

“This is a valley of ashes- a fantastic farm where ashes grow like wheat into ridges and hills and grotesque gardens; where ashes take the forms of houses and chimneys and rising smoke and, finally, with a transcendent effort, of men who move dimly and already crumbling through the powdery air.”

- F. Scott Fitzgerald, *The Great Gatsby*, pg. 16

In 1925, Flushing, Queens, in New York City, was a dump for industrial ash. For F. Scott Fitzgerald, it represented the social and moral decay of America. Today, the ash piles have been replaced with a lush garden: Queens Botanical Garden. Its Visitor and Administration Building, completed in 2007, was awarded a Platinum LEED rating, the highest award a new construction can receive from the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED). The 16,000-square-foot Visitor and Administration Building became one of the first structures in the city to receive such a prestigious rating.¹ The garden now serves as a home to various plant and bird species, as well as a backyard for the diverse residents of Flushing, Queens. It also represents the forward-thinking in green development that many organizations have embraced.

The 39-acre garden had simple roots (no pun intended). It was originally a five-acre exhibit for the “Gardens on Parade” in the 1939 World’s Fair. In 1948, Parks Commissioner Robert Moses, designated the site to Charles G. Meyer, then president of the Queens Botanical Garden Society. This also marked the opening of Queens Botanical Garden. In 1963, the garden was moved to its current location so that the original land could be used for the 1964-65 World’s Fair.² This was a strategic move since Kissena Park Corridor was adjacent to the garden.



Fountain by the Main St. entrance

As one walks through the iron gates, a hush overcomes the land. The trees that line the periphery of the garden muffled the sounds of buses and cars that busy the nearby streets. Conversations in different languages are kept to a low volume. You can actually hear birds chirping! (not pigeon calls). The only noticeable sounds are the grinding of gravel pathways against people’s shoes. The garden boasts of various

species of trees, bushes, and flowers. It also has a small meandering creek that greets the visitors

¹ Bernstein, Fred A. “A Garden Blooms in Queens.” *Metropolis Magazine* 20 Feb. 2008.

² *QBG: A Public-Private Partnership*. Brochure. New York: Queens Botanical Garden, 2008.

as they come through the Main Street entrance. Subtly, the garden also boasts of its sustainability. During the designing process, administrators and local communities were involved in public meetings to help design the site.³ What the developers and officials of the Queens Botanical Garden discovered was that water has a significant meaning in all of the cultures that surround the garden. It was readily accepted that the new site should have a water theme. Near the Main Street entrance, the visitor can find “A Fountain of Life” information board. Here, it describes how water is an important resource, its significance in various cultures, and the botanical garden’s use of water. It also encourages visitors to think about the significance of water in their lives as they walk through the garden.



Information board



*Bioswale on western side of building.
Photo from QBG website*

The Queens Botanical Garden employed several methods to achieve the points in LEED’s Water Efficiency category. The native plants used are sturdy and do not require much water. In fact, their survival is mostly dependent on rainwater. Stormwater is managed by using bioswales. These are low-lying areas that are inhabited with sturdy plant species, such as Sweet Flag and Shallow Sedge, that can survive wet and dry times. Stormwater runoffs are directed to the three bioswales on the site. There, the water is used by the plants, evaporates, or percolates down to the water table. The effectiveness of the bioswale was tested during a storm in November 2005. For a week, over a foot of rain fell and the bioswales were successful in managing the onrush of water.⁴ The use of bioswales reduced the amount of stormwater runoff that overwhelms the city’s inadequate sewer and water treatment systems.

³ Gonchar, Joann. “Setting Down Roots.” GreenSource Magazine April 2008.

⁴ Water. Queens Botanical Garden. 18 Oct. 2008.

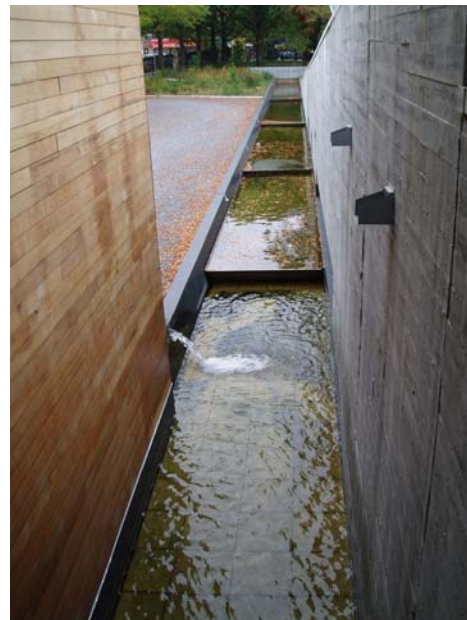
Rainwater is also managed through a Cleansing Biotope. The dramatic canopy with red pillars in front of the building was designed to collect rainwater and have it cascade off the canopy's corner and into the biotope. It's like having a mini waterfall near the building. In the biotope, native wetland plants filter the water. The cleansed water is then stored in an underground cistern that can hold 24,000 gallons of water.⁵ The water is piped into the Fountain of Life and flow down the meandering waterway and back to the biotope to be recycled again. With this system, stormwater is managed while providing a unique and beautiful feature to the garden.



Waterway leading to the biotope with canopy on the right



Biotope and Visitor and Administration Building



*Waterway leading to biotope.
On a rainy day, water falls from the spouts on the wall.*

⁵ Water: Cleansing Biotope. Queens Botanical Garden. 18 Oct. 2008.



Constructed Wetland with Canopy in the background

Graywater; non-toilet water such as from sinks, showers, and dishwashers; are recycled using underground settling tanks and a constructed wetland. Located near the Visitor & Administration Building, the water is released below the constructed wetland. As the water moves up, through gravel and soil, contaminants are filtered out. Various native wetland plants also help filter the water. The cleansed water is then collected and used to flush toilets. With this

wetland system, the building can recycle up to 4,000 gallons of water per week.⁶ This helps reduce the use of potable water by 55 percent⁷ and lessen the amount of water that gets released into the city's sewer system.



Sign in front of restrooms

The building's restrooms use low-flow fixtures and waterless urinals. In the staff's bathroom, there are composting toilets. Outside the public restroom's doors, there's a sign that educates visitors on the significance of using these water-efficient fixtures. The various water-conservation systems and features "make the visitor and administrative center about 82 percent more water-efficient than a standard office building of its size."⁸ Now, that is something to boast about.

⁶ Water: Constructed Wetland. Queens Botanical Garden. 18 Oct. 2008.

⁷ Queens Botanical Garden Visitor Center: Water Conservation and Use. BuildingGreen.com. 18 Oct. 2008.

⁸ Gonchar, Joann. "Setting Down Roots." GreenSource Magazine April 2008.

The Visitor and Administration Building did well in LEED's Sustainable Sites category. The building is about eight blocks away from the nearest subway station. A couple of city buses drop visitors by the Main St. entrance. The building also has "showers and changing areas [which] encourages employees to bike or walk."⁹ If one were to follow the graveled path near the constructed wetland, one would wonder how he/she came upon a garden built on a hill when the rest of the surrounding land is flat. On second look, he/she would realize that this is the green roof! The 3,000-square foot roof houses various native plant species and is home to insects and birds. Not only is the open space welcoming to visitors, the roof garden helps absorb rainwater and provide insulation for the auditorium



Green Roof

below. The roof garden also helps muffle "the sounds of jets heading in and out of La Guardia and Kennedy Airports."¹⁰ This multi-functional rooftop garden should inspire New York City developers to include one in their constructions. Any city dweller would be thrilled to have a small green sanctuary on top of their apartment building.

Besides the rain collecting canopy and the garden on the auditorium's roof, there is one more functional roof. The Visitor and Administration Building's roof is lined with 5,544

⁹ Queens Botanical Garden Visitor Center: Overview. BuildingGreen.com. 18 Oct. 2008.

¹⁰ Raver, Anne. "A Queens Garden Gives New Meaning to 'Green'." The New York Times. 16 Sept. 2004: F11.

photovoltaic cells that provide 20 percent of the building's electricity.¹¹ The building also uses "an efficient lighting system, daylight dimming, and occupancy sensors"¹² which help decrease the building's energy consumption. Although the building is equipped with lighting systems, its employees will most likely prefer natural lighting. The building is oriented in an east-west axis, allowing 84 percent of interior spaces to be touched by daylight.¹³ In terms of heating, the building uses a geothermal system. The constant 55-degree underground well water is pumped into heat exchangers, heating the building. This system uses less energy than a traditional furnace. These energy-saving features allow the building to use 40 percent less energy than a comparable size building and also save the organization \$7000 in energy costs.¹⁴



The brise-soleil is seen on the building

The Visitor and Administration Building uses local and recycled materials. More than 33 percent, by cost, of the materials were produced within 500 miles and almost 90 percent of construction waste, by weight, were recycled or reused.¹⁵ A prominent feature outside the building is the wooden brise-soleil. This structure dilutes and deflects harsh direct sunlight that enters the building. Selecting the type of wood for the brise-soleil was a difficult task. The wood needs to be rot-resistant. BKSK Architects selected a Forest Stewardship Council certified Brazilian wood with high density. Although it was sustainably harvested, Jennifer Souder, the Director of Capital Projects, believed that it was

not "necessary to ship something around the world, especially since this is a pretty important architectural element that people might want to replicate."¹⁶ Through months of research, Souder decided on black locust that was "harvested in Long Island and milled in Pennsylvania."¹⁷ As of date, the brise-soleil is functioning well and is not rotting.

¹¹ [Energy: Photovoltaic Cells](#). Queens Botanical Garden. 18 Oct. 2008.

¹² [Queens Botanical Garden Visitor Center: Energy](#). BuildingGreen.com. 18 Oct. 2008.

¹³ [Queens Botanical Garden Visitor Center: Energy](#). BuildingGreen.com. 18 Oct. 2008.

¹⁴ [Energy](#). Queens Botanical Garden. 18 Oct. 2008.

¹⁵ [Queens Botanical Garden Visitor Center: Materials and Resources](#). BuildingGreen.com. 18 Oct. 2008.

¹⁶ Bernstein, Fred A. "A Garden Blooms in Queens." [Metropolis Magazine](#) 20 Feb. 2008.

¹⁷ Bernstein, Fred A. "A Garden Blooms in Queens." [Metropolis Magazine](#) 20 Feb. 2008.

Most of the employees enjoy working in the new building because of the views. The brise-soleil allow diffused sunlight to enter the workspaces without blocking the view to the garden, which is most appreciated on the second story of the building. According to Nicole De Feo, the Capital Projects Coordinator, “there is a corner meeting room that some staff have nicknamed a ‘treehouse’ for its views and feel.”¹⁸ Sliding glass doors and operable windows also improve ventilation and give employees a comfortable place to work in. Not only do the unfinished surfaces, exposed steel beams, and concrete floors reduce the amount of materials used in the building’s construction, the staff finds them to be refreshing.¹⁹ Concerned for the employee’s health and the environment, low levels of volatile organic compounds products, such as carpets, paints, sealants, and caulks, were used.²⁰

The establishment and prestige of the LEED rating system encouraged developers to create environmentally-friendly buildings. A criticism on the LEED system is that “the program’s narrow-minded focus on a checklist leads to uninspired architecture that is not as environmentally friendly as it could be.”²¹ Since awards are given on a point system, some developers go for the easy points that may not significantly help the sustainability of the building (such as installing a bike rack instead of a top-notch environmentally-friendly climate control system). The Queens Botanical Garden encountered this issue. If the offices had no carpeting, then the building would be more sustainable. However, because LEED awards a point for using low-emitting and recycled carpets, some parts of the building ended up with carpeting.²² Perhaps the U.S. Green Building Council should consider this issue when they draft up a new version of LEED for New Construction ratings; most of the requirements on the checklist should not be weighed equally since the design and cost differs greatly.

Several contractors were used in the construction of the Visitor and Administration Building. New York State’s Wicks Law “requires each subcontractor on a project costing more than \$50,000 to enter into a contract directly with the client (rather than with a general contractor).”²³ In the construction of the building, the four main contractors were general,

¹⁸ De Feo, Nicole. E-mail correspondence. 29 Oct. 2008.

¹⁹ De Feo, Nicole. E-mail correspondence. 29 Oct. 2008.

²⁰ Sustaining the Future. Brochure. New York: Queens Botanical Garden, 2008.

²¹ Brook, Daniel. “MisLEEDing?” Scientific American. Special Issue 18.4 (2008): 56.

²² Bernstein, Fred A. “A Garden Blooms in Queens.” Metropolis Magazine 20 Feb. 2008.

²³ Bernstein, Fred A. “A Garden Blooms in Queens.” Metropolis Magazine 20 Feb. 2008.

electrical, plumbing, and HVAC. According to Nicole De Feo, “the challenge was coordinating their work to effectively complete the sometimes complicated and integrated systems the building employs.”²⁴ There were some confusion of which contractor was responsible for what since some of the tasks overlapped. For example, “there had to be collaboration between the plumber and general...to get the graywater recycling system up and running- it was not as simple as laying pipes to a certain point and then the general contractor takes over.”²⁵ To date, everything seems to be working as they should. Finding the right resources and funding for the continual maintenance of the unique systems is challenging. That is why it is encouraged that visitors, who enter the garden for free, should donate or purchase something from the gift shop to help keep the garden working just right.



*Morning at the Queens Botanical Garden.
Visitor and Administration Building in the background.*

The project, which included the construction of the Visitor and Administration Building, Horticulture maintenance facility, and landscapes between the buildings, was a pilot project for New York City’s High Performance Green Buildings Initiative. The project cost \$22 million dollars and came from the New York State Energy Research and Development Authority and other city agencies.^{26,27} Was it worth it? Well, it was a costly project, and “for BKSK the project

wasn’t a money maker. The DDC [Department of Design and Construction] fee structure didn’t begin to account for the length or complexity of the project.”²⁸ The project, however, serves as the ideal pilot project, inspiring other organizations to “go green.” For example, the DDC learned of the difficulties of putting in the garden’s geothermal system. This knowledge was passed on to the Brooklyn Children’s Museum and the Bronx Zoo, which were looking to put in their own geothermal system. Other city agencies, organizations, private firms, and universities have also

²⁴ De Feo, Nicole. E-mail correspondence. 29 Oct. 2008.

²⁵ De Feo, Nicole. E-mail correspondence. 29 Oct. 2008.

^{26,27} De Feo, Nicole. E-mail correspondence. 29 Oct. 2008 and Queens Botanical Garden Visitor Center: Finance & Cost. BuildingGreen.com. 18 Oct. 2008.

²⁸ Bernstein, Fred A. “A Garden Blooms in Queens.” Metropolis Magazine 20 Feb. 2008.

contacted the Queens Botanical Garden to learn more about the site's design and construction.²⁹ It seems that the Visitor and Administration Building is now also an educational center for sustainable design.

Walking away from the Visitor and Administration Building and the currently dry fountain, it was a relief to not find any ash piles on site. For a poet or a writer, the trees and trickling stream could be a metaphor for the growth of social and environmental stewardship. The completion of the building is a great gift from the city to its dwellers. Not only is the garden free of charge and serves as a quick getaway destination to the stressed out New Yorkers, it teaches visitors on the importance of sustainability. More importantly, it shows visitors, developers, and government officials in and out of the city that sustainability works and is achievable.



*View from the Herb Garden.
Visitor and Administration Building in the background.*

²⁹ De Feo, Nicole. E-mail correspondence. 29 Oct. 2008.

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