer. It is generated at a rate of about one gallon for every 20 uses and, in most cases, is automatically pumped from the compost chamber into a separate storage tank ②.

The separation of liquid from solid waste ensures that solid waste remains in an aerobic environment which can include bacteria, fungi, insects and compost worms. The addition of a bulking agent like wood chips creates greater biomass ③, which assists in decomposition.

The organisms work on the biomass to create a process of mineralization ④, through which chemical compounds decompose into simpler forms that can be taken up by plants. The end product is compost ⑤ that has chemical, biological and aesthetic characteristics similar to topsoil. The volume of the final compost is less than 10 percent of the original solid waste.

A continuously operating fan pulls air down the toilet fixture and out through a vent stack ⑥, creating an odorless restroom environment.



# Wildlife Spotlight: Longtime Staten Islanders make homes in basins and wetlands



PHOTO COURTESY OF DOLAN GREENE

## Muskrat *Ondatra Zibethicus*

**Range:** Native to North America. Introduced to parts of Europe, Asia and South America.

**Size:** Muskrats vary in size, depending on the region in which they live. Typically weighing two pounds and measuring 22 inches long (with the tail accounting for half that length), they can reach a length of 25 inches and a weight of four pounds.

**Preferred habitat:** Muskrats are very adaptable to a wide variety of climates, but require abundant water. They thrive in fresh or saltwater marshes, lakes, rivers, ponds and streams. With limited access to natural bodies of water in urban areas, muskrats have learned to occupy manmade canals or irrigation channels.

Muskrats have foraged and nested at the Freshkills Park site and its surrounding area for generations. Hunting and trapping them for their warm pelts was common on Staten Island—as in Europe and other parts of the Americas—up through the first half of the 20th century.

Today, muskrats live in the stormwater management basins and adjacent wetland areas of the Freshkills Park site. They feed mostly on the rhizomes of cattails and other aquatic plants but will also eat fish, frogs, insects and shellfish. They are considered pests in some parts of the world because they damage the structural integrity of dams and dikes and eat farm crops when they can't find the foods they prefer.

Despite its name, the muskrat is not a rat (many of which are of the genus *Rattus*), though it is a rodent. A semi-aquatic mammal, the muskrat has a double layer of fur: thick on top for warmth, oily underneath to keep dry. It has a fur mouth flap behind its teeth which seals off its mouth while chewing underwater, preventing it from taking in too much water. Its long tail helps it to maintain balance when on land and to steer when swimming. Muskrats also have an extraordinary lung capacity: they can swim underwater for up to 10 minutes at a time, surface for a few seconds, then submerge again for another 10 minutes.

The species builds dome-shaped lodges in the water using plants and mud. Lodges can be built with several chambers, each with its own underwater entrance. Each muskrat family lives in its own lodge.

## Department of Sanitation landfill operations vehicles: How many can you name?

TOP ROW: (left to right) crawler dozer, landfill compactor; Athey Wagon (track-mounted, side-dumping trailer which was towed by crawler dozer); water wagon (used for dust suppression and adding water content for better compaction); tire shredder; bank skimmer boat (used to collect stray garbage in the waterway); stationary cable crane (used to unload garbage from barges directly into Athey Wagons).



# A primer on wetlands at the Freshkills Park site

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high salt marsh and salt scrub. These zones are defined by the marsh's elevation and subsequent levels of inundation by rising and falling tides.

## LOW SALT MARSH

Low salt marshes are located along sheltered areas of seacoast and are flooded regularly. They are characterized by stands of *Spartina alterniflora* (smooth cordgrass). *S. alterniflora* is one of the most common plants found in tidal wetlands and is distinguished by smooth, hollow stalks that taper at the ends. It is halophytic, which means that it is tolerant to saline conditions and has special glands to excrete salt. *S. alterniflora* holds oxygen in the muck of the marsh, which makes the land suitable for other types of marsh plants to grow. It reproduces asexually by sending out rhizomes underground, which form dense, web-like root systems. These root mats serve to stabilize the marsh, paving the way for marine wildlife requiring sturdy ground.

## HIGH SALT MARSH

High salt marsh is also located along sheltered areas of seacoast, but it experiences less frequent flooding. In the high salt marsh, patches of *S.*

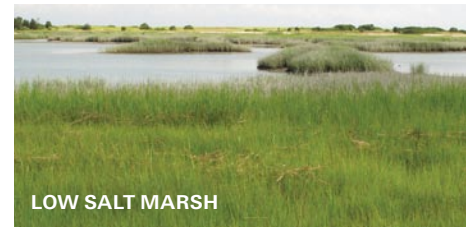
*alterniflora* are interspersed with *Spartina patens* (saltmeadow grass) and *Distichlis spicata* (spikegrass). A major threat to the high salt marsh plant community is *Phragmites australis* (common reed), a tenacious and invasive plant that tends to dominate the areas it colonizes, preventing the development of more diverse and complex marsh ecosystems. A halophytic species that thrives in wet ground and even standing water, *Phragmites* are in strong supply at the Freshkills Park site, as in many areas throughout the region.

## SALT SCRUB

Salt scrub is a transitional area between salt marsh and upland coastal vegetation. It is characterized by halophytic, shrubby vegetation. Not regularly inundated with salt water, salt scrub is influenced by wind and salt spray. *Phragmites* remains a potential problem in these areas, as does their exposure to coastal storm surges which occasionally clear out indigenous scrub. *Distichlis spicata* (saltgrass), *Spartina Patens* (saltmeadow cordgrass) and *Baccharis halmifolia* (the groundsel tree) are common here.

## MOVING FORWARD

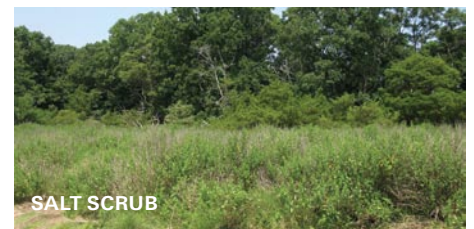
The Freshkills Park site hosts over 160 acres of undisturbed, *Spartina-*



LOW SALT MARSH



HIGH SALT MARSH



SALT SCRUB

PHOTOS COURTESY OF SANDY RICHARD

dominated salt marsh. Not only does the park plan aim to preserve existing wetlands, it proposes significant wetland restoration and enhancement. Strategies implemented throughout the site will aim to eradicate invasive plants like *Phragmites* and to make alterations to marsh elevations so as to favor native vegetation over invasive species.

# FreshkillsPark

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**Project Partners**  
Department of Sanitation  
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Department of City Planning  
[www.nyc.gov/dcp](http://www.nyc.gov/dcp)

**Related City Initiatives**  
PlaNYC 2030  
<http://www.nyc.gov/planyc2030/>

MillionTreesNYC  
<http://www.milliontreesnyc.org>

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