Gateway as Greenway - Re-envisioning Gateway National Recreation Area: An inquiry into biophysical processes and cultural history to interpret a national park of the future

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Master of Landscape Architecture
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Frank Sleegers, Committee
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INTRODUCTION

On October 27, 1972, Gateway National Recreation Area (NRA), located in New York and New Jersey, was established as one of two national recreation areas intended to serve urban areas. Along with Golden Gate NRA in San Francisco, California, these were the first two national parks to be brought closer to large, urban populations. The creation of these urban parks was the result of a social objective: creating parks that were truly in reach of large populations of people (Rothman, 2004). Thirty-five years later, while Golden Gate NRA thrives as an active recreation area for the people of the San Francisco area, Gateway struggles “to meet the aspirations of its founders, to negotiate its relationship with the communities that surround it, and to balance the goals of historic preservation, environmental conservation, and active recreation” (Van Alen competition brief). In a poll of New York City residents, conducted in 2006 (Zogby, 2006), under the collaboration of the National parks Conservation Association, 47% of the residents polled were not aware that the Gateway NRA existed. This differs from the pro-active Bay Area residents that greatly identify with the GGNRA and who pride themselves in their very own national park.

Figure 1: Gateway NRA (source: Competition Research Report)

Gateway National Recreation Area

Gateway NRA encompasses 26,607 acres of land that is dispersed throughout Jamaica Bay in Brooklyn, the eastern coast of Staten Island and the northern coast.
of New Jersey. The majority, or 16,233 acres, of the park is water, with the remaining 10,374 acres consisting of land. “Gateway ... presents a significant regional resource with incredible infrastructural, ecological and cultural value in the New York metropolitan region, hosting endangered birds, fish and shellfish breeding grounds, marinas, playfields, and cultural relics. It is also the site of combined sewer outfalls, treated wastewater effluent, abandoned buildings, degraded habitat, drowned marshes, former landfills and vast asphalt runways” (competition brief).

Gateway NRA consists of three units: Jamaica Bay Unit, Staten Island Unit and the Sandy Hook Unit. While each unit has abundant historic, cultural, ecological and recreation resources, each provides a unique experience for the visitor. The Jamaica Bay Unit includes New York City's first major airport and coastal fortifications as well as a national wildlife refuge and beaches. In 1924, Robert Moses proposed a park on the north shore of Jamaica Bay represented the last chance to preserve the bay’s wild marshes and abundant animal and bird life from commercial exploitation (Caro 1974, p. 343). Jamaica Bay was to be “the greatest urban waterfront park in the world (Caro 1974, p. 921). The Staten Island Unit provides open space and access for recreational uses such as soccer and baseball, and fishing to sailing. In addition this unit includes the historic of Fort Wadsworth and World War Veterans Park at Miller Field. The Sandy Hook Unit offers beaches, a Holly forest and other natural and recreational resources as well as the Sandy Hook Light, America's oldest operating lighthouse (1764), and Fort Hancock and the Sandy Hook Proving Ground.

**Design Competition**

Gateway’s size and dispersal among two different states and three different city boroughs present many challenges to the park. Additionally, Gateway’s identity as a national park is not known or well defined. Therefore, the competition sponsor's see the redesign of Gateway NRA to be an opportunity for re-
conceptualizing the role of national parks relative to an increasingly urbanized landscape.

Envisioning Gateway is an international competition sponsored by the partnership of Van Alen Institute, National Parks Conservation Association and Columbia University Graduate School of Architecture Planning and Preservation. Designers were invited “to play a vital role in Gateway National Recreation Area’s future by generating innovative, visionary and compelling proposals that celebrate the unique potential of the park as both a significant regional resource and a national environmental treasure” (competition brief).

The competition is being held in anticipation of the National Park Service Centennial in 2016, which will provide an opportunity to reinvest in Gateway by focusing on a renewed commitment to environmental education based on an understanding that “nature” in urban environments is complex, actively constructed, and dynamic.

Goals and Objectives
The goal of the redesign and master plan as presented in this master’s project is to provide new strategies to ensure the future vitality of the park and to create a sustainable urban-eco center. Through re-conceptualizing the role of Gateway, the project will show how ecological, cultural and historical resources can coexist and be sustained in one the most populous cities in the United States. The final project submission will be based on the guidelines and requirements of the Van Alen Institute competition: Envisioning Gateway.

The conditions and challenges competitors were asked to address in the design submittals are as follows (see competition brief in Appendix for full conditions and challenges description):

- Ecological
- Historical
- Recreational
- Educational
- Waste Management
- Access and Transportation
- Economic Strategies
The following objectives were suggested for design concepts:

- Rethink what the term "nature" means when defining a park in post-industrial urban conditions.
- Create a clear national identity for Gateway that celebrates its unique urban and ecological heritage.
- Reinforce the identity of Gateway as a 'gateway' to the wider National Park experience, as well as the initial aspirations of Gateway's founders "to bring parks closer to the people."
- Connect Gateway's diverse set of sites and programs to create a unified park system, and improve access from surrounding areas.
- Establish a destination and symbolic center of Gateway in a new park at the site of Floyd Bennett Field.
- Emphasize and integrate the presence of water as a defining feature of the larger Gateway landscape and of the new park at Floyd Bennett Field.
- Reinforce the National Park Service's ethic of stewardship of historical and ecological sites by maintaining and integrating existing wildlife and ecological habitats into the new park program at Floyd Bennett Field.
- Recognize and expand upon the diverse social and cultural activities that currently exist throughout Gateway and at Floyd Bennett Field.
- Imagine new park programs that will help ensure the long-term viability of Gateway and of the new park at Floyd Bennett Field.

Based on the Conditions and Challenges outlined above, competitors were asked to address Gateway at two scales:

**Gateway Master Plan:** Developing a new master plan and strategy for creating a unified experience when visiting Gateway National Recreation Area.

**Park within a Park:** Within the larger approach developed above, design a new park sited at Floyd Bennett Field within the Jamaica Bay Unit of Gateway

**Competition Structure and Submission Requirements**

The competition is an open, international competition that requires the digital submission of anonymous design ideas. Submission requirements include:

1:2 mile scale of the entire park; 1:500-foot scale plan
of Floyd Bennett Field; two perspectives; and a 250-word abstract. The design was to be submitted via two 30”x40” boards, which would be printed at the Van Alen Institute, and displayed side-by-side during the jury deliberations. To add to the challenge, file size of the documents was limited to 10 MB per board.

**LITERATURE REVIEW**

The purpose of the literature review was to gather a better understanding of the National Park Service and the goal of National Recreation Areas and to look at different views regarding the re-envisioning of pre-developed sites to inform the design process.

National Recreation Areas do not fit into the National Park Service interpretation framework (Rothman, 2004 p. 150). GGNRA and Gateway became “part of the vanguard of a re-envisioning of the ideal of national parks in American society (Rothman, p. ix). Urban parks reflected the most basic tension in the agency mission of “dichotomy between preservation for the future and available public use in the present” (Rothman, 2004 p. ix).

Previous national parks “shared a combination of inaccessibility for commercial economic purposes that made them valuable manifestations of American
cultural needs instead of sources from which to wring wealth” (Runte, 1964).

From the competition research report:

From 1916 to 1942 the character of the NPS developed as “landscape architects, architects, and engineers forged a cohesive style of landscape design which fulfilled the demands for park development while preserving the outstanding natural qualities” of each park. Many of these early parks were in the dramatic landscapes in the western interior of the country. Thus the NPS focused on landscape or scenic preservation. It identified wilderness areas to be preserved with limited access and camouflaged any new development. The design vocabulary came from the 19th century English gardening tradition, which gained popularity in America through the park designs of Fredrick Law Olmstead as well as the writings of Andrew Jackson Downing. The style was employed to “create a system wide identity for the national parks in the 1920’s.” This identity is the basis of what now makes up the “National Park Experience.” The “Organic Act” outlines the purpose of the NPS, and the “Enabling Legislation” describes the particular national park’s purpose, boundaries, resources and the mechanism for revisions. The “Organic Act,” establishing the National Park Service within the Department of the Interior, was enacted on Aug. 25, 1916. It is contained within Title 16, Chapter 1, Subchapter I of the United States Code. “The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified … which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” Title 16, Chapter 1, Subchapter I, 1 Thus the NPS’s role fundamentally serves as a “pact between generations,” in perpetuity. The present generation is responsible for continuing the conservation of resources from past generations, so that future generations may enjoy them and continue the tradition of conservation. However, this does not mean that the NPS has a static management system. In fact, changes happen as the cultural climate evolves and the NPS continues to “envision and ensure a system of parks and programs that benefits a new generation of citizens in a changing world.” The “Organic Act” not only defines the mission of the NPS, it also defines the purpose of the national parks as a collective system.”

The nature exemplified by 18th and 19th century landscapes offered an alternative to the constraints of organized society. Those bucolic ideals reflect the
values and landscape of a pre-industrial, largely agrarian world. Today, the designer’s task is to transform what we might think of as blighted sights into places that challenge not only our preconception of what makes a park but also what makes a landscape beautiful (Reed 2005. p. 25).

Case studies
These case studies, in concept, inspired the decisions made in the planning approach to Gateway National Park and the design of Floyd Bennett field: Golden Gate National Recreation Area, San Francisco, California; Boston Harbor Islands, A National Park, Boston, Massachusetts; Gas Works Park, Seattle, Washington, designer Richard Haag; and Duisburg Nord Landschaftspark, Ruhr Valley, Germany, designer Peter Latz + Partners. Two of these case studies were selected to understand the management practices and interpretation guidelines for National Recreation Areas in similar contexts. The other two were similar in size and the designers solved problems of site and program for former industrial sites that did not hide the former uses but used the existing structures as landscape elements.

Golden Gate National Recreation Area
San Francisco Bay, California
74,816 acres
13,154,102 visitors annually

(image taken from www.nps.gov/goga)

Golden Gate National Recreation Area (GGNRA) formed as a response to organizations that wanted to conserve land and hinder sprawl and development. It is made up of city, state and county land located in the San Francisco Bay area. After the Golden Gate Bridge was constructed, and became national symbol, conservationists proposed that lands around
the bridge be conserved and designated as a national monument. Later, these same conservationists from the Sierra Club founded a grassroots organization to lead a drive for a national park unit in the San Francisco Bay Area (Rothman, 2004). On October 11, 1972, during the last week of his re-election campaign, Nixon signed the bill creating both Golden Gate NRA and Gateway NRA.

In the beginning, the park planning team recognized the need to hear more from the public than previous NPS planners had done. Historically in the NPS planning process, the public did not see plans until after they were finalized. GGNRA was not seen as a national park. There were no visible boundaries or signs; it was easy to overlook that national status. Planners were forced to live in the project and listen to constituents for one year before they could start the planning process. Over 400 public workshops were held during the planning process (Rothman, 2004). This type of park has more day use and less obvious significance than other historic NPS sites, like batter grounds, etc. NPS personnel and resources were distributed across a wider spectrum than in most national park areas (Rothman, 2004, p. 149). Another one of the many challenges of the management of the GGNRA was that the national park that was created had already been defined as specific places for various purposes. The components were known more as local features rather than as a whole National Park (Rothman, 2004).

Interpretation became the key to the success of providing the park to a national audience while supporting local goals. The General Management Plan (GMP) called for interpretation to be tied into a laboratory for public education, discovery of parks attributes, creating a sense of ownership (Rothman, 2004).

The success of the GGNRA is owed to the management’s commitment to agency goals and the flexibility of leadership in building support in both the public and private sectors for the park. Golden Gate National Park Association (GGNPA), a cooperating association, was formed as a centralized
board to help deal with interpretation issues. GGNPA was critical to the success of the park. They had fundraising experience and capability, volunteers, resources, and acute decision making (Rothman 2004, p. 167).

In the mid-1990s, they hired a prominent advertiser to develop a “brand name” for the park: Golden Gate National Parks, which represented that park as a family of sites allied together.

Some of the strategies that have led to the success of GGNRA becoming a comprehensive national park are: use cultural resources; adaptive reuse of historic resources; natural resource management; and the diverse resources catered to many publics (Rothman 2004).

Boston Harbor Islands, a national park
Boston, Massachusetts
1,600 acres at high tide and 3,100 acres at low tide. 150,000 visitors annually.

“The mission of the Boston Harbor Islands, a national park area, is to make the island system an integral part of the life of the surrounding communities and region, and to protect the islands as a resource of national significance, while improving public knowledge and access for education, recreation, and restful solitude within an urban area.” (Boston Harbor Islands Draft Management Plan, 2000)

(image taken from www.nps.gov/boha)

The Boston Harbor Islands (BHI) National Recreation Area includes thirty-four islands situated within the Greater Boston shoreline. Seventeen of these islands are also considered to be part of the Boston Harbor Islands State Park, under the operation of the Department of Conservation and Recreation (DCR).
Nine entities, consisting of federal, state, municipal and private/non-profit organizations, own the Harbor Islands.

The BHI NRA was created in November 1996. The BHI contain a military fort, tide pools, salt marshes, trails, picnic and swimming areas, and the nation’s most historic lighthouse, all at the edge of the urban center of Boston. Logan Airport is located adjacent to the BHI. The NPS identifies the BHI as a transition between the open ocean and the settled coast. It’s not only a “physical entrance, but a gateway to a long sweep of history, from Native American uses through the explosive growth of the city and industry and the concerns of the current post industrial age.”

The Commonwealth of Massachusetts began acquiring the islands in the 1970s to hold for the benefit of the public. The improvement of the harbor waters has regenerated the biotic communities of the islands and the sea around them.

Approximately 150,000 people visit the 16 islands managed by the DCR. Carrying capacities were established in the 1986 Boston Harbor Islands State Park Master Plan in order to enhance visitor experience as well as protect the natural resources.

From early May to mid-October, a passenger-ferry company under contract to the state provides service for the public to George’s Island from three mainland points. George’s is the long-standing transportation hub of the island hub. From George’s, passengers can then use the water shuttle service which goes to Bumpkin, Gallop’s, Grape, Lovell’s, and Peddock’s islands. In addition, the park management estimates that up to 50% of the island visitors arrive by private boats. Islands accessible by road include: Deer, Nut, Moon and long islands, and World’s End.

The harbor islands changed their name to the Boston Harbor Islands, a national park area, in order to remove the idea of recreation from their purpose. They did this because the land is held sacred by
Native Americans as their ancestors were incarcerated, died and were buried on some of the islands during King Philip’s War.

The islands have become not only a recreation area for urban residents, but also a laboratory to learn about natural processes and cultural history. The collaborative that manages the islands wants to focus more on the park’s resources and history than on recreation.

The basic tenets of the NPS 1996 park legislation are that: “the recreation area shall be administered in partnership by the Secretary, the Commonwealth of Massachusetts, City of Boston and its applicable subdivisions and others in accordance with the provisions of law generally applicable to units of the National Park System...” Thus, establishing the Boston Harbor Island Partnership. Advisory Council made up of federal, state and local organizations. Seats are held by: state agencies; private/non-profit agencies; the Island Alliance; the Trustees of Reservations; Thompson Island Outward Bound Education Center; National Park Service; US Coast Guard; Boston Redevelopment Authority; and the City of Boston Office of Environmental Services.

Successful programming for the park as a whole include education opportunities (based on marine life, natural resources, forts, pirates, archeology, wars), research (EnviroLab, different universities), and a new renewable energy initiative. The renewable energy resources are: photovoltaic panels on the Spectacle Island visitor center, as well as remote panels on other small islands. Hydro-turbine at Deer Island MWRA to produce 10% of its energy used. Bioenergy from the Deer Island Facility (methane powers a steam turbine generator). An online component for learning and outreach to schools has been created as a resource for teachers and students. Ongoing activities throughout the park include concerts, historic reenactments, boating, swimming, sunset cruises and lighthouse cruises. External cooperation with cultural, recreational resources outside of the park is considered vital.
The Park has been divided into six management areas, giving certain resources protection regardless of their location: Mainland Gateways; Visitor Services and Park Facilities; Historic Preservation; Managed Landscape; Natural Features; and Special Uses.

Duisburg Nord Landschaftspark– International Building Exhibition – Emscher Park
Ruhr Zone, Germany
Designer: Peter Latz: Latz + Partner, Kranzberg, Germany
Site: Former Thyssen Steelworks site, 570 acres

The site is located in the densely populated Ruhr Zone in Western Germany. The Ruhr Valley was once a mining and steel producing region, and has lost its economic value, leaving behind an industrial landscape. In 1989, planners, landscape architects, architects, artists, and historians became involved in a ten-year program to create a new regional park. The 800 sq. km. Emscher Landscape Park links 17 cities in the region and builds on its industrial past.

The site invokes a “landscape experience rich with memories, associations and feelings” (Reed 2005). Latz took cues from the existing infrastructure (network of rail lines) to give coherence to the system of paths and used existing structures as part of the landscape.

Programming at the site includes pedestrian and bike trails, prairie, plazas, gardens, and recreation areas (rock climbing, meditative enclosed gardens, play grounds).

Remediation of contaminated soils and water was incorporation into the design. The former sewage channel was cleaned up and included as part of the

(image taken from http://www.landschaftspark.de)
Gas Works Park is a city park that was developed on the former Seattle power generation site, located on the edge of Lake Union in Seattle. The design involved minimal intervention. Haag selectively edited the machinery, modifying it, with restraint, for recreational use. The park stimulates an “individual unconscious.” (Saunders, 1998, p. 12). The design concept is Terra incognita: that which is visible is challenged by the invisible (ibid, p. 7). “Industrial ruins [were] adapted to recreational use and exposed to the sky, wind, and the city beyond” (p. 6). The industrial fragments at Gas Works have come to be associated with danger and trauma as much as regeneration and healing” (p. 7). “The conquered Gas Works told a story of improvement and an act of redemption for industrial pollution” (p. 17). Gas Works park is based on the improvement of the site, regeneration and healing. It was a model for the “act of redemption for industrial pollution” in America. The machinery becomes “less consequential and more part of the park of a cast of characters than sole performers within the park (Saunders, p. 19).
Summary of Case Studies

To summarize, the success of both the Golden Gate and Boston Harbor Islands NRAs is owed to the level of connectivity and accessibility. In addition, management plans at each of these parks have established a cooperative administration practices. The management of the parks is administered in cooperation with the private sector, municipalities, state level organizations and other organizations. Also, it is interesting to note that each of the parks has been re-branded, no longer are they known as National Recreation Areas. Golden Gate National Parks and Boston Harbor Islands, a national park. Operators of each park understand that this has been an important step in creating greater public understanding of the goals and programs of each park. As the NPS looks to create the new Management plan for Gateway in 2009, the management plans for these two parks should be reviewed and modeled after.

The take home point of looking at both GasWorks Park and Duisburg Nord is to reveal the history of the site, use existing structures, and take cues from existing infrastructure to influence design. In addition, each park design makes regeneration and healing as part of the experience.

PROJECT DESCRIPTION AND ANALYSIS

Site Description

Gateway National Recreation Area (NRA)
The Gateway NRA consists of 26,607 acres, with 16,233 acres under water and the remaining 10,374 acres consisting of land. The park is comprised of three units: Staten Island Unit; Jamaica Bay unit in Brooklyn and Queens; and Sandy Hook unit, located in New Jersey. The park amenities are listed below:

State Island Unit
- Miller Field (World Wars Veteran Park, recreation fields)
- Great Kills Park (beach access)
- Fort Wadsworth
- Hoffman Island
- Swinburne Island

Sandy Hook Unit
- Sandy Hook Light
- Fort Hancock
- Sandy Hook Proving Ground
- Beaches, Holly forest, Recreational resources, windsurfing/swimming
Jamaica Bay Unit
Jamaica Bay Wildlife Refuge (Wildlife refuge, Carnesie pier (canoeing and kayak access), bird watching, beach)
Floyd Bennett Field (Park administration, NPS visitor center, Ecology Village, Environmental Study area, Sports Complex, AC Model Airfield, Historic Aircraft Restoration Project, Marina, Community gardens, beach, hiking, nature walks, golf, restricted access (NYC Police Department, Department of Sanitation, USMC Reserve Center)
Fort Tilden
Jacob Riis Park/Beach (little league fields, boat and ferry landing)
Breezy point natural area

Floyd Bennett Field
Floyd Bennett Field is a 1,358 acre piece of land located within the Jamaica Bay Unit. The site was New York City's first municipal airport; today several programs operate at the site, but there is no clear definition of the program of the airfield as a park.

Figure 2: Gateway NRA (source: competition website)

Figure 3: Existing Floyd Bennett Field programming
Site Analysis
Due to size of Gateway NRA, as well as the scope and objectives of the competition, the site analysis for the park as a whole was limited to research on park amenities, transportation and connectivity. In addition, open space networks for the site region, including those outside the boundaries of the Gateway NRA, were also mapped.

Ecology
“The Harbor Estuary has a geographic and ecological complexity that is unique in North American estuaries. Jamaica Bay, a classic barrier beach wetland complex, is part of the Harbor Estuary system. The natural resources and physical characteristics of the harbor estuary first drew European settlers to New York and then made New York America’s and now the world’s leading metropolis. Today twenty million people live within a fifty mile radius of the estuary. Yet despite this density of human settlement and the trillion dollar economy that surrounds it, critical ecosystems of national significance are hanging on around the estuary. Preservation and restoration of these sites is critical to the ecological health and future of the region” (www.rpa.org, accessed March 2, 2007).
Landfills, dredging, erosion, and development, along with many other factors, have changed the shoreline of Jamaica Bay over the last century. These activities have compromised the water and habitat quality within the Bay. The changing shoreline of Floyd Bennett Field in association with its development as an airfield is illustrated in the figure below.

Transportation
The majority of the Jamaica Bay Unit is directly accessible by car from the Belt Parkway, with connections via Flatbush Avenue and Marine Parkway Bridge, or Cross Bay Boulevard and Cross Bay Bridge. The Verrazano Narrows Bridge provides vehicular connectivity from the Belt Parkway to the Staten Island Units and to interstate highways for connections to the Sandy Hook Unit.

Subway access is available for the Staten Island Unit and those portions of the Jamaica Bay unit, including the NWR headquarters and the Rockaway Parks. Floyd Bennett Field and the entire Sandy Hook Unit are not directly accessible by subway. Bus lines extend to all units of the park, with the exception of Sandy Hook. There is direct access from Manhattan to Sandy Hook via the ferry. There is also a ferry stop located on the northern tip of Staten Island, west of Fort Wadsworth. Overall, there is limited access.

Figure 5: Changing Shorelines (based on information from New York RPA)
between the three parts of Gateway.

There is no direct subway access to FBF. The A line subway line provides access to the Jamaica Bay NWR area and Rockaway parks. A bus line runs along Flatbush Avenue, provides the only public transportation to FBF.

Pedestrian and Bikeways
All of the sites, except Floyd Bennett Field are located within walking distance to residential neighborhoods. The Belt Parkway Bikeway runs along the northern coast of Jamaica Bay, and connects to the Rockaway Greenway Bikeway, which provides access to FBF.
**Floyd Bennett Field**

Cultural Contributions

The period of historical significance for FBF dates to the commercial aviation period, or the “Golden Age” of flight in the 1930s. The site is nationally significant as an early municipal airport and as the location for many record-setting flights from nationally known aviators. In addition to its significance for commercial aviation, the site is also considered to be significant for the activities of Naval Units during World War II.

FBF was developed as the first commercial airport in New York City, constructed in 1928-1931. The airfield was developed to bring air traffic into New York City, instead of to Newark, New Jersey, where the only airport serving the city existed at that time. However, Idlewild Airport (now JFK Airport) was constructed in 1939, and forced FBF to close as a commercial airport in 1941. The airfield then became Naval property in 1942. The Navy filled in remaining wetlands, giving the site the shorelines of today. The Barren Island settlement became Navy housing. During WWII, FBF was one of the busiest airfields in the United States. The Naval Air Station was decommissioned in 1972.

The Naval air reserve detachment and Coast Guard air station retained their facilities on the eastern portion of FBF and the remaining was transferred to the Gateway National Recreation Area. In 1980, the Floyd Bennett Field Historic District was listed to the National Register.

Prior to the filling and development of the area for FBF, the area was originally made up of several small islands interconnected by estuarine streams.

A settlement of workers form a large fertilizer and glue factory in the bay grew on Barren Island, what is now the southern portion of FBF. The community settled in the early 1800s, and occupied the island until the Navy took over the site in 1941.

Runways

The historic pattern of the runway is considered to be a significant cultural/historical contribution to the site.
The northeast/southwest runway and the northwest/south-southeast runway were constructed in 1929 and 1931. The U.S. Navy expanded the original runways, and created the other two runways after 1941. The National Register historic district includes the area encompassing the runway system as it existed prior to 1941.

Figure 8: Contributing Historic Features
Figure 9: Existing land mass and coastline

Figure 10: Existing pavement/impervious surfaces

Figure 11: Existing Building Footprints

Figure 12: Overlays of existing site features
Vegetation
Approximately 420 acres of coastal scrub habitat can be found along the western side of Flatbush Avenue (south of the marina), in areas at the southern and northernmost reaches of the runways, and in the North Forty area. The National Park Service maintains the Grassland Management Areas, which consist of approximately 120 acres of meadows located in the areas of land between the runways.

Wildlife
Along with the other islands and undeveloped areas of the Jamaica Bay Unit (Jamaica Bay National Wildlife Refuge), FBF provides a prime habitat for migrating birds. Few small mammals reside in the grasslands, waterfront and North Forty area. The busy roads, urban development, and water create barriers for the wildlife which resides in FBF.

Hydrology
FBF is located on a peninsula which is surrounded by Rockaway Inlet to the south, Mill Basin to the north, Dead Horse Bay to the west, and Jamaica Bay the east. Rockaway Inlet connects Jamaica Bay to the Atlantic Ocean. With the exception of small open water areas in the North Forty area, there are no water sources on FBF.

Water Quality
Water quality on FBF is a major concern due to the high quantity of impervious surfaces (asphalt, concrete, large buildings). The Grasslands Management areas provide some natural stormwater
management. Pollutants from vehicles accumulate in the stormwater runoff. Runoff that is not naturally mitigated travels across the runways and parking areas and flow into the Bay, carrying pollutants with it. In addition to runoff concerns, the impervious surfaces prevent groundwater tables outside of the North Forty and Grasslands Management areas from being recharged.

Topography and soils
The land at FBF was filled in and graded for use as an airfield, therefore, the majority of the site is flat. Up to nine feet of fill was brought to the site to create the airfield. Topography on the site ranges from 12 to 15 feet above mean sea level (amsl), with the lowest elevations found along the shoreline and highest in the center of the site. Higher elevations, up to 17 feet amsl, are found in the North Forty Area, where the land was not disturbed for the development of the airfield.

Summary
To summarize, the challenges to the success of Gateway NRA are plentiful: multi-constituency; various management; different uses; lack of efficient management; connectivity; and lack of cohesive program. Beyond the lack of a cohesive program, there is a lack of connectivity and accessible between the park units, and between the park and its users.
THE DESIGN: GATEWAY AS GREENWAY
Design Process and Development

The design process was based on finding solutions to the challenges and objectives of the design competition. For the Gateway NRA, I wanted to find a way to enhance connectivity and integrate with the city of New York. Given the development pressures that New York City region will be facing for years to come, I wanted to create an open space resource that was easily accessible for the people to use. I also wanted people to know that there was a national park in Brooklyn.

In the beginning, I started with case studies. I decided on the case studies based on similarities to the competition site, hopeful that lessons could be extracted and applied to my design. I then looked for design inspiration from as many examples of contemporary landscape architecture that I could find. Examples such as Hellinikon Metropolitan Park in Athens, Gnuchtel Airfield in Germany, and Crissy Field provided much inspiration. I wanted to find other examples of re-use and re-envisioning of large parks.

At the same time I was reading excerpts from the Power Broker and various resources on the history of New York.

I visited the site twice: on a rainy day in March and on a warm and sunny day in April. The visits were limited to the Jamaica Bay Unit, the entire length of the Belt Parkway, and Flatbush Avenue.

The site analysis consisted of a review of historic, geologic, vegetative maps, satellite images, and historic aerial photos. I consulted primary resources provided by the Van Alen Institute as well as all information available to the public through the National Park Service. GIS data was difficult to acquire, therefore, GIS analysis was limited.

After two months of research and analysis, I began to work on the design. Design decisions were based on understanding of the regional and historical context, requirements of the competition, and the site analysis previously described. At first I worked at the scales
required by the competition: 500-foot scale for Floyd Bennett Field and 2-mile scale for the entire park, eventually looking at different scales to better understand the context of the design. The base map was created using AutoCAD data provided by the competition, aerial photographs, and GIS layers obtained through the State of New York. I developed ideas first on trace, and then transferred the ideas into AutoCAD in order to work at different scales more easily. Based on the size of the site, this proved to be more efficient than moving between scales by hand. The maps were rendering in PhotoShop. Consultation with faculty members on a weekly or bi-weekly basis helped lead my design.

The submittal board was an integral part of the design. A color scheme was established based on a 1930s poster for Floyd Bennett Field. The layout was decided on to convey the importance of the greenway design while still meeting the requirements of the design competition.

Figure 15: Color Scheme Inspiration: Poster for Floyd Bennett Field (Source: www.airfields-freeman.com)
Design Concept

Figure 16: Competition Submission Boards (original document size: (2) 30"x40" boards)

0101: Gateway as Greenway (250-word statement presented to the competition)

The concept is to integrate the open space resources with surrounding communities via Green connections. By connecting and enhancing existing greenways, access to recreation and ecological habitats for the residents of this dense urban area will be enhanced. These connections will also support the goals of sustainability and provide alternative modes of transportation. By focusing on innovative methods of connectivity for users, and providing models of sustainability, the NPS of the future can be successful. As a National Recreation Area, Gateway can become a national symbol for the ‘GREEN-way’ of living.

Along Flatbush Avenue, the airfield provides new active recreation opportunities, concession and rest
areas for Greenway users, the Airfield Museum, and headquarters for the Gateway NRA. Programmed outdoor activities in this core area include: skate park, model airplane runway, model car runway, playgrounds, sport fields and runways for uses such as landsurfing. A new canal increases access to the shoreline while providing controlled water activities.

The existing education center and programming on site will be expanded as the Sustainability Institute. One of the research projects of the institute will be shoreline restoration program. The changing shoreline will be a phased process with several experimental zones. The zones will be accessible by the public through a trail and boardwalk system that will change the changing shoreline. An urban eco-village integrated with the research campus as well as resort community that allows visitors to experience the ‘GREEN-way’ of living. The resort is reminiscent of a time when visitors stayed within National Parks.

Program

Master Plan: Park as a Whole

Figure 17: Proposal for Gateway NRA area (original scale 1”=2miles, aerial photograph from TerraServer)

The goal of the design is to increase visibility and success of the park by integrating the park into the city of New York. By enhancing networks and
recreational opportunities, the NPS can create partnerships with New York City, and other private and non-profit organizations that work to enhance the resources of the city. By looking at Gateway as a Greenway accessibility and circulation by bicycle and/or foot will be greatly increase. At the larger scale, proposals to integrate the park into the surrounding communities include creating connections between existing greenways; a proposed pedestrian and bicycle lane on the Verrazano Bridge; completing the Gowanus Greenway (proposed by others); enhancing Ocean Parkway; and creating the Flatbush Avenue Greenway.

Connections along the waterfront will be created between Gateway and city parks, such as the Red Hook Recreation Area, Shore Park, and the new Brooklyn Bridge Park by Michael van Valkenburgh. Flatbush Avenue will be an important corridor between the site and Prospect Park. Through these connections, users will be able to access various levels of leisure and active recreation.
In addition, the subway line will be extended along Flatbush Avenue, connected Floyd Bennett Field with the rest of the subway network. Additional ferry stops at the marina at Floyd Bennett field and Riis Park will be the major connection between the three park units.
Floyd Bennett Field: a Park within a Park

The design of Floyd Bennett field is based on the strong forms created by the existing runways. Interventions are proposed on the runways, as well as along the shoreline, the historic district, and the southern portions of the site. The historic district is supplemented with additional buildings to create a strong urban core along Flatbush Avenue. The programming for this core includes a new Center for Gateway, enhanced aviation museum, and both indoor and outdoor recreation opportunities. The main entrance to the site will be in front of the existing Ryan Visitor Center. A plaza will be designed, which will cross Flatbush Avenue and connect to the marina and new ferry stop. There will be informal entrances in the North Forty area for users of the Greenway.

The runways will act as connections between the different elements of the park. The east-west runway will be converted to a canal, connecting to the urban/active recreation division of the park. The canal increases access to the shoreline, and aids stormwater mitigation on the site. Several bridges will be created to provide circulation throughout the area for bicyclists and hikers.

The north-south runway is converted to a series of athletic fields, and model runways. The northwest-southeast runway is reduced to its original 100-foot width, and will be maintained as an asphalt surface for continued recreational uses (no vehicles). The northeast/south-southwest runway will be maintained in a way that allows nature to take over. The runway will still be accessible for pedestrians and cyclists; however, the majority of the concrete will be broken up into various stages of decay. Inspiration for this is taken from the current condition of disrepair and from
images of the Old Niddawiesen Airfield. This runway acts as the metaphorical division between the urban/developed uses of the site, and the ecological restoration components of the site.

Old Niddawiesen Airfield (source: BDLA Bund Deutscher Landschaftsarchitekten)

Program in Context of Design Competition Goals:

**Historical**
Floyd Bennett Field Historic District
Enhancing the historic district, by using structurally sound historic structures, and using the historic pattern of runways and building configurations to inform design. In addition, the design will enhance existing airfield museum, and provide additional interpretive and education opportunities.

**Recreational**
The urban core of the airfield, found along Flatbush Avenue, provides new active recreation opportunities, concession and rest areas for Greenway users; the Airfield Museum; and headquarters for the Gateway NRA. Programmed outdoor activities in this core area include: skate park, model airplane runway, model car runway, playgrounds, sport fields and connections to runways for uses such as landsurfing and cycling. A new canal created along the E-W runway increases access to the shoreline while providing water-based activities, such as kayaking and canoeing.

**Educational, Ecological and Waste Management**
Sustainability Institute and Urban Eco-Village:
The urban eco-village will include the buildings of the Sustainability Institute research campus as well as a resort community that allows visitors to experience the ‘green-way’ of living. The Sustainability Institute will expand on existing programming at the site and serve the city of New York as a resource for researching sustainable practices and strategies. The resort is
modeled after the Central Parcs system of leisure resorts in Europe, and is reminiscent of the days when visitors stayed at lodges and cabins within US National Parks. By staying in the eco-village, visitors can partake in birding tours, hiking, plant/eco-system tours, fishing, scuba diving and other water-based activities.

Changing Shoreline:
A shoreline restoration program will be implemented as part of the programs of a research and learning campus. The changing shoreline will be a phased process with several experimental zones of wetland and marshland restoration. The zones will be accessible by the public through a trail and boardwalk system that will change with the changing shoreline.

Habitat Preservation and Restoration:
Preservation of the North 40 and GRAMP areas will continue, and new areas of ecological and habitat restoration will be created as part of the research campus.

Reduction of Asphalt and other impervious surfaces:
By reducing the amount of asphalt and other impervious surfaces on the site, natural areas will be able to mitigate stormwater runoff. And by reducing the use of vehicles on the majority of the site, the amount of organic pollutants reaching Jamaica Bay will be significantly reduced.

Access and Transportation
Transportation Hub:
With the expansion of the subway line and ferry line, a new center for the Gateway NRA will be created and accessibility for NY and NJ residents will be increased. A plaza will be designed, connecting the marina and
subway stop with the visitor center. By create a plaza that crosses Flatbush Avenue, traffic in this area will be calmed, allowing for safer crossing for park users. Where before Flatbush Avenue acted as a barrier, it will act as a corridor connecting the site with the surrounding community. Shuttle service on site will be provided to connect to activities throughout the site. A bicycle rental service will also be provided.

Economic Strategies
Strategies to increase the economic viability and sustainability of the park have been included in each of the abovementioned strategies.

CONCLUSIONS

The design proposals for Gateway as GREENway made by this master's project succeed in addressing, at various scales of detail, the goals outlined by the Envisioning Gateway Design Competition. The design approach was rooted in the understanding of the regional context, and the historically and ecologically-significant characteristics of the site, specifically Floyd Bennett Field.

The design, and the representation of the design ideas, would have benefited from a longer time period, better understanding of representational techniques at such a large scale, and cooperation with a team. I felt that this goals and objectives of the design competition, as well as the size and scale of the project site, were overwhelming. This was a job for a team of designers.

Retrospectively, I would have liked to focus solely on the design of Floyd Bennett Field, paying more attention to the logistics of the shore reclamation
progress, the eco-village, and a more cohesive circulation program. In addition, the implementation and maintenance of the canal and the “nature taking over” runway designs could have taken another four months of conceptualization and redesign.

As the human population increases, the re-envisioning and restoration of pre-developed sites that have fallen out of use will have a very important role in mitigating the impacts of development pressure. Sites such as Floyd Bennett Field are great assets in the role of open space and park design. Many examples already exist in Europe, and it seems that the role of landscape architects in creating these recovered landscapes in the United States will continue to be on the rise.

**Epilogue**

This design board was submitted to the Van Alen Institute on May 8, 2007. Although the winners have not officially been announced, I have been told that my submission made the first round of cuts, landing in the top 35. Although I did not have the winning entry, my board will be part of a public exhibition in Fall 2007.
Envisioning Gateway: Design Competition Brief
(the competition logistics were transmitted via a paperless process; therefore, the following is adapted from the website www.vanalen.org/gateway)

The partnership of Van Alen Institute, National Parks Conservation Association and Columbia University Graduate School of Architecture Planning and Preservation invites designers worldwide to play a vital role in Gateway National Recreation Area’s future by generating innovative, visionary and compelling proposals that celebrate the unique potential of the park as both a significant regional resource and a national environmental treasure.

Created in 1972, Gateway National Recreation Area (Gateway) stretches across 26,607 acres of the New York-New Jersey harbor and coast. It was one of the first units in the U.S. National Park System established to sustain both natural and urban ecologies while providing recreational opportunities for more than 22 million residents in the tri-state region. The park is a key sanctuary on the migratory flyway where more than 330 bird species have been observed, and it contains an array of estuarine wildlife habitats. Simultaneously, Gateway is home to public beaches, historic U.S. military forts and navigational facilities, New York City’s first municipal airport, and regional infrastructural systems.

Comprised of as much water and marsh as land and field, this urban national park stands as one of the region’s greatest opportunities. Gateway’s size and scope, however, present a set of fundamental challenges. The great number of visitors and diverse wildlife at the park attest to its undeniable potential, but because it lies in two different states and serves three different city boroughs it faces competing physical, cultural, and economic demands. Additionally, Gateway’s identity as part of the National Park System is not known to many of its surrounding communities. Waste and water treatment facilities historically sited at Gateway also warrant attention and reclamation.

Gateway thus has incredible potential to become a global model for re-conceptualizing the role of national parks relative to an increasingly urbanized landscape. We must acknowledge the growing urgency to bridge science, design and politics when addressing today's built environment, and redefine environmental stewardship and cultural patronage to match the scale of contemporary urban development patterns and needs. Envisioning Gateway at this juncture will generate critical dialogue not only about the significance of national parks today, but about the ways in which thriving cities and complex ecosystems can co-exist.

Competition Structure
This is an open, international competition that requires the digital submission of anonymous design ideas for Gateway National Recreation Area. Members of a distinguished and diverse competition jury will evaluate the submissions in May 2007. The jury will select first ($15,000), second ($10,000) and third ($5,000) place winners as well as multiple honorable mention finalists ($500). Winning entries will be presented to the National Park Service for potential inclusion in the next planning phase of Gateway's General Management Plan, which is scheduled for 2009.

The competition is being held in anticipation of the National Park Service Centennial in 2016, which will provide an opportunity to reinvest in Gateway by focusing on a renewed commitment to environmental education based on an understanding that “nature” in urban environments is complex, actively constructed, and dynamic.

**Ecological**

Condition: Located at the intersection of the Atlantic Ocean and the Hudson Raritan estuary, Gateway supports a variety of estuarine ecologies – open water, dune, wetland, grassland and forest – that provide critical habitats for fish, shellfish, migratory birds, insects and vegetation. In some cases these communities are rare or endangered, and recent studies have revealed a mysterious and rapid deterioration of Jamaica Bay's marsh islands.

Challenge: Establish a relationship between the new park site at Floyd Bennett Field and existing ecological systems throughout Gateway, and propose new opportunities for environmental stewardship, restoration, remediation, and reclamation.

**Historical**

Condition: While many of Gateway's cultural and historical sites have benefited from restoration (ie., Fort Wadsworth, Fort Hancock, Sandy Hook Lighthouse), a great number of military facilities and former airstrips at Floyd Bennett Field lie abandoned and in disrepair.

Challenge: Address the value of these structures and the industrial heritage that they represent, outlining an approach not necessarily bound by a conservative attitude towards preservation. Competitors are welcome to incorporate existing structures, facilities and site conditions into their proposals, however such proposals should include a strategy for renovation (in the case of abandoned buildings) or relocation of functions/uses (in the case of buildings that are currently occupied).

**Recreational**

Condition: Gateway's current recreational opportunities range from activities typically found in national parks, such as experiential education and camping, to activities typically found in urban parks, such as sporting events and picnics. Floyd Bennett Field is additionally home to many local hobbyists - model car and aircraft enthusiasts, community gardeners, windsurfers, bird watchers,
antique air show audiences, fishermen, and cyclists are just a fraction of the individuals who currently rely on the open space and proximity of Floyd Bennett Field.

Gateway is also comprised of 61% water, and has approximately 57 miles of shoreline. Sites like Canarsie Pier, Gateway Marina, Riis Beach, and the trails at the Jamaica Bay Wildlife Refuge have visitors year-round, however in many areas – particularly at Floyd Bennett Field – the shoreline is inaccessible or off-limits to the public.

Challenge: Respecting and building upon existing activities, develop new and innovative recreational opportunities at Floyd Bennett Field that expand upon Gateway's prime position within the urban environment, the park's original mandate as a "National Recreation Area," and the tremendous presence of water.

**Educational**

Condition: Gateway's numerous and complex ecologies provide an opportunity to learn about natural and urban systems in the context of the New York metropolitan area's rich cultural heritage. While the National Park Service provides site-specific educational programming at several visitor's centers and museums throughout Gateway, there is no single facility, site or information system that provides a comprehensive overview of Gateway as a whole.

Challenge: Consider the form and location of such a resource, and propose new educational opportunities that reinforce the National Park Service's vision of "a national park system that is recognized as a significant resource for learning, where people and organizations collaborate on teaching and learning about the interconnections of human culture and nature, natural systems, the values of America's diverse heritage, and the principles of democracy."

**Waste Management**

Condition: Gateway's physical form has been and continues to be significantly shaped by infrastructural demands. The waters and coastlines of Gateway can be considered recreational; however, they are also an intricate part of the metropolitan region's current water management system. Six water treatment plants are located directly adjacent to park lands, and many of New York City's combined sewer pipes output directly into the harbor during flooding and heavy rain. The estuarine waters surrounding Gateway therefore take on the adverse effects associated with these pollution sources.

Gateway has also been a site for solid waste disposal. Landfills at Pennsylvania Avenue and Fountain Avenue and waste recycling facilities at Floyd Bennett Field are no longer operational; however the impact of this activity remains a significant concern throughout Jamaica Bay.
Challenge: Address the implications of this legacy, and consider opportunities for waste management and pollution mitigation throughout Gateway and at Floyd Bennett Field.

**Access and Transportation**

Condition: While a few areas of Gateway have sufficient access via public transportation, a car is required to visit many other sites within the recreation area. Floyd Bennett Field, roughly one and a half times the size of Central Park, is also quite difficult to negotiate on foot. Much of the Jamaica Bay Unit is physically cut off from Brooklyn by the Belt Parkway, one of New York City's major transportation routes to and from JFK Airport. In short, neither neighboring residents nor visitors to the region have clear or convenient access to this National Park site or the future park at Floyd Bennett Field.

Challenge: Rethink public transportation to Gateway, between Gateway's three units, and within Floyd Bennett Field, and propose innovative solutions to existing access barriers. Consider the significance of a threshold or transition between the urban fabric of New York City and the open landscape of Gateway.

**Economic Strategies**

Condition: The financial stability of federally managed parks often depends on the use of concession contracts and commercially-operated visitor services such as lodging, food and beverage sales, retail merchandise and recreation activities. Such business operations generate revenue that can be put directly back into park maintenance or programming costs. Concessions, however, can be harshly criticized (or rejected entirely) when inappropriate in scale or unrelated to a park's primary stated purpose.

Challenge: Consider Gateway's need for additional financial resources when developing programmatic elements for the new park at Floyd Bennett Field – rethink concessions and/or envision other economic strategies that may strengthen your proposal. (ie., public-private partnerships as with Golden Gate NRA and Golden Gate National Parks Conservancy/Presidio Trust)

The jury will seek out powerful, transforming proposals that inspire new ways of thinking about not only the role of national parks relative to an increasingly urbanized national landscape, but the ways in which thriving cities and complex ecosystems can co-exist and enrich each other.

The jury will be guided by the following objectives in evaluating submissions and recommending winning design proposals for presentation to the National Park Service:

1. Rethink what the term "nature" means when defining a park in post-industrial urban conditions.
2. Create a clear national identity for Gateway that celebrates its unique urban and ecological heritage.

3. Reinforce the identity of Gateway as a ‘gateway’ to the wider National Park experience, as well as the initial aspirations of Gateway's founders "to bring parks closer to the people."

4. Connect Gateway's diverse set of sites and programs to create a unified park system, and improve access from surrounding areas.

5. Establish a destination and symbolic center of Gateway in a new park at the site of Floyd Bennett Field.

6. Emphasize and integrate the presence of water as a defining feature of the larger Gateway landscape and of the new park at Floyd Bennett Field.

7. Reinforce the National Park Service's ethic of stewardship of historical and ecological sites by maintaining and integrating existing wildlife and ecological habitats into the new park program at Floyd Bennett Field.

8. Recognize and expand upon the diverse social and cultural activities that currently exist throughout Gateway and at Floyd Bennett Field.

9. Imagine new park programs that will help ensure the long-term viability of Gateway and of the new park at Floyd Bennett Field.

Based on the Conditions and Challenges outlined below, competitors are asked to address Gateway at two scales:

**Gateway Master Plan**

Develop a new master plan and strategy for creating a unified experience when visiting Gateway National Recreation Area.
Proposals should link the diverse recreational, ecological and historic opportunities located within the three existing units of the park: Jamaica Bay, Sandy Hook, and Staten Island.

**Park within a Park**

Within the larger approach developed above, design a new park sited at Floyd Bennett Field within the Jamaica Bay Unit of Gateway, which includes the Wildlife Refuge, Riis Beach and Fort Tilden. Floyd Bennett Field has the opportunity not only to become a premier destination within Gateway, but to provide facilities and resources for the entire park. Floyd Bennett Field is a 1,358 acre piece of land that was New York City's first municipal airport; today it hosts myriad activities but suffers from a lack of identity and definition, representing a microcosm of the larger issues facing Gateway. Competitors may intervene on as much or as little of Floyd Bennett Field and its surrounding waters as they choose, and should define the programmatic elements of a “park” in terms of contemporary urban conditions and social/recreational needs and desires.

**Competition Structure**

“This is an open, international competition that requires the digital submission of anonymous design ideas for Gateway National Recreation Area. Members of a distinguished and diverse competition jury will evaluate the submissions in May 2007. Winning entries will be presented to the National Park Service for potential inclusion in the next planning phase of Gateway's General Management Plan, which is scheduled for 2009.”
The concept of this plan for Gateway NRA is to connect and integrate the recreation and open space resources with the surrounding communities via Green connections. By connecting existing greenways and vegetated corridors, nodes of recreation and ecological habitats will be more accessible and more beneficial to the residents of this dense urban area. Flushing Avenue as a greenway will connect the leisure activities of Prospect Park with the more active recreation and educational opportunities of Gateway. These connections will also foster an idea of sustainability and the growing need to provide alternative modes of transportation. By increasing the ease of connectivity via bicycle or foot, vehicular roadblocks will decrease, and therefore decrease the convenience of driving. By focusing on innovative ways of connecting to its users and providing models of sustainability, a National Park Service of the future can be successful.

As a National Recreation Area, Gateway can become a national symbol for sustainability and the 'GREENway' of living.
**CHANGING SHORELINE:**
A shoreline restoration program will be implemented as part of the programs of a research and learning campus. The Sustainability Institute will expand on existing programming at the site. The changing shoreline will be a phased process with several experimental areas of wetland and marshland restoration. The zones will be accessible through a trail and boardwalk system that will change with the changing shoreline.

**HABITAT PRESERVATION AND RESTORATION:**
Preservation of the North and G & M wetland areas will continue, and new areas of ecological and habitat restoration will be developed as part of the research campus.

**URBAN ECO-VILLAGE:**
The urban eco-village will include the buildings of the Sustainability Institute research campus as well as a resort community that allows visitors to experience the "new way of living." The resort is modeled after the Club Med system of leisure resorts in Europe and is reminiscent of the days when visitors stayed at lodges and glamping within U.S. National Parks. By staying in the eco-village, visitors can partake in birding tours, biking, paddle-boat-system tours, fishing, scuba diving, and other water-based activities.

**FLOYD BENNETT FIELD RECREATION PROGRAM:**
The urban core of the airfield, found along Flatbush Avenue, provides new active recreation opportunities, confection and rest areas for Gateway users: the Airfield Museum, and headquarters for the Gateway NHA. Programmed outdoor activities in this core area include: skate park, model airplane runway, model car runway, playgrounds, skate parks, and connections to runways for uses such as hang-gliding and cycling. A new canal formed along the E-W runway increases access to the shoreline while providing water-based activities, such as kayaking and canoeing.

**VISIONS FOR NEW-E AND NEW RUNWAYS, EXAMPLES FROM OTS, GROUSE & SHERMAN AIRFIELDS, CANADA:**
1910 1920 1940 1880 1910 2010 2030

**ALONG THE NEW CANAL**