Urban areas and green infrastructure

Local communities and environmental policies in New York City. The case of the Bronx River

Katia Perini

ISBN 978-09822174-5-0
Published by the Urban Design Lab at the Earth Institute, Columbia University
http://www.urbandesignlab.columbia.edu
The Interchurch Center, 475 Riverside Drive, Suite 239, New York, NY 10115

Cover photo: Aurélie Delage

This project was made possible by a FulbrightSchuman Program grant, which funded a period as Visiting Scholar at Graduate School of Architecture, Planning and Preservation (GSAPP), Columbia University.

Under the direction of Richard Plunz, Director, GSAPP, Director, Urban Design Lab.

My thanks to Patricia Culligan, Co-Director, Urban Design Lab and Maria Paola Sutto, Program Coordinator, Urban Design Lab

I would also like to thank the following people for their availability as consultants:
Thomas Angotti, Hunter College
Christopher Clark, U.S. Environmental Protection Agency
Robert Crauderueff, Stormwater Infrastructure Matters Coalition (S.W.I.M.)
Michael Flynn, m3project
Robin Kriesberg, Bronx River Alliance
Artie Rollins, New York City Department of Parks and Recreation
Case Wyse, Sustainable South Bronx

FULBRIGHT SCHUMAN

URBAN DESIGN LAB
THE EARTH INSTITUTE | COLUMBIA UNIVERSITY

Table of Contents

Introduction

The present research was conducted in 2013 at the Urban Design Lab at the Earth Institute, Columbia University. It was funded by a Fulbright-Schuman Program grant.

The Fulbright-Schuman Program is jointly financed by the U.S. State Department and the Directorate-General for Education and Culture of the European Commission. The program funds proposals in the field of European policy, issues of common concern from a comparative (U.S.-European Union) perspective and significant for European Member States.

Environmental policies have recently gained increased attention, becoming one of the primary objectives within the European Union (and, as it will be shown, the United States). Europe is firmly committed to the protection of the environment; preserving air and water quality, conservation of resources and biodiversity, waste management, and curbing activities which have an adverse environmental impact are just some of the areas in which the EU is active, both at Member State level and internationally (www.europa.eu). European environmental policies aim to support sustainable development through corrective measures relating to specific environmental problems or through cross-cutting measures integrated within other policy areas, such as the "Thematic Strategy on Urban Environment" (Commission of the European Communities, 2006). This strategy contributes to the implementation of the priorities of the Sixth Environment Action Programme of the European Community 2002-2012 (EAP) and other environmental policies, covering many environmental media and issues.

The Brundtland Commission (the 1987 World Commission on Environment and Development) described sustainable development as, "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Waheed et al., 2009). Sustainable development is a dynamic pattern of social, economical, technological and environmental indicators that makes countries move toward a better life (Meyar-Naimi and Vaez-Zadeh, 2012). According to Porter (2012), in the United

States the most visible manifestation of urban sustainability is the ideal of "Smart Growth" – higher population densities and construction of housing around transportation hubs.

Urban and building design may aim to reduce environmental imbalances in urban areas and guarantee sustainability: on one hand, buildings consume a significant amount of energy (International Energy Agency, 2012); on the other, working on urban fabric is important considering the surface covered by built areas (e.g. in the case of New York City; www.nyc.gov). Vegetation can restore the environmental quality of dense urban areas by reducing the Urban Heat Island (UHI) effect, improving air quality and energy performance of buildings, and fostering biodiversity (Dunnett and Kingsbury, 2008; Ottelé et al., 2010; Sternberg et al., 2010; Taha, 1997). Therefore, a wider diffusion of vegetation and green infrastructure in cities could contribute to the achievement of several European environmental objectives.

European environmental policies so far have achieved important results at both Member State level and internationally. The normative framework of Member States can vary significantly, greatly impacting the effectiveness and flexibility of territorial management tools (www.scoremed.eu; Giachetta, 2013). An important step forward comes from Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings, which contributes to achieving this aim by proposing guiding principles for Member States regarding the energy performance of buildings, considering their thermal characteristics, heating and air conditioning, hot water supply, lighting, and indoor climatic conditions. According to this directive, all new buildings shall be nearly zero-energy consumption buildings («[A] 'nearly zero-energy building' means a building that has a very high energy performance [...]. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources» European Union, 2010).

The United States has a different approach to Europe in this field; five states have not yet adopted the Department of Energy's Building Energy Codes Program (U.S. Department of Energy, 2014), and several associations, organizations and public bodies work to improve environmental conditions in dense urban areas through the integration of green infrastructure. This community involvement can play a very important role in the field as many initiatives to improve ecological conditions of cities depend on the participation of urban citizens (Francis and Lorimer, 2011).

The case of New York City (NYC), a city with over 27,000 people per square mile (www.nyc.gov), is considered in this research. While London and Los Angeles, among others, issued sustainability plans in the 1990s, New York did not seriously address environmental issues until after the election of Mayor Michael Bloomberg in 2003; he later reversed his position on urban sustainable development, however (Porter, 2012).

The main objective of this research is to study and analyze initiatives and actions carried out and developed in New York City to help improve environmental conditions in cities and better understand the environmental impact of dense urban areas; it considers especially bottom-up approaches, providing insight for the improvement of European environmental policies as well.

In order to identify causes, risks, and social and public health consequences, an overview of the main environmental and ecological imbalances in dense urban areas is provided, considering especially the UHI phenomenon, air and water quality, stormwater management, and urban ecosystems. The research takes into account the main strategies useful for acting on effects and causes of these environmental and ecological problems, and the scale at which these can be implemented (neighborhood, city, building). Vegetation can play a fundamental role, and therefore the positive effects of green infrastructure, along with definitions and examples, are evaluated.

Among the main objectives of this research, top-down and bottom-up initiatives to improve ecological imbalances of dense cities through the wider diffusion of green infrastructure are identified; particular attention is paid to top-down initiatives implemented in New York, considering also the role played by Federal agencies in promoting the integration of green infrastructure. The effectiveness of mechanisms related to bottom-up approaches are similarly evaluated, with the concept of environmental justice defined and examples of initiatives implemented by local community organizations, grassroots associations, and citizen groups in the field of urban areas environmental sustainability and green infrastructure provided.

Finally, to better investigate these aspects and the relationships between the policies of public bodies at the Federal, State and City government levels and local communities (i.e. bottom-up and top-down approaches), the case of the Bronx River is analyzed.

Rivers and streams are critical to almost any green infrastructure systems (Benedict and McMahon, 2001); urban waters take on large amounts of pollution from a variety of sources (e.g. industrial discharges, wastewater, trash, and polluted stormwater runoff), creating public and environmental health hazards (Office of Water, 2014). The Bronx River is an urban river located in the South Bronx, a low income, polluted neighborhood in the northern part of NYC that has long been characterized by its many environmental and social inequities (Loria, 2009; Maantay, 2000).

From the 1970s, many restoration measures have been directly implemented or pushed by the local community; today, local community organizations and NYC Departments work together to improve the environmental and social conditions of the neighborhood to reduce ecological imbalances of the River, which is surrounded by a greenway and parks, and is maintained with the efforts of citizen volunteers.

To reach the above mentioned objectives, several methods and tools have been used, including a literature review that considers the international state of the art with respect to the ecological and environmental problems in and of cities. Bibliographic analysis, evaluation of tools used by public bodies and designers, and site visits allowed for the identification of improved environmental conditions through the integration of green infrastructure. An analysis of plans and regulations provided information on top-down approaches in the field while an overview of local community organizations highlighted bottom-up initiatives.

Regarding the case study Bronx River, a broad survey of local newspapers dating to the 1970s was carried out, as was bibliographic analysis and research on plans released by local community organizations and NYC Departments over the past 40 years.

All the aspects analyzed in this research have also been deepened thanks to consultation with several experts in the field, researchers, experts working at the Federal and local level, and referents from community groups, among others.

1. Green cities and green neighborhoods

ENVIRONMENTAL AND ECOLOGICAL IMBALANCES IN DENSE URBAN AREAS, STRATEGIES AND SCALE MATTERS. The majority of the world's population today lives in urban areas (Luederitz et al., 2013) and is responsible for 70% of global carbon emissions and nearly 70% of energy consumption – an increasing trend for both (International Energy Agency, 2008) with land converted to urban areas projected to triple by 2030 (Seto et al., 2012; United Nations, 2012). Furthermore, global greenhouse gas (GHG) emissions have increased 70% in the last 40 years (Rogner et al., 2007) and environmental problems within cities have significant consequences for human health, citizens' quality of life, and urban economic performance (Commission of the European Communities, 2005). This is due in large part to urban areas' high vulnerability to climate change related flooding and heat waves (Commission of the European Communities, 2005). As also stated by Grimm et al. (2008), while human lifestyles, consumerism, and unsustainable material production lead to alterations at multiple scales in urban systems, they also generate negative effects in residents' everyday lives.

Owen (2010) states that, in the United States, people living in cities consume less energy compared to people living in suburbs or rural areas; also according to Hamin and Gurran (2009), a denser urban environment could reduce the emissions connected to transportation needs and building energy use, and consequently their impact on climate change (Ewing et al., 2008); compact development add population to already developed places, concentrating human related activities and helping to protect underdeveloped and sensitive lands and maintaining viable habitats in the remainder (Farr, 2008). Therefore, through sustainable urban design, the negative effects of anthropic activities on the environment can be reduced, and environmental issues for human health and quality of life can be mitigated.

Environmental problems and the ecological imbalances related to climate change, including especially biodiversity loss and environmental pollution, demonstrate the need to reduce material and energy flows and lessen environmental impacts (Luederitz et al., 2013; Rockström et al., 2009; Seto et al., 2012; Weisz and Steinberger, 2010). After all, «The gamble for ecological survival has always been reliant on technology and design – and when technological limits are obvious, the design adaptation has to be made» (Plunz, 2008).

On climate change, both mitigation and adaptation strategies should be considered as twin issues (Hamin and Gurran, 2009), as according to the 2007 Fourth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) (IPCC, 2007, p. 65),

«There is high confidence that neither adaptation nor mitigation alone can avoid all climate change impacts. Adaptation is necessary both in the short term and longer term to address impacts resulting from the warming that would occur even for the lowest stabilization scenarios assessed. [...] Adaptation and mitigation can complement each other and together can significantly reduce the risks of climate change».

To reduce the impact of urban areas, global carbon emissions should be reduced, perhaps especially the 40% of energy use today attributed to building consumption (International Energy Agency, 2012). Through integrated urban design and planning promoting bike and pedestrian paths, or "greenways", and public transportation in dense urban environments the impact of transportation needs on climate change and air pollution can be reduced (Hamin and Gurran, 2009; Colvile et al., 2001).

High levels of pollution in the atmosphere and the "cementification" of urban areas (an excess of asphalted, or "low albedo", areas relative to green areas) causes the Urban Heat Island (UHI) phenomenon resulting in the dramatic two to five degree Celsius temperature differences between cities and their surrounding suburban and rural areas (Taha, 1997). Several studies show this phenomenon increasing in these past years (Böhm, 1998; Hasanean, 2001; Rozbicki and Golaszewski, 2003), causing damage to human health, especially during summer periods when air temperatures remain high during the night (Taha, 1997; Tereshchenko and Filonov, 2001). Huge quantities of solar radiation are stored and later radiated in urban areas due to massive amounts of construction materials the so-called "canyon effect" related to tall buildings (Arnfield et al., 1999; Santamouris et al., 2001) and the use of air conditioning, all contributing to the Urban Heat Island effect (Landsberg, 1981; Nakamatsu et al., 2003; Petralli et al., 2006; Santamouris et al., 2001), along with the anthropogenic heat generated by power plants, and automobiles (Rizwan et al., 2008).

Though the UHI phenomenon has regional-scale impacts on energy demand, air quality, and public health, mitigation strategies, such as urban forestry, living (green) roofs, and light colored surfaces, could be implemented at the community level (Rosenzweig et al., 2006). Susca et al. (2011) monitored the urban heat island in four areas in New York City, finding a two degrees Celsius average temperature difference between the most and the least vegetated areas. Although UHI can be mitigated with large amount of surfaces with higher albedo, such as vegetated or simply white painted surfaces (Rizwan et al., 2008), larger green areas like as urban parks may be more effective (Petralli et al., 2006). ultimately, a combined strategy that maximizes the amount of vegetation offers more potential cooling than any individual strategy (Rosenzweig et al., 2006).

Figure 1. Green infrastructure in the city of Hamburg, Germany.

High levels of air pollutants in dense urban areas are also responsible for serious damage to human health. The United Nations Environment Programme (UNEP) links urban air pollution to up to one million premature deaths and one million pre-native deaths each year (www.unep.org). According to a study conducted by Hoek et al. (2000), daily mortality is significantly associated with the concentration of all air pollutants and especially ozone, particulate air pollution, and the gaseous pollutants sulfur dioxide (SO_2) and nitrogen dioxide (NO_2). In urban

areas, transportation represents a major source of air pollution (Colvile et al., 2001), together with other sources such as those related to industry and heating (Legambiente, 2012).

Urban parks affect air quality as demonstrated by a study conducted in China by Yin et al. (2011) and climbing plants improve air quality by collecting fine dust particles (Ottelé et al., 2010), demonstrating that, along with reducing the sources of air pollution (i.e. transportation, industry, and domestic heating and air conditioning; Colvile et al., 2001, Legambiente, 2012), vegetation can play an important role inside a city.

The effects of rainfall on vegetated land versus on the hard surfaces of built-up areas are very different. The vast majority of precipitation that falls on vegetation is absorbed by soil and eventually joins the water table; some is also absorbed by plants and transpired back into the atmosphere. Water cannot be absorbed by hard surfaces such as asphalt and concrete, however, and it runs off through drainage systems into rivers (Dunnett and Kingsbury, 2008); about 75% of rainfall on towns and cities is lost directly as surface runoff as compared to around five percent on a forested area (Scholz-Barth, 2001). High rainfall in urban areas is rapidly reflected in river level peaks, with flooding a frequent consequence when river banks cannot cope with the influx (Dunnett and Kingsbury, 2008).

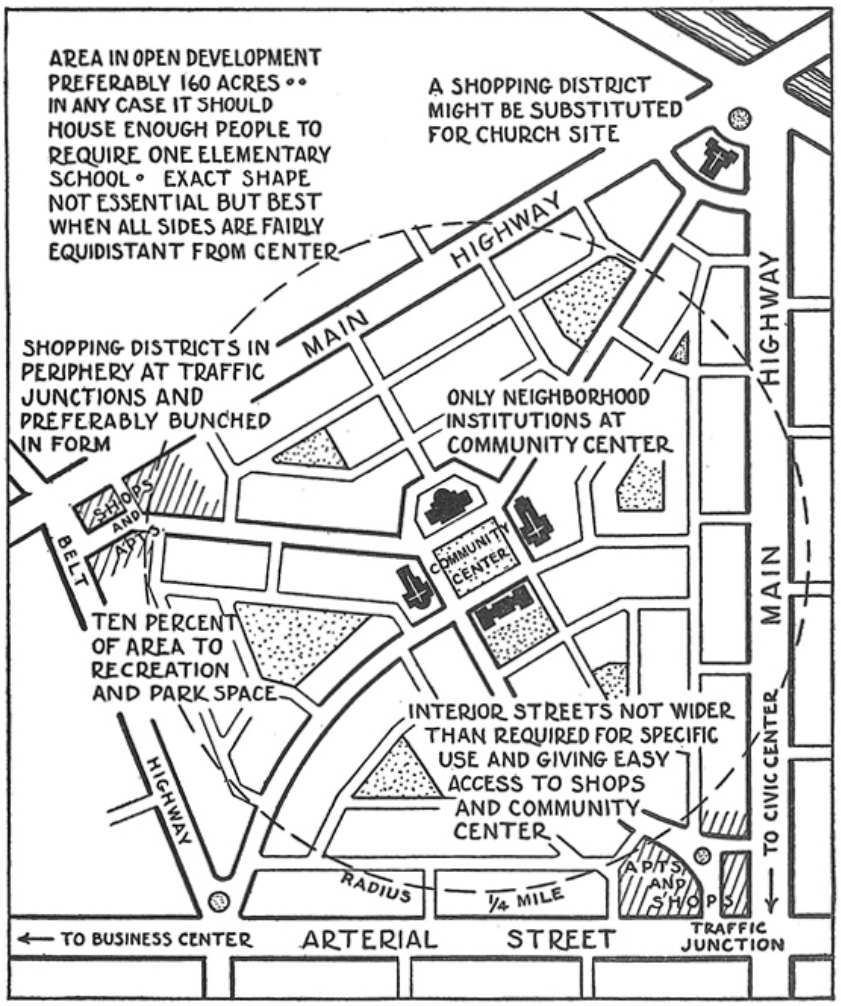
The amount of water that can be harvested from rain is important; so too is the quality of that water (Czemiel Berndtsson, 2010). Polluted stormwater runoff from urban landscapes affects the quality of urban waters, which, according to the Environmental Protection Agency (EPA) of United States, are polluted with industrial discharges, mobile sources (i.e. automobiles), residential and commercial wastewater, and trash, among other sources. Since urban populations often share centralized water sources, this pollution creates public and environmental health hazards such as reduced drinking water quality and unsafe for swimming bodies of water (www2.epa.gov/urbanwaters).

Green roofs – as well as small green areas on the ground – can be effective in reducing the stormwater runoff of cities (Carson et al., 2013; Palla et al., 2009) and also in improving water quality, although some roofing materials may add chemicals or metal compounds to the runoff water (Bianchini and Hewage, 2012). Urban parks are more effective, with a runoff reduction up to 95%, while for green roofs the percentages are around 60% to 85%, depending on green roof and vegetation type (Kosareo and Ries, 2007; Scholz-Barth, 2001).

Terrestrial ecosystems provide a number of vital services to people and society, including increased biodiversity, food, fiber, water resources, carbon sequestration, and recreation; the future capability of ecosystems to provide these services is determined by changes in socioeconomic characteristics, land use, biodiversity, atmospheric composition, and climate (Metzger et al., 2006). Many aspects of the planet are changing rapidly due to human activities and these changes are expected to accelerate during the next decades; for example, rising atmospheric carbon dioxide (CO_2) results in global warming (IPCC, 2001a, 2001b, 2001c). According to the urban ecology approach, cities should be considered as ecological systems; despite often being seen as separate from human activities, green areas play an important part (van Bueren, 2012) and their interconnection is important (Benedict et al., 2006).

Green areas can maintain the integrity of habitat systems and may provide the physical basis for ecological networks to reduce the ecological impacts of habitat fragmentation by increasing biodiversity for ecosystem health (Opdam et al., 2006; Rapport et al., 1998; Tzoulas et al., 2007). While biological conservation still largely focuses on "non-use" land (Andelman and Willig, 2003; Redford and Richter, 1999), Rosenzweig (2003a, 2003b) proposed the concept of "reconciliation ecology"; the modification and diversification of anthropogenic habitats to support biodiversity is particularly relevant to cities as a more realistic and practical solution (Francis and Lorimer, 2011).

Figure 2. Green infrastructure in the city of Freiburg, Germany.


AREA IN OPEN DEVELOPMENT PREFERABLY 160 ACRES •• IN ANY CASE IT SHOULD HOUSE ENOUGH PEOPLE TO REQUIRE ONE ELEMENTARY SCHOOL • EXACT SHAPE NOT ESSENTIAL BUT BEST WHEN ALL SIDES ARE FAIRLY EQUIDISTANT FROM CENTER
A SHOPPING DISTRICT MIGHT BE SUBSTITUTED FOR CHURCH SITE
HIGHWAY
MAIN
SHOPPING DISTRICTS IN PERIPHERY AT TRAFFIC JUNCTIONS AND PREFERABLY BUNCHED IN FORM
ONLY NEIGHBORHOOD INSTITUTIONS AT COMMUNITY CENTER
HIGHWAY
SHOPS AND APTS
BELT
COMMUNITY CENTER
MAIN
TEN PERCENT OF AREA TO RECREATION AND PARK SPACE
INTERIOR STREETS NOT WIDER THAN REQUIRED FOR SPECIFIC USE AND GIVING EASY ACCESS TO SHOPS AND COMMUNITY CENTER
TO CIVIC CENTER
HIGHWAY
APTS AND SHOPS
RADIUS
1/4 MILE
TRAFFIC JUNCTION
TO BUSINESS CENTER
ARTERIAL STREET

Integrated urban design and planning at the neighborhood scale, at least, is needed in the cases of widespread small interventions, such as networks to promote the use of public transportation and bicycles, urban parks, and ecological networks, since cities cannot be considered sustainable if their component parts, such as neighborhoods, do not meet sustainability criteria (Choguill, 2008). The contributions of neighborhoods to sustainable development is a complex issue requiring integrated knowledge from practitioners from many different disciplines (Luederitz et al., 2013).

SUSTAINABLE NEIGHBORHOOD. In 2008 Choguill stated that although sustainability has become an increasingly important element in the planning of urban areas, it has received less attention in the development of neighborhoods, their component parts. Following the development of neighborhood theory from Ebenezer Howard and Clarence Perry through to more recent contributions, it can be seen that the ideas of sustainability, although not by that name, are central to these various contributions. Howard, an Englishman, proposed in 1898 the "Garden Cities of Tomorrow", in which inhabitants could have the advantages of living in cities - self-contained, employment-generating human communities - while also being surrounded by concentric rings of agricultural activity serving as a green belt to protect the establishment from outside encroachment. According to Choguill (2008), for the first time "the neighborhood" became an integral part of urban planning activity.

Clarence Perry's theories on the "neighborhood unit" must also be mentioned when speaking about neighborhood planning (Farr, 2008; Gillette, 2010; USGBC, 2009), especially given their strong influence on present day urban planning (Choguill, 2008). Howard and Perry's theories mirror the different approach seen in the development of cities and suburbs, especially with regard to the substantial difference between American and European urban planning: The United States «is known for its settlement patterns that emphasize low-density suburban development and extreme automobile dependence, whereas European countries emphasize higher densities, pro-transit policies and more compact urban growth» (Chang-Hee et al., 2004).

According to Farr (2008), the classic illustration defining the neighborhood for the modern era is Perry's neighborhood unit, developed in 1924 and published in the "Regional survey of New York and its environs" (1927; Figure 3). Perry, an American planner and sociologist, arrived at his notion of neighborhood planning with the belief that changes in the urban fabric could improve social life and enhance citizenship; social life and citizen participation concerned Perry for the major part of his career, as reflected in the key and central position in his work of community centers, intended to be a comprehensible focal point for citizens' daily activities (Choguill, 2008; Gillette, 2010) a lot the size of 160 acres is bounded by major streets, in which a mix of retail, office, civic, and park uses are connected by a street network intended for a population large enough to support a walk-to elementary school (Farr, 2008). Indeed, some of these aspects can be found in the definition of the term "neighborhood in the Oxford English Dictionary (OED, 2014):

«"Neighborhood | neighborhood, n." A district or portion of a town, city, or country, esp. considered in reference to the character or circumstances of its inhabitants. [...] Town Planning. A small sector of a larger urban area, provided with its own shops and other facilities. [...] A community; a certain number of people who live close together».

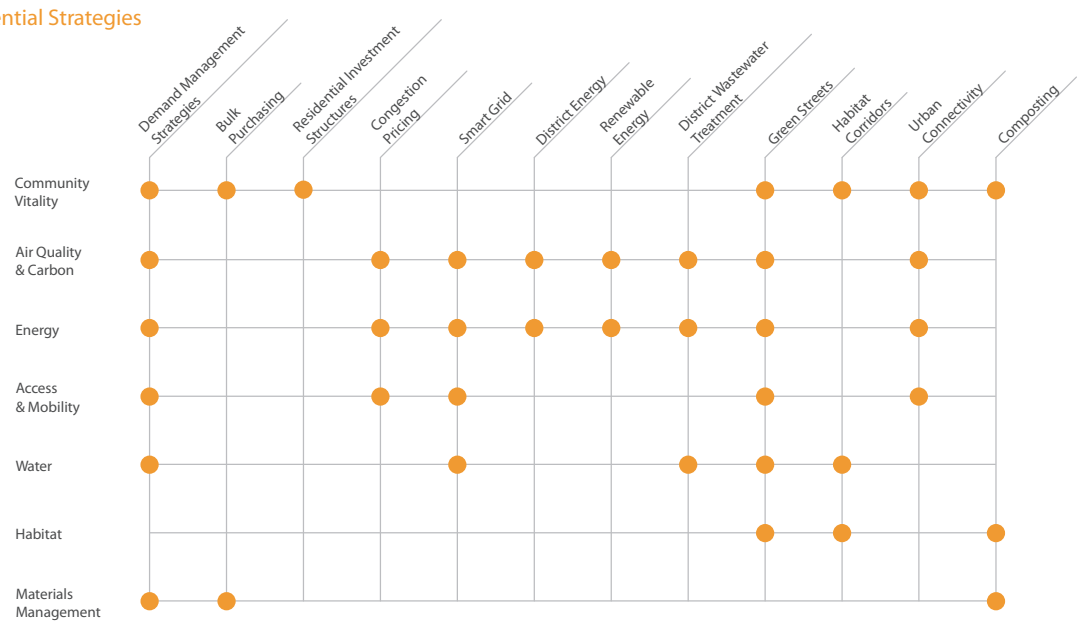
The definition of sustainable urbanism provided by Farr (2008) also shares with Perry's and Howard's theories important aspects:

Figure 3.
Clarence Perry's neighborhood unit, 1929.

«Sustainable urbanism is walkable and transit-served urbanism integrated with high performance buildings and high performance infrastructure. Compactness (density) and biophilia (human access to nature) are core values of sustainable urbanism. [...] Sustainable urbanism emphasizes that the

EcoDistricts

Potential Strategies



personal appeal and societal benefits of neighborhood living - meeting daily needs on foot - are greatest in neighborhoods that integrate five attributions: definitions, compactness, completeness, connectedness, and biophilia».

According to Choguill (2008), neighborhood sustainability criteria mirror those used in sustainability analysis for higher level cities and towns, including consideration of the economic, the social, the technical, and the environmental.

Patrick Geddes, a Scottish biologist, educationalist, and planner that born in 1854, conceived the city as something "organic", an "evolving" or developing organism in relation to its environment,, emphasizing the importance of cooperation (Geddes and Thomson, 1911; Geddes, 1913). While the idea of a city as a living being may familiar to us now, it was not common then; Geddes suggested that town planning was an integrated theoretical and practical activity like architecture and engineering rather than simply a matter of laying down buildings and streets (Batty and Marshall, 2009).

Geddes recognized the importance of garden and open spaces as forms of urban rehabilitation and stated that, when urban development higher functions become concentrated in metropolitan centers, a regional approach can overcome problems arising from the polarization of functions (Geddes, 1973). Farr (2008), also recognizes the influence of the book "Design with nature" by McHarg (1969). The Scottish landscape architect, for instance, developed important methods for ecological urban planning and building design to promote the restoration of environmental quality rather than improving cities by better integrating their natural systems. Farr (2008) defines McHarg's built work as well-landscaped, auto-dependent suburbs, which was still mistakenly seen as "sustainable development".

In recent years, sustainable development of urban neighborhoods has gained increasing attention; Luederitz et al. (2013) in a recent review of guiding principles for sustainable urban neighborhood development notes several aspects - social, ecological, cultural, and economic - considered as fundamental for the development of sustainable urban neighborhoods. Initiatives have been undertaken to promote sustainable neighborhoods, and several tools have been developed to assess the sustainability performance of plans and their success in achieving sustainability (Sharifi and Murayama, 2012), recognizing the importance of neighborhoods for cities sustainability (Choguill, 2008) in both the United States and in Europe. Sharifi and Murayama (2012) identify two main categories of Neighborhood Sustainability Assessment (NSA) tools: third party assessment tools that have been spun off of building assessment tools and assess sustainability beyond the single building level (e.g. LEED for Neighborhood Development (LEED-ND) in the United States) and tools that are embedded into neighborhood scale plans and sustainability initiatives to assess their sustainability performance (e.g. the Portland Sustainability Institute's EcoDistricts Toolkit in the U.S and the Ecocity and HQE2R initiatives in Europe).

LEED-ND is the first American rating system for planning and development of new green neighborhoods. LEED (USGBC, 2009) highlights that,

«For Neighborhood Development, compact, walkable, vibrant, mixed-use neighborhoods with good connections to nearby communities should be encouraged. In addition to neighborhood morphology, pedestrian scale, and mix of uses, the rating system also emphasizes the location of the neighborhood and the performance of the infrastructure and buildings within it. The sustainable benefits of a neighborhood increase when it offers proximity to transit and when residents and workers can safely travel by foot or bicycle to jobs, amenities, and services. This can create a neighborhood with a high quality of life and healthy inhabitants. Likewise, green buildings can reduce energy and water use, and green infrastructure, such as landscaping and best practices to reduce stormwater runoff, can protect natural resources. Together, well-located and well-designed green neighborhood developments will play an integral role in reducing greenhouse gas emissions and improving quality of life».

Figure 4. EcoDistricts scheme.


회 시 장
평화시장

The allocation of points is based on the potential environmental impacts and human benefits of each credit with respect to a set of impact categories. Social and public health benefits at the neighborhood scale are considered along with the impacts defined as the environmental or human effect of the design, construction, operation, and maintenance of buildings, such as greenhouse gas emissions, fossil fuel use, toxins and carcinogens, air and water pollutants, and indoor environmental conditions (USGBC, 2009).

Ecocity - Urban development towards appropriate structures for sustainable transport - is an international research project financed in 2001 by the European Commission within the fifth framework program.

«An Ecocity is composed of compact, pedestrian-oriented, mixed-use quarters or neighborhoods, which are integrated into a polycentric urban system in public-transport oriented locations. In combination with attractively designed public spaces, integrating green areas and objects of cultural heritage to create varied surroundings, an Ecocity should be an attractive place to live and work. Such sustainable and livable structures contribute to the health, safety and well-being of the inhabitants and their identification with the Ecocity».

To minimize transport demand, higher density is suggested. Furthermore, urban development has to meet the main requirements, following the objectives of minimizing use of land, energy, and materials, and minimizing the impairment of the natural environment.

According to the HQE2R (2004), a project supported by the European Commission in the "City of tomorrow" program from 2001 to 2004 (Fifth Framework Programme, or FP5; www.suden.org), the five objectives for sustainable neighborhoods and buildings are: to preserve and enhance heritage and conserve resources related to energy, water and land); to improve the quality of the local environment with regard to comfort, health, quality, safety, air quality, pollution, and waste; to ensure diversity of population, functions, and housing supply; to improve integration regarding education and job qualification, services, meeting places, public transport, and bicycles; and to reinforce social life with local governance, social network, and social capital.

The EcoDistricts Toolkit identifies seven performance areas, as shown in Figure 4: Community Vitality, Air Quality and Carbon, Energy, Access and Mobility, Water, Habitat and Ecosystem Function, and Materials Management; green streets relate to all these performance areas except Materials Management.

These neighborhood sustainability assessment tools confront the social, environmental and ecological aspects in and of cities, considering the effects of cities on the global scale. Integrating vegetation as green areas or green streets is among the strategies utilized in these NSA tools and, as it will be shown, this aspect plays a fundamental role.

GREEN INFRASTRUCTURE (GI). The term "green infrastructure" was coined in Florida in 1994 in a report to the Governor on land conservation strategies noting that natural systems important components of infrastructure (Firehock, 2010). Infrastructure is commonly defined as the facilities and services necessary for a society, community, and/or economy to function; these facilities and services can be "hard" (e.g. transportation and utilities) or "soft" (e.g. institutional systems such as education, health care and governance). GI is considered "soft" and is important for building capacity improved health, job opportunities, and community cohesion (Rouse, 2013).

GI includes natural, semi-natural, and artificial networks of multifunctional ecological systems within, around, and between urban areas (Sandstrom, 2002; Tzoulas et al., 2007). This includes waterways, wetlands, woodlands, wildlife habitats, greenways, parks, and other natural areas that support native species, maintain natural ecological processes, sustain air and water resources, and contribute to the health and quality of life for communities and people (Benedict and McMahon, 2001; European Commission, 2010; Benedict et al., 2006).

Figure 5 . Green infrastructure in the city of Seoul, South Korea.

Several definitions have been given to this term, including: «Interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations» (Benedict and McMahon, 2001); «A strategically planned and managed network of wilderness, parks, greenways, conservation easements, and working lands with conservation value that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to the health and quality of life for America's communities and people» (Benedict et al., 2006); «Compris[ing] of all natural, semi-natural and artificial networks of multifunctional ecological systems within, around and between urban areas, at all spatial scales» (Tzoulas et al., 2007); «A successfully tested tool for providing ecological, economic and social benefits through natural solutions. Compared to single-purpose, gray infrastructure, GI has many benefits» (European Commission, 2013). Again according to the European Commission (2013) «It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings» (European Commission, 2013); and «An effective response to a variety of environmental challenges that is cost-effective, sustainable, and provides multiple desirable environmental outcomes» (EPA Administrator Lisa Jackson, Testimony before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Water Resources and Environment, March 19, 2009; NYC Environmental Protection, 2010).

The EPA emphasizes the role of green infrastructure in stormwater management:

«Green infrastructure involves the use of landscape features to store, infiltrate, and evaporate stormwater. This reduces the amount of water draining into sewers and helps reduce the discharge of pollutants into area water bodies. Examples of green infrastructure include rain gardens, swales, constructed wetlands, and permeable pavements» (EPA, 2011).

Rouse (2013) notes that different definitions depend on scale: at the city and regional scale, green infrastructure has been defined as a multifunctional open space network; at the local and site scale, as a stormwater management approach that mimic natural hydrologic processes. Benedict et al. (2006) specify that

«the green infrastructure approach can be implemented at any scale: the individual parcel, the local community, the state or even multi-state region. At the parcel scale, green infrastructure means designing homes and business around green space. [...] At the community level, green infrastructure could mean creating greenways to link existing public parks. At the state wide or regional level, it could mean protecting broad landscape linkages that connect forests, prairies and other natural areas and provide habitat for animals».

Today, more than 40% of the total land in urban areas is covered by impervious surfaces as roads, parking, and buildings (Benedict et al., 2006). Green infrastructure at city scale is therefore important to improve environmental conditions. When green infrastructure is proactively planned, developed, and maintained, it can guide urban development by providing a framework for economic growth and nature conservation integrating urban development, nature conservation, and public health promotion (Schrijnen, 2000; Tzoulas et al., 2007; Van der Ryn, 1996; Walmsley, 2006).

Green infrastructure provides multiple benefits for the environment, economy, and equity (Rouse, 2013), and by creating job and business opportunities in fields such as landscape management, recreating, and tourism, it can" stimulate retail sales and other economic activity in local business districts (Wolf, 1998); preserve property values (Economy League of Greater Philadelphia, in Southeastern Pennsylvania, 2010; Neelay, 1998); attract visitors, residents, and business to a community (Campos, 2009); and reduce energy, healthcare, and gray infrastructure costs (Economy League of Greater Philadelphia, in Southeastern Pennsylvania, 2010; Heisler, 1986; Simpson and McPhearson, 1996).

Figure 6. Green infrastructures in the city of Seoul, South Korea.


Hanwha

Vegetation plays an important role in the human psychological well being inside dense cities (Perini, 2013). Biophilia is the name given to the human love of nature based on this intrinsic interdependence between humans and other living systems (Farr, 2008). According to Wilson (1984), who defines the term biophilia as "the urge to affiliate with other forms of life", human beings are instinctively bonded to other living systems. In reference to inadequate quantity of vegetation and green areas within the urban environment, the issue relates to poor quality of life and, as it will be shown, problematic urban pollution and environmental problems.

Green areas provide recreational amenities and improve residents' quality of life and their use in new developments is likely to result in additional benefits (Chiesura, 2004; Dunnett and Kingsbury, 2008; Kazmierczak and Carter, 2010). Natural environments have a restorative function; Ulrich (1984) found that hospital patients who could see trees and nature from their windows recovered more quickly than those whose views where restricted to buildings.

Vegetation mitigates climate change generally, transforming the CO_2 produced by automobile traffic and heating into carbonhydrates and oxygen; CO_2 is used by plants for the photosynthesis process, creating oxygen and biomass (Getter et al., 2009; Köhler, 2008). Greened paved surfaces intercept solar radiation and can reduce warming of hard surfaces, thus reducing the UHI phenomenon by two to four degrees Celsius (Onishi et al., 2010; Taha, 2008).

Green infrastructure may include greenways, which, if systematically planned, can lead to a reduction of private transportation (use of cars) and, consequently, of their impact on the city environment (Hamin and Gurran, 2009). Vegetation improves environmental conditions in cities by acting on both causes and effects; an example with regard to effects is the improvement of air quality due to different type of vegetation (Ottelé et al., 2010; Yin et al., 2011). Water quality can similarly be improved by natural systems filtering pollutants (Benedict and McMahon, 2001). As stated by the Environmental Protection Agency (EPA, 2011), green infrastructure is fundamental for stormwater management and as flood control as the loss of natural systems increases the risk of flooding and natural disasters (Benedict and McMahon, 2001).

The elements and components of green infrastructure are able to improve ecosystem health, defined as the occurrence of normal ecosystem processes and functions, free from distress and degradation, maintaining organization and autonomy over time and being resilient to stress (Costanza et al., 1992; Lu and Li, 2003; Mageau et al., 1995; Rapport et al., 1998). Species rich heterogeneous habitats are considered more resilient than homogenous habitats in terms of habitats, species and genes (Loreau et al., 2002), and influence urban ecosystem health by contributing to ecosystem resilience, organization, and vigor (Tzoulas et al., 2007). Green Infrastructure can maintain the integrity of habitat systems and may provide the physical basis for ecological networks (a set of ecosystems of one type, linked in a spatially coherent system through the flows of organisms, and interacting with the landscape matrix in which it is embedded), as a means of alleviating the ecological impacts of habitat fragmentation. For this reason, biodiversity conservation is an integral part of sustainable landscapes (Opdam et al., 2006).

Figure 7. Green infrastructure in the city of Seoul, South Korea.

2. Green infrastructure in New York City, policies and local community organizations

TOP-DOWN. Since 2009, the U.S. Environmental Protection Agency (EPA) under Administrator Lisa Jackson has endorsed the promotion of green infrastructure with the support of the New York State Department of Environmental Conservation (DEC). The EPA, with its mission to protect human health and the environment, writes and enforces regulations based on laws passed by the U.S. Congress, including, among others: the Clean Air Act (CAA), the comprehensive Federal law that regulates air emissions from stationary and mobile sources, and which authorized EPA to establish National Ambient Air Quality Standards (NAAQS); and the Federal Water Pollution Control Act Amendments commonly known as the Clean Water Act (CWA), adopted in 1977, which regulates discharges of pollutants into water and sets quality standards for surface waters (www2.epa.gov\\laws-regulations; New York City Department of Environmental Protection (DEP), 2010).

The CWA plays an important role in many cases where outdated sewage systems are polluting waterways favoring the adoption of corrective measures. An example is the case study considered in this research, the Bronx River. In this specific case, during storm events the outdated sewage system is responsible for river water pollution (Bronx River Alliance, 2006a). As it will be described in Chapter 3, a greenway along the River reduces this environmental and ecological problem, providing many other benefits.

Although private funding also plays an important role, since planning initiatives to green American cities are frequently funded by foundations (Crauderueff et al., 2012), Thomas Angotti, Professor of Urban Affairs and Planning at Hunter College and the Graduate Center, City University of New York, links Federal and State role in restoring cities to economic resources: «In the case of New York City, which is one of the largest U.S. administrations, 75% of the budget is made up of Federal and State funds and programs. For this reason local governments all over depend heavily on [the] Federal Government» (T. Angotti, personal communication, December 13, 2013). The EPA provides local municipal grants, along with technical support, to cities to support an implementation of GI to fulfill CWA requirements (http://water.epa.gov/grants_funding).

Despite this approach, regulatory aspects at the Federal level also play an important role in the diffusion of GI; cities around the country have begun to manage stormwater runoff using green infrastructure to advance EPA regulatory requirements because local municipalities spend billions of dollars to reduce the volume of stormwater runoff in order to meet the regulatory requirements of the CWA to achieve swimmable and fishable waters (Crauderueff et al., 2012).

New York City (NYC) has 25,900 inhabitants per square kilometer, an urban density higher than figures registered in 40 American states and 800 times the population density of the United States (Owen, 2010), meaning that green infrastructure can play a very important role in reducing environmental and ecological imbalances there, as well as mitigating the Urban Heat Island (UHI) phenomenon (Susca et al., 2011).

During administration of Mayor Michael Bloomberg, several policies were developed reduce greenhouse gas (GHG) emissions by 30 percent by 2030, and to improve residents' quality of life, as outlined in PlaNYC, the City's comprehensive sustainability plan released in 2007. PlaNYC was created as a bold agenda to meet challenges related to growing population, aging infrastructure, a changing climate, and an evolving economy and to build a greener, greater NYC (PlaNYC, 2011). The ambitious goal of PlaNYC is to reduce citywide GHG emissions by 30% below 2005 levels by 2030 (known as 30 by 30). According to the "PlaNYC Progress Report" of 2013, in six years, NYC reduced citywide GHG emissions by 16% with a cleaner energy supply, more highly efficient power plants coming online, and less polluting natural gas displacing energy generation by coal and oil. Among the initiatives launched to improve infrastructure, create or preserve housing, and reduce emissions related to transportation, green infrastructure received much attention. With the aim of bringing more than 250,000 New Yorkers to within a 10 minute walk of a park, green areas have been built, including the Bronx River Greenway (case study of this research, see Chapter 3), although in this case the community also played a fundamental role.

For generations, parks have been among NYC's most cherished forms of public infrastructure (PlaNYC, 2011); Central Park, an 843 acres strip of nature cutting through the hearth of Manhattan island, is widely considered to be the most important public space created in 19th century America (Gandy, 2002; Figure 8).

Michael Flynn, Principal of m3project, a multidisciplinary urban design, research, and resiliency development collaborative based in NYC, recognizes the important role played by the Bloomberg administration's policies regarding green areas, and makes mention of the High Line, Brooklyn Bridge Park, Hudson River Park, Pier 15 and 17, and Battery Park. According to Flynn (personal communication, December 10, 2013),

«These are successful administrative initiatives in transforming and resurrecting public space in New York City. The administration facilitated a recalibrated urban landscape agenda through implementing a renewed emphasis on the importance of providing a citywide, connected public space network. As part of a progressive vision to activate and reconnect the City through the function of open space, the Administration's PlaNYC has been successful from urban and public health perspectives in activating and reconnecting the public realm, from a transportation and an open space perspective, and from an urban design perspective. Collectively, the initiative has offered a revitalized image, identity, and persona to the City's public facade.» (M. Flynn, personal communication, December 10, 2013).

Parks and public space importance is recognized for recreational amenities, ecological function, and economic development, as well as trees, green roofs and other forms of ecological infrastructure. NYC has invested in a network of green corridors, streets and other dedicated paths that perform multiple functions, including promoting recreation, capturing stormwater, and cleaning air (PlaNYC, 2011; Figure 9-10).

Figure 8. Central Park, NYC.

Research has been developed to identify cost effective strategies to reduce environmental and ecological imbalances, including a study conducted by Columbia University Center for Climate Systems Research, Hunter College, and SAIC Corporation, which investigates effective strategies to mitigate UHI (Rosenzweig et al., 2006). Results show that, to mitigate the phenomenon in NYC, a combined strategy that maximizes the amount of vegetation by planting trees along streets and in open spaces, as well as by building ecological infrastructure, offers more potential cooling than any individual strategy.

Stormwater management also plays a fundamental role in this case, as New York City experiences a tremendous volume of rainwater runoff from rooftops, streets, and other impervious surfaces (PlaNYC, 2011). To comply the Federal Clean Water Act, New York City built 14 sewage treatment plants, which were problematic in some area of the City (e.g. West Harlem), as demonstrated by local community organizations' protests (Angotti, 2008a). In other cases, as with the Bronx River, a green infrastructure approach has been adopted to prevent environmental degradation (see Chapter 3). The Bronx River is part of the greenway system developed starting with the Greenway Plan for New York City, released in 1993 and intended to double bicycle commuting from 2007 levels by 2012 (this result has been achieved, with 300 miles of bike lanes installed, "PlaNYC Progress Report," 2013) and tripling it by 2017.

Furthermore, the damage caused by Hurricane Sandy (which, in October 2012, left more than 800,000 people without power, damaged tens of thousands of homes and businesses, and killed 43 residents) demonstrate the importance of green infrastructure systems in complementing traditional "gray" infrastructure and implementing the City's climate resilience efforts. According to Columbia University's Richard Plunz (2008),NYC faces a moment of truth with regard to hurricanes and rising sea levels. Hurricane Sandy highlighted the need to bolster the City's resiliency and reduce its GHG emissions to help stave off the worst potential impacts of climate change ("PlaNYC Progress Report," 2013). "PlaNYC. A Stronger, More Resilient New York" (2013) was developed after Hurricane Sandy with the aim to make the City more able to withstand the forces of climate change and bounce back more quickly when extreme weather strikes. Among its strategies,, the plan recognizes the importance of increased green area capacity to absorb flood waters and expanded green infrastructure citywide.

NYC has launched several initiatives to increase the resilience of the built environment, including a $2.4 billion GI plan intended to better manage rainfall and reduce the impacts of Combined Sewer Overflow (CSO) ("PlaNYC Progress Report," 2013). It's notable that the City recognized the importance of GI previous to Hurricane Sandy as cost effective stormwater management.

Robert Crauderueff, Coordinator of NYC-based Stormwater Infrastructure Matters (S.W.I.M.), a coalition dedicated to ensuring swimmable and fishable waters around NYC through natural, sustainable stormwater management practices, states that,

«At the time S.W.I.M. was founded in 2007, the Department of Environmental Protection (DEP) was very resistant to the idea of using green infrastructure. The coalition, made of community, environmental and environmental justice organizations to advance the use of green infrastructure as stormwater management, worked with the City Council to require the City (via the Mayor's Office of Long-term Planning and Sustainability) to assess the green infrastructure approach. As an extension of this study, the DEP has begun using green infrastructure to advance water quality standards set by the Federal government through the Clean Water Act.» (R. Crauderueff, personal communication, November 26, 2013).

Figure 9. A waterfront view from the Brooklyn Bridge Park, NYC.

The "PlaNYC Sustainable Stormwater Management Plan" (2008) was issued by an Interagency Best Management Practices (BMP) Task Force and concluded that green infrastructure - including bioswales, green roofs, and subsurface detention systems - was feasible in many areas in the City and could be more cost effective than certain large infrastructure projects such as CSO storage tunnels or tanks (during heavy storms, these

can exceed capacity and are designed to discharge a mix of stormwater and wastewater into New York Harbor to prevent treatment plants from becoming compromised; NYC Environmental Protection, 2012). In September 2010, the City released its Green Infrastructure Plan, presenting an approach to improving water quality that integrated green infrastructure with investments to optimize the existing system and build targeted and cost-effective gray or traditional infrastructure (NYC Environmental Protection, 2010).

Among the several initiatives implemented in NYC to increase vegetation via widespread small interventions, the Greenstreets program is notable (Figure 11); transforming unused road space, traffic islands, and industrial areas into green assets, Greenstreets capture stormwater and improve water quality, and serve as important ecological respites within the urban landscape. Since 1996, they have been built throughout the City's five boroughs using specially designed soils and plants ("PlaNYC. A Stronger, More Resilient New York," 2013).

To demonstrate GI's utility on a variety of land uses, several projects have been constructed, including green roofs (NYC Environmental Protection, 2013, 2012). Green roofs are mentioned in "PlaNYC" (2011) as means of supporting ecological connectivity because of their potential to create ecological links between fragmented ecosystems and habitats, reduce the UHI effect and energy costs for buildings, and better manage stormwater.

The green roof installation atop the Five Borough (5-Boro; Figure 12-17) Administrative Building on NYC's Randall's Island is a pilot project described as, "a living laboratory for innovative green roof design", and implemented by New York City Department of Parks and Recreation (NYC Parks), it aims to test different types of green roofs available on the market. Artie Rollins, Assistant Commissioner for Citywide Services, has been working on this project for the past seven years.

«Nowadays, 31,000 square feet of green roofs and 31 different systems form the largest multiple system (extensive and intensive) in the world. Each system differs in weight, growth medium, plant life, and benefits. Some systems maximize the benefits - stormwater retention, heat island effect, insulating the building, biodiversity (with thousands of different insects on the roof) - where other systems are shallow and lightweight and require a very low maintenance. Some effects have been monitored, resulting in data regarding energy saving and stormwater management (stormwater which is also reused to irrigate during very dry periods). The 5-Boro project also serves as a way to educate and inspire park staff and patrons, as well as supply a resource for peers in the field. [Artie Rollins does] 150 tours per year on the roof with colleges, high schools, elementary schools, green roof installers, other municipalities, and commercial and condominium [developers]. Community involvement is a very important aspect of green roofs, and nowadays there are lots [of] projects in Manhattan with volunteers helping to install and maintain.

Green roof investments are effective for NYC with regard to stormwater management. To process a gallon of water through sewage treatment plant during a storm, the DEP spends less than a penny; however to build the sewage treatment plant to process one gallon of water, the cost is about $7. Since the cost saving are high, [the] DEP is giving away a million dollars in grants every year to private and commercial businesses to install green roofs. Even if green roofs would allow [for] a relevant cost saving, [however] investments are required to manage the large surface areas of green roofs. NYC invests in green roofs mainly to reduce stormwater; from an energy saving point of view, other choices may be more effective» (A. Rollins personal communication, December 4, 2013).

Several programs involve or were conceived to involve citizens participation, including GreeNYC and MillionTreesNYC, both implemented by NYC. GreeNYC's aim is to encourage residents to adopt sustainable practices in their daily lives; the program supports PlaNYC by urging action to meet the City's sustainability goals. GreeNYC's campaigns seek to present a compelling case for behavioral change at the individual level using simple, action oriented messages (www.nyc.gov/html/greenyc/html/about/about.shtml).

Figure 10. Brooklyn Bridge Park, reopened in 2011, NYC.


GREENSTREETS

With its slogan "I'm counting on you", MillionTreesNYC is one of the 132 PlaNYC initiatives and is a public-private program intending to plant and care for one million new trees across the City's five boroughs over the next decade (www.milliontreesnyc.org/html/about/about.shtml); in 2012, more than 65,000 trees were planted, and since 2007, more than 730,000 ("PlaNYC Progress Report," 2013). According to PlaNYC (2011), this initiative has been implemented because city trees cool summer air temperatures, filter air pollution, conserve energy by providing shade, and reduce stormwater runoff; greening the city will also reduce GHG emissions, combat UHI, and enhance stormwater management.

PlaNYC recognizes the important role played by the community with regard to parks maintenance, and the need to involve the public early in the park development process to engage citizens and community groups in the upkeep of their parks and green infrastructure. According to "PlaNYC Progress Report" (2013), maintenance and stewardship are key priorities going forward. As stated in the NYC Green Infrastructure Plan, stakeholder participation is critical to build and maintain green infrastructure, and the DEP has led the outreach effort to involve community boards, stormwater advocacy and green job non-profit organizations, Citizens Advisory Committees (CACs), civic organizations, other City agencies, environmental justice organizations, and local communities (DEP, 2010). A meaningful example of this is the case of the Bronx River, where local community organizations, citizens and public bodies have for years worked together to improve GI, creating and maintaining the Bronx River Greenway (see Chapter 3). This case confirms that successful green infrastructure projects seek to improve quality of life by incorporating multiple public uses, such as public parks or greenways, while focusing on stormwater-specific designs that may result in unforeseen public reactions and maintenance challenges (Crauderueff et al., 2012).

According to Francis and Lorimer (2011), some reconciliation, or habitat enhancement, techniques may be characterized as top-down as well, including the creation of habitats in public parks and recreational spaces, and the planting of vegetation along urban infrastructures. Generally, however, reconciliation relies much more heavily on localized and coordinated efforts of a large number of people and organizations with high levels of spatial, social, and economic diversity - a classic bottom-up structure).

BOTTOM-UP. As described above, community plays an important role in restoring environmental conditions of urban areas. However, the issue is not only related to functional contribution (e.g. maintaining or building a green area), but also to the engagement of the community, which is especially relevant for the improvement of environmental conditions in low income communities, as demonstrated in the case of the Bronx River (See Chapter 3), with its successful bottom-up approach.

Local participation in the United States has a deep rooted tradition. According to Angotti,

«This can be connected to slavery and the exclusion of all black people from being citizens, [and the] indigenous Indian[s] murdered and their lands stolen. This is what Michael Parenti calls 'democracy for the few' (Parenti, 2010). Besides this aspect, a constitutional foundation explains why, in the United States, there is a tradition of local participation and expectation that everybody has the right to say something» (T. Angotti, personal communication, December 13, 2013).

The United States based Environmental Justice Movement (EJM) started its national campaigns in 1980s among a confluence of events that brought about the terms "environmental racism" (the disproportionate effects of environmental pollution on racial minorities) - and "environmental justice" (a social movement that emerged in response to this problem) into the public space (Sze, 2008, 2007). Environmental justice, with its central concern the disproportionate impact of noxious facilities on communities of low income and of color, brings a progressive approach to sustainability by underlining the role of social

Figure 11. A "Greenstreet" in the Bronx, NYC.

justice in environmental and land use planning; as results, many of the current generation of community plans arose from the struggles of this movement (Angotti, 2008a).

The EJM was founded to address the inequity of environmental protection in local communities (www.epa.gov/environmentaljustice); the EPA defines environmental justice as,

«the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. 'Fair treatment' means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies».

In the period in which the EJM emerged, Republican Ronald Reagan was President of United States (1981-1989). His policies consolidated the rollback of Federal antipoverty programs and the hegemony of neoliberalism (Angotti, 2008a). According to Angotti, (personal communication, December 13, 2013), the Reagan administration represented a major turning point in government policies away from welfare state to neoliberal state, cutting back on social services, Federal support, with tremendous impact on cities all over. This had an important impact on all the industrial cities and particularly on the portions of the cities that were low income, minority, African American, Latinos.

In 1990, the EPA created the Environmental Equity Workgroup (since 1994 the Office of Environmental Justice (OEJ)) to address allegations that, "racial minority and low income populations bear a higher environmental risk burden than the general population". In the same year, New York's first African American Mayor, David Dinkins, took office with the support of a broad coalition of community, environmental, and other social movements. In 1991, the first People of Color Environmental Leadership Summit took place at which "Principles of Environmental Justice" were defined and diffused (Sze, 2008).

The elections of Dinkins and of Democrat Bill Clinton as President (1993 to 2001) raised hopes among neighborhood groups for greater involvement in decision making (Angotti, 2008a). On February 11, 1994, Clinton signed Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", to focus Federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities (www.epa.gov/environmentaljustice/basics/ejbackground.html). As demonstrated by the case of the Bronx River, bottom-up initiatives require both a first push from the community is fundamental and support by institutional bodies at the City, State, and Federal level.

This is not the first case in which policies at the national level were focused on community involvement; an example is a Federal program that funded architects and planners to favor community involvement (developed by the Democratic Presidents John F. Kennedy and Lydon Johnson from 1961 and ended by the Republican President Richard Nixon; T. Angotti, personal communication, December 13, 2013).

American architectural and planning theories have also claimed the need of a bottom-up approach. "A Pattern Language: Towns, Buildings, Construction", emphasizes the participation of owners and users in the making of buildings, claiming that all town and city planning should be from the bottom-up, done entirely by neighbors for neighborhoods (Saunders, 2002).

Figures 12-17. Green roofs atop the Five Borough Administrative Building on Randall's Island, NYC. Photos by NYC Parks.

The involvement of community in city planning and design is today widespread. In New York , immediately after his election in 2002, Mayor Bloomberg accepted the basic principle of community planning, as opposed to his predecessor Rudolph Giuliani (Angotti, 2008a), whose «response to environmental justice campaigns was just one more salient example of how hostile attitudes and politics toward low income communities and neighborhood[s] of color were managed by City Hall in the 1990s». However, according to Porter (2012), critics argue that, despite PlaNYC's claims of promoting equity and environmental justice, its policies may have the opposite effect. The Plan's content came from private consultants;

the hundreds of public meetings, stakeholder forums, and focus group sessions to introduce the Plan apparently did not elicit meaningful input (Angotti, 2008b). «within PlaNYC, the Bloomberg administration's commitment to environmental protection and equity take[s] a back seat to its vigorous promotion of economic growth» (Porter, 2012).

M3project principal Flynn was consulted on the role of the community in a firm activity, and of community boards in the urban design process, and notes that

«community participation, involvement, and approval has become a fundamental component to complex urban design initiatives and agendas. Successfully engaging the public realm into the design process and, ultimately, into the design solution, can in itself be a complex agenda. We've seen success in this process by identifying the importance of involving the community, stakeholders, and special interest groups meaningfully from the initial phases of the project design and vision creation. Engaging public interest as an initial design element contributes and informs the project's vision, ambition, and goals and in many cases promotes enhanced community support, increased stakeholder investment, and expedited planning processes» (M. Flynn, personal communication, December 10, 2013).

Flynn was part of the team created by James Corner, Field Operations with the firm Diller Scofidio + Renfro, which designed the High Line in New York City, a project that demonstrates the capabilities of productive collaborations that successfully merge architecture, landscape architecture, and urban design.

The High Line is a public park opened in 2009 that is built on an historic freight rail line elevated above the streets. The rail line was built in the 1930s as part of a massive public-private infrastructure project on the West Side of Manhattan and had not been used since 1980. It is owned by the City but maintained and operated by Friends of the High Line, a community-based non-profit group formed in 1999 when the historic structure was under threat of demolition, that works to raise essential private funds to support more than 90 percent of the park's annual operating budget (www.thehighline.org).

Although the High Line project (Figure 18-23) rises in a very different neighborhood to, for example, the low income Bronx site that is analyzed in this research, it is an interesting example of a bottom-up project.

«The High Line project was a catalyst and product of the 'Friends of High Line', an independent interest and promoter group of the project at its true infancy [that] created the initiative and the gravity behind its success. From an administrative perspective, the Bloomberg administration was a great advocate and facilitator towards its realization, implementation, and potential, especially since the previous administration, the Giuliani administration, was contemplating tearing it down. Initially, to gain public interest and awareness, an open design competition was held, attracting and producing fantastic ideas from a range of students, artists, and design professionals. The open ideas competition was the platform for demonstrating community interest and true value possessed in the, at the time, decaying and abandoned industrial landscape. From this point, a significant and exhaustively competitive design competition was held, attracting some of the world's leading landscape architects, architects, ecologist, and engineers. Still during that time, NYC Parks was not on board; Friends of High Line was the real initiator and capital facilitator for the project. [...] Although, at the time preceding the High Line's transformation and opening, Chelsea, the epicenter of Manhattan's Gallery District, and the Meatpacking District, was a burgeoning design district in its own right [and] that area of Manhattan [was] an international creative hub, the addition of the High Line to its cultural landscape transformed the West Side of Manhattan [in]to what it is today. The High Line has given evidence of the importance of green infrastructure within urban landscapes and the profound effect and potential [it can] have on culture, economy, real estate, and public identity. The story of the High Line is a profound example of the impacts a strong community voice, determined private interest groups, and key private investment can have on the reshaping of our urban environments.» (M. Flynn, personal communication, December 10, 2013).

Figure 18-19-20. The High Line, NYC.

Also small widespread initiatives can play an important role, as mentioned in Chapter 1. Interesting examples of bottom up initiatives that increased the amount of vegetation in NYC are community gardens, city owned properties that were in some cases purchased by not for profits and remained in their ownership but which are protected by the City and the State of New York through a Memorandum of Agreement (Crauderueff et al., 2012). More than 1000 community gardens exist in the City ("PlaNYC," 2011; Figure 24), and although not designed as stormwater capture parks, in a City where more than 70% of the surface is impervious, they play an important role; additionally, more than 80 community gardens utilize rain water harvesting systems for irrigation (Crauderueff et al., 2012) and approximately 80% grow food, mostly in neighborhoods with limited open space and inadequate access to fresh produce and other healthy foods ("PlaNYC," 2011).

LOCAL COMMUNITY ORGANIZATIONS. In New York City, some neighborhoods have seen important struggles carried out by local community organizations, including especially Sunset Park in Brooklyn, West Harlem in Manhattan, and the South Bronx. Planning policies had an enormous impact on these minority-majority and low income communities (Sze, 2007). In 1916, New York City Zoning was approved, defining three different type of zoning districts related to use (residence, business, and "unrestricted" - in practice, mostly industrial), height (shape of the building), and area (yards, courts, and other open space; Makielski, 1966). In 1961, the City saw a zoning resolution that divided land into residential (R), commercial (C), manufacturing (M) areas. According to Maantay (2000), «The re-zoning pattern corresponds to policy trends regarding privatization, gentrification, the importance of industry, and the roles of governmental and community-led planning». Although zoning regulations were not explicitly racial or discriminatory, they contributed to discrimination through the application of land use policies (Sze, 2007). In Sunset Park in Brooklyn, zoning changes accelerated trends of abandonment and housing decline (Winnick, 1990); manufacturing increased in Bronx, the borough with very high levels of minority and low income populations, while in Manhattan these decreased. Sunset Park, West Harlem, and the South Bronx are all mixed use districts with heavy manufacturing zones on the industrial waterfront, areas that have the lowest levels of protections relative to residential and commercial zones (Maantay, 2000). In the same period, during the administration of Mayor Robert Wagner, community planning boards were authorized (from 1963) to advise the Borough President and City Planning Commission on local matters. The process, which was started more than 10 years prior by then-City Planning Commission Chairman Wagner established 12 community planning boards that become a model for the City (Viteritti, 2009).

In 1988, Harlem community activists started West Harlem Environmental Action (WE ACT), which has become one of the most active and effective environmental justice organizations in New York City, to campaign against and to monitor the operations of the North River wastewater treatment plant, located near a densely populated housing development (Angotti, 2008a; Sze, 2007) in West Harlem. One of 14 that the City built to comply the Federal Clean Water Act, the North River plant drew citizen protests. Partially in response to the community protests the City got the State of New York to build the Riverbank State Park on a platform above the plant (Angotti, 2008a), WE ACT, with the Natural Resources Defense Council (NRDC, a major national environmental group), won a $1.1 million settlement from the City of New York and the DEP in State Court in response to numerous water quality and air pollution violations. Eventually, the City was required to carry out a $55 million program to reduce odors, and money was provided to WEACT and NRDC towards the establishment of the North River Fund to address community, environmental and public health issues (Sze, 2007).

Figure 21-22-23. The High Line, NYC.


PRIDE OF CONEY ISLAND
WELCOME to SANTOS White
COMMUNITY GARDEN
ASTELLA
GREEN THUMB
718 266 9675
VISITING HRS. 12:00 TO 6:00

In addition to its advocacy regarding the North River plant, WE ACT also participated in planning decisions in West Harlem, affecting public policy by positioning environmental justice as a major political issue (Shepard, 1994).

Today, WE ACT describes itself as one of the first environmental organizations in New York State to be run by people of color, and the first environmental justice organization in New York City; the Northern Manhattan community-based organization's mission is to build healthy communities by assuring that people of color and / or of low-income participate meaningfully in the creation of sound and fair environmental health and protection policies and practices. It was founded as the result of local communities' struggles against environmental threats and the resulting health disparities of institutionalized racism and the lack of social and political capital. Together with he North River sewage treatment plant, WE ACT includes as threats in its area: the siting and operation of six of seven New York City diesel bus depots in Northern Manhattan; the operation of the City's only 24 hour Marine Transfer Station in Manhattan; the general use of Northern Manhattan the City's dumping ground; and the exclusion of communities of color from democratic decision making (www.weact.org)

As stated on its website, this local community organization works to accomplish specific goals linked to "Indicators of a Healthy Community", including:

- The elimination of ambient air pollutants emitted from transportation, housing, and other facilities, including small business sources;
- Acces to affordable, safe, clean, reliable and equitable public and alternative transitregardless of age and ability (http://www.weact.org/Projects/PublicMobility/tabid/603/Default.aspx);The appropriate management of solid waste, pests, and pesticides (http://www.weact.org/Projects/SolidWastePestsandPesticidesManagement/tabid/604/Default.aspx);Access to and use of consumer products that do not contain chemicals at levels harmful to human health (http://www.weact.org/Projects/ReducedAccesstoandUseofToxicProducts/tabid/605/Default.aspx);
- Safe, fresh, and nutritious school meals that are prepared in schools in a quality environment, that kids eat and parents support, to contribute to the reduction of childhood obesity (http://www.weact.org/Projects/AccesstoGoodFoodinSchools/tabid/606/Default.aspx);
- Land use planning and zoning policies that support community health and wellness (http://www.weact.org/Projects/SustainableLandUseandEquitableDevelopment/tabid/607/Default.aspx);
- The creation and use of unenclosed areas connecting the built and natural environments and providing opportunities for recreation, reflection and interactions with nature (http://www.weact.org/Projects/OpenandGreenSpace/tabid/608/Default.aspx); and
- Reduced exposure to indoor pollutants in residences, workplaces, and schools (http://www.weact.org/Projects/HealthyIndoorEnvironments/tabid/609/Default.aspx).

Peggy M. Shepard, WE ACT's Executive Director and Co-founder, in speaking about the group's work in Harlem (Bullard et al., 2007) states that to build a safe and sustainable environment science, technology and research are indispensable tools, and that the lack of scientific literacy, information, data, and context has been a serious void contributing to the systemic exclusion of communities of color from decision making. For this reason, WE ACT, as well as other local community organizations, conducts outreach programs, education, and communication campaigns.

According to a "Climate Justice" special issue edited by WE ACT (Shepard and Corbin-Mark, 2009), climate change - and, as a result of global warming, impacts to key areas like water, ecosystems, food, and health - is the most significant social and political challenge of the 21st Century. Researchers report that vulnerable communities and areas, even in the most prosperous nations, will be the first and worst hit, and will face multiple stresses affecting their level of exposure, sensitivity, and capacity to adapt. Therefore, the authors note that, «It is critical to define a community-based research agenda and translate findings into strategies and interventions that address the impacts our most vulnerable communities will and are experiencing».

Figure 24. Community garden, Brooklyn, NYC.

Volume 3, Issue 4 Winter/ Spring 2014

ENVIRONMENTAL JUSTICE & POLICY NEWSLETTER

In This Issue

The EPA moves forward with the release of two new rules to improve air quality, public health of EJ communities

WE ACT for Environmental Justice and many communities across the country are hopeful that two proposed rules will improve the air and better protect the health of communities across the country.

Refinery Rule:

On May 15, the Environmental Protection Agency proposed a rule to update the toxic air pollution standards for petroleum refineries.

Many EJ communities live on the fence-line of these oil refineries that emit multitudes of air toxins on an hourly basis. This new proposed rule includes measures that would aim to reduce toxic pollution from flaring, require new monitoring requirements, specifically monitoring of air concentrations of benzene around the fence-lines. The EPA estimates that toxic air emissions, including benzene, toluene and xylene, would be reduced by 5,600 tons per year. Volatile organic compound (VOCs) emissions would be cut by approximately 52,000 tons per year. EPA will take comments on the proposal for 60-90 days after it is published in the Federal Register and plans to hold two public hearings near Houston and Los Angeles. WE ACT, EarthJustice and other community partners met with the EPA and the Office of Management and Budget weeks before the refineries rule was released to reiterate the need for this rule and the importance of the process moving forward expeditiously.

The final standards should be completed in June 2015.

Continued on page 2

WE ACT, New Member of US Climate Action Network (USCAN)!

On May 1, 2014, WE ACT was voted as a new member of the US CAN, a network of 119 organizations. We are thrilled to be part of this network and contribute to its climate change work in the United States. Click here to see the full list.

WE ACT for Environmental Justice

Washington, D.C. Staff:

Dr. Jalonne L. White-Newsome, Federal Policy Analyst
*Ms. Alaura Carter, Communications Intern
*Ms. Dorthea Thomas, Climate Justice Fellow
*Ms. Falon Shackleford, Outreach Intern
*Ms. Mayra Cruz, Climate Accountability Intern
Ms. Laetitia N'Dri, Toxic Chemical Safety Intern
*Mr. Kyle Colonna, Research Health Intern
Ms. Megan Griffin, Literature Intern

New York Policy Staff:

Mr. Cecil D. Corbin-Mark, Dep. Director /Policy Director
Ms. Peggy Shepard, Executive Director

*Internship completed

The "Harlem on the River Plan" is an as example of WE ACT involvement in an NYC project for an important green area, and is «a community-based planning model that should be replicated nationally to develop public space and encourage community-based economic development with State, municipal and Federal funds» (WE ACT for Environmental Justice, 2004).

As explained by Sze (2007), this plan regarded a property on the West Harlem waterfront owned by the City and once used for ferry services to New Jersey, Brooklyn, and Upstate New York. Over the past half century it had become a litter-strewn stretch of asphalt with a parking lot. Two plans were drawn up: the Harlem West Plan was organized by the New York City Economic Development Corporation (NYCEDC) and was advised by the West Harlem Working Committee (a broad base of local constituents, agencies, and elected officials); the Harlem on the River Plan was a comprehensive community plan established through a community-driven planning process and initiated by WE ACT in conjunction with Community Board 9 (WE ACT for Environmental Justice, 2004). The Harlem on the River Plan was ultimately used by NYCEDC as the benchmark for the Harlem Piers Master Plan Study rather than private developer proposals and the landscaped park area along the riverfront (Sze, 2007) became the missing link in achieving a continuous greenway along the Hudson River in Manhattan (WE ACT for Environmental Justice, 2004).

At the end of 1980s, the Sunset Park waterfront in Brooklyn was chosen as site for two of the eight sludge plants at which the City that would convert the waste to fertilizer pellets. The United Puerto Rican Organization of Sunset Park (UPROSE) played a fundamental role in coordinating opposition from the neighborhood's Latino, Asian American, and Italian American communities, arguing that the proposal was a classic example of environmental injustice. After developing an alternative masterplan for the Sunset Park waterfront that included a mix of industrial preservation, public space, and residential blocks, UPROSE became one of the neighborhood's most vocal advocates for community planning (Angotti, 2008a). Formerly known as United Puerto Rican Organization, UPROSE was founded in 1966 as the first Latino social services agency in Brooklyn and, in the 1990s was reorganized to focus on environmental justice issues (Sze, 2008).

In Sunset Park, according to city-data.com, 44.9% of the community was foreign born, the majority from China, the Dominican Republic, Ecuador, Mexico, and Poland. A quarter of residents live below the poverty line and public health statistics show high rates of cancer and asthma. According to UPROSE, this is due to environmental degradation; numerous factories, a waste treatment plant, contaminated brownfields along the waterfront, and the heavily trafficked Gowanus Expressway contribute to the toxic release of arsenic, nickel, and other potentially carcinogenic chemicals into the community's air. UPROSE's efforts include those aimed at reducing vehicular traffic, planting trees, teaching young people empowerment, testifying at public hearings, organizing meetings and protests, doing research, and developing strategies for community engagement, such as training youth to measure carbon monoxide (CO) and particulate matter that contributes to respiratory distress (Bader, 2013).

As an environmental justice organization, UPROSE is dedicated to planning processes that are inclusive and allow local residents to have a voice in making decisions. Of primary concern are issues of waterfront development, land use, brownfields, transportation, air quality, open space, alternative energy, and environmental health; with regard to open space, UPROSE worked on the design of a community "Greenway-Blueway" for Sunset Park, a plan that coordinates an extended green space (Greenway) within the community to correspond with a planned waterfront park (Blueway; www.uprose.org).

Figure 25. WE ACT newsletter, released twice per year since 2012 (www.weact.org).

UPROSE is committed against climate change as well, since it believes young people of color should be trained to become environmental "change makers" (Bader, 2013; www.uprose.org)

SUSTAINABLE SOUTH BRONX

PROGRAMS AND INITIATIVES

1231 LAFAYETTE AVE.
4TH FLOOR
BRONX. NEW YORK
10474
646-400-5430

WWW. SSBX.ORG

MISSION:

Since it's founding in 2001, SSBx aims to address environmental, economic, and social issues pertaining to the South Bronx through a series of community building programs like green job training, community greening programs, and social enterprise. Over the past decade, the initiatives presented by SSBx reflect a common environmental justice notion that the poor environmental conditions in the South Bronx are well connected to the area's social and economic concerns. In addition to the South Bronx's status as the nation's poorest congressional district, it is also home to the Hunts Point Market, one of the worlds largest food distribution centers, creating an hyper-industrialized neighborhood, including several residential and commercial waste facilities, four power plants, one prison, and one water treatment plant. Through the programs and initiatives SSBx offers, the key goal is link the environmental restoration of the South Bronx with economic needs of it's residents.

JOIN US AND SUPPORT OUR PROGRAMS AND INITIATIVES

BEST ACADEMY

Bronx Environmental Stewardship Training is the flagship program of SSBx. BEST addresses the environmental and economic needs of the South Bronx by certifying low income or underemployed New York City residents to learn the knowledge and skill-set to attain employment in the growing green-collar job sector. Students that graduate from the award-winning program receive alumni benefits, like employment assistance, but they also join a network of green-collar workers that protect the natural environment through green building, restore urban green spaces, and, in general, bring NYC to a greener standard.

SMARTROOFS

SmartRoofs is a for-profit, social enterprise subprogram at SSBx. All SmartRoofs projects are completed by BEST graduates, who are able to gain real green-job experience while receiving income. SmartRoof employees install green, living roofs for clients, big and small ranging from housewares giant, ABC Carpet and Home, to a fellow South Bronx non-profit organization, Rock the Boat. In April 2012, the NYC Cool Roof initiative, a city wide program to apply white-reflective paint on roofs to promote building energy efficiency, began to solely contract BEST graduates for Cool Roof recipients.

BE²

Bronx Energy Efficiency is a program that connects Bronx homeowners to NYSERDA contractors and financial services that can provide energy audits, home energy retrofits, and installation at a low cost. Through community partnerships with community councils, SSBx is able to recruit interested home and business owners to participate in an energy audit and installation which can contribute to over $700 in energy savings annually. We want Bronxites to take advantage of the low-cost energy and economically efficient home improvement opportunities.

SOUTH BRONX GREENWAY

SSBx co-partners with the Point CDC and the New York Economic Development Corporation to advocate for parks, waterfront green spaces, and green streets throughout the Hunts Point and Port Morris areas of the South Bronx. Sections of the Greenway have already been developed but more green developments around the existing parks will create a safe, accessible linked network of green spaces in the South Bronx. SSBx employs a full time Greenway steward to maintain the Greenway litter-free and healthy. The Greenway is part of the city's comprehensive plan to increase economic development, recreation, and transportation safety in the South Bronx peninsula.

Many grassroots environmental justice campaigns were born in the Bronx to developed community plans, such as the one implemented by South Bronx Clean Air Coalition (SBCAC) that successfully worked to close the Bronx Lebanon Medical Waste Incinerator, built in 1991, or the Youth Ministries for Peace and Justice (YMPJ) protect to develop community gardens, public open space, and youth education programs (Angotti, 2008a). As a neighborhood, the South Bronx has struggled for nearly three decades under the negative connotations of its name as a flash point for violent crime, drugs, and unchecked urban decay; the neighborhood also houses 15 waste transfer stations and four power plants (Loria, 2009).

Sustainable South Bronx (SSBx) was created by activists who merged environmental issues with cultural development and community planning priorities and has become among the strongest advocates for community planning in the South Bronx, along with the POINT Community Development Corporation, which develops plans for the Bronx waterfront, public spaces, and housing (Angotti, 2008a).

SSBx is an environmental justice solutions organization addressing land use, energy, transportation, water and waste policy, and education to advance the environmental and economic rebirth of the South Bronx (Loria, 2009) and was launched in 2001 after organizing a successful campaign to fight a proposal to locate a new waste facility that would have brought 40% of the City's waste into the South Bronx (Cohen, 2008).

Today, industrial activities continue to produce environmental problems in a neighborhood with high rates of asthma, especially those related to the traffic to and from the Hunts Point Food Distribution Center, one of the world's largest food distribution centers: every weekday, 15,000 trucks pass through the neighborhood, producing toxic air pollution (www.ssbx.org).

Among SSBx's green infrastructure and education programs, the Bronx Environmental Stewardship Training (BEST) program stands out as a so-called "green collar" job training program that places 85 percent of the graduates in jobs. The program addresses environmental, health, poverty, and quality of life issues by equipping urban residents to work in green collar positions such as in ecological restoration, hazardous waste cleanup, green roof installation, and landscaping (Loria, 2009).

Majora Carter, Founder of SSBx addressed in an interview with the American Society Of Landscape Architecture (ASLA; www.asla.org) the crucial role her organization played in bringing green roofs to the South Bronx:

«I think the City will save money if they pay in full for green roofs in certain water shed areas [...] air quality goes up and energy consumption goes down when green roofing is deployed on a massive scale.[...] The ball is in motion and it's just a matter of time before migratory birds light on the roofs of NYC as they make their journeys. [...] We need change on a massive scale. We might not get it perfectly right immediately, but we certainly know that we have not been doing a good job with regard to our social or environmental future so far. If you know something works, do it - and do it big, bold, and beautifully, and make an impact!»

SSBx works to create policies to increase the use of GI, such as incentives to plant trees and install green roofs (Loria, 2009). With its aim to "green" the community, Sustainable South Bronx is planting hundreds of trees along the greenway and throughout the Hunts Point peninsula (Cohen, 2008) and has provided spaces for urban agriculture as part of its green roofs program, producing fresh, healthy food, and providing educational opportunities for kids and adults (Loria, 2009).

Case Wyse, Community Greening Coordinator, SSBx, states that, «Sustainable South Bronx works to enhance people awareness and community consciousness, not only to maintain green areas but also to create a network so that other projects can be made. Sustainable South Bronx identifies as an environmental justice organization. The South Bronx has problems with waste and pollution due to the industries of NYC and especially in Hunts Point due to the Hunts Point [Cooperative] Market. Involving kids that grow

Figure 26. SSBX Leaflet., handed out in 2013.

up in areas as Hunts Point is very important, since they are the most affected by these circumstances. A lot of schools have groups of children that come out thanks to teachers that have taken interest in these projects. Sustainable South Bronx helps people realize that they can fight for themselves, that they can do something more» (C. Wyse, personal communication, November 26, 2013).

3. Case study: the Bronx River

THE RIVER AND THE NEIGHBORHOOD. The Bronx River runs through the New York City (NYC) borough of the Bronx and southern Westchester County in New York State; this corridor begins near Valhalla, N.Y., and flows south for 23 miles through Westchester and Bronx Counties before emptying into the East River (Bronx River Alliance, 2006a; www.bronxriver.org).

The Bronx River has been used for human activities since at least the time of the Mohegan Indians, who inhabited the mainland peninsula that came to be called the Bronx, and used its numerous freshwater waterways – including the Bronx River, known then as Aquehung, or "River of High Bluffs" – for drinking water, food, transportation, waste removal, and recreation (Kadt, 2011).

In 1639, a Swede named Jonas Bronck purchased land from the Mohegans and began building mills. By the beginning of the 18th Century, 12 mills were manufacturing paper, flour, pottery, tapestries, barrels, and snuff, powered by water from the stream (New York City Department of Environmental Protection (DEP), 2010); despite this, the river water was considered to be "pure and wholesome" (in 1798, the Bronx River was even proposed as source of NYC drinking water; Bronx River Alliance, 2006b), and the valley remained vegetated and forested. However, the construction in the 1680s of a dam (now at 182nd Street), affected the health of the River, slowing the flow of water and reducing fish passage with important effects on the ecosystem (Griffin, 2009). It was in the 1840s that railroad construction turned the valley into an industrial corridor (DEP, 2010) and, with industrialization, power was turned to the production of tobacco, paint, cotton, rubber products, and the River to flushing away waste and providing water for industrial processing (Kadt, 2011). In 1905, Westchester County constructed the Bronx River Valley Sewer that discharged into the River; and in 1915, New York City's demand for water continued to rise and the construction of the Kensico Dam, diverting the upper reaches of the River into the reservoir and cutting its flow by approximately 25% (DEP, 2010). In this period, the New York Tribune termed the Bronx River a "turbid, reeking, stinking thing."


Bronx River Parkway
Metro-North railroad
Woodlawn Cemetery
Fordham University
New York Botanical Garden
Bronx Zoo
Bronx Park
Cross Bronx Expressway
Starlight Park
Concrete Plant Park
Westchester Avenue
Sheridan Expressway
Bruckner Boulevard
Amtrak train line
Hunts Point Riverside Park
Lafayette Avenue
Soundview Park
Hunts Point peninsula
Hunts Point Food Distribution
mostly industrial

The damages caused by industry lasted a century. In 2003, a study of Starlight Park in the South Bronx by Consolidated Edison (Con Ed) and the New York State Department for Environmental Conservation (DEC) found hazardous waste from early 1900s power plant, a possible cause of cancer and asthma (Bronx Beat February 17, 2003). Mills operated along the River until 1934 (Greenburgh Nature Center and Scarsdale Historical Society, 1983), decreasing its water quality, and dams harnessing the River's power impeded the ability of anadromous fish to spawn upstream. When mills started to close, the Bronx River's water quality became more of a concern,, however, the combined sewer and stormwater infrastructure (combined sewer overflow, or CSO) continues to be usable to transfer all the sewage to treatment plants, especially when it rains, causing water pollution to this day (Kadt, 2011).

Some areas have not been urbanized (e.g. the 662-acre Bronx Park, which has provided a buffer against development on either side of the river (but many large projects have been realized, including the Bronx River Parkway running parallel to the River, completed in 1925 (www.bronxriver.org; Bronx River Alliance, 2006c). Other projects had even greater impacts upon the River and the neighborhood: throughout the 1960s and 1970s, highway projects divided the Bronx and, in particular, the construction of the Sheridan Expressway and Cross-Bronx Expressway greatly distanced the Bronx River communities from each other (DEP, 2010). In the 1970s, the Bronx River had became "hidden" behind small industry, apartment buildings, roads, and junk (Kadt, 2011).

This overview of the Bronx River's history shows how quickly it went from a flourishing and beautiful resource to a contaminated conduit for industrial and residential wastes; there are still many ecological and environmental issues related to transportation and industry, but, «as the 20th Century becomes the 21st, people are returning to the Bronx River, drawn back to a place that has remained true to itself in a region where much else has changed» (www./bronxriver.org).

As it will be shown, the main credit for this change of trend belongs to the Bronx community that, in the 1970s, started to work to improve the river and the neighborhood conditions (DEP, 2010). To understand the climate in which grassroots organizations started to work in the area, the opposition to the construction of a treatment plant must be mentioned:

«Our community is definitely opposed to the water treatment plant planned for construction at Calhoun and Schurz Avenues, in the Throggs Neck area. [...] the location is surrounded by schools, churches and private homes. It is not been proven us that the water treatment plants do not give off offensive odors, which would not be in keeping with air pollution standards. In addition, our local streets are in no way capable of withstanding the traffic of the heavy trucks and equipment needed for building such a projects» (Bronx Press Review, 1974).

In the same year the Bronx Press Review reported on the end of a raw sewage dumping in the Bronx River, printing:

«Government action in the Bronx at Westchester, to halt the discharge of raw sewage into the Bronx River is being sought, after completion of an environmental report issued by the New York Botanical Garden which charges that the sewage is fed into the stream at two points, and heavy silt at a third» (Bronx Press Review, 1974).

Figure 27. The Bronx River area, the Bronx, NYC.

As shown in Figure 27, the Bronx River winds through areas with different land use and physical characteristics. Neighborhood and community around the River are characterized by industries to the south and residential and parkland uses in the central and northern segments (DEP, 2010).

The southern segment of the Bronx River, the estuary section, is mostly industrial, parkland and residential with some commercial, institutional and vacant areas as well. This section's industrial and manufacturing uses consist primarily of warehouses of no more than three floors concentrated on the Hunts Point peninsula (DEP, 2010).

According to an onsite survey (October 5, 2013), industrial and manufacturing uses predominate; during non-working hours, streets are virtually abandoned with very few commercial activities (figures 29). There are also, however, some mostly residential areas along Lafayette Avenue, including multistory buildings near the River, albeit adjacent to industrial areas and interspersed with several industrial and commercial parcels (Figure 28).

Residents of Hunts Point are used to seeing about 10,000 trucks a day on their streets, according to a survey conducted by members of Mothers on the Move, a Hunts Point community activist group. This traffic is considered responsible, along with other pollutants, for neighborhood's asthma rates, which rank among the City's highest, and is due to the Hunts Point Food Distribution Center, one of the largest in the world (Bronx Beat February 28, 2000).

The access to the riverfront is extremely limited along this stretch, with the exception of Hunts Point Riverside Park along Lafayette Avenue, between a scrap metal facility and the Food Distribution Center, but nearby residential areas; Figures 30-31); Hunts Point Riverside Park became the first waterfront park in the South Bronx in over 60 years when ground broke in 2004 (Bronx River Alliance, 2004).

Along the east side of the River, the Soundview area stretches from Clason Point to the Bruckner Expressway, and is characterized by its parkland – Soundview Park – and medium density residential uses, including a large high rise public housing complex (Figure 31); Soundview Park also contains large tracts of vegetated areas alongside recreational facilities (DEP, 2010). The northern extent of the Hunts Point Peninsula, between the Hunts Point Riverside Park and Concrete Plant Park, another park with access to the waterfront, is mostly industrial (onsite survey, October 5, 2013).

The southern portion of the Bronx River has undergone an important makeover in recent years, from an industrial no man's land to an increasingly people-friendly waterfront; however, there are still many accessibility problems due to the presence of an Amtrak line and the Sheridan Expressway nearby Starlight Park's southern entrance (DNAinfo.com New York; 2012).

This area is highly characterized by these infrastructures: the Amtrak rail line holds a prominent place along the Bronx River, running north-south along a portion of the southern segment of the river, crossing the river just north of Westchester Avenue (DEP, 2010). The Sheridan Expressway (Figure 32-33) parallels the river from Bruckner Boulevard to the Cross Bronx Expressway and is, according to Loria (2009), a poorly planned, 1.25-mile, redundant highway link in the South Bronx that was

«Built at a time when Robert Moses dictated New York public works projects; the Sheridan Expressway is one of four expressways that has contributed to the blight, disinvestment and public health problems plaguing the South Bronx. [The local community organization Sustainable South Bronx (SSBx) is] hoping to remove the short stretch of highway, which will reunite South Bronx neighborhoods, allow residents to access the newly restored Bronx River, and create space for parks, affordable housing, and positive economic development».

The Concrete Plant Park, between Bruckner Boulevard and Westchester Avenue (Figure 35), opened in 2009 (Bronx River Alliance, 2009), and is partly cut off from the neighborhood by the expressways, the rail line, and various industrial uses (Figures 32-33-34).

The eight acre Starlight Park is also largely cut off from the nearest community by the Sheridan Expressway (Figure 36). This park, which parallels the River (Figure 39), has a long history, beginning as an amusement park in 1918 (Bronx River Alliance, 2006b). The Starlight project was developed in the 1960s in conjunction with the construction of the Sheridan Expressway (Bronx River Alliance, 2006c).

Figures 28-31. The Hunts Point peninsula in the Bronx, NYC.

Near Starlight Park and slightly inland from the River, the building stock is a mixture of detached and semi-detached homes, townhouses, brownstones, and multistory, multifamily apartment buildings (Figures 37-38; DEP, 2010).

Closer to the Bronx Park, more mixed uses can also be found with these residential areas (Figure 40), including commercial structures and industrial buildings that line much of the east bank of the River (Bronx River Alliance, 2006a).

The central section of the Bronx River area is dominated by Bronx Park (Figure 43), an extensive parkland that includes the New York Botanical Garden and the Bronx Zoo, and which is bisected by the Bronx River Parkway and the northern section of the Bronx River (Figure 41-42). The Park borders to the west and south medium density apartments multifamily residential areas and Fordham University (DEP, 2010).

Residential areas between the university and Woodlawn Cemetery are mostly multifamily homes, while the River's eastern shore is largely single family and detached houses. The Woodlawn Cemetery and the Metro-North railroad, which runs parallel and adjacent to the Bronx River, are predominant in this area. Shoelace Park runs along the eastern shore of the Cemetery and the area features several industries, although less along the northern segments than the southern areas. Finally, the northern extreme of Bronx River area's eastern shore are made up almost exclusively of residential zoning (DEP, 2010).

In summation, the densely populated section of the Bronx River that passes through industrial areas shows a range of problems typical of urban rivers, while the northern part that passes though Bronx Park is mostly naturalized and well vegetated (Figure 44).

Human activities implemented over 400 years along the Bronx River have had a very high impact on the river ecology and on the environment. Below, a description of the main ecological and environmental imbalances, regarding stormwater management, biodiversity loss, invasive vegetation, and water quality, will be provided.

The urbanization of the area around the Bronx River (which houses approximately 210,000 people) has resulted in an increase in annual stormwater runoff to the water body and has all but eliminated any natural response mechanisms (e.g. tidal marshes, buffer zones) that could helped absorb this hydraulic load (DEP, 2010). According to McDonnell and Larson (2004), impervious surfaces such as rooftops, parking lots, and roads cover more than 60% of the River's upland areas and inhibit the watershed's natural hydrological function. Due to stormwater runoff, water goes directly into the River through sewers and drains and is not be intercepted by vegetation or absorbed by soil (Dunnett and Kingsbury, 2008). According to Bronx River Alliance (2006a), this results in disturbed flow patterns within the river channel that cause flash floods, erosion, low habitat value, high water temperatures, low base flow, and excessive sedimentation. This is not the only problem related to human activities; other examples including dams located in the Bronx Park section that work as barriers to fish passage, floating waste as debris, and sewage, inputs of which lower dissolved oxygen (DO) levels and limit the growth and survival of aquatic organisms. Habitat degradation, the result of riparian management, channel degradation, and poor hydrology and water quality, prevents diverse flora and fauna from establishing and, as poor water quality violates health standards, these waters are also unsuitable for public recreation. According to the Bronx Beat (April 2, 2007), the City's outdated sewage system plays an important role in polluting the Bronx River.

«Heavy rainwater routinely overwhelms city sewage that are built on a model that sends more than 27 billion gallons of sewage and stormwater into rivers and streams each year. "When they overflow, it's completely disgusting. You can see it, you can smell it" said Irene Dominguez of Rocking the Boat, an organization the leads canoeing and kayaking trips on the Bronx River for students. New York City has been ordered by the state to finally comply with the 1972 Clean Water Act and clean up its waterways. In response, the Department of Environmental Protection has developed a plan to fix the sewage problem by building giant holding tanks that will hold stormwater underground and realize it into water ways slowly according to a report by Riverkeeper, a nonprofit environmental organization in Manhattan».

Figures 32-35. The Concrete Park and the surrounding area, the Bronx River. NYC.


NORTH
95
onx River Pkwy
NORTH
SE E 177 St


99¢
99 99


NO PARKING

This problem is highlighted also in the Ecological Restoration and Management Plan (Bronx River Alliance, 2006a): during storm events, combined sewer overflows discharge untreated sewage, stormwater, and other pollutants into the River, which results in poor water quality conditions in this section of the River. Combined sewer systems are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe. During periods of heavy rainfall or snow melt, if the wastewater volume in a combined sewer system exceeds the capacity of the sewer system or treatment plant, excess wastewater can be discharged directly to nearby streams, rivers, or other water bodies (http://cfpub.epa.gov/npdes/home.cfm?program_id=5). According to Robin Kriesberg, Ecology Director with the Bronx River Alliance, this is the biggest problem in the Bronx: «During heavy rain events, the sewage plants may not be able to process all the water; if so, [untreated] rain, instead of being processed, goes right into the Bronx River and all of New York Harbor» (personal communication, November 18, 2013).

Another important aspect is the presence of invasive vegetation, which limits the diversity of the vegetative community, contributes to bank instability, and excludes trees from the riverbank, thus limiting the supply of large woody debris necessary to create certain habitats (Bronx River Alliance, 2006a).

«Due to invasive species, plants that may be better food for wildlife, better shelter and [better] for controlling erosion and keeping the soil in place, can't grow. Furthermore, there are probably still some problems regarding industrial activities and water quality, but a lot of that has been takien care of by regulations and enforcement. This aspect is important for human health since people swim (and fish; Figure 45) in the Bronx River even if they should not» (R. Kriesberg, personal communication, November 18, 2013).

The ecological problems described related to specific sections of the Bronx River; the Westchester and Botanical Garden / Zoo sections are predominantly freshwater, with relatively undisturbed soil and vegetation, which contrasts with the considerable changes visible in other sections (Figure 44; Bronx River Alliance, 2006a).

THE ECOLOGICAL RESTORATION AND THE GREENWAY. Rivers and streams are critical to nearly all green infrastructure systems (Benedict and McMahon, 2001); as such, urban waters that take on large amounts of pollution from a variety of sources (e.g. industrial discharges, wastewater, trash, polluted stormwater runoff), are flashpoints for public and environmental health hazards (Office of Water, 2014).

«Improving the quality of New York City's waterways is a long term commitment that requires consensus about priorities and goals. We must remove historical pollution that has had a prolonged and damaging effect on our waterways. We must also address the present day pollution that comes from CSOs and continue finding ways to restore natural systems. As these investments can be costly, we need to focus on those problems that can affect public health or prevent New Yorkers from accessing their waterfront today. These improvements will allow millions of New Yorkers to access areas that have been off limits to recreational use for decades. They will also revitalize our City's aquatic ecosystems. Our commitment to improving our waterways is a critical element of our environmental stewardship for the next generation, which needs and deserves a clean and healthy harbor ecosystem» ("PlaNYC," 2011).

Figures 36-39. Starlight Park and the surrounding area, the Bronx, NYC.

The ecological restoration of the Bronx River started in the 1970s, before the famous campaigns for environmental justice of the 1980s; In 1974, in response to the poor conditions of the Bronx River, local residents formed the Bronx River Restoration Project, Inc. and removed debris from the shoreline of the Bronx River (DEP, 2010).

Activities implemented to improve the River and the neighborhood saw an interruption in the 1980s, however, but regained momentum at the end of the century (See Appendix: The Bronx River timeline). According to Angotti (personal communication, December 13, 2013), this trend can be related to Federal and local politics.

«During the administration of [President Richard] Nixon (1969-1974) and the crisis of near bankruptcy of New York City in 1975, the South Bronx was written off by local and national policies as a declining area that was not worth the investment. However, the community-based efforts to improve and restore housing and communities have created a viable Bronx, which is attracting new investments for development resulting also in gentrification processes. Specifically focused on what is happening with the Bronx River and the South Bronx, economic trends [have] played an important part. In this area, industrialization led to the vast abandonment of 1970sI and in this period, industries located in the South Bronx moved out and took with them also the workers, the white working class. Therefore, the Bronx River - which originally was an important waterway - stopped being a place for industrial waste. The revival, redevelopment, and gentrification of the South Bronx, and the clean up and improved access to the waterfront were therefore influenced by the mega-economic trend».

When asked about the slowing down of restoration activities near the Bronx River during the 1980s, Angotti links the trend specifically to the Federal politics: «Most political scientists would agree that [the administration of President Ronald] Reagan (1981-1989) was a real turning point in government policies away from welfare state to neoliberal state» (T. Angotti, personal communication, December 13, 2013).

In 1974, local community residents started to clean up the river and formed the Bronx River Restoration Project (BXRR), under the direction of Ruth Anderberg (Kadt, 2011). In a letter to the editor of the Bronx Press Review (1975), she wrote:

«A year ago, the Bronx River Restoration Project - without any funds - began to clean the river. Meeting where held with various community groups who helped and supported the work of restoration. It was their unanimous wish that the land on either side of the river be left as open space or used as parkland. The Bronx River Restoration Project learned last week that, in spite of promises to hold the land for community recreation, the lot next to the river was released for sale, quietly. When asked for a reason, the community was given an ultimatum: "Give up the playground or you will loose the New York State Employment Office". This is an outrage. [...] We are ready to fight for that property».

Among many others, the first plan released by BXRR (Bronx River Restoration Plan, 1977) was sent to the White House care of the Democratic President Jimmy Carter (1977-1981), who had recently replaced the Republican Gerald Ford (1974-1977).

«A direct appeal to President Jimmy Carter for his aid in expediting the Bronx River Restoration program has been sent to the White House, by Alex Horn, director for long term planning of the Restoration group. Mr. Horn urged assistance for the Master Plan for the Project, which he notes would 'revitalized the physical environment, and serve a number of strongly felt needs economic, social, cultural, educational and recreational. [...] We need your help in two ways': to identify the channels through which the program can receive Federal funding and to help expedite such procedure. With your indicated interest, BXRR can become a symbol of self help to which your administration can point with satisfaction and justification [...]. The Restoration program recently received a $45,000 grant from the Youth Conservation Corps to put 50 young people to work on the river this summer» (Bronx Press Review; 1977).

Figures 40-43. The Bronx Park and the surrounding area, the Bronx, NYC.

Just a few years after the community started to work on the Bronx River, the important involvement of New York City municipality was formalize by the release, in 1979, of "Restoring the Bronx River".

«Made by the Department of City Planning, the study plots the land use along the eight and one half miles of the river in the Bronx between Westchester and the East River. The major recommendation is that a 'public way' easement of varying widths, be established south of East 180th Street on both sides of stream to permit grater public access to the water. [...] Noticing that, 'with little government money, volunteers have already cleaned a portion of the river and have drawn plans for creating a variety of riverfront recreational activities. Now it is our job to open the way for people to reach the water. [...] Plans to control raw sewage discharges at 235th Street and East 233rd Street, through the construction of a combined sewer system along Webster Avenue, [have] already have been made, and this project is expected to be put underway this year. City action will be needed to protect the river water quality, and continued efforts by the Bronx River Restoration Project, local volunteer organization, with community development program funds, would help realize the other recommendations» (Bronx Press Review, 1979).

In the same year as efforts made by the Bronx River Restoration Project, the "Bronx River Preliminary Master Plan", funded by the State Legislature, was drawn with the aim to highlight what was hoped to be a joyous program to clean, revitalize, and beatify the Bronx River (Bronx Press Review, 1979).

Starting with the preliminary form released in 1979, BXRR, in collaboration with the Stein Partnership, prepared the "Bronx River Restoration" report following groups and individual comments (Bronx River Restoration, Inc., 1980). The master plan for the River, an effort of Ruth Anderberg, established a third benchmark for the River, 84 years after the Bronx Valley Sewer Commission branded it an "open sewer" (Kadt, 2011).

Among the most important initiatives implemented to restore of the Bronx River are simple communication and community outreach. Seminars conducted by a team of ecological experts of the City University of New York examined the reasons for the current condition of the River and set long range plans for its restoration, and were organized already in 1974 by Bronx Community College (Bronx Press Review, 1974). Fairs, exhibitions, and festivals were also organized in the following years (Bronx Press Review, 1975), and the Bronx River Rehabilitation Exhibit was made (Bronx Press Review, 1977).

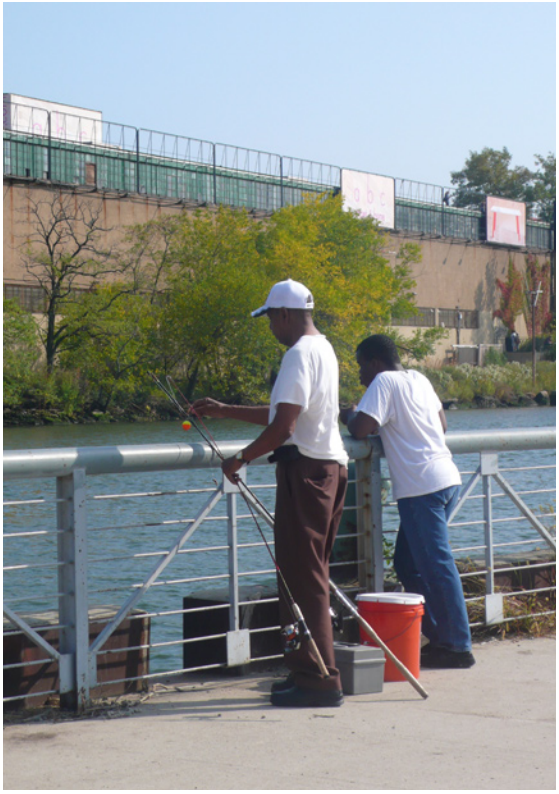
The presidential administration of Bill Clinton (1993-2001, following 12 years of Republican Presidents Ronald Reagan and George H. Bush) and the mayoral administration of Rudolph Giuliani (994-2001) played a part in Bronx River restoration initiatives as well, explained Angotti, but not as much as the environmental justice activists in the South Bronx (T. Angotti, personal communication, December 13, 2013).

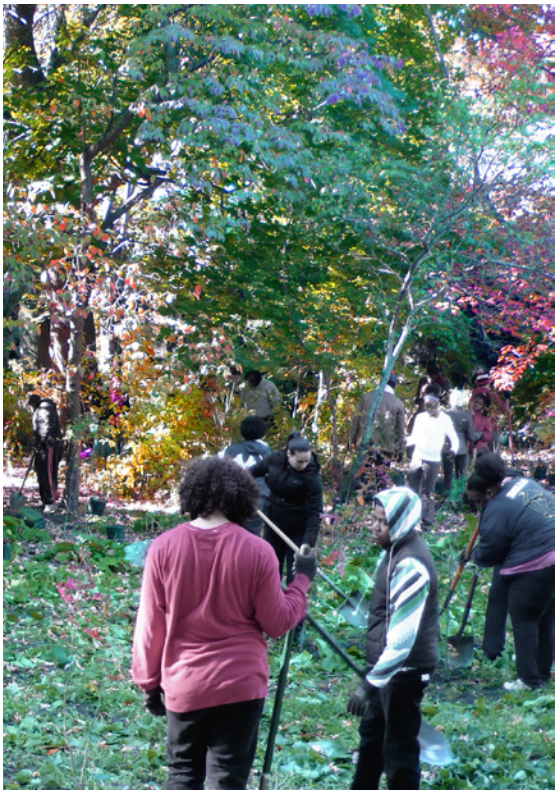
The 1990s were dynamic years for the Bronx River, going back to the1992 Bronx River Trailway Plan to create a greenway all the way along the River (New York Times, 1992). The greenway was conceived not only as a pedestrian and bicycle route, but as a linear park that would serve a population long deprived of green open space and waterfront access (Bronx River Alliance, 2006c).

In this period, several groups and programs, involving both local community groups and NYC Departments, were created, including the Partnerships for Parks, a joint program of City Parks Foundation and NYC Parks founded by local activist in 1995 (Bronx River Alliance, 2006c) and the Bronx Riverkeeper Program developed by the Parks Department in partnership with Con Edison (DEP, 2010). In 1997, the Bronx River Working Group was formed by grassroots organizations, made up of local activists who embraced the reclamation of the River and joining with Partnerships for Parks and other units of NYC Parks to draft the Bronx River Action Plan (Bronx River Alliance, 2006c).

Figure 44. The Bronx River in the New York Botanical Garden, the Bronx, NYC.

The work to restore the Bronx River was also made possible by grants and funds from NYC Parks and the Federal Government, which also funded a reconnaissance study examining flood control and the potential to restore the damaged ecosystem of the Bronx River (Norwood News March 11-24, 1999); according to the New York Times, New York City also devised at that time a $60 million plan to build hiking and cycling trails along the Bronx River (New York Times, 1999).





«The southern end of the Bronx River will gradually turn greener as plans to install an emerald chain of parkland along the length of the winding waterway grow closer to reality. In just one of several adjoining plans, a one and a half mile trail along the length of Soundview Park is scheduled for completion next month, Parks and Recreation Department officials said. [...] The $1.3 million project is one piece of a long term collaborative plan to line the river with parkland. The parks may eventually extend from the north - from Westchester through the Bronx Botanical Garden and the Zoo - to the south, bordered by Soundview and Hunts Point. The project is the result of a collaboration between communities along the entire length of the river and various government agencies. The project resulted two years ago in the creation of the Bronx River Working Group, a coalition of more than 50 community groups, non-profit organizations and several governmental agencies. [...] Efforts to restore the river gained momentum last year when City Parks Commissioner Henry Stern declared 1999 the "Year of the Bronx River", pledging $60 million to restore the waterway» (Bronx Beat, 2000).

According to Angotti, the City government follows economic trends when proving funds, and therefore also community-based efforts (personal communication, December 13, 2013), confirming how effective community action was and is.

In 2001, the Bronx River Working Group formed the Bronx River Alliance as an independent non-profit organization, working in close partnership with NYC Parks to protect, improve, and restore the Bronx River corridor to be a healthy ecological, recreational, educational, and economic resource (http://bronxriver.org; DEP, 2010), and to coordinate and track the implementation of the Bronx River Greenway (New York City portion, Bronx River Alliance, 2006c).

The Bronx River Alliance consists of 74 community-based and other non-governmental organizations as partners and supporters, including Sustainable South Bronx (SSBx), the Federal Government (i.e. the Environmental Protection Agency (EPA)), State and local government (including Community Boards, the DEP, NYC Parks, and 37 schools (www.bronxriver.org; Bronx River Alliance, 2006a)

According to Robin Kriesberg of the Bronx River Alliance, a bottom-up approach allows the community to remain involved.

«Everything started from a branch of smaller groups in the area that were interested in cleaning up the river that was neglected - there was lot of dumping and it was not accessible from the community. They formed some working groups trying to address some of the issues and problems, got some funding and worked together to clean up (pulling out cars, washing machines, trash) and got the City to buy some land around the river to build public parks. From that original work, they formed the Bronx River Alliance» (personal communication, November 18, 2013).

Aiming to keep a community-based structure, the Bronx River Alliance has several programs managed by teams that meet four times a year to discuss the best way to work together in partnership.

River clean up and restoration efforts are driven by the Ecology Team (bronxriver.org/?pg=content&p=aboutus&m1=1&m2=1&m3=16), a committee of scientists, City, State, and Federal agency representatives, and local community representatives who work to manage stormwater infiltration to reduce runoff, CSOs and pollution. the Greenway Team (bronxriver.org/?pg=content&p=aboutus&m1=1&m2=3&m3=27), comprised of community-based and agency planners, designers, and advocates, guides the planning and implementation of the Bronx River Greenway. The Alliance's collaborative approach ensures that Bronx residents come to the table with designers and agency representatives in discussing design concepts and implementation priorities for the greenway. The Education Program (bronxriver.org/?pg=content&p=aboutus&m1=1&m2=2&m3=19) brings together teachers, community-based educators, and scientists to use the river as a classroom, educate the public about the river, and train volunteers to monitor the

Figure 45. Residents fishing in the Bronx River at Concrete Park, the Bronx, NYC.

Figure 46. Volunteers at a SSBX organized tree planting event along the Bronx River, the Bronx, NYC.


Bronx River Greenway
Muskrat Cove
Shoelace Park
Bronx River Forest
Bronx Park
West Farms
Starlight Park
Concrete Plant Park
Hunts Point Riverside Park
Soundview Park

river's conditions. The Bronx River Stewards Program engages individuals and groups in monitoring water quality to solve the real-world problems that the river faces. The Outreach Program (bronxriver.org/?pg=content&p=aboutus&m1=1&m2=4) includes community, civic, and business representatives joined together to promote the Alliance and the Bronx River and to organize events that draw people to the river, including the Bronx River Flotilla in the spring, and the Bronx River Festival. The Recreation Program (bronxriver.org/?pg=content&p=aboutus&m1=1&m2=5) sponsors recreational bike and canoe trips (bronxriver.org; Bronx River Alliance, 2006c).

The Alliance has released several plans that highlight priorities and steps to create the greenway and aimed to the ecological restoration of the river. The Ecological Restoration and Management Plan (Bronx River Alliance, 2006a) was drawn from the Bronx River Upland Restoration Assessment Workshop, which brought together 22 diverse organizations, including the DEP, the State Department of Transportation (NYSDOT), Youth Ministries for Peace and Justice (YMPJ), and the Gaia Institute to develop policy solutions for stormwater management in the Bronx River watershed (Bronx River Alliance, 2004). This plan assesses the River's environmental health, sets targets for its improvement, and defines the projects through which the Bronx River Alliance will achieve those goals (Bronx River Alliance, 2006a).

In 2010 the Waterbody/Watershed Facility Plan Bronx River was drawn (DEP, 2010). This plan assessed the ability of the existing 2004 Bronx River Waterbody/Watershed Facility Plan to provide compliance with the existing water quality standards.

The Greenway Plan (2006) presented a full vision of the Bronx River Greenway with the Bronx River Alliance working closely with NYC Parks to develop the greenway as a new flagship park within the City parks system (Bronx River Alliance, 2006c).

The programs aimed to involve the citizens are very important; since the Alliance works a lot with volunteers due to a lack of money to hire so many people, they try different ways of training and involving (R. Kriesberg, personal communication, November 18, 2013).

SSBx coordinates volunteer activities and works together with the Bronx River Alliance, according to Case Wyse, its Community Greening Coordinator who was consulted during a tree planting volunteer day at Shoelace Park (November, 2013; figure 46).

«With regard to the greenway, there are opportunities to volunteer everyday, with different groups coming out Monday to Friday. By taking care of the greenway (planting trees, picking up trash, etc.), volunteers gain a sense of environmental education besides playing an important role in allowing these projects to grow. Oftentimes, it is their own personal interest that attracts them to the volunteer event in the first place. These volunteer activities do not only regard the Bronx River, but also the greenway. Since the Department of Parks and Recreation has not fully acquired ownership of the greenway from the EDC, and, as a result, cannot take care of everything [so] people are needed to maintain neighborhood trees and the planted greenway median» (C. Wyse, personal communication, November 26, 2013).

SSBx's efforts played a major role in the development of the South Bronx Greenway, according to Cohen (2008) «One of Majora Carter's first accomplishments prior to starting Sustainable South Bronx was to secure a $1.25 million Federal grant for a feasibility study on developing a greenway for bicyclists and pedestrians along the South Bronx Waterfront».

The Alliance's work is mostly financed thanks to City, State and Federal grants or private funding; when asked about the City's role in the Alliance, Kriesberg says:

«Our organization is based in a NYC Parks building, we use their trucks and some of our staff are NYC Parks employees. Most of our staff is funded through the non-profit portion but the structure is partly NYC Parks and partly non-profit. The Parks Department is really part of the River Alliance and most of our work is done on properties owned by NYC Parks. NYC Parks bought land to make the greenway possible».

Figures 47-52. The Bronx River greenway., NYC.

The Outreach Program of the Bronx River Alliance works to involve the community with as many events as we can and one of the best ways is to try to create friends groups or local groups for each park. According to Kriesberg, the people that live in the community are the ones that can really do something, differently than people that go there just for one day. Bringing people to the river is the best way to make them care about the river. (personal communication, November 18, 2013). To do so, the Alliance organizes every year a Bronx River Flotilla (the first was in 2000; Bronx River Alliance, 2006a).

«Despite the cold and drizzle Saturday, more than 80 borough residents and community leaders, including City Parks Commissioner Adrian Benepe, participated in the fourth annual Amazing Bronx River Flotilla. Wearing ponchos and life vests the group paddled down a six mile stretch of the 23 mile Bronx River, through the Botanical Garden, the Bronx Zoo, and into Hunts Point, to launch the spring and summer paddling season, where the Bronx River Alliance, an environmental advocacy group, runs public canoe trips (Figure 54). The Alliance organized the flotilla to draw attention to the river and to motivate residents to help keep it clean. "It's exciting and every bit of its fun," said Linda Cox, executive director of the Alliance. "It gives you a sense of that the Bronx River is, and what it can become." Other Alliance projects include riverside cleanup, the creation of parkland, and finishing a pedestrian greenway along the Bronx River that would stretch from the East River to Westchester County» (Bronx Beat April 7, 2003).

Public awareness of the River has grown also thanks to education programs, which include aquatic fauna, water and soil quality monitoring, and the history of the Bronx River Valley. In addition, the Alliance trains and supports Bronx River Stewards - school groups, community groups, and individual residents who care for and monitor a particular section of the Bronx River (Bronx River Alliance, 2004).

Residents are involved also in design processes, as happened in the case of the Concrete Plant Park, for which the input of Bronx residents guided the final design (Bronx River Alliance, 2004).

«In its 10 years of work, the Alliance has removed 21 cars and 15,000 tires from the river, Kellie Terry-Sepulveda, the chair of the Alliance's board, told the crowd assembled at the New York Botanical Garden on September 27 to celebrate the anniversary. In addition, she boasted, the Alliance has planted 85,000 trees and shrubs, used the river as a science lab to teach 6500 students, helped to create two new parks - Concrete Plant and Hunts Point Riverside - for a Hunts Point [neighborhood] starved for open space, and brought thousands to the River for bike trips, hikes, and canoe paddles. The River, which was once so foul that most fish could not survive in it, is now teeming with life. Egrets and osprey hunt it. The famous Bronx beaver lodges in it. The transformation of the River is a testament to the unshakeable optimism of New Yorkers. Who else would start trying to revive a dying river while their city was going broke and their neighborhoods were in flames? Their success contradicts the too-widespread notion that government can do nothing good. Without the $120 million in federal funds - much of it obtained by [U.S. Representative] Jose Serrano - for the Bronx River Greenway and the River's restoration, the River might still be a polluted backwater» (Hunts Point Express, 2011).

Figure 53. Canoes on the Bronx River Greenway., NYC.

Figure 54. Japanese knotweed along the Bronx River, NYC .

«The whole idea was bottom-up, people came together to address a problem. This approach works the best because people saw a problem and they wanted to solve it working together, now it is harder because there is nothing they are fighting for, we try to keep going, but sometimes maintenance is a bigger problem. NYC has been forced by the top, forced by the state and federal government to address the problem of sewage. They are taking an approach to analyze what can be done, achieved by each project, and the costs. They don't have the time to engage the community and I would say that, because of that, it would be less successful. If you do planting for stormwater capture in an area where people want to walk because they are used to it they will walk on it. If you need the community to help maintain and you didn't even ask if that was a good place or help them understand I don't think it will succeed. We see that bottom-up works better. However, for some problems, as with the volume of sewage going into our water waste in NYC, actions have to come from the top-down» (Kriesberg, November 18, 2013).


Muskrat Cove
Shoelace Park
Bronx River Forest
New York Botanical Garden
Bronx Zoo
Bronx Park
Starlight Park
Concrete Plant Park
Hunts Point Riverside Park
Soundview Park
CSO outfall
Bronx River Greenway

GOALS, STRATEGIES, PROJECTS, RESULTS. Goals and strategies implemented in and for the Bronx River are among those the DEP identified as City-wide best management practices. These address operation and maintenance procedures and related planning efforts to maximize capture of CSO and reduce contaminants in the combined sewer system for water quality. Green solutions are considered as control technologies and can be effective in restoring site hydrology to capture, infiltrate, evaporate, and detain stormwater runoff to reduce both its volume and peak overflow rate, and consequently the volume of stormwater entering the combined sewer system, while improving its quality (the "first flush" contains the highest concentration of nitrogen, other nutrients, and urban pollutants). Some common green solutions include bioretention (rain garden), vegetated buffers, grassed swales, green roofs, and increased tree cover (DEP, 2010).

Neither these problems nor their related strategies are new; according to the Bronx Beat (2007), the City's outdated sewage system plays an important role in polluting the Bronx River.

«"Stormwater is an issue that affects a lot of people, but people don't realize it", said Teresa Crimmens, an environmental coordinator for the Bronx River Alliance and the head of the new Stormwater Infrastructure Matters (S.W.I.M. Coalition). S.W.I.M. is asking the Mayor to consider a collection of smaller, more environmentally friendly options, like planting more rooftops gardens and small parks to absorb the water. Such solutions would have added benefits like cooling buildings and cleaning the air»

Robin Kriesberg of the Bronx River Alliance says that

«NYC is required by the state to fix this problem. In the past, to reduce such a problem, the City would spend millions of dollars to fix the existing gray infrastructure, building a big tank underground so that when there is lot of volume coming in it would hold back some of the water that would go through the sewage treatment plants after the storm. A more cost effective approach is a combination of those types of techniques along with green infrastructure, green roofs and the taking up of pavement, parking and street corners to allow more water to be used by plants. Green solutions are also good for the community, helping with air quality, shading, purification. This is for us a great way to try to adjust a problem, but it is expensive and will take a huge amount of planting everywhere to really make a difference. Furthermore, technical problems related to very high bedrock where it is not possible to dig down deep enough to allow the water to infiltrate creates difficulties in finding suitable areas for green infrastructure projects. However, the City is investing in GI – for example, there is a green roof on the rooftop of the Bronx River Alliance building (the Bronx headquarters of the NYC Department of Parks and Recreation)» (personal communication, November 18, 2013).

In general, the main ecological goals of the Bronx River Alliance are the improvement of the Bronx River water quality via reduced direct and indirect sewage inputs and illegal discharges, and increased natural treatment of stormwater through infiltration thereby reducing direct releases from CSOs, and the improvement of hydrology in reducing erosion, sedimentation, and habitat disturbance. Biodiversity plays an important role too, with ecological goals including protecting and improving the aquatic and riparian plant and animal biological diversity and habitat through targeted removal of invasive vegetation, and increasing the connectivity between reaches and facilitating the passage of diadromous fish (Bronx River Alliance, 2006a).

«We always try to control invasive species, taking sections along the river and planting native species to reestablish native habitats to benefit plants and animals. The invasive species Japanese knotweed (Figure 54) grows very fast and gets very tall, so that nothing else can grow – other plants work better as food for wildlife, shelter, erosion control and soil retention. The Bronx River Alliance conservation crew, now five people, tries every day to manage this problem by cutting, pulling and putting in fabric to prevent growing, and planting species that will grow and shade up. One other big initiative is the fish passage. Blockages on the river are addressed by getting the fish passage clear so that migratory fish

Figure 55. The Bronx River Greenway, NYC.

are able to pass through all the major barriers on the Bronx River. The goal is to restore the habitat and wildlife for an healthy ecosystem, making sure that the river itself can support fishes.
The greenway, besides allowing people to bike and walk around, provides access for boating, making the river and the neighborhood a better place to live and has an important effect on biodiversity and water quantity and quality» (R. Kriesberg, personal communication, November 18, 2013).

According to the Bronx River Alliance (2006c), the Bronx River Greenway opened up new green space in neighborhoods and enhanced existing parks, connecting also some areas currently separated by highways, railroads, and other barriers. The greenway design aims to follow ecological performance guidelines, related to landscape (e.g. increase ecological connectivity and habitat diversity, increase public amenities and quality of life, controlled invasive plant species), stormwater management, hardscape (e.g. increase smart access to the river, replace informal circulation networks with bike and pedestrian connections), streetscape, and sustainable maintenance practices. The Bronx River Greenway aims to be a sustainable transportation resource, a vehicle for the ecological restoration of the river and its banks, a catalyst for ecological restoration of the wider watershed and the revitalization of the communities along the river an educational resource, a "blueway" (a means of access to the river for boating), and a resource for a wide variety of recreation.

Over its length, the Bronx River exhibits diverse characteristics. While in the northern part (in the Bronx) long stretches of natural shoreline exist (Bronx River Parkway Preserve, Shoelace Park, the New York Botanical Garden, and the Bronx Zoo), there are altered shorelines in the heavily industrialized areas in the southern part (DEP, 2010). Following, a description of projects completed along the Bronx River is provided, beginning with the southern section.

Soundview Park is the largest park along the Bronx River, and is a former landfill that was closed in the 1960s; due to the history of land use on the site, capital projects have encountered delays (Bronx River Alliance, 2006c). In 1994, the sewer systems and control vaults were renovated and dams were installed; a few years later the playground was improved, and sidewalks and pavements were repaired (www.nycgovparks.org). In 2001, the first segment Soundview Park bikeway was constructed (Bronx River Alliance, 2006c), and the bike path was completed in 2011, offering a continuous riverside route (Bronx River Alliance, 2011), connecting citizens with access points to the water along the Bronx River, and providing overlook seating areas (The Bronx Times, 2009).

In more recent years, the Soundview Lagoons, located at the southeastern end of the park, have been cleaned up to restore the natural habitat (DEP, 2010), and additional improvements are planned by NYC Parks (Bronx River Alliance, 2006c). To do so, groups have hosted bioengineering and greenway planning workshops, as well as yearly Coastal Clean ups (DEP, 2010).

Figures 56-58. The Hunts Point Riverside Park, the Bronx, NYC.

This area will host a field house, as a base of operations for maintenance of neighborhood parks, providing also much needed bathrooms for users of the adjacent ball fields and the nearby Soundview greenway (www.nycgovparks.org).

Community efforts in this area are fundamental:

Figure 59. Path between Hunts Point Riverside Park and the Concrete Park Plan, the Bronx, NYC.

«A handful of volunteers worked to free all manner of plastics from the shoreline as part of a coastal clean up led by environment agency the Bronx River Alliance. Who cleans the Bronx Greenway, a new stretch of coastline pathways in Soundview? No one, according to the state department for parks. That job falls to volunteers who, after tropical storm Irene, are finding the task a little too much to handle» (The Bronx Ink, 2011).

Hunts Point Riverside Park has been recently transformed into a waterfront park (DEP, 2010; figures 56-57), a physical transformation that began in 1997 when community groups developed it as a Green Street (Bronx River Alliance, 2006c). In 2004, the Bronx River Alliance started working on a waterfront park, to become the first new waterfront park in the South Bronx in more than 60 years (Bronx River Alliance, 2004).

Set in a degraded industrial section of a residential neighborhood in the Bronx the Hunts Point Riverside Park has always been at the heart of community involvement, celebrated with locally led youth environment stewardship program, boating and fishing programs, scientific monitoring projects, and large-scale community events (DEP, 2010).

According to NYC Parks (www.nycgovparks.org), the Hunts Point Riverside Park, completed in 2007, is a gateway to the revitalized Bronx River, and a major connector to the Bronx River Greenway, and the water (for kayakers, canoers, and paddlers); what was once an illegal dumping ground has now it has been transformed into a waterfront oasis.

Following its opening in the spring of 2007, Hunts Point Riverside Park won a national award for its replicate-able green design (Bronx Times, 2009), and as a Rudy Bruner winner medal awardee for Urban Excellence, the park received a $10,000 prize, money which was used for the development of the Bronx River Greenway (The Bronx Times; 2009).

According to an onsite survey (October 5, 2013 Figure 58), the Hunts Point Riverside Park lacks for maintenance. When asked about this, Robin Kriesberg, Ecology Director of the Bronx River Alliance, stated that there was a problem with the beach that was eroding due to Hurricane Sandy and lot of the sand was washed away. Although the Bronx River and surrounds did not have as many problems with Sandy as elsewhere, the Alliance and NYC Department of Parks and Recreation don't have adequate staff and funding to take care of everything. In the case of the Hunts Point Riverside Park, the priority was guarantying citizens safety by holding the rocks together and keeping the soil (personal communication, November 18, 2013).

At the present time (onsite survey, October 5, 2013; figure 59), the greenway connection between the Hunts Point Riverside Park and Concrete Plant Park, as well as the connection between the Soundview Park and Concrete Park, has not been realized. On the path that will connect Riverside and the Concrete Plant, old train rails run, and to reach Concrete Plant Park from Soundview Park, cyclists and pedestrians need to use great caution or use the pedestrian bridge over the Bruckner Expressway at Elder Street.

«Community advocates from the Bronx River Alliance, Transportation Alternatives, Bronx Health Reach, and other local organizations gathered on the corner of Whitlock Avenue and Westchester Avenue with helmets on their heads and their bicycles by their sides. Their mission was to document the conditions on the roads linking Hunts Point Riverside Park, Concrete Plant Park and the soon to be opened Starlight Park. For years, these groups have been asking the City's Departments of Transportation and City Planning to improve the greenways within the parks. Now, City officials finally seem to be paying attention - and in an ongoing series of meetings, they've been asking the community firsthand what they want for the greenways. "A part of the issue is that the on-street connections haven't been properly connected," said Devona Sharpe, greenway coordinator for the Bronx River Alliance. "And the condition of the street itself, it's not inviting to users." The most direct path connecting the three different parks follows a north-south route along the Bronx River, with a U-turn around the busy Bruckner Expressway. From Hunts Point Riverside Park to Starlight Park, pedestrians and cyclists have to navigate through difficult terrain simply to get from one street to the next, as well as from one park to the next. Tree roots pushing through cracked sidewalks, shards of glass on the road, and nonexistent bike lanes are just some of the physical barriers on the roads» (The Bronx Ink, 2012).

Figures 60-62. Concrete Plant Park, the Bronx, NYC.

Concrete Plant Park is a waterfront accessible park along the western shoreline that was completed in 2009 (Figure 60-61-62) and was formerly an abandoned concrete plant (DEP, 2010). This process was begun also thanks to YMPJ, which, for nearly a decade, tussled with the City government, the DOT, and other State officials, in an effort to transform an

abandoned concrete plant into Concrete Plant Park (The Hunts Point Express, 2007b), a project that included ecological restoration of the mudflats through large scale salt marsh grass planting, and the construction of an aquatic nursery (DEP, 2010).

The land was acquired by NYC Parks in 2000 to work on its revitalization in partnership with community organizations and public agencies (www.nycgovparks.org). Since then it has been used as a public park, also thanks to the temporary pathway constructed by volunteers (Bronx River Alliance, 2006c). The design of the park - the way it is now - is the result of a participative process, as Bronx residents guided the final design for the Concrete Plant Park (Bronx River Alliance, 2004). Half of the existing structures of the cement manufacturing facility, which closed in 1987, were maintained as relics of the site's industrial history (The Bronx Times, 2008) and the park contains facilities supporting and linking existing and planned multiuse pedestrian greenways with other bicycle and pedestrian routes, and a canoe and kayak launch (www.nycgovparks.org). According to Catherine Nagel, Executive Director of the City Parks Alliance, the Concrete Plant Park «exemplifies the power of public-private partnerships to create and maintain urban parks that make our cities sustainable and vibrant» (The Bronx Times, 2011).

Further upriver is Starlight Park, intended to connect with Concrete Plant Park via a bridge. The Bronx River Alliance, YMPJ , SSBX, Rocking the Boat, and The POINT Community Development Corporation are working to build three bridges in the vicinity of Starlight Park, but NYSDOT, which had committed to building the bridges, has not allocated funds (Hunts Point Express; 2012). In the short term, long sought bike lanes, curb extensions, and crosswalks near the entrances of Starlight and Concrete Plant Parks were installed by the City DOT (DNAinfo, www.dnainfo.com; 2013).

Starlight Park (Figure 63-64-65-66), is located between the Bronx River and the Sheridan Expressway and was developed in the 1960s in conjunction with the construction of the Expressway. Poorly utilized and in poor condition, it features outdated recreational facilities and access difficulties and was found in 2003 to contain high levels of contamination when soil excavated for the construction of a drainage system was tested and it was learned that the site formerly housed a manufactured gas plant. After remedial work, including the removal and safe disposal of contaminated soil (Bronx River Alliance, 2006c), the park reopened in 2013(City Room, 2012a). The Bronx River Alliance, a partnership between community groups, NYSDOT and NYC Parks, adopted Starlight Park in 1998 (Bronx Beat, 2003) and undertook the restoration project, the $17 million budget of which paid for new playgrounds, a soccer field, a basketball court, and paths for walking and cycling (The Bronx Ink, 2010).

The connection between Starlight Park and Bronx Park is not yet complete, but an important step forward was recently undertaken: a new trail, part of a $2.7 million project of the Bronx River Greenway, opened to pedestrians and cyclists (News 12 Bronx, 2012;figures 67-68).

Further upriver from Starlight Park is Bronx Park, which contains the New York Botanical Garden (opened in 1891) and the Bronx Zoo (opened in 1899; Bronx River Alliance, 2006c), and which is characterized by long stretches of natural shoreline (Figure 69); the Zoo and the Botanical Garden do however influence the River's health through the management and operations of their facilities (Bronx River Alliance, 2006a), which can be destructive. For approximately 20 years, as much as 200,000 gallons of untreated animal waste from the Zoo was discharged into the Bronx River each day, a practice that was stopped thanks to an agreement on reducing water pollution in the Bronx River signed in 2001 between the State and the Wildlife Conservation Society (WCS), operators of the Bronx Zoo (DEP, 2010).

Figures 63-66. Starlight Park the Bronx, NYC.

The Bronx River Forest opened to the public in 2005 as the first completed section of the Bronx River Greenway and offers 19 acres of urban forest and a rare glimpse into the wooden manors of the borough's past (Bronx Beat, 2007). According to the DEP (2010), community groups have been active in bringing children into the old growth forest to teach them about native flora and fauna, as well as the value of community service.

Shoelace Park is a narrow section of Bronx Park which has a canoe and kayak put-in and which serves as a launch site for public canoe tours and river wide events (DEP, 2010; Figure 70). During the last few years, improvements to this area were completed, such as a new entrance to Shoelace Park (Bronx River Alliance, 2009) and the installation by the Bronx River Alliance and its Conservation Crew of a rain garden and swales (Bronx River Alliance, 2010). Native trees, plants, and shrubs, as well as green infrastructure elements, were also added along with a link between Bronx Park and Shoelace Park (Bronx Times, 2011).

Finally, the northernmost section of the Bronx River Greenway in the Bronx is Muskrat Cove, where local groups continuously work to beautify the area by removing invasive plants, and reintroducing native trees and shrubs to reestablish stream banks (DEP, 2010; figures 71).

Through the work of local community organizations, NYC Departments, and especially of the Bronx River Alliance described above, many greened areas and a continuous, 23 miles greenway have been installed, with very important environmental, ecological, and social effects in the underserved neighborhood and on a formerly degraded River. The improvement in water quality and the actions carried out led to important results, such as a significant and measurable increase of biodiversity. NYC Parks'

«Natural Resources Group (NRG) and the Connecticut Department of Environmental Conservation reintroduced alewife into the river, in partnership with the Bronx Zoo, and, in April 2009, the first alewife was netted as it migrated upstream to spawn [...] "Finding alewife in the river again this spring is evidence of the reintroduction program's success and a testament to the improvements made by ongoing restoration efforts along the Bronx River," said Linda Cox, Bronx River Alliance Executive Director/NYC Parks Bronx River Administrator» (The Bronx Times, 2010).

In addition to ecological and environmental improvements, neighborhood conditions have also changed over the past few years, with the 2006 opening of the greenway affect[ing] land values in the watershed's neighborhoods (Bronx River Alliance, 2006c). Again according to the Bronx River Alliance, this would have both positive and negative effects: positive for local property owners and negative for tenants due to increases in both residential and commercial rents. Considering that most of the watershed residents are tenants and the dynamic real estate market in the Bronx, the Bronx River Alliance has, among its aims, to influence decision making on land use to ensure that the people who have worked to reclaim the river and build the greenway can enjoy the fruits of their efforts, rather than being displaced as a result of them (Bronx River Alliance, 2006c).

Although several connections along the greenway are still missing, forcing visitors to navigate crumbling sidewalks and busy roads on their way in and out, «the southern portion of the Bronx River has undergone an eye-catching makeover in recent years, from an industrial no-man's land to an increasingly people-friendly waterfront» (DNAinfo.com New York, 2012).

Figure 67-68. Bronx River Greenway, section between Starlight Park and Bronx Park, NYC.

The case of the Bronx River demonstrates how effective a collaboration between local community organizations and public bodies can be in a low income community, [and] in a neighborhood with many social and environmental issues. Everything started with a branch of residents cleaning up the river 40 years ago, passing through protests of local community organizations, over time better organized, pushing the City and the State to

work for the project. A long history of work, fights, plans, [and] efforts to involve the city for funds and grants, teaching, outreach activities, took where they are now: the Bronx River Alliance consists of 74 community-based and other non-governmental organizations working together keeping a community based structure.

The role played both by the community and the public bodies involved is fundamental; on one hand, the main credit for the change of trend belongs to the Bronx community, on the other, the support (economic especially) at City, State and Federal level allowed the initiatives to be implemented.

Following community priorities may bring about important results, providing projects with State and City resources that would not be possible otherwise: in the case of the Bronx River, the community still plays a fundamental role since NYC cannot maintain all the green areas and requires the cooperation of volunteers. Local community organizations work to involve residents; their work is very effective because of its bottom-up approach, and because it is responsive to the interests of citizens. Therefore, in the case of the Bronx River, relevant mutual benefits we obtained through an effective collaboration.

Another important aspect in improving the quality of New York City's waterways and managed stormwater is the commitment of the City to meet the swimmable and fishable water quality standards fixed by Federal Government through the Clean Water Act. The use of green infrastructure to reduce stormwater runoff and to improve water quality is a cost effective measure for NYC, and is one of the reasons why the City is investing in the Bronx River Greenway, although not the only one. As shown, the Federal Government can play an important role in this area, as can be seen by the interuption caused by the Reagan administration on activities to improve the river and neighborhood conditions, and the increased attention the Clinton and Giuliani administrations brought to the area.

The Bronx River and its surrounding area have undergone an important makeover in recent years, going from, in some segments, an industrial no-man's land to an increasingly people-friendly waterfront; from a polluted river to a beautiful stream; from asphalted to park. There remain, however, many accessibility, ecological, and environmental issues related to transportation and industries and any future improvements will also thanks to the collaboration of citizens and volunteers.

Figure 69.
Bronx Park, NYC.

Figures 70.
Shoelace Park on the Bronx River Greenway, NYC.

Figures 71.
Muskrat Cove, the Bronx, NYC.

Conclusion notes

The environmental problems and the ecological imbalances of urban areas demonstrate the need to implement strategies at different scales. Improvements can come from wide spread small interventions (building scale), e.g. decreasing the energy use of buildings enhancing thermal performances. However, an integrated urban design and planning at (at least) the neighborhood scale is needed for networks to promote the use of public transportation or bicycles, urban parks, and ecological networks. Integrating vegetation can be an important tool to reduce the environmental problems in and of cities, considering also the concept of "reconciliation ecology", the modification and diversification of anthropogenic habitats to support biodiversity (Francis and Lorimer, 2011; Rosenzweig 2003a, 2003b).

Since 1898, neighborhoods became an integral part of urban planning activity. Neighborhood theories from Ebenezer Howard and Clarence Perry through to more recent contributions show the importance of sustainability, although not always by that name. An increased attention on sustainable development of urban neighborhoods is demonstrated by the several initiatives that have been taken to promote sustainable neighborhoods and the several tools that have been developed. These neighborhood sustainability assessment tools address the social, environmental, ecological aspects in and of cities and consider the integration of vegetation among the possible strategies.

Green infrastructure (GI), since when the term was first used in 1994, has gained increasing attention as multifunctional ecological systems. U.S. Environmental Protection Agency (EPA), as well as European Union, takes into account the use of GI for stormwater management and flood control, and in general for ecological, economic, and social benefits through natural solutions. The endorsement of EPA of the promotion of green infrastructure plays an important role in its diffusion. Although it does not endorse a prescriptive approach, the EPA supports the use of GI for stormwater management to accomplish the requirements of Federal laws, and proves funds with a well as technical support.

With regard to the case of New York City (NYC), many policies have been implemented in the past 10 years to reduce greenhouse gas (GHG) emissions by 30% by 2030 and to improve the quality of life, and the use of GI is considered especially important for maintaining water quantity and quality and bolstering the livability aspects connected to the public space.

Stormwater management is among the most important aspects of recent policies implemented for sustainability. This is due to the evidence of looming ecological imbalances (e.g. Hurricane Sandy) and especially various economic aspects, as green infrastructure can be a cost effective measure to manage stormwater and to meet the swimmable and fishable water quality standards fixed by Federal Government through the Clean Water Act and regulated by the EPA.

To facilitate the management and also creation of green areas, several programs implemented by NYC involve citizens participation and it can be therefore concluded that the City invests significantly in communication and education.

Community engagement in NYC is essential to city planning and design and, in addition to community involvement in such top-down initiatives, interesting examples of bottom-up projects an also be found, ranging from the famous High Line project to small interventions such as community gardens. The community plays an important role in restoring environmental conditions of urban areas, not only related to functional contributions (e.g. parks maintenance) but also of the scale of environmental justice organizations campaigns that have resulted in improvement of environmental conditions in low income communities.

Today, local community organizations can effectively work together with municipalities to improve environmental and social conditions, as demonstrated in the case of the Bronx River.

The Bronx River went from a flourishing and beautiful resource to a contaminated conduit for industrial and residential wastes over the past two centuries. In the last generation, many initiatives implemented thanks to effective partnership between public bodies and local community groups have improved river and neighborhood conditions. A greenway has been built, albeit with some parts still missing, with important ecological effects on the river (e.g. stormwater management, biodiversity, etc.), a new pedestrian and bike path, and benefits related to urban vegetation.

The case study analyzed shows that bottom-up initiatives are connected to Federal, State and City policies in several ways. Building a timeline allows higher or lower levels of attention (and initiatives implemented) over the last 45 years to be highlighted, showing that while favorable conditions are important (e.g. the policies of President Bill Clinton and Rudolph Giuliani), the environmental justice activists of the South Bronx have played the most important role (T. Angotti, personal communication, December 13, 2013).

This research shows how effective policies and local communities can be in improving environmental and ecological conditions in and of cities through the integration of green infrastructure. A question arises: Would community involvement work as well in Europe if correctly supported? While this research does not aim to answer this question, when asked about the community involvement in United States and in Europe, Angotti states that there is a fundamental historical difference in constitutional approaches that influence the relative politics of the United States and Europe in the Napoleonic tradition, such as Italy and France: «Individual actions and individual liberty is part of the institution of the United States; the States began with a structural weakness: it was not supposed to be a powerful state because it started from the federation of 13 colonies to protect of individual freedom. This makes the United States very different compared to Italy and France, in which local governments, especially historically, have depended on the national government».

References

Andelman, S.J., Willig, M.R., 2003. *Present patterns and future prospects for biodiversity in the Western Hemisphere*. Ecol. Lett. 6, 818–824. doi:10.1046/j.1461-0248.2003.00503.x

Angotti, T., 2008a. *New York for sale community planning confronts global real estate*. MIT Press, Cambridge, Mass.

Angotti, T., 2008b. *Is New York's Sustainability Plan Sustainable?*, in: Joint Conference of the Association of Collegiate Schools of Planning and Association of European Schools of Planning (ACSP/AESOP), Chicago, IL, USA.

Angotti, T., 2013. Personal communication.

Arnfield, A.J., Herbert, J.M., Johnson, G.., 1999. *Urban Canyon Heat Source and Sink Strength Variations: A simulation-based sensitivity study.* Presented at the Congress of Biometeorology and International Conference on Urban Climate – WMO, Sydney , 8-12 November.

Asaba, J., 2008. *$10 million facelift for Concrete Park* [WWW Document]. Bronx Times. URL http://www.bxtimes.com/stories/2008/26/doc485bf4f356e5d260584041.html (accessed 4.4.14).

Bader, E.J., 2013. *UPROSE Uplifts Sunset Park* [WWW Document]. URL http://www.brooklynrail.org/2013/04/local/uprose-uplifts-sunset-park-1 (accessed 4.1.14).

Batty, M., Marshall, S., 2009. *The evolution of cities: Geddes, Abercrombie and the new physicalism*. Town Plan. Rev. 80, 551–574. doi:10.3828/tpr.2009.12

Benedict, M.A., McMahon, E.T., 2001. *Green infrastructure: smart conservation for the 21st century.*

Benedict, M.A., McMahon, E.T., 2006. *Green infrastructure: linking landscapes and communities*. Island Press, Washington, DC.

Bianchini, F., Hewage, K., 2012. *How "green" are the green roofs? Lifecycle analysis of green roof materials*. Build. Environ. 48, 57–65. doi:10.1016/j.buildenv.2011.08.019

Böhm, R., 1998. *Urban Bias in Temperature Time Series – a Case Study for the City of Vienna, Austria*. Clim. Change 38, 113–128. doi:10.1023/A:1005338514333

Bronx River Alliance, 2004. *Annual report*.

Bronx River Alliance, 2005. *Annual report*.
Bronx River Alliance, 2006a. *Bronx River Ecological Restoration and Management Plan*.
Bronx River Alliance, 2006b. *Annual report*.
Bronx River Alliance, 2006c. *Bronx River Greenway Plan*.
Bronx River Alliance, 2008. *Annual report*.
Bronx River Alliance, 2009. *Annual report*.
Bronx River Alliance, 2010. *Annual report*.
Bronx River Alliance, 2011. *Annual report*.
Bronx River Alliance, 2012. *Annual report*.
Bronx River Restoration, Inc., 1980. *Bronx river restoration*, New York.
Bullard, R.D., Mohai, P., Saha, R., Wright, B., 2007. *Toxic Wastes and Race at Twenty 1987-2007*.
Campos, 2009. *The Great Allegheny Passage Economic Impact Study* (2007-2008). For The Progress Fund's Trail Town Program Laurel Highlands Visitors Bureau and Allegheny Trail Alliance August 7.
Carson, T.B., Marasco, D.E., Culligan, P.J., McGillis, W.R., 2013. *Hydrological performance of extensive green roofs in New York City: observations and multi-year modeling of three full-scale systems.* Environ. Res. Lett. 8, 024036. doi:10.1088/1748-9326/8/2/024036
Chang-Hee, C.B., Richardson, H.W., Bae, C.-H.C., 2004. *Urban Sprawl in Western Europe and the United States*. Ashgate Pub Ltd, Aldershot, Hants, England ; Burlington, VT.
Chiesura, A., 2004. *The role of urban parks for the sustainable city.* Landsc. Urban Plan. 68, 129–138. doi:10.1016/j.landurbplan.2003.08.003.
Choguill, C.L., 2008. *Developing sustainable neighbourhoods*. Habitat Int. 32, 41–48. doi:10.1016/j.habitatint.2007.06.007.
Cohen, S., 2008. *Sustainable South Bronx: Helping the Bronx Become a Sustainable Community*. N. Y. Obs.
Colvile, R.N., Hutchinson, E.J., Mindell, J.S., Warren, R.F., 2001. *The transport sector as a source of air pollution*. Atmos. Environ. 35, 1537–1565. doi:10.1016/S1352-2310(00)00551-3
Commission of the European Communities, 2005. *EUR-Lex - 52005DC0718 - EN* [WWW Document]. URL http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0718:FIN:EN:HTML (accessed 1.23.14).
Commission of the European Communities, 2006. *Communication from the commission to the council and the European Parliament on Thematic Strategy on the Urban Environment.*
Costanza, R., Norton, B.G., Haskell, B.D., 1992. *Ecosystem health: new goals for environmental management*. Island Press, Washington, D.C.
Crauderueff, R., 2013. *Personal communication*.
Crauderueff, R., Margolis, S., Tanikawa, S., 2012. *Greening Vacant Lots: Planning and Implementation Strategies*. A report prepared fot The Nature Conservancy as part of the NatLab collaboration.
Czemiel Berndtsson, J., 2010. *Green roof performance towards management of runoff water quantity and quality: A review*. Ecol. Eng. 36, 351–360. doi:10.1016/j.ecoleng.2009.12.014
Dunnett, N., Kingsbury, N., 2008. *Planting green roofs and living walls.* Timber Press, Portland, Or.
Ecocity, 2006. *Urban Development towards Appropriate Structures for Sustainable Transport*. www.transport-research.info.
Economy League of Greater Philadelphia, in Southeastern Pennsylvania, 2010. *Return on Environment*. The Economic Value of Protected Open Space.
EPA, 2011. *Land Revitalization Fact Sheet Green Infrastructure*. www.epa.gov.
European Commission, 2010. *Green infrastructure*. www.ec.europa.eu.
European Commission, 2013. *Green Infrastructure (GI) — Enhancing Europe's Natural Capital*. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.
European Union, 2010. *Directive 2010/31/EU* of the European Parliament and of the Council on the energy performance of buildings.

Ewing, R.H., Anderson, G., Winkelman, S., Walters, J., Chen, D., 2008. *Growing cooler the evidence on urban development and climate change*. ULI, Washington, D.C.

Farr, D., 2008. *Sustainable urbanism : urban design with nature*. Wiley, Hoboken, N.J.

Firehock, K., 2010. *A Short History of the Term Green Infrastructure and Selected Literature*.

Flynn, M., 2013. *Personal communication*.

Francis, R.A., Lorimer, J., 2011. U*rban reconciliation ecology: The potential of living roofs and walls*. J. Environ. Manage. 92, 1429–1437. doi:10.1016/j.jenvman.2011.01.012

Gandy, M., 2002. *Concrete and clay: reworking nature in New York City*. MIT Press, Cambridge, Mass.

Geddes, P., 1973. *City development: a report to the Carnegie Dunfermline Trust, Scottish reprints*. Irish university press, Shannon.

Geddes, S.P., 1913. *Two Steps in Civics: "Cities & Town Planning Exhibition" and the "International Congress of Cities"*, Ghent International Exhibition, 1913. University Press.

Geddes, S.P., Thomson, S.J.A., 1911. *Evolution*. H. Holt.

Getter, K.L., Rowe, D.B., Robertson, G.P., Cregg, B.M., Andresen, J.A., 2009. *Carbon Sequestration Potential of Extensive Green Roofs*. Environ. Sci. Technol. 43, 7564–7570. doi:10.1021/es901539x

Giachetta, A., 2013. *Diffusion of Sustainable Construction Practices. A Case of International Cooperation*. Open J. Energy Effic. 02, 46–52. doi:10.4236/ojee.2013.21008

Gillette, H., 2010. *Civitas by design : building better communities, from the garden city to the new urbanism*. University of Pennsylvania Press,, Philadelphia :

Greenburgh Nature Center, Scarsdale Historical Society, 1983. *Bronx River Retrospective: 300 Years of Life Along the Bronx River Valley*. Greenburgh Nature Center.

Griffin, D., 2009. *How To Polute A River*.

Hamin, E.M., Gurran, N., 2009. *Urban form and climate change: Balancing adaptation and mitigation in the U.S. and Australia*. Habitat Int. 33, 238–245. doi:10.1016/j.habitatint.2008.10.005

Hasanean, H.M., 2001. *Fluctuations of surface air temperature in the Eastern Mediterranean* 68, 75–87. doi:10.1007/s007040170055

Heisler, G., 1986. *Energy savings with trees*. J. Arboric. 12, 13–25.

Hoek, G., Brunekreef, B., Verhoeff, A., van Wijnen, J., Fischer, P., 2000. *Daily mortality and air pollution in The Netherlands*. J. Air Waste Manag. Assoc. 1995 50, 1380–1389.

Howard, E., 1898. *To-morrow A Peaceful Path to Real Reform*. Swan Sonnenschein, London.

HQE2R, 2004.

Intergovernmental Panel on Climate Change, 2007. *Climate change 2007: Synthesis report, fourth assessment report*.

International Energy Agency, 2008. *World energy outlook 2008*. International Energy Agency ; Turpin Distribution, Paris; New Milford, Conn.

International Energy Agency, 2012. *EBC Annual Report - Energy in Buildings and Communities Programme*.

IPCC, 2001a. *Climate change 2001: impacts, adaptation, and vulnerability*. A Report of Working Group II of the Intergovernmental Panel on Climate Change. Cambridge University Press for the Intergovernmental Panel on Climate Change, Cambridge, U.K.; New York.

IPCC, 2001b. *Climate change 2001: the scientific basis.* A Report of Working Group I of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge; New York.

IPCC, 2001c. *Climate change 2011: Mitigation*. A Report of Working Group II of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge; New York.

Jenady Garshofsky, 2012. *Hunts Point Express - Bronx River Greenway stays cut in two*.

Jon Minners, 1999. *New Guide Charts Comeback*. Norwood News.

Kadt, M. de, 2011. *The Bronx River: an environmental & social history*. History Press, Charleston, SC.

Kazmierczak, A., Carter, J., 2010. *Adaptation to climate change using green and blue infrastructure*. A database of case studies. Interreg IVC Green Blue Space Adapt. Urban Areas Eco Towns GRaBS Manch. UK Available Httpwww Grabs-Eu Orgaccessed 5 July 2012.

Köhler, M., 2008. *Green facades–a view back and some visions*. Urban Ecosyst. 11, 423–436. doi:10.1007/s11252-008-0063-x

Kosareo, L., Ries, R., 2007. *Comparative environmental life cycle assessment of green roofs*. Build. Environ. 42, 2606–2613. doi:10.1016/j.buildenv.2006.06.019

Kriesberg, R., 2013. *Personal communication*.

Landsberg, H.E., 1981. *The Urban Climate*. Academic Press.

Legambiente, 2012. *Mal'aria di città*.

Loreau, M., Naeem, S., Inchausti, P., 2002. *Biodiversity and Ecosystem Functioning: Synthesis and Perspectives*. Oxford University Press.

Loria, K., 2009. *Sustainable South Bronx* [WWW Document]. URL http://cooperator.com/articles/1916/1/Sustainable-South-Bronx/Page1.html (accessed 4.2.14).

Lu, F., Li, Z., 2003. *A model of ecosystem health and its application*. Ecol. Model. 170, 55–59. doi:10.1016/S0304-3800(03)00300-4

Luederitz, C., Lang, D.J., Von Wehrden, H., 2013. *A systematic review of guiding principles for sustainable urban neighborhood development*. Landsc. Urban Plan. 118, 40–52. doi:10.1016/j.landurbplan.2013.06.002

Maantay, J., 2000. *Industrial Zoning Changes and Environmental Justice in New York City: An historical, Geographical and Cultural Analysis*. (Doctoral dissertation). Rutgers University, New Brunswick.

Mageau, M.T., Costanza, R., Ulancowicz, R.E., 1995. *The development and initial testing of a quantitative assessment of ecosystem health*. Ecosyst Health 1, 201–213.

Makielski, S.J., 1966. *The politics of zoning; the New York experience*. Columbia University Press,, New York,.

McDonnell, T.C., Larson, M., 2004. *Estimating pollutant loading to the Bronx River*.

McHarg, I.L., 1969. *Design with nature*, [1st ed.]. ed. Published for the American Museum of Natural History [by] the Natural History Press,, Garden City, N.Y.,.

Meyar-Naimi, H., Vaez-Zadeh, S., 2012. *Sustainable development based energy policy making frameworks, a critical review*. Energy Policy 43, 351–361. doi:10.1016/j.enpol.2012.01.012

Nakamatsu, R., Tsutsumi, J.G., Arakawa, R., 2003. *Relations of energy consumption and local climate in a subtropical region*.

Neelay, 1998. *Valutation of landscape trees, shrubs, and other plants*, in: 7th Ed. Council of Tree and Landscape Appraisers. International Society of Arboriculture.

New York City Department of Environmental Protection, 2010. *Waterbody/Watershed Facility Plan Bronx River*.

New York Department of City Planning, 1979. *Restoring the Bronx River. New York City, Dept. of City Planning,*, New York.

NYC Environmental Protection, 2010. *NYC Green Infrastructure Plan*.

NYC Environmental Protection, 2012. *NYC Green Infrastructure Plan 2011 Update*.

NYC Environmental Protection, 2013. N*YC Green Infrastructure 2012 Annual Report*.

OED, 2014. *neighbourhood | neighborhood*, n. OED Online.

Office of Water, U.W., 2014. *Urban Waters: Be a Part of the Solution* [WWW Document]. URL http://www2.epa.gov/sites/production/files/widgets/urbanwaters.html (accessed 5.20.14).

Onishi, A., Cao, X., Ito, T., Shi, F., Imura, H., 2010. *Evaluating the potential for urban heat-island mitigation by greening parking lots. Urban For*. Urban Green. 9, 323–332. doi:10.1016/j.ufug.2010.06.002

Opdam, P., Steingröver, E., Rooij, S. van, 2006. *Ecological networks: A spatial concept for multi-actor planning of sustainable landscapes*. Landsc. Urban Plan. 75, 322–332. doi:10.1016/j.landurbplan.2005.02.015

Ottelé, M., van Bohemen, H.D., Fraaij, A.L.A., 2010. *Quantifying the deposition of particulate matter on climber vegetation on living walls.* Ecol. Eng. 36, 154–162. doi:10.1016/j.ecoleng.2009.02.007

Owen, D., 2010. *Green metropolis: why living smaller, living closer, and driving less are the keys to sustainability.* Riverhead Books, New York.

Palla, A., Gnecco, I., Lanza, L.G., 2009. *Unsaturated 2D modelling of subsurface water flow in the coarse-grained porous matrix of a green roof.* J. Hydrol. 379, 193–204. doi:10.1016/j.jhydrol.2009.10.008

Parenti, M., 2010. *Democracy for the Few*, 9 edition. ed. Cengage Learning, Boston.

Patrick Wall, 2013a. *New Street Fixes Aim for Safer, Easier Access to Two Bronx River Parks - Longwood* - DNAinfo.com New York [WWW Document]. DNAinfo N. Y. URL http://www.dnainfo.com/new-york/20130820/longwood/new-street-fixes-aim-for-safer-easier-access-two-bronx-river-parks (accessed 4.4.14).

Patrick Wall, 2013b. *Starlight Park Officially Reopens, But Remains Disconnected to Greenway* - Claremont Village - DNAinfo.com New York [WWW Document]. DNAinfo N. Y. URL http://www.dnainfo.com/new-york/20130513/claremont-village/starlight-park-officially-reopens-but-remains-disconnected-greenway (accessed 4.4.14).

Perini, K. *Progettare il verde in città: una strategia per l'architettura sostenibile*. F. Angeli, MIlano.

Petralli, M., Prokopp, A., Morabito, M., Bartolini, G., Torrigiani, T., Orlandini, S., 2006. *Ruolo delle aree verdi nella mitigazione dell'isola di calore urbana: uno studio nella città di Firenze*. Riv. Ital. Agrometeorol. 1, 51–58.

PlaNYC, 2008. *Sustainable Stormwater Management Plan*.

PlaNYC., 2013 *A Stronger, More Resilient New York*.

PlaNYC., 2013. *Progress Report* 2013.

PlaNYC, 2011 *Update April 2011*.

Plunz, R., 2008. *The design equation*, in: Sutto, M.P., Plunz, R. (Eds.), *Urban Climate Change Crossroads*. Urban Design Lab of the Earth Institute, Columbia University, New York.

Porter, M., 2012. *The Environmental Justice Implications of New York State's and New York City's Brownfield Policies*. CIity University of New York.

Portland Sustainability Institute, n.d. E*coDistricts Performance Areas Toolkit*. Understanding District Impacts.

Rapport, D.J., Costanza, R., McMichael, A.J., 1998. *Assessing ecosystem health.* Trends Ecol. Evol. 13, 397–402. doi:10.1016/S0169-5347(98)01449-9

Redford, K.H., Richter, B.D., 1999. *Conservación de la Biodiversidad en un Mundo de Uso*. Conserv. Biol. 13, 1246–1256. doi:10.1046/j.1523-1739.1999.97463.x

Rizwan, A.M., Dennis, L.Y., Liu, C., 2008. A *review on the generation, determination and mitigation of Urban Heat Island.* J. Environ. Sci. 20, 120–128.

Rocchio, P., 2009. *Hunts Point Park wins Bruner Award* [WWW Document]. Bronx Times. URL http://www.bxtimes.com/stories/2009/30/doc4a686fe4d8df2945761634.html (accessed 4.4.14).

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F.S., Lambin, E.F., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, H.J., Nykvist, B., de Wit, C.A., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P.K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R.W., Fabry, V.J., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P., Foley, J.A., 2009. A *safe operating space for humanity*. Nature 461, 472–475. doi:10.1038/461472a

Rogner, H.-H., Zhou, D., Bradley, R., Crabbé, P., Edenhofer, O., Hare, B., Kuijpers, L., Yamaguchi, M., 2007. *Introduction. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)].

Rollins, A., 2013. *Personal communication*.

Rosenzweig, C., Solecki, W.D., Slosberg, R.B., 2006. *Mitigating New York City's Heat Island with Urban Forestry, Living Roofs, and Light Surfaces - New York City Regional Heat Island Initiative.*

Rosenzweig, M.L., 2003. *Win-win ecology how the earth's species can survive in the midst of human enterprise*. Oxford University Press, Oxford; New York.

Rosenzweig, M.L., 2003. *Reconciliation ecology and the future of species diversity*. Oryx 37. doi:10.1017/S0030605303000371

Rouse, D.C., 2013. *Green infrastructure: a landscape approach.* American Planning Association, Chicago, IL :

Rozbicki, T., Golaszewski, D., 2003. *Analysis of local climate changes in Ursynów in the period 1960–1991 as a result of housing estate development*, in: Proc. 5th Int. Conf. Urban Climate. pp. 455–458.

Sanchez, K., 2011. NYC p*arks cut ribbon on new entrance to Shoelace Park* [WWW Document]. Bronx Times. URL http://www.bxtimes.com/stories/2012/30/30_shoelace_2012_07_26_bx.html (accessed 4.4.14).

Sandstrom, U.G., 2002. *Green Infrastructure Planning in Urban Sweden*. Plan. Pract. Res. 17, 373–385. doi:10.1080/02697450216356

Santamouris, M., Papanikolaou, N., Livada, I., Koronakis, I., Georgakis, C., Argiriou, A., Assimakopoulos, D.N., 2001. *On the impact of urban climate on the energy consumption of buildings.* Sol. Energy 70, 201–216. doi:10.1016/S0038-092X(00)00095-5

Saunders, W.S., 2002. *Book Reviews. A Pattern Language,* by Christopher Alexander, Sara Ishikawa, and Murray Silverstein, with Max Jacobson, Ingrid Fiksdahl-King, and Shlomo Angel New York: Oxford University Press, 197. Harv. Des. Mag. Hard/Soft, Cool/Warm.

Scholz-Barth, K., 2001. *Green Roofs: Stormwater Management From the Top Down.* Environ. Des. Constr. Feature January/February 2001.

Schrijnen, P.M., 2000. *Infrastructure networks and red-green patterns in city regions.* Landsc. Urban Plan. 48, 191–204. doi:10.1016/S0169-2046(00)00042-6

Seto, K.C., Güneralp, B., Hutyra, L.R., 2012. *Global forecasts of urban expansion to 2030 and direct impacts on biodiversity and carbon pools.* Proc. Natl. Acad. Sci. 109, 16083–16088. doi:10.1073/pnas.1211658109

Sharifi, A., Murayama, A., 2012. *A critical review of seven selected neighborhood sustainability assessment tools.* Environ. Impact Assess. Rev.

Shepard, P., 1994. *Issues of Community Empowerment*. Fordham Urban Law J. 21, 739.

Shepard, P.M., Corbin-Mark, C., 2009. *Climate justice.* Environ. Justice 2, 163–166.

Simpson, J.R., McPhearson, E.G., 1996. *Potential of tree shade for reducing Residential energy use in California.* J. Arboric. 22, 10–18.

Sternberg, T., Viles, H., Cathersides, A., Edwards, M., 2010. *Dust particulate absorption by ivy (Hedera helix L) on historic walls in urban environments.* Sci. Total Environ. 409, 162–168. doi:10.1016/j.scitotenv.2010.09.022

Susca, T., Gaffin, S.R., Dell'Osso, G.R., 2011. *Positive effects of vegetation: Urban heat island and green roofs.* Environ. Pollut. 159, 2119–2126. doi:10.1016/j.envpol.2011.03.007

Sze, J., 2007. *Noxious New York: the racial politics of urban health and environmental justice*. MIT Press, Cambridge, Mass.

Sze, J., 2008. *The question of Environmental Justice,* in: Plunz, R., Sutto, M.P. (Eds.), *Urban Climate Change Crossroads.* Urban Design Lab of the Earth Institute, Columbia University, New York.

Taha, H., 1997. U*rban climates and heat islands: albedo, evapotranspiration, and anthropogenic heat*. Energy Build. 25, 99–103. doi:10.1016/S0378-7788(96)00999-1

Taha, H., 2008. *Meso-urban meteorological and photochemical modeling of heat island mitigation.* Atmos. Environ. 42, 8795–8809. doi:10.1016/j.atmosenv.2008.06.036

Tereshchenko, I. e., Filonov, A. e., 2001. *Air temperature fluctuations in Guadalajara, Mexico, from 1926 to 1994 in relation to urban growth*. Int. J. Climatol. 21, 483–494. doi:10.1002/joc.602

Tzoulas, K., Korpela, K., Venn, S., Yli-Pelkonen, V., Kaźnierczak, A., Niemela, J., James, P., 2007. P*romoting ecosystem and human health in urban areas using Green Infrastructure: A literature review.* Landsc. Urban Plan. 81, 167–178. doi:10.1016/j.landurbplan.2007.02.001

U.S. Department of Energy, 2014. S*tatus of State Energy Code Adoptio*n [WWW Document]. URL https://www.energycodes.gov/adoption/states (accessed 6.30.14).

Ulrich, R., 1984. *View through a window may influence recovery.* Science 224, 224–225.

United Nations, 2012. *World Urbanization Prospects. The 2011 Revision* (United Nations, Department of Economic and Social Affairs, Population Division, New York).

USGBC, 2009. L*EED for Neighborhood Development*.

Van Bueren, E., Itard, Laure, Visscher, Henk, van Bohemen, Hein, 2012. *Sustainable Urban Environments: An Ecosystem Approach*. Springer-Verlag Gmbh.

Van der Ryn, S., 1996. *Ecological design.* Island Press,, Washington, D.C. :

Viteritti, J.P., 2009. *When Mayors Take Charge: School Governance in the City.* Brookings Institution Press.

VV.AA., 1927. *Regional survey of New York and its environs* [WWW Document].

VV.AA., 1974. Bronx Press-Review. New York.

VV.AA., 1975. Bronx Press-Review. New York.

VV.AA., 1977. Bronx Press-Review. New York.

VV.AA., 1978. Bronx Press-Review. New York.

VV.AA., 1979. Bronx Press-Review. New York.

VV.AA., 1980. Bronx Press-Review. New York.

VV.AA., 1985. Bronx Press-Review. New York.

VV.AA., 1989. Bronx Press-Review. New York.

VV.AA., 1992. The New York Times. New York

VV.AA., 1996. *"Riverkeeper"* Alliance Formed to Clean-up Bronx River and Promote Environmental Awareness. New York.

VV.AA., 1999. The New York Times. New York.

VV.AA., 2000. Bronx Beat. New York.

VV.AA., 2002. The New York Times. New York.

VV.AA., 2003. Bronx Beat. New York.

VV.AA., 2005. Bronx Beat. New York.

VV.AA., 2006a. Bronx Beat. New York.

VV.AA., 2006b. The New York Times. New York.

VV.AA., 2007a. Bronx Beat. New York.

VV.AA., 2007b. *Concrete plant to become park*. Hunts Point Express. New York.

VV.AA., 2007c. *Will apartments rise on Bronx River Greenway?* Hunts Point Express. New York.

VV.AA., 2009a. The Bronx Times. New York.

VV.AA., 2009b. *Polluters will pay to keep Bronx River clean.* Hunts Point Express. New York.

VV.AA., 2010. *Breaking ground for a sliver of a riverside park*. The Bronx Ink, 2010. New York.

VV.AA., 2010. The Bronx Times. New York.

VV.AA., 2011. *Cleaning up after Irene*. The Bronx Ink, New York.

VV.AA., 2011. *From the editor: Reviving the Bronx River*. Hunts Point Express, New York.

VV.AA., 2011. The Bronx Times. New York

VV.AA., 2012. *City Seeks Bronx Residents' Views on Greenways.* The Bronx Ink, New York.

VV.AA., 2012a. City Room. New York.

VV.AA., 2012b. *New Bronx River Greenway trail opens* [WWW Document]. News 12 Bronx. URL http://bronx.news12.com/news/new-bronx-river-greenway-trail-opens-1.6133553 (accessed 4.4.14).

VV.AA., 2012. *New Bronx River Parks Are Beautiful But Dangerous to Reach, Advocates Say - Claremont Village* - DNAinfo.com New York [WWW Document], 2012. . DNAinfo N. Y. URL http://www.dnainfo.com/new-york/20120926/claremont-village/new-bronx-river-parks-are-beautiful-but-dangerous-reach-advocates-say (accessed 4.4.14).

Waheed, B., Khan, F., Veitch, B., 2009. L*inkage-Based Frameworks for Sustainability Assessment: Making a Case for Driving Force-Pressure-State-Exposure-Effect-Action (DPSEEA) Frameworks. Sustainabilit*y 1, 441–463. doi:10.3390/su1030441

Walmsley, A., 2006. *Greenways: multiplying and diversifying in the 21st century.* Landsc. Urban Plan. 76, 252–290. doi:10.1016/j.landurbplan.2004.09.036

WE ACT for Environmental Justice, 2004. *Harlem on the River-Making a Community Vision Real.*

Weisz, H., Steinberger, J.K., 2010. *Reducing energy and material flows in cities.* Curr. Opin. Environ. Sustain. 2, 185–192. doi:10.1016/j.cosust.2010.05.010

Wilson, E.O., 1984. *Biophilia*. Harvard University Press,, Cambridge, Mass.

Winnick, L., 1990. *New people in old neighborhoods: the role of new immigrants in rejuvenating New York's communities*. Russell Sage Foundation, New York :

Wolf, K.L., 1998. *Trees in Business Districts: positive effects on consumer behavior.* Fact sheet no.5.

Wyse, C., 2013. *Personal communication*.

Yin, S., Shen, Z., Zhou, P., Zou, X., Che, S., Wang, W., 2011. *Quantifying air pollution attenuation within urban parks: An experimental approach in Shanghai, China.* Environ. Pollut. 159, 2155–2163. doi:10.1016/j.envpol.2011.03.009

www.asla.org

www.bronxriver.org

www.epa.gov

www.europa.eu

www.milliontreesnyc.org

www.nyc.gov

www.nycgovparks.org

www.scoremed.eu

www.ssbx.org

www.suden.org

www.thehighline.org

www.unep.org

www.uprose.org

www.weact.org

Appendix: The Bronx River Timeline

This timeline does not intend to be exhaustive but to give an idea of what happened in the last 45 years in and around the Bronx River. The timeline includes a wide research on local newspapers, as the Bronx Press Review, Bronx Beat, The New York Times, reports, plans, books, blogs,

1960

CITY PLANNING DIVIDES THE BRONX

City and state highway projects divided neighborhoods in the Bronx. In particular, the construction of the Sheridan Expressway and Cross-Bronx Expressway distanced the Bronx River communities from each other as well as from the river.
Waterbody/Watershed Facility Plan Bronx River (DEP, 2010).

1970

BRONX BURNED AND RIVER HIDDEN

During the 1970s the Bronx burned and the Bronx River became "hidden" behind small industry, apartment buildings, roads and junk.
The Bronx River: An Environmental & Social History (Kadt, 2011).

1974

NEW BOTANICAL GARDEN BOARD HEAD CALLS FOR WORK

«A call for volunteers to aid in a program for the rehabilitation of the Bronx Botanical Garden, and an expression of hope that the institution's horticultural excellence will be brought to a par with its scientific achievement are voiced by the new chairman of the board of managers. [...] "the New York Botanical Garden is one of the hidden assets of New York" [...] "Our goal, looking toward the year 2000, is to work in many ways to help the public understand the essential role of the green world of plants"».
Bronx Press Review (January 31, 1974)

BRONX COMMUNITY AGAINST TREATMENT PLANT

«Our community is definitely opposed to the water treatment plant planned for construction at Calhoun and Schurz Aves., in the Throgs Neck area. [...] the location is surrounded by schools, churches and private homes. It is not been proven us that the water treatment plants do not give off offensive odors, which would not be in keeping with air pollution standards. In addition our local streets are in no way capable of withstanding the traffic of the heavy trucks and equipment needed for building such a projects».

Bronx Press Review (January 31, 1974)

RAW SEWAGE DUMPING IN BRONX RIVER ASKED ENDED

«Government action in the Bronx at Westchester, to halt the discharge of raw sewage into the Bronx River is being sought, after completion of an environmental report issued by the New York Botanical Garden which charges that the sewage is fed into the stream at two points, and heavy silt at a third».

Bronx Press Review (April 11, 1974)

2ND CLEANUP SEMINAR SET BY RIVER RESTORATION UNIT

«The second cleanup effort of the Bronx River Restoration Project will be held on Saturday, from 10 a.m. to 4 p.m., following the held of last Saturday, in which members of civic and church groups participated».

Bronx Press Review (April 18, 1974)

RIVER PROJECT CONTINUES WITH CLEAN-UP DRIVE

«The cleanup program of the Bronx River Restoration Project will be continued Saturday and Sunday, in the West Farm section, following previous drives held in the Bronx Zoo area and in the section of North of Gun Hill Rd. National Guardsmen helped last week. In West Farms last weekend, the men and the women of the Project, with the assistance of tow trucks, yanked cars, parts of cars, bed-springs and refrigerators from the stream and debris of many kinds from the banks».

Bronx Press Review (April 25, 1974)

GIANT CATERPILLAR ATTACK ON BRONX RIVER TOMORROW

«The caterpillar, sometimes known as "cat", is a great big earthmoving machine which will put to work for the Bronx River Restoration Project at 10 a.m. all day long it will be rooting up junk from the river bed near West Farm».

Bronx Press Review (June 13, 1974)

CO-OP CITY YUNG GARDENERS AND BRONX RIVER RESTORATION UNIT WIN DRESS-UP PRIZES

«Four groups of children gardeners of Co-op City, and the Bronx River Restoration Project were among the Bronx winners of honor in the third annual Dress Up Your Neighborhood Contest, announced by Mayor Beame and Miss Mollie Parnis, contest sponsor, last Friday».

Bronx Press Review (October 10, 1974)

BRONX RIVER SEMINAR SERIES SET BY BCC

«A Bronx River Seminar Program is being put together by the staff of the Center of Continuing Education and Community Services of Bronx Community College, announced Dairdre Gliscкman, project director. The program will present four two-hour seminars, one of which will be conducted by a team of ecological experts of the City University. The program is funded by the U.S. Department of Health, Education and Welfare. "As urban resource, the Bronx River is unique in the city of New York", says Mr. Glicksman. "It is the only river flowing through any of the five Boroughs, and at one time it was noted for its natural beauty and abundant marine life. Today the rapid deterioration of the river threatens the area with ecological disaster. The Bronx River Seminars Program will examine the reasons for the current condition of the river and will set a long-range plan for its restoration».

Bronx Press Review (October 17, 1974)

LOCAL COMMUNITY RESIDENTS CLEAN UP THE RIVER AND FORM THE BRONX RIVER RESTORATION

From 1974 on was an amazing community effort in the Bronx to bring the river back to life - formation of the Bronx River Restoration by local community residents, Ruth Anderberg spearheaded the organization and worked to clean up the West Farms reach of the Bronx River in the 1970s.
The Bronx River: An Environmental & Social History (De Kadt, 2011)
In 1974, local residents became fed up with the dismal conditions of the Bronx River and formed Bronx River Restoration Project, Inc., with Ruth Anderberg as its first director.
The Bronx River Restoration succeeded in removing a plethora of debris, including refrigerators, tires, and even a wine press along the shoreline in the 180th Street/West Farms area.
www.bronxriver.org
«In recent years, the Bronx River has become the object of an extensive clean up and restoration drive, thanks largely to the tireless efforts of the Bronx River Restoration Organization».
Restoring the Bronx River (New York Department of City Planning, 1979)
«In response to the poor conditions of the Bronx River, local residents formed the Bronx River Restoration Project, Inc. The group was successful in removing debris from the shoreline of the Bronx River».
Waterbody/Watershed Facility Plan Bronx River (DEP, 2010)

ENVIRONMENTAL COMMITTEE PLANS FIFTH ECOLOGY FAIR

«the Fair this year will include exhibits from all Environmental Action subcommittees: on noise, pollution, and waste, Pelham Bay Dump, environmental education and arts project».
Bronx Press Review (April 17, 1975)

1975

RELEASED FOR SALE THE LAND FOR COMMUNITY RECREATION NEXT TO THE RIVER

«It is well known in fact of life that politicians and City agencies say one thing, then they turn around and do quite the opposite. Everyone is for ecology and protecting the environment - until it comes to making money - a sorry example of this type of double talk is unfolding with regard to the Bronx River, at West Farms. For years no one in City government made any attempt to halt the disgraceful illegal dumping and pollution of the river in that area. A year ago the Bronx River Restoration Project - without any funds - began to clean the river. Meeting where held with various community groups who helped and supported the work of restoration. It was their unanimous wish that the land on either side of the river be left as open space or used as parkland. The Bronx River Restoration Project learned last week that in spite of promises to held the land for community recreation, the lot next to the river was released for sale, quietly.When asked for a reason the community was given an ultimatum: "give up the playground or you will lose the New York State Employment Office". This is an outrage. No community in these terrible days, can afford to lose an Employment Office [...]. We are ready to fight for that property».
Letter to the editor by Ruth Anderberg. Bronx River Restoration Project
Bronx Press Review (June 12, 1975)

1977

BRONX RIVER RESTORATION PLAN SENT TO WHITE HOUSE

«A direct appeal to President Jimmy Carter for his aid in expediting the Bronx River Restoration program has been sent to the White House, by Alex Horn, director for long term planning of the Restoration group. Mr. Horn urged assistance for the Master Plan for the Project, which he notes would "revitalized the physical environment, and serve a number of strongly felt needs economic, social, cultural, educational and recreational. [...] "We need your help in two ways": to identify the channels through which the program can receive Federal funding and to help expedite such procedure. With your indicated interest BXRR can become a symbol of self-help to which your administration can point with satisfaction and justification [...]. The Restoration program recently received a $45.000 grand from the Youth Conservation Corps to put 50 young people to work on the river this summer».
Bronx Press Review (March 24, 1977)

$60.000 BRONX RIVER PLANS FUNDS PROVIDED

«After a concerted effort on the part of the Bronx legislative delegation to Albany, an allocation of $60.000, for the preparation of a master plan for the restoration of the Bronx River for new outdoor uses by the public has been made available. Mr. Koppell, chairman of the Assembly committee on environmental conservation notes that the River Restoration is one of a number of Green New York projects, "it is part of an effort by my committee and several State agencies to revitalize the urban environment. The plans have a special apparel, they will make the river a part of the daily lives of the people again"».

Bronx Press Review (July 14, 1977)

BRONX RIVER REHABILITATION EXHIBIT OPEN

«An exhibit on the ecology of the Bronx river and the mighty efforts being made to improve it, is being presented in the Museum of Bronx History, sponsored by the Bronx River Restoration and the Bronx Country Historical Society».

Bronx Press Review (October 27, 1977)

BRONX RIVER ENVIRONMENTAL CRUISE CHARTED

Public officials, environmentalist and civic leaders will participate in an inspection cruise in the lower Bronx River.

Bronx Press Review (November 10, 1977)

BRONX RIVER CANOE EXPEDITION

1978

2nd Annual Bronx River Canoe Expedition of Two Days Set, South from Valhalla sponsored by the Bronx River Restoration Project

Bronx Press Review (April 13, 1978)

PUBLISHED "RESTORING THE BRONX RIVER", INVOLVEMENT OF NYCPC

1979

E. I. Koch Mayor, New York City Planning Commission, New York City Department of City Planning, with description of the river and recommendations.

(New York Department of City Planning, 1979)

«The recommendations of a special study made to further the restoration of the Bronx River and "provide access to its shores" were released last week by Mayor Edward I. Koch and City Planning Commissioner chairman Rober F. Wagner. The mayor declared that the experience gained in restoring the Bronx River can be applied in reclaiming other sections of the waterfronts through the City, especially those adjacent to residential neighborhoods. Made by the Department of City Planning, the study plots the land use along the eight and one half miles of the river street in the Bronx, between Westchester and the East River. The major recommendation is that a "public way" easement of varying widths, be established South of E. 180th Street, on both sides of stream, to permit grater public access to the water. Mr. Wagner noted that "with little government money, volunteers have already cleaned a portion of the river and have drawn plans for creating a variety of riverfront recreational activities. Now it is out job to open the way for people to reach the water. [...]. Plans to control raw sewage discharges at 23th St. and E. 233rd St., thought the construction of a combined sewer system along Webster Ave., already have been made, and this project is expected to be put under way this year. City action would be needed to protect the river water quality, and continued efforts by the Bronx River Restoration Project, local volunteer organization, with community development program funds, would help realize the other recommendations. [...]».

Bronx Press Review (March 29, 1979)

Bronx River Preliminary Master Plan

«Today's 96-pages Preliminary Master Plan sets down in cold type the long-sought description of what is hoped-for, has been dreamed-of and will be fought for: a joyous program to clean, revitalize and beatify the Bronx River. The splendid Bronx River Restoration, dreamers-doers headed by Ruth Anderberg and Alex Horn, have presented a document, which is sweeping and soaring, realistic and attainable. It calls for money. The study was funded by the State Legislature. But the changing of the plans into the great action realties will take an other $20 millions».

Bronx Press Review (March 29, 1979)

1980

"BRONX RIVER RESTORATION" – BXRR PUBLISHES A REPORT FOLLOWING GROUPS AND INDIVIDUAL COMMENTS.

«Published "Bronx River Restoration", report prepared and produced by Bronx River Restoration (BXRR) in collaboration with The Stein Partnership. "this volume represents a further step in the formulation of the Master Plan for the 20 miles of the Bronx River Basin broached in preliminary form in 1979. Since then, there has been a major effort to understand even more thoroughly the problems, attitudes, aspirations, and expectations of many individuals and groups whose lives are intertwined in some way with the Bronx River».

Bronx River Restoration, Inc. (1980)

The master plan for the river (effort of Ruth Anderberg), established a third benchmark for the river eighty-four years after the Bronx Valley Sewer Commission branded it an "open sewer.

The Bronx River: An Environmental & Social History (Kadt, 2011).

BRONX RIVER FESTIVAL

The first Bronx River Restoration River Festival set to mark mini/park opening.

Bronx Press Review (July 31, 1980)

1985

BRONX RIVER CLEAN WATER CELEBRATION

«High officials, including Mayor Koch and Borough President Stanley Simon, will paddle their own canoes, so to speak, in a Bronx River Clean Water celebration [...}. The event will mark the tenth anniversary of the founding Bronx River Restoration Project, Inc. [...] the event is sponsored by the Restoration Project and the City Department of Parks and Recreation. [...] the Restoration Program, a partnership of private and public efforts, includes a Master Plan for the entire river, construction of a mini-park and a community garden, and restoration and maintenance of riverbanks and parklands».

Bronx Press Review (April 11, 1985)

1989

STUDENTS CLEAN UP THE BRONX RIVER PARK

«Urban ecology students from Lehman College's adult education program and members of the Riverdale Country School environmental club joined forces to clean up the Rosewood area of Bronx River Park and repair a retaining wall along a pathway beside the Bronx River. The project was part of the RiverKeeper Program sponsored by Bronx River Restoration Project, Inc. to involve community members in caring for the Bronx River and its adjoining land. Cosponsored by the Council on the Environment of New York City, the work was coordinated with New York City Parks and Recreation's semi-annual Clean-Up Day. [...] The project was the second Bronx River workday this year for students from the environmental club at the Riverdale Country School. [..] Next year students will participate in water testing as part of Bronx River Restoration's RiverKeeper program».

Bronx Press Review (May 18, 1989)

WATER QUALITY MONITORING PROGRAM

Program initiated by Bronx River Restoration.

Annual report (Bronx River Alliance, 2006)

1992

"BRONX RIVER TRAILWAY PLAN" TO CREATE GREENWAY TRAIL

«A plan to Conserve New York's Wildness. "Bronx River Trailway". The plan is to create a greenway trail all the way along the Bronx River, from where it empties into the East River, up to East 180th Street in the Bronx. It would connect to an existing 17 mile trial leading to the Kensico Reservoir in Westchester Country».

The New York Times (Jun 28, 1992)

1994

SOUNDVIEW PARK SEWER AND DAMS

In 1994 the sewer systems, and control vaults were renovated and dams were installed.
www.nycgovparks.org

1995

LOCAL ACTIVISTS FOUNDED PARTNERSHIPS FOR PARKS

Partnerships for Parks was founded in 1995. Nowadays the program helps New Yorkers work together to make neighborhood parks thrive and it is an innovative joint program of City Parks Foundation & NYC Parks.
http://www.cityparksfoundation.org/partnerships-for-parks

In the mid-1990s, Jenny Hoffner, then a project coordinator for Partnerships for Parks, reached out to a new generation of local activists who embraced the reclamation of the river as an element of a broad struggle for environmental justice.
Bronx River Greenway Plan (Bronx River Alliance, 2006c).

1996

BRONX RIVERKEEPER PROGRAM

Bronx River keeper program developed by NYCDPR in partnership with City of New York/Parks & Recreation and Con Edison.
www.bronxriver.org/

«The Bronx Riverkeeper program is a year-long series of river front activities designed to raise environmental awareness. During the first year of the program, efforts will be concentrated in the Bronx Park area from East 233 Street to Gun Hill Road. Bronx Park, which was developed in the early 1900's for public use, stretches from Pelham Parkway to 233rd St. in the North Bronx. In addition to clean-up and beautification activities, future plans call for river tours, environmental outreach seminars and Riverkeeper Festival».
"Riverkeeper" Alliance (1996)

«Years ago, according to Jeffrey Katz, a public affairs representative for Con Edison, the Bronx River was as pretty as a post card. (Con Edison is a corporate member of the Bronx River Working Group and a major funder of the Bronx River Keeper Program, which helps clean the river.) Soiled by abandoned industrial developments, though, the Bronx River became polluted and environmentally unsafe».
Norwood News (March 11-24, 1999)

The Restoration Project was strengthened with the Bronx Riverkeeper Program that was created in a partnership with the City of New York Department of Parks and Recreation (NYCDPR) and the Consolidated Edison Corporation.
*Waterbody/Watershed Facility Plan Bronx Rive*r (DEP, 2010)

1997

FORMATION OF THE BRONX RIVER WORKING GROUP

«Grassroots organizations, made of local activists who embraced the reclamation of the river, joined with Partnerships for Parks and other units of NYC Parks, the National Parks Service Rivers and Trails program, and the Appalachian Mountain Club to convene the Bronx River Working Group. As an informal, unincorporated coalition, the Working Group was able to tap the strengths of supporters within and outside of government and worked with NYC Parks to draft the Bronx River Action Plan in 1999».
Bronx River Greenway Plan (Bronx River Alliance, 2006c)

«The Bronx River Working Group, coordinated by Partnerships for Parks and Waterways & Trailways, expanded the effort to include over 60 community groups, government agencies, schools and businesses».
www.bronxriver.org

Bronx River Working Group (BRWG) formed under the leadership of Jenny Hoffner as a coordinator and Mojora Carte as its chairwhoman. In 1997 Hoffner joined the New York City Partnership for Parks (one of her function was to lead an effort to clean up the Bronx River.
The Bronx River: An Environmental & Social History (Kadt, 2011)

Formation of the Bronx River Working Group who expanded the effort to included 60-plus community groups, government agencies, schools, and businesses.
Waterbody/Watershed Facility Plan Bronx River (DEP, 2010)

1998

SOUNDVIEW PARK IMPROVEMENTS

The playground was improved in 1997, and the sidewalks and pavements were repaired in 1998. www.nycgovparks.org

1999

BRONX RIVER STILL "HIDDEN"

«In 1999 a New York Times reporter, Barbara Stewart, expressed her surprise that the "hidden" river was being discovered again: "It is not easy to hide a river. But except for wide, picturesque expanses in Westchester Country and the Northern Bronx, especially in the New York Botanical Garden, the Bronx River is as unknown as an urban river can be. In the South Bronx, the waterway is hidden behind industrial buildings».

The Bronx River: An Environmental & Social History (Kadt, 2011).

«Yesterday, the parks commissioner, Henry J. Stern, joined other officials from private corporations and neighborhood groups by the river's to discuss an improbable sounding project and watch as a giant crane pulled a rusty carcass of a vehicle from the water - a symbol, they hope, of the work to come. Sometime about 2010, Mr. Stern aid, New Yorkers will be able to bicycle and hike through bushy, landscaped greenways from the edge of Westchester border all the way down to Soundview, the gritty neighborhood on the tip of the South Bronx where the river empties into the East River. Right now the southern part of the river is lined by industrial sites, highway overpasses and other emblems of the urban landscape. But under the plan being devised by community groups and the city, Bronx residents - now to totally blocked to reaching of even glimpsing the water's edge - will be able to stroll through small parks to piers, of fish (...) "It will be our version of Mississippi" said Mr. Stern, as he announced his plans near a short section along the river called Starlight Park, by the Sheridan Expressway. (...) The construction of Soundview Park near the East River, which is expected to cost $1.5 million, has already started, and the work on Starlight park, is scheduled to begin in the spring" (in 2000)».

The New York Times (November 20, 1999)

PUBLICATION OF BRONX RIVER ACTION PLAN MADE BY NYC PARKS AND BRONX RIVER WORKING GROUP

«First among the plan's five Core Goals was the creation of the Bronx River Greenway. The greenway was conceived from its inception not only as a pedestrian and bicycle route, but as a linear park that would serve a population long deprived of green open space and waterfront access. The Bronx River Working Group, as an informal, unincorporated coalition, the Working Group was able to tap the strengths of supporters within and outside of government and worked with NYC Parks to draft the Bronx River Action Plan in 1999».

Bronx River Greenway Plan (Bronx River Alliance, 2006c)

GRANTS AND FUNDS TO RESTORING THE PARK AND THE RIVER AND TO CONSTRUCT THE GREENWAY

«Parks and Recreation awarded four Water Works grants of $10,000 to four agencies which have made major contributions to restoring the park. First, Phipps Community Development Corporation together with the West Farms Friends of the Bronx River received its $10,000 to continue their efforts to improve a Riverside Park they created at 179th Street. Another recipient group, The Point Community Development Corporation, helped to create another community park along the west bank of the Bronx River. Third, the Gaia Institute was awarded a grant to continue its teaching program on Bronx River forests. Finally, Bronx River Restoration, a group which has worked on restoring the river for about 25 years, received Water Works money to expand its Bronx River Keeper Program, in which volunteers regularly clean the river. Assorted other projects are just now leaving the dock. On Jan. 25, Parks received $1.5 million in federal and city funds for the construction of the Bronx Soundview Greenway, a bike and pedestrian trail."The Soundview Greenway will change the park dramatically and provide developed access to the waterfront in this 157-acre park," Henry Stern said during his Feb. 23 speech at the Botanical Garden. Also, the Natural Resources Group (NRG) secured $1.7 million from the city and state to restore the banks, flood plains and forest along one 2,500-foot stretch of the Bronx River just north of the New York Botanical Garden.

Also, a $25,000 grant from the federal Environmental Protection Agency was given to the NRG to restore the river's eroding edges, a project that will be implemented with Partnerships for Parks. Thirdly, a major contribution to Bronx River Restoration comes from the federal government, which has funded a reconnaissance-level study to examine the flood control and potential to restore the damaged ecosystem of the Bronx River».

Norwood News (March 11-24, 1999)

«A Greenway Through the Bronx. New York City is devising a $60 million plan to build hiking and cycling trails along the Bronx River».

The New York Times (November 20, 1999)

PARKS COMMISSIONER HENRY STERN PROCLAIMS "YEAR OF THE BRONX RIVER"

*Annual repor*t (Bronx River Alliance, 2006a)

CONCRETE PLANT PARK SAVED FROM THE AUCTION BLOCK BY COMMUNITY RESIDENTS

«led by Youth Ministries for Peace and Justice (YMPJ), and the NYC Parks Department designated the site as parkland. These efforts were supported by The Point Community Development Corporation, Community Boards, elected officials and others who saw the site's potential as a crucial link in the development of the Bronx River and the Bronx River Greenway».

The Bronx Times (2009)

2000

NYC PARKS ACQUIRED THE LAND OF CONCRETE PARK

«The land that is now Concrete Plant Park was acquired by Parks in 2000. In close partnership with community organizations and public agencies, the Parks Department and the Bronx River Alliance began the revitalization of this formerly abandoned site through re-establishing salt marshes on the riverbank once strewn with trash and tires, as well as reintroducing the public to the site through organizing community festivals and leading hundreds of residents out on the Bronx river to canoe and kayak».

www.nycgovparks.org

BRONX RIVER'S PATH GROWS GREENER

«The southern end of the Bronx River will gradually turn greener as plans to install an emerald chain of parkland along the length of the winding waterway grow closer to reality. In just one of several adjoining plans, a one-and-a-half mile trail along the length of Soundview Park is scheduled for completion next month, Parks and Recreating Department officials said. [...] the $1.3 million project is one piece of a long term collaborative plan to line the river with parkland. The parks may eventually extend from the north - from Westchester through the Bronx Botanical Garden and the Zoo - to the south, bordered by Soundview and Hunts Point. The project is the result of a collaboration between communities along the entire length of the river and various government agencies. The project resulted two years ago in the creation of the Bronx River Working Group, a coalition of more than 50 community groups, non-profit organizations and several governmental agencies "[...]. Efforts to restore the river gained momentum last year when city Parks Commissioner Henry Stern declared 1999 the "Year of the Bronx River", pledging $60 million to restore the waterway».

Bronx Beat (April 17, 2000)

TRUCKS AND POLLUTION IN HUNTS POINT

«Residents of Hunts Point now see 10,000 trucks a day on their streets, according to a survey conducted by members of Mothers on the Move, a Hunts Point community activist group. This includes trucks hauling garbage to existing waste transfer stations and 18-wheelers carrying goods to the Hunts Point Terminal Market. Although medical studies are inconclusive, some physicians believe truck's exhaust, as well as other pollutants, contribute to neighborhood's asthma rates, which are among the highest in the city».

Bronx Beat (February 28, 2000)

FIRST BRONX RIVER FLOTILLA

Annual report (Bronx River Alliance, 2006)

2001

BRONX RIVER ALLIANCE

«In 2001, the Bronx River Alliance was created to build on the 27-year history of restoration work started by Bronx River Restoration Project, Inc. in 1974; The Bronx River Working Group was formed the Bronx River Alliance as an independent 501(c)(3) organization (non profit organization). Furthermore, in 2001 the Bronx River Alliance was created to restore and protect the Bronx River, building on the 27-year history of restoration work».
Waterbody/Watershed Facility Plan Bronx River (DEP, 2010)

SOUNDVIEW PARK BIKEWAY COMPLETED

Bronx River Greenway Plan (Bronx River Alliance, 2006c)

2002

BRONX RIVER GREENWAY ACTIONS

«In New York City, community and environmental groups along the Bronx River environ linking Woodlawn to Hunts Point with greenway projects that range from posting informational signs to removing the Sheridan Expressway».
The New York Times (July 16, 2002)

2003

FLOTILLA PADDLES BRONX RIVER

«Despite the cold and drizzle Saturday, more than 80 borough residents and community leaders, including city Parks commissioner Adrian Benepe, participated in the fourth annual Amazing Bronx River Flotilla. Wearing ponchos and life vests the group paddled down a six-mile stretch of the 23-mile Bronx River, through the Botanical Garden, the Bronx Zoo and into Hunts Point, to launch the spring and summer paddling season, when the Bronx River Alliance, an environmental advocacy group, runs public canoe trips. The alliance organized the flotilla to draw attention to the river and to motivate residents to help keep it clean. "It's exciting and every bit of its fun," said Linda Cox, executive director of the alliance. "It gives you a sense of that the Bronx River is, and what it can become." Other alliance projects include riverside cleanup, the creation of parkland and finishing a pedestrian greenway along the Bronx River that would stretch from the East River to Westchester County».
Bronx Beat (April 7, 2003)

ROCKING THE BOAT BRINGS KIDS ON THE RIVER INCLUDING AN ECOLOGY CLASS

«Sonia Alfonso lives within spitting distance of the Bronx River, but she never looked at it or thought much about it before February. That's when the 16-yearold Alfonso, a junior at Fannie Lou Hamer High School, and a handful of other students enrolled in Rocking the Boat's after-school ecology program. Rocking the Boat, a nonprofit group, has taught borough teens to build boats and row them on the Bronx River since 1996, but this year it has expanded to include an ecology class. This semester, 13 students are monitoring the health of the river and restoring native plants to its banks, riding in seven New York Whitehall pulling boats. The traditional rowboats, designed for use in New York Harbor, were constructed by students in the program's boat-building workshop. [...]. The students will learn to test the water quality, program director Jim Lane said. They will also catch fish, shrimp and crabs to monitor those populations, another way to check the health of the river».
Bronx Beat (April 7, 2003)

HAZARDOUS WASTE IN THE BRONX RIVER

«A recent soil study of Starlight Park by Consolidated Edison and the New York State Department for Environmental Conservation found hazardous waste left from an industrial plant that produced power from coal and oil in the early 1900s. Con Edison, which owned the land before selling it to the city Parks Department in 1945, volunteered to remove the waste and foot the bill for the $11 million cleanup. [..] Though exposure to such waste could cause cancer and asthma, Con Edison and the city's Department of Health say risks from the 80-year-old muck is minimal. Residents, they say, can be harmed only if they touch By Clancy Nolan the waste or inhale contaminated gases. "This is not a health issue as much as an environmental issue," said Michael Crane, a physician employed by Con Edison. "We are fortunate that water is piped into the city. If we were a community drinking from wells, then it would be a problem."

[..] The Bronx River Alliance, a partnership between community groups, the state Department of Transportation and the city Parks Department, adopted Starlight Park in 1998 and has since secured more than $5 million to renovate the park and build a boathouse and comfort station. Soon after breaking ground on the renovation project last May, however, workers unearthed the waste and closed the park until tests could be done. Con Edison estimates that cleanup will last through the fall of 2004. The Bronx River Alliance says that as long as its funding is secure, it will renew the project after the cleanup».

Bronx Beat (February 17, 2003)

HUNTS POINT SEEKS RELIEF FROM TRUCKS

«Community and transportation organizations are pressuring the State Department of Transportation to sign on to an alternative traffic plan to divert trucks from residential and waterfront areas in Hunts Point. Approximately 11,000 trucks pass through Hunts Point in a single day to reach the produce and meat markets. [..]. If the Leggett Avenue ramp is built and the Sheridan Expressway is closed, the waterfront just east of the expressway could become part of a greenway along the Bronx River, an area with few publicly accessible open spaces. Currently, the southern portion of the greenway ends in Bronx Park, but plans are to extend it to Hunts Point».

Bronx Beat (March 10, 2003)

URBAN PARK RANGERS AND COMMUNITY INVOLVEMENT

«When Adelaida Del Pilar moved to the city in 1978, she pined for the mountains and forests near her hometown, Quebradillas, Puerto Rico. "I love the outdoors," Del Pilar said. "The only place I could go and feel free again was in the city parks." Tired of her life as a homemaker, Del Pilar enlisted with the Urban Park Rangers 16 years ago. She is one of 42 rangers, part of a program that has educated the public about the ecology of the city's parks for nearly 25 years. Next week, the borough's rangers will celebrate Earth Week with events that include planting a garden to attract butterflies in Crotona Park. The rangers work mostly with school children at nature centers in many of the city's largest parks, including Van Cortlandt, Crotona and Pelham Bay. Students from grade school through high school learn about plants, birds, water and rocks and get to know the parks on tours. "When they leave, they have a better understanding of the environment that's here," said Del Pilar, who lives in Brooklyn. "They learn to respect it, and that's a great accomplishment." The rangers organize hikes and canoe trips at the lagoons near Orchard Beach and on the Bronx River. All programs are free to the public and are offered year-round. "I can be outdoors, it doesn't matter what the season of the year," Del Pilar said. New rangers make about $29,000 a year».

Bronx Beat (April 14, 2003)

2004

FIRST BRONX RIVER GREENWAY PROJECTS - BRONX RIVER ALLIANCE

«Hunts Point Riverside Park–will provide the first new waterfront park in the South Bronx in over 60 years and - the Bronx River Forest Floodplain Restoration. The floodplain restoration project, on the other hand, represents our commitment to restore the health of the river and improve waterfront access in existing parks. In addition to these groundbreakings, a 1.25-mile existing segment of the greenway located in Bronx Park East was repaved and stenciled. Advance designs for three greenway projects: Bronx Park North Pathways, Muskrat Cove/Westchester Connection, and the Concrete Plant Park».

Annual Report (Bronx River Alliance, 2004)

COMMUNITY INVOLVEMENT IN CONCRETE PARK

The input of Bronx residents in 2004 guided the final design for the Concrete Plant Park.

Annual Report (Bronx River Alliance, 2004)

ECOLOGY PROGRAM WITH VOLUNTEERS

«Ecological restoration work on the river has continued, powered by the sweat equity of the Conservation Crew and hundreds of volunteers, who removed river blockages and replaced invasive species with native plantings. The Conservation Crew serves worked with 16 community organizations and schools to remove four significant blockages along the river– including five cars–and plant more than 8,700 native trees, shrubs, and other types of vegetation. In addition, our volunteer base is

as strong as ever, logging more than 11,000 hours on the river in 2004».
Annual Report (Bronx River Alliance, 2004)

BRONX RIVER UPLAND RESTORATION ASSESSMENT WORKSHOP

«The Alliance took a critical step toward our goal of reducing stormwater runoff and pollution by organizing the Bronx River Upland Restoration Assessment Workshop. For three days in June, this workshop brought together 22 diverse organizations–such as the Department of Environmental Protection, the New York State Department of Transportation, Youth Ministries for Peace and Justice, and the Gaia Institute–to develop policy solutions for stormwater management in the Bronx River watershed. Participants in this workshop brainstormed ways to reduce sewage discharges into the river during periods of high precipitation. Discussion focused on methods to capture stormwater through natural systems–such as bioswales, rain gardens, and retrofits to existing paved surfaces–increasing the amount of water that seeps through soil strata, where it can be filtered and cleansed. Information gathered at the workshop will inform the forthcoming Ecological Restoration and Management Plan».
Annual Report (Bronx River Alliance, 2004)

PUBLIC AWARENESS ABOUT BRONX RIVER

«Public awareness of the river grew as educators and students monitored water quality and hundreds of Bronx residents came to the river by foot, bike, and canoe to appreciate and celebrate this emerging resource. 85 educators participated in the 5th Annual Student Activities in the Bronx River Watershed: Field Monitoring Workshop for Educators. This workshop offered practical training on topics including aquatic fauna, water and soil quality monitoring, and the history of the Bronx River Valley. We also awarded seven grants to educators for the equipment, supplies, and services they need for river and watershed projects both in and outside of the classroom. In addition, the Alliance trains and supports Bronx River Stewards–school groups, community groups, and individual residents who care for and monitor a particular section of the Bronx River. These Stewards are creating a scientifically valid database to evaluate the health of the river and alert agencies to water quality issues as they arise. In 2004, 23 site leaders–lead monitors charged with coordinating volunteers, monitoring the river, and providing the Alliance with data–participated in volunteer monitoring training sessions to learn how to collect, analyze, and share useful data, using Environmental Protection Agency-approved protocols and equipment. A total of 95 volunteers monitored water quality at nine sites in the spring, four in the summer, and eight in the fall».
Annual Report, Bronx River Alliance, 2004

2005

ECOLOGY PROGRAM WITH VOLUNTEERS

140 volunteers on ecological restoration and river clean up projects. Cleaned and cleared 130 acres, restored 37 acres, Planted 13100 native trees, shrubs and other plants.
Annual Report (Bronx River Alliance, 2005)

PUBLIC AWARENESS - BRONX RIVER ALLIANCE

1000 students participated in Bronx River Education Programs
Annual Report (Bronx River Alliance, 2005)

MORE TREES AND COMMUNITY INVOLVEMENT

«Starting next month, trees along sidewalks in the borough will be individually inspected and recorded as part of the 2005 citywide tree census of Department of Parks and Recreation. But some community groups and political leaders predict the Bronx will still lag behind other boroughs in street trees, as it did in the first census in 1995. [...] Hunts point, which has one of the highest asthma rates in the nation had 690 trees, according to the 1995 census, or about one tree per acre. In response, residents created a nonprofit group, Greening for Breathing, to increase the number of trees there. [...] Greening for Breathing organized volunteers to knock on doors in Hunts point to encourage owners to request trees. Through the group's efforts, an additional 500 trees have been planted [...]».
Bronx Beat, April 18, 2005

GRANT TO CLEAN UP THE RIVER

The city received a grant from the Department of state in Albany to develop a river cleanup plan with Westchester Country.
Bronx Beat (February 27, 2006)

2006

CLEANUP COALITION TACKLES BRONX RIVER

«The Bronx is about to get some help cleaning up the river that bears its name. Nearly two-third of the 23/mile long river runs through Westchester Country, collecting tires, plastics and dirty stormwater before entering the borough and further fouling an already polluted river. In an effort to manage the river as a whole, the city has agreed to work with 13 other municipalities that fall within the river's watershed to the north. In a memorandum of agreement signed by mayors and supervisors on Feb. 10, the Bronx River Watershed Coalition was formed to develop and execute a plan for cleanup. [...] For the last two years, groups in Westchester and the Bronx have been working independently to clean up the river and improve its water quality. [...] Stormwater can pick up oil and grease from parking lots and nutrients from lawn fertilizers. Bacteria can also and up in the river this way. All of these pollutants can affect the plant, fish and invertebrates that live in the river as well as residents that swim and fish there in the summers. [...] Proposed solutions include filters for catch basins, stormwater storage structures under parking lots and even the creation of green roofs to filter water».
Bronx Beat (February 27, 2006)

ECOLOGICAL RESTORATION AND MANAGEMENT PLAN

Assesses the river's environmental health, sets targets for its improvement, and defines the projects through which the Bronx River Alliance will achieve those goals.
Bronx River Ecological Restoration and Management Plan (Bronx River Alliance, 2006a)

GREENWAY PLAN

Bronx River Alliance's goals and vision for the parkland along the river's banks.
Bronx River Greenway Plan (Bronx River Alliance, 2006c)

BRONX RIVER GREENWAY, WORK IN PROGRESS

Several groups came together to clean up the Bronx River. An old concrete plant is being turned into a city park, and a multifaceted greenway along the river is emerging
The New York Times (February 22, 2006)

2007

LAUNCH OF THE BRONX RIVER CLASSROOM

The Inside Track for Educators, a guide providing lesson plans, maps and resources for utilizing the river as a living classroom
Annual Report (Bronx River Alliance, 2006b)

CLEANING THE BRONX RIVER

Together with hundreds of volunteers, the Conservation Crew of the Bronx River Alliance cleared an astonishing amount of debris from the eight miles of the river in the Bronx in the last two years: over 3,000 tires, 7,500 other large objects, and some 85 tons of litter and flotsam.
Annual Report (Bronx River Alliance, 2006b)

GREENING THE BRONX RIVER

The Conservation Crew of the Bronx River Alliance has also planted over 15,000 trees, and restored more than 60 acres of parkland along the Bronx River since 2005
Annual Report (Bronx River Alliance, 2006b)

COMPLETED HUNTS POINT RIVERSIDE PARK

«Hunts Point Riverside Park is a gateway to the revitalized Bronx River, a major connector to the Bronx River Greenway, and a home to kayakers, canoers, and paddlers from across the city. This park, once an illegal dumping ground, has been transformed into a waterfront oasis, with a pier for fishing, and a kayak and canoe launch. Even the spray shower and playground takes the shape of built-in canoes, as kids can safely play in the "water" on hot days».
www.nycgovparks.org

LOCAL ENVIRONMENTAL GROUPS FIGHT FOR CLEANER WATERWAYS

«The beaver that's building a lodge on the Bronx River may herald the rebirth of Borough waterways, but the rivers still have a long way to go before they're clean, thanks to the city's outdated sewage system. Heavy rainwater routinely overwhelms city sewage that are built on a model that sends more than 27 billion gallons of sewage and stormwater into rivers and streams each year. "When they opverflow, it's completely disgusting. You can see it, you can smell it" said Irene Dominguez of Rocking the Boat, an organization the leads canoeing and kayaking trips on the Bronx River for students. New York City has been ordered by the state to finally comply with the 1072 Clean Water Act and clean up its waterways. In response, the Department of Environmental Protection has developed a plan to fix the sewage problem by building giant holding tanks that will hold stormwater underground and realize it into water ways slowly according to a report by Riverkeeper, a nonprofit environmental organization in Manhattan. But a new coalition of environmental organizations, headed by the Bronx River Alliance, wants the city to use more grassroots methods for reducing the stormwater and sewage overflow. "Stormwater is an issue that affects a lot of people, but people don't' realize it", said Teresa Crimmens, an environmental coordinator for the Bronx River Alliance and the head of the new Stormwater Infrastructure Matters, SWIM, coalition. SWIM is asking the mayor to consider a collection of smaller, more environmentally friendly options, like planting more rooftops gardens and small parks to absorb the water. Such solutions would have added benefits like cooling buildings and cleaning the air».
*Bronx Beat (*April 2, 2007)

BRONX RIVER FOREST IS BORO'S HIDDEN TREASURE

«Some may have trouble seeing the trees in the Bronx River Forest, the city's Park of the Month for February. [...] Two miles north of the Bronx Zoo, at a dead end on 204th Street in Norwood, piles of garbage bags mark the entrance to a sanctuary of old growth red and silver maples with an increasing variety of wildlife roaming free in 19 acres of urban forest. For those who live nearby, and the intrepid few with good maps, the Bronx River Forrest offers a rare glimpse into the wooden manors from the borough's past. When the forest opened to the public in 2005, it was the borough's first completed section of the Bronx River Greenway, a proposed footpath connecting communities along the 23 miles of the riverbank in the Bronx and Westchester Country».
*Bronx Beat (*February 26, 2007)

CONCRETE PLANT TO BECOME PARK

«It's hard to imagine a waterfront promenade along Bronx River near the Sheridan Expressway, especially where the water's color and texture resembles the coolant fluid from a car engine. But try telling that to the young leaders of the Youth Ministries for Peace and Justice (YMPJ), who for nearly a decade have tussled with city government and the Department of Transportation and other state officials, in an effort to transform an abandoned concrete plant into Concrete Plant Park. It's been an uphill battle, but in January 2005, the Parks Department proudly featured the design of the ribbon of riverside land between Westchester Avenue and the Bruckner Expressway as its project of the month».
The Hunts Point Express (May 2, 2007)

WILL APARTMENTS RISE ON BRONX RIVER GREENWAY?

«The Bloomberg administration is eyeing the greenway for river-view apartments to attract families earning from $60,000 to $145,000 to Hunts Point. A report quietly submitted to the Bloomberg Administration last May calls for a new village to rise on the shores of the Bronx River, attracting

wealthier residents than now live in Hunts Point while increasing the neighborhood's population by as much as 7,000 residents. Titled "Visions for New York: Housing and the Public Realm," the plan was crafted by the architectural firm Alex Garvin & Associates at the request of the city's Economic Development Corporation. The Bloomberg Administration estimates the city's population will swell to 9 million people by 2030. The Garvin report was commissioned to study where New York could accommodate new housing. It recommends lining the Bronx River Greenway, a park still in the planning stage, with high-rise apartments up to eight stories tall. [...] The Garvin Report calls the current plan for the Bronx River Greenway "strong but one-dimensional." Constructing apartments along the Greenway would attract residents, and the residents' proximity to the park would deter crime, the report argues. The area would become "a spectacular new community," it concludes. [...] Only about one in 10 families in the area earn more than $60,000, according to the Department of City Planning, which says half the 13,181 apartments in Hunts Point and Longwood rent for between $300 and $750, and only 384 for between $1,200 and $2,500. "What's concerning about the report in general is the lack of thought in housing," says Menaka Mohan, the South Bronx Greenway Coordinator for Sustainable South Bronx. "There's not one word of affordable housing in the report, and 40% of Hunts Point is below the poverty line." Mohan said she was also disappointed that none of the community advocates who've worked over 10 years to create the Greenway were consulted for the report».

The Hunts Point Express (May 2, 2007)

BIODIVERSITY IN THE BRONX RIVER

«The New York City Department of Parks & Recreation Natural Resources Group (NRG) and the Connecticut Department of Environmental Conservation reintroduced alewife into the river, in partnership with the Bronx Zoo, and in April 2009, the first alewife was netted as it migrated upstream to spawn.

The Bronx Times (2010)

2008

$10 MILLION FACELIFT FOR CONCRETE PARK

«A $10 million facelift will soon transform a facility that's camouflaged the Bronx River's beauty for more than 20 years. Resting on the western bank of the waterway in the south Bronx, Edgewater Concrete Plant was a functioning cement manufacturing facility until it closed in 1987, leaving the property in Crotona Park East to fall by the wayside. Now, through a partnership with community and public agency partners, the Parks Department and Bronx River Alliance are in the second phase of reestablishing the area's elements into a naturalistic attraction for the borough's outdoor adventurers. [...] Maintaining half of the existing structures as relics of the site's industrial history, Concrete Plant Park will offer a 2.7-acre waterfront space to the already established seven-acre section of the Bronx River Greenway».

The Bronx Times (2008)

PUBLIC AWARENESS BY BRONX RIVER ALLIANCE

Bronx River Alliance worked with 176 educators and 625 students to enrich their educational experience by relating their lesson plans to the Bronx River. brought 972 volunteers to the river to participate in our work.

Annual Report (Bronx River Alliance, 2008)

BRONX RIVER ALLIANCE'S ECOLOGY PROGRAM WITH VOLUNTEERS

Planted 1370 trees, 1049 shrubs, and 1192 other herbaceous plants. Stabilized 240 feet of stream bank with coir logs. Removed 18 river blockages, 17.4 tons of trash, and 83 tires. Placed more than 350 educational storm drain markers in the Bronx River sewer sheds.

Annual Report (Bronx River Alliance, 2008)

CONSTRUCTION COMPLETED AT MUSKRAT COVE AND RE-OPENED TO THE PUBLIC

Annual Report (Bronx River Alliance, 2008)

2009

BRONX RIVER ALLIANCE'S ECOLOGY PROGRAM WITH VOLUNTEERS

Planted 580 trees, 199 shrubs, and 128 other native plants. Stabilized over 20 feet of stream bank Removed 10 river blockages, 17.4 tons of trash, and 2433 tires. Removed over 30,850 square feet of invasive plant species. Installed 5 rainbarrels to capture and use stormwater on site. Worked towards reconnecting migratory fish with their upstream spawning habitats.
Annual Report (Bronx River Alliance, 2009)

HUNTS POINT PARK WINS BRUNER AWARD

«It had once been a barren, illegal dumping ground. Now, after opening in the spring of 2007, Hunts Point Riverside Park has won a national award for its replicate-able green design. Situated between a recycling plant and the world's largest food distribution center, the park was the brainchild of community groups like Sustainable South Bronx, Bronx River Alliance, The Point, and Rocking the Boat».
«On July 7, 2009 Hunts Point Riverside Park was awarded the national Rudy Bruner Award for Urban Excellence silver medal. As a silver medal winner, Hunts Point Riverside Park received a $10,000 prize which the Bronx River Alliance will invest in the continued development of the Bronx River Greenway, a pedestrian and bike path linked by a set of linear parks along the Bronx River. Opened in Spring 2007, the 1.4 acre Hunts Point Riverside Park sits on the site of a former vacant lot and illegal dumping ground which was revitalized by the community».
The Bronx Times (2009)

IMPLEMENTATION OF THE BRONX RIVER GREENWAY

Implementation of Greenway, construction underway at West Farms Rapids and 211th Street entrance to Shoelace Park and 219th Street entrance to Shoelace Park.
Annual Report (Bronx River Alliance, 2009)

PUBLIC AWARENESS REGARDING THE BRONX RIVER

Worked with 133 educators and 797 students to enrich their educational experience by relating their lesson plans to the Bronx River.
Annual Report (Bronx River Alliance, 2009)

COMPLETED CONCRETE PLANT PARK

«The waterfront park, completed in September 2009, contains facilities supporting and linking existing and planned multi-use pedestrian greenways with other off-road, on-road bicycle/pedestrian routes. Construction of a new canoe/kayak launch provides an access point to the Bronx River Corridor along the park's shoreline. The park was also enhanced through the creation of a waterfront promenade, a reading circle, and inviting park entrances at both Westchester Avenue and Bruckner Boulevard».
http://www.nycgovparks.org
«A former industrial site along the Bronx River has been transformed into a park. After a decade of community push, Concrete Plant Park, the newest link in the Bronx River Greenway, officially opened last month between the Bruckner Expressway and Westchester Avenue».
http://www.bronxnewsnetwork.org/
«The Concrete Plant Park adds seven acres to the Bronx Park System and the Bronx River Greenway. The $10 million capital project was funded by Congressman José E. Serrano, mayoral funds, the Bronx Borough President, Croton Mitigation Funds, and a Recreation Trails Grant from the New York State Office of Parks, Recreation, and Historic Preservation and water quality monitoring activities that have kept the park in active use. Now residents of the Bronx have access to a beautiful park featuring remnants of the concrete plant towers preserved as sculptural elements, a boat launch, bench area, restored salt marsh, entrance plazas at Bruckner Boulevard and Westchester Avenue, and the first new segment of the Bronx River Greenway. Concrete Plant Park, a segment of the Bronx River Greenway, is seven (7) acres in size. The park is situated along the western shore of the Bronx River in the Crotona Park East section of the Bronx, between Westchester Avenue to the north and Bruckner Boulevard to the south. To the west lies the Amtrak Railroad and the Sheridan Expressway (I-895)».
The Bronx Times (2009)

SETTLEMENT MONEY TO CLEAN BRONX RIVER

Nearly $2 million of a settlement between state officials and alleged polluters has been allocated to clean up the Bronx River.

The Bronx Times (2009)

POLLUTERS WILL PAY TO KEEP BRONX RIVER CLEAN (ALSO WITH GREEN ROOFS)

«The Point Community Development Corp. will be able to plant a green roof to trap rainwater and cool its building on Garrison Avenue, and the Bronx River Alliance will begin a pilot program to cut down on the amount of stormwater contaminating the Bronx River, thanks to funds from polluters in Westchester. The money is part of a $7 million settlement won by Attorney General Andrew Cuomo that ended the illegal discharge of raw sewage into the Bronx River. Cuomo announced on Aug. 27 that his office was allocating $1.8 million to seven organizations and government agencies for programs that capture stormwater before it reaches the river. When it rains or when snow melts, New York City's sewers are unable to handle all the water, so cigarette butts, antifreeze, pesticides and everything else that accumulates on streets and in parks, along with what is flushed from toilets and washed down sinks runs into the city's streams, rivers and bays. The Point, which will get $149,793 to install a green roof that will absorb rainwater, will also use the roof as a demonstration project and outdoor classroom. The Bronx River Alliance plans to test the idea of capturing rainwater, storing it and using it later to water gardens and lawns. The $117,500 grant will allow it to "harvest" rainwater from the roofs of five Bronx buildings, "from a playground parkhouse to a private home," said Linda Cox, the Alliance's executing director. The organization also plans to "begin to correct the damage that excessive water from a pipe causes by eroding the riverbank," Cox said. The other recipients of funds from the settlement include the New York Botanical Garden, which will use a variety of methods to reduce and treat water flowing from four existing stormwater discharge pipes on its grounds, and the Parks Department, which will create living catchbasins of plantings in Shoelace Park as part of the Bronx River Greenway project».

The Hunts Point Express (August 27, 2009)

SOUND VIEW PARK OPENS

«Called the "Gateway to the Bronx River," Soundview Park is situated where the Bronx River opens into the East River. When the City of New York acquired the original 93 acres of land for this park in 1937, the entire area was composed of marshland. For a good chunk of its history, Soundview Park was a partially developed park built on a landfill. The southern third was once open water, while the remaining 2/3 of the park was tidal marsh, complete with three streams. Landfill operations began in the 1920s and lasted forty years. The landfill increased the height of the shoreline up to 30 feet above the marsh elevation, decreasing public access to the water. Parks has worked to create a pedestrian path system that connects you with access points to the water along the Bronx River, providing overlook seating areas and greatly improving the your ability to traverse the edge of the river».

The Bronx Times (2009)

2010

GRANT FOR EDUCATION ALONG THE BRONX RIVER

Verizon's $18,000 grant to the Bronx River Alliance to support education along the Bronx River Greenway.

www.bronxnewsnetwork.org

MILLIONS GRANTED TO CLEAN BRONX RIVER

«Efforts to clean up the Bronx River have gotten a boost, thanks to $2.5 million in grants going to organizations and municipalities trying to fight water pollution».

*The Bronx Time*s (2010)

LIFE IN THE BRONX RIVER

«Staff from the Bronx River Alliance and Queens College netted a 255 mm male alewife on the Bronx River. The capture marks the second year in a row that this species of fish has been observed in the river since the species was reintroduced in four years ago. "Finding alewife in the river again this spring is

evidence of the reintroduction program's success and a testament to the improvements made by ongoing restoration efforts along the Bronx River," said Linda Cox, Bronx River Alliance Executive Director/NYC Parks Bronx River Administrator. Like salmon, alewives (Alosa pseudoharengus) are anadromous fish, meaning they are born in fresh water, migrate to the ocean for their adult life and return to the place where they were born to spawn. Experts believe that alewives were once abundant in all tributaries entering Long Island Sound, including the Bronx River, but that dam construction starting in the 1600's likely prevented their yearly migration back to the freshwater reaches of the river. In 2006, the U.S. National Marine Fisheries Service declared alewife and blueback herring, collectively known as river herring, as "species of concern." Both are considered an important part of the energy and food chain in a healthy river ecosystem and are a critical part of the diet of birds, mammals, and large sport fish in streams, estuaries and the ocean. [...] Under the direction of NRG, the Bronx River Alliance, and other partner organizations installed a trap in River Park near 180th St. in the Bronx on April 1, 2010, to determine the presence of alewife heading to spawn this year. Now that one has been caught, the trap will be removed, to minimize mortality to other returning fish. The presence of alewives, together with the appearance of Jose the beaver in 2006, speaks to the remarkable ability of a heavily urbanized waterway to support a diversity of life. It also testifies to the resurgence in the overall health of the river that has occurred as a result of work by community members, local non-profits, and government agencies. The return of the alewife is an example of the positive benefits that occur when this partnership mobilizes».
The Bronx Times (2010)

BREAKING GROUND FOR A SLIVER OF A RIVERSIDE PARK

«Local Bronx politicians and community groups broke ground Thursday in a $17 million project to restore Starlight Park, a derelict sliver of land running between the Bronx River and the Sheridan Expressway. The two-year restoration of the park, over a decade in the works, is expected to include the building of new playgrounds, a soccer field, a basketball court and paths for walking and cycling. "This is election year and there are many candidates saying government doesn't work," said New York State Assemblyman, Michael Benjamin. "Well, tell them about this place." Starlight Park's restoration was set in motion by a coalition of Bronx-based non-profit groups and local and state agencies as a part of a larger scheme to redevelop neglected land along the Bronx River. "This is the end or maybe the beginning of a long journey to have a park that will be better used by young people," said David Shuffler, director of the Youth Ministries for Peace Justice, a Bronx-based group that spearheaded the restoration of the park. The park project is one of the final installments in the Greenway plan, a 20-mile long green corridor along the Bronx River that will connect the East River to Westchester County by bike paths.[...] The Bronx Greenway initiative was launched in 2006 by the New York Economic Development Corp. in collaboration with the Bronx River Alliance, a non-profit group pushing for the rejuvenation of the river. [...] Though local community groups had been calling for the restoration of the park for years, the city only began to plan and raise money for the project in 1999. In 2004, just after beginning the initial excavation, work crews struck rusted remnants of a Con Edison gas plant that had formerly occupied the site. Soil testing found high levels of contaminants, including benzene and other toxins, which put the project on hold until the site could be cleaned up. Though Con Edison has subsequently decontaminated the site, the Bronx River area still faces many challenges. Decontamination efforts of Starlight Park found no less than 22 cars lodged in the riverbed close by. The river itself is also contaminated by raw sewage, which overflows into it on rainy days. Yet, despite the persistent environmental problems surrounding the river, officials in charge of the restoration of Starlight Park have worked to maintain high standards regarding environmental sustainability, even earning an Evergreen award, the highest certification under the New York Transport Department's criteria for environmental friendliness. The park's new environmental credentials will include rainwater retention basins, the use of recycled materials in park construction and the planting of nearly two acres of wildflowers. "That's what this is all about: bringing green back to the Bronx and making the Bronx a greener place," said Crowley. Local officials also praised the project for creating approximately 50 new jobs during the first phase of construction. Yet, some at the groundbreaking had more lighthearted considerations in mind when discussing the new park's benefits to the community. "Do you know how many first kisses will happen here?" asked State Assemblyman, Marcos Crespo».
The Bronx Ink (2010)

WATERBODY/WATERSHED FACILITY PLAN BRONX RIVER

(DEP, 2010)

SHOELACE MASTER PLAN

«The Shoelace Park master plan, issued in February, triggered several positive initiatives for this long-overlooked, one-and-a-half-mile park. It galvanized a group of community residents to form Friends of Shoelace Park and begin caring for and advocating for the park. It set the vision and priorities for fund-raising. Our first wins are an Environmental Protection Fund grant for path and planting improvements and funding from several sources for stormwater capture and erosion control. It enabled us to direct improvements to key locations in the shortterm and envision the long-term future of this park. Small wonder, then, that the plan won four awards: from the NYC Design Commission, from The Waterfront Center, and from the ASLA New Jersey and New York chapters».

Annual Report (Bronx River Alliance, 2010)

BRONX RIVER ALLIANCE'S ECOLOGY PROGRAM WITH VOLUNTEERS

The Bronx River Alliance expanded its use of volunteers substantially. The total number of volunteers grew by 50%. They helped at every one of our Bronx River Alliance events, paddling trips, bike rides, Bronx River Rambles, Million Trees plantings, It's My Park Days, and Coastal Clean-up Day.

Annual Report (Bronx River Alliance, 2010)

GREENWAY IMPROVEMENTS, BRIDGE AND PARKLAND

Construction of new parkland on the east bank and a renewed Starlight Park, with a striking blue bridge linking them.

Annual Report (Bronx River Alliance, 2010)

GREEN INFRASTRUCTURE ON THE BRONX RIVER

«The Conservation Crew has now installed six rain barrels at homes, offices and parks. In Shoelace Park, a rain garden and swale, augmented by a 6,000- gallon underground tank, collect storm flows from 219th St. Another system is under construction at the park's entrance at 211th St, and two-three more projects are funded. A greenstreet collects water at White Plains Rd.».

Annual Report (Bronx River Alliance, 2010)

2011

OPENING SOUNDVIEW PARK FIELD HOUSE

«The new Soundview Park Field House will act as a base of operations for maintenance of neighborhood parks, and also provide much-needed bathrooms for users of the adjacent ballfields and nearby Soundview greenway," said Commissioner Benepe. "This new facility comes at a historic time for the Soundview Park. As part of the Mayor Bloomberg's PlaNYC program this local gem, long known for its great views of the Long Island Sound, will be transformed into a regional destination that will attract visitors from the neighborhood, the Bronx, New York City and beyond." Thanks to $4.015 million allocated by Mayor Bloomberg and $1.72 million in federal transportation grant funding the new Soundview Park Field House will be the headquarters of Parks Department operations in Bronx Community Board 9. It includes a garage, offices, locker room, and storage space. The facility also contains public restrooms and a multipurpose meeting room».

www.nycgovparks.org

SOUNDVIEW GREENWAY BIKEPATH COMPLETED

«The Soundview greenway bikepath was completed in 2011, offering the public a continuous riverside route along the edge of the park. The Greenway's first two orientation signs (funded by Verizon) were also installed at the entrance to the new bikepath and at the improved 222nd Street entrance to Shoelace Park».

Annual Report (Bronx River Alliance, 2011)

CLEANING UP AFTER IRENE

«A handful of volunteers worked to free all manner of plastics from the shoreline as part of a coastal clean up led by environment agency the Bronx River Alliance. Who cleans the Bronx Greenway, a new stretch of coastline pathways in Soundview? No one, according to the state department for parks. That job falls to volunteers who, after tropical storm Irene, are finding the task a little too much to handle. The Greenway was opened in 2008 and has been in a state of disorder since Hurricane Irene, which kicked up storm surges between seven and 15 feet, submerging large chunks of the coastline. The surges dumped plastic packaging from Hunts Point Terminal Market in the backyards of Soundview residents and the paths surrounding Soundview Park. According to the state Parks department, the Greenway is the responsibility of local park rangers who in reality have little time to dedicate to clean-up. Without volunteers like the Vegas family, the contaminated coastline would be left to fester».
The Bronx Ink (2011)

BRONX RIVER ALLIANCE TURNS 10

«Last night, the Bronx River Alliance celebrated ten years of progress on the Bronx River by honoring four key founders: Majora Carter, Jenny Hoffner, Alexie-Torres-Fleming and Dart Westphal. With countless others, the four founders shared their dreams and marshaled their forces to reclaim the Bronx River from a degraded, nearly invisible condition. Their efforts are a testimony to the power of a community-based coalition to effect real, lasting, and meaningful change».
The Bronx Times (2011)
«When Bronx River Restoration, the grassroots organization that evolved into the Alliance, began clean-up efforts in 1974, its volunteers pulled enough shopping carts out of the water to equip a supermarket, and enough washing machines and refrigerators to stock a Best Buy. In its 10 years of work, the Alliance has removed 21 cars and 15,000 tires from the river, Kellie Terry-Sepulveda, the chair of the Alliance's board, told the crowd assembled at the New York Botanical Garden on Sept. 27 to celebrate the anniversary. In addition, she boasted, the Alliance has planted 85,000 trees and shrubs, used the river as a science lab to teach 6,500 students, helped to create two new parks–Concrete Plant and Hunts Point Riverside–for a Hunts Point starved for open space, and brought thousands to the river for bike trips, hikes and canoe paddles. The river, which was once so foul that most fish could not survive in it, is now teeming with life. Egrets and osprey hunt it. The famous Bronx beaver lodges in it. The transformation of the river is a testament to the unshakeable optimism of New Yorkers. Who else would start trying to revive a dying river while their city was going broke and their neighborhoods were in flames? Their success contradicts the too-widespread notion that government can do nothing good. Without the $120 million in federal funds–much of it obtained by Rep. Jose Serrano–for the Bronx River Greenway and the river's restoration, the river might still be a polluted backwater».
Hunts Point Express (2011)

CONCRETE PLANT PARK NAMED A "FRONTLINE PARK"

«Concrete Plant Park in New York City has been named a "Frontline Park" by the national urban park advocacy organization City Parks Alliance. Each month, City Parks Alliance recognizes two "Frontline Parks" to promote and highlight inspiring examples of urban park excellence, innovation, and stewardship across the country. The program also seeks to highlight examples of the challenges facing our cities' parks as a result of shrinking municipal budgets, land use pressures, and urban neighborhood decay. "We selected Concrete Plant Park for recognition because it exemplifies the power of public-private partnerships to create and maintain urban parks that make our cities sustainable and vibrant" said Catherine Nagel, Executive Director of City Parks Alliance. "We hope that by shining the spotlight on this park that we can raise awareness about both the necessity and the promise of these kinds of partnerships to spur investment in our nation's urban parks." A signature project on the Bronx River Greenway, Concrete Plant Park highlights a unique partnership between public agencies and communities to reclaim the waterfront for public use. The seven-acre park is sited on a former concrete plant, which was in operation from 1945 to 1987. After the plant closed in the 1980s and the city seized the property, Concrete Plant Park was saved from the auction block by community residents, led by Youth Ministries for Peace and Justice. These efforts were

supported by The Point Community Development Corporation, community boards, elected officials, and the newly-formed Bronx River Alliance who saw the site's potential as a waterfront park. Revitalization began through re-establishing salt marshes on the riverbank once strewn with trash and tires, as well as reintroducing the public to the site through sponsoring community festivals and leading hundreds of residents out on the Bronx River to canoe and kayak. Today, the park boasts the stabilized remnants of the concrete plant, acres of open lawn, winding paths, game tables, a waterfront promenade, and canoe/boat launch facilities».

The Bronx Times (2011)

2012

CITY SEEKS BRONX RESIDENTS' VIEWS ON GREENWAYS

«Community advocates from the Bronx River Alliance, Transportation Alternatives, Bronx Health Reach and other local organizations gathered on the corner of Whitlock Avenue and Westchester Avenue with helmets on their heads and their bicycles by their sides. Their mission was to document the conditions on the roads linking Hunts Point Riverside Park, Concrete Plant Park and the soon-to-be-opened Starlight Park. For years, these groups have been asking the city's Departments of Transportation and City Planning to improve the greenways within the parks. Now, city officials finally seem to be paying attention – and in an ongoing series of meetings, they've been asking the community firsthand what they want for the greenways. "A part of the issue is that the on-street connections haven't been properly connected," said Devona Sharpe, greenway coordinator for the Bronx River Alliance. "And the condition of the street itself, it's not inviting to users." The most direct path connecting the three different parks follows a north-south route along the Bronx River, with a U-turn around the busy Bruckner Expressway. From Hunts Point Riverside Park to Starlight Park, pedestrians and cyclists have to navigate through difficult terrain simply to get from one street to the next, as well as from one park to the next. Tree roots pushing through cracked sidewalks, shards of glass on the road and nonexistent bike lanes are just some of the physical barriers on the roads».

The Bronx Ink (2012)

NYC PARKS CUT RIBBON ON NEW ENTRANCE TO SHOELACE PARK

«The new entrance to shoelace park on East 211 Street and Bronx Park Boulevard features sitting areas, native trees, plants, and shrubs, as well as green infrastructure elements. The link between Bronx River Park and Shoelace Park has finally been tied. Parks Commissioner Adrian Benepe joined with other officials earlier this month to cut the ribbon on the new 211th Street entrance to the Bronx River Greenway on Wednesday, July 18. [...] Joining Benepe were Assemblyman Jeffrey Dinowitz along with members of the Bronx River Alliance, Friends of Shoelace Park, and Bronx Community Board 12. "Since 2002, the Bloomberg administration has reclaimed under-used and often dilapidated waterfront to create first-rate parks in all five boroughs, but nowhere has the transformation been more dramatic than here along the Bronx River," Benepe said. "Thanks to the Bronx River Alliance and all of our partners, both in the community and in government, we have been able to commit more than $100 million to restore the Bronx River, and build parks and a greenway around it," he said. "This new entrance is the latest improvement and will make Shoelace Park more attractive and more accessible to pedestrians, cyclists and boaters alike." »

The Bronx Times (2011)

NEW BRONX RIVER PARKS ARE BEAUTIFUL BUT DANGEROUS TO REACH

«One green patch at a time, the southern portion of the Bronx River has undergone an eye-catching makeover in recent years, from an industrial no-man's land to an increasingly people-friendly waterfront. [...] But to the dismay of many cyclists and pedestrians, the green transformations have mostly stopped at the edges of these new parks, forcing visitors to navigate crumbling sidewalks and busy roads on their way in and out. "It's pretty dangerous," said Elizabeth Hamby, a Bronx artist and cyclist who with other advocates has pressed the city to improve access to the new parks. "What's the point of having a park if nobody can use it?" A team of cycling advocates from the Transportation Alternatives Bronx Committee recently took an excursion around the parks, which are wedged between the Bronx River on the east and an Amtrak line and the Sheridan Expressway on the west. The

group documented the surrounding sidewalks and roads, which they say are unsafe and intimidating for non-motorists. The southern entrance to Starlight Park, for instance, faces a traffic circle where cars zoom from Edgewater Road onto the Sheridan Expressway».
www. DNAinfo.com (2012)

STARLIGHT PARK REOPEN, NYC AND LOCAL GROUPS

«The park, thanks to the work of grass-roots groups and New York City and State agencies, has been remade into a green gem and will soon reopen after more than a decade. It's part of a trail known as the Bronx River Greenway, which was designed to connect the tip of the South Bronx and the shaded, grassy parks up in Westchester County, with parks, pedestrian bridges and bike paths along the way». http://cityroom.blogs.nytimes.com/ (2012)

GREENWAY BETWEEN 180TH AND BRONX RIVER PARK, BRONX RIVER ALLIANCE AND DEPARTMENT OF PARKS AND RECREATION

«The new trail is part of the Bronx River Greenway and crosses under the Bronx River Parkway. (9/24/13). A scenic new trail near the Bronx Zoo officially opened Tuesday to pedestrians and cyclists. The new trail is part of the Bronx River Greenway and crosses under the Bronx River Parkway. A ribbon-cutting ceremony took place today at 180th Street in West Farms to unveil the $2.7 million project. The Bronx River Alliance worked with the city Department of Parks and Recreation to complete the mile-long trail. The greenway will be 23 miles long when completed, says a member of the Alliance».
http://bronx.news12.com (2012)

NEW ENTRANCE BRONX RIVER PARKWAY

Link between Bronx Park and Bronx River "Shoelace" Park, and a gateway to the Bronx River Greenway
www.nycgovparks.org

NATIONAL WATER TRAIL - BRONX RIVER ALLIANCE

Bronx River was designated as a National Water Trail by the National Park Service.
Annual Report (Bronx River Alliance, 2012)

BRONX RIVER GREENWAY STAYS CUT IN TWO

«A broken promise will break the Bronx River Greenway into two pieces, denying tens of thousands of Bronxites access to newly-built parks along the river, the advocacy organizations that crusaded to build the parks charge. The Bronx River Alliance, Youth Ministries for Peace and Justice, Sustainable South Bronx, Rocking the Boat and The Point CDC are backing a petition campaign to persuade the state Department of Transportation to build three bridges in the vicinity of Starlight Park, as it had committed to do a decade ago. Without them, people living north of the park will not be able to reach Concrete Plant Park and Hunts Point Riverside Park from the Greenway and Hunts Point and Longwood residents will not be able to travel north on the Greenway to Starlight Park, the Westchester border and beyond. But the State Department of Transportation, which had committed to building the bridges–one from the Southern end of Starlight park, one north of Westchester Avenue and the third over the Amtrak line at 172nd Street near Bronx River Avenue–says it can no longer afford the $20 million price tag».
Hunts Point Express (2012)

2013

NEW STREET FIXES AIM FOR SAFER, EASIER ACCESS TO TWO BRONX RIVER PARKS

«This month, the city Department of Transportation started to install long-sought bike lanes, curb extensions and crosswalks around the entrances of Starlight and Concrete Plant parks to make access to each easier and safer. While advocates see the fixes as short-term improvements until a real connection is built between the parks, users are already welcoming the changes».
www.dnainfo.com (2013)

STARLIGHT PARK OFFICIALLY REOPENS, BUT REMAINS DISCONNECTED TO GREENWAY

«After 10 years and $18 million, Starlight Park officially reopened Friday, an emerald oasis on the bank of the Bronx River replacing cracked concrete and contaminated soil. The revamped 13-acre park now features a new synthetic-turf ball field, basketball courts, playgrounds, a picnic area, paved waterfront pathways and floating docks to launch canoes and kayaks. "Honestly, it's a beauty," said Juan Rivera, 24, who took his 3-year-old son to the park Friday. Most mornings, Rivera arrives by 9 a.m. to play basketball on the bright green court. "You can see ducks on the river then," he said. "It's so peaceful." But there is a problem – the park's renovation is incomplete, and a timeline and full funding for the final phase of construction have been elusive». The park sits in a central spot on a borough-long trail of paths and parks, but a plan to build three pedestrian bridges that would connect it to the Bronx River Greenway and help residents across the river access the park has stalled. [...] The state Transportation Department, which controls Starlight Park, had agreed not only to overhaul the park, but also to connect it to the Bronx River Greenway, a long-planned riverfront route from Westchester County to the southern tip of The Bronx. "It's right smack in the middle of the greenway," said Linda Cox, executive director of the Bronx River Alliance. "It's a very critical link." Designs were drawn and funding was in place to build three bridges to link Starlight to another park on the greenway and to add 11 acres of new parkland on the eastern side of the River. But the plan hit a snag: the state DOT could not reach an indemnity agreement with Amtrak that would allow it to build one of the bridges over a train track. As a result, after the site was remediated, Starlight Park was renovated, but the bridges were not built nor was the vacant land developed. Without the bridges, people following the greenway north from Concrete Plant Park to Starlight Park must cross a busy intersection and travel along a narrow service road next to the highway that lacks a bike lane. "Multiple factors make [the road] undesirable even as a temporary greenway connection," Bronx biker Richard Gans said last fall. "It's not the kind of thing you'd feel comfortable taking your kids on." In addition, construction on a building in Starlight Park that will become the Bronx River Alliance headquarters and will feature a comfort station has yet to begin and will not likely finish until 2015».

www.dnainfo.com (2013)