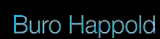


THE BIG “U”

REBUILD BY DESIGN

Promoting Resilience Post-Sandy Through Innovative Planning, Design, & Programming



THE BIG “U”

HOW CAN THE CITY
PLAN FOR IT'S
RESILIENCY WHILE
ALSO PLANNING FOR
IT'S FUTURE GROWTH?

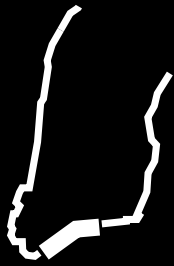


...CAN PROTECTIVE
MEASURES BECOME THE
CITY'S ATTRACTIONS?



...WHICH BOTH
PROTECT AND SERVE
AS UPGRADES, RATHER
THAN DOWNGRADES. FOR
THE SOCIAL AND URBAN
FABRIC?



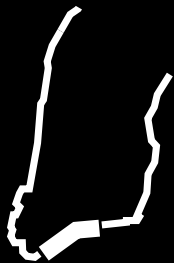


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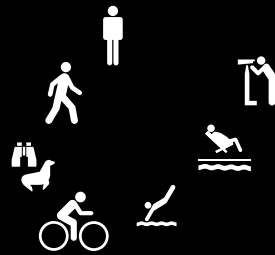


RESILIENCY INFRASTRUCTURE

PEOPLE!

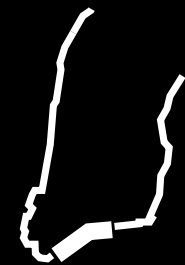


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RESILIENCY INFRASTRUCTURE

PROGRAM



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RESILIENCY INFRASTRUCTURE

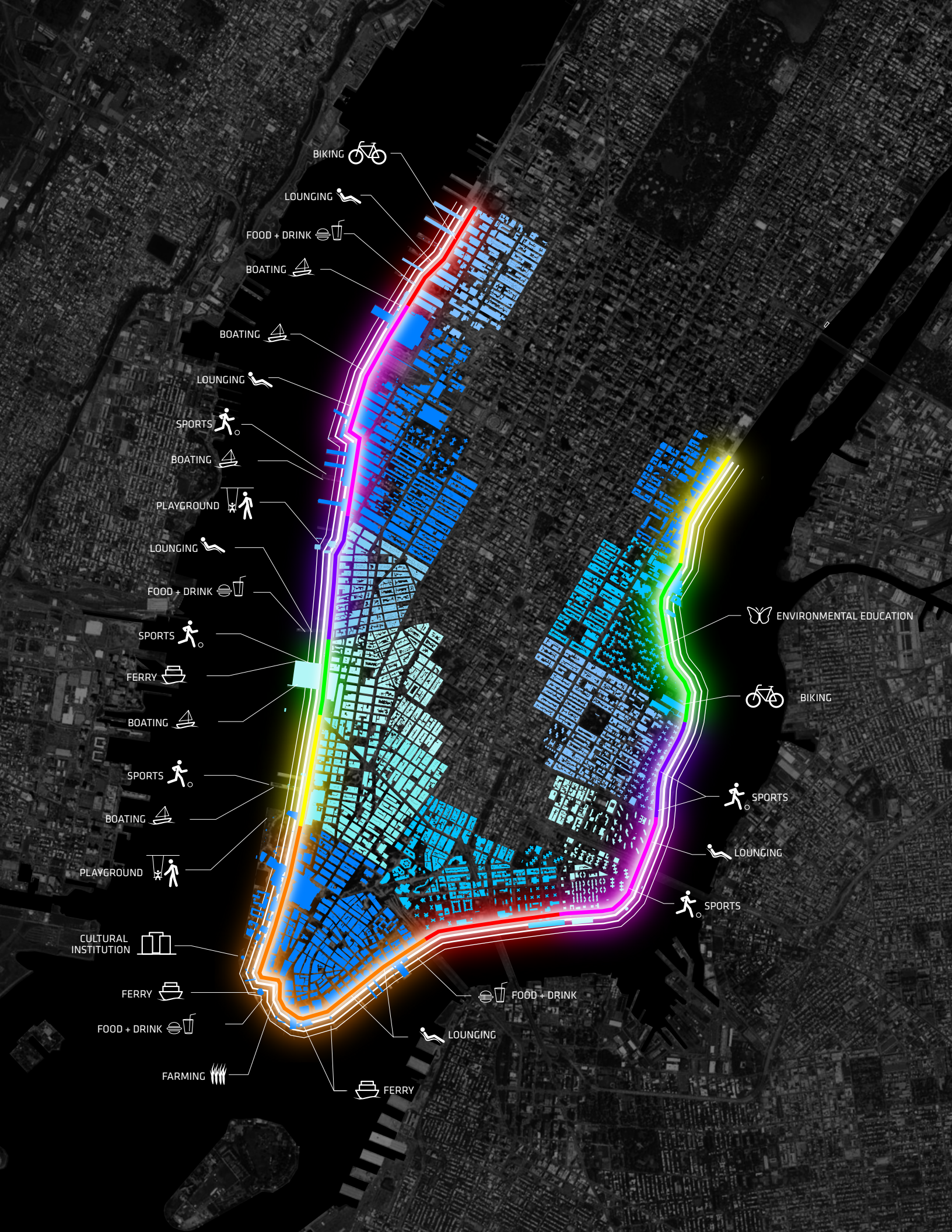
COMMUNITY



+



Intellectual Property Disclaimer:
All Rights Reserved BIG Team



BIKING



LOUNGING



FOOD + DRINK



BOATING



BOATING



LOUNGING



SPORTS



BOATING



PLAYGROUND



LOUNGING



FOOD + DRINK



SPORTS



FERRY



BOATING



SPORTS



BOATING



PLAYGROUND



CULTURAL INSTITUTION



FERRY



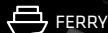
FOOD + DRINK



FARMING



FERRY



LOUNGING



FOOD + DRINK



ENVIRONMENTAL EDUCATION



BIKING



SPORTS



LOUNGING

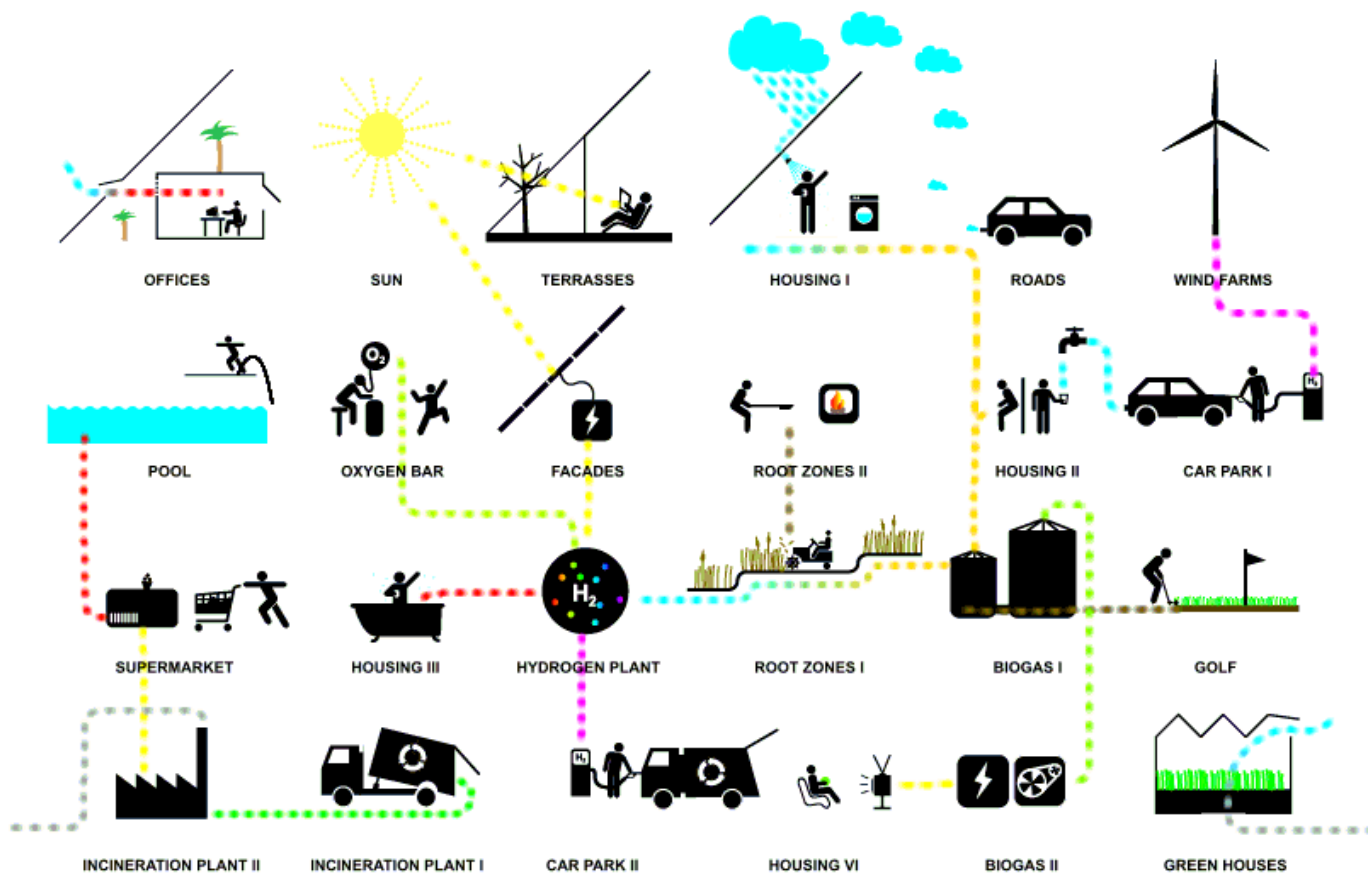


SPORTS



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Harbour Bath



Danish National Maritime Museum



**Brooklyn Bridge Park Pier
& Viewing Platform**



West 57th

BIG Team is led by BIG Bjarke Ingels Group and includes co-lead One Architecture (water & urbanism), Starr Whitehouse (landscape architecture), Buro Happold (engineering & sustainability), Level Infrastructure, (infrastructure engineering), Arcadis (Hydrological Engineering), James Lima Planning & Development (finance & economics), Green Shield Ecology (ecology), AEA Consulting (arts & cultural planning), Project Projects (graphic design), and the School of Constructed Environments at Parsons The New School.

BIG Team brings together significant international experience in Denmark and the Netherlands with a deep understanding of this Sandy region's economic, political and social environment. Team Leader, BIG, is a group of architects, designers and thinkers operating within the fields of architecture, urbanism, research and development with offices in New York City, Copenhagen and Beijing. For over a decade, BIG has been building a reputation as one of the most creative and intelligent architecture offices in the world. Our projects are also widely recognized as sophisticated responses to the challenges of urban development that create dynamic public spaces and forms that are as programmatically and technically innovative as they are cost and resource conscious.

The team's approach is rooted in the two concepts of social infrastructure and hedonistic sustainability. By proactively cross-breeding public infrastructure with social programs, the team will inject new urban life forms into our cities. BIG is committed to designing cities and buildings that are both ecologically and economically profitable—where sustainability is not a moral dilemma, but approached as a design challenge.

THE BIG U - EXECUTIVE SUMMARY



THE BIG U

THE BIG U PRINCIPLES

The principles behind the design of the Big U are:

- Flood protection and preparation are not a mere line of defense; they must take entire neighborhoods and districts into account.
- The design should be community-driven.
- The system should be compartmentalized and should be able to be built incrementally.
- Physical resiliency should be combined with social resiliency.
- The requirements of different sectors (housing/transit/energy/urban development) should be addressed by one solution.
- Flood protection should be tied to community benefits (better open space, better access to housing, jobs and education, lower insurance rates, possibilities for growth), allowing government investment to be leveraged with local and sectoral funding in a Resilient Community District.

The Big U is a protective system around Manhattan, driven by the needs and concerns of its communities. Stretching from West 57th street south to The Battery and up to East 42th street, the Big U protects 10 continuous miles of low-lying geography that comprise an incredibly dense, vibrant, and vulnerable urban area. The proposed system not only shields the city against floods and stormwater; it provides social and environmental benefits to the community, an improved public realm. For Phase 3 of Rebuild by Design, the Big U Team created separate but coordinated plans for three contiguous regions of the waterfront and associated communities, regions dubbed compartments. Each compartment comprises a physically separate flood-protection zone, isolated from flooding in the other zones, but each is equally a field for integrated social and community planning. The compartments work in concert to protect and enhance the city, but each compartment's proposal is designed to stand on its own. Each was designed in close consultation with the associated communities and the many local, municipal, state and federal stakeholders; each has a benefit-cost ratio greater than one; and each is flexible, easily phasable, and integrable with existing projects in progress.

RESEARCH

The Big U concept was the product of a research phase in which the BIG Team studied the history of resiliency planning in the Tri-State Area and elsewhere. The team's research demonstrated that resiliency plans typically have taken the existing city into account but failed to provide for the natural growth and transformation of communities. In response, the BIG Team resolved to combine city-making and resiliency planning to create coordinated, intelligent designs for "growing resiliency." The resulting designs would not only solve existing problems, but prevent the formation of new ones, proactively enhance the city in many dimensions, and channel its future growth in desirable directions. Such an approach has many advantages. It creates possibilities for leveraging the incorporated projects financially and integrating them with existing plans. It makes it possible to work with communities to ensure that the resiliency measures become social and environmental assets. As a dynamic process, moreover, "growing resiliency" enables planners to adapt on the fly to emergent developments such as global climate change and new legislation.

WHAT IS AT RISK?

The floodplain behind the 10 miles of coastline is home to approximately 220,000 people. This area contains some of the largest central business districts in the country, which cumulatively are at the core of an economy with a \$500 billion annual GDP, and influences economic activity throughout the world. More than 52 million visitors annually come to New York City to see such sites as the 9/11 memorial, The Battery, and Wall Street, or to take the ferries to the Statue of Liberty and Ellis Island. The area also contains 35,000 affordable housing units, many of which have been hit hard by Sandy. Over 95,000 low-income, elderly, and disabled residents live there, predominantly along the East River.

Superstorm Sandy devastated much of the area. Much of the infrastructure was disabled, the economic heart of the Financial District stopped for a week, homes

were flooded, and people were trapped in their apartments. Many residents are still struggling with the aftermath. Mold, for example, has almost doubled in public housing affected by Sandy. It is clear that global climate change has made the challenges of providing affordable housing to Lower Manhattan even greater. Rebuilding after Sandy poses its own risks. In the worst case, each party (building owners, NYCHA, DOT, MTA) might rebuild just for itself, resulting in a chaotic set of atomized changes that could prove destructive to the urban realm as a whole. Such a piecemeal approach would not only cost much more than a coherent plan; it would also worsen economic disparity in the city as low-income areas, financially stretched as they are, inevitably are left behind. The poor would be left with nothing or worse. Another danger is that flood-protection measures, if not intelligently designed, might sever the communities' connection to the waterfront, so important for this area.

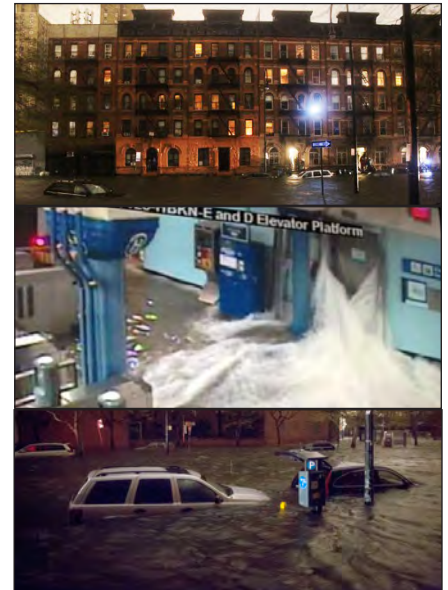
The opportunities that rebuilding brings, however, are as great as the risks. This occasion represents a priceless opportunity to rebuild better, to rebuild in such a way that even as the city grows more secure physically it is endowed with new social, aesthetic, economic and environmental assets, becoming more secure in many other senses.

SOCIAL INFRASTRUCTURE

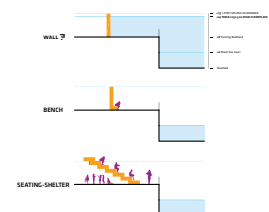
The BIG Team proposes to rethink infrastructure as an amenity. The team calls it social infrastructure. Infrastructure in the United States, as traditionally conceived, has not been civic, accessible, designed with interaction with the public in mind; rather, it has been imposed from without on our cities on a large scale, sometimes with terrible consequences for the urban experience. The Big U combines the mandate to create large-scale protective infrastructure with a commitment to meaningful community engagement. It fuses 'Robert Moses' hard infrastructure with 'Jane Jacobs' locally-based, community-driven sensitivity. The Big U's flood-protection will not look like a wall, and it will not separate the community from the waterfront. Rather, the very structures that protect us from the elements will become attractive centers of social and recreational activity that enhance the city and lay a positive groundwork for its future.

The multivalent 'U' consists of linked compartments, each on its own scale of time, size and investment. This in turn allows neighborhoods to tailor the protective changes to fit their own programs, needs, assets, and opportunities. Small, relatively simple projects will maintain the resiliency investment momentum post-Sandy, and at the same time set in motion intelligent long-term solutions.

After the Big U was selected by the Rebuild by Design Jury for the 3rd phase of the competition, the BIG Team was greeted enthusiastically by many stakeholders on the West Side, at the Battery, and on the Lower East Side (LES). In order to focus resources in the relatively short planning window, the BIG Team, at the suggestion of the Mayor's Office, decided to focus first on the Lower East Side. Here a large, vulnerable population (a major target of CDBG-DR funding) lives in the floodplain.



THE LOWER EAST SIDE



FOCUS SCOPE

THE BIG U - EXECUTIVE SUMMARY

WORKING WITH THE COMMUNITY



To better understand the needs of the communities in Lower Manhattan, the BIG Team analyzed earlier, non-flood-related projects in the area, projects such as the East River Esplanade, The People's Plan (a reaction to the Esplanade), and the East River Blueway Plan. Since the community was actively involved in the design of these projects, the projects tell the story of what the community finds important. In addition, many elements of these plans are already under way.



On the Lower East Side (LES), the BIG Team worked intensively with LES Ready, an umbrella organization of twenty-six community groups. A joint planning committee prepared a series of workshops at various locations in the neighborhood. At the first workshops, the community debated the merits of various approaches, using the BIG Team's models of different prototypical solutions. In the second series of workshops, the results of these discussions were incorporated in two possible integral design solutions for each compartment. Once again these designs were discussed at length by community groups. Many people from the community attended these workshops as well as the party at the end of the process.

Our major stakeholder, the City, saw the BIG Team's approach on the LES as suitable for other sections of the Big U. After discussions with the Battery Conservancy and the Downtown Alliance, the BIG Team expanded its design efforts to include the Financial District and The Battery.



PUBLIC WORKSHOPS

In addition to working with the community, the BIG Team spoke to a vast array of city, state and Federal agencies, elected officials, and planning boards. These made many suggestions and tweaks that were incorporated into the proposals, enabling the plans to handle deftly many issues of concern to these entities. The BIG Team would like to express its profound gratitude for the kind attention and constructive criticism the proposals received.

A proposal for each of the compartments between East 23rd St. and the Battery emerged from the design process described above. Elements of each compartment can be implemented quickly. The Big U proposal has the support of the community, the design sought to minimize execution risk related to permitting and regulatory review, and has a positive benefit-cost ratio. At the same time, each compartment is designed for growth: each is able to incorporate decisions that could not be made by the stakeholders within the timeframe, opportunities that are unrealizable under current regulations, possible higher design heights in response to climate change, and more drastic transformations of the city. The designs anticipate continued future growth.

THREE CUSTOMIZED COMPARTMENTS

The resulting Phase 3 proposal is for three compartments that, while linked together, function independently in terms of flood protection. Each is a particular solution to the problems posed by a particular portion of the city, and each responds to the needs and wishes of the particular communities concerned.

C1: L.E.S. North - East River Park

from E. 23rd St. to Montgomery St.

The northern compartment protects a deep floodplain next to the FDR Drive, which separates it from East River Park. The park, now poorly connected to the community, has room for a protective berm.

The compartment connects to the flood protection of Hospital Row at 23rd Street with a deployable. Under the FDR Drive at Peter Cooper Village, a series of pavilions are placed. At the land-side, these can be programmed with the commercial functions and other amenities the area now lacks. On the water side, they can be programmed with recreational amenities. Between the pavilions, deployables maintain the relationship with the waterfront. Around the Con-Ed plant, a new flyover with an integrated levee provides a link between sections of the waterfront. In East River Park, an undulating berm at the location of the service road to the FDR Drive provides flood protection. The berm is shaped so that the existing sports fields can be maintained. Generous landscaped bridges will connect the East River Park to the community. The flood protection continues to Montgomery Street by fortifying the new Pier 42 Park, where a deployable will help maintain the on-ramp to the FDR Drive.

The flood protection in East River Park protects \$780,000,000 in potential damages (NPV). With a design height of 15ft, the system has a benefit-cost ratio of 2.08.

C2: Two Bridges

from Montgomery St. to the Brooklyn Bridge

At Two Bridges, the relative lack of space between the residential areas and the waterfront favors a mixed-flood-protection strategy. Limited-height flood protection shields the area against most recurrent floods while allowing for views to the waterfront. This is complemented by systematic measures to raise generators, etc., in a so-called 'wet feet' (or waterproofed buildings) strategy that will allow the community to deal with the much rarer, bigger flood. The BIG Team has given special attention to ensuring that the resiliency measures add much-needed amenities for public housing.

From Montgomery Street, in front of the Pier 36 Sanitation Department facility, deployables will be attached to the underside of the FDR Drive. These deployables, in part a public art project, are designed so as to provide lighting and security in these now-dark spaces. Opposite Smith Houses, this flood protection system gives way to a system of benches, skateparks, tai-chi platforms and a pool, the latter in a glass pavilion from 4 feet up. The flood protection enlivens the Smith Houses waterfront and provides recreational amenities. Buildings in the area are flood-proofed: utilities are moved, basements strengthened and the apartments on the ground floor are evacuated. This in turn makes space for amenities such as laundromats, shops, and spaces for community functions. One of the ground floors is fortified and will house a Co-Gen plant serving the entire campus. A new public-housing project compensates for the evacuated apartments.

The flood protection in Two Bridges protects \$237,000,000 in potential damages (NPV). With a design height of 10 ft, the system has a Benefit Cost Ratio of 1.02.



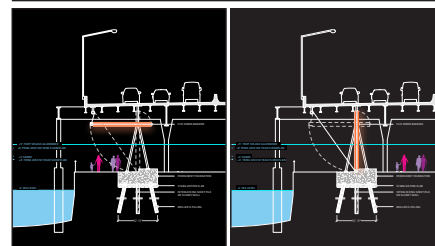
NEAR AND LONG TERM POTENTIALS



NEW TOPOGRAPHIES IN EAST RIVER PARK



NEW RECREATIONAL SPACE UNDER THE FDR



INTEGRATED "FLIP-DOWN" DEPLOYABLES

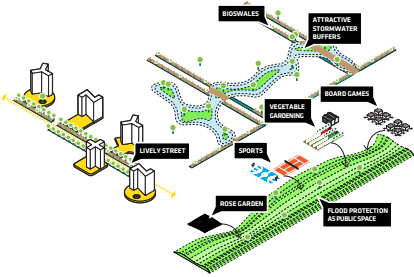
THE BIG U - EXECUTIVE SUMMARY



THE BATTERY BERMS



THE HARBOR SCHOOL + MUSEUM



C₃: BATTERY-FINANCIAL DISTRICT

from the Brooklyn Bridge to the Battery

The unifying theme in compartment C₃ is the enhancement of the touristic infrastructure in Lower Manhattan. A sequence of attractive urban spaces on the waterfront will protect the city while serving and pleasing the millions of visitors and thousands of workers in the area.

Berms in The Battery, strategically located so as to protect the ducts of the infrastructure below, create a continuous protective upland landscape. In place of the Coast Guard building, the plan envisions a new building programmed as a maritime museum or environmental education facility. This signature building features a “Reverse Aquarium”: its form is derived from the flood protection at the water-facing ground floor. Continuing east, a floodwall connects through the Staten Island Ferry building and aligns with the FDR Drive at the Battery Maritime Building (BMB). An elevated plaza brings the surroundings level with the monumental mezzanine floor of the BMB. This plaza connects to an elevated bikeway/footpath, which in turn connects to a series of pavilions which provide flood protection in conjunction with deployables that swing down from the underside of the FDR Drive.

The flood protection in the Financial District protects \$1,900,000,000 in potential damages (NPV), including the critical infrastructure underneath. With a design height of 15ft, the system has a benefit-cost ratio greater than 5.0.

GREEN INFRASTRUCTURE

Green infrastructure in all three compartments contributes to both flood protection and social amenities in the Big U. Climate-change models predict more frequent heavy-precipitation events, leading to even more street flooding and combined sewer overflows (CSO) than we have already experienced in our largely water-impervious city. The urban heat island effect will be exacerbated by longer heat waves. The Big U's native species bio-swales, rain gardens, and street plantings will absorb and clean stormwater, cool the city, reduce air pollution, store carbon, buffer noise, enhance recreational activities, improve mental health, and provide green jobs. As a by-product of these benefits, they will also save the City and its residents money, for example in healthcare.

IMPLEMENTATION

The Mayor's Office has become a close collaborator of the BIG Team during the development of this third phase of Rebuild by Design. As the intended grantee of CDBG-DR funding for the Big U, the City of New York is expected to implement the project however a new mayoral administration has yet to make such a decision.

Implementation of the proposal can start in any of the three compartments. This flexibility, part of the essence of the Big U, allows implementation to start swiftly. While risks have been minimized as much as possible in this phase, the compartmental design makes it possible to respond to any unresolved issues



COORDINATION WITH MAYOR'S OFFICE

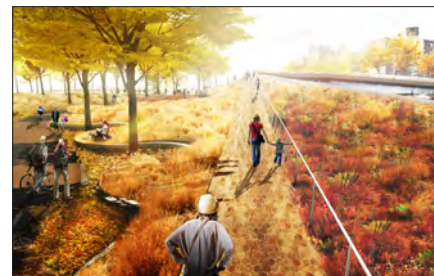
that might come to light in design development simply by changing the order of implementation while the issues are addressed.

Raising the integration between some of the stakeholders such as at some of the area housing communities and the Big U objectives to a high level will take a bit more time. To achieve this, the BIG Team has developed a 'toolbox' that demonstrates how resilience measures can achieve multiple objectives: more amenities, housing preservation, greater access to economic opportunity, jobs, and better public space. Using this toolbox, an even more integrated and comprehensive strategy for the 'towers-in-the-park' can, over time, be developed with the community.

The BIG Team's proposal is quickly implementable and highly integrated, yet it is organized so as to be responsive to new, longer-term opportunities and necessities, and to allow for even higher levels of integration. Evolving regulations might eventually make it possible to build resiliency measures in water and soft edges. The City's affordable housing strategy can generate new opportunities and imperatives for housing preservation. The rise in sea level can accelerate. Construction elsewhere on the shore or in the water can impact the necessary design heights. Mobility changes. The Big U incorporates a framework for adapting to the inherent dynamism of urban reality.

Growing resiliency will provide ever-increasing benefits for the city, but it will also require a continuous, active planning process. Part of this proposal, therefore, is to develop a Big U Lower Manhattan Waterfront planning leadership, which will streamline the adaptation of all planning initiatives to preserve resiliency, and which will address the long-term needs and possibilities of Lower Manhattan as these inevitably evolve. A high-capacity public agency with both authority and resources must be identified to serve as a coordinating planning and implementation agency lead for the Big U, supported by an interagency Technical Working Group and a broadly representative Community Advisory Committee.

The request for CDBG-DR funds, therefore, contains not only the funding for implementation of the three compartments, but also the funding for the Big U comprehensive planning leadership structure and community engagement process over a prolonged period. This is the only way to preserve the effectiveness of resiliency measures such as those contemplated here, and it is the only way to maximize the funding leverage, benefits, and public engagement which form the essence of the Big U. The Big U thus serves as an exemplary project: it shows how to integrate resiliency with city making.



THE BRIDGING BERM



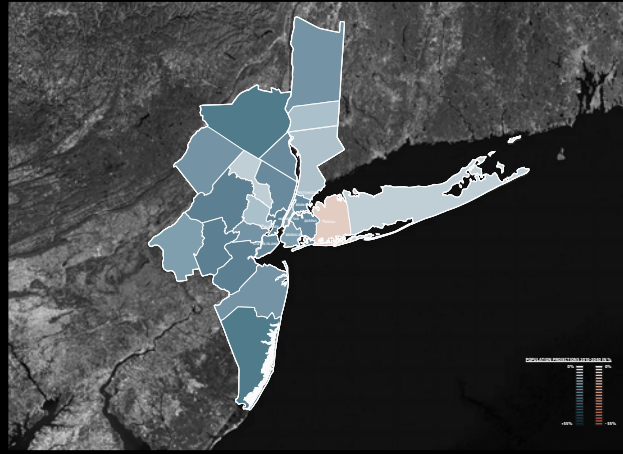
THE STORM SURGE



BETTER PUBLIC ACCESS AT EAST RIVER PARK



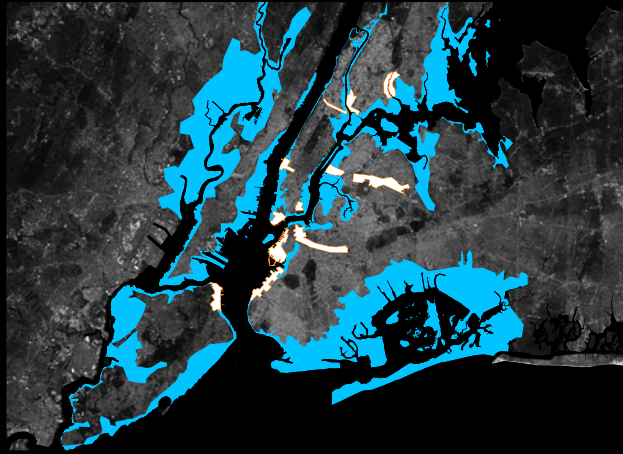
SANDY AND THE NORTH-EAST MEGAREGION



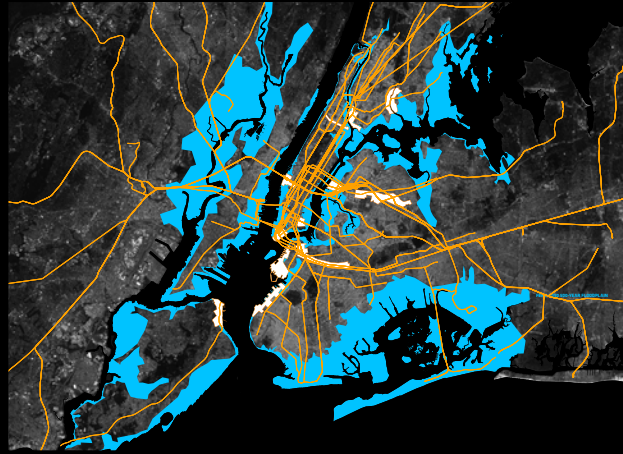
GREATER NEW YORK AREA GROWTH



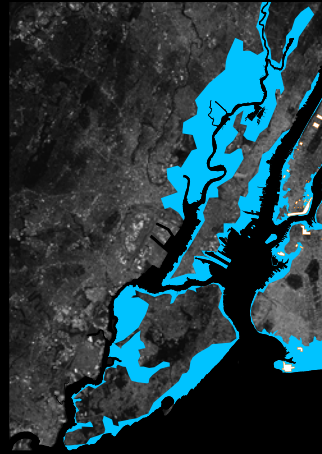
THE NEW YORK "BIGHT": STORM SURGE CHANNLED INTO THE HEAD OF THE BAY



C.U.R.E. PROJECTED GROWTH ZONES, OFTEN NEAR THE WATER



TRANSIT NETWORKS WILL NEED TO BE USED TO ACCOMMODATE GROWTH

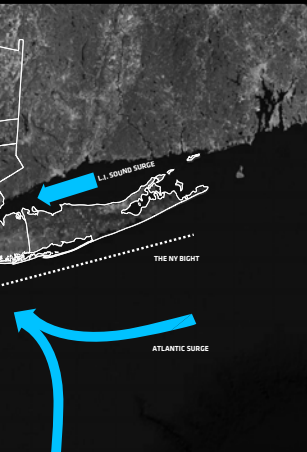


MUCH OF NYCHA'S HOUSING IS LOCATED IN THE FLOODPLAIN

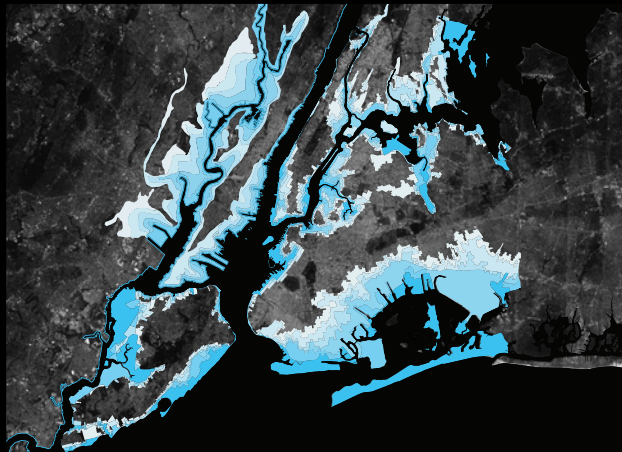
A REGIONAL ANALYSIS

STAGE II RESEARCH

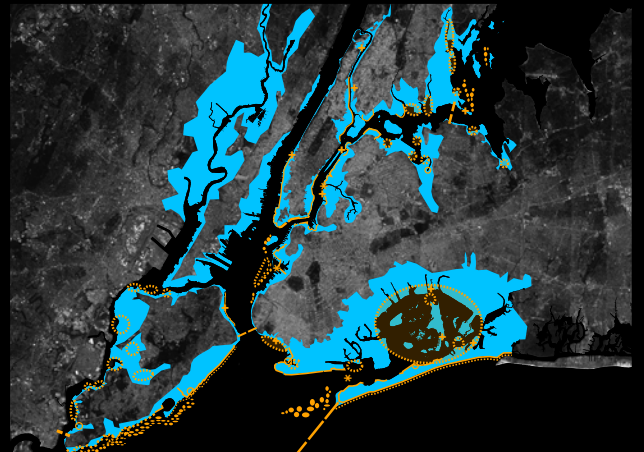
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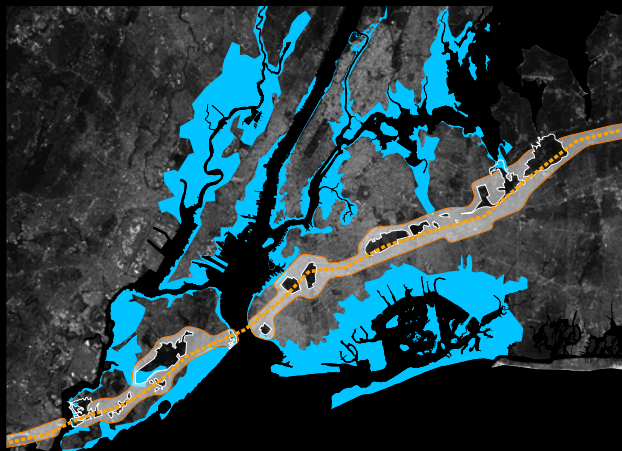
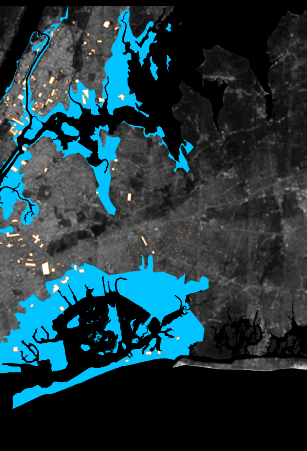
RT OF GREATER NYC



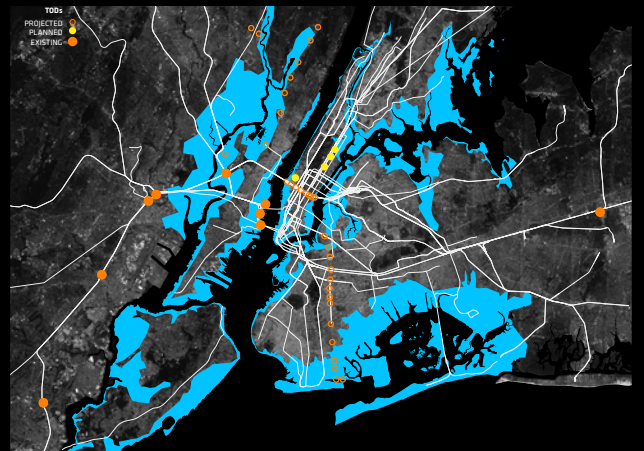
NYC METRO AREA EVACUATION ZONES



SIRR MEASURES

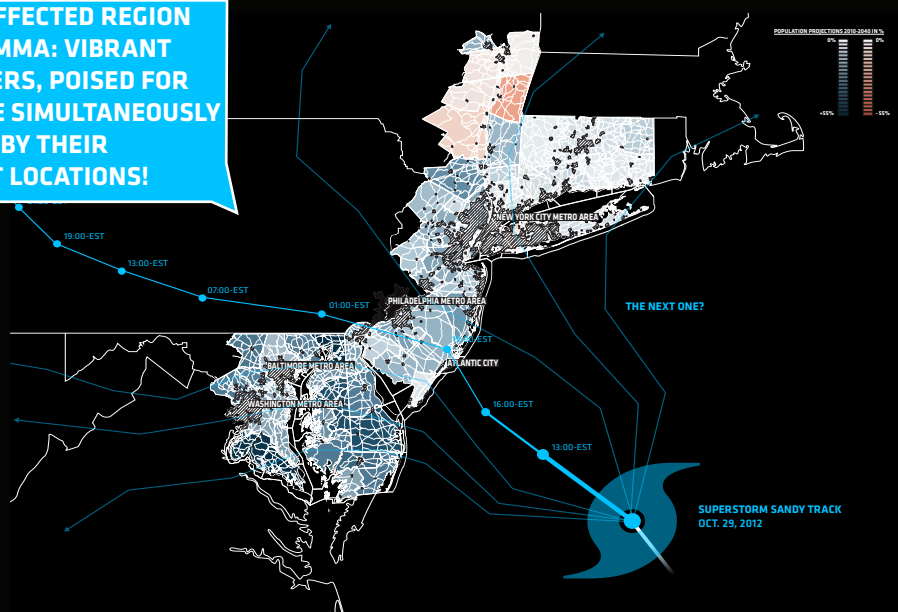


HIGH GROUND: A FUTURE PLANNING AND DENSIFICATION EFFORT



TRANSIT-ORIENTED DEVELOPMENT POTENTIALS

**THE SANDY AFFECTED REGION
FACES A DILEMMA: VIBRANT
URBAN CENTERS, POISED FOR
GROWTH, ARE SIMULTANEOUSLY
THREATENED BY THEIR
WATERFRONT LOCATIONS!**

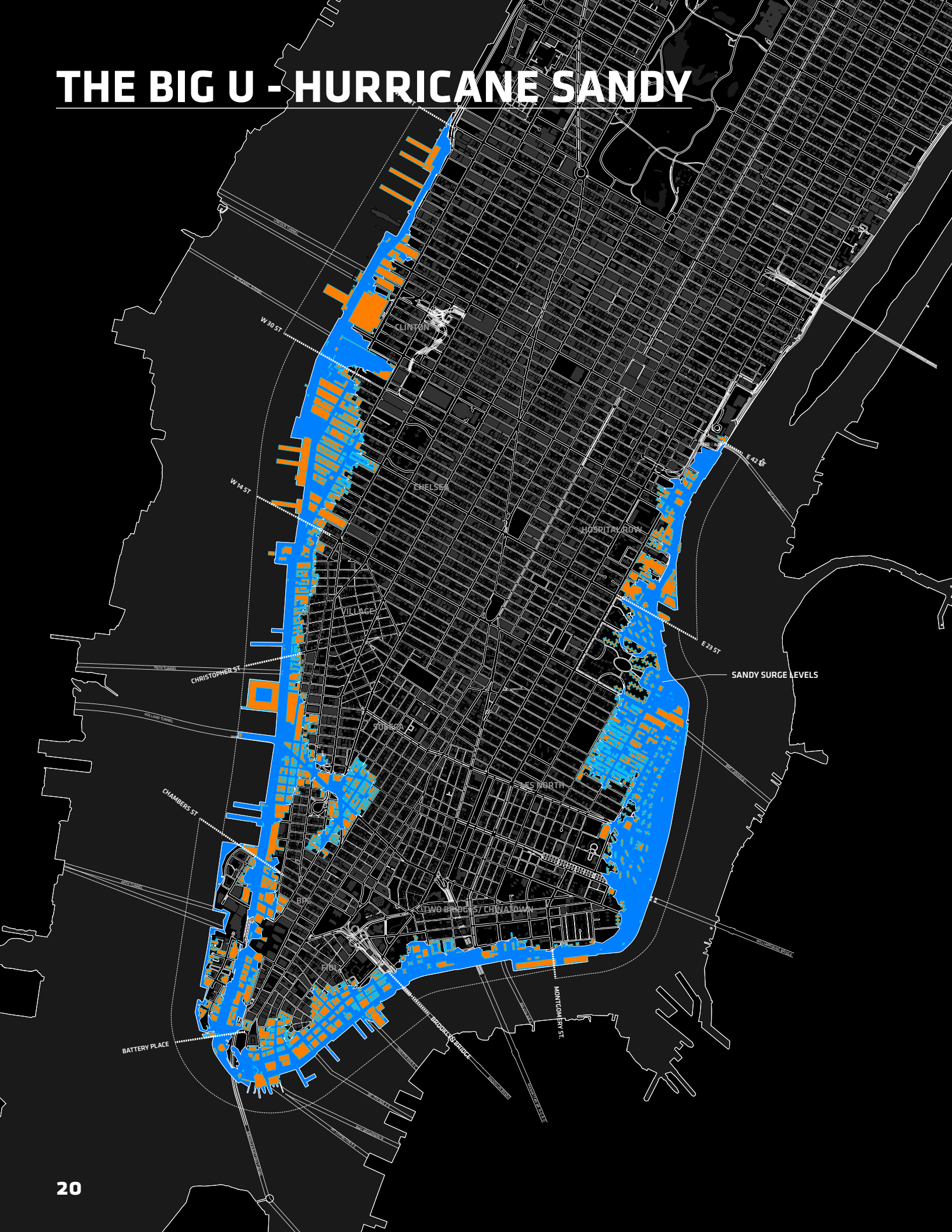


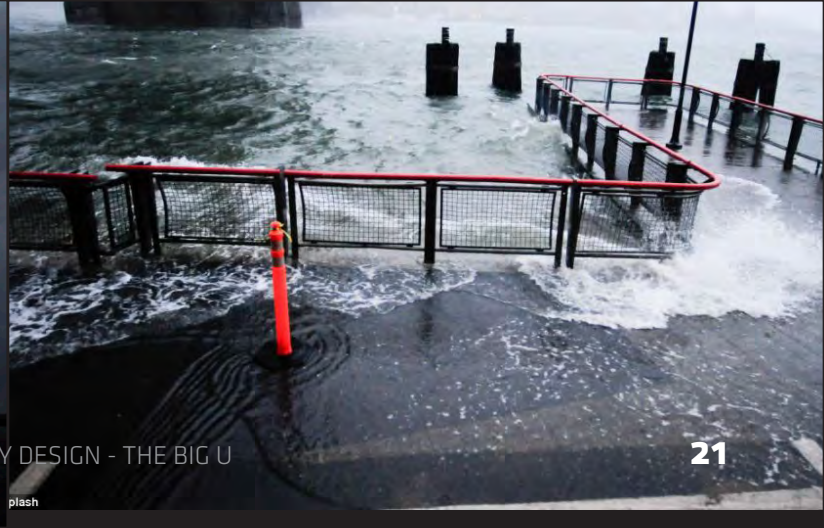




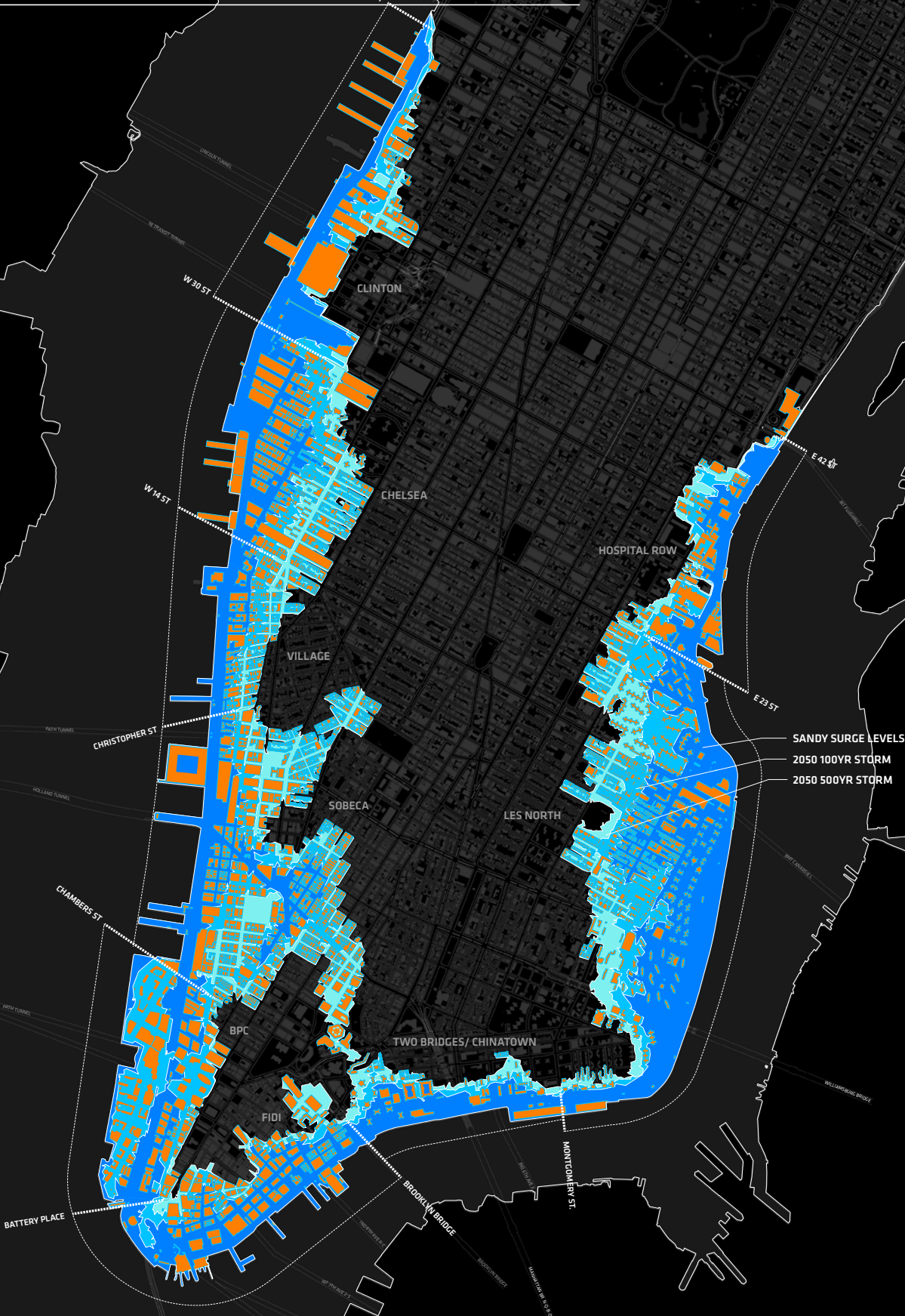
1 THE BIG U

THE BIG U - HURRICANE SANDY





THE BIG U - FUTURE RISK



10 MILES OF COASTLINE

200,000 RESIDENTS

285 MILLION BUILT SQUARE FEET

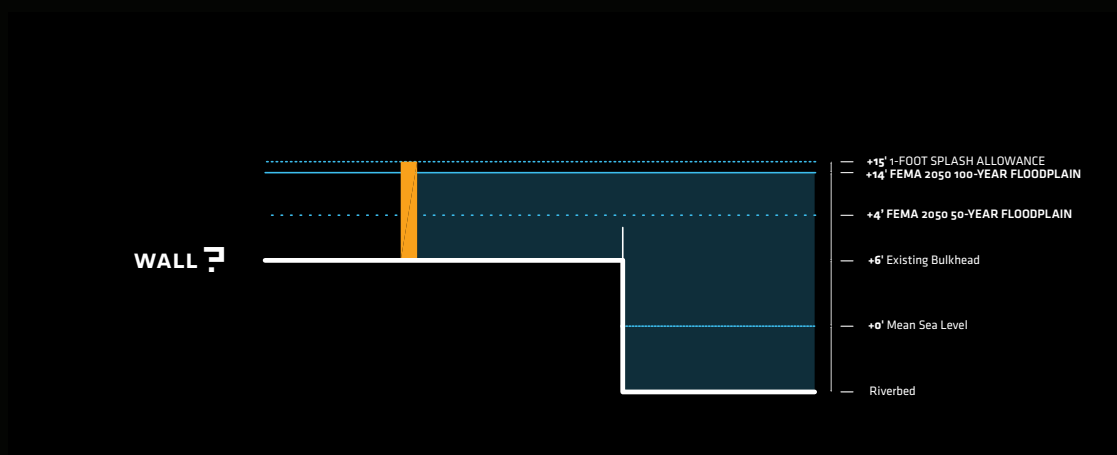
21,000 BUSINESSES

CENTRAL BUSINESS DISTRICT FOR THE NATION

52.7 MILLION ANNUAL VISITORS

29,500 AFFORDABLE HOUSING UNITS

95,000+ LOW-INCOME, ELDERLY, OR DISABLED RESIDENTS



THE BIG U - THE S.I.R.R. REPORT

NYC SPECIAL INITIATIVE FOR RECOVERY AND REBUILDING

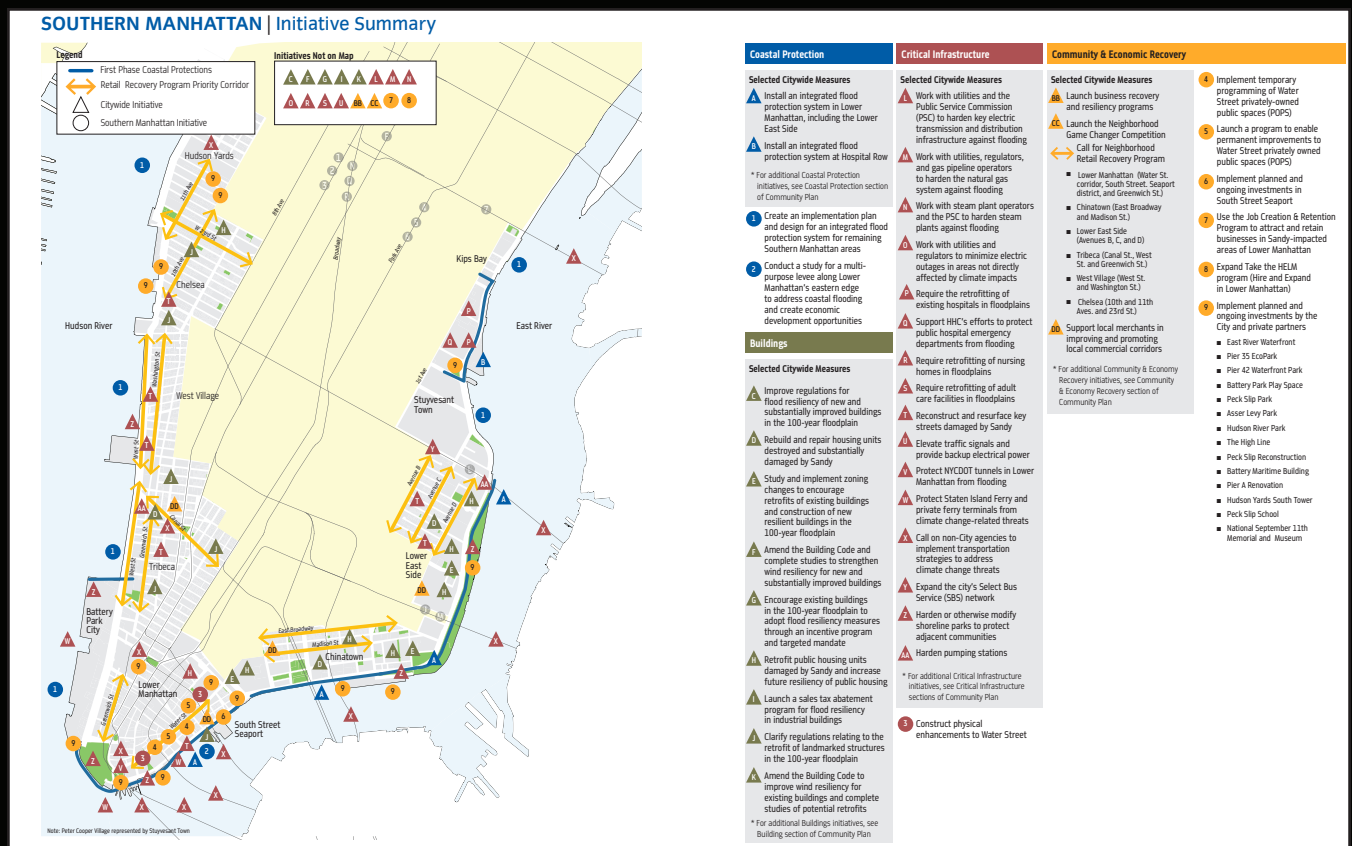


BUILDING ON A GOOD PLAN

The Big U Plan builds off the SIRR Report recommendations for adapting New York City to a changing climate. Neighborhood resiliency comes in many forms; SIRR encouraged flood protection that would enhance the social, economic and ecological infrastructure of our communities - avoiding the catastrophic effects that a purely engineered floodwall solution might have. The Big U met each community along the U on its own terms with interventions that can adapt to changing climate conditions as they evolve. In the short term, reducing upland flooding on the Lower East Side; creating flood protecting topography in our parks to protect the city beyond and making the parks themselves more resilient, and promoting the creation of green jobs to maintain this green infrastructure. In the long term, big moves like covering the FDR Drive with a park will have a transformative effect on the city.

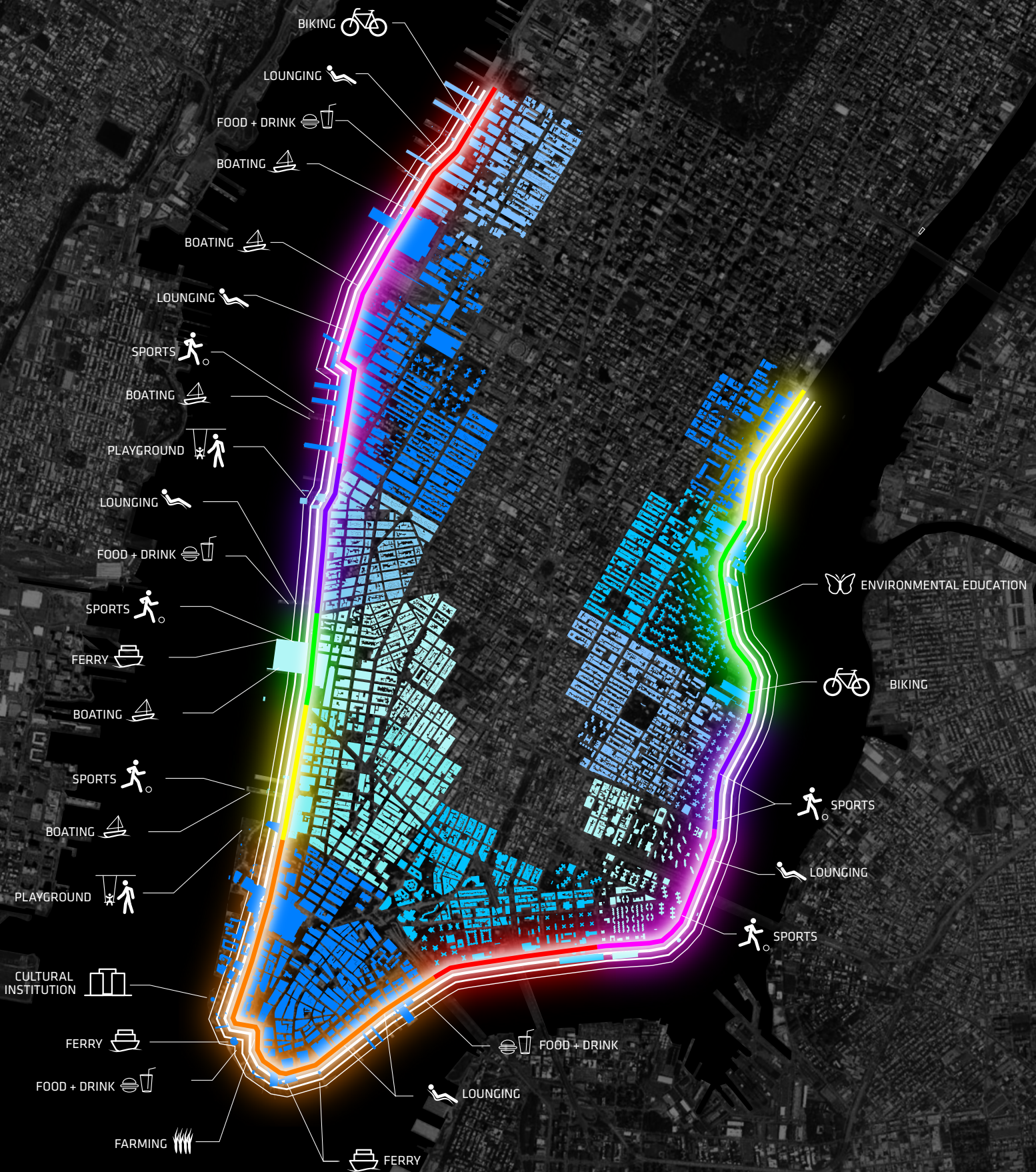


HOW TO AVOID PURELY ENGINEERED SOLUTIONS?



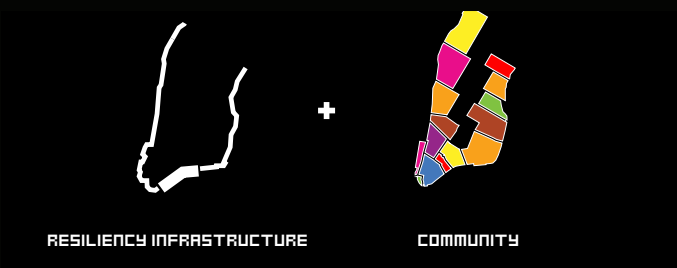
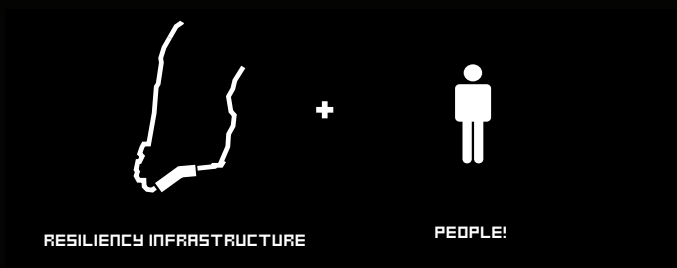
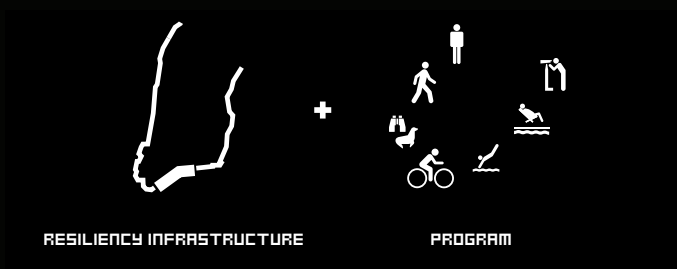
SOUTHERN MANHATTAN - PHASE I INITIATIVES

THE BIG U - PRINCIPLES



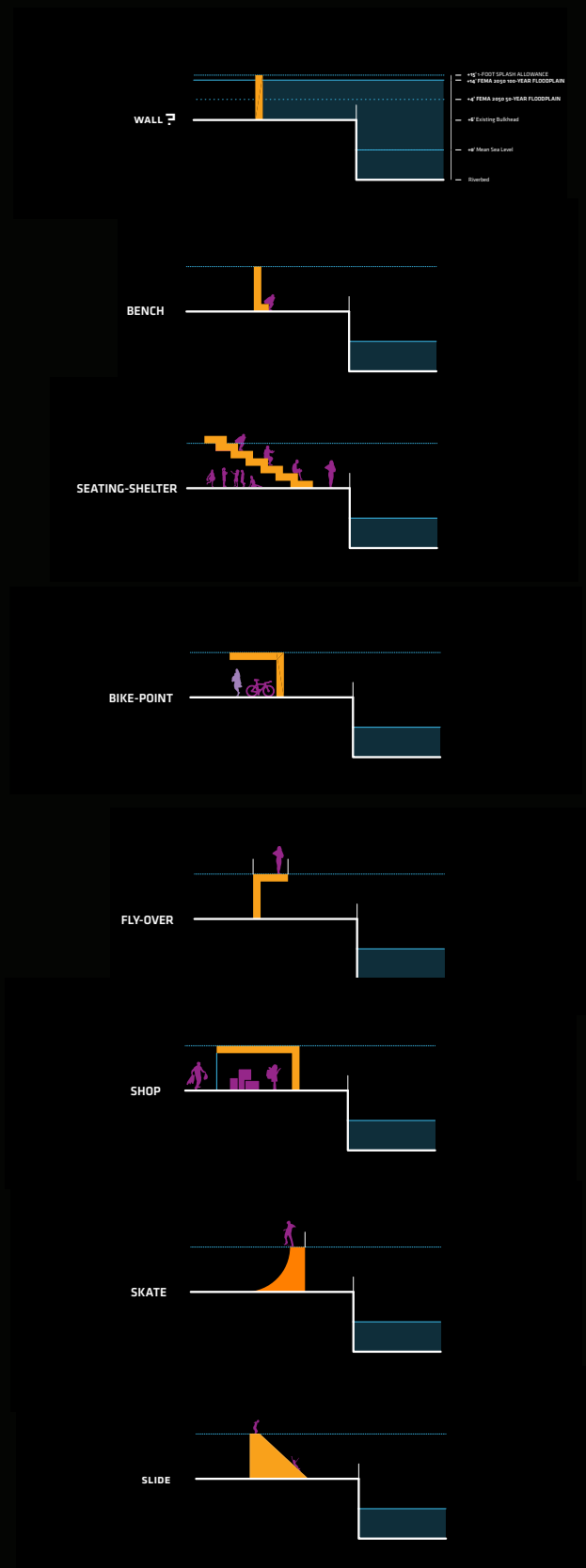
TAILORED RESILIENCY

Design solutions for protection in the city become hybrid solutions, each custom tailored to their specific place, time and program. The artful combination of a classic engineered infrastructural element with desirable social functions of each community can produce an almost unnoticeable protection. There is something that is not so complex about protection. On the most basic level, the task is to make a barrier of a certain height. At the core of these design challenges is the requirement that it be done in a way that does not look like concrete barriers, but is an upgrade to the social and urban condition.

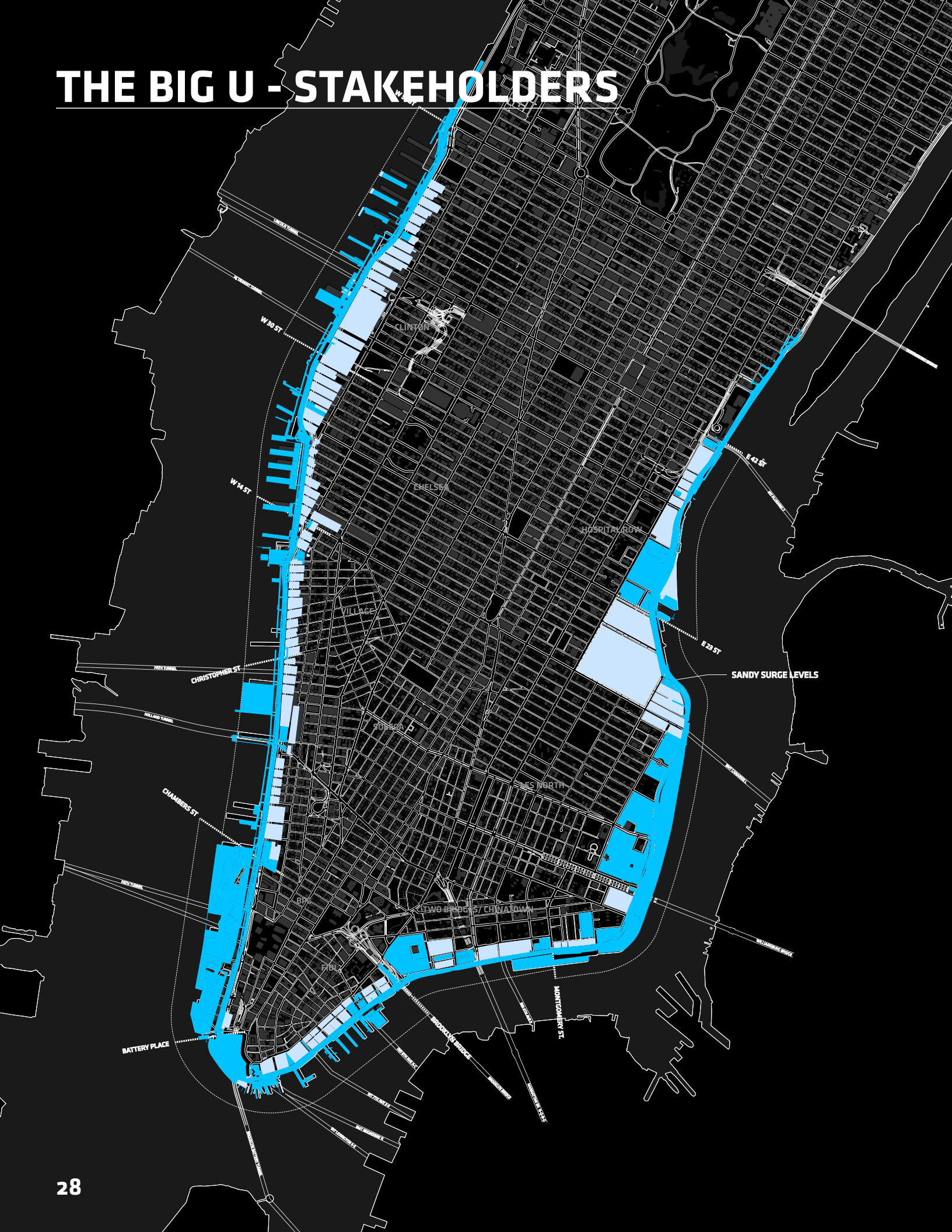


ROBERT MOSES

JANE JACOBS



THE BIG U - STAKEHOLDERS



PUBLIC STAKEHOLDERS



CITY

NYC Mayor's Office/OLTPS
 NYC DCP
 NYC EDC
 NYC DOT
 NYC Parks
 NYCHA
 NYC DEP
 NYC LPC
 NYC DCAS
 NYC Dept. of Sanitation
 NYPD
 FDNY

NYC City Council Districts 1,2,3,4



STATE

Governor's Office
 New York Rising
 MTA – City Transit / Bridges and Tunnels
 NY State DOT
 NY State Dept. of Environmental Conservation
 NY State Office of Parks, Recreation, and Historic Preservation
 Empire State Development Corporation
 Battery Park City Authority
 Port Authority NY/NJ

NYS Senate Districts 26,26,28,31
 NYS Assembly Districts 65,66,67,73,74,75



FEDERAL

US Army Corps of Engineers
 NOAA
 US Coast Guard
 US Dept. of Homeland Security
 US Dept. of the Interior - National Parks Service
 US DOT
 US Environmental Protection Agency
 US General Services Administration

US Congressional Districts 8,12,14

PRIVATE STAKEHOLDERS



COMMUNITY/CIVIC

NYC Manhattan Community Districts 1,2,3,4,6
 Downtown Alliance
 Lower East Side Ready (LTRG)
 Asian Americans for Equality
 Metropolitan Water Alliance
 Scenic Hudson
 Riverkeeper
 Real Estate Board of New York
 NY Building Congress
 Municipal Art Society
 Regional Plan Association
 NY Building Congress
 Municipal Art Society
 Regional Plan Association

PARKS GOVERNANCE:
 Hudson River Park Trust
 Battery Park Conservancy
 Friends of the High Line



BUSINESSES

Howard Hughes Corporation
 Edison Properties
 Brookfield Properties
 Con Edison
 Dermot

PUBLIC OWNERSHIP

Land ownership along the city's waterfront is primarily public - a mix of City, State, and Federal agencies, each of whom become important stakeholders in the process.

This provides the benefit of single jurisdiction along extended stretches of coastline, streamlining future implementation for protection of the city.

THE BIG U - STAKEHOLDERS



NY STATE SENATE



US SENATE



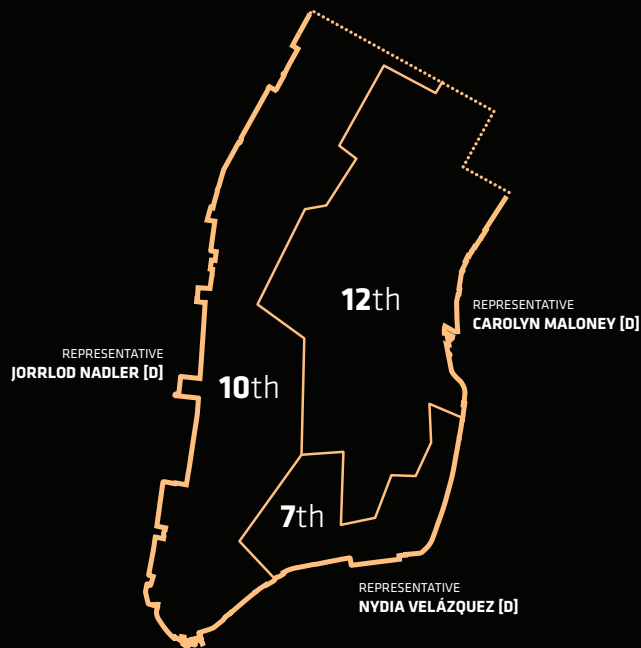
NY CITY COUNCIL



COMMUNITY BOARD DISTRICTS



CULTURAL GROUPS



US CONGRESSIONAL DISTRICTS

STAKEHOLDERS

More than 24 Elected officials, at the Local, State, and Federal level, as well as a plethora of relevant community, civic, and cultural groups, comprise an important base for outreach, coordination, and design input.

THE BIG U - 16 WEEKS OF OUTREACH



NOVEMBER/DECEMBER

JANUARY

NOVEMBER 25TH: NY RISING LOWER MANHATTAN

NOVEMBER 26TH: US COAST GUARD, NYCDOT

NOVEMBER 26TH: BATTERY CONSERVANCY

DECEMBER 10TH: CB1 PLANNING AND LAND USE COMMITTEE

JANUARY 2ND: HUDSON RIVER PARK TRUST

JANUARY 3RD: OFFICE OF DANIEL SQUADRON

JANUARY 6TH: COMMUNITY BOARD 3

JANUARY 7TH: ALLIANCE FOR DOWNTOWN NEW YORK

JANUARY 11TH: US ARMY CORPS OF ENGINEERS

JANUARY 11: OFFICE OF NYDIA VELASQUEZ, 7TH NY CONGRESSIONAL DISTRICT

JANUARY 11: GOOD OLD LOWER EAST SIDE

JANUARY 12: NYC PARKS DEPARTMENT, MAYOR'S OFFICE

JANUARY 12: COMMUNITY BOARD 4 WATERFRONT, PARKS, AND ENVIRONMENT COMMITTEE

JANUARY 13TH: LESREADY!

JANUARY 13TH: PRATT INSTITUTE

JANUARY 14TH: FORUM FOR CLIMATE-RESILIENT COASTS

JANUARY 16TH: NYCHA

JANUARY 17TH: INGRID GOULD ELLEN/NYU FURMAN CENTER

JANUARY 17TH: US COAST GUARD

JANUARY 17TH: NYCEDC

JANUARY 21ST: LESREADY! CORE PLANNING GROUP

JANUARY 22ND: HUD/RXD CHECK-IN

JANUARY 23RD: NYC MAYOR'S OFFICE, DCP

JANUARY 24TH: NY RISING LOWER MANHATTAN

JANUARY 24TH: MARK GINSBERG (L.E.S. HOUSING POLICY)



JANUARY 24TH: CITY COUNCILWOMAN MARGARET CHIN

JANUARY 28TH: MTA, PORT AUTHORITY NY/NJ, SDOT

FEBRUARY 3RD: COUNCILMAN DANIEL GARODNICK

FEBRUARY 3RD: OFFICE OF COUNCILMAN BRIAN KAVANAUGH

FEBRUARY 6TH: DAN ZARRILLI / MAYOR'S OFFICE OF RESILIENCY

FEBRUARY 10TH: NY RISING LOWER MANHATTAN COMMITTEE

FEBRUARY 10TH: RXD + LESREADY! COMMUNITY WORKSHOP

FEBRUARY 12TH: CB3 LAND USE COMMITTEE

FEBRUARY 24TH: NYCEDC/SEAPORT CITY

FEBRUARY 24TH: NY RISING LOWER MANHATTAN COMMITTEE

FEBRUARY 25TH: DCP/MAYOR'S OFFICE

FEBRUARY 26TH: RXD+LESREADY COMMUNITY DESIGN

FEBRUARY 28TH: OUTSIDE NEW YORK

MARCH 3RD: NYC HPD

MARCH 6TH: NYCHA

MARCH 7TH: TWO BRIDGES NEIGHBORHOOD COUNCIL

MARCH 11TH: NYC DOT

MARCH 13TH: NY STATE DOT

MARCH 13TH: NYC PARKS

MARCH 17TH: NYCEDC

MARCH 18TH: NATIONAL PARKS SERVICE

MARCH 20TH: NYC OEM, OMB, EDC

MARCH 21ST: LOWER EAST SIDE ECOLOGY

MARCH 22ND: HUD



ILES



LESReady Core Planning Group



City Housing Authority



CB1 Planning and Land Use Committee



Community Board 3



CB4 Waterfront and Parks Committee



Council member Daniel Garodnick



LESReady



Two Bridges Neighborhood Council



Public Workshop - Rutgers Houses



MTA, PANYNJ, SDOT, CDOT



Workshop



34
Workshop



Workshop



Public Workshop



OEM, OMB



NYCEDC



BIG TEAM

Borough President Julie Briskman



Works Department



Round 1 Public Workshop - LES Girls Club



Public Workshop - Hamilton Madison House



Damaris Reyes



LESReady!



ford Foundation



Smith House Residents



NY1



Round 2 Public Workshop - LES Girls Club



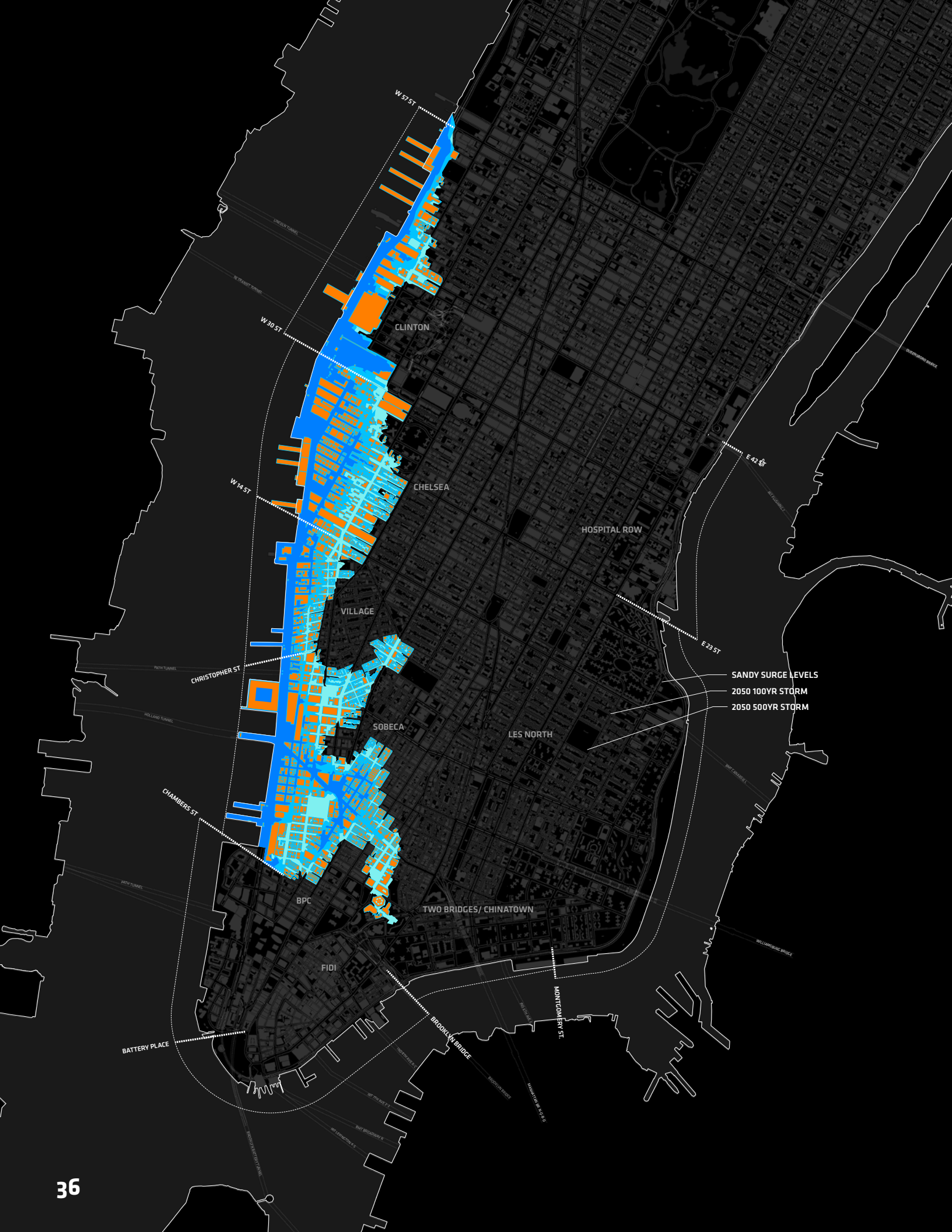
Public Workshop - Report Back



Public Workshop - Report Back



SDOT



WESTSIDE

The BIG U begins at West 57th Street, where the bedrock of northern Manhattan drops away, and terminates where Hudson River Park meets the elevated land of Battery Park City. Piers, bulkheads, sanitation operations, ventilation shafts, and the landscape and features of Hudson River Park define this waterfront, creating a varied array of constraints and opportunities impacting flood protection. Between the city and the waterfront threads NY State Route 9A, a seven-lane arterial whose northbound and southbound lanes are separated by a wide, planted median. The BIG U sees in 9A's under-maintained median a key opportunity to insert protective infrastructure into the most tightly constrained areas of Westside waterfront. By tapping into upland neighborhoods' diverse characters, the protection can vary: from a sculptural flood wall modeled on Richard Serra's work beside Chelsea to a series of undulating, salt-tolerant gardens guarding the West Village. By creating new, elevated park topography and sculptural experiences, Hudson River Park can be harnessed to protect SoHO and Tribeca.

Westside stakeholders, including Hudson River Park Trust, Community Board 4's Waterfront and Parks Committee, Friends of the High Line, and the NYS DOT, which oversees Route 9A, were enthusiastic about these ideas; however, the initial focus of the BIG U targets the Lower East Side and the Financial District, where damage from Sandy was more severe, private funding is less secure, and planning issues are more complex. The team looks forward to addressing the West Side in more detail in the next phase of our work.

OUTREACH

HUDSON RIVER PARK TRUST
COMMUNITY BOARD 4 - WATERFRONT AND PARKS
FRIENDS OF THE HIGHLINE
NYSTATE DEPT. OF TRANSPORTATION ROUTE 9



LOWER

This segment of the BIG U hugs the shoreline of Lower Manhattan from Battery Park City to the Brooklyn Bridge. Nearly half the land is man-made and forms a broad, flat flood plain that was severely inundated during Hurricane Sandy, damaging billions of dollars of real estate and transit infrastructure. At the southern extent of Battery Park City, the land drops drastically to its lowest elevation where Route 9A terminates at Pier A Plaza. The highway became a riverbed during the hurricane, when floodwaters rushed upland to drench the World Trade Center site's \$30 billion reconstruction investments. A second dip in elevation between the Coast Guard Site and the Staten Island Ferry Terminal led to flooding throughout the financial district, where some buildings were shuttered for weeks as they tried to cope with repairs. The new East River Esplanade, a newly-minted public space with benches, plantings, and new paving, also found itself underwater during the storm.

The BIG Team has begun to form a stakeholder coalition in this area, and has begun to initiate discussions among Federal, State, City, and private stakeholders. There is a tremendous shared desire to see an integrated flood protection system enhance and protect the "World's Financial District."

OUTREACH

BATTERY CONSERVANCY
 US COAST GUARD
 NYC DOT-
 ALLIANCE FOR DOWNTOWN NEW YORK
 COMMUNITY BOARD 1 - LAND USE
 OFFICE OF DANIEL SQUADRON
 NY RISING LOWER MANHATTAN
 MTA
 PORT AUTHORITY NY/NJNY
 NYC COUNCILWOMAN MARGARET CHIN
 NYCEDC/SEAPORT CITY TEAM
 OFFICE OF CONGRESSMAN JERROLD NADLER



SANDY SURGE LEVELS
2050 100YR STORM
2050 500YR STORM

EASTSIDE

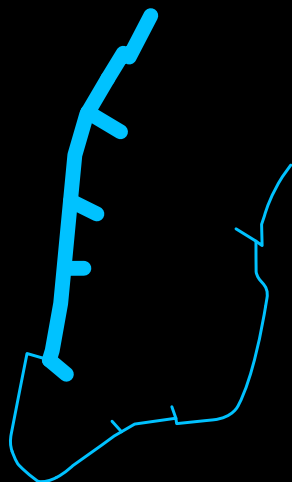
The Eastside of the Big U stretches from the Brooklyn Bridge to just south of the United Nations at 42nd Street. During Hurricane Sandy, multiple hospitals that cluster in the floodplain near the segment's northern end had to be evacuated – these vulnerable facilities need to be protected from future such events. South of the hospital district, the Con-Ed plant at 14th Street exploded during Sandy, plunging hundreds of thousands of residents and businesses in Lower Manhattan into darkness that lasted for days. The resilience of the entire BIG U is dependent on uninterrupted power from this source. South of Con-Ed plant, the Lower East Side is home to a very large population of low-income, senior and disabled residents. Once a bustling industrial waterfront, the Lower East Side was cleared during urban renewal and rebuilt with public housing developments, creating a coastline of high-density residential towers in the floodplain. Many of these buildings are in poor condition, and lost all power during Hurricane Sandy, leaving vulnerable residents stranded in high towers without elevators, water, or heat. The public housing towers are physically isolated and disconnected from essential physical and social infrastructure like transit, grocery stores, and drug stores. The impacts of Hurricane Sandy worsened these conditions for many of the City's most vulnerable inhabitants.

The extents of the floodplain and the vulnerability of residents and infrastructure in the Lower East Side compelled the city to ask the BIG Team to focus its initial design explorations here. The team conducted extensive background research and public outreach in this neighborhood; these efforts are detailed in subsequent chapters.

OUTREACH

NYC MAYOR'S OFFICE
 GOLES
 CB3 DISTRICT MANAGER - SUSAN STETZER
 CB3 BOARD CHAIR - GIGI LI
 OFFICE OF CONGRESSWOMAN NYDIA VELASQUEZ
 NYC COUNCIL WOMAN ROSIE MENDEZ
 LESReady!
 NYCHA
 EDC
 PARKS AND RECREATION
 INGRID ELLEN GOULD - NYU FURMAN CENTER
 NYRISING
 MTA
 NYSTATE DOT
 NYC COUNCILWOMAN MARGARET CHIN
 NYC COUNCILMAN DANIEL GARODNICK
 OFFICE OF BRIAN KAVANAGH
 ROUND 1 COMMUNITY DESIGN WORKSHOPS
 GALE BREWER - MANNHATTAN BOROUGH PRESIDENT
 CARTER CRAFT - MWA/OUTSIDE NEW YORK
 DCP
 AAFE - THOMAS YU
 TWO BRIDGES NEIGHBORHOOD COUNCIL
 CHINATOWN PARTNERSHIP - WELLINGTON CHEN
 NYCHA - GM CECIL HOUSE, MARGARITA LOPEZ
 ROUND 1 L.E.S. COMMUNITY DESIGN WORKSHOPS
 NYC DOT
 NYSTATE DOT FDR
 OFFICE OF CONGRESSMAN JERROLD NADLER

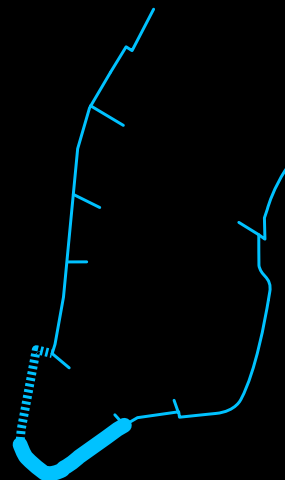
THE BIG U - OUTREACH BY AREA



WESTSIDE

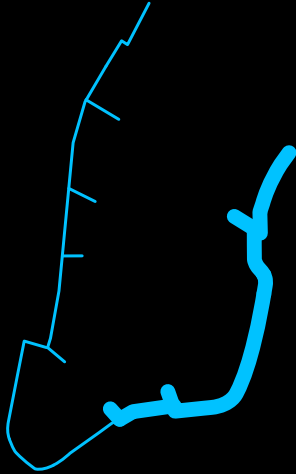
OUTREACH TO DATE:

**HUDSON RIVER PARK TRUST
COMMUNITY BOARD 4 - WATERFRONT AND PARKS
FRIENDS OF THE HIGHLINE
NYSTATE DEPT. OF TRANSPORTATION ROUTE 9A**



LOWER

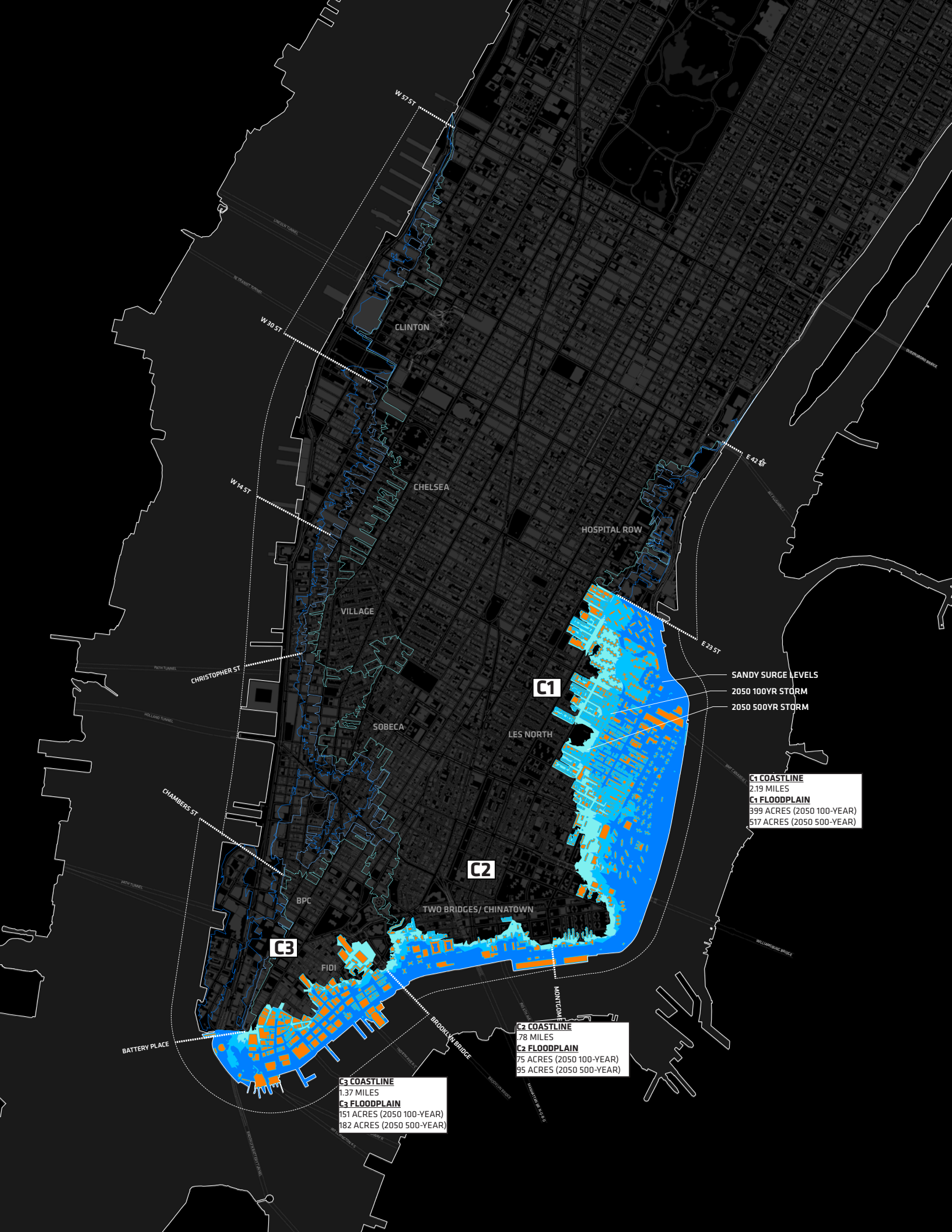
**BATTERY CONSERVANCY
US COAST GUARD
NYC DOT
ALLIANCE FOR DOWNTOWN NEW YORK
COMMUNITY BOARD 1 - LAND USE
OFFICE OF DANIEL SQUADRON
NY RISING LOWER MANHATTAN
MTA
PORT AUTHORITY NY/NJ
NYC COUNCILWOMAN MARGARET CHIN
NYCEDC/SEAPORT CITY TEAM
OFFICE OF CONGRESSMAN JERROLD NADLER
LOWER MANHATTAN CULTURAL COUNCIL**



EASTSIDE

NYC MAYOR'S OFFICE
 GOLES
 COMMUNITY BOARD 3
 OFFICE OF CONGRESSWOMAN NYDIA VELASQUE
 NYC COUNCILWOMAN ROSIE MENDEZ
 LESReady!
 NYCHA
 NYCEDC
 NYC PARKS AND RECREATION
 INGRID ELLEN GOULD - NYU FURMAN CENTER
 NYRISING LOWER MANHATTAN COMMITTEE
 MTA
 NYSTATE DOT
 NYC COUNCILWOMAN MARGARET CHIN
 NYC COUNCILMAN DANIEL GARODNICK
 OFFICE OF BRIAN KAVANAGH

CB3 LAND USE COMMITTEE
 ★ ROUND 1 COMMUNITY DESIGN WORKSHOPS
 MANHATTAN BOROUGH PRESIDENT GALE BREWER
 NYC HPD
 METROPOLITAN WATERFRONT ALLIANCE
 OUTSIDE NEW YORK
 NYC DCP
 AAFE
 TWO BRIDGES NEIGHBORHOOD COUNCIL
 CHINATOWN PARTNERSHIP
 NYCHA - GENERAL MANAGER CECIL HOUSE
 ★ ROUND 2 L.E.S. COMMUNITY DESIGN WORKSHOPS
 NYC DOT
 NYS DOT
 OFFICE OF CONGRESSMAN JERROLD NADLER
 L.E.S. ECOLOGY CENTER



FOCUS SCOPE

Protecting vulnerable housing and communities unable to protect themselves became the focus of the team's East Side work. As Hospital Row and Con Ed were addressing flood protection building by building, we immersed ourselves in the question of how can flood protection infrastructure enhance and stabilize underserved neighborhoods. The diverse conditions from the Brooklyn Bridge to 23rd Street inspired diverse design and policy responses.

In the Lower Manhattan compartment, we gave concerted design focus to The Battery/Coast Guard Site/Battery Maritime area. The convergence of transit infrastructure in this extremely vulnerable area, with the availability of ideal waterfront sites for creating passive flood protection, and the enthusiasm of diverse interested stakeholders, inspired us to seize the moment and reimagine the tip of Manhattan. The Rebuild by Design Competition has created a rare opportunity to assemble federal, state, city properties into an integrated vision, with the potential to leverage private funding for public benefit.

THREE CUSTOMIZED COMPARTMENTS

The resulting Phase 3 proposal is for three compartments that, while linked together, function independently in terms of flood protection. Each is a particular solution to the problems posed by a particular portion of the city, and each responds to the needs and wishes of the particular communities concerned.

C1

The northern compartment protects a deep floodplain next to the FDR Drive, which separates it from East River Park. The park, now badly connected to the community, has room for a protective berm.

C2

At Two Bridges, the relative lack of space between the residential areas and the waterfront favors a mixed-flood-protection strategy. Limited-height flood protection shields the area against most recurrent floods while allowing for views to the waterfront. This is complemented by systematic measures to raise generators, etc., in a so-called 'wet feet' strategy that will allow the community to deal with the much rarer, bigger flood. The BIG Team has given special attention to ensuring that the resiliency measures add much-needed amenities for public housing.

C3

The unifying theme in compartment C3 is the enhancement of the touristic infrastructure in Lower Manhattan. A sequence of attractive urban spaces on the waterfront will protect the city while serving and pleasing the millions of visitors and thousands of workers in the area.





2 THE SITE



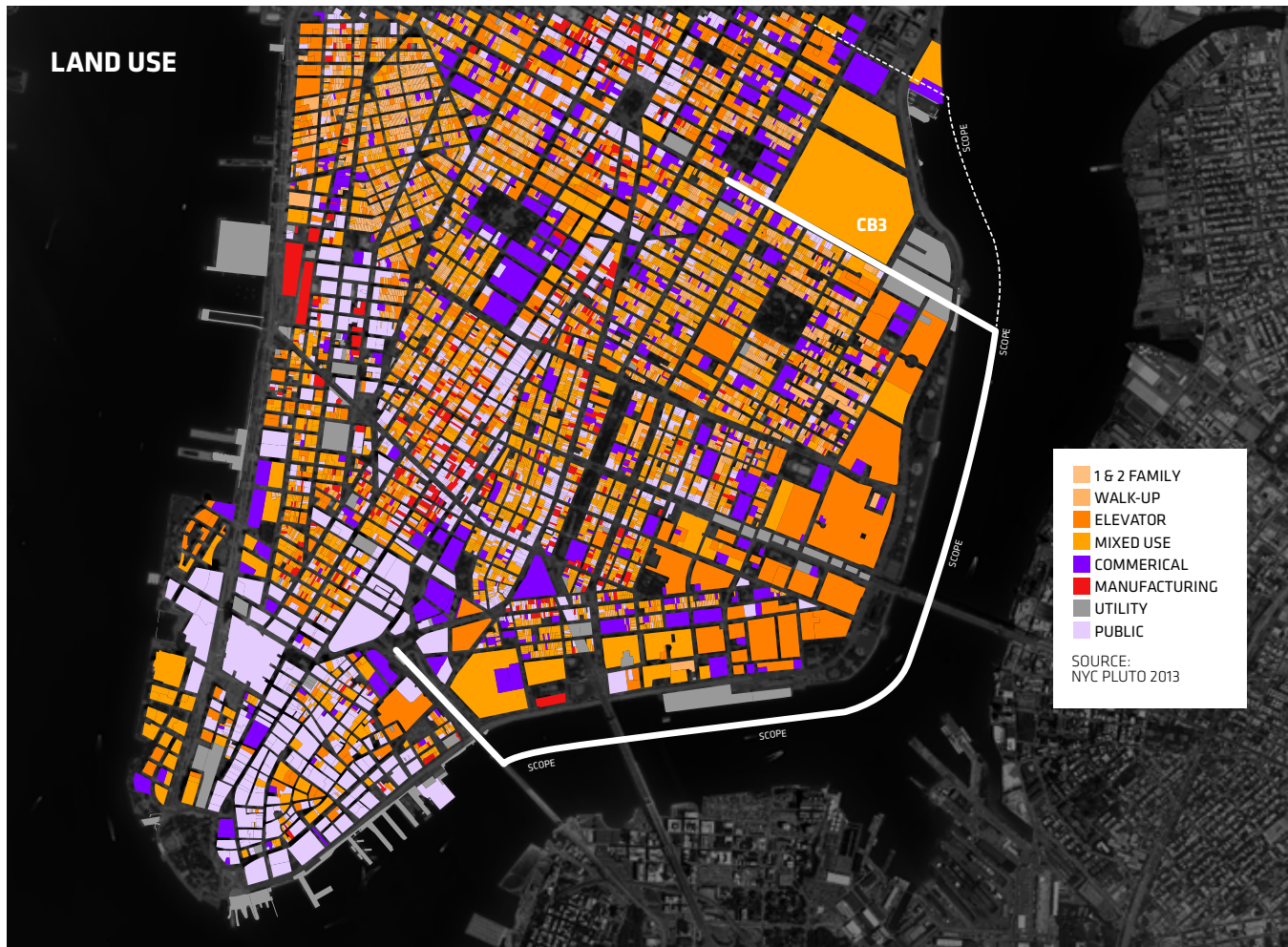
LOWER EAST SIDE

The Lower East Side is a complex and diverse place whose inhabitants span a wide range of ages, incomes, ethnic and racial backgrounds, and language groups. Fittingly for an area that historically served as home to US immigrants, more than a third of the area's residents were born in another country. The neighborhood has served as home turf for immigrants, artists, a strong Jewish population, and many minority groups. Today, that diversity creates a vibrant, complex neighborhood that enriches the city.

The neighborhood also encompasses a wide diversity of incomes, access to transportation and essential services, and social power. It is home to the largest remaining reservoir of affordable housing below 60th Street in Manhattan, and incomes and infrastructure decrease rapidly east of 1st Avenue. The population closest to the East River is not only the neighborhood's most physically vulnerable but also the most socially vulnerable. Acutely self-aware, these residents perceive their situation as tenuous, and fear that any improvements will accelerate gentrification and lead to displacement in this area adjacent to increasingly desirable upland streets.

By combining contextually appropriate social infrastructure with flood protection measures, the BIG U seeks to improve quality of life on the waterfront without contributing to resident displacement.

LOWER EAST SIDE

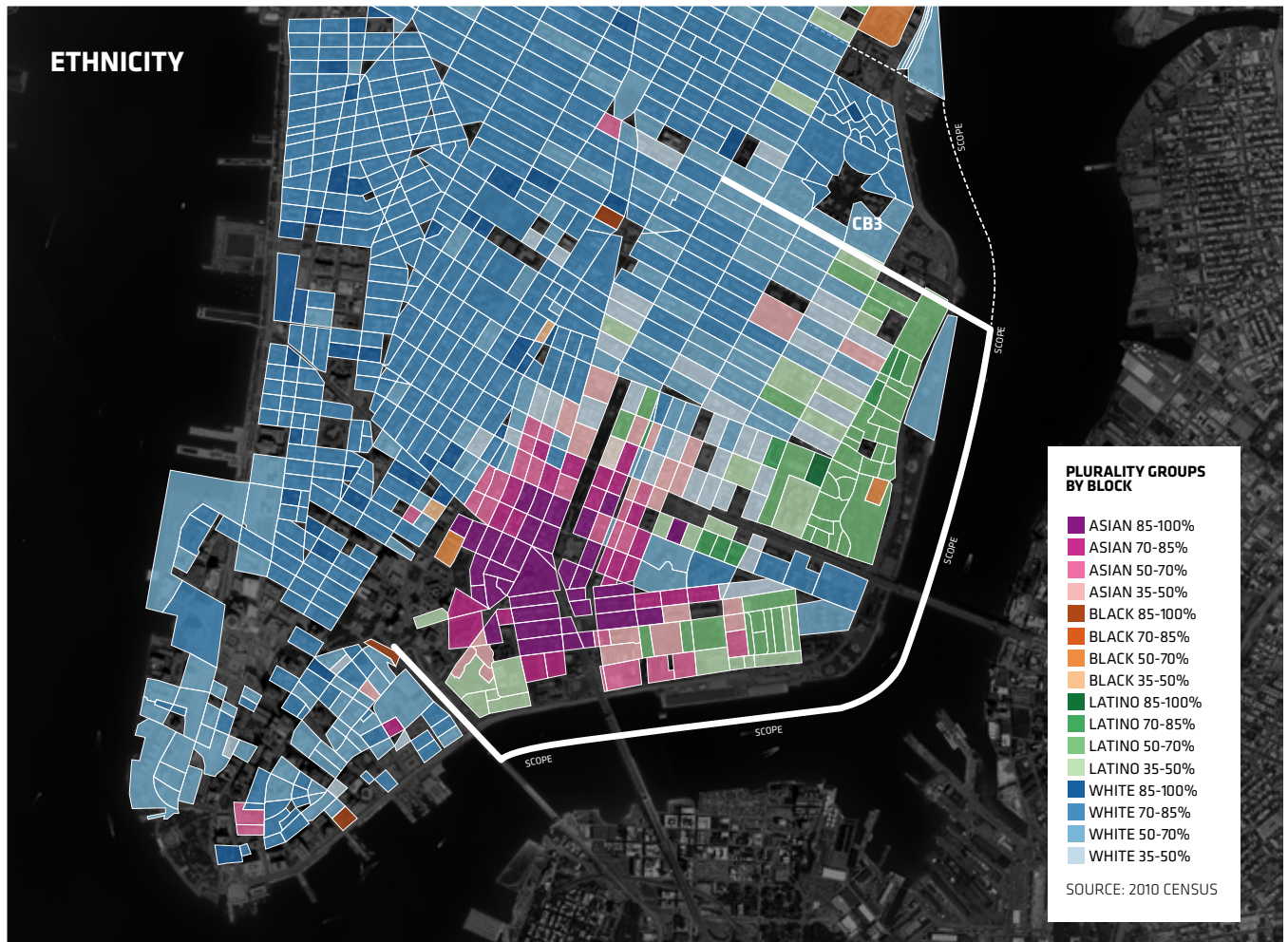


THE L.E.S. IS RESIDENTIAL.

New York City's integrated mix of land uses contributes to its vibrancy and appeal, adding visual interest at the pedestrian level, enhancing safety by keeping eyes on the street at all hours, and easing transportation issues by distributing jobs, homes, schools, and services throughout the city. Workers, students, residents, and tourists mix and mingle in the streets at all hours.

In Manhattan, this diversity is evident: purely residential uses occupy 24.7% of the land, while 26% is occupied by uses that provide street-level activity (commercial and industrial uses), and 11.6% is given to public institutions (schools, museums, hospitals). In Community District 3, 33.5% of the land is residential, 28.4% commercial/industrial, and 10.8% used for public institutions.

In the blocks closest to the waterfront, this diversity disappears. East River Park and associated open space take up 28% of the land, while purely residential uses occupy 47% of the non-open-space land (34% of total). Only 17% is devoted to commercial/industrial uses and 4% public institutions (mostly schools). The net effect of this homogeneity is lack of services, fewer local employment opportunities, greater transportation needs, isolation, and decreased safety.

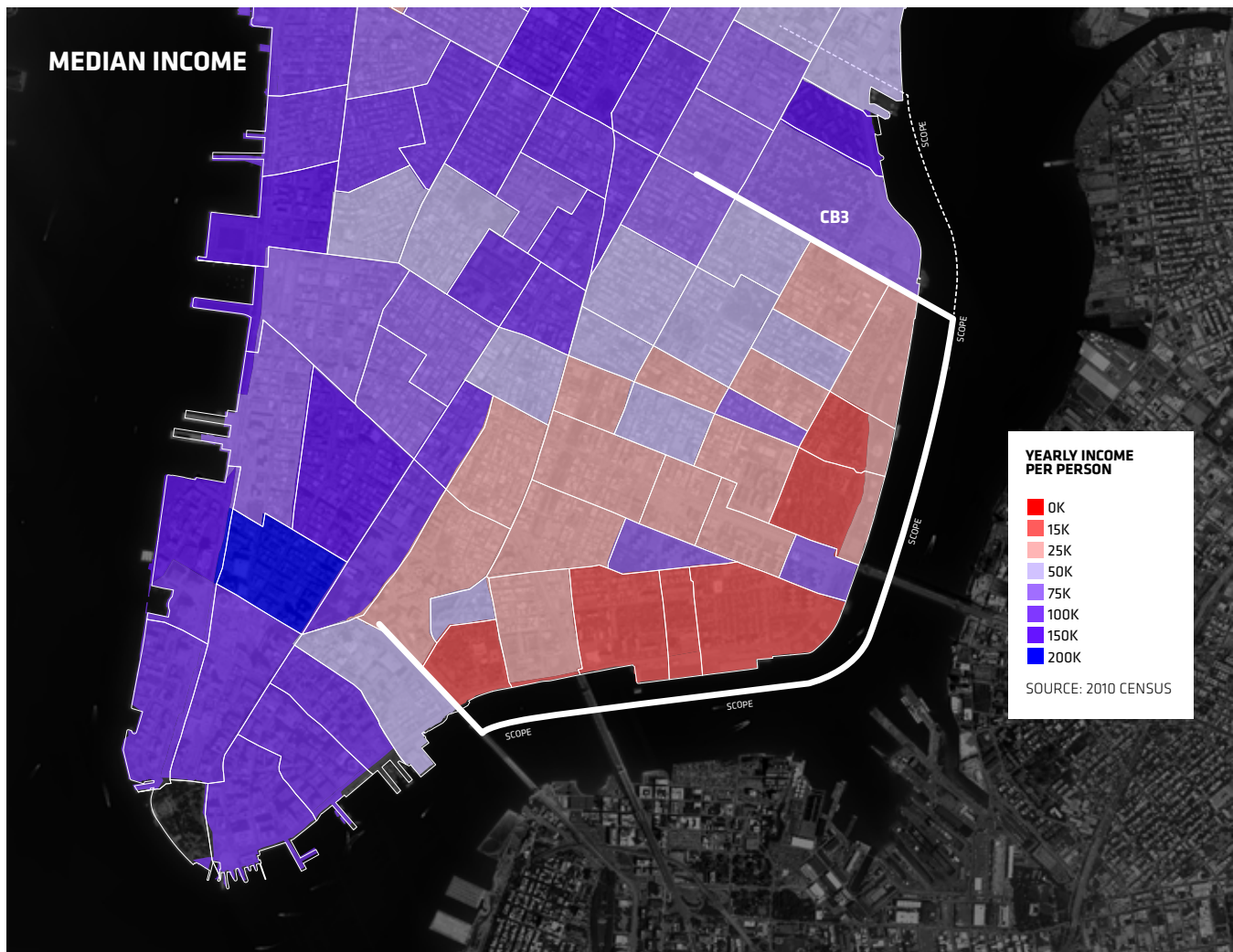


THE L.E.S. IS DIVERSE.

While New York is generally perceived as diverse, the 2010 Census showed that the plurality of residents in the vast majority of blocks in Manhattan below 60th Street is actually white. Community District 3, bounded by 14th Street to the north, the East River to the east, Brooklyn Bridge to the south and Bowery to the west is among the most racially diverse neighborhoods in the City. The district's population is 32.4% white, 33.8% Asian, 24.6% Hispanic, and 7% African American. The community is filled with a diversity of cultures, religions, and languages, and is immensely proud of its heritage as a historic first stop for many immigrants: a role it still serves, as 35% of its population is foreign-born.

This multiplicity of languages and cultures is a boon to New York City and makes the Lower East Side among the most interesting and visited neighborhoods in the five boroughs. It also creates a concentration of residents who may require assistance navigating the City's social, political, and civic realms. In times of emergency, it indicates a population that is more difficult to contact and requires specific intervention.

LOWER EAST SIDE



THE L.E.S. HAS A SOCIALLY VULNERABLE POPULATION.

In addition to being racially diverse, Community District 3 is increasingly economically diverse; in 2012, nearly 30% of resident households had incomes below \$19,000/year, and 47% of the area's population received income support in 2010 (i.e. medicare and other social welfare programs). Meanwhile, 17% of resident households, most of whom moved to the area after 2008, had incomes in excess of \$114,000 - as a consequence, CD3 had the fifth highest income diversity ratio in the City. Long-time, low-income residents strongly fear displacement by wealthy newcomers.

The Lower East Side's high concentration of immigrants, seniors, low-income residents, and non-English speakers, all of whom contribute to the city's vital diversity, renders it socially and physically vulnerable. The greatest concentrations of vulnerable populations are found in the affordable housing clusters by the river.

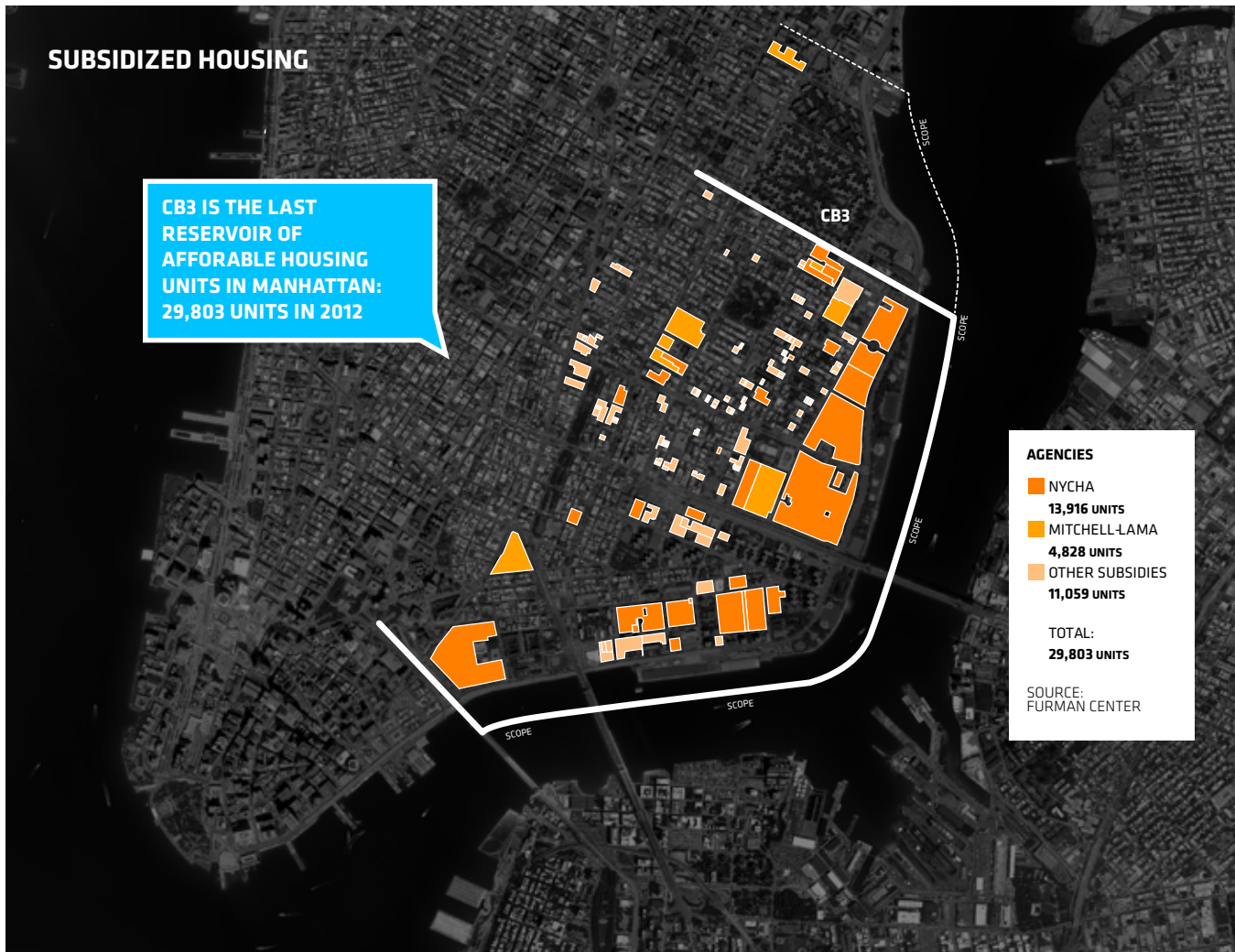


THE L.E.S. IS A TRANSPORTATION DESERT.

Although it is crisscrossed by six subway lines, the Lower East Side has very little access to transit. Subway lines pass over and under the neighborhood; from the Brooklyn Bridge to 14th Street, there are only 2 subway stations west of 1st Avenue / Allen Street, both of which are located below Houston Street. Alphabet City has no stations at all. The L.E.S. is served by busses, which are generally slower and less reliable than subways, and require more transfers. Four crosstown bus routes serve the area between the Brooklyn Bridge and 14th Street.

Lack of transit places an additional burden on residents who are low-income, elderly, disabled, or otherwise vulnerable, requiring them to walk longer distances to access goods and services, and increasing car dependence among populations that may not be able to afford or operate private vehicles. Lack of public transportation may endanger these populations in times of emergency.

LOWER EAST SIDE



THE L.E.S. IS A RESERVOIR OF AFFORDABLE HOUSING.

The Lower East Side contains the largest concentration of public and affordable housing in Manhattan: nearly 14,000 of Manhattan's 53,890 NYCHA-run units are in CB3, and 39% of the 76,000 total housing units in the district are affordable (maintained through NYCHA, Mitchell-Lama, or other subsidies). The Lower East Side's affordable housing represents some of the last places where working-class and low-income residents can live in proximity to Manhattan's vast array of jobs and opportunities.

The oldest NYC public housing structures were built in the 1930s; the newest were built in the 1970s. Many of the buildings need repair; most were built according to a towers-in-the-park model that created cherished, if unimpressive, open space around the houses but also isolated them. That isolation has persisted; today, the majority of housing campuses include few (if any) retail or service establishments and are infrequently visited by nonresidents.



THE L.E.S. LACKS SOCIAL INFRASTRUCTURE

Along the East River waterfront, where public housing structures cluster together, and transit stops are few and far between, the vibrant street life enjoyed by much of the Lower East Side dies out. Especially in the blocks dominated by NYCHA campuses, grocery stores, drugstores, medical offices, and community facilities (libraries, museums, etc.) are few and very far between. This forces the residents, who include many seniors and people with limited mobility, to travel further to meet their basic needs, despite limited transit access. Just as absence of transit access results in costly car dependency, spending more time procuring basic goods and necessary services (such as eviction counselling, interpretation services, etc.) leaves less time for work and childcare, and contributes to structural poverty.

LOWER EAST SIDE



THE L.E.S. HAS LITTLE DESIRABLE OPEN SPACE.

Despite the expanse of East River Park, which constitutes nearly half of Community District 3's total 123 acres of open space, the Lower East Side is underserved by parks, with only .7 acres of parkland per 1,000 residents. There is little variety among the types of open spaces available - flat squares and ballfields make up the majority of assets, with many ballfields and courts available only to paying members of leagues. In East River Park in particular, user fees make fields inaccessible to local residents. In the Two Bridges area, recreation spaces are few and far between.

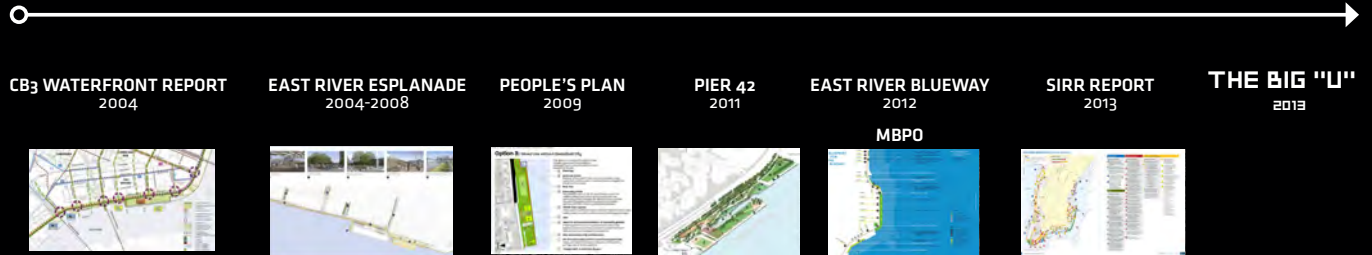
In a dense city like New York, open space contributes to improved mental and physical health. Green open spaces create room for relaxation and gathering, while relieving extreme temperatures in the summer and improving local air quality. Well-designed, they can incorporate green infrastructure that lessens pressure on combined sewer systems, thereby improving water quality. They also provide an escape from urban density that is available at no cost to all comers.



THE L.E.S. IS CUT OFF FROM ITS WATERFRONT.

Along the length of the Lower East Side, connection to the waterfront is interrupted by the FDR Drive - a 6-lane highway with average traffic volumes of up to 4500 vehicles per hour (during peak travel times). Below Montgomery Street, the FDR is elevated, creating a dark space beneath that has poor pedestrian access. Where the EDC is installing an esplanade along the waterfront, pedestrians must first cross South Street, an access road just west of the FDR, and then through the uninviting space beneath the highway to access it. Between Montgomery Street and Avenue C/16th Street, the FDR is at grade, forming a high-speed barrier between local residents and East River Park. Five steep pedestrian overpasses, which can be difficult to navigate for seniors or those with limited mobility, cross the highway to provide park access.

L.E.S. VISIONING



L.E.S. VISIONING



Year: 2004

Author: Manhattan Community
Board 3

COMMUNITY BOARD 3 WATERFRONT REPORT: 2004

In an effort to guide EDC's nascent planning process for a continuous waterfront esplanade along the East River, Manhattan Community Board 3 held a two-evening community design workshop that engaged approximately 100 residents. The resultant plan requested green infrastructure improvements, enhanced transportation connectivity, and programming that reflected the neighborhood's needs. Several of the recommendations of CB3's plan were incorporated into later plans, including green streets leading to the river, better bike connections, improved pedestrian access, a (long-promised) park at Pier 42, and programmed social/activity spaces below the elevated FDR. While some improvements have been made along Pike Slip and other waterfront blocks, and the park at Pier 42 is now (after a long struggle) in design, few of the ideas expressed in this vision have achieved fruition, despite reiteration through later visioning processes.



Year: 2004
Author: Rebuild Chinatown Initiative

AMERICA'S CHINATOWN: 2004

Rebuild Chinatown Initiative's 2004 plan saw the waterfront as a place for their constituents to escape from urban congestion, as well as a space with economic development potential. Encapsulated within a plan more geared toward supporting economic development and cultural expression in Chinatown, *America's Chinatown's* waterfront recommendations envisioned a continuous waterfront park whose programming integrated Chinatown's interests with those of the neighboring communities. Key plan features included: a continuous waterfront park with open areas for gathering and winding paths, improvements to transportation linkages, upland green streets leading to the waterfront, removal of barriers to pedestrian access, and the addition of economic features including a night market that could double as performance or activity space, and an offshore tourist attraction. With the exception of the offshore tourist attraction, the waterfront vision expressed here was nearly identical to CB3's.

L.E.S. VISIONING



Year: 2005-2009 (revisions)

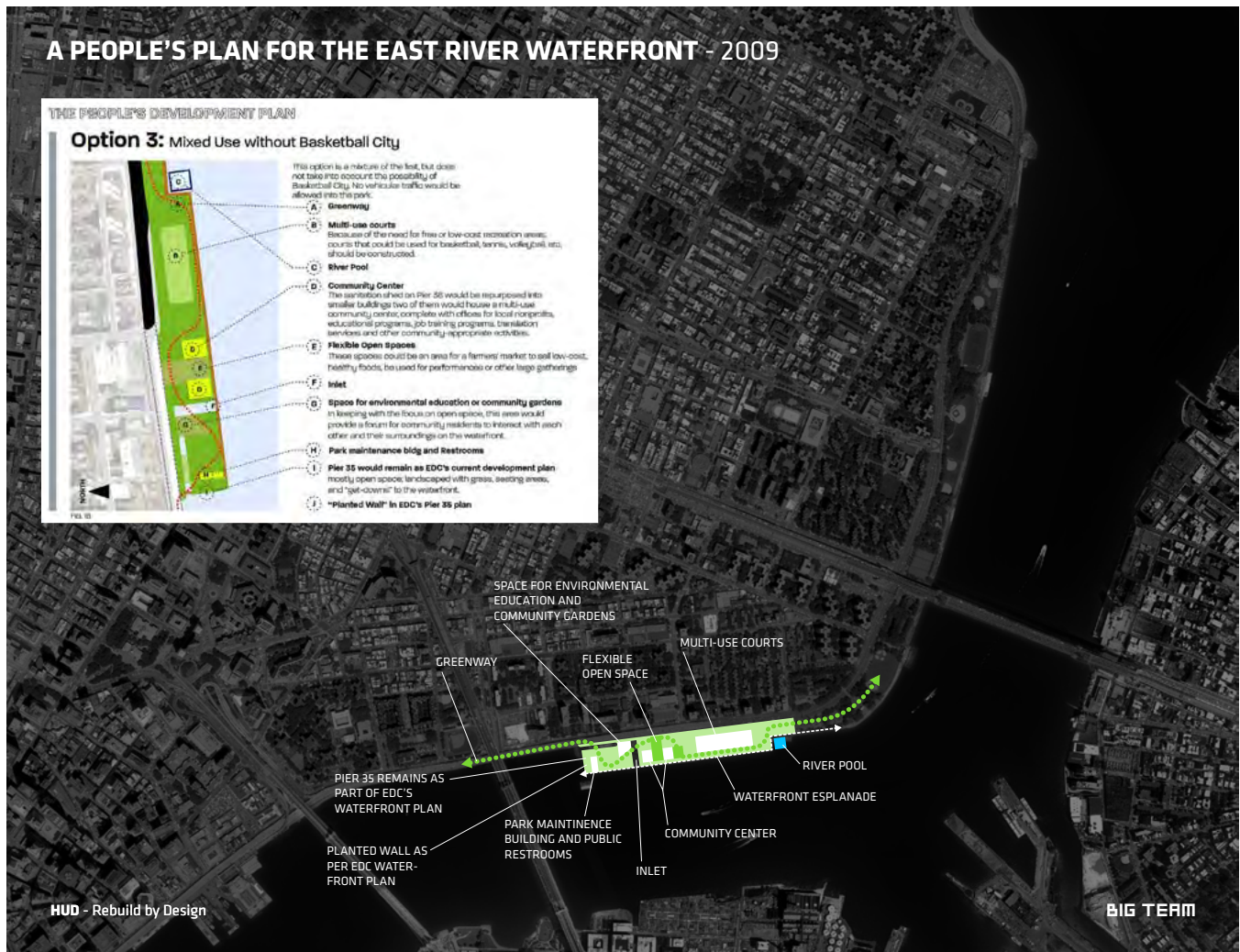
**Author: NYC Economic
Development Corporation**

EAST RIVER ESPLANADE PLAN: 2009

The NYC Economic Development Corporation's eventual plan for a continuous esplanade along 2 miles of the East River shore, stretching from the Battery to Pier 35, incorporated many suggestions from community visions. The plan featured the continuous, concrete esplanade along the East River, a series of pavilion structures below the elevated FDR that would house community programs and activity spaces, an Eco-Park at Pier 35, improvements to waterfront blocks of streets that connect to the river, and a public park at Pier 42. The first phase of the esplanade, in the financial district, was completed in 2011, and a section between Pier 35 and Pike Slip is currently under construction.

Although the project received national and international acclaim, many community members felt disappointed that plans for the park at Pier 42 seemed too high-end and geared toward tourist attraction. In addition, community spaces planned for pavilions below the FDR were eventually eliminated, greatly reducing the benefit to the resident population. In response to EDC's proposal and a feeling of underrepresentation from the CB3 process, a group of CBOs and local tenant associations came together to make the People's Plan.

A PEOPLE'S PLAN FOR THE EAST RIVER WATERFRONT - 2009



Year: 2009

Author: O.U.R. Waterfront Coalition

A PEOPLE'S PLAN FOR THE EAST RIVER WA-

The People's Plan offered a direct response to EDC's East River Esplanade Plan. Focused on piers 35, 36 (home to EDC's Basketball City facility, which many in the community viewed as a betrayal of Mayor Dinkins' promise that, in exchange for siting a sanitation garage on Pier 36, the City would build community space), and 42, the plan requests: free and low-cost services including sports and recreation opportunities, open space, education and community services, and space for appropriate businesses; celebration of local cultural diversity in waterfront spaces; programs and services that improve local health and quality of life; and space for low-cost businesses that represent opportunity for local business owners and meet residents' needs. Physically, the plan requests that a park along the piers include a greenway, connection to the East River Esplanade, multi-use ball courts, a filtered river pool, a community center, flexible open spaces, water access, education space, community gardens, and restrooms.

In response to this plan, control over Pier 42 was transferred from EDC to the Parks Department, who have moved ahead with park planning.

L.E.S. VISIONING



Year: 2012-ongoing
Author: NYC Department of Parks and Recreation / Matthews Neilsen Landscape Architects

PIER 42 PARK: 2012 - ONGOING

In response to the People's Plan, Pier 42 is being turned into an 8.1 acre park with open space and habitat areas. Currently in the process of securing approvals, the park is expected to open in 2016 and contain: better connections to upland neighborhoods, a bikeway that connects to nearby bike infrastructure, a playground and play lawn, open space for picnicking, restored habitat areas, water access, fishing areas, a river promenade, a pier pavilion with a snack bar, and thick upland plantings to buffer noise and emissions from the FDR. The park design process included another public visioning session, where participants requested open space, a public rec center, habitat areas, food concessions, and green space.



Year: 2013

Author: Manhattan Borough

President's Office / WXY Architects

EAST RIVER BLUEWAY PLAN: 2013

The first major sustainability plan for the East River Waterfront, the Blueway combined extensive public outreach with review of existing plans to create a consolidated plan to enhance community safety and quality of life. The plan focused on engaging the river, planning for resilient neighborhoods, improving community access, and creating a continuous waterfront experience. Specific plans for the Lower East Side included: improving pedestrian connections to the waterfront, creating green corridors along streets that lead to the river, calming traffic at the East Houston Street overpass to increase pedestrian safety, capturing storm water at the ballfields in East River Park, elevating the East River Greenway to create a flood barrier, and creating a Blueway Crossing at 14th Street that would improve bike and pedestrian traffic flow while adding flood protection. Along the river shore, the blueway explored a system of absorbent salt marsh pools.

While the Blueway plan was largely embraced by the City and the community, no projects have yet been undertaken.

L.E.S. VISIONING

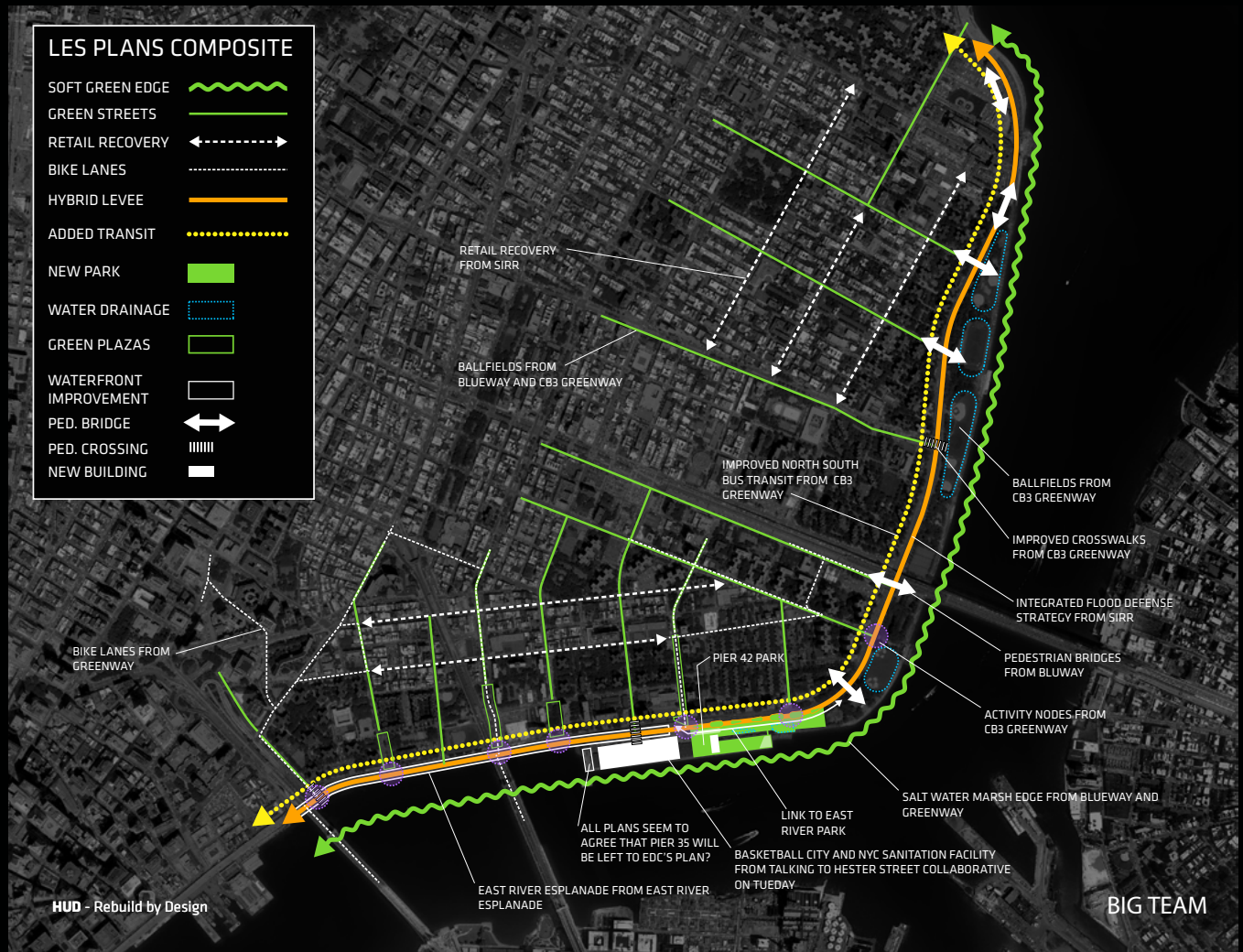


Year: 2013

Author: PlaNYC / Mayor Michael Bloomberg

A STRONGER, MORE RESILIENT NEW YORK (SIRR): 2013

Mayor Bloomberg's Special Initiative for Rebuilding and Resiliency devised citywide strategies for protecting the City's population and infrastructure from the future effects of climate change. The plan envisioned a complementary array of large and small scale interventions that, in combination, would radically improve the City's ability to weather increasingly dramatic storms. On the Lower East Side, the plan recommended: a multi-purpose wall or levee at the East River that would protect Manhattan from flooding and create economic opportunity; retrofitted building codes that require structural improvements and changes to mechanical systems; protection of critical infrastructure; economic recovery initiatives in areas impacted by 2012's Hurricane Sandy; and a package of incentives to entice supermarkets and grocers to locate in Sandy-affected neighborhoods, where economic uncertainty threatened to reduce residents' quality of life.



Consolidated Vision

A DECADE OF PLANNING

The past decade of planning for the Lower East Side waterfront has produced a remarkably consistent vision. Participants in the processes have repeatedly requested: better connection to the waterfront, more open green space, low or no-cost recreational amenities that serve the resident population, community social services and spaces, improved transit and bicycle connections, and a celebration of the river that extends upland along connecting streets. Integrating these oft-repeated ideas into a comprehensive system of flood protection will help increase the physical and social resiliency of the Lower East Side.







PARTICIPATORY DESIGN

PROCESS

The Big U's public outreach work focused on cultivating understanding and generating excitement about the possibilities for flood protection and civic infrastructure on the Lower East Side.

In Round I, the team used interactive models to demonstrate potential flood protection options and generate discussion among workshop participants. Everyone participated in designing their own waterfronts, with integrated protection schemes and program options. The team took participants' input to heart and used it to refine design options that were presented and discussed in Round II.

In East River Park, people responded enthusiastically to visions of a protective berm, increased park access, open space, and water access. In Two Bridges, while the perfect protection scheme proved elusive, there was near-universal interest in a more prolonged and in-depth community process that focus on devising protection that champions visibility, connection to the water, safety, security, and community-accessible programming.

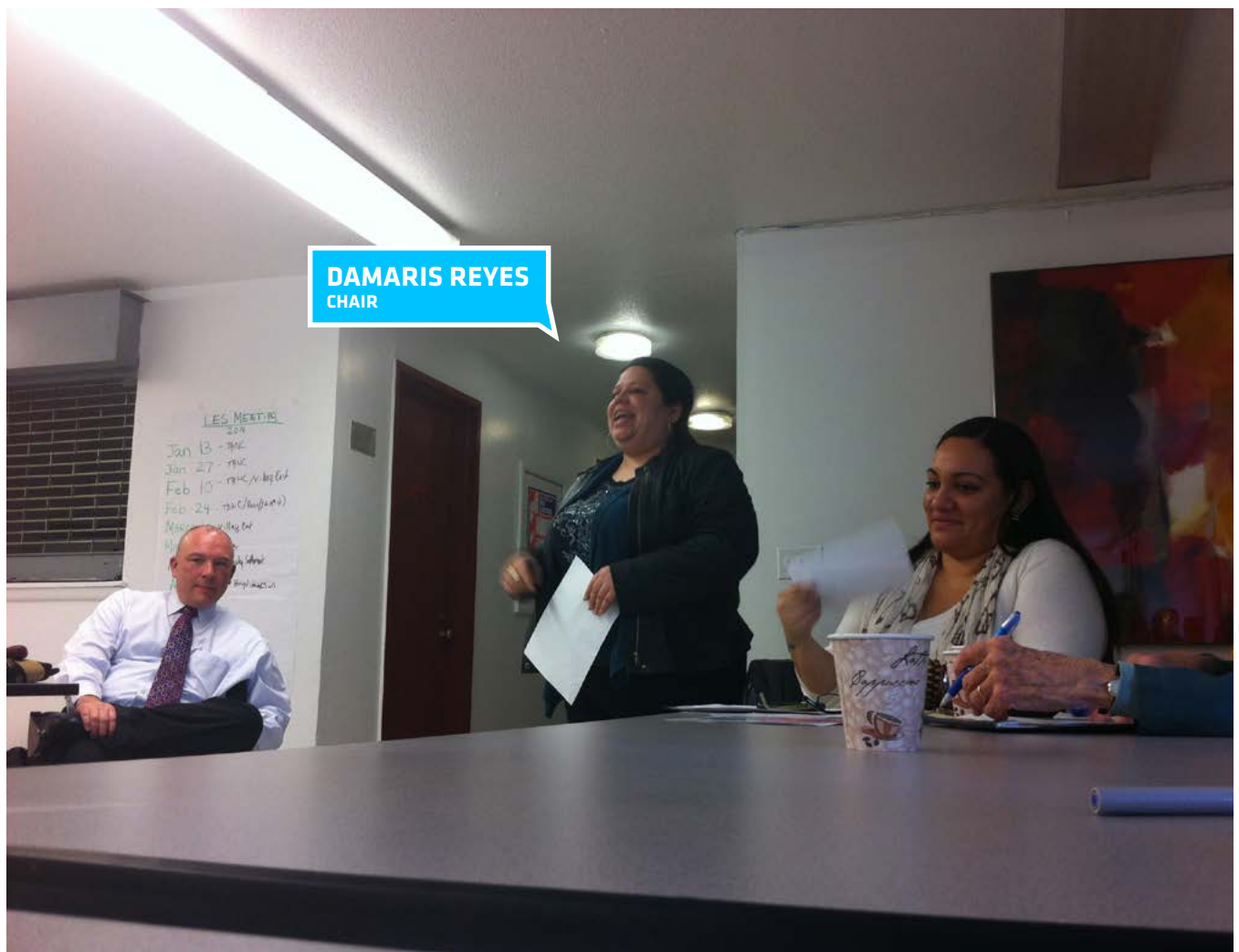
COMMUNITY PARTNER: LESREADY!



MEMBER ORGANIZATIONS



AMERICAN RED CROSS
ASIAN AMERICANS FOR EQUALITY
ASSOCIATION OF LATINO BUSINESS OWNERS AND RESIDENTS (ALBOR)
CATHOLIC CHARITIES
CHINESE PROGRESSIVE ASSOCIATION
COMMUNITY BOARD 3
COOPER SQUARE COMMITTEE
EAST SIDE TABERNACLE
FEGS
GOOD OLD LOWER EAST SIDE (GOLES)
GRAND ST. SETTLEMENT
HAMILTON MADISON HOUSES
HENRY STREET SETTLEMENT
LOWER EAST SIDE POWER PARTNERSHIP
NAZARETH HOUSING
NEW YORK DISASTER INTERFAITH SERVICES (NYDIS)
OCCUPY SANDY
OPERATION HOPE
RYAN-NENA COMMUNITY HEALTH CENTER
SIXTH STREET COMMUNITY CENTER
THE SALVATION ARMY
TWO BRIDGES NEIGHBORHOOD COUNCIL
UNIVERSITY SETTLEMENT
URBAN JUSTICE CENTER - COMMUNITY DEVELOPMENT UNIT
VILLAGE EAST TOWERS
WORLD CARES CENTER



DAMARIS REYES
CHAIR

LES Ready!, which gathers many Lower East Side community-based organizations together to coordinate response, resources, and preparedness planning and training, was essential in coordinating the outreach effort for the BIG U. Staff and volunteers helped to put the team in contact with key community members, organized flyering drives, orchestrated venues, and even provided transportation in this underserved area to ensure that all interested parties could attend BIG U workshops.

ROUND I

ATTENDANCE & SUMMARY FINDINGS

Roughly 15 community members attended the February 10 meeting, held at the Madison Houses Community Center. Approximately 45 community members attended the February 26 meeting, held at the Lower East Side Girls' Club.

Outreach for the events was managed by GOLES (Good Old Lower East Side) through building-to-building flyering, mailers, and face-to-face interactions. After a less than satisfactory turnout for the Feb 10 meeting, GOLES provided transportation to ensure that all interested community members could attend the Feb 26 meeting.



February 10



February 26

TWO BRIDGES SUMMARY: LIKES AND DISLIKES

In the Two Bridges area, workshop participants liked:

- Burying the FDR to improve waterfront access and increase programmatic opportunity
- Maintaining views and access to the water
- Increasing programmable space
- Providing recreation facilities

Participants disliked:

- Darkness
- Walls
- Visual obstructions
- Loss of planned waterfront improvements

EAST RIVER PARK SUMMARY: LIKES AND DISLIKES

By East River Park, workshop participants liked:

- Improving park access over the FDR
- Visual connection into the park and to the water
- Access for all populations (regardless of physical ability and socioeconomic status)

Participants disliked:

- Losing/sacrificing recent park improvements
- Visual obstructions (impeding upland views of the park or views to water)

PROGRAM SUMMARY

Participants liked a range of program elements, but particularly focused on programs that were beneficial to and desired by the local resident population. These included no-fee recreation opportunities, more green open space for relaxing and socializing, and community services including spaces/programs for teens and seniors, jobs/skill training facilities, and spaces like pop-up libraries with free internet access, scholastic coaching, and support services.

TWO BRIDGES PROTECTION OPTIONS

In LES South/Two Bridges, the team presented a series of five protective options, illustrated by interactive models. Participants discussed the options in small groups at tables before beginning to work on designing their own waterfront schemes.



“WET FEET”

Because LES South’s 100-year flood plain contains primarily NYCHA housing, Wet Feet explored a flood accommodation strategy. Ground floor residents are removed to a new public housing structure built on the affected campus’s land. Ground floor residential units are retrofitted to accommodate flood waters, and are used for community programming that will enhance local quality of life.



BASIC 9’ WALL

The most basic flood protection, a 9’ wall would protect upland areas from flood tides and storm surge. Different wall placements have different effects on upland neighborhoods.



ENHANCED WALL: BIG BENCH / BIG STAIRS

Big Bench and Big Stairs added functionality to the basic wall. Seating areas on the outboard side of the wall create the opportunity to use the area for programs. Big Stairs incorporated storage areas suitable for CitiBike stations or other urban amenities on the upland side.



ENHANCED WALL: PAVILIONS BELOW FDR

The straight 9’ wall is re-invisioned as a zig-zagging barrier that creates a series of “rooms” to house program. Floodable spaces on the outboard side could be used flexibly for recreation, performance, and gathering. Flood-secured spaces on the upland side could become permanent shops or community facilities that bring light, amenities, and community to an underserved area.

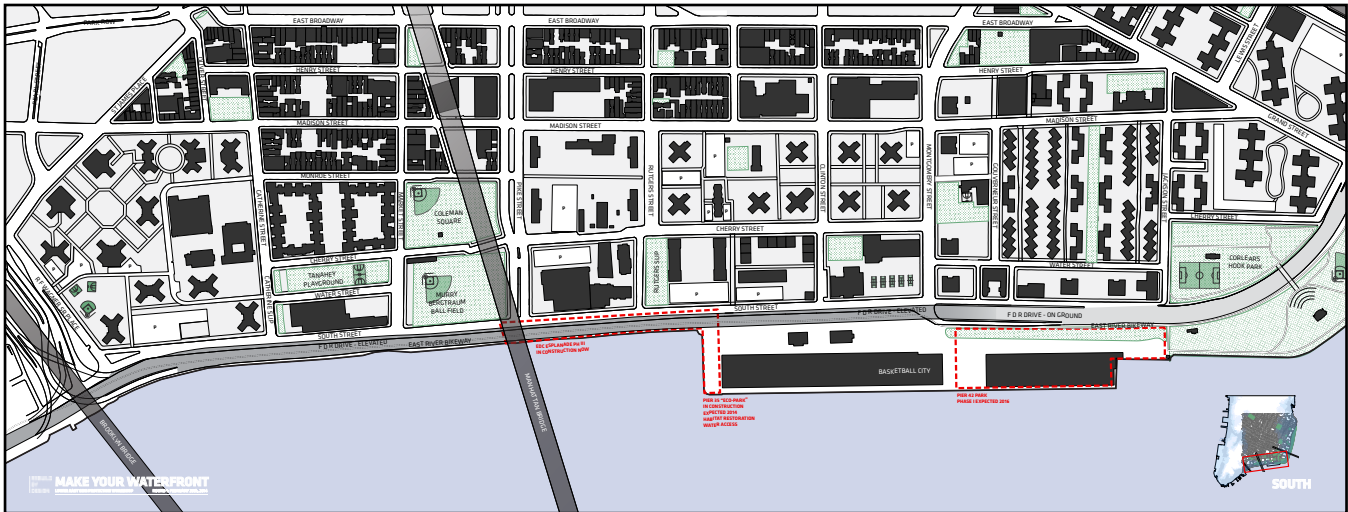


WALL ALTERNATIVE: BURY THE FDR

Rather than building a barrier to the waterfront, the final option removes the biggest obstacle in LES South: the FDR Drive. By burying the FDR beneath a 9’ high protective berm, this option increases waterfront access, creates new areas for program and passive recreation, and mitigates air and noise pollution from the highway.

COMMUNITY WORKSHOPS

TWO BRIDGES FEEDBACK: SURVEY RESULTS



TWO BRIDGES PROTECTION: TOP CONCERNS FROM SURVEYS

Ground Floor Flood Proofing	Wall at Residence Edge	Wall with Bench	Wall with Stairs & Storage	Pavilions below FDR; optional wetland	Bury FDR Under Berm
Impractical	Deployable preferred	Blocks views	Blocks views	Blocks views	Seems expensive
Interesting	Blocks light	Potential Safety Issues	Potential Safety Issues	Needs to be accessible	Needs more greenery
Inconvenient (for seniors)	Increases CO2 near residential	Deployable Preferred	Deployable Preferred		

For the LES South/Two Bridges area, survey respondents strongly preferred burying the FDR Drive. Comments indicated that this option offered the best visibility, provided much-needed open space, and delivered the most effective flood protection. The main concern about burying the highway was its anticipated expense.

IN THEIR OWN WORDS:

1. Ground floor flood proofing

Seems like a temp. solution. What about the ppl. on top floors?

4. Pared + Escaleras y estación de bicicletas

este me gusta
se puede que no se dañen las cosas
ahí.
se pueden guardar cosas.

I like this; you can store things underneath

5. Pavilion under highway + wetland

could work - more flexible.

6. Berm + underground highway

Best I think for this area.

TWO BRIDGES FEEDBACK: TABLE DISCUSSIONS

Some tables found the Wet Feet and Pavilion concepts promising, but nearly all tables approved of burying the elevated FDR. In general, participants disliked walls and obstacles that blocked visual connection to the water, on the grounds that they were likely to increase crime in an area that already feels unsafe.



“WET FEET”

Some participants who were opposed to walls due to safety and access concerns preferred this option. Participants were concerned about residents not being able to exit buildings or procure supplies during floods. Others worried about getting NYCHA's agreement for this plan.



BASIC 9' WALL

This seemed to be most participants' least favorite option - there were many concerns about interfering with light, visibility, and physical access, in addition to directing CO₂ into the neighborhood. Many people suggested deployable or retractable walls as an alternative.



ENHANCED WALL: BIG BENCH / BIG STAIRS

In addition to concerns voiced about the basic wall, participants believed that this option would attract homeless people. One table saw an opportunity to use the bench for skateboarding. The storage capacity of Big Stairs was moderately well received.



ENHANCED WALL: PAVILIONS BELOW FDR

Participants feared the wall-like elements of the pavilion design, although the potential for expanded programming sparked a fair amount of interest. Participants were excited about arts and community programming (e.g. pop-up libraries or skills training programs), but wary of big-box or high-end retail. They also worried about floods on the outboard side. Some were concerned about air quality in the pavilions.



WALL ALTERNATIVE: BURY THE FDR

This option had by far the most support. It expands access to the waterfront and creates room for programs. Many people felt this option was unrealistically expensive, while others worried about ventilation and flood-proofing the highway. The orange foam led some to believe that the berm did not include green space.

COMMUNITY WORKSHOPS

TWO BRIDGES FEEDBACK: DESIGN YOUR WATERFRONT

For this exercise, participants worked in groups to develop a protection scheme and set of programs along the waterfront. Four tables chose to work on LES South/Two Bridges.



TABLE 1: BURY FDR

This table was highly concerned with providing more programmable space in the area. They were concerned with cost-benefit analysis, and would accept the zig-zag wall beneath the FDR as well as a berm if it were more cost effective. Programmatically, they wanted to provide sports facilities and social services for Two Bridges.

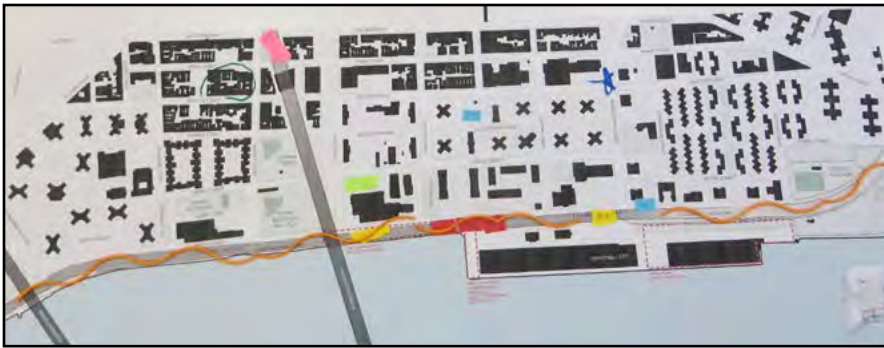


TABLE 2: ZIG ZAG WALL

This table was primarily interested in phasing, and planned to build the low-cost, quickly implemented elements first, then use the first section as a base for the next step of development. A wall could turn into a bench and then into a pavilion.

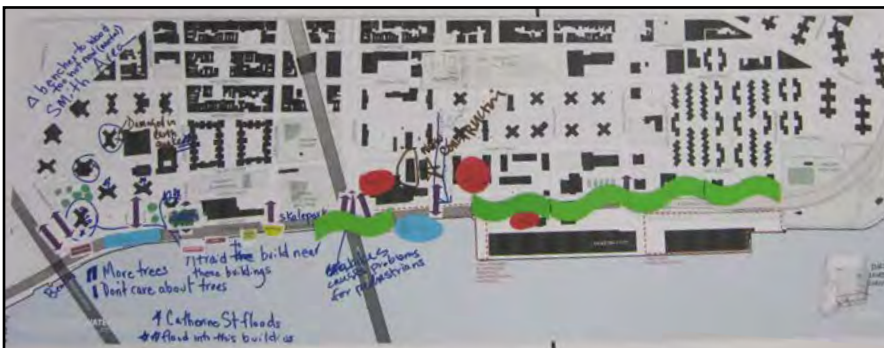


TABLE 3: AMENITIES

This table wanted better connections to the waterfront, particularly below the Manhattan Bridge, and more community programs and amenities to offset overcrowding from building of Pathmark site. Community pool. A berm over the FDR near Montgomery street creates access to new parks at Piers 36 & 42.



TABLE 4: WALL COMBO

This table focused on safety. Opposed to permanent walls that eliminate light and visual connectivity, this table proposed deployable walls or a wall on the edge of Piers 36-42. North of the Manhattan bridge, they envisioned a berm or deployable wall. Additional programming should focus on recreation facilities for the resident community.



ROUND I WORKSHOPS

COMMUNITY WORKSHOPS

EAST RIVER PARK PROTECTION OPTIONS

In LES North/East River Park, the team presented a series of five protective options. While most options correlate to LES South choices, Wet Feet is not feasible in the northern area due to the depth of the flood plain and the sheer number of buildings and property owners involved.



BASIC 7' WALL

The most basic flood protection, a 7' wall would protect upland areas from flood tides and storm surge. Different wall placements have different effects on upland neighborhoods. This wall is shorter than the LES South wall due to a difference in elevation of the bulkheads.



ELEVATED PATH, SEATING

This option elevates the existing bike path along the park's western edge and creates widened wall. Pedestrians and cyclists on the path can look down into the park or out to the water's edge. The wall can incorporate stadium seating at strategic locations.



RAMP WITH BLEACHERS & OVERPASS

An undulating wall with more pronounced areas of seating and passive recreation space, this option incorporates frequent overpasses that connect upland neighborhoods with amenities in the park.



BERM ALONG WATER'S EDGE

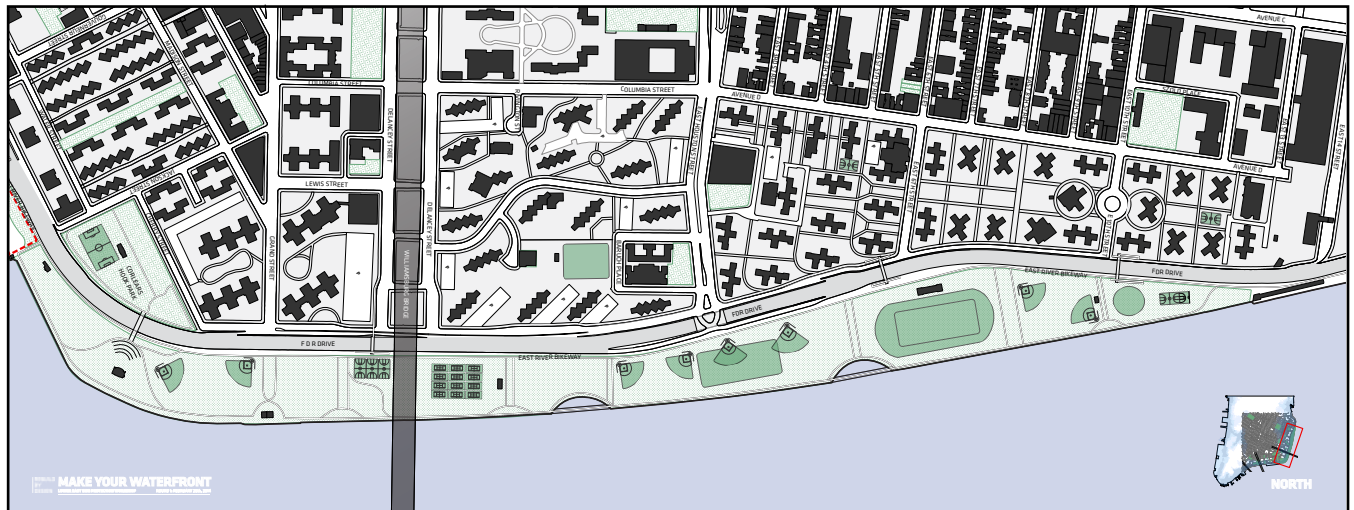
A berm along the water's edge provides new program area and flood protection that does not affect views into the park. Views of the water from the park are blocked; however, this configuration can include direct water access as well as a softer wetland edge: a new amenity for the east side.



BURY THE FDR, WIDEN THE PARK

Burying the FDR beneath an extension of the park creates limitless access to park programs for local residents, and mitigates noise and air pollution from the highway.

EAST RIVER PARK FEEDBACK: SURVEY RESULTS



EAST RIVER PARK PROTECTION: TOP CONCERNS FROM SURVEYS

ERP1. Wall Separating highway from park	ERP2. Elevated Walkway	ERP3. Elevated walkway with side bleachers	ERP4. ramp with bleachers and pedestrian bridge	ERP5. berm at waters edge	ERP6. berm over highway
Blocks Visibility	Blocks Visibility	Blocks visibility	Great Bury FDR	More Greenery	Expensive
Unattractive	More Greenery	Maintenance	Security and Safety	Blocks visibility	Maintenance
Air Quality Reduction	Separates Community	Security and Safety	More Greenery	Security and Safety	More Greenery
Separates Community	Access for Seniors and Disabled		Maintenance	Best Design	

For the LES North / East River Park area, survey respondents expressed a mixture of preferences. Berming over the FDR, creating a berm at the water's edge, and creating a wall with bleachers and new pedestrian bridges all received positive feedback. Among the workshop tables, persistent concerns about interrupting the existing visual connection among park users, residents, and drivers led most groups to bury the FDR.

IN THEIR OWN WORDS:

2. Elevated walkway

Good idea! just make more flexible. consider entire area opinions and all ages.

3. Elevated walkway with side bleachers

It blocks - closes the Park.

5. Berm at water's edge

Provides flood protection, access, recreation, and could incorporate green space and habitat

6. Berm over highway

Like it But with greenery. RAIN GARDEN. Skate Park. volleyball. Hand ball court. Ferry landing

COMMUNITY WORKSHOPS

EAST RIVER PARK FEEDBACK: TABLE DISCUSSIONS

Every table thought that an unadorned wall at the FDR was little more than a barrier to views, although a wide, ramping wall with new pedestrian overpasses was embraced. A berm at the water's edge got mixed reviews, while burying the FDR retained its appeal.



BASIC 7' WALL

Although walls in this area did not receive the same vitriol as in the Two Bridges area, participants were generally concerned about maintaining visual connection to the park from upland areas (for safety), as well as physical access to the park. Many people worried about the effectiveness and durability of walls.



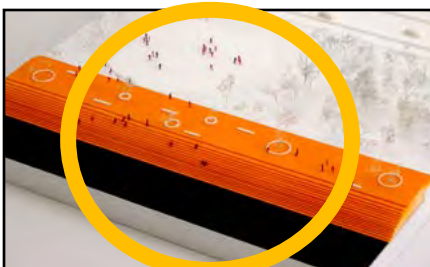
ELEVATED PATH, SEATING

Many people voiced concern about maintaining visual connection between upland areas and the park (for safety). Physical access to the park through/over walls was not well understood. Some people wondered how and where the elevated bike path met the ground.



RAMP WITH BLEACHERS & OVERPASS

The visible pedestrian bridge incorporated in this model made this option more palatable to participants than other wall options. However, positioning the wall against the FDR was seen as “sacrificing” the park to floods. Some individuals interpreted the color scheme of the model to mean that this option (and others) would not include any greenery.



BERM ALONG WATER'S EDGE

A berm along the water's edge was appealing because it did not block views into the park; however, participants voiced concerns about the feasibility of permitting and construction, and the destruction of recent improvements to the park. They also lamented the loss of river views. Some participants read the elevated edge as blocking water access.



BURY THE FDR, WIDEN THE PARK

The majority of tables chose to bury the FDR, creating continuous park access and space for new programming. Many people expressed concern about the expense and feasibility of their choice, in one case stating that it was “a fantasy.” Some individuals interpreted the color scheme of the model as not including greenery.

EAST RIVER PARK FEEDBACK: DESIGN YOUR WATERFRONT

For this exercise, participants worked in groups to develop a protection scheme and set of programs along the waterfront. Five tables chose to work on LES North / East River Park.



TABLE 5: BURY FDR

This table focused on park access by local residents, both physical and programmatic. The table chose a berm over the FDR with frequent access ramps that thoughtfully connect with NYCHA blocks. The park should have free programming accessible to local residents.



TABLE 6: COMBO

This table worked to enhance existing infrastructure, creating walls with stadium seating near sports fields and expanding existing pedestrian bridges. They emphasized protecting essential infrastructure like the Con Ed substation, and protecting existing investments in the park.



TABLE 7: GREEN WALLS

This table created a green, sloping wall along the FDR, and emphasized connections with new/improved overpasses at: East Houston, East 8th, the playfield between Houston and Delancey. Overpasses extend further into the neighborhood to thoughtfully intersect NYCHA campuses. Some ramps, e.g. 10th St, reach the water.



TABLE 8: A SECURE WALL

This table prized security, with a tall and robust wall along the FDR. Steps down from the wall would provide seating space for relaxation. Within the park, this table planned for more gardens and green spaces, to offset air pollution concerns.

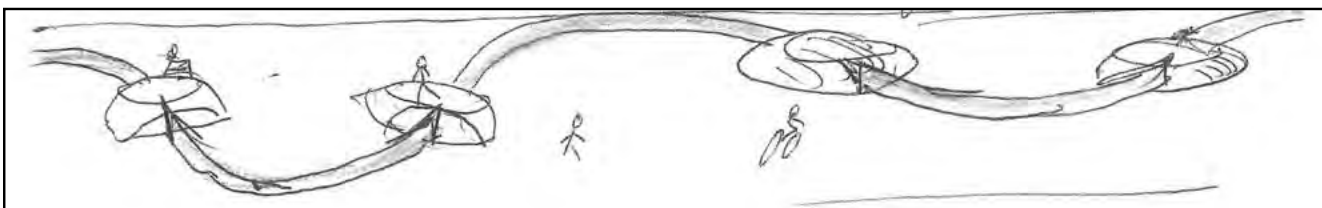
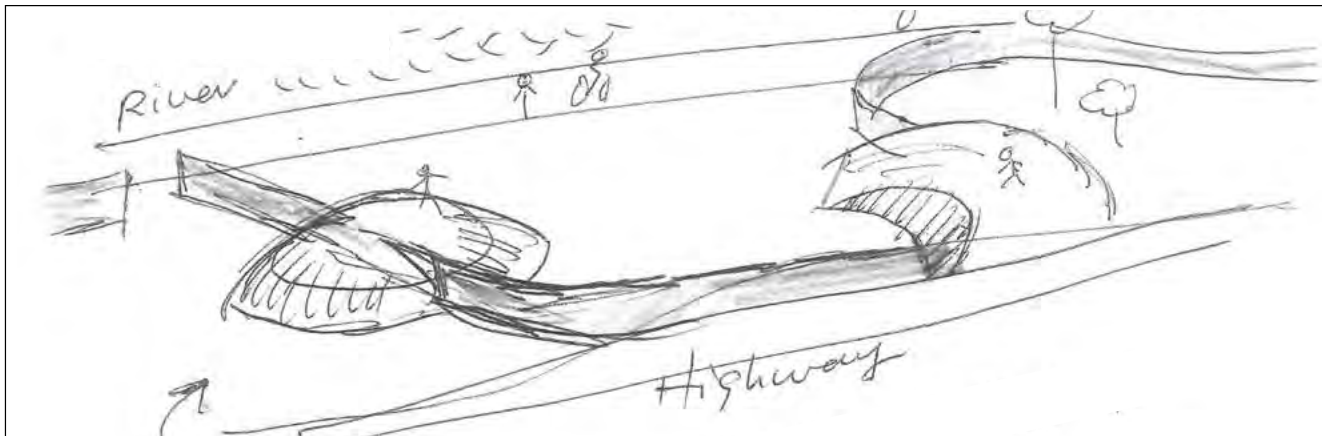
COMMUNITY WORKSHOPS



TABLE 9: MULTIPLE

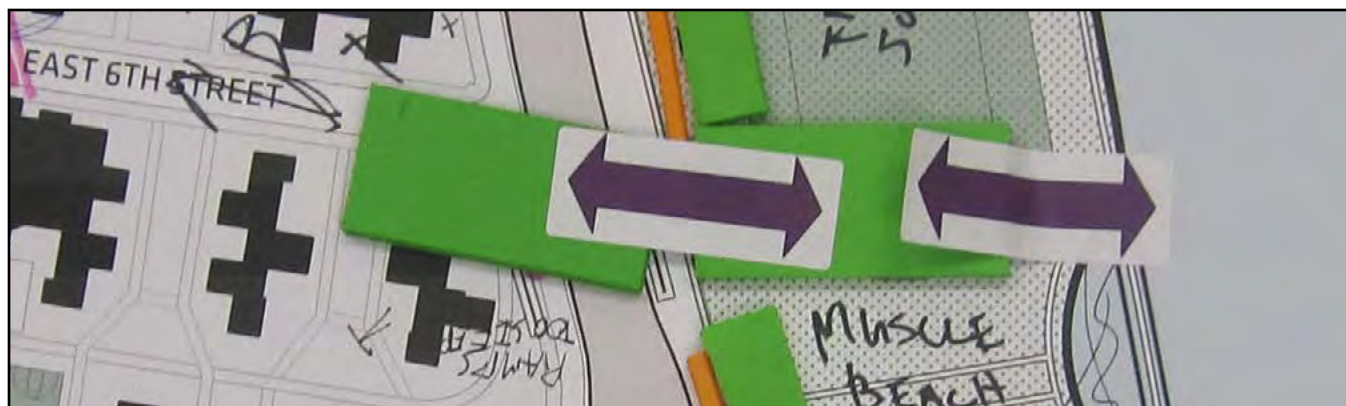
1. Berm over the FDR
2. Berm over FDR for 4 blocks every 10 blocks
3. Undulating walls/berms throughout park
4. Wall along the water's edge to maintain visual access & existing traffic patterns

UNDULATING BERM/WALL SYSTEM ILLUSTRATED



In the author's words,

"The overall plan could put walls & raised berms so as to alternate spaces that are visible/usable with more private, non-viewable areas. To do this, the wall would meander from along the water to the edge of the highway, along sports fields – but having raised berms so overview access of most areas would result. [...] People on raised berms would be able to see crime, etc. By having viewing level areas – eye contact parkside is maintained and park does not have dark corners of crime."



ACCESS

As the intermittent berm concept makes clear, access, both visual and physical, was a major concern to workshop participants.

VISUAL ACCESS

The question of visual access can be broken down into issues of safety and views. Participants feel strongly that visual connections promote safety through an “eyes on the street” mechanism; any object that impedes the ability to see and be seen is regarded as decreasing safety and creating areas ripe for crime.

People also highly value the visual openness that comes from a view toward the water, and do not want to lose those views.

ACCESS ACROSS FDR

Physical access to the waterfront and to East River Park is challenging. At the south end, insufficient pedestrian infrastructure makes crossing South Street dangerous; at the north end, pedestrian bridges crossing the highway are infrequent, too steep, and unpleasant. There is a near-universal desire to improve access to the waterfront in both areas.

Access must accommodate all populations. There were many complaints that models shown at the Round I workshops showed only stairs, and a strong fellow feeling that seniors and the physically encumbered should be included in waterfront access planning.

ACCESS ACROSS PROTECTION

Because the majority of wall-based models did not illustrate access points and deployable gates, participants were confused about their ability to cross protection features. Access to the waterfront is very important.

SOCIO-ECONOMIC ACCESS

Participants were highly concerned that programming and physical features of the waterfront be accessible to resident, low-income communities. This was expressed in a desire for thoughtful connections to NYCHA campuses, for free programming, provision of amenities appealing to the local population (e.g. swimming pools rather than kayak put-ins), and for “unprogrammed” space for socializing.

SUGGESTED CONNECTION POINTS

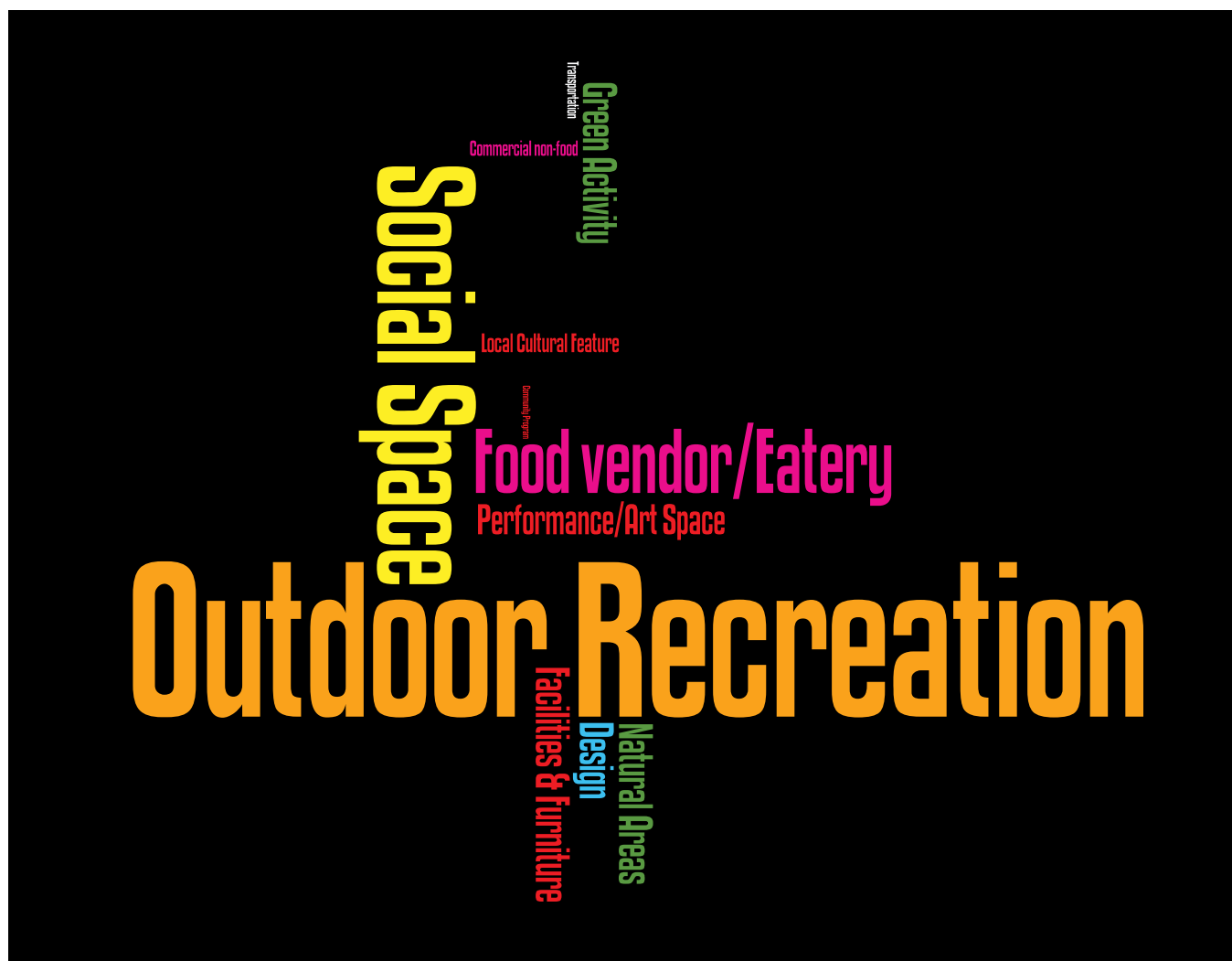
Delancey Street	4
Grand Street	3
Rivington (ext)	3
East 6th	3
East 10th	3
Corlears Hook Park	3
Montgomery Street	2
East Houston	2
East 8th (ext)	2
BK Bridge	1
RF Wagner Place	1
Catherine Slip	1
Market Street	1
Pike Slip	1
Rutgers Slip	1
East 4th (ext)	1
East 12th (ext)	1
East 13th (ext)	1

COMMUNITY WORKSHOPS

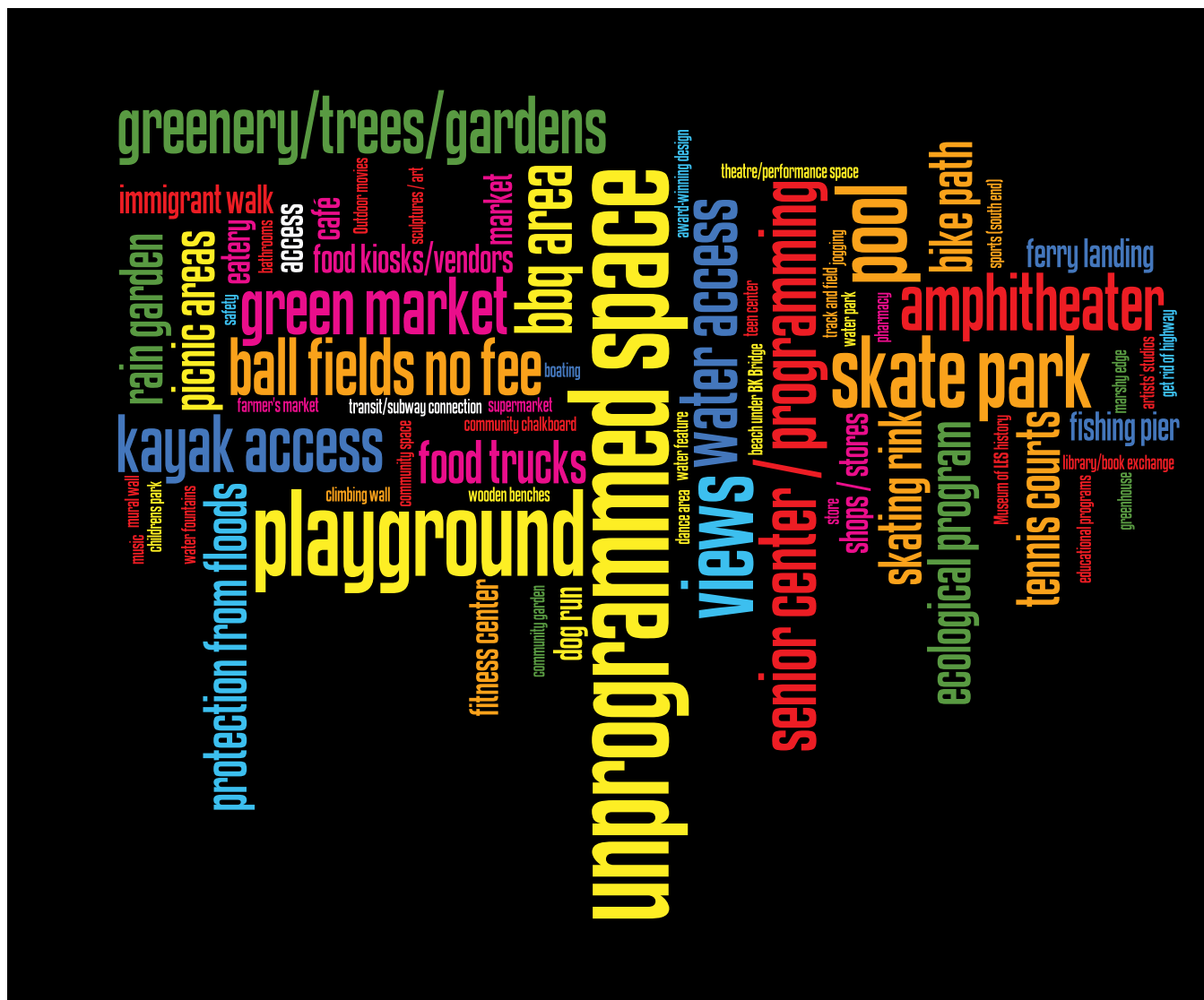
PROGRAM

Participants' feedback about program was received via individual surveys, moderators' notes, and maps from the second interactive exercise.

A tally of program elements requested via surveys and the table maps reveals interesting trends. By far the largest number of programs requested focused on increasing opportunities for outdoor recreation (41 mentions). Social spaces, including BBQ areas, dance areas, fitness spaces, areas with programming and facilities for seniors and teens, dog runs, and libraries were very popular, with 26 mentions. People also showed desire for food services, with 17 mentions of options ranging from farmers' markets to cafes and food trucks.



Specific program requests covered a wide and interesting range, including a museum of Lower East Side history, jobs and vocational training centers, better transit connections via Delancey Street, pharmacies, shops in the desolate area beneath the Williamsburg Bridge, and more.



In general, there was a concern that programming should serve the local, resident, low-income community. Participants suggested a wide range of social services, including job/skill training facilities, homeless shelters with medical/mental health staff, nonprofit office space, pop-up libraries and facilities with free internet access to assist the local population. There was particular interest in dedicated programs/spaces for teens and seniors. Recreational facilities and programs were requested to be free or low-cost, and oriented toward the local community, with public swimming pools and skating rinks seeing much more enthusiasm than kayak access.

COMMUNITY WORKSHOPS

ROUND I OUTCOMES MAP



In response to feedback from the Round I meetings, the team refined and further developed design ideas for LES North and South. These ideas were presented at the Round II meetings on March 10 and 11.

ATTENDANCE

Approximately 60 stakeholders attended the March 10 meeting, which was held at Rutgers Houses' Community Center, in conjunction with LES Ready's biweekly 10am meeting. Another 50 stakeholders attended the workshop held on March 11 at 6pm in the Lower East Side Girls' Club. Representatives of the Department of City Planning and the Manhattan Borough President's office also attended.

Outreach for the meetings was again managed by GOLES and LES Ready, who distributed 1800 flyers and personally contacted everyone who had attended the Round I meetings. GOLES also provided transportation on March 11 for anyone from LES South who would otherwise have been unable to attend the meeting.



March 11 at Lower East Side Girls' Club



SUMMARY

The meetings began with presentations: an overview of the Rebuild process, review of the Big U, a summary of the Round I public input, and new, refined design concepts for both LES South and North. Moderators facilitated table discussions about the design concepts in English, Spanish, and Mandarin, and participants' opinions were recorded through group worksheets, individual surveys, and table moderators' notes. Although paper surveys were available only at the March 11 workshop, an electronic survey link was distributed to March 10 attendees.

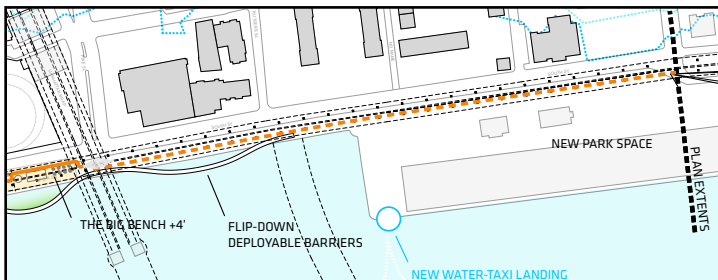
For LES North, workshop participants showed strong support for the team's Wide Berm option, which combined a wide, landscaped berm along East River Park's western edge with in-water programs, improved pedestrian access over the FDR, and upland greening and stormwater infrastructure.

In LES South, participants did not come to consensus. There was widespread interest in flip-down, deployable walls that could showcase the work of local artists, for the area north of the Manhattan Bridge. South of the bridge, the team proposed four possible solutions for protecting the Smith Houses, none of which were accepted. Nearly all participants agreed that any solution that impacts a NYCHA campus directly should be designed in collaboration with residents. While the groups did not agree on a preferred selection for this area, each of the proposals had advocates, indicating that the team needs to progress these ideas further and work harder to ensure that the designs serve the community.

COMMUNITY WORKSHOPS

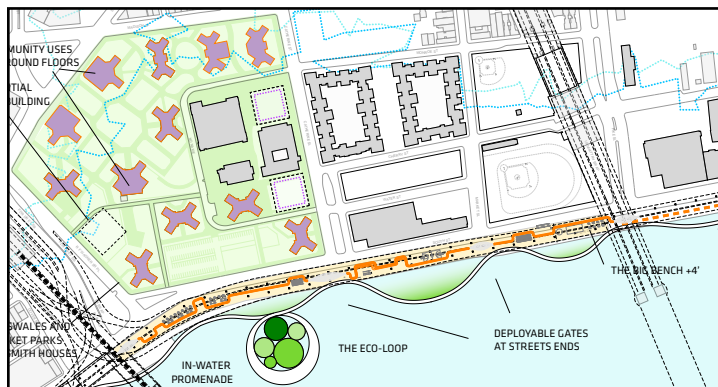
DESIGN CONCEPTS: TWO BRIDGES

The team presented two design options for LES South/Two Bridges. North of the Manhattan bridge, both options showed a system of deployable barriers for flood protection, and an optional berm around non-NYCHA mixed and affordable housing. The two options showed different protection schemes for the area between the Brooklyn and Manhattan bridges.



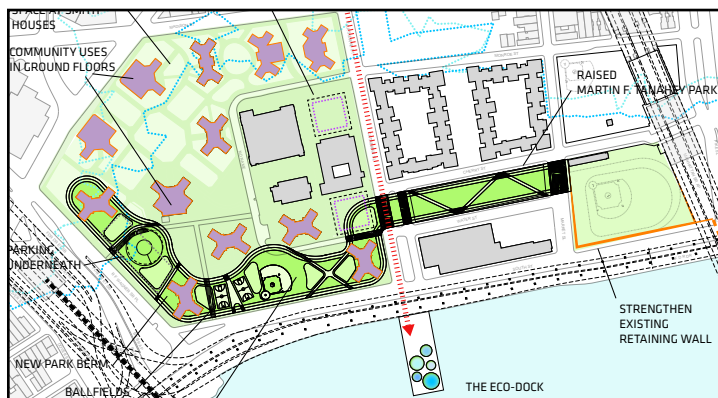
UNIVERSAL: FLIP DOWN WALLS

North of the Manhattan bridge, both options proposed flip-down, deployable wall panels suspended from the FDR. When not in use, the panels, decorated by local artists, create an inviting ceiling above the East River Esplanade. Additional lighting helps to transform a currently menacing area into a safe destination.



OPTION 1: BIG BENCH

The first option for the area south of the Manhattan bridge envisioned a combination of protection that would not block views or light. A 4' high version of the Big Bench would wend in a zig-zag pattern below the FDR, creating program spaces. Upland, affected NYCHA buildings would be given Wet Feet. Because the small wall would block floods in most storm events, residents would be able to exit and enter their buildings in all but the worst storms, at which point Wet Feet would ensure that buildings were prepared to accommodate flood waters.

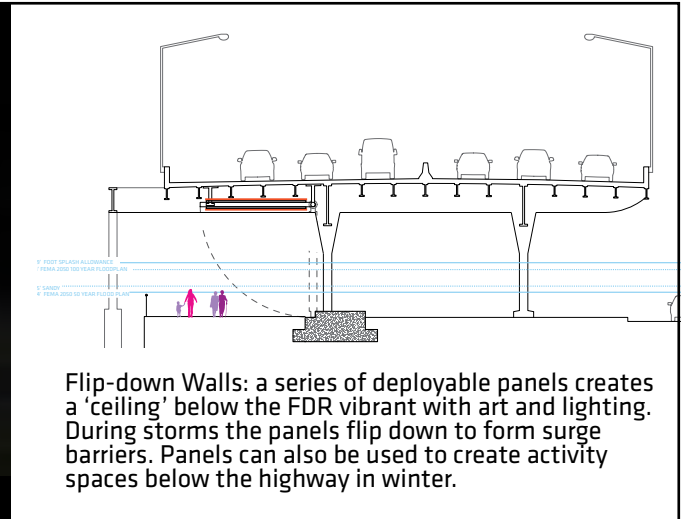


OPTION 2: NYCHA BERM

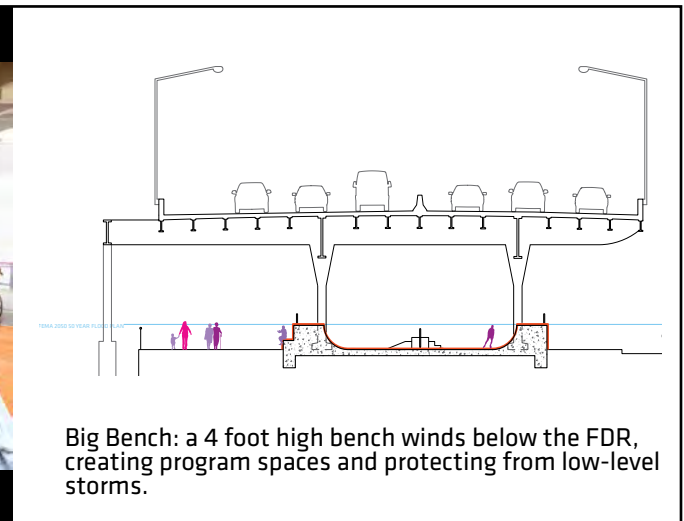
The second option proposed building a programmed berm around the edge of the Smith Houses NYCHA campus. The berm would replace underused lawn and surface parking areas with community-accessible green space that could feature ball fields or passive recreation areas. Parking would be relocated within the berm. Houses in the path of the berm would be integrated into it, with reconfigured points of egress.

DESIGN ELEMENTS ILLUSTRATED: TWO BRIDGES

FLIP-DOWN DEPLOYABLE WALLS



BIG BENCH

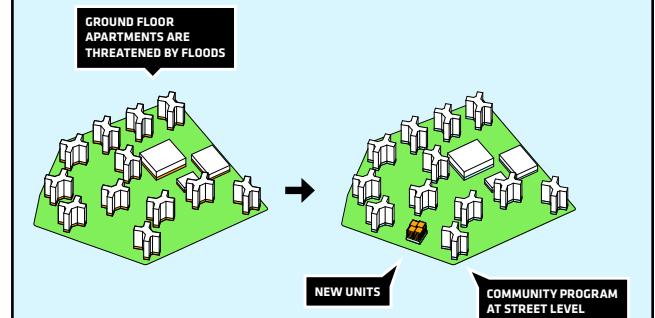


NYCHA BERM



NYCHA berm: a landscaped berm is integrated into the NYCHA campus, with free and low-cost programming for residents on top.

WET FEET



Wet Feet: relocate residents of ground-floor NYCHA apartments to a new, 100% affordable public housing building on the NYCHA campus. Ground floors are used for flood-friendly community activities. Can be used in combination with Big Bench.

COMMUNITY WORKSHOPS

TWO BRIDGES PREFERENCES: SURVEY RESULTS

Survey respondents had mixed preferences regarding protection in Two Bridges. The flip-down deployable wall, presented as an option north of the Manhattan Bridge, was strongly supported and suggested as the main protection South of the bridge as well.

Q1: HOW DO YOU THINK WE SHOULD PROTECT LES SOUTH/TWO BRIDGES? [TABULATED RESPONSES]

Big Bench	Wet Feet	NYCHA Berm	Flip Down Wall	Other
9	3	10	12.5	7

Participants who do not reside in the Smith Houses complex were tentatively in favor of the NYCHA berm and/or Wet Feet concepts, although many stressed in their comments that design of either option should only proceed with Smith residents' input and consent. This group of respondents strongly resisted walls or barriers below the FDR as decreasing safety and interfering with views, but also repeatedly stated that Smith residents should have the final say.

Participants who do live in the Smith Houses were strongly opposed to any modifications to their housing campus, and were willing to accept any alternative, whether Big Bench or even a 9' wall at the water. They did not believe any new housing would be built to accommodate those displaced in Wet Feet, and decried the idea that any new structure would be used exclusively for public housing. They were strongly concerned that program space on a berm would be privatized to pay for its construction, resulting in a net loss of usable open space for residents. Ideas that appealed to this group included deployable solutions, Big Bench (if 9' tall), and a 9' translucent wall at the water's edge.

Nearly all participants expressed desire for programs that were free of charge and accessible to the local resident population. A swimming pool was repeatedly requested.

How do you think we should protect LES SOUTH/TWO BRIDGES from floods and storm surge?

(Please turn survey over for reference images.)

Smith residences want to preserve their land above all else.
Build SWFF under FDR. Short ~~or~~ floodwall.

How do you think we should protect LES SOUTH/TWO BRIDGES from floods and storm surge?

(Please turn survey over for reference images.)

NYCHA Berm with conditions: and clarifications:
 - Need more Smith Houses input re design (e.g. how will berm affect adjacent bldgs)
 - no privatization of park and clarification on administration and funding since on NYCHA property

How do you think we should protect LES SOUTH/TWO BRIDGES from floods and storm surge?

(Please turn survey over for reference images.)

9' Foot Clear Wall - a pool -

TWO BRIDGES PREFERENCES: TABLE DISCUSSIONS

Table discussions closely mirrored survey comments. Big Bench found favor only among residents of Smith Houses, while the NYCHA berm found support only among those who live elsewhere. Everyone thought the artist-adorned, illuminated, deployable wall showed promise.

FLIP-DOWN DEPLOYABLE WALLS

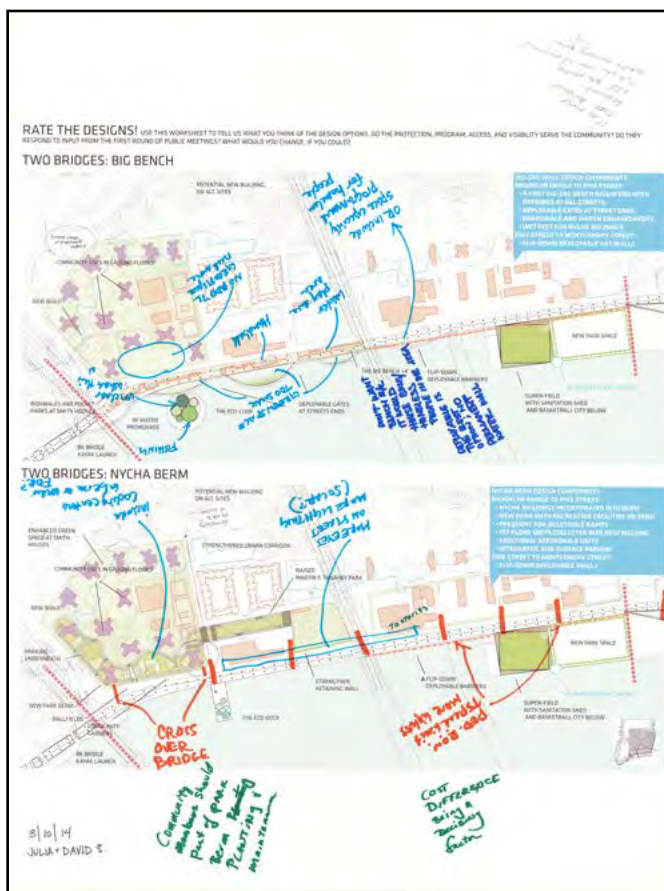
This concept was almost universally liked. People loved the addition of lighting, the sense of safety along the waterfront at night, the potential for local artists to contribute and showcase their work, the potential for the walls to create program areas below the FDR, and the fact that the view is unimpeded when the walls are in the raised position. There were some concerns about functionality, the technology used to deploy the walls, and whether the LES might be being used as a guinea pig for an untested idea. Participants proposed using these walls the length of the elevated FDR.

BIG BENCH

The bench received an overwhelming “No” at the majority of tables, although one table that comprised primarily Smith Houses residents was willing to consider it. In general, people thought the bench was insufficiently protective, was likely to attract the homeless, and had negative security and visibility impacts.

NYCHA BERM

The berm at the Smith Houses received scattered interest but a resounding NO from Smith Houses residents, who feared that it would mean displacement for lower-floor residents, possible structural damage to buildings already rendered vulnerable by an earthquake, and a net loss of available open space due to inevitable privatization of accompanying program spaces. Non-residents emphasized the importance of consulting Smith residents in any design like this.



Two Bridges area worksheets from 3/10 and 3/11

COMMUNITY WORKSHOPS

WET FEET

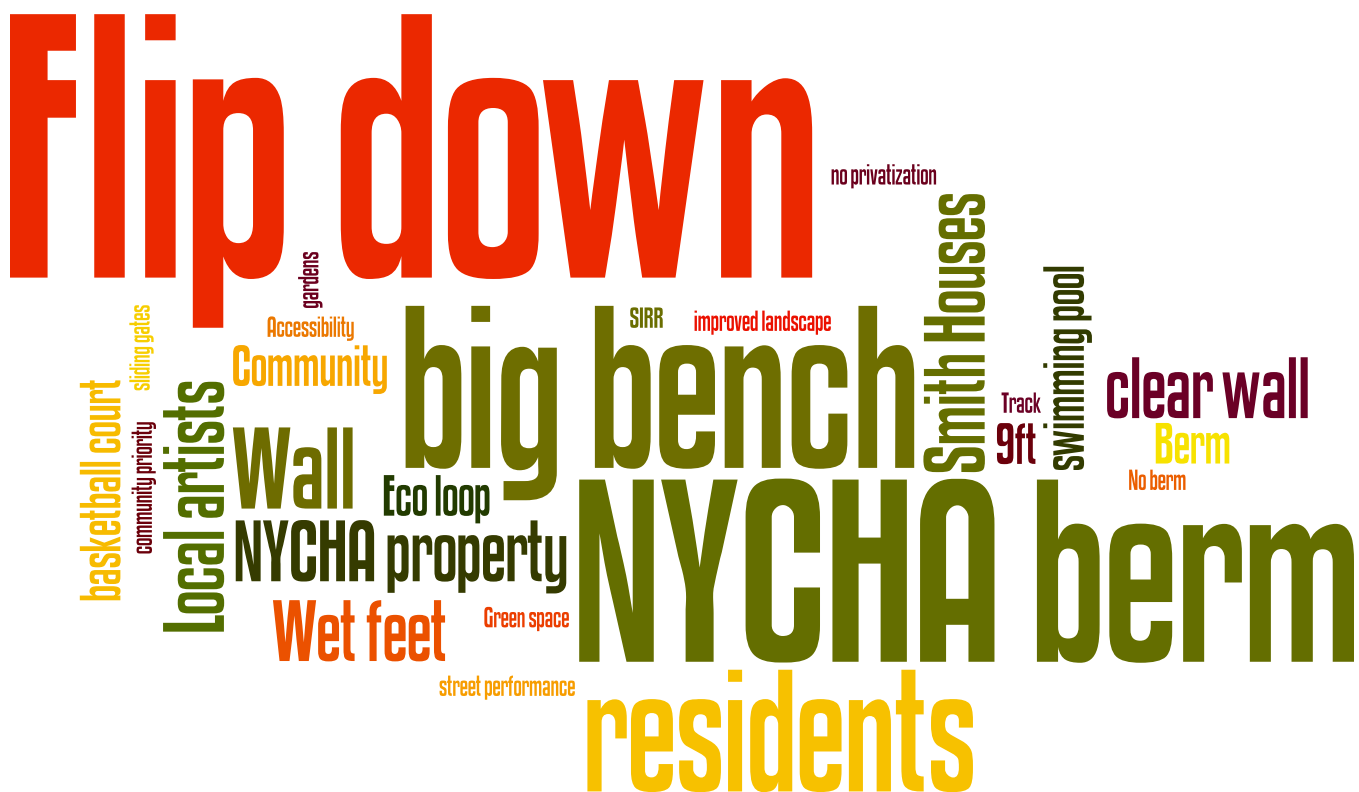
Wet Feet elicited a wide range of responses, although overall it was not well-liked. Among non-NYCHA residents, there was interest in the possibilities of repurposing ground-floor units; some advocates suggested building additional stories on top of existing buildings, rather than planning for a new structure. Residents and non-residents alike were skeptical that a new structure would be built, and distrusted the notion that a new structure would be reserved for public housing. Many NYCHA residents were upset about upgrades that affected only ground floor units. Others were concerned that spacious ground-floor units would be downgraded in a new building. Many people worried that seniors and disabled individuals would become trapped on upper floors during floods, unable to evacuate or procure supplies. Although increasing buildings' resiliency to floods was generally appealing, the specific details of this plan were not.

ECO-LOOP

This proposal, for a meandering boardwalk and coastal marshlands in the East River, was not well-understood, even by those who expressed interest in lookouts and marshes.

PROGRAM

Participants agreed that the Two Bridges area needs more free programs accessible to residents. Program requests included: a public swimming pool, a fishing pier, BBQ areas below the FDR, passive recreation space, a dog run, an ice/roller skating rink, and shops that are not delis. Several people requested 911 call stations every few hundred feet below the FDR, and better pedestrian connections across the FDR in general. Nearly everyone agreed that improvements should be accessible for people of all ages and abilities, and that they should not encourage gentrification.



Two Bridges Preferences: survey respondents used a few phrases consistently when expressing their preferences for this area. Word size corresponds to frequency of use; participants' emphasis on consulting with residents of the Smith Houses is clear.

TWO BRIDGES CONCLUSION: PROCESS IS PRIMARY!

Although workshop participants did not convey strong preference for one protection scheme over another, they did send a clear message that, when working in this area, process is primary. Nine out of a total of 13 tables had active discussions about the importance of involving residents of Smith and other NYCHA and non-NYCHA buildings in the LES South area in the design process. In response to a survey question asking how we can improve outreach for any future design efforts for this project, 10 individuals talked about the importance of holding meetings in residences, while 6 suggested doing targeted outreach to the local Spanish and Chinese speaking populations. Overall the team received 39 suggestions on how to improve outreach, many of them quite detailed.

"Have more canvassers and target your audience better. Not everyone works 9-5pm, there are many people who work in the evening. Also families need that time to put the kids down. Also the process of 3 hours is just too long for a week night."

- online respondent

Si se financia este proyecto, ¿cómo podemos mejorar el proceso de divulgación?

HACIENDO REUNIONES en español
BY MEETINGS in spanish 2

"Presentation in the open spaces of the community. People got a lot of things going on so you got to bring it to them."

- survey respondent

What critically important questions or issues do you think we have not considered?

Do specific Outreach for input from NYCHA + other residents, relative to where they live.

Although engaging local residents further in the design process is necessary, it may also be quite difficult. As one survey respondent summed up below, residents may be reluctant to participate in any process that does not address their more immediate concerns. Future outreach should plan for this and strive to facilitate improved communication between residents and housing authorities.

"Although it may not be in your purview, public housing [residents] are concerned about the following issues that are very real to them:

1. *How come there is all this money to avoid flooding in the future and there is no money to fix the despicable condition of their apartments, some of which were damaged by Sandy?*
2. *What assurances do public housing residents have that these plans are not intended to destroy public housing and move poor people out of this area and make it another mecca for the rich as in the rest of Manhattan?*
3. *Is there an opportunity for jobs for people living in public housing in the construction phase of this plan?*

These are real sociological issues on the ground that someone has to address.

Public outreach has been done on a broad scale to public housing residents. However, this population will not show up if the issues [above] are not addressed because survival and living in better conditions are the primary concerns of people living with mold, rats, cockroaches, leaks, lack of heat and hot water, in dilapidated buildings which suffered more damage from Sandy. This project doesn't address the primary concern of residents living along the waterfront in the Lower East Side."

COMMUNITY WORKSHOPS

DESIGN CONCEPTS: EAST RIVER PARK

The team presented two additional design options for LES North / East River Park. Both options centered around building a protective berm along the western edge of the park.

OPTION 1: NARROW BERM



Occupying the right-of-way of the current park service vehicle & bike path, the narrow berm carefully avoids existing program areas and does not require removal of existing trees. New park access is created through additional pedestrian overpasses at strategic streets. All overpasses are widened and given landscape treatments. Upland, significant park access corridors are augmented with rain gardens, bio-swales, and other green infrastructure.

OPTION 2: WIDE BERM



Option 2: WIDE BERM: The wide berm expands upon the narrow berm, incorporating increased park access and upland green streets into a plan with more robust programmatic offerings. The widened berm bulges out between existing program areas, creating large passive recreation spaces and areas for seating, viewing the water, or BBQing. At the water's edge, new features draw visitors out from the shore: an in-river, filtered Harbor Pool for swimming, a pair of lookout piers, a dedicated fishing pier, a potential ferry or water taxi dock, and more.

FUTURE VISION: COVER THE FDR

Although not presented as a formal option given its costs and long-term logistics, covering the FDR is very much a future possibility for both of these scenarios.



COMMUNITY WORKSHOPS

EAST RIVER PARK PREFERENCES: SURVEY RESULTS

Survey respondents came out strongly in favor of a wide berm at the western edge of East River Park. Six respondents looked forward to an eventual full covering of the FDR, and a handful of people preferred other solutions, including a Big Bench, and a wall or berm by the water that would not block park views from upland.

Q2: HOW DO YOU THINK WE SHOULD PROTECT LES NORTH/EAST RIVER PARK? [TABULATED RESPONSES]

Narrow Berm	Wide Berm	Cover FDR	Other
3	19	6	5

Many comments, and most table discussion, about East River Park focused on creating the right mix of amenities for the space, and the importance of creating a program that responds to the local resident community.

How do you think we should protect **LES NORTH/EAST RIVER PARK** from floods and storm surge?

(Please turn survey over for reference images.)

~~Barriers and FDR~~ WIDE BERM. Recreation
more Bridges. RECREATION, BBQ AREA'S, PICNIC
AREA'S ... Bike lane's, Runner's LANE. OPEN SPACES for RELAXING...

How do you think we should protect **LES NORTH/EAST RIVER PARK** from floods and storm surge?

(Please turn survey over for reference images.)

Wide berm:
However, need to know more about design of the
NYCHA pedestrian bridges, & resident input.
- Will bridges bifurcate ~~and~~ campuses.
ST

How do you think we should protect **LES NORTH/EAST RIVER PARK** from floods and storm surge?

(Please turn survey over for reference images.)

Wider Berms of green space. Accessibility via more
bridges. ↗

¿Cómo crees que debemos proteger **LES NORTE / EAST RIVER PARK** de las inundaciones y las mareas repentinas?

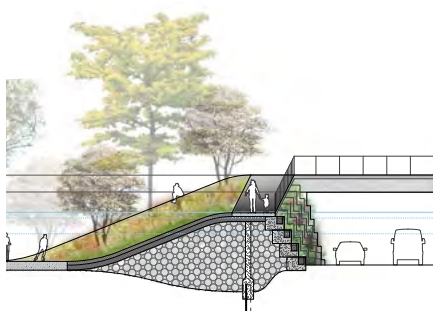
(Por favor voltear la página para ver imágenes de referencia.)

BERMA ANCHA WIDE BERM

EAST RIVER PARK PREFERENCES: TABLE DISCUSSIONS



Table discussions in East River Park primarily focused on the wide berm and specific program opportunities called out in the plan or desired by the community.



BERM AS A BARRIER

Workshop participants remain concerned that the berm will create a barrier to the park, blocking views from ground-floor residences and from pedestrians. This was seen as undesirable both as a quality of life and a safety issue. A small number of workshop participants were concerned that a berm would block emergency pedestrian access to the park in the event of an emergency evacuation. Others worried that the berm would reflect pollution and noise from the highway toward the residences, although they were reassured by the idea that the upland side of the berm could be planted.



BIKE PATH ALIGNMENT

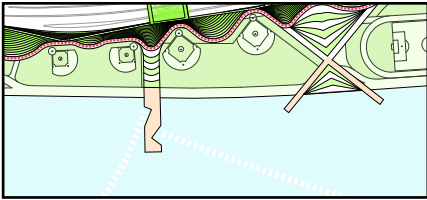
There was a strong desire among workshop participants to use surface treatments to create separate spaces for cyclists and pedestrians. A number of tables thought that a curving bike path that hugs the base of the berm would be undesirable for bike commuters, and proposed moving the bike path to the water's edge and retaining the curvy path for pedestrians and runners. If the bike path is upland of the park, people would like designated, safe pedestrian crossing points.



PEDESTRIAN OVERPASSES / PARK ACCESS

The team's proposal to increase park access with more frequent and generous pedestrian overpasses was largely embraced, although many people were concerned that ramps into the NYCHA campuses would create obstacles on the ground for residents to navigate. If designed well and in conjunction with the residential population, these bridges were seen as a benefit. There was strong support for creating wide bridges with planting that are accessible for seniors and disabled people.

COMMUNITY WORKSHOPS



FERRY SERVICE

Ferry service was largely seen as desirable but unlikely. Some thought it would be useful for commuters but not for local residents; some thought it could aid in emergency evacuations if necessary. In general, people worried that lack of connection to nearby transit would result in the ferry appealing to a user base too small to support it financially.



PROGRAM

The main concern among the majority of participants was that new programming in East River Park be free of user charges and responsive to the needs of the resident community. Specifically, unprogrammed space, games tables for dominoes and chess, a dog run, free basketball and handball courts, seating, and more cookout spaces were requested. People embraced the idea of a dedicated pier for fishing that would provide better water access for fishermen and reduce risk to people walking by. A harbor pool shown aligned with East 10th Street revealed enthusiasm and trepidation about pools (participants voiced concerns about water quality, particularly close to CSOs and a ferry terminal; safety; and security, requesting that any pool be supervised during operating hours and closed at night), plus a desire to locate any new pools further south to avoid duplicating amenities (the Dry Dock pool is located at East 10th and Szold Place). Many people were interested in water access, such as lookout piers, soft green edges, or step-downs, but balanced that interest with a desire to protect/discourage people from getting in the river, which has strong and unpredictable currents.



Participants discussed East River Park



AMENITIES SHOULD SERVE THE COMMUNITY

RESIDENTS SHOULD BE COLLABORATORS

PLANS NEED PROOF

For plans on NYCHA property in particular, the community is unwilling to believe that improvements will be for their benefit until they see corroboration from official sources, i.e. NYCHA and HUD. Without articulated agreement from these authorities, any plans for modifying NYCHA property are unlikely to be taken seriously.



OUTREACH FINDINGS

L.E.S. SOUTH: TWO BRIDGES-CHINATOWN

PROTECTION:

FLIP-DOWN WALLS

BENEATH FDR

NO CONSENSUS ON
NYCHA BERM, BIG BENCH,
OR WET FEET

ACCESS:

ENHANCE PEDESTRIAN ACCESS
WITH IMPROVED CROSSWALKS AND
LIGHTS

PROGRAM:

- SWIMMING POOL
- FISHING PIER
- BBQ AREAS BELOW FDR
- PASSIVE RECREATION SPACE
- SKATING RINK (ICE/ROLLER)
- SHOPS
- 911 CALL BOXES
- LIGHTING
- FREE/LOW-COST PROGRAMS
- PROGRAMS THAT PRIORITIZE
COMMUNITY ACCESS

PROCESS / CONCERNS:

- NO PROPOSALS FOR NYCHA
PROPERTY WITHOUT RESIDENT
COLLABORATION
- NO NEW BUILDINGS ON NYCHA
CAMPUSES WITHOUT HUD/
NYCHA GUARANTEEING
AFFORDABILITY
- NEED TARGETED OUTREACH TO
TENANT ASSOCIATIONS, NON-
NYCHA AFFORDABLE BUILDINGS,
NON-ENGLISH LANGUAGE
COMMUNITIES
- MEETINGS SHOULD BE SMALLER,
HELD WITH MORE ADVANCE
NOTICE, AND HELD IN A VARIETY
OF LOCATIONS AT DIFFERENT
TIMES OF DAY

L.E.S. NORTH: EAST RIVER PARK

PROTECTION:

WIDE BERM

ACCESS:

FREQUENT, WIDE, LANDSCAPED,
ADA-ACCESSIBLE OVERPASSES

TRANSIT CONNECTIONS

PROGRAM:

- OPEN SPACE
- PICNIC / BBQ AREAS
- GAMES TABLES
- NO-FEE BALL FIELDS
- FISHING
- DOG RUN
- BATHROOMS?
- SWIMMING POOL (SOUTH)
- LOOKOUT PIER
- STEP DOWNS TO WATER
- JOBS TRAINING PROGRAMS

PROCESS / CONCERNS:

- ENGAGE NYCHA & TENANTS
TO DISCUSS OVERPASSES AND
CONNECTIONS





FOCUS SCOPE

4 DESIGN

PROPOSALS







SANDY SURGE LEVELS
2050 100YR STORM
2050 500YR STORM

STUYVESANT COVE PARK
COOPER STUYVESANT PAVILIONS

PEDESTRIAN LOOKOUT
BIKEWAY FLYOVER
DELIVERY POINT FOR COIN EGGON

HARBOR BATH
RAMP UP TO BRIDGE
BIKE PATH
PEDESTRIAN BRIDGE
MIDBLOCK PED. BRIDGE
HOUSTON FERRY LANDING

BRIDGING BERM
FISHING PIER
HISTORIC SHIP DOCK

EXISTING AMPHITHEATER
PROPOSED PIER 42 PARK
U.S. MARITIME ST

C1
LES NORTH

C2
TWO BRIDGES / CHINATOWN

C3
FIDELITY

ECO-PIER
BIG BENCH
GREEN STREETS
FLIP DOWN DEPLOYABLES

SOUTH STREET PAVILIONS
URBAN LIVING ROOM

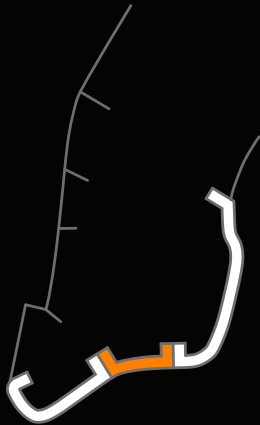
BMB PLAZA
BATTERY MARITIME BLDG
WHARF TERMINAL

BATTERY PLACE
BATTERY PARK BERM
HARBOR MUSEUM

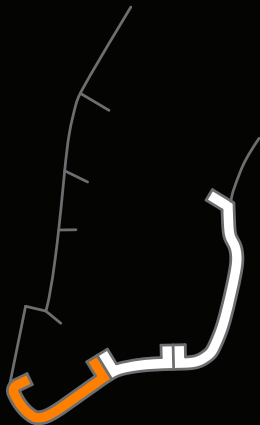
FOCUS SCOPE MASTERPLAN



COMPARTMENT 1 (C1)
EAST RIVER PARK



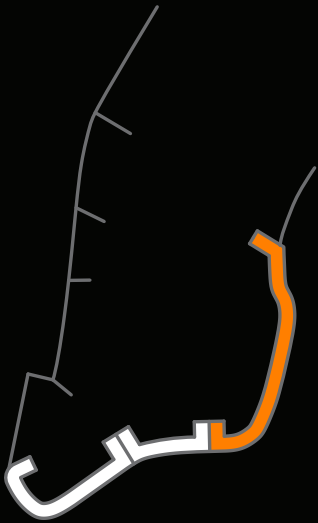
COMPARTMENT 2 (C2)
TWO BRIDGES/CHINATOWN



COMPARTMENT 3
BATTERY TO BROOKLYN BRIDGE

COMPARTMENT 1 (C1)

EAST RIVER PARK



INTRODUCTION

East River Park offers a chance to solve a simultaneous equation of surge protection, flood mitigation, and the long standing need for community access to the water, while investing in an underutilized strip of the park along the FDR . Building on the vision put forward in the 2013 East River Blueway Plan (page 63), the BIG U forwards a vision of a more accessible and ecologically sustainable waterfront that integrates vertical protection against East River flooding.



A 23TH STREET MEDIAN
DEPLOYABLE BARRIER

B STUYVESANT COVE
PAVILIONS

C CON-ED
FLYOVER
PASSAGE

CON-ED
DEPLOYABLE
BARRIER

STRENGTHENED
GREEN CORRIDORS

GREEN BRIDGES

HARBOR BATH

D EAST RIVER PARK
THE BRIDGING BERM

LOOK-OUT

FERRY
PLAZAS

FISHING

HISTORIC
SHIP DOCK

COMPARTMENT
DEPLOYABLE BARRIERS

PIER 42 PARK

C1 PLAN

23RD STREET TO MONTGOMERY

COMPONENTS:

A

23RD STREET MEDIAN

.3 MILES

23rd Street acts as the northern boundary of the C1 compartment, connecting the vertical protection by the water's edge to higher elevations. Separating Hospital Row to the north from Peter Cooper Village to the south, this 90'+ wide roadway is reconfigured as a multi-modal green corridor that connects upland neighborhoods to the amenities and flood protections system along the waterfront. A generously sized median provides a safe, segregated bicycle lane and promenade. Built-in benches and planters enhance this as a social space and can support deployable flood gates during storm events.

B

STUYVESANT COVE

.28 MILES

The existing park at the water's edge is extended beneath the elevated FDR, with pavilions housing food concessions and recreational programming. In preparation for storm events, deployable walls are inserted between the pavilions, creating a continuous line of vertical protection. Existing parking lots under the FDR are moved or stacked to free up land for rain gardens and public space.

C

CON-ED FLYOVER

.43 MILES

Building off of the work of The Blueway Plan, this integrated bridge and levee transforms the tightest public passage along the East River into a wide thoroughway with ample connection to the upland neighborhood.

D

EAST RIVER PARK - THE BRIDGING BERM

1.4 MILES

A system of undulating berms between the FDR and the Park protect the neighborhood from storm surge and rising sea levels, while supporting a series of frequent, generous pedestrian bridges from the neighborhood into the park and maintaining existing sports fields. These bridges link enhanced corridors in the upland neighborhood to new program elements along the East River. The berms support diverse new plantings, provide enhanced prospects on the park, and create the passive social spaces that residents have asked for on their waterfront.





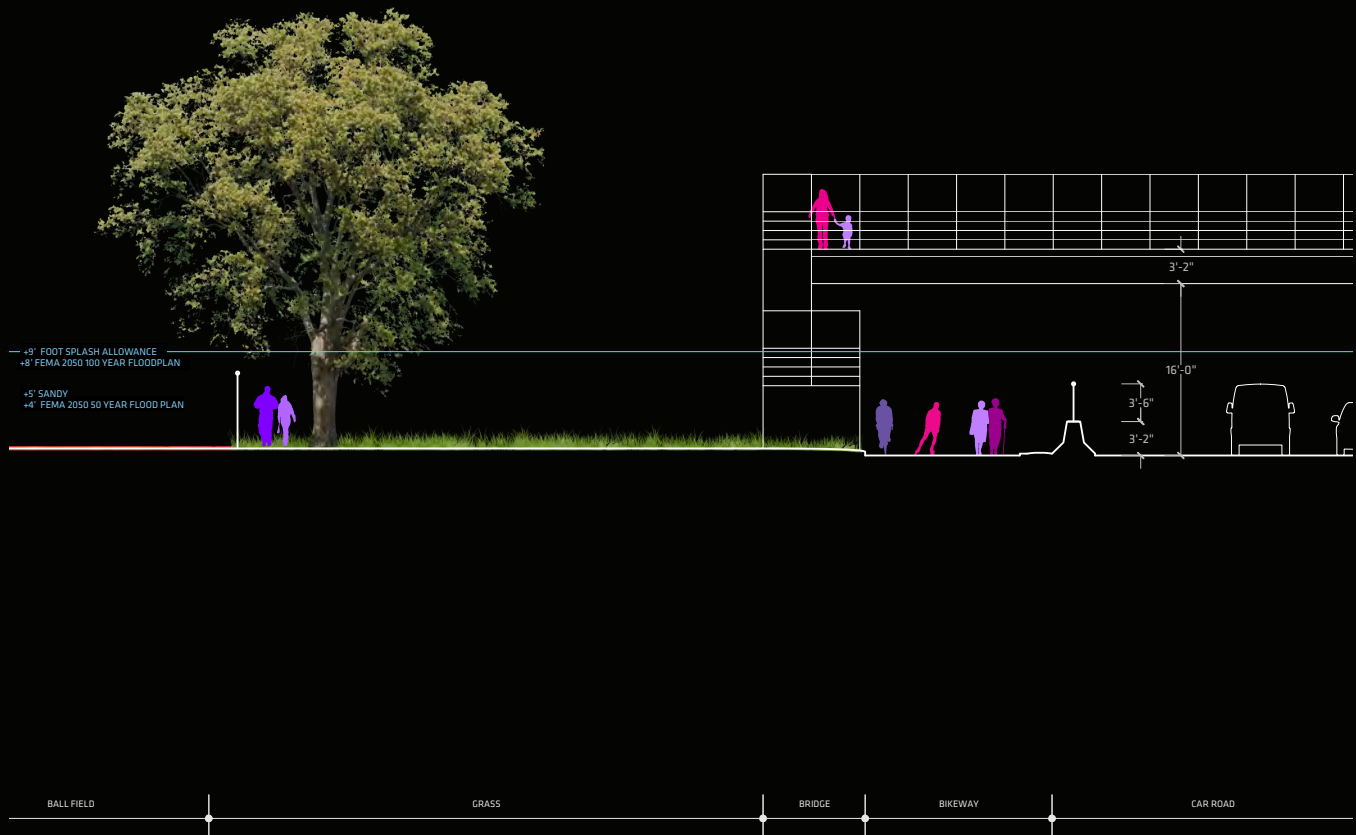
THE TEAM



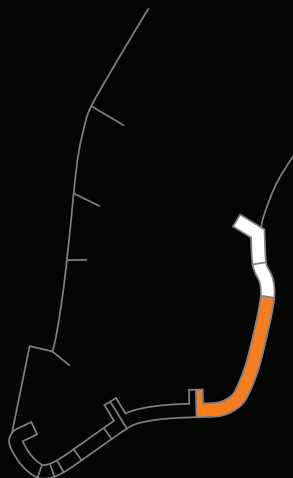
REBUILD BY DESIGN - THE BIG U

EXISTING CONDITIONS

EAST RIVER PARK



C1

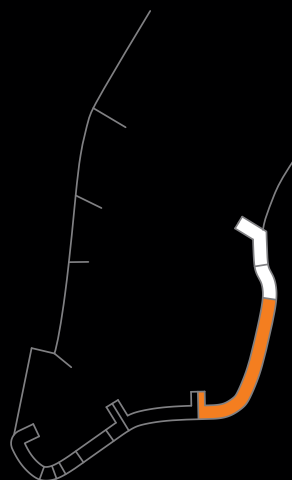


The strip of East River Park along the highway currently hosts the East River Bikeway, which doubles as the Park's service road. Unlike the recently completed Promenade along the water, this strip has patchy paving and is planted mainly with a monocultural palette of London Plane trees, which have proved very sensitive to salt water and provide poor wildlife habitat. Infrequent pedestrian bridges are narrow, unattractive, and often inaccessible for the many senior and disabled residents of the Lower East Side. The exhaust coming off of the highway is detrimental both to the health of the adjacent trees in the park, and to the lungs of people exercising in the Park.





C3



EAST RIVER PARK REDUX

The Bridging Berm provides robust vertical protection for the neighborhood from future storm surge and rising sea levels, while providing pleasant and accessible routes into the park from the Lower East Side. Berms and bridges offer plentiful unprogrammed spots for resting, socializing, and enjoying the prospect offered over the park and river. Both berms and bridges are planted with a diverse selection of salt tolerant trees, shrubs and perennials, providing a resilient urban habitat. Facing the FDR, the berm hosts a series of terraced pockets planted with tough urban species, which filter car exhaust and enhance the view from the highway.

BIG TEAM





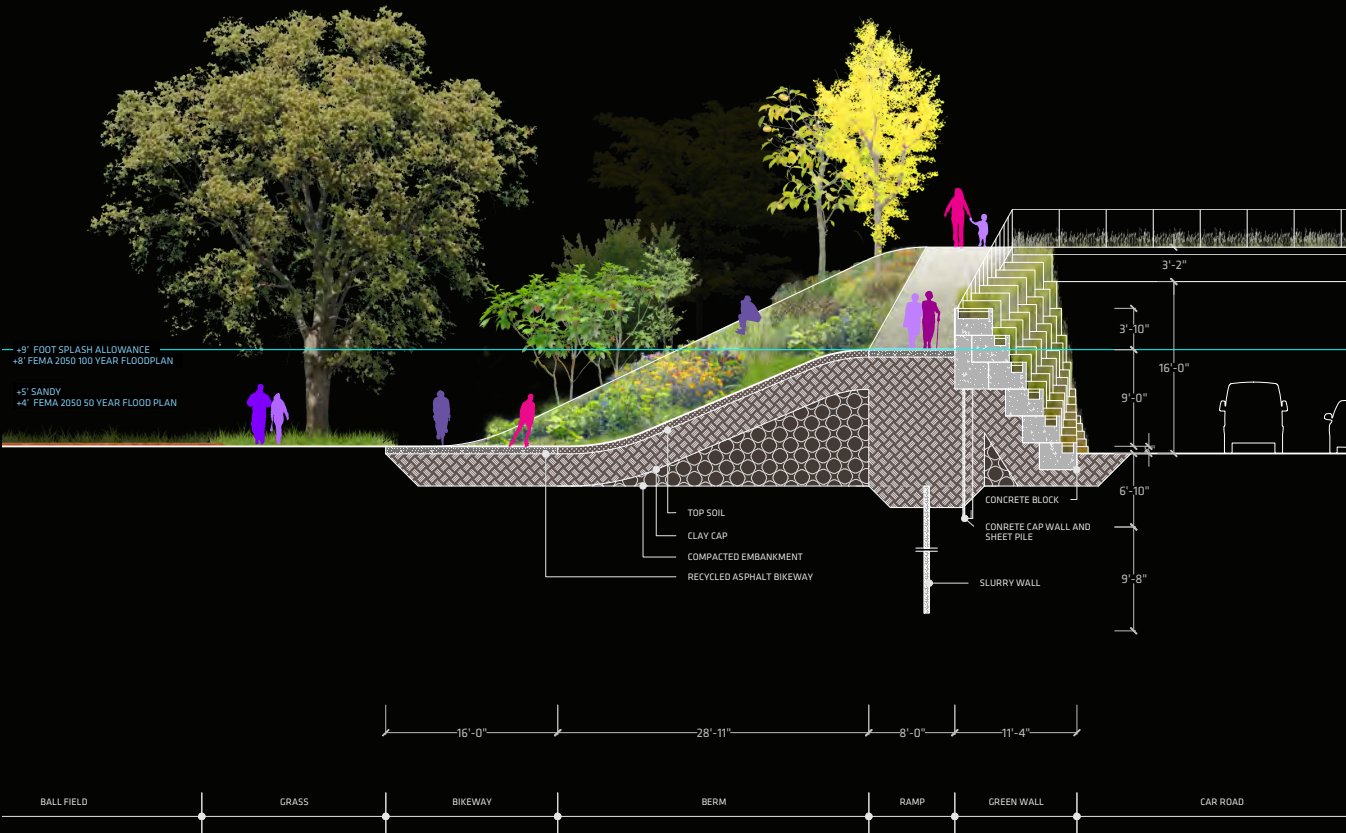
THE BRIDGING BERM

The bridges and ramps are wide and heavily planted, creating an immersive landscape experience from the neighborhood into the park. On the neighborhood side of the highway, they are integrated into the existing major circulation routes. On the park side, ADA accessible ramps gently lead down into the park, while generous steps allow quicker access and informal seating.



THE BRIDGING BERM

EAST RIVER PARK



C3

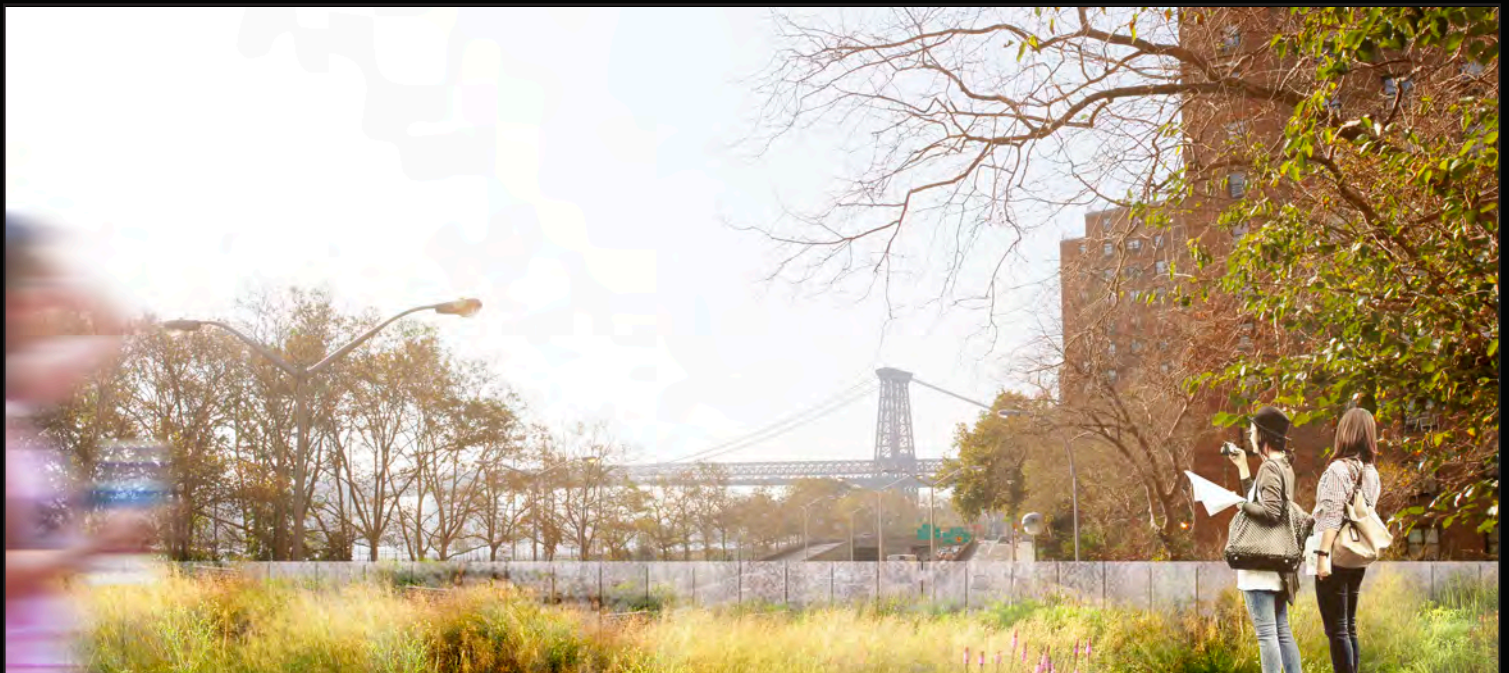


THE UNDULATING BERM

As the berm makes its way along the edge of the park, it widens to provide planting and social space, and narrows to accommodate sports fields and other existing park programs. Ramps and bridges are inserted at frequent intervals on major upland streets in the neighborhood, in conjunction with concentrated green infrastructure enhancements, offering easy and legible corridors to the park. These corridors then culminate in new program elements at the water’s edge: an in-river, filtered Harbor Pool for swimming, a pair of lookout piers, a dedicated fishing pier, a potential ferry or water taxi dock, and more.



EXISTING BRIDGES



GENEROUS LANDSCAPE CONNECTIONS



THE EAST RIVER PARK BIKEWAY

The East River Bikeway and park service road undulate with the base of the berm, creating diverse biking and jogging experiences. Benches wrap around existing trees, creating intimate seating nooks and preserving the park's canopy.

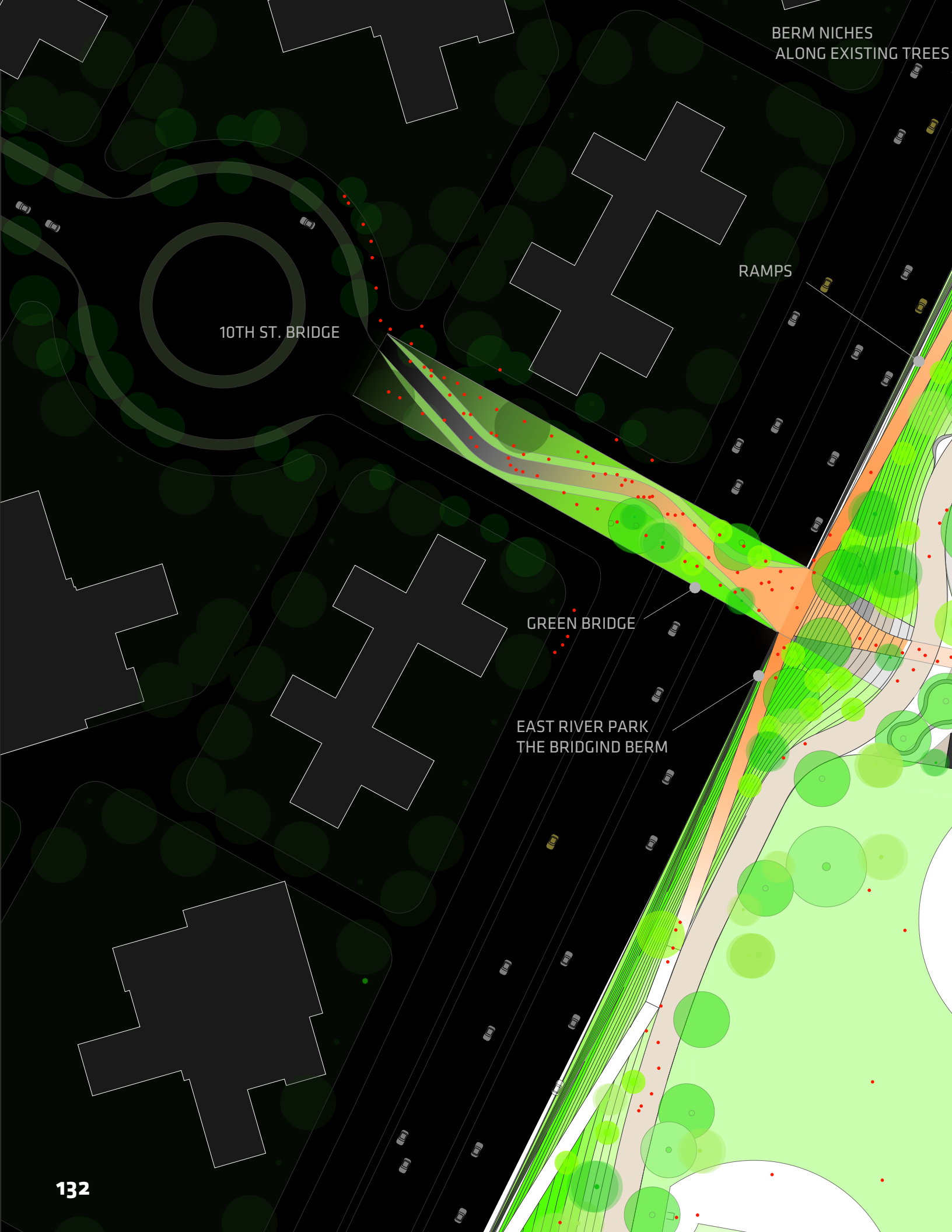




NEW TOPOGRAPHIES

The Bridging Berm allows a new prospect on previously flat park, visually engaging the visitor with the larger landscape, park activities, and the East River beyond.





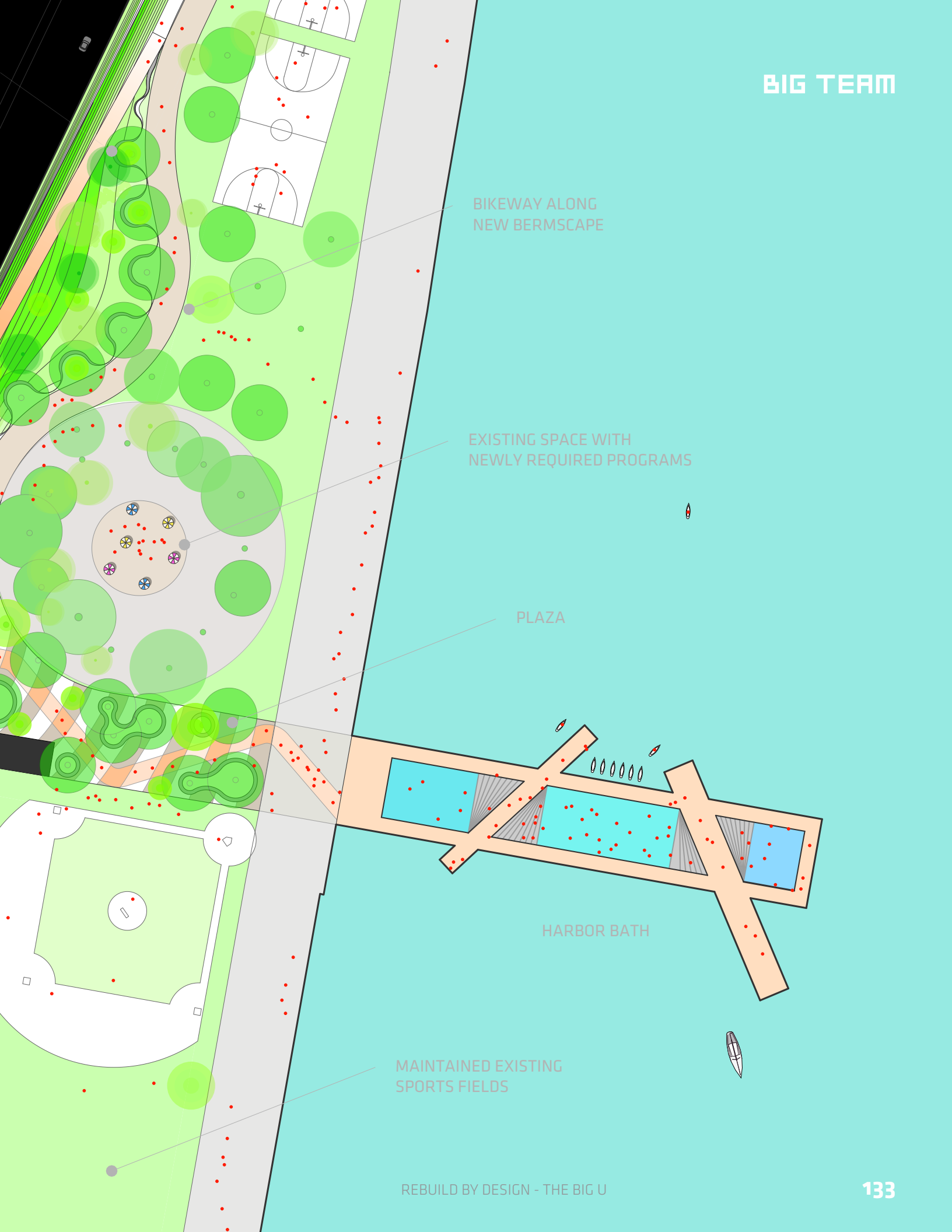
BERM NICHES
ALONG EXISTING TREES

RAMPS

10TH ST. BRIDGE

GREEN BRIDGE

EAST RIVER PARK
THE BRIDGIND BERM



BIKEWAY ALONG
NEW BERMSCAPE

EXISTING SPACE WITH
NEWLY REQUIRED PROGRAMS

PLAZA

HARBOR BATH

MAINTAINED EXISTING
SPORTS FIELDS



10TH STREET HARBOR BATH

At 10th Street, the Bridging Berm corridor culminates in the Harbor Bath, providing a much needed swimming facility for the Lower East Side. Depending on the future cleanliness of the water, the pool is either city water, cooled by immersion in the East River, or filtered River water.



LONG-TERM POTENTIAL



SUSTAINABILITY

Re-thinking parking, bike, and passive energy infrastructure.



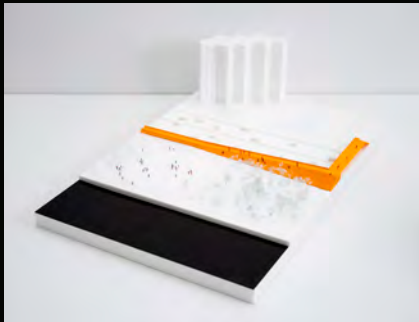
TRANSIT

Enhancing transit such as light-rail or BRT systems.



FDR

Integrating a buried F.D.R. into a berm and increasing waterfront parkspace.



EXTENDING THE PARK

Though the community, city agencies and the design team had productive discussions about the possibility of covering the FDR with a contiguous park space, this proposal is limited to an in-park berm because of cost and current feasibility. However, it does set up a framework that would support such a future intervention. This berm could be the edge of a decking system over the highway, with planting, program, and open space on top. Alternatively, as traffic and use patterns change, the highway could be removed altogether and replaced with an expansive park. This current proposal anticipates either of these future options.

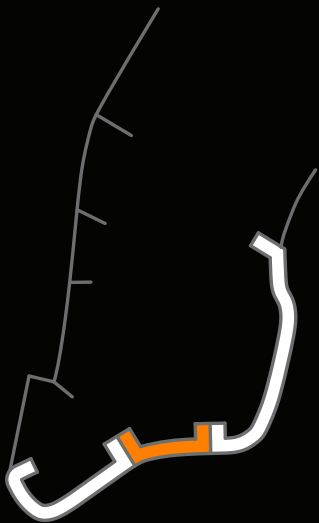


BIG TERM



COMPARTMENT 2 (C2)

TWO BRIDGES/CHINATOWN



INTRODUCTION

The Two Bridges community is nestled into a low-lying area between the Brooklyn and Manhattan Bridges and Pearl Street and Montgomery Street. About half of the area is the Governor Alfred E Smith Houses Campus, a public housing complex built by the New York City Housing Authority (NYCHA) and other affordable housing built by not-for-profit organizations. The other half of the area is an extension of the tenement row houses of Chinatown. Due to the relatively narrow flood plane in this area, flooding was not as extensive as in the areas further north, yet the impact was severe for this community. Ground floors were flooded, and when the Con-Ed plant went dark, so did the neighborhood. Adapting this neighborhood for climate change is complex.

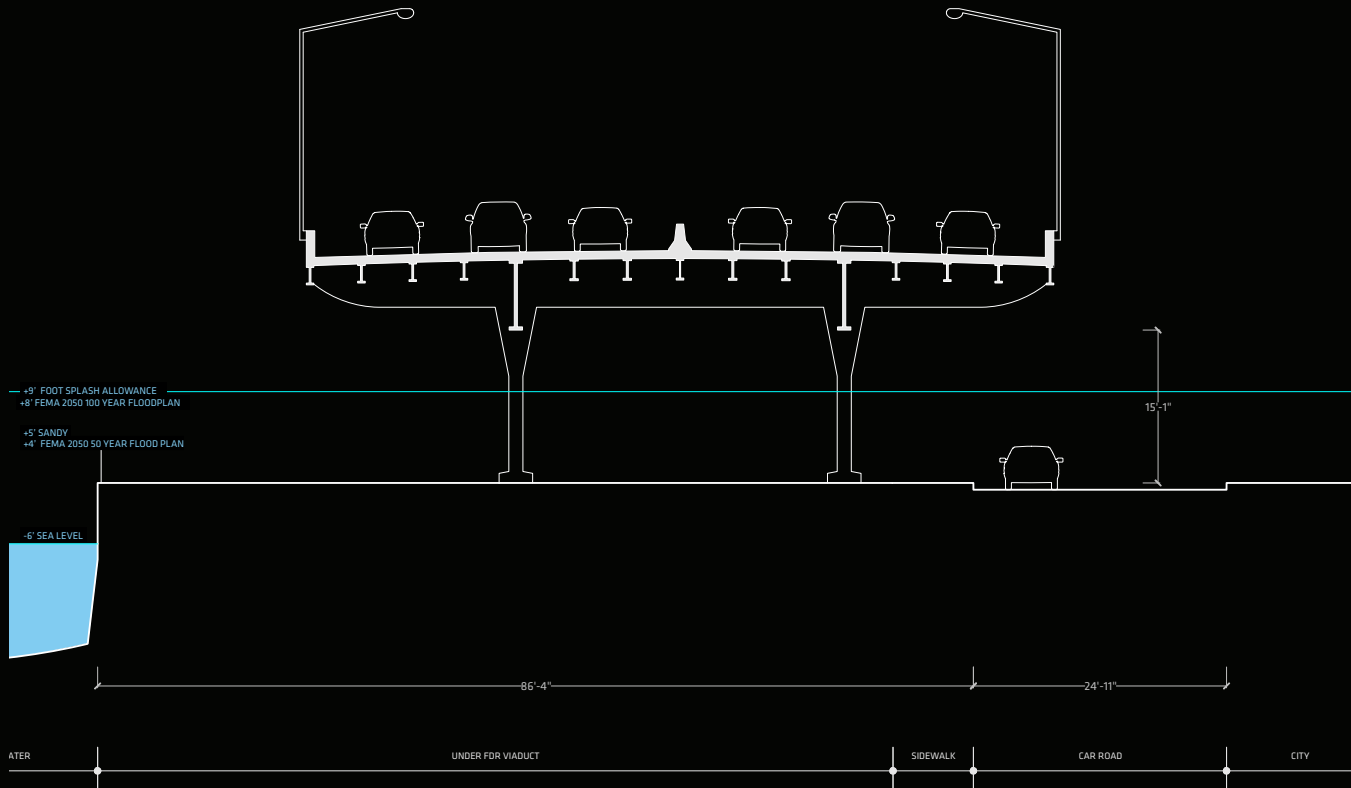
The community greatly values the uninterrupted views to the waterfront under the elevated FDR Drive. Nearly every morning, residents can be seen practicing Tai Chi on the waterfront esplanade, and unlike the busier waterfront south of the Brooklyn Bridge, the Two Bridges waterfront is serene with views of the Brooklyn Manhattan Bridges. Yet the community is severely lacking the range of programs that this densely populated community desires and needs such as community centers, swimming pools, sports fields and other recreational programs for youth. The growing elderly population is also underserved, lacking senior centers and related programs, nearby pharmacies and grocery stores. Additionally, the connection from upland communities to the waterfront is tenuous. The vibrant streets of Chinatown, lined with shops and restaurants change to less activated expanses as they near the broader streets, and open campuses of the housing blocks.



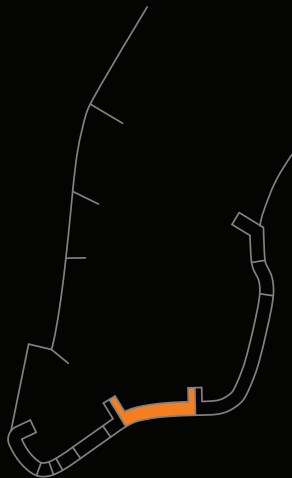


EXISTING CONDITIONS

TWO BRIDGES- UNDER THE FDR



C2



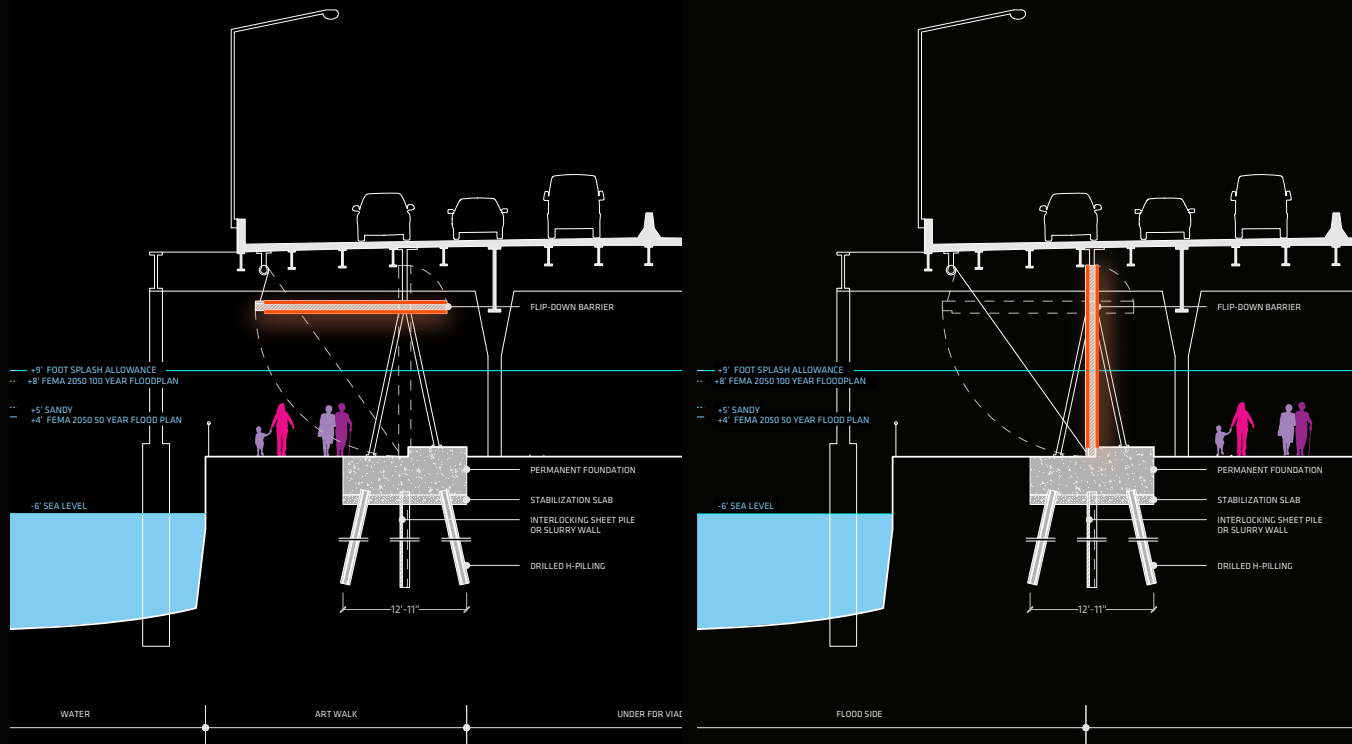
Between the Brooklyn Bridge and East River Park, the public waterfront is a narrow, paved strip underneath the elevated FDR. It is dingy and unattractive, poorly lit at night, and perceived as unsafe by many local residents.

Through the past 10 years of planning, organizing and outreach, the city and community have developed planned enhancements, from the East River Esplanade Plan to park installations on Piers 35 and 42 to the Blueway Plan (for overview of prior planning, see pages 56-66). Working closely with the community, and consulting with NYCHA, the BIG Team studied several strategies for addressing surge protection and routine flooding, while adding amenities to the area. A multi-layered and multi-phase approach is the recommended strategy; and maintaining the affordable housing in perpetuity here is a huge priority as improvements are made.

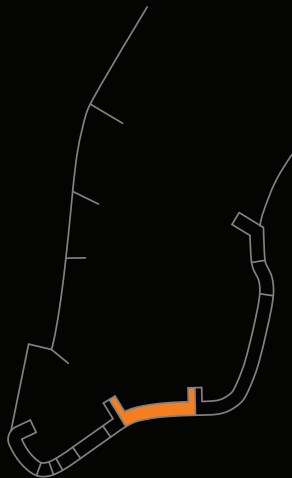


TWO BRIDGES - ALTERNATIVE 1

FLIP-DOWN DEPLOYABLES



C2



Between the Manhattan Bridge and Montgomery Street, deployable walls are attached to the underside of the FDR Drive, ready to flip down to prepare for flood events. When not in use, the panels, decorated by neighborhood artists, create an inviting ceiling above the East River Esplanade. At night, lighting integrated into the panels transforms a currently menacing area into a safe destination. Panels can also be flipped down to protect from the elements, creating a seasonal market during the winter.



BIG TEAM



STORM EVENT



WINTER MARKET

C2 FLIP DOWN

BATTERY TO BROOKLYN BRIDGE

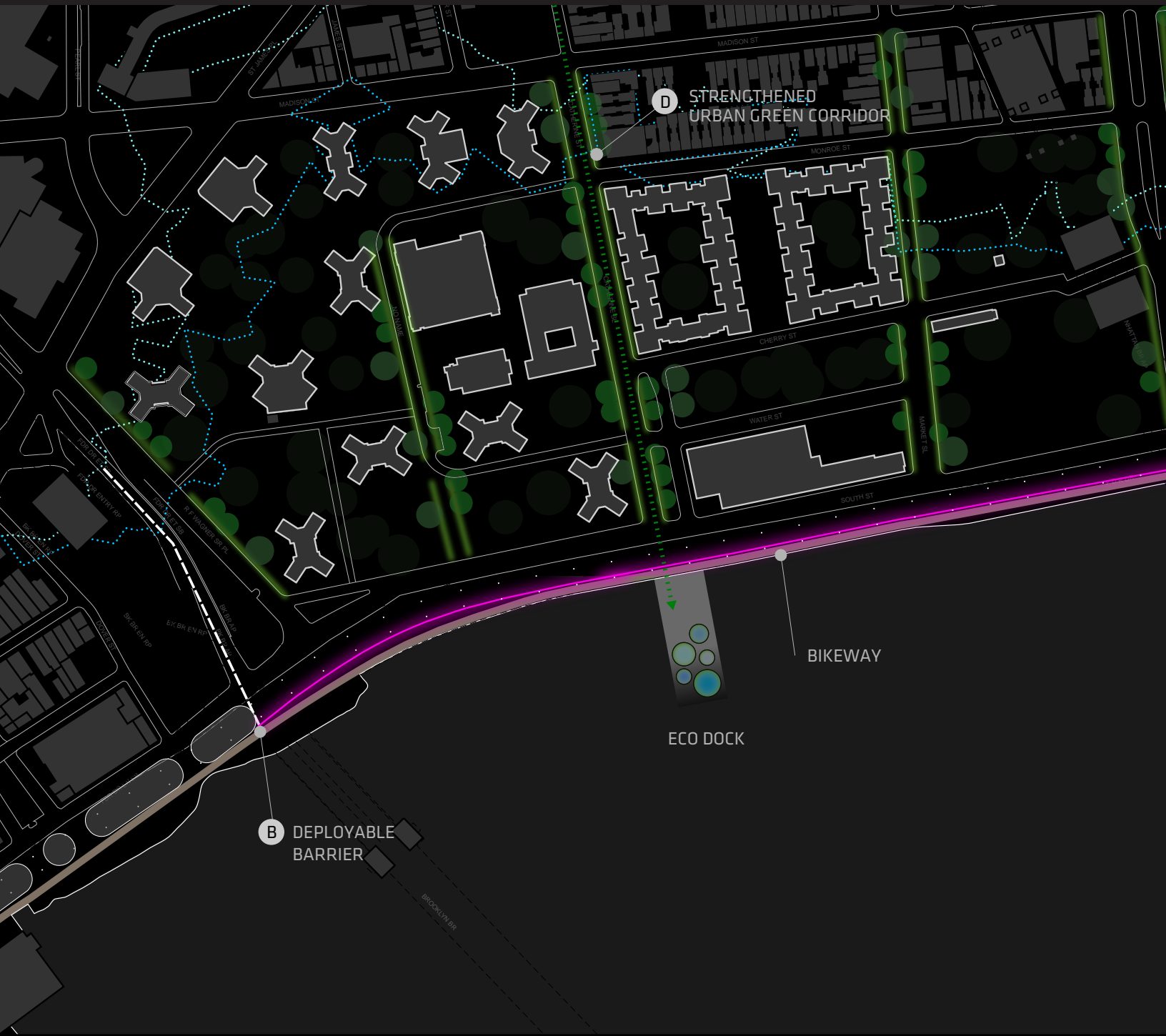
COMPONENTS:

A1 FLIP DOWN .79 MILES

Deployables will be attached to the underside of the FDR Drive. These flip down barriers, in part a public art project, are designed to provide lighting and security in these now-dark spaces.

B DEPLOYABLES AT BK BR & MONTGOMERY ST 800FT/200FT

The extends of C2 are protected by two stretches of deployable barriers aligned beneath the Brooklyn Bridge to the West and Montgomery Street to the East.



C COMPREHENSIVE PLANNING 44 ACRES

Improvements to ground floors and basements in buildings within the flood zone helps reduce damages from storm events.

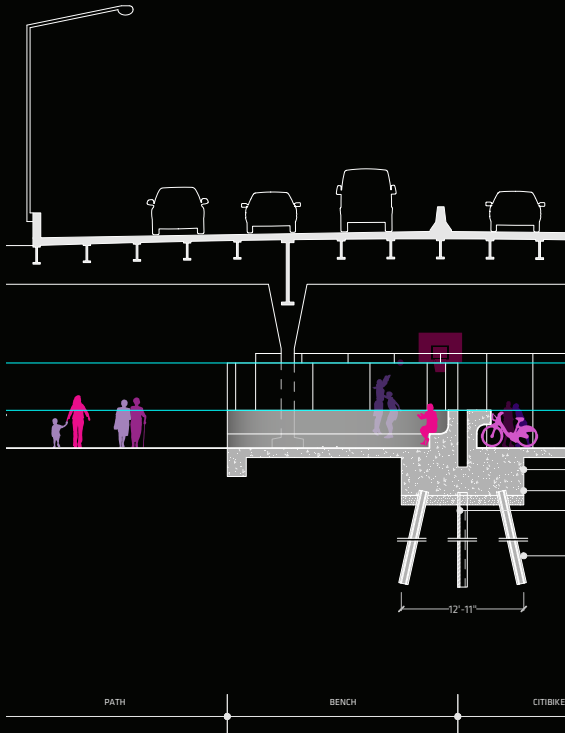
D GREEN STREETS 2 MILES

Permeable surfaces ling the street edges in C2 mitigate storm water drainage issues by providing absorptive surfaces that reduce runoff.

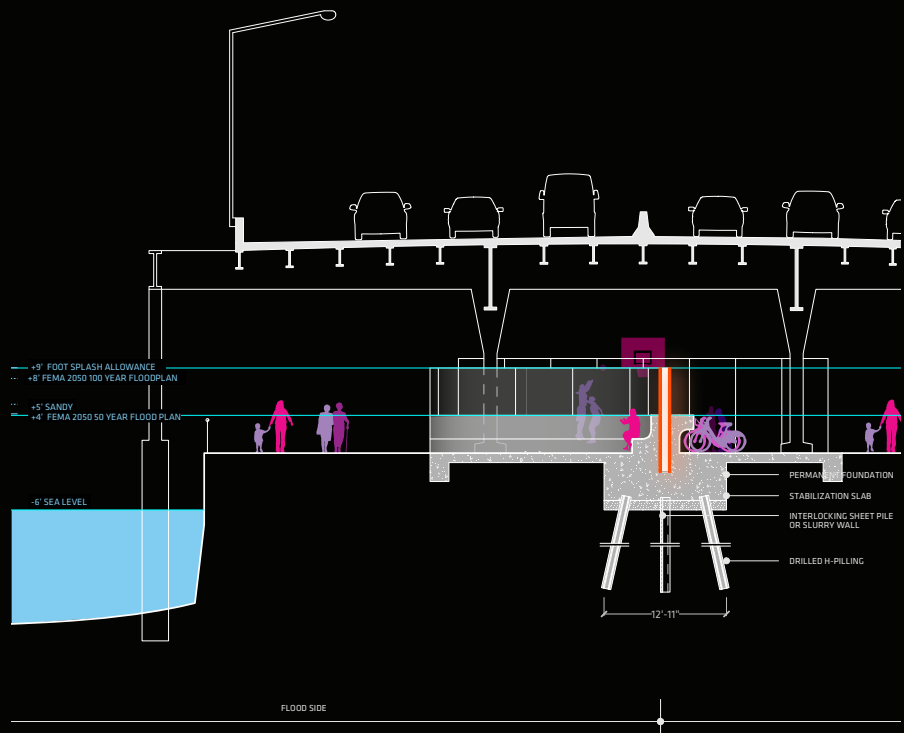


TWO BRIDGES - ALTERNATIVE 2

BIG BENCH + DEPLOYABLES

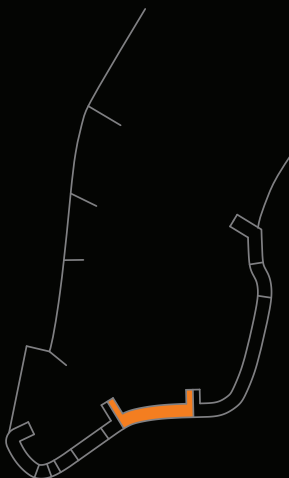


BENCH CONDITION



DEPLOYABLE WALL

C2



Between the Brooklyn Bridge and the Manhattan Bridge, across South Street from the densely populated Smith Houses, residents are very concerned about losing views of the water or blocking light. To maintain this view, one alternative of the BIG U inserts a zig-zagging 4' high Big Bench underneath the elevated FDR, creating unique spaces for socializing, tai chi, skate boarding, and a pool. Openings in the bench at the adjacent street intersections can be closed with deployable gates during storm events. This intervention creates need social and recreational space and maintains the connection between the neighborhood and the waterfront, while protecting against all but the worst storms.

In order to deal with flood waters that could overtop that 4' barrier, vulnerable NYCHA buildings are given Wet Feet (pg 181). Because the small wall blocks floods in most storm events, residents are able to exit and enter their buildings in all but the worst storms, at which point Wet Feet ensure that buildings are prepared to accommodate flood waters.



STORM EVENT



COMMUNITY RECREATION

C2 BIG BENCH

TWO BRIDGES/CHINATOWN

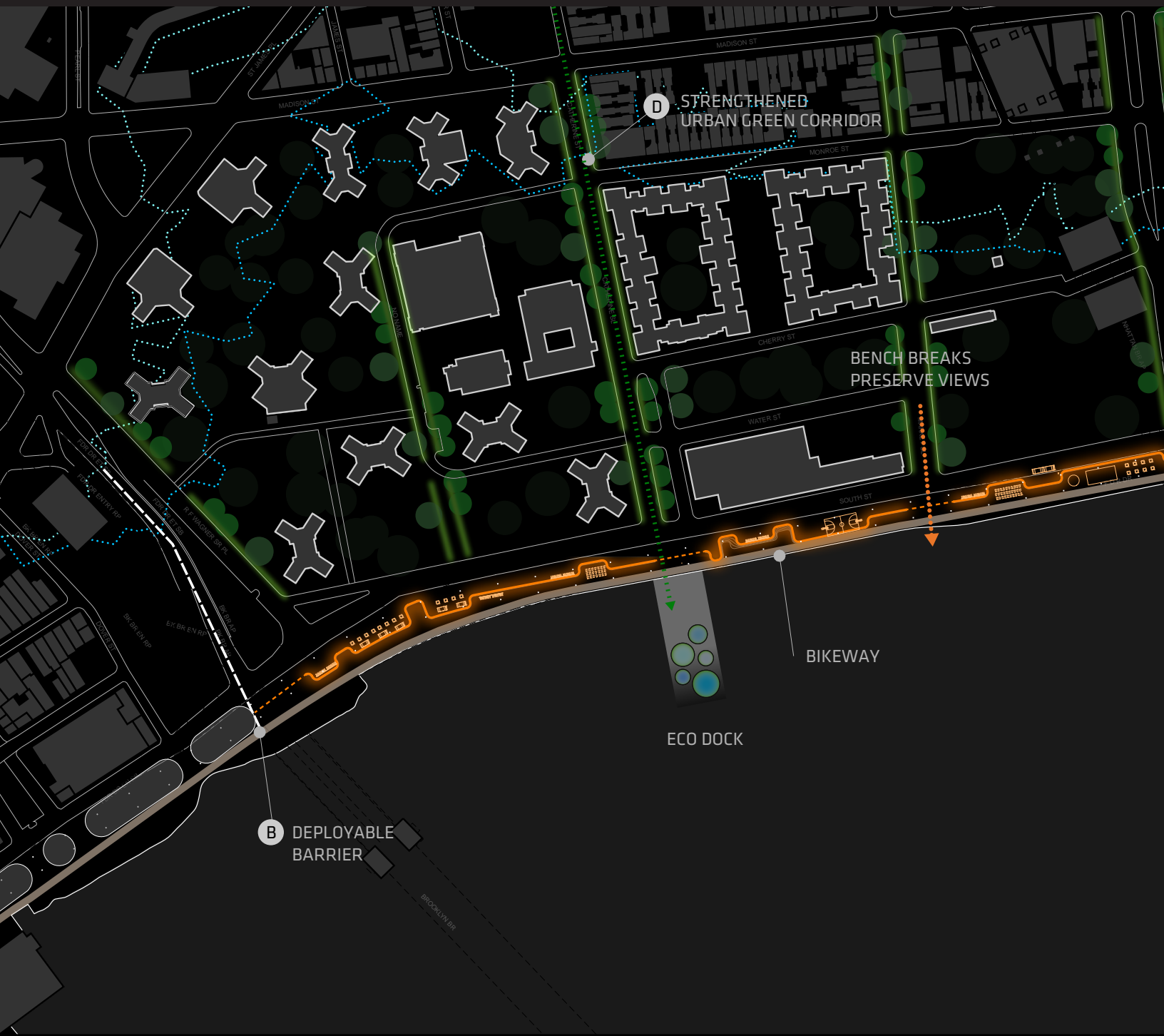
COMPONENTS:

A2 BIG BENCH .79 MILES

A system of benches, skate parks, tai-chi platforms and a pool, the latter in a glass pavilion The flood protection enlivens the Smith Houses waterfront and provides recreational amenities for the community.

B DEPLOYABLES AT BK BR & MONTGOMERY ST 800FT/200FT

The extends of C2 are protected by two stretches of deployable barriers aligned beneath the Brooklyn Bridge to the West and Montgomery Street to the East.



C

COMPREHENSIVE PLANNING

44 ACRES

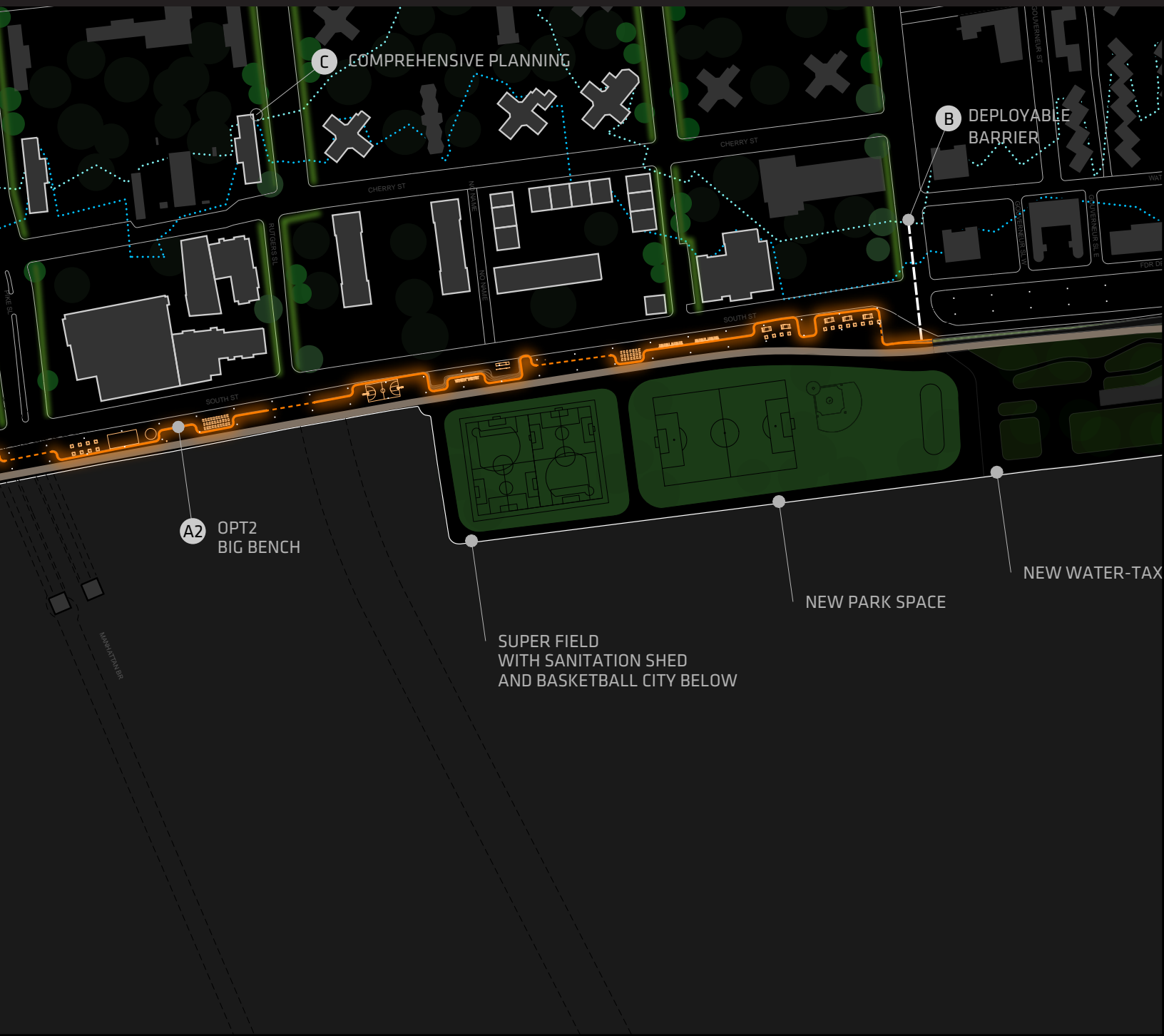
Improvements to ground floors and basements in buildings within the flood zone helps reduce damages from storm events.

D

GREEN STREETS/

2 MILES

Permeable surfaces ling the street edges in C2 mitigate storm water drainage issues by providing absorptive surfaces that reduce runoff.

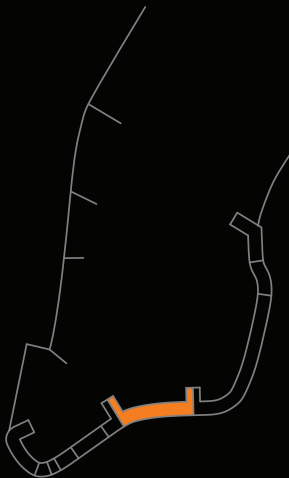


TWO BRIDGES

LONG TERM POTENTIAL



C2

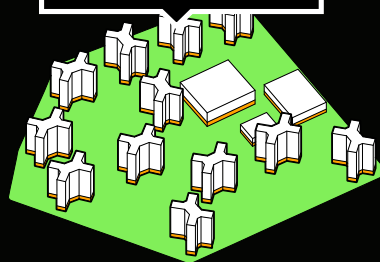


NYCHA CAMPUSES

An alternative location for the BIG U lies within the Smith Houses campus. The existing landscape around the residential towers does not adequately meet the needs of residents, as it largely consists of impervious underutilized parking lots and fenced-off lawns. Additionally, the existing monocultural planting of London Plane trees proved extremely vulnerable to salt water flooding during Sandy, and is in severe decline. This landscape has the potential of providing a diverse mix of landscape amenities and programs for the community, while providing needed vertical flood protection.



**GROUND FLOOR
APARTMENTS ARE
THREATENED BY FLOODS**



NEW UNITS



**COMMUNITY PROGRAM
AT STREET LEVEL**



**GREEN
INFRASTRUCTURE!**

This alternative alignment of vertical protection is a landscaped berm integrated into the South and West margins of the Smith Houses Campus. The Berm replaces underused lawn and surface parking areas with community-accessible open space and a robustly planted landscape that filters exhaust from the adjacent FDR. The residential towers in the path of the Berm are integrated into it, with reconfigured points of egress. First floor residents of these towers could be relocated to a new building on the campus, while the parking is inserted into the berm.

TWO BRIDGES - LONG TERM



EXISTING PARKING LOT



RECREATIONAL BERM

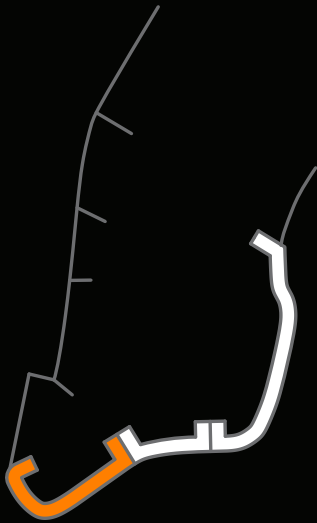


RECREATIONAL ADDITIONS

In this alternative a swimming pool is inserted into the inland side of the Berm, creating an immersively lush swimming experience, while supporting open landscape and social space above. Swimming pools, community centers and other pavilions could also be constructed under the FDR Drive, but this has to be balanced against the risk of obscuring views and also requires a maintenance partner. A long term solution that must be coupled with affordable housing protections, would be to create a berm on the city side of the FDR Drive that could offer flood protection while providing a great spread of recreational activities.

COMPARTMENT 3 (C3)

BATTERY TO BROOKLYN BRIDGE



INTRODUCTION

At the tip of Lower Manhattan, a succession of man-made piers, docks, and wharves have expanded the land area to nearly twice its 1600 size. These reclamations, once a gateway for international trade, now constitute a low lying and vulnerable back door to an area that houses some of the City's – and the world's – most critical financial assets. Recent strategies to create a continuous waterfront esplanade sought to capture the disused waterfront as a tourist attraction, but neglected to address the topographic challenges that incapacitated the world's foremost financial district during Hurricane Sandy. In the Battery and the Financial District, the BIG U unites protective infrastructure with amenities that enhance the waterfront for tourists, local workers, and the ever-swelling ranks of residents. Ranging from integrated landscape features in the Battery, to a system of deployable barriers, protective waterfront furniture that will enhance EDC's East River Esplanade, and new activity spaces transforming dark warrens below the FDR into brightly-lit social gathering spots, these additions promise to expand the waterfront's appeal while closing a door too long left ajar.



COMPARTMENT
BERM BARRIER

ELEVATED
BOSQUES AND
COMMUNITY GARDENS

ELEVATED
PARK PROMENADE

BATTERY BERM **F**

NEW HARBOR SCHOOL

HARBOR MUSEUM **E**

WHITEHALL TERMINAL
FLOOD WALL

D BATTERY MARITIME BUILDING
FLYOVER PLAZA

C SOUTH STREET
PROMENADE

BIG TEAM

COMPONENTS:

A SOUTH STREET PAVILIONS .34 MILES

From the Brooklyn Bridge to Maiden Lane, a series of Pavilions provide flood protections. Sliding flood gates concealed in the central wall of each pavilion slide shut during flood events.

B URBAN LIVING ROOM .2 MILES

From Maiden Lane to Old Street a series of urban furniture pieces beneath the FDR serve as anchors for deployable barriers. The large percentage of deployables preserves views.

C SOUTH STREET PROMENADE .23 MILES

From Old Street to Broad Street an elevated pedestrian and bicycle path along the coast provides the necessary elevation to protect against flooding. While providing an improved public realm from which to look out on the water.

D BMB PLAZA 60,000SF

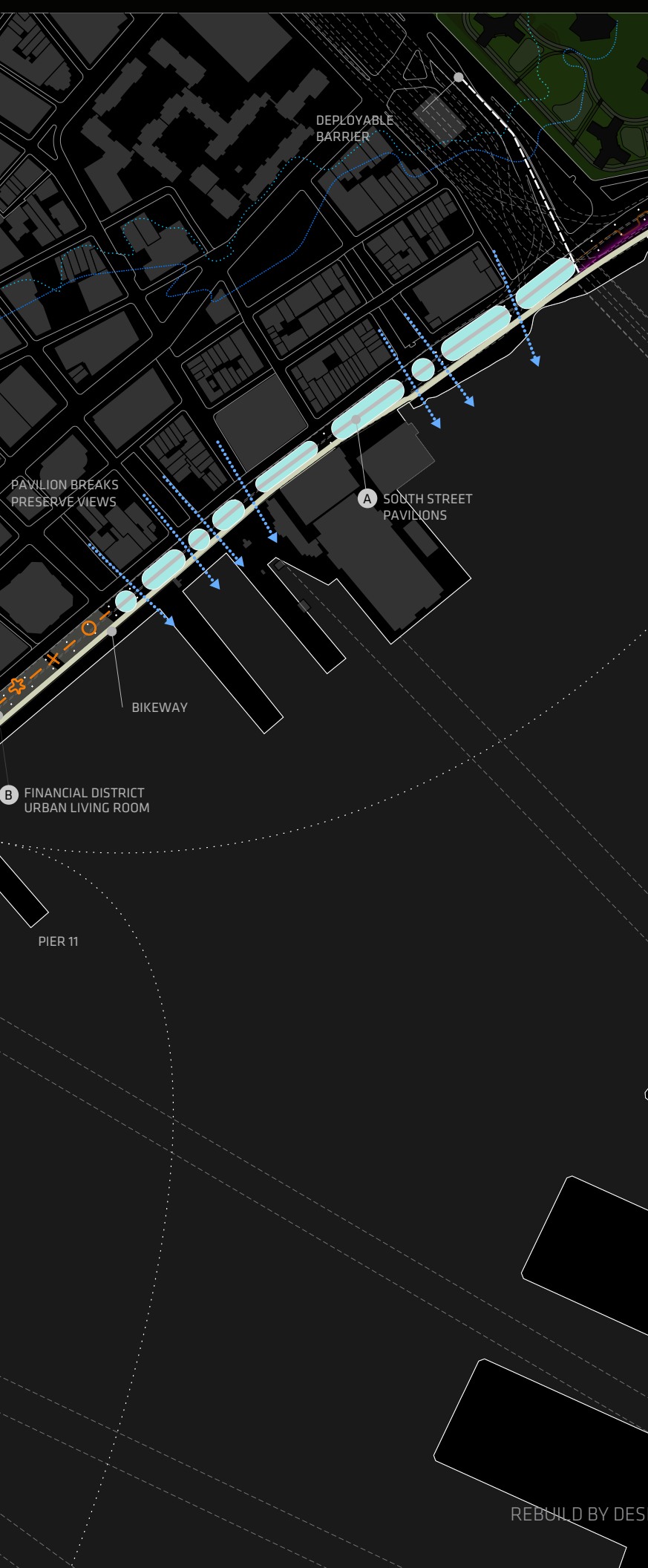
A plaza North of the Battery Maritime building creates a new public space linking the elevated promenade to Peter Minuit Plaza.

E HARBOR MUSEUM 30,000SF

The site of the Coast Guard Building at the Battery is transformed into a museum of Climate change with views of the Harbor and an "inverse aquarium" where visitors can track the water level of the Harbor.

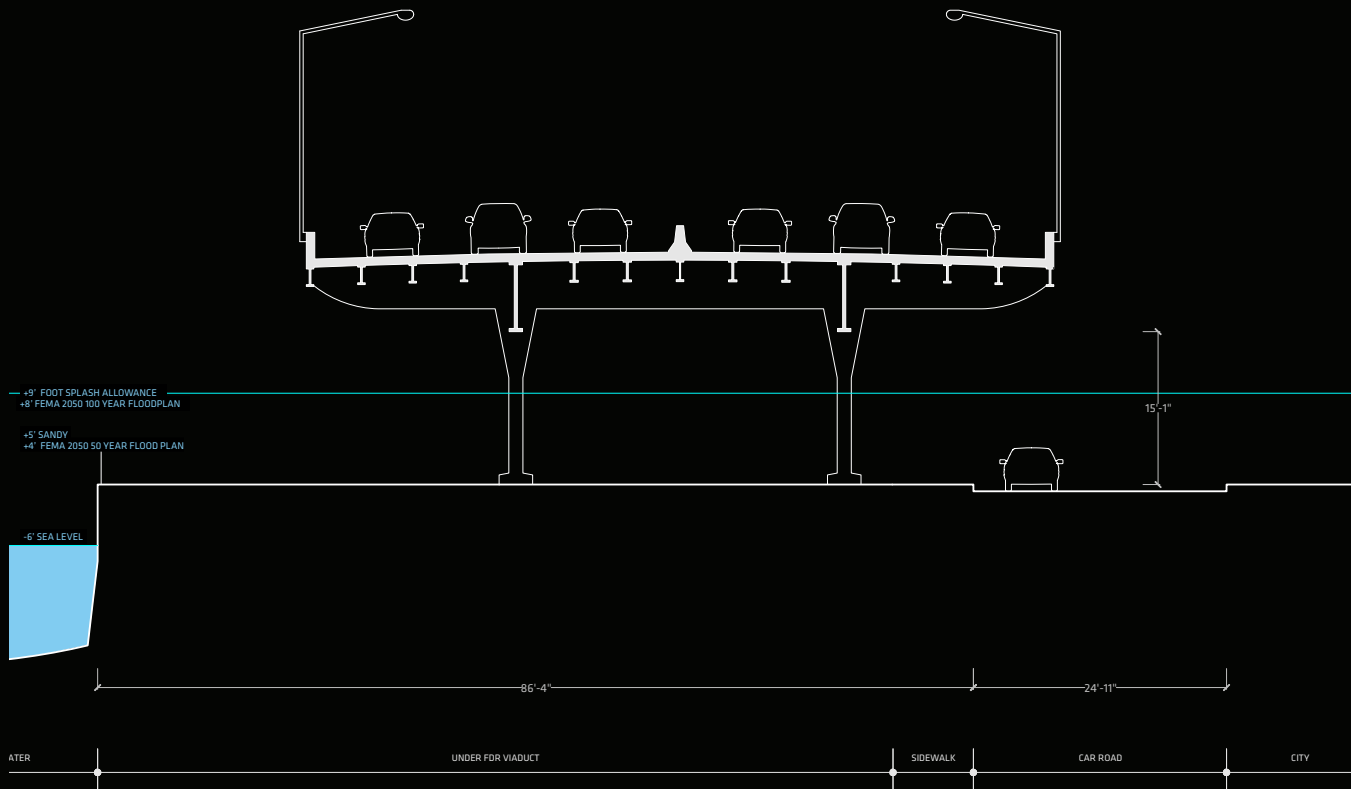
F BATTERY BERM 7.2 ACRES

The natural topography of Battery park is Augmented to form a continuous berm stretching from West Street to Whitehall Terminal where the protection switches to a wall beneath the terminal underpass.

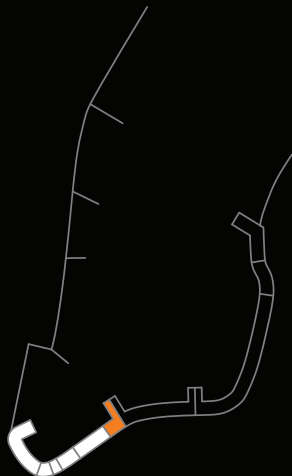


EXISTING CONDITIONS

SOUTH STREET SEAPORT



C3



Bounded on the north by the Brooklyn Bridge, the west by Pearl Street, the south by John Street, and the east by South Street and the elevated FDR Drive, South Street Seaport's residential enclave of 18th century brick buildings is extremely vulnerable to flooding. The historic market at the heart of the district is a major tourist draw, and is a centerpiece in ongoing plans by EDC and the Howard Hughes Corporation to re-envision the waterfront. Flood-proofing of individual structures in this area is impeded by buildings' idiosyncrasies and lack of consolidated ownership; large-scale flood-proofing is made challenging by tight conditions along the waterfront edge. The under-used area below the FDR, currently an obstacle to connecting the Seaport neighborhood with the water, provides an ideal place for protective infrastructure and enlivening urban design.

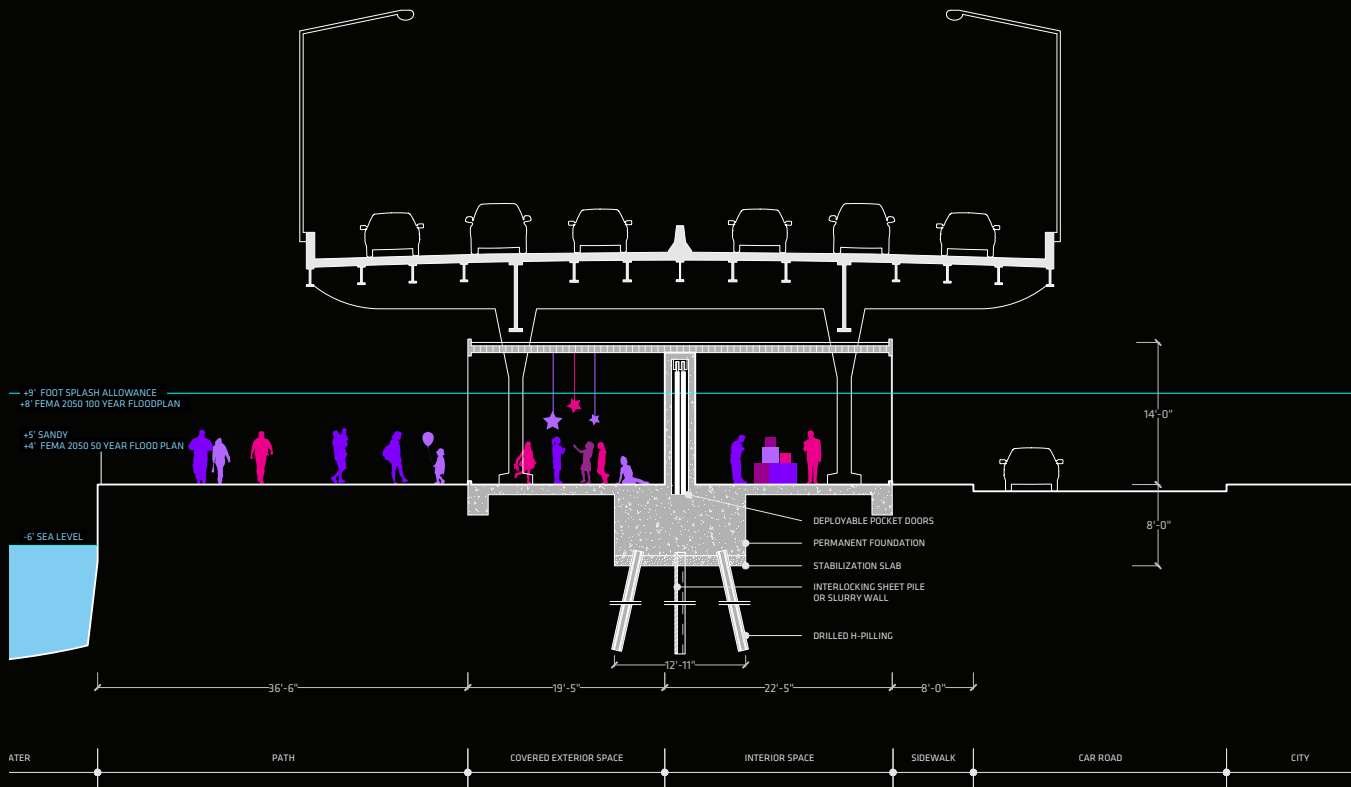


BIG TEAM



SOUTH STREET PAVILIONS

SOUTH STREET SEAPORT



C3

PAVILIONS OF PROTECTION

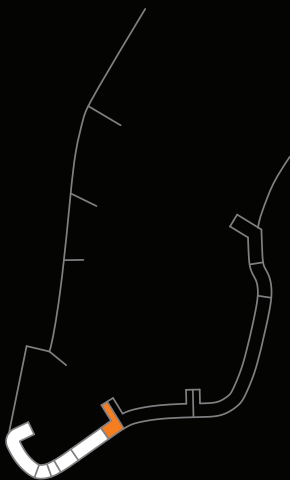
Building off the East River Esplanade Plan, the BIG U in the Seaport is a series of oval pavilions under the elevated FDR that house temporary market stalls and art exhibits as well as more permanent programming. The pavilions are anchored by sturdy central flood walls. These walls contain pocket flood doors that can be deployed to provide a continuous vertical flood barrier. The pavilions animate the transition zone between the neighborhood and the waterfront and revive the historic mercantile uses of the site, while engaging the local artistic community.



GATES



C3

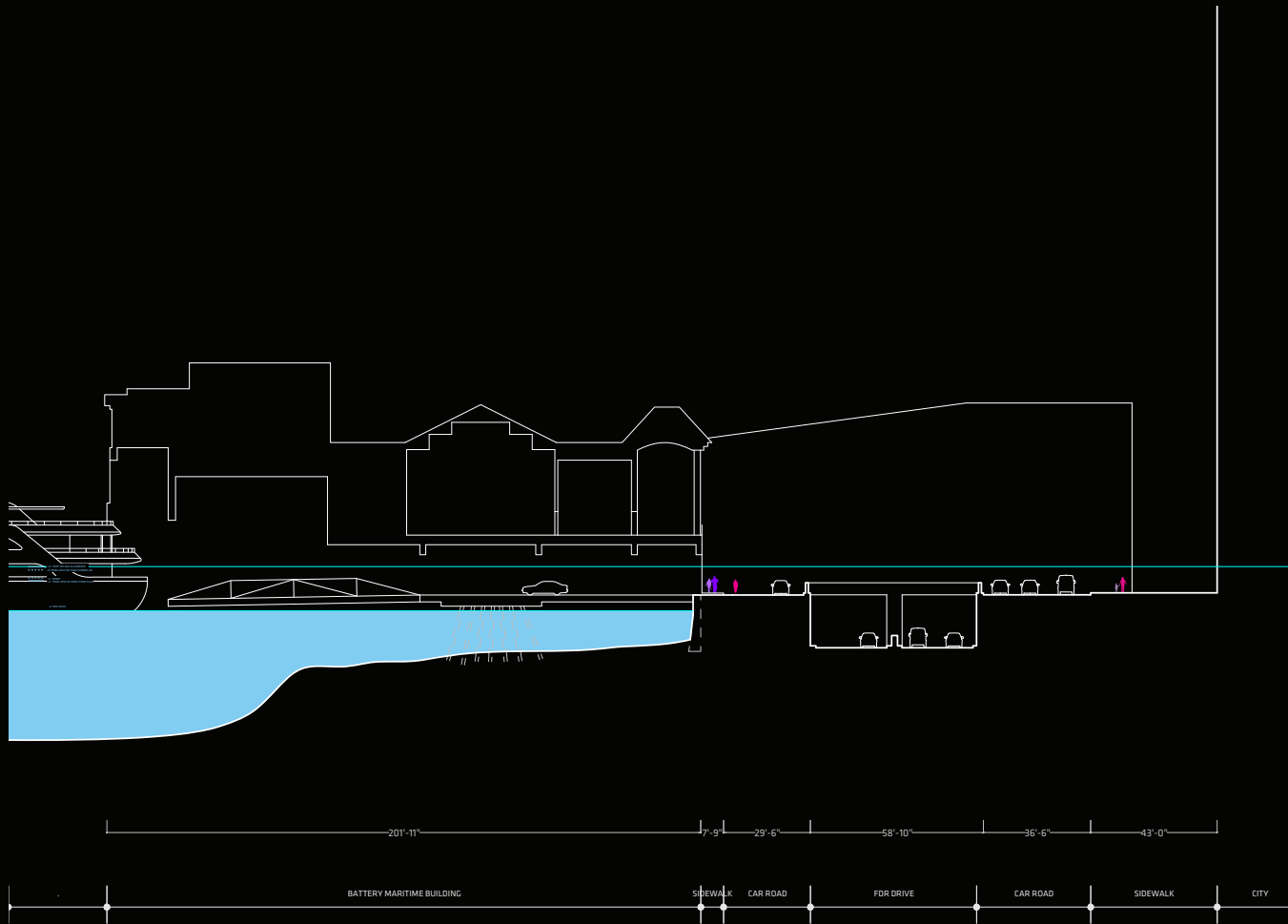


The Financial District's dynamic shoreline of piers, ferry terminals, and park spaces needs to be accessible in order to support the neighborhood's bustling commercial and tourist activities. From John St to Coenties Slip, an urban living room of flexible outdoor furniture and occasional pavilions animate the area under the FDR, and can be filled in with deployable gates to prepare for storm events. These gates are located at major view and transportation corridors - Maiden Lane, Wall Street, Gouvernors, Lane and Old Slip - maintaining views and accessibility during fair weather.



EXISTING CONDITIONS

BATTERY MARITIME BUILDING



C3

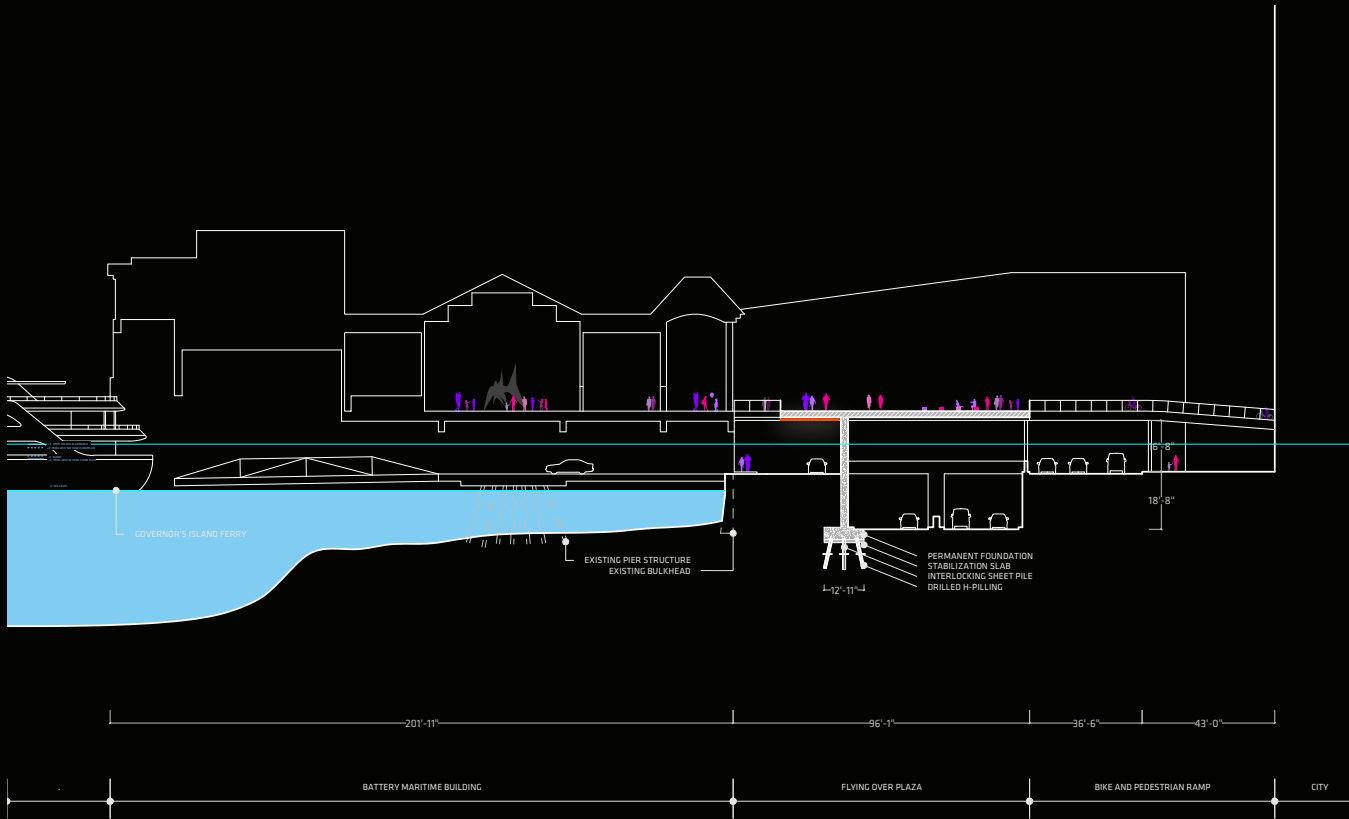
A HUB FOR VISITORS

Located at the corner of South and Whitehall Streets, the Battery Maritime Building provides ferry service to Governors Island for hundreds of students attending the New York Harbor School as well as hundreds of thousands of visitors looking to enjoy summer events at the island's 90 acres of public parkland. Considered the lynchpin of any comprehensive waterfront development by NYC EDC, this facility recently underwent a \$35 million renovation that restored the building and piers, and is in the process of expanding to include a hotel and diverse food market.



BMB PLAZA

BATTERY MARITIME BUILDING



C3

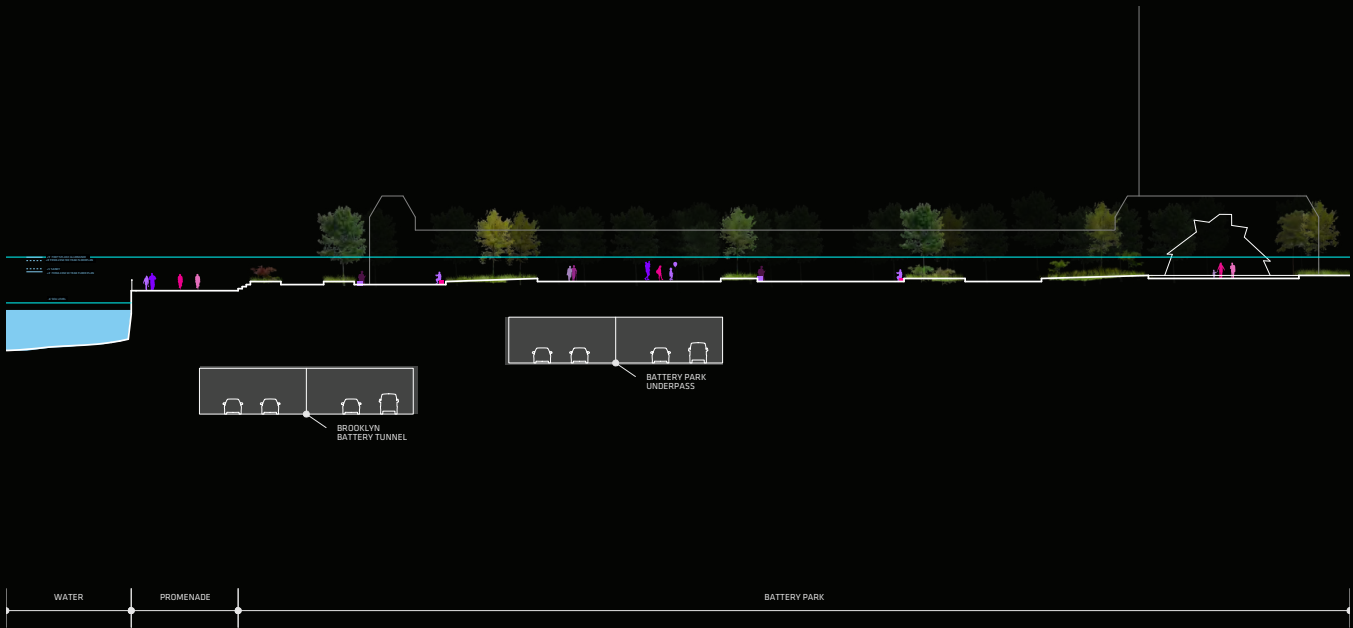
A RAISED PEDESTRIAN WAY

While the renovations and repositioning of the Battery Maritime Building will make the facility a jewel in Lower Manhattan's crown of tourist destinations, its cramped outdoor space remains insufficient to provide protection or recreation. The BIG U envisions an elevated public plaza and esplanade that connects directly to the Battery Bikeway at Peter Minuet Plaza, protecting the entrance of the Battery Underpass. An integrated floodwall turns this weak spot into a stronghold for protection as well as tourism.



EXISTING CONDITIONS

THE BATTERY



C3

THE PROW OF MANHATTAN

The east and west boundaries of the Battery were key inlets during Hurricane Sandy, allowing floodwaters to rush into Lower Manhattan and shut down the nation's – and the world's – premier financial district. Enhancing the public realm while protecting the Financial District and critical transportation infrastructure beyond, the Battery Berm weaves an elevated path through the park. Along this berm, a series of upland knolls form unique landscapes where people farm, sunbathe, eat and engage with world class gardens. The berm enhances the visual interest and experience of the park, while cradling Lower Manhattan within a continuous curve of protection.



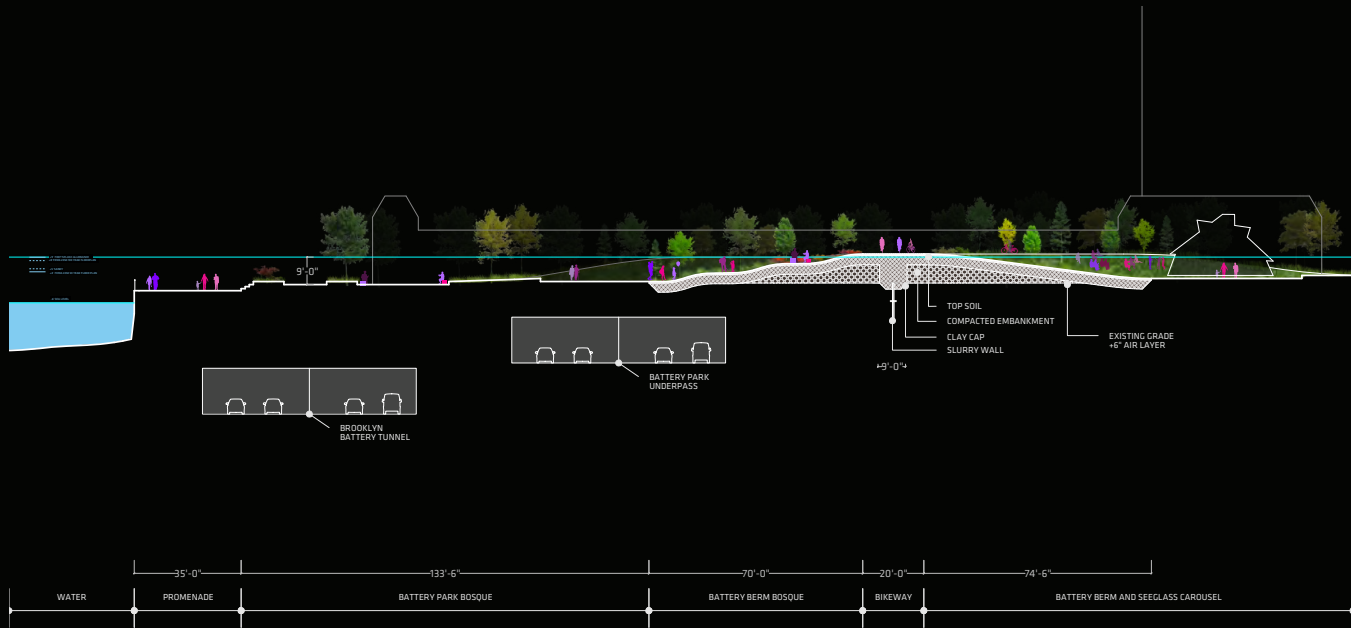
BIG TEAM



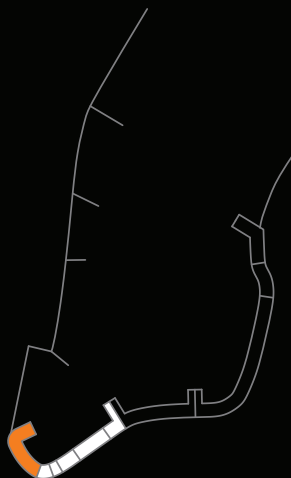
REBUILD BY DESIGN - THE BIG U

BATTERY BERMS

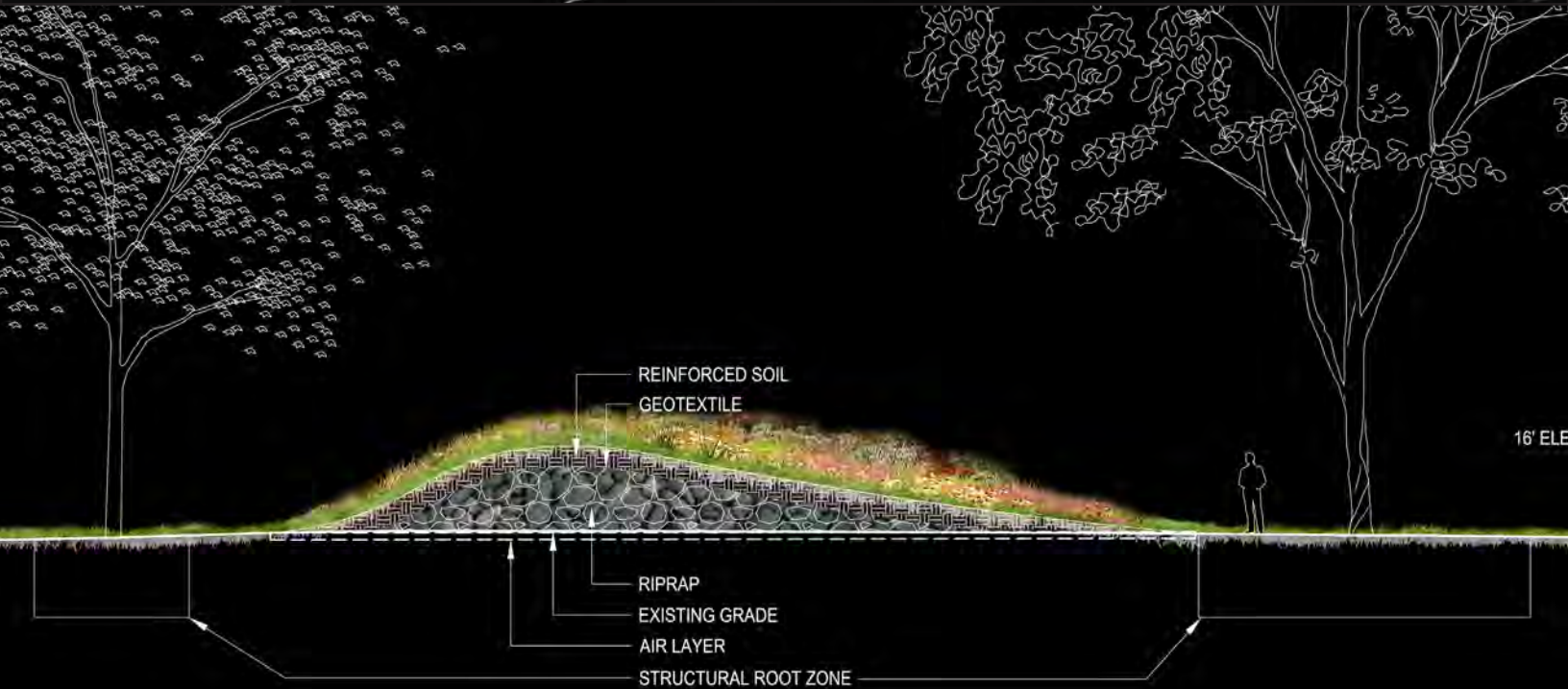
THE BATTERY



C3



The Battery Berm connects with the elevated Battery Place to the west, creating a broad levee stretching past Pier A Plaza and Wagner Park to meet high ground in Battery Park City. This remarkable green infrastructural insertion protects the Battery Underpass, the Brooklyn Battery Tunnel, and the World Trade Center site, while enriching a public park for residents and tourist alike.



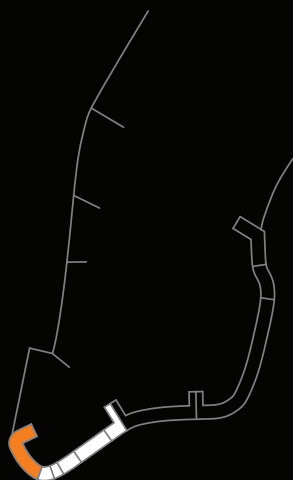
PLAN

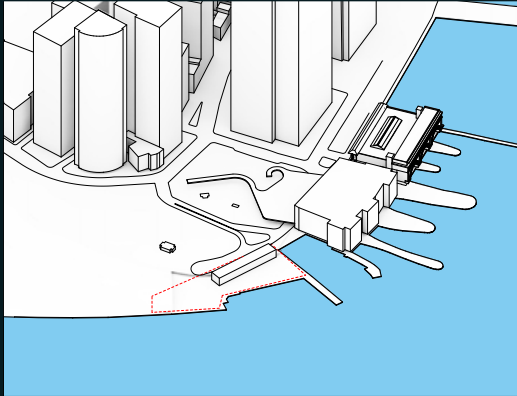


C3

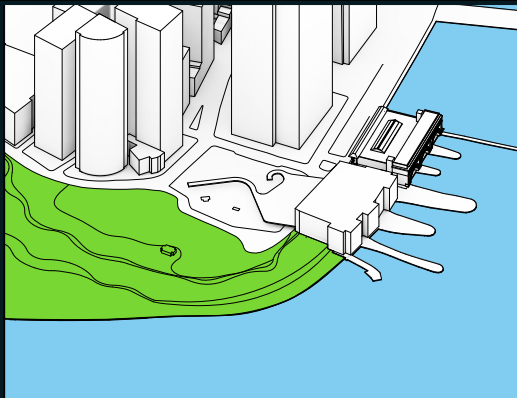
NY HARBOR BERM

Berms in The Battery, strategically located so as to protect the ducts of the infrastructure below, create a continuous protective upland landscape. In place of the Coast Guard building, the plan envisions a new building programmed as a maritime museum or environmental education facility. This signature building features a “Reverse Aquarium”: its form is derived from the flood protection at the water-facing ground floor. Continuing east, a floodwall connects through the Staten Island Ferry building and aligns with the FDR Drive at the Battery Maritime Building (BMB). An elevated plaza brings the surroundings level with the monumental mezzanine floor of the BMB. This plaza connects to an elevated bikeway/footpath, which in turn connects to a series of pavilions which provide flood protection in conjunction with deployables that swing down from the underside of the FDR Drive.

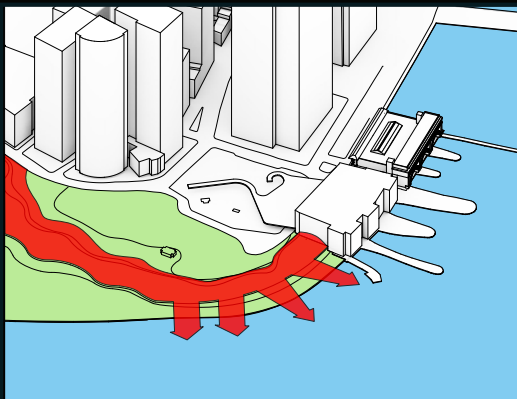




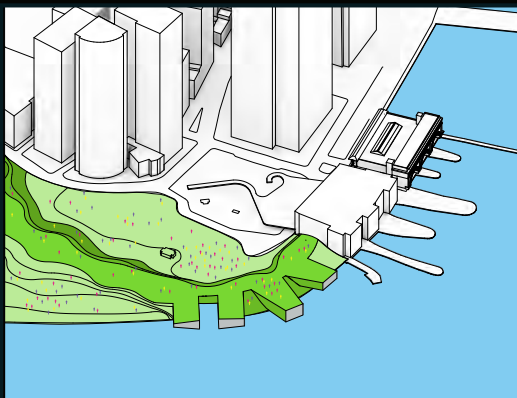
COAST GUARD SITE



PROTECTIVE BERM



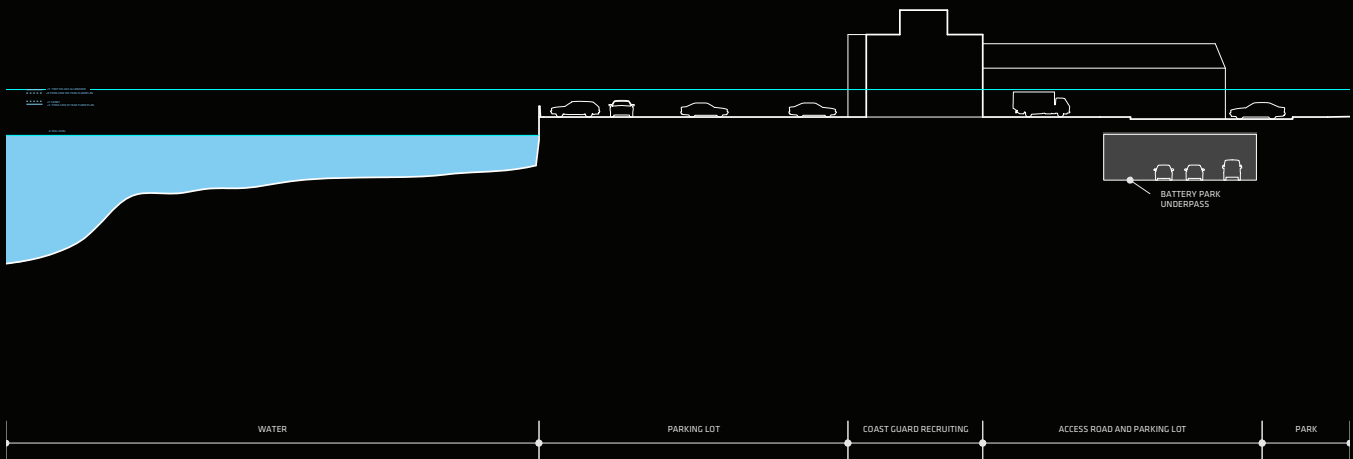
EXTEND!



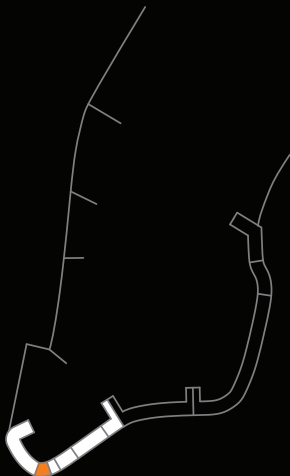
NY HARBOR BERM!

EXISTING CONDITIONS

THE COAST GUARD SITE



C3



The highly secured Coast Guard Site at 1 South Street forms a privately-operated barrier between the heavily-trafficked public spaces of Battery Park and the Staten Island Ferry Terminal. The dilapidated 1950's-era building occupies prime waterfront real estate without engaging the water: the space is currently used as a credential-granting center and office location. In two meetings with the BIG U team, the Coast Guard has expressed interest in designing an alternate use for the site that participates in, rather than ignores, the waterfront.



BIG TERM



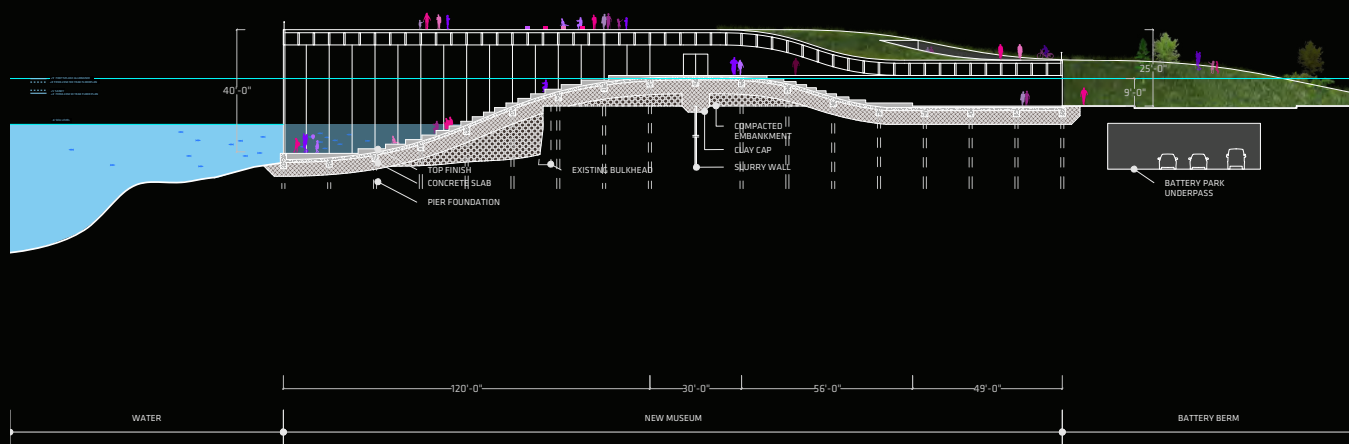
October 29, 2012



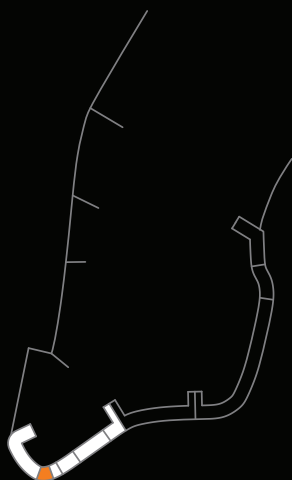
THE HARBOR BERM

NY HARBOR MIDDLE SCHOOL

MUSEUM FOR THE ECONOMY AND ECOLOGY OF THE HARBOR



C3

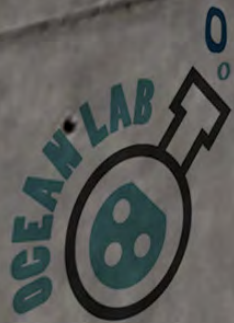


The Harbor Berm celebrates the historic maritime uses of the site, while connecting the Battery Berm with the elevated pedestrian ways in the Battery Maritime Plaza. Watertight marine grade glass structures create in-water educational and cultural experiences, while graded slips allow easy harbor access for boaters. This buildings could be perfect locations for The Museum Of Ecology And Economy of New York and a Middle School for the New York Harbor School.



BIG TEAM





THE REVERSE AQUARIUM

The Museum Of Ecology And Economy of New York anticipates and engages with climate change. The Reverse Aquarium is an architecturally optimistic building that enables visitors to observe tidal variations and sea level rise while providing a flood barrier.







RESILIENT COMMUNITY PLANNING

A TOOLKIT

During the development of the Big-U, and in the outreach sessions with the LES community, the BIG-team has come to an understanding how resilience measures in these areas can be combined with other objectives: more amenities, housing preservation, jobs and better public space.

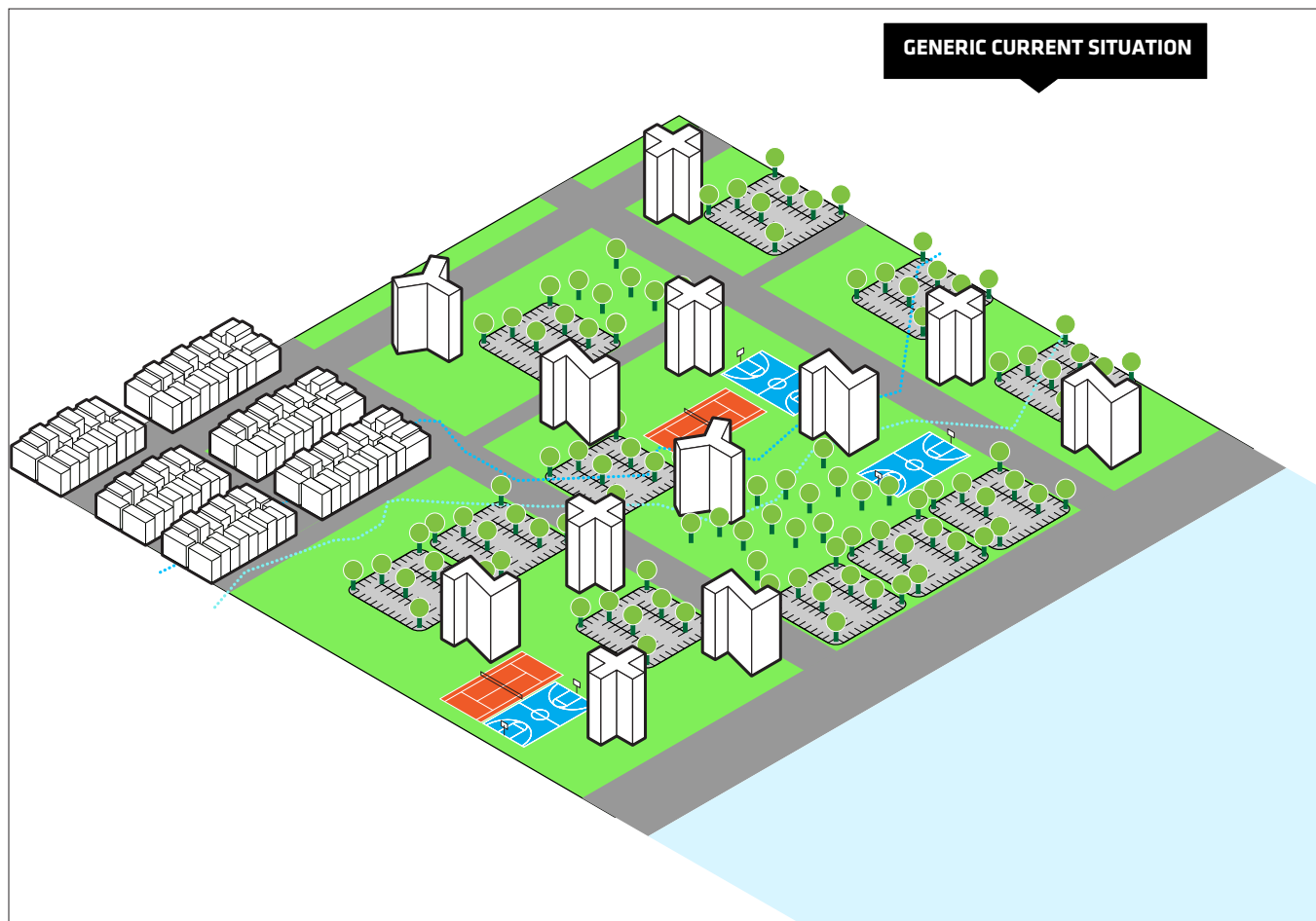
Many of these opportunities have been included in the Big-Team's phase 3 proposal. Capturing all these opportunities, however, requires a level of integration between community groups, the City, NYCHA and other land-owners in the area that has proven to be difficult in the relatively short time-frame of this 3rd phase of Rebuild by Design.

In order to let this thinking not go to waste, and to be able to use the findings in the further development with the community of the Big-U, as well as in other 'towers-in-the-park' areas in the flood zones in the region, the BIG team has developed a toolbox of measures. The toolbox makes visual the elements for an integrated and comprehensive strategy for the 'towers-in-the-park' and the way multiple elements can be combined in order to make 'towers-in-the-park' areas more resilient, while also achieving the other objectives.

RESILIENT COMMUNITY PLANNING

PUBLIC- AND AFFORDABLE HOUSING STRATEGY

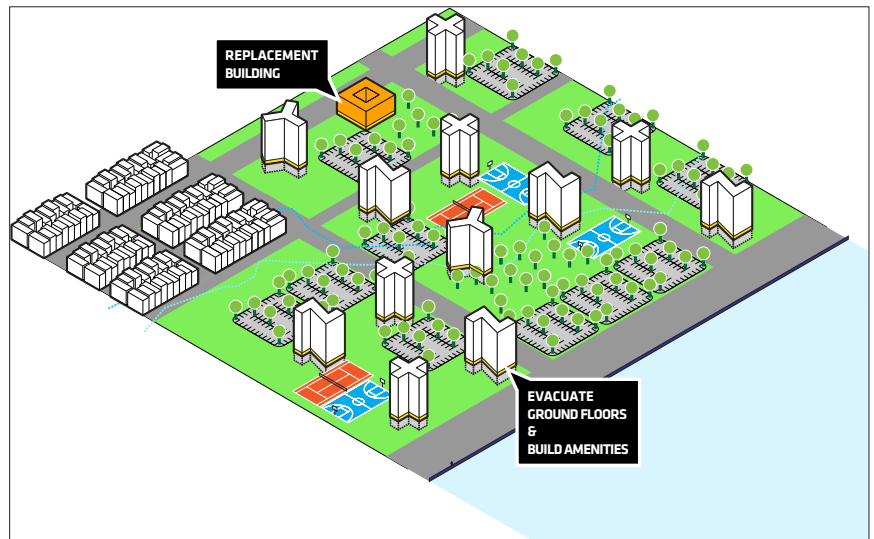
Much of New York City's public housing is built in the flood zone. The Lower East Side contains one of the largest reservoirs of NYCHA public housing, as well as much housing that is owned by not-for-profit housing groups. The so-called 'towers in the park' typology is dominant here (though the 'park' often consists of parking places and impervious materials). Hurricane Sandy has once more demonstrated the vulnerability of these areas, both socially and physically.



Current situation

WET PROOFING

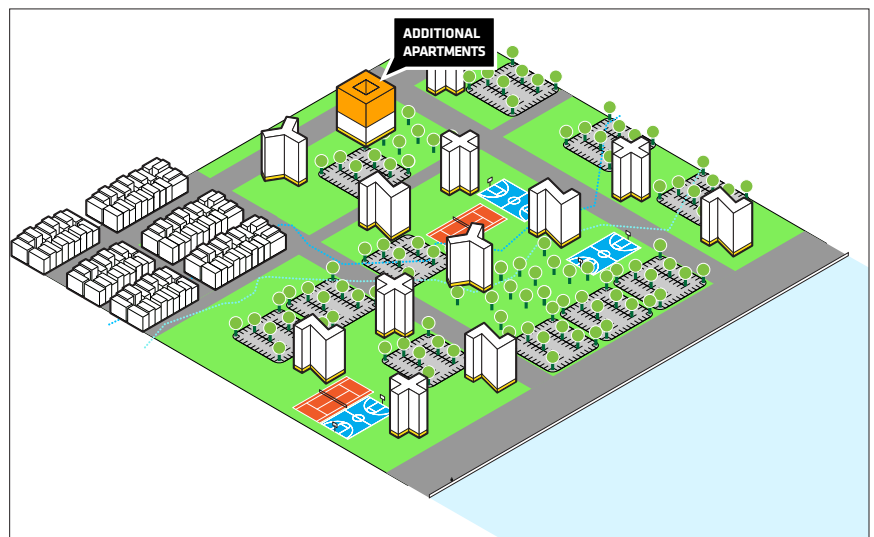
A lower level of flood protection necessitates the wet-proofing of the buildings. Basements of NYCHA properties need to be strengthened, equipment needs to be moved, and the ground floors must be evacuated of residential use. The ground floors can then be used to build amenities in them. In order to keep the total number of apartments equal, a replacement building should be built.



Wet proofing

ADDING AFFORDABLE HOUSING ON REPLACEMENT BUILDING

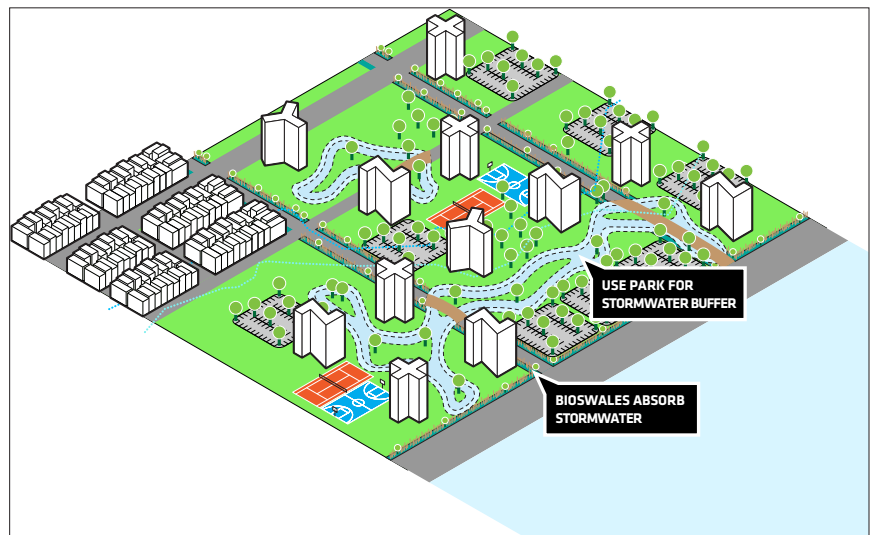
The City wants to add more affordable housing. It is possible to add additional apartments to replacement buildings.



Additional apartments

USE 'PARK' FOR STORM-WATER STRATEGY

Because stormwater cannot escape, flood protection on the waterfront makes it even more necessary to develop a stormwater strategy for the low-lying areas. Next to the obvious infrastructure improvements, reducing the amount of impervious material, bio-swales and stormwater retention ponds or tanks will be necessary to keep the area from flooding. Combined, these measures can increase the quality of the urban space.

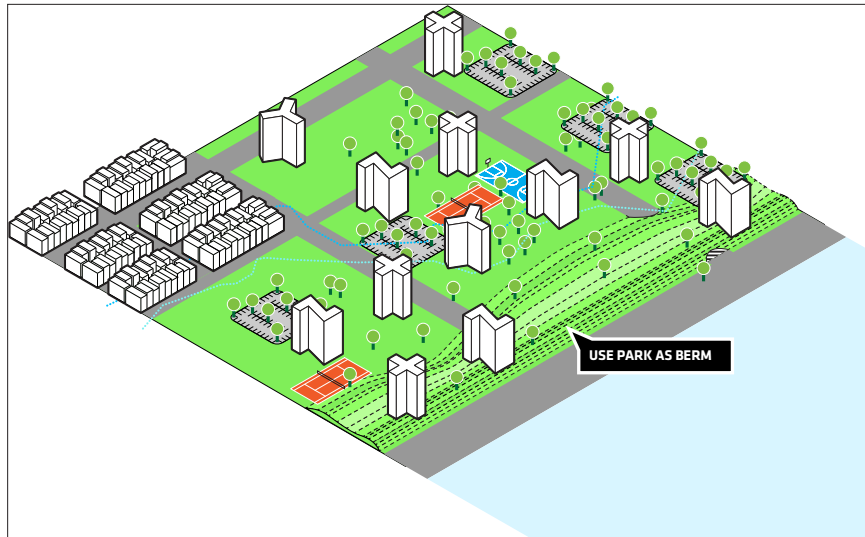


Park for stormwater strategy

RESILIENT COMMUNITY PLANNING

USE 'PARK' FOR BERM

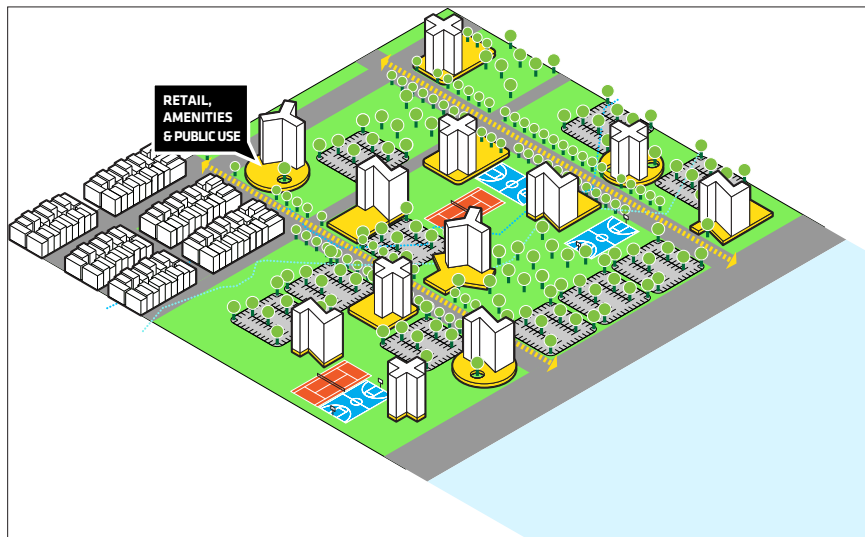
When there is little space on the waterfront, or when a flood protection there is undesirable because of the connections to the waterfront, it is possible to use the 'park' for a berm.



Park for berm

CREATE LIVELY STREETS

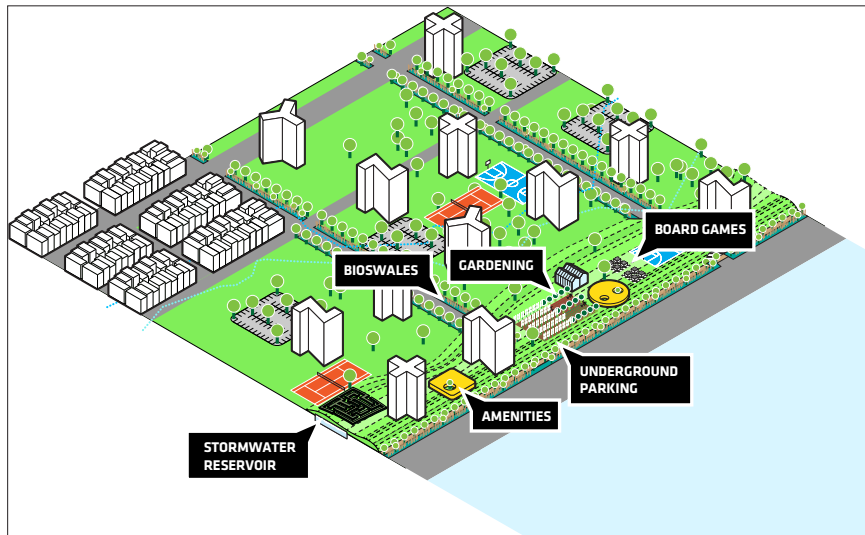
Resiliency driven changes in the public space design, as well as in the function (and form) of the ground floors, makes it possible to create lively streets that connect better to the waterfront.



Create lively streets

USE BERM FOR PARKING/AMENITIES/STORMWATER

The berm in the 'park' can have functions underneath: parking, amenities, and even stormwater retention tanks (the latter easily combined with parking).



Berm for parking/amenities/stormwater

DEVELOP NEW BUILDINGS TO INCREASE THE AMOUNT OF AFFORDABLE HOUSING AND GENERATE REVENUE (PREFERABLY OUT OF THE 'WET FEET' ZONE)

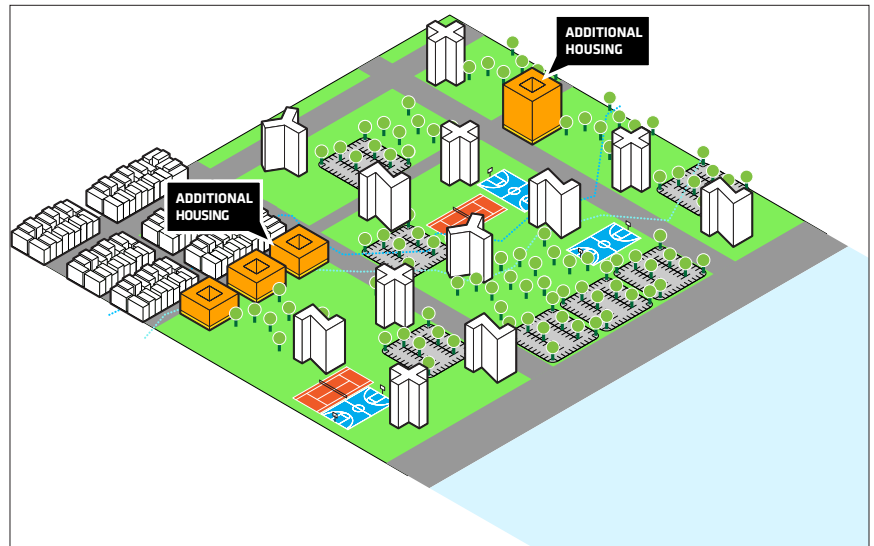
With the area flood- and stormwater protected, it becomes conceivable to re-think, in tandem with the community, the possibility of adding program, not only to add to the number of affordable housing units, but possibly also to generate revenue to make housing preservation possible.

BUILD A CO-GEN PLANT

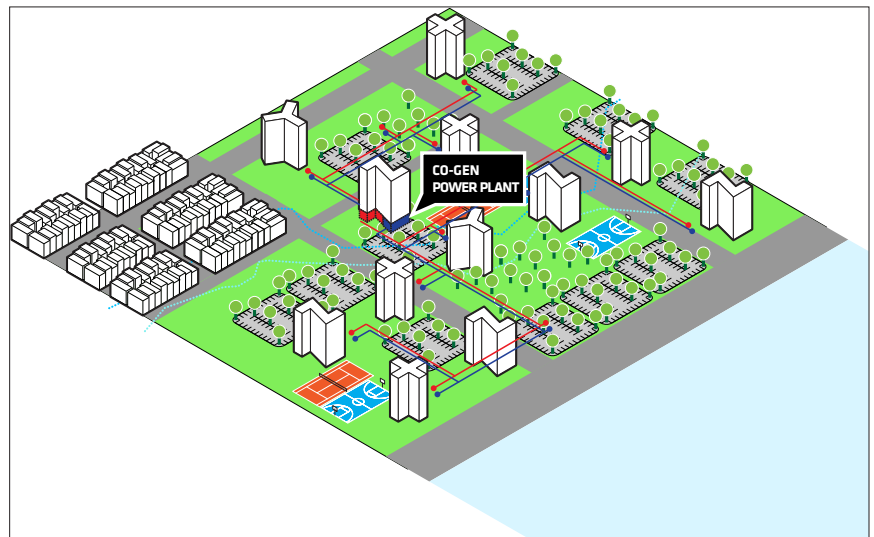
In addition to providing backup in case of emergencies and blackouts, a Co-Gen plant and a community microgrid on a campus increases energy efficiency and reduces emissions. A Combined Heat and Power Plant can be placed in one of the evacuated, fortified, ground floors. Ideally, this function is combined with other community resilience functions, such as charging stations and health services. Multiple, connected local plants increase the resiliency on a large area such as the Lower East Side even further.

EXTEND THE CHINATOWN-LES ACQUISITION FUND

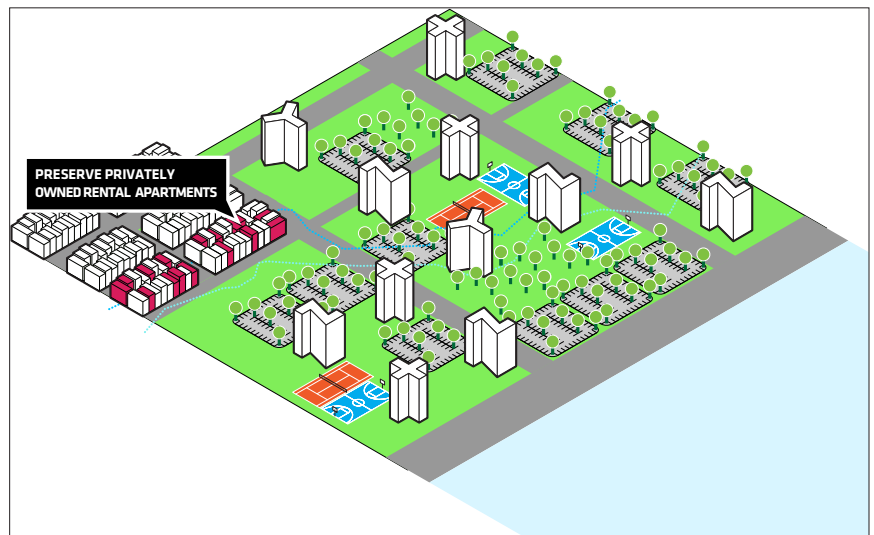
In order to preserve privately owned rental apartment buildings with low- and moderate-income tenancies in wet feet area, the Chinatown-LES Acquisition Fund could be extended.



Additional housing



Co-Gen plant

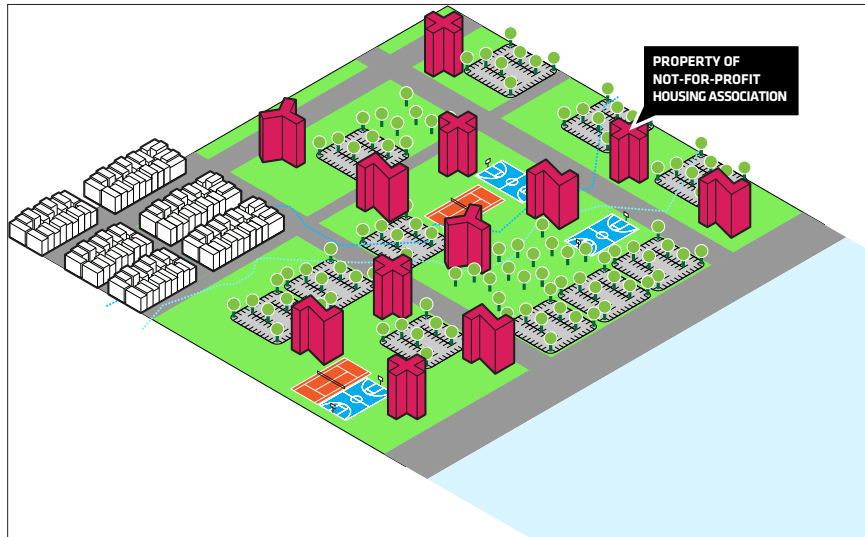


Privately owned affordable rental apartments

RESILIENT COMMUNITY PLANNING

LOCK IN NOT-FOR PROFIT HOUSING IN THE PROTECTED FLOODZONE

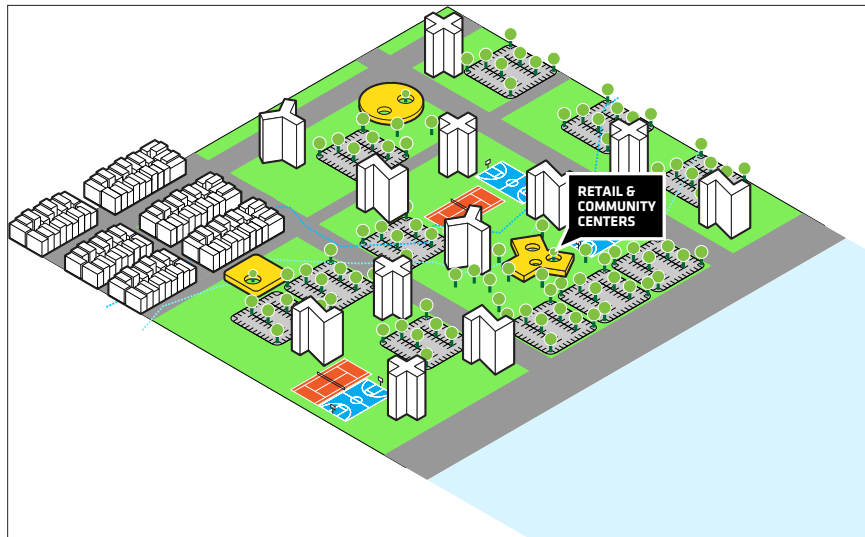
One of the beneficiaries of integrated flood protection are the various not-for-profit housing associations that now cannot afford the resiliency measures and rising insurance premiums. The promise of publicly funded flood- and stormwater protection can be leveraged into a lock-in of affordability.



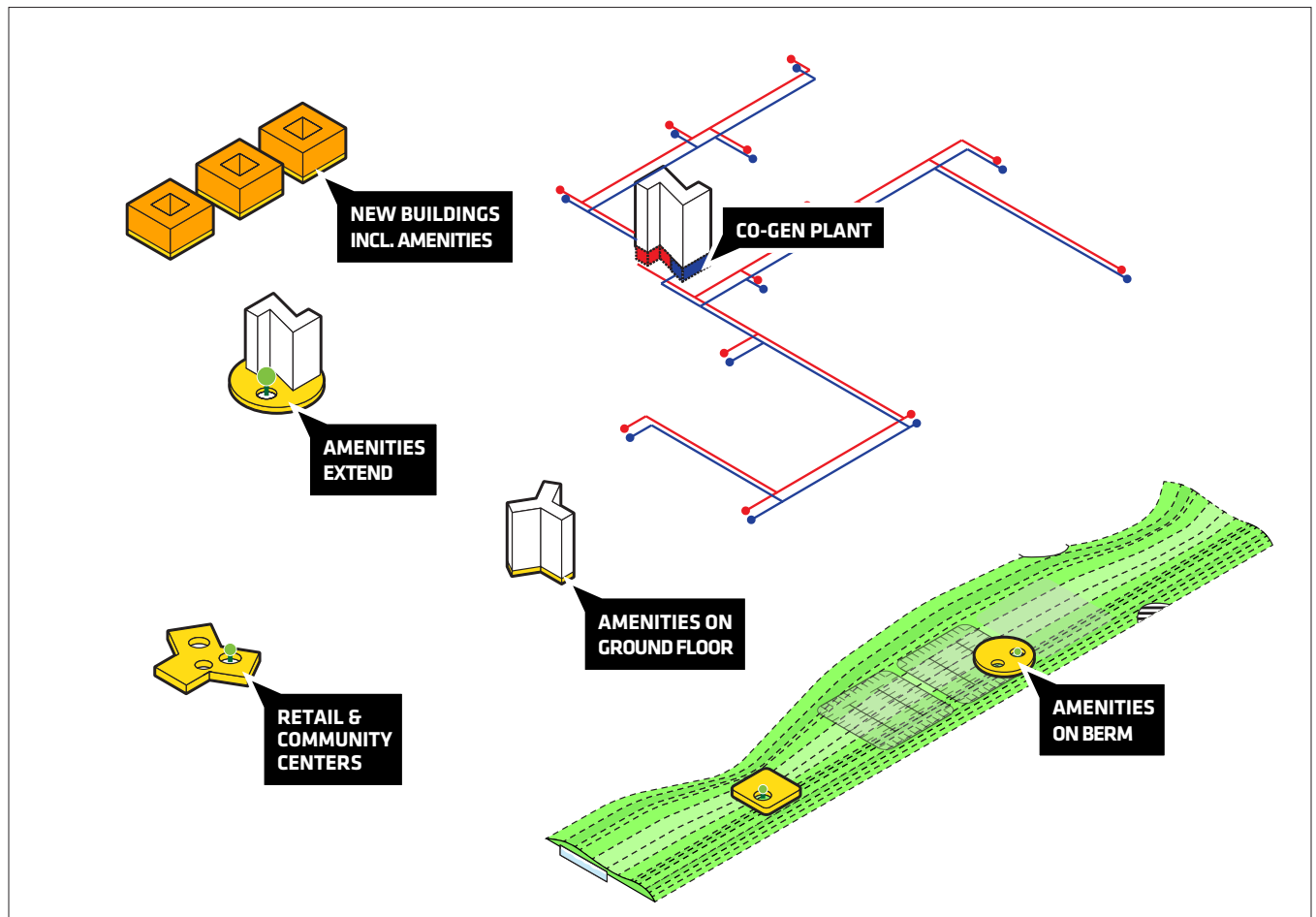
Not-for-profit housing association

ADD COMMUNITY CENTERS

Resilience is to a large extent also a social issue. Community centers play an important role in building social resiliency. A combination of “shared work spaces” and “business incubators”, operated through NYCHA’s REES programs, might be added.

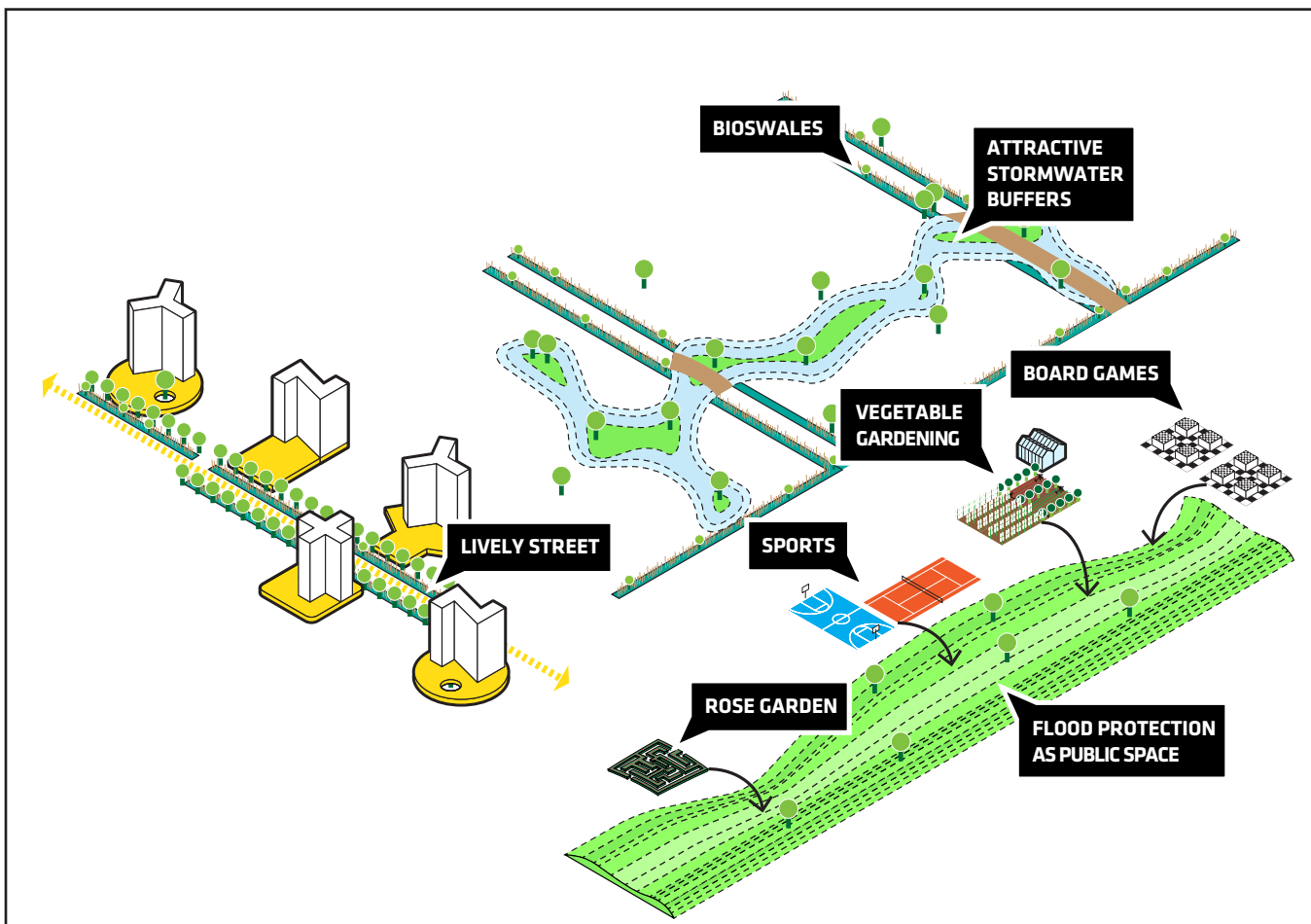


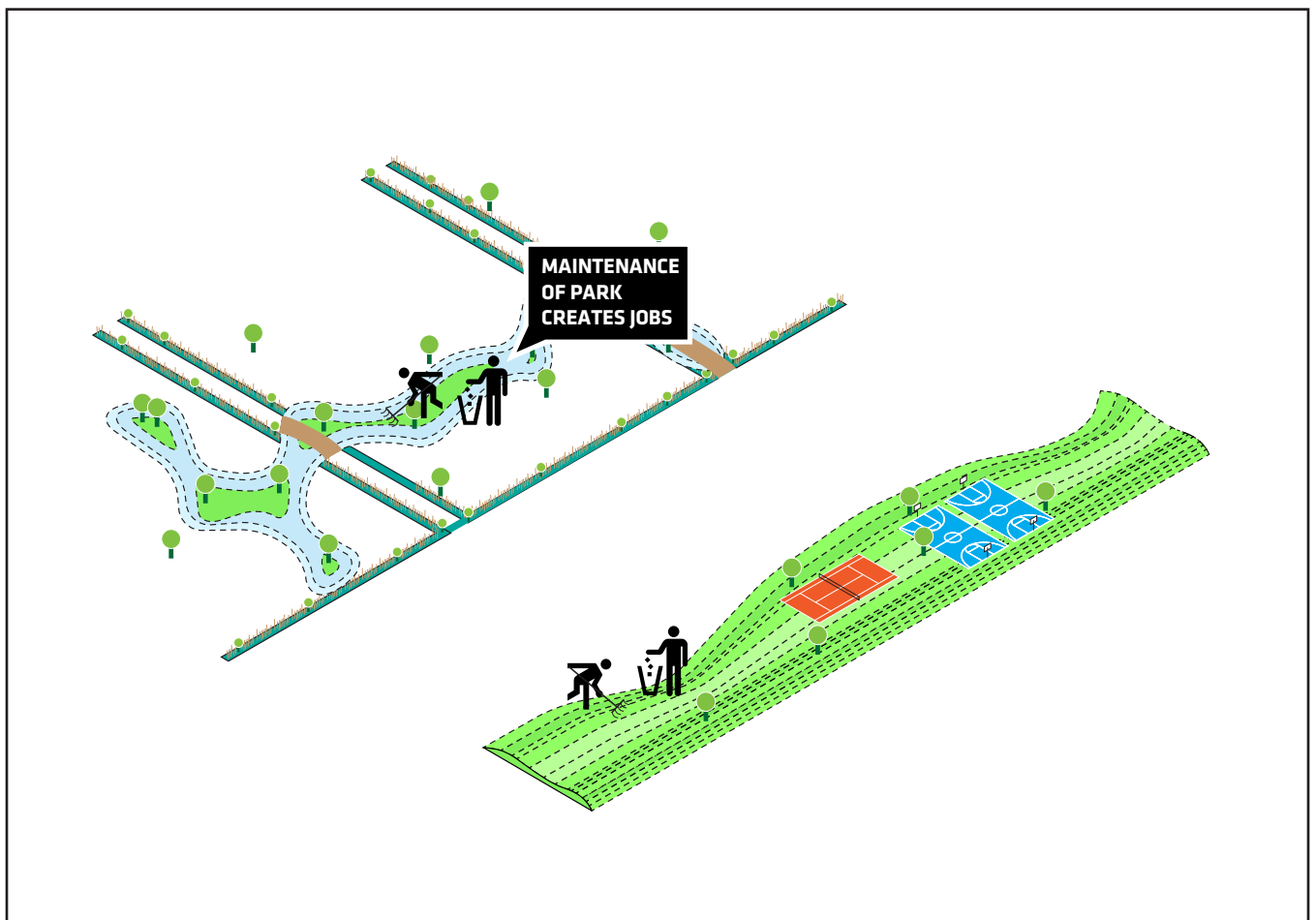
Community centers, shared workspaces and business incubators

RESILIENCY + ADDITION OF MORE AMENITIES

RESILIENT COMMUNITY PLANNING

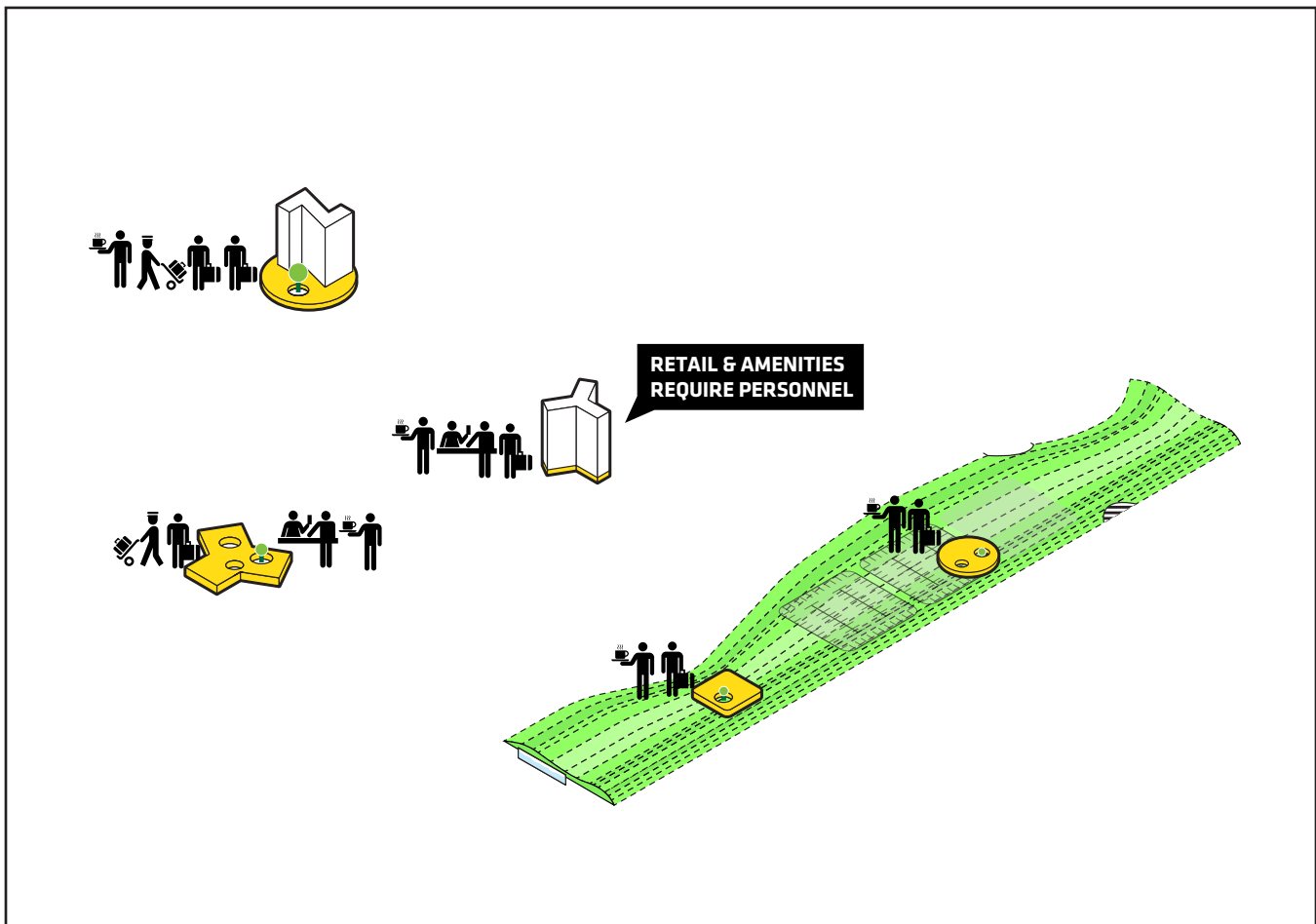
RESILIENCY + IMPROVEMENT PUBLIC SPACE



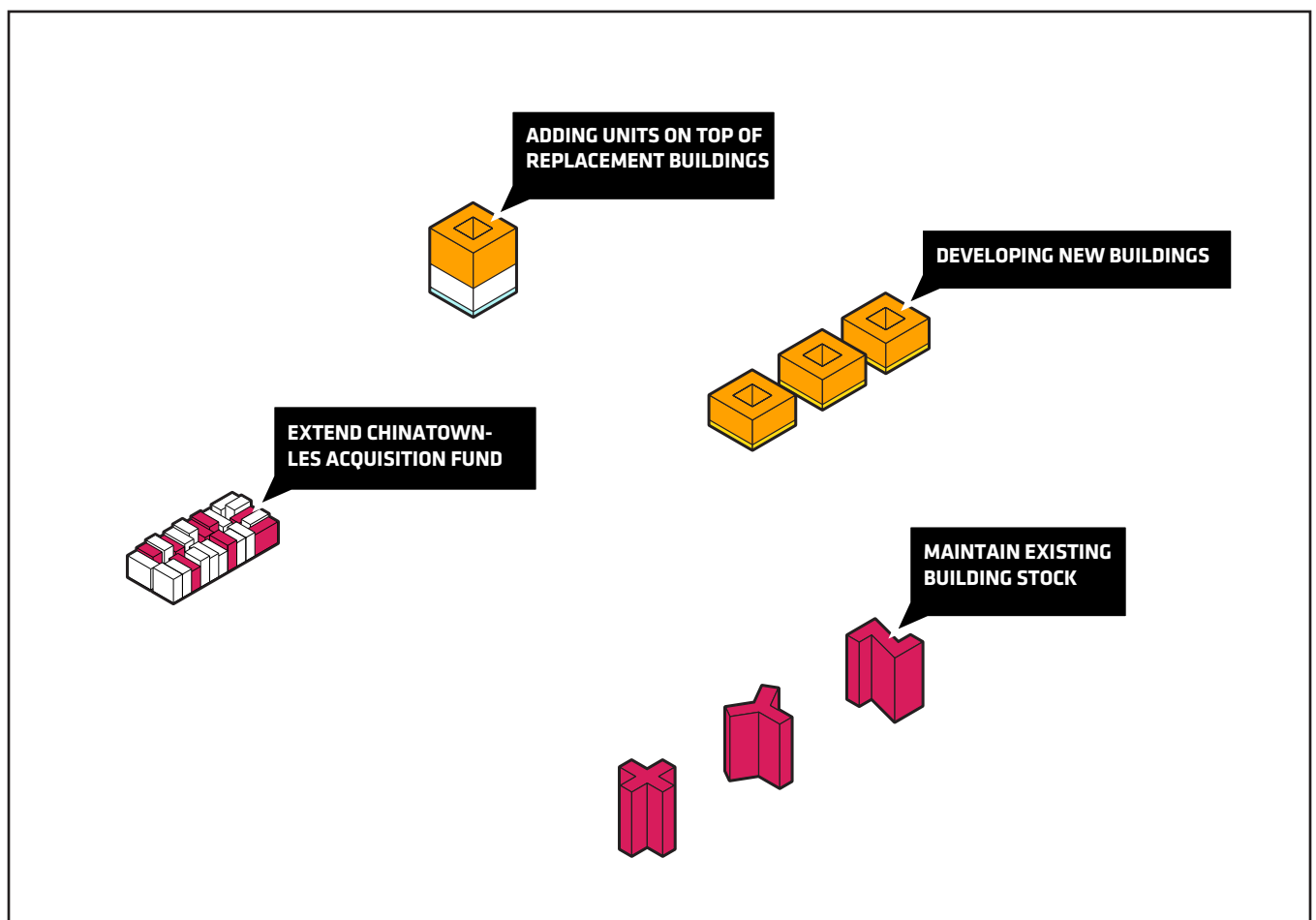
RESILIENCY + CREATION OF GREEN JOBS FOR PARK MAINTENANCE

RESILIENT COMMUNITY PLANNING

RESILIENCY + CREATION OF JOB PROGRAMS FOR THE NEW AMENITIES



RESILIENCY + PRESERVATION OF PUBLIC AND AFFORDABLE HOUSING



UPLAND RESILIENT LANDSCAPES



A NETWORK OF GREEN INFRASTRUCTURE

Storm surge flooding and sea level rise threaten coastal communities. Upland flooding, high temperatures, storm generated power outages, and communication failures threaten all communities.

Climate change scientists predict increases in the variability of precipitation, with larger events at less frequent intervals. Impervious city surfaces already block absorption of current precipitation events. Increase in stormwater retention capacity is essential if New York City is not to become the next Venice. The Towers in the Park, with their widely spaced buildings, have a unique potential for increased stormwater retention. Fenced off lawns and over-wide streets can be planted as beautiful and functional rain gardens and bioswales, filling with water during rain events and slowly releasing it to the air and surrounding soil in the following dry days. Soil microbes will break down pollutants, cleaning the water as well.

Scientists also predict higher summer temperatures, with more high temperature days in a row. This will intensify the urban heat island effect, caused by the sun heating impervious, dry surfaces. Summer in the city can be dangerous. Over-heating contributes to breathing problems, aggression and fatalities. High temperatures increase energy intensive cooling demands, elevating emission of greenhouse gases and pollutants from power plants. Hot roofs and pavement heat stormwater runoff, stressing aquatic organisms in the receiving waterbody. Rivers, lakes and vegetation ameliorate the heat island effect. Water has high heat capacity; it takes a lot of energy to change its temperature. Vegetation shades pavement and buildings, reducing surface and air temperatures. Evaporation of water from leaf surfaces cools the air. Parks and tree-lined streets are cooler than downtown areas with little vegetation. Vegetation on the protective levees, stormwater gardens, and green bridges will decrease local temperature and improved park access will connect more people to the cooler waterfront.

UPLAND RESILIENT LANDSCAPES

CORRIDORS OF BIOSWALES AND STREET TREES LEAD TO THE WATER



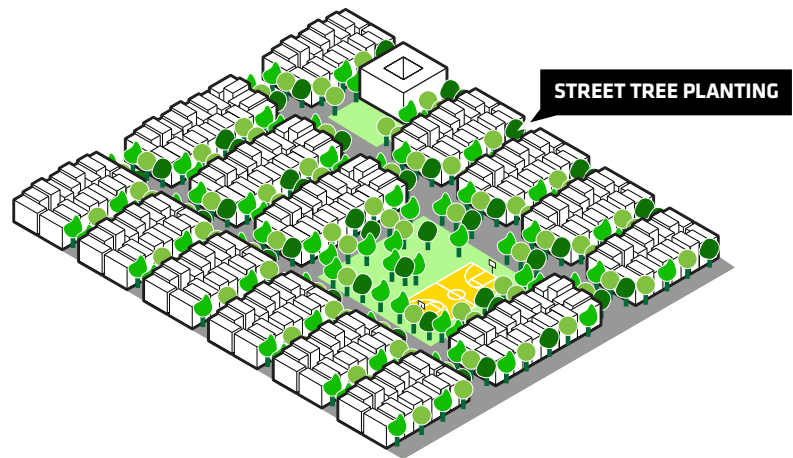
INLAND PARKS AND COMMUNITY GARDENS ARE CONNECTED BY GREEN CORRIDORS

GREEN CORRIDORS

Green corridors are the living spines of a resilient community. The LES is rich in small urban parks, mid-block community gardens filling the missing tooth of a tenement block, and the sprawling lawns of public housing campuses, yet this community has the least amount of park space per citizen of nearly any New York neighborhood. It is beset with bad air pollution from the traffic on the FDR Drive. Creating green corridors on east/west streets will knit these disparate open spaces into a greater green network. Tree and rain garden-lined streets will bring the small-scale neighborhood feel of the upland neighborhoods through the low-lying open housing campuses across generously planted green bridges connecting across the highway to the East River water front. Green corridors running north/south on both sides of the FDR Drive Diverse would further anchor this network in the form of a wooded berm in East River Park and a planted edge along the City side of South Street. This comprehensive system of street trees and linear rain gardens would filter the air and absorb and clean storm water. Green corridors also provide essential connections for supporting biodiversity in the city. These green connections facilitate seed, pollen and wildlife movement, supporting larger population sizes with increased survival prospects, and granting refuge space from unfavorable conditions such as storms, vandalism, and development.

PLANT STREET TREES

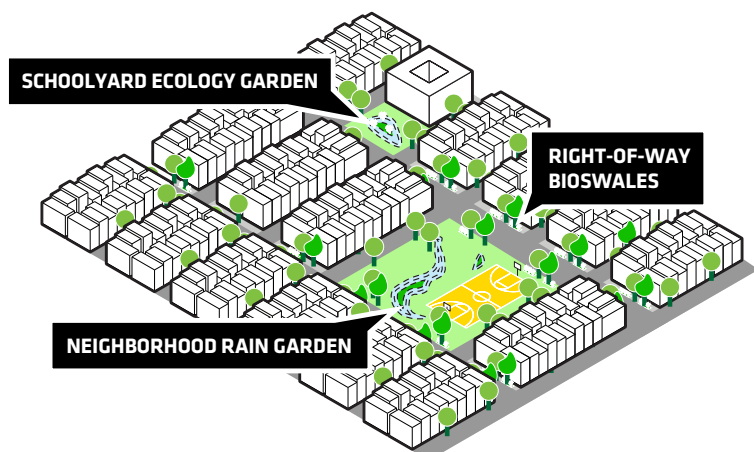
Street trees are the most noticeable physical element that can provide continuity between the small scale row house-lined upland blocks and the open large scale public housing campuses in the flood plain. Trees cool summers in the city by shading the ground, buildings and people. Plants, especially large, old trees store carbon, decrease the amount of the greenhouse gas CO₂ in the atmosphere.



Tree Planting

PLANT RIGHT-OF-WAY BIOSWALES

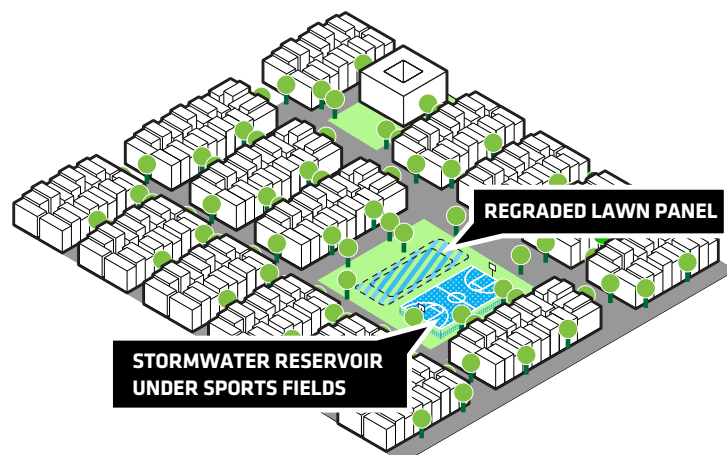
Bioswales along streets and rain gardens in parks and lawns capture water from rain storms. Plant roots make channels into the soil, allowing the rain to sink into the ground, rather than flooding streets and buildings. Less water in the combined sewer system decreases sewer overload and overflow, reducing resultant flooding and threats to public health.



Bioswales + Rain Gardens

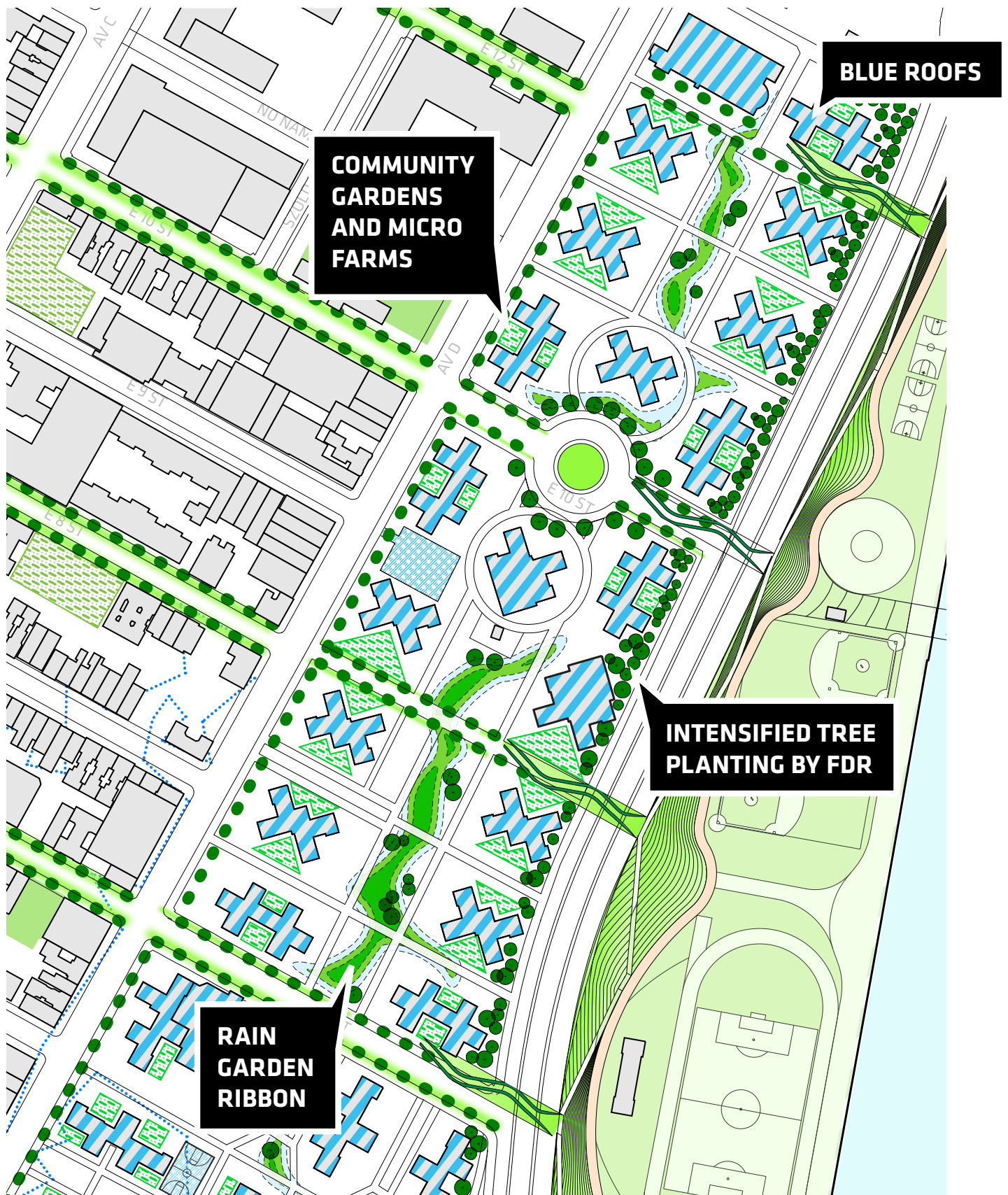
STORE WATER IN SOFTSCAPE

Lawns and sports fields can be subtly regraded and adapted to detain water in storm events.



Softscape Storage

UPLAND RESILIENT LANDSCAPES



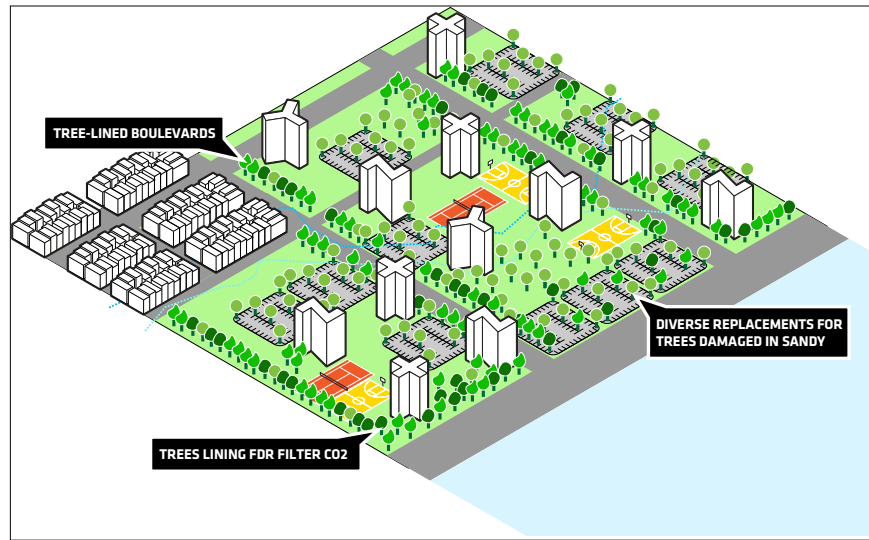
NYCHA STORMWATER TOOLKIT

The NYCHA campuses have an abundance of open space, mostly in the form of fenced-in lawns that are unavailable for residents' use and are low-performing ecologically. These sites can be transformed to create a physically resilient landscape that can also be the structure around which social resiliency develops. These under-used spaces can be regraded to capture storm water in a system of gardens winding through the buildings, creating a green spine rich with social spaces and water-absorbing perennials and shrubs. Hinging off this verdant swale, would be upland areas configured to create vegetable and ornamental gardening opportunities to support the NYCHA Gardening and Greening Program and related green job training. The result would be a higher performing landscape and expanded social programs.

UPLAND RESILIENT LANDSCAPES

PLANT TREES

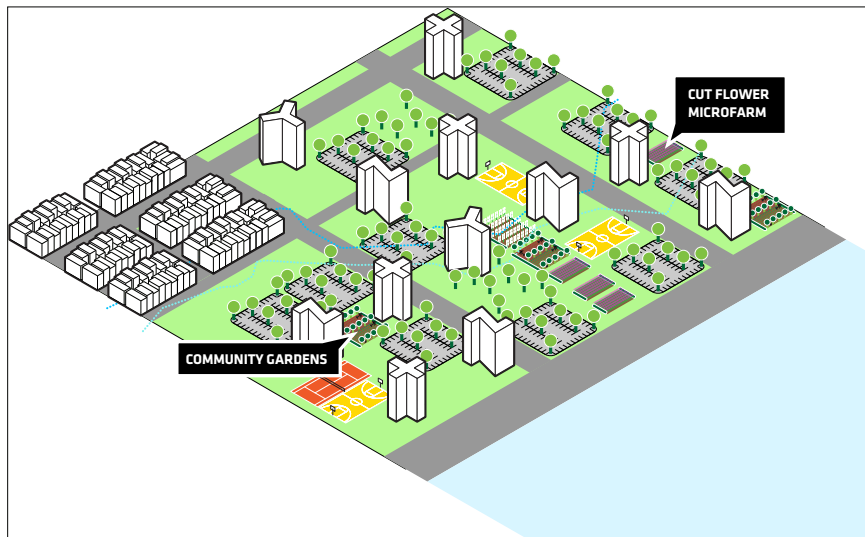
The canopy on the NYCHA campus suffered tremendous loss from salt water inundation during Sandy. These trees should be replaced by a diverse mix of salt-tolerant species, both in groves in the interior of the campus and lining boulevards leading to the water.



Tree Planting

PLANT COMMUNITY GARDENS AND MICRO FARMS

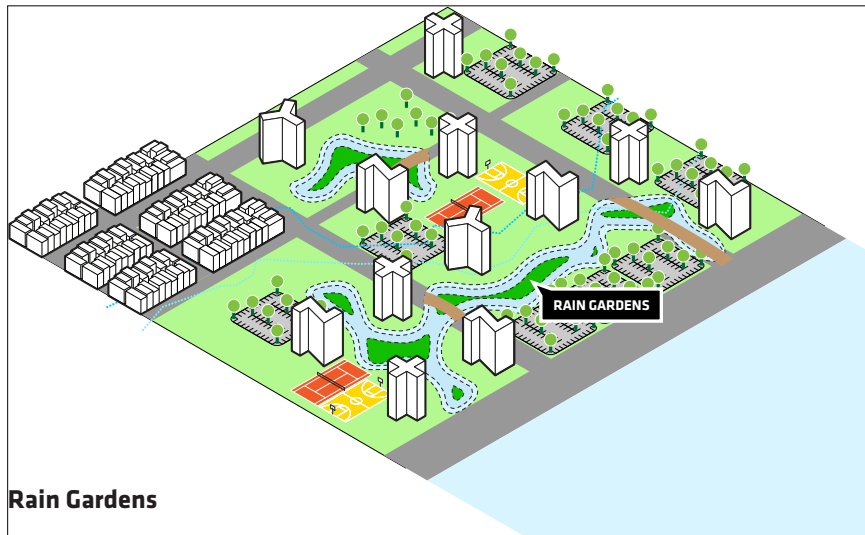
Community vegetable gardens on the NYCHA campus' can also provide greater access to healthy foods for NYCHA residents, strengthen community ties, and educate children about healthy food choices. Community flower gardens could provide income-generating bouquets, sold in local green markets or in the park.



Community Gardens and Micro-Farms

PLANT RAIN GARDENS

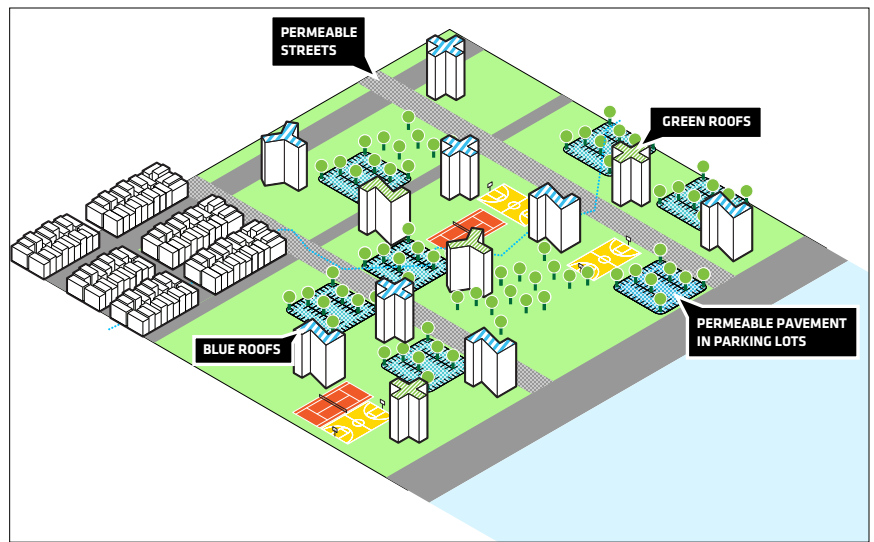
Spaces can be regraded to capture storm water in a system of gardens winding through the buildings, creating a green ribbon rich with social spaces and water-absorbing perennials and shrubs.



Rain Gardens

REDUCE AND UPDATE PERVIOUS SURFACES

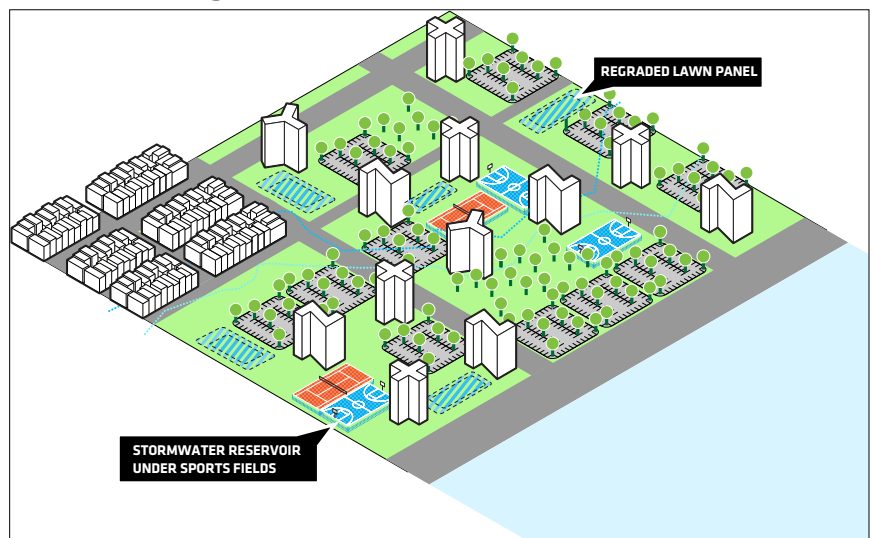
Roofs, paved thoroughfares and parking lots are impervious surfaces that absorb heat and contribute to storm water runoff. Roofs can be converted into extensive green roofs or blue roofs to absorb and detain storm water. Roadways and parking lots can be repaved with permeable paving. Ideally, the parking lots would be transformed into smaller footprint parking decks or integrated into new public housing buildings or a protective berm.



Permeable Parking Lots

STORE WATER IN SOFTSCAPE

The NYCHA campuses have an abundance of open space, in the form of lawns and sports fields. These existing landscapes can be subtly regraded and adapted to detain water in storm events.



Water Storage in Softscape

UPLAND RESILIENT LANDSCAPES

EXISTING INITIATIVES

The BIG U Upland Resilience Plan for the Lower East Side builds on successful programs and organizations in the neighborhood and city.

NYC GREEN INFRASTRUCTURE PROGRAM

The BIG U plan would provide the first comprehensive green infrastructure plan in Manhattan. Collaborating with the City and local environmental organizations will be critical to the success of this effort. Building on the guidelines outlined in the 2010 NYC Green Infrastructure Plan, the BIG U strategy is to reconfigure underused paved and other open space areas to capture storm water as soon as possible and wherever possible in a system of absorbent interventions. Advanced street-tree pits, porous pavements and streets, green and blue roofs, and many other storm water controls are recommended in the City's Green Infrastructure Plan to improve water and air quality, help to cool the City, reduce energy bills and greenhouse gas emissions, increase property values, and beautify our City. The BIG U adapts these green interventions to create a network of storm water-absorbing gardens linking upland neighborhoods to the waterfront. Built in the New York City DOT right-of-way, and maintained by NYC Parks, converting even 10% of the LES's vast impervious area will require a local level of stewardship that the Lower East Side, with its impressive network of ecological organizations, will be well equipped to handle.

TWO BRIDGES NEIGHBORHOOD COUNCIL

The Two Bridges Neighborhood Council has already embarked on an award-winning Rain Garden at Two Bridges Tower. Funded through a Green Infrastructure Grant from the New York City Department of Environmental Protection (NYCDEP), the Rain Garden will become a shade-filled social space, that mitigates particulate matter and hydrocarbon pollution generated by the FDR and South Street Truck Route. The Two Bridges Council will train residents in gardening and principles of ecology in order to maintain this amenity.

LOWER EAST SIDE ECOLOGY CENTER

The Lower East Side Ecology Center is a community-based organization focusing on environmental education and community stewardship. In their role as the stewardship organization for East River Park they will develop a job training program for local residents to maintain this green network.

NYCHA GARDEN AND GREENING PROGRAM

The New York City Housing Authority (NYCHA) campuses offer enormous opportunity for creating high-performing landscapes. Currently a landscape of fenced-in lawns, parking lots and wide thoroughfares, the BIG U Plan would transform these under-used spaces into a network of bio-swales and rain gardens leading to spaces designated for food and ornamental gardens at the drier elevations. The would provide enormous opportunity to expand on NYCHA's Garden and Greening Program. One of the oldest urban gardening programs of its kind in the country, The Garden and Greening Program is a beautification and environmental education program that benefits NYCHA residents of all ages.



Right-of-way Bioswales



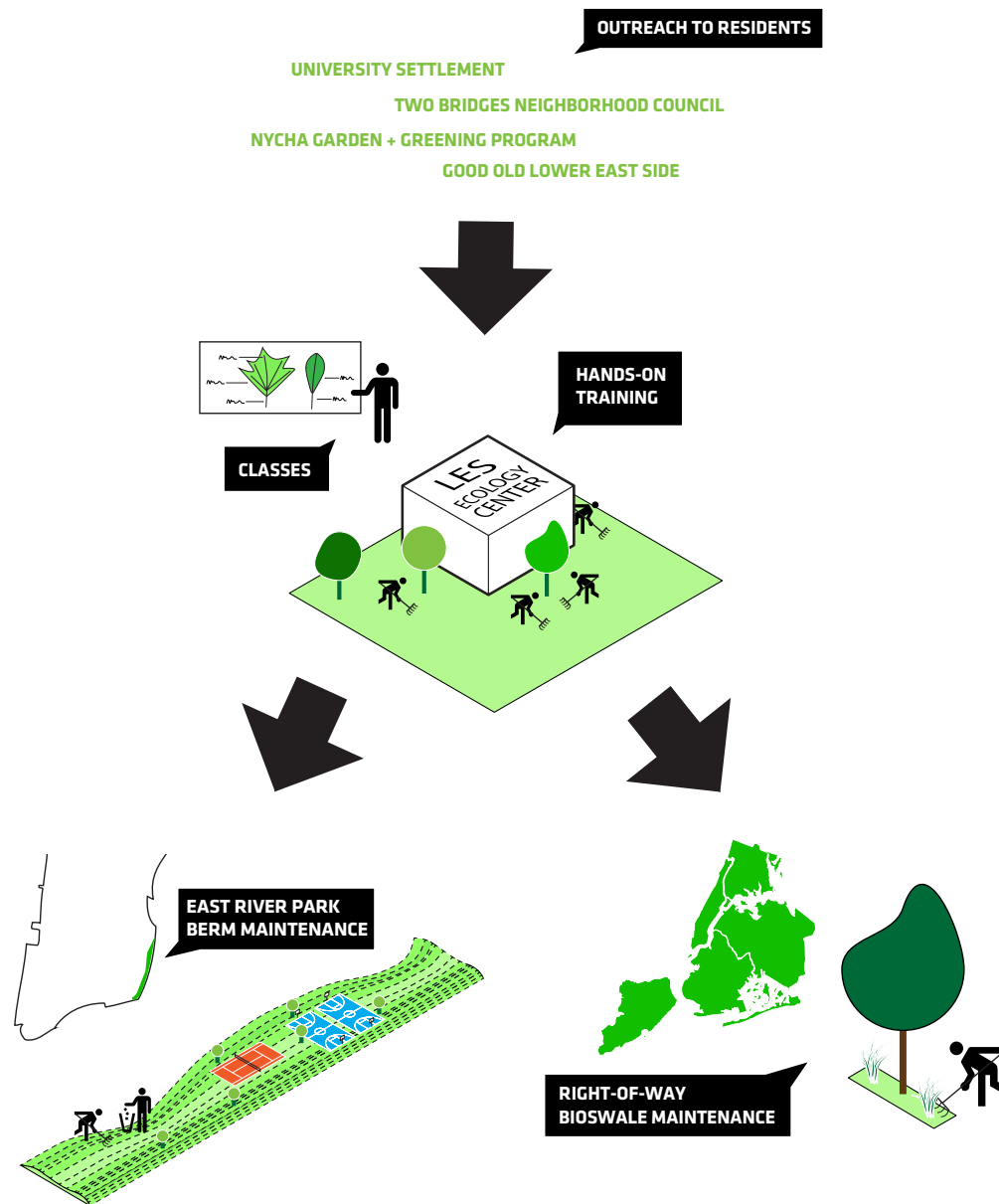
Rutgers Slip (dLand Studio)



LES Ecology Center Garden



NYCHA Community Garden



JOBS PROGRAM DESCRIPTION

This expansion of the green network must be complimented with an expansion of the maintenance capacity. Green jobs training can provide new skills for NYCHA residents that they can apply on the campuses and also will be in demand city-wide as the green infrastructure program is fully implemented and there are thousands of bioswales to maintain.

FOCUS SCOPE

4 TECHNICAL

TECHNICAL FEASIBILITY

The technical feasibility during this phase of study of the BIG U focused on the development of design criteria for flood levels through 10 miles waterfront of Lower Manhattan. Secondly geotechnical and structural aspects of flood protection structures were studied to ensure no fatal flaws exist in the architectural designs presented.

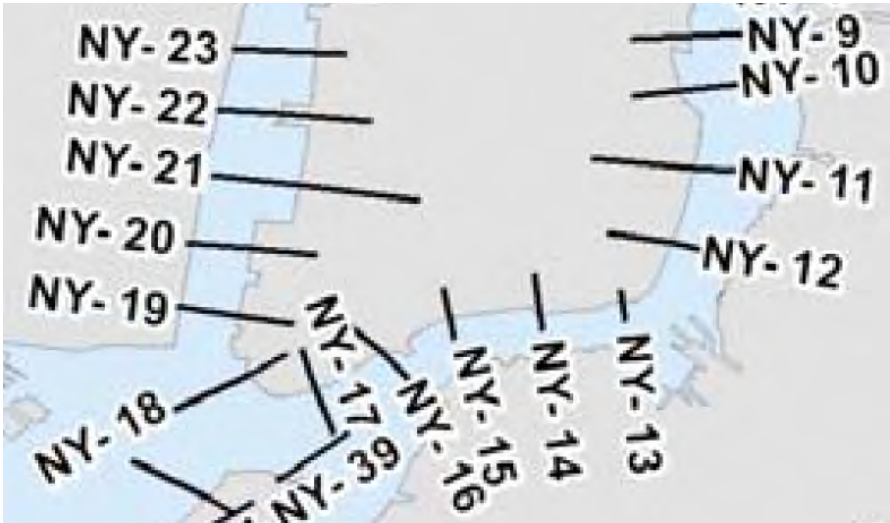
COST AND BENEFIT-COST ANALYSIS

Based on the conceptual architectural designs, preliminary cost estimates were prepared to provide a sense and scale of construction cost for each compartment. The technical proposal also includes a summary of the Benefit Cost Analysis studied for each compartment.

TECHNICAL FEASIBILITY

FLOOD HEIGHTS AND RETURN PERIODS 2013

The New York City Flood Insurance Study (FIS) was used to determine 10-, 50-, 100-, and 500-year stillwater flood elevations for lower Manhattan as shown below. FEMA methodology allows for both stillwater and sea level rise elevations to be used when determining damages to a facility. Wave action was not included in this analysis, which creates a conservative estimate; however wave action could be included in the future.



Transect locations from FEMA 2013 FIS

	Wave Height (ft)	10% Annual Chance (NAVD88)	2% Annual Chance (NAVD88)	1% Annual Chance (NAVD88)	0.2% Annual Chance (NAVD88)
NY-18	5.0'	+6.9'	+9.9'	+11.3'	+14.9'
NY-10 to NY-17	2.7' - 3.3'	+6.8'	+9.7'	+10.9 - +11.2'	+13.9 - +14.7'

FEMA 2013 FIS wave height and stillwater flooding levels for study area

SEA LEVEL RISE

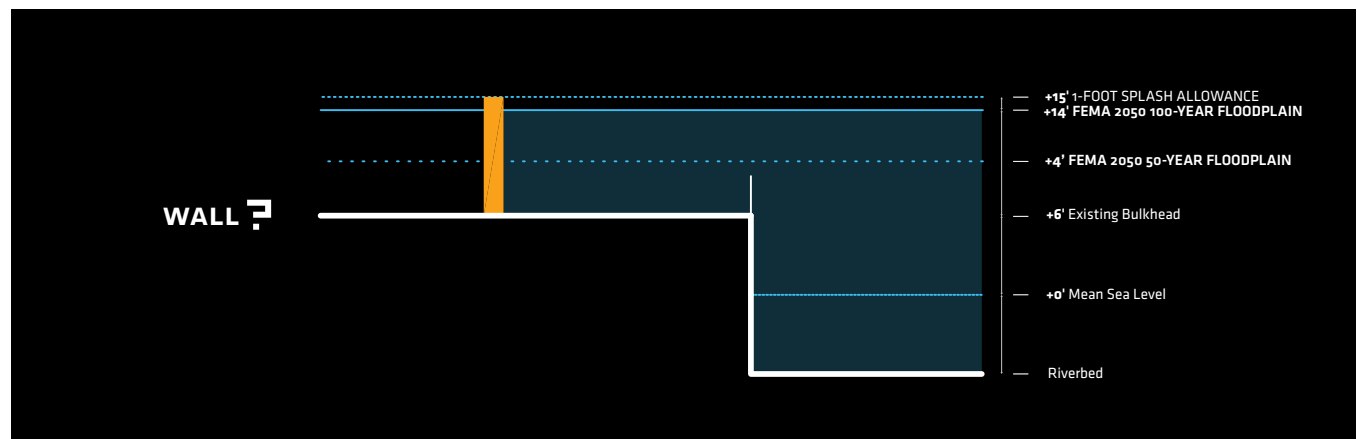
CONSIDERATIONS

The sea level rise used is 2.58-ft (31-in) as defined by the NYCC 2013 climate projections data (PlaNYC, 2013). The Benefit Cost Review was completed with both the stillwater, and the stillwater plus sea level rise values in order to provide net present damage values for the present (2014), and for the year 2050, 35 years in the future.

2014
1% Annual Chance

Low-Range (10 th percentile)	+7"
Mid-Range (25 th -75 th percentile)	+11" to +24"
High-Range (90 th percentile)	+31"

NYCC Sea Level Rise Projections



Typical Section in East River Park with various design flood levels

	2014 1% Annual Chance	2050 1% Annual Chance	Wave Impact Zone	Proposed Top of Levee / Wall Height (NAVD88)
C-1	+11'	+14'	AE Zone	+15'
C-2	+11'	+14'	AE Zone	+15'
C-3	+11'	+14'	VE Zone	+15'

Flood height design parameters for Phase 1 levee / wall design and Benefit Cost Analysis

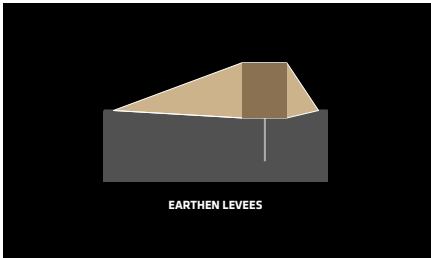
TECHNICAL FEASIBILITY

FLOOD PROTECTION

TOOLKIT

Three types of primary physical flood protection structures are proposed for the BIG U: earthen levee berm, T-Wall concrete structure, and deployable wall structure. Through the length of the project the team balanced the pros and cons of each type attempting to minimize the higher cost, less reliable deployable structures with

the need to minimize the feeling of creating a barrier between the city and the waterfront. Also the spatial requirements of an earthen berm are difficult to fit within the urban context of the BIG U, but nearly 2 miles of earthen berm are included in the East River Park component of the design.



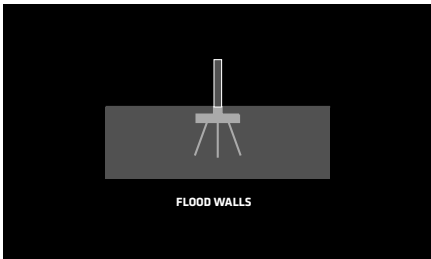
Earthen Levee Berm Type



Earthen Levee Berm Example

10⁻⁷
(1 failure in 1,000,000 events)

FAILURE PROBABILITY OF EARTHEN LEVEE



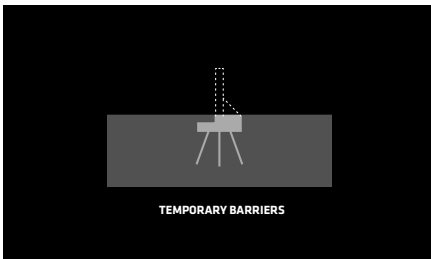
T-Wall Type



T-Wall Example

10⁻⁶
(1 failure in 100,000 events)

FAILURE PROBABILITY OF T-WALL



Deployable Wall Type



Deployable Wall Example

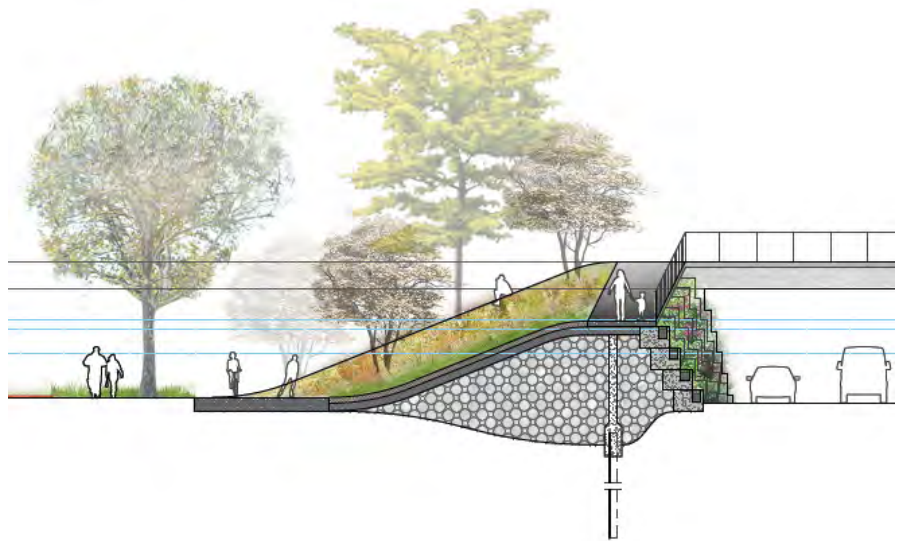
10⁻³
(1 failure in 1,000 events)

FAILURE PROBABILITY OF DEPLOYABLE

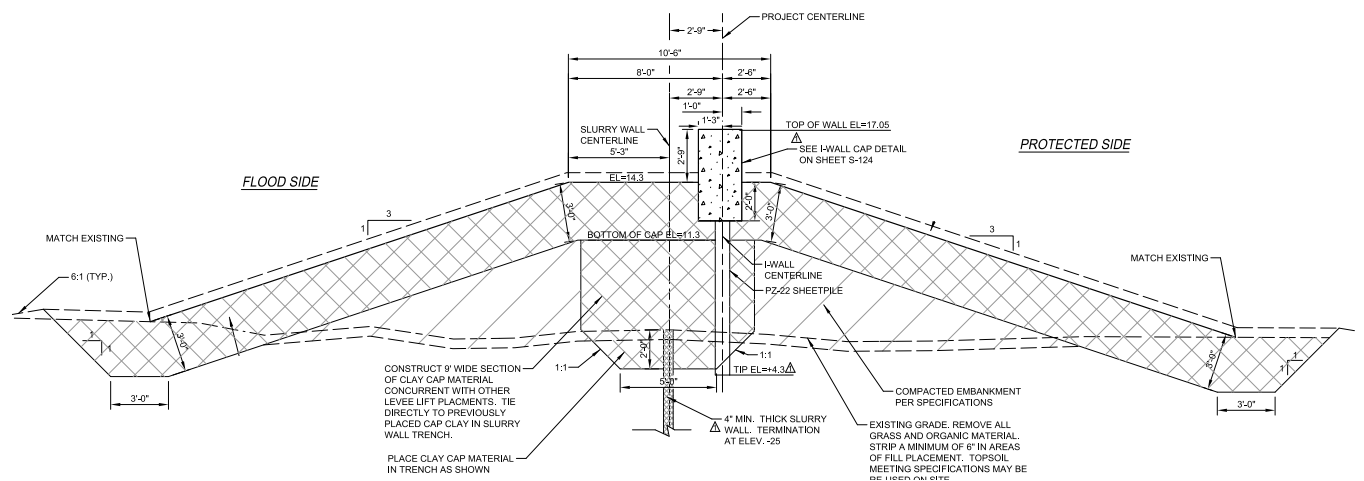
FLOOD PROTECTION

TYPICAL LEVEE BERM

The primary flood protection element in East River Park where the FDR is at grade is an earthen levee berm. The berm creates low slope ramps up to bridge crossings and broad planted landscapes along the edge of the park. The earthen berm is a relatively low cost structure compared to the other protection types and the structure is highly reliable, so the use of the earthen berm is maximized.



Typical Levee Berm Section along FDR in East River Park



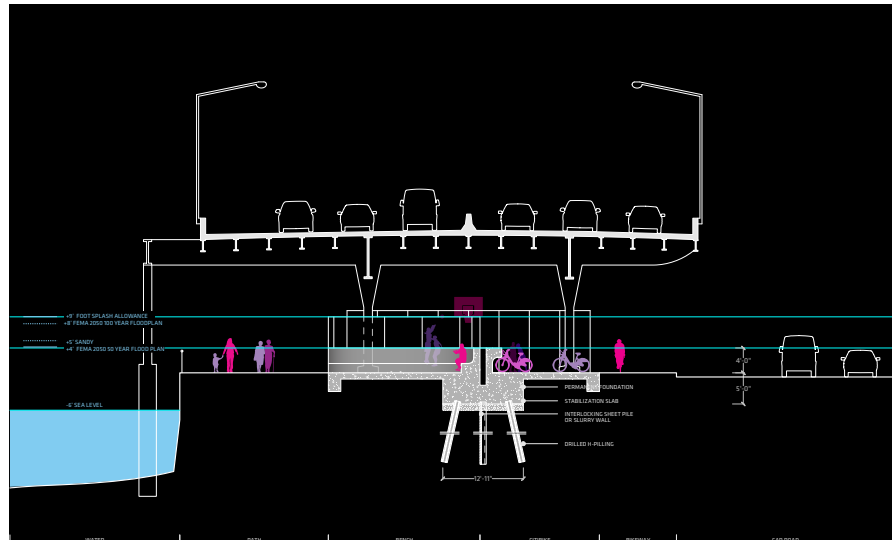
Typical Levee Berm Technical Design Sketch

TECHNICAL FEASIBILITY

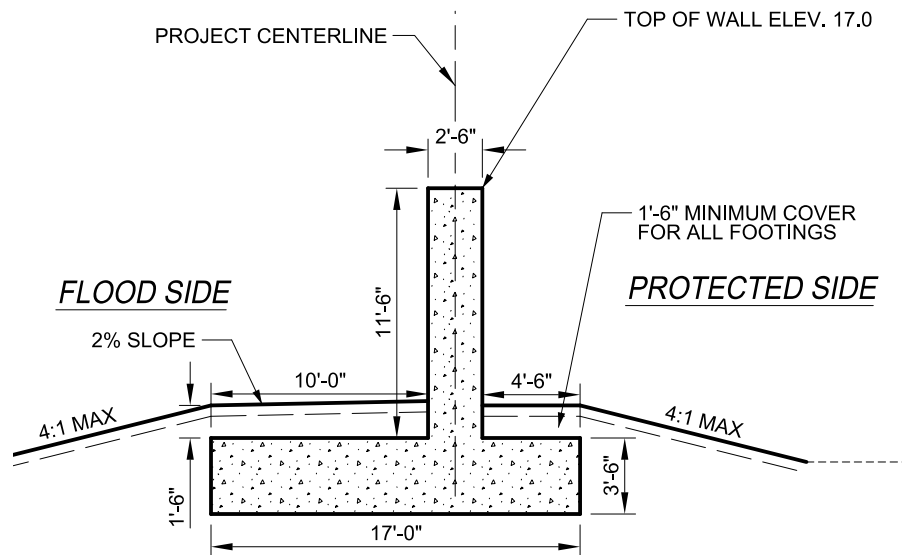
FLOOD PROTECTION

T-WALL

The T-Wall flood protection structure is also a passive protection measure which is highly reliable in practice. The structure is designed to withstand hydrostatic pressure and wave energy impacts as well as seepage and uplift. The T-Wall type of protection is used in many of the pavilions under the FDR in the BIG U.



The Big Bench



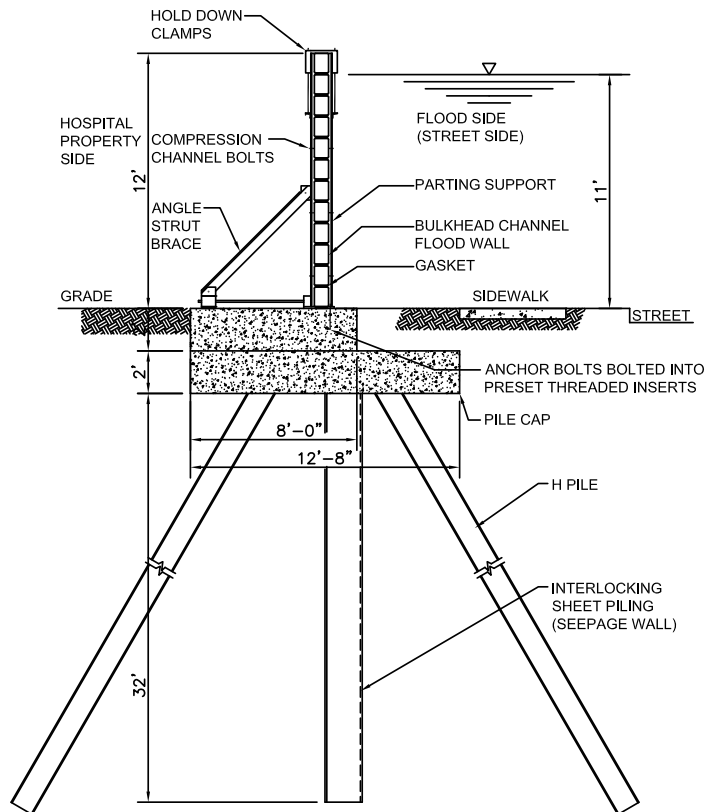
Typical T-Wall Technical Design Sketch

FLOOD PROTECTION

TYPICAL DEPLOYABLE

Deployable Structures are used strategically through the length of the BIG U as they are the most expensive and the least reliable of the three types in the toolkit. The deployable structures are preferable because they allow unimpeded access to the water which is important for many of the active areas along the study area.

The foundations of the deployable structure are designed to withstand hydrostatic pressure of the storm surge to the design height, wave impact energy, seepage, and uplift.



Typical Deployable Wall Technical Design Sketch

COST ESTIMATE SUMMARY

SUMMARY

Based on the conceptual design of the three compartments of the BIG U, an opinion of probable construction costs was prepared by the team. Cost estimate unit costs provided are based on actual similar levee and floodwall projects in the United States. Estimates are to be taken as conceptual until further technical study and feasibility work can be undertaken in Stage 4. For the purposes of the Benefit Cost Analysis, a Net Present Value calculation was taken for the project construction costs, soft costs and estimated operations and maintenance costs for a 50 year project life. A 5% discount rate was used for the NPV calculation.

C1: East River Park		C2: Two Bridges/Chinatown		C3: Battery to Brooklyn Bridge	
\$72M	Flood Protection Structures	\$56M	Flood Protection Structures	\$62M	Flood Protection Structures
\$27M	Landscape, Furniture and Architectural Features	\$14M	Landscape, Furniture and Architectural Features	\$18M	Landscape, Furniture and Architectural Features
\$87M	Utilities and Stormwater	\$28M	Utilities and Stormwater	\$54M	Utilities and Stormwater
\$53M	Bridges	\$65M	Wet Feet, New Building	\$50M	BMB Plaza Structure
\$94M	Contingencies & Escalation	\$65M	Contingencies & Escalation	\$35M	Periscope Building
\$83M	Total of All Soft Costs	\$57M	Total of All Soft Costs	\$87M	Contingencies & Escalation
\$418M	COMPARTMENT TOTAL	\$285M	COMPARTMENT TOTAL	\$76M	Total of All Soft Costs
				\$383M	COMPARTMENT TOTAL

C1: EAST RIVER PARK

DESCRIPTION	Qty	Unit	Unit Cost	TOTAL COST
PETER COOPER VILLAGE				
23rd St Median (Deployable Barrier)	1,700	LF	\$7,100	\$12,070,000
FDR Pavilions (Programmed Levee)	1,200	LF	\$14,000	\$16,800,000
FDR Pavilions Gates (Deployable Barrier)	300	LF	\$7,100	\$2,130,000
GI Stormwater Plan (Landscaping)	2,787,840	SF	\$10	\$27,878,400
CON-ED FACILITY E. 14TH ST.				
Con-Ed Bike and Pedestrian Flyover (Programmed Levee)	2,180	LF	\$18,600	\$40,548,000
Con-Ed Bike and Pedestrian Flyover Gates (Deployable Barrier)	100	LF	\$7,100	\$710,000
LES NORTH / EAST RIVER PARK				
Bridging Berm (Earthen Berm)	7,247	LF	\$3,250	\$23,552,750
Bridging Berm - Parkland (Landscaping)	740,520	SF	\$10	\$7,405,200
Bridging Components - 40' wide (Bridge)	3	EA	\$10,000,000	\$30,000,000
Bridging Components - 20' wide (Bridge)	3	EA	\$7,500,000	\$22,500,000
Bridging Components - Landscape Enhancement (Bridge)	2	EA	\$5,000,000	\$10,000,000
Bridging Components (Landscaping)	87,120	SF	\$10	\$871,200
Plazas (Landscaping)	50,000	SF	\$10	\$500,000
Piers	5	EA	\$500,000	\$2,500,000
GENERAL PROVISIONS				
Flood Gates	2	EA	\$1,000,000	\$2,000,000
Stormwater Ejector Pump Facilities	--	LS	--	\$30,000,000
Utility Relocation Contracts	--	LS	--	\$10,000,000

Contingency (30%)	\$71,700,000
Escalation (10%)	\$23,900,000
Professional Services (25%)	\$83,600,000
Compartment 1 Total	\$418,250,000

COST ESTIMATE SUMMARY

C2: TWO BRIDGES

DESCRIPTION	Qty	Unit	Unit Cost	TOTAL COST
LES SOUTH / TWO BRIDGES / CHINATOWN				
Flip-Down Barriers under FDR (Deployable)	4,184	LF	\$14,200	\$59,412,800
GI Stormwater Plan	827,640	SF	\$10	\$8,276,400
Eco-Loop	4,074	LF	\$2,500	\$10,185,000
Eco-Loop Wetland	126,020	LF	\$10	\$1,260,200
Wet Feet - Ground Floor Programming NYCHA	197,525	SF	\$100	\$19,752,500
Wet Feet - New building NYCHA	225,000	SF	\$200	\$45,000,000
GENERAL PROVISIONS				
Stormwater Ejector Pump Facilities	--	LS	--	\$10,000,000
Utility Relocation Contracts	--	LS	--	\$10,000,000

Contingency (30%)	\$48,900,000
Escalation (10%)	\$16,300,000
Professional Services (25%)	\$57,200,000
Compartment 2 Total	\$285,000,000

C3: BATTERY TO BROOKLYN BRIDGE

DESCRIPTION	Qty	Unit	Unit Cost	TOTAL COST
SOUTH STREET SEAPORT (TO FULTON ST)				
Pavilions at South Street Seaport	980	LF	\$14,000	\$13,720,000
Pavilion Deployable Gates	250	LF	\$12,700	\$3,175,000
FINANCIAL DISTRICT (FULTON - HANOVER)				
Big Bench - Wall (Programmed Levee)	1,200	LF	\$5,600	\$6,732,000
Big Bench - Integrated Deployable Barrier	1,200	LF	\$2,250	\$2,700,000
Big Bench - Gates (Deployable Barrier)	400	LF	\$7,100	\$2,840,000
South Street Flyover (Programmed Levee)	1,068	LF	\$18,600	\$19,864,800
South Street Flyover - Gates	50	LF	\$14,200	\$710,000
BMB Plaza - Flood Wall	330		\$18,600	\$6,138,000
THE BATTERY				
BMB Plaza - Bridge Structure	--	LS	--	\$50,000,000
BMB Plaza - Landscaping	41,100	SF	\$10	\$411,000
BMB Plaza - Gates (Deployable Barrier)	200	LF	\$7,100	\$1,420,000
Whitehall Terminal Stretch - Flood Wall	584	LF	\$5,100	\$2,978,400
Whitehall - Gates (Deployable Barrier)	100	LF	\$7,100	\$710,000
Coast Guard Site - "The Periscope" Museum	--	LS	--	\$20,000,000
Coast Guard Site - New School	--	LS	--	\$15,000,000
Battery Berms (Earthen Berm)	1,760	LF	\$6,750	\$11,880,000
Battery Berms - Parkland (Landscaping)	265,464	SF	\$10	\$2,654,640
Battery Place Berms (Earthen Berm)	512	LF	\$6,750	\$3,456,000
Battery Place Berms - Parkland (Landscaping)	58,774	SF	\$10	\$587,740
GENERAL PROVISIONS				
Flood Gates	25	EA	\$1,000,000	\$25,000,000
Stormwater Ejector Pump Facilities	--	LS	--	\$20,000,000
Utility Relocation Contracts	--	LS	--	\$10,000,000

Contingency (30%)	\$65,700,000
Escalation (10%)	\$21,900,000
Professional Services (25%)	\$76,600,000
Compartment 3 Total	\$383,900,000

COST ESTIMATE SUMMARY

C2: TWO BRIDGES

DESCRIPTION	Qty	Unit	Unit Cost	TOTAL COST
LES SOUTH / TWO BRIDGES / CHINATOWN				
Flip-Down Barriers under FDR (Deployable)	4,184	LF	\$14,200	\$59,412,800
GI Stormwater Plan	827,640	SF	\$10	\$8,276,400
Eco-Loop	4,074	LF	\$2,500	\$10,185,000
Eco-Loop Wetland	126,020	LF	\$10	\$1,260,200
Wet Feet - Ground Floor Programming NYCHA	197,525	SF	\$100	\$19,752,500
Wet Feet - New building NYCHA	225,000	SF	\$200	\$45,000,000
GENERAL PROVISIONS				
Stormwater Ejector Pump Facilities	--	LS	--	\$10,000,000
Utility Relocation Contracts	--	LS	--	\$10,000,000

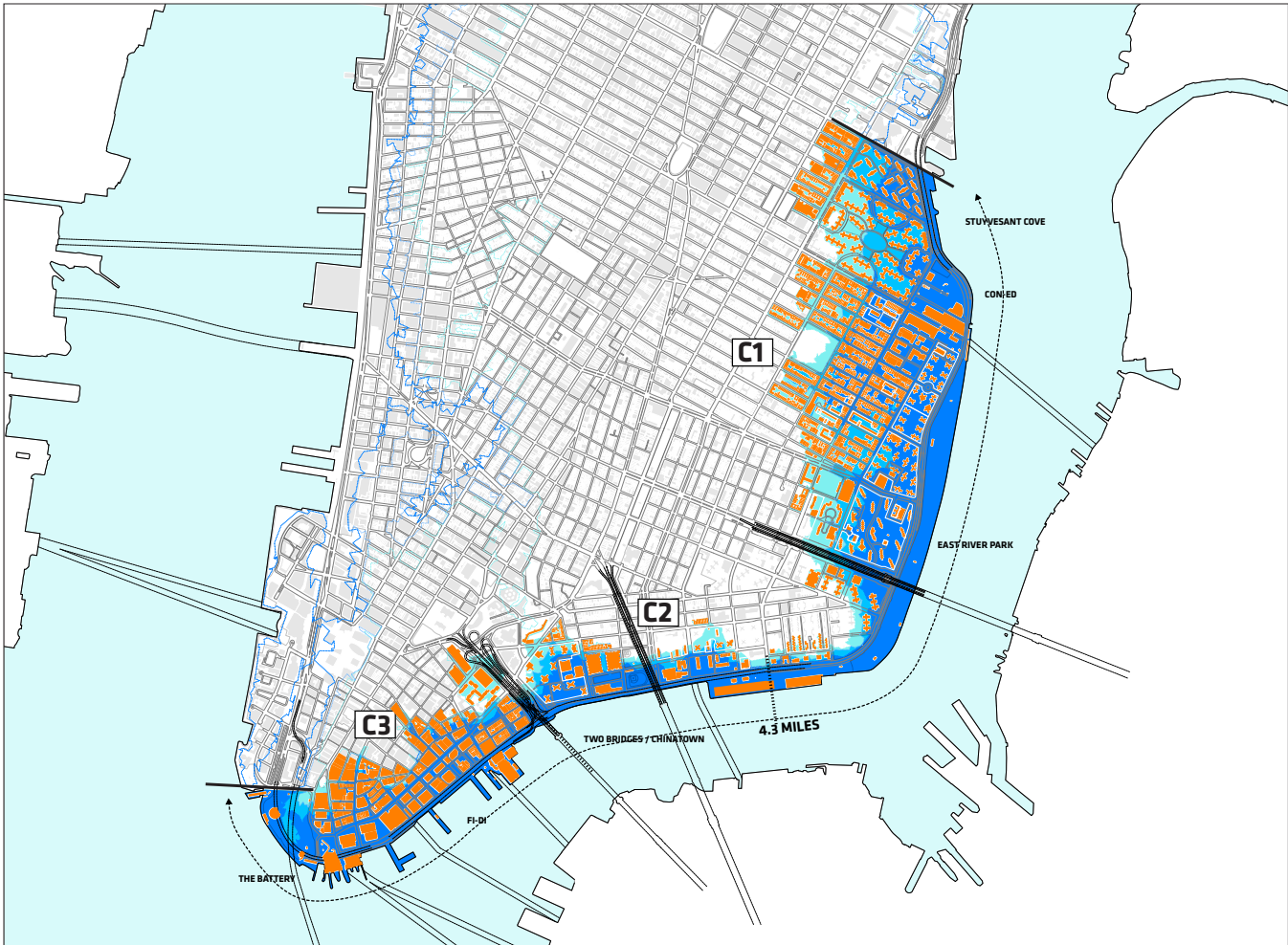
Contingency (30%)	\$48,900,000
Escalation (10%)	\$16,300,000
Professional Services (25%)	\$57,200,000
Compartment 2 Total	\$285,000,000

C3: BATTERY TO BROOKLYN BRIDGE

DESCRIPTION	Qty	Unit	Unit Cost	TOTAL COST
SOUTH STREET SEAPORT (TO FULTON ST)				
Pavilions at South Street Seaport	980	LF	\$14,000	\$13,720,000
Pavilion Deployable Gates	250	LF	\$12,700	\$3,175,000
FINANCIAL DISTRICT (FULTON - HANOVER)				
Big Bench - Wall (Programmed Levee)	1,200	LF	\$5,600	\$6,732,000
Big Bench - Integrated Deployable Barrier	1,200	LF	\$2,250	\$2,700,000
Big Bench - Gates (Deployable Barrier)	400	LF	\$7,100	\$2,840,000
South Street Flyover (Programmed Levee)	1,068	LF	\$18,600	\$19,864,800
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BMB Plaza - Gates (Deployable Barrier)	200	LF	\$7,100	\$1,420,000
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Coast Guard Site - "The Periscope" Museum	--	LS	--	\$20,000,000
Coast Guard Site - New School	--	LS	--	\$15,000,000
Battery Berms (Earthen Berm)	1,760	LF	\$6,750	\$11,880,000
Battery Berms - Parkland (Landscaping)	265,464	SF	\$10	\$2,654,640
Battery Place Berms (Earthen Berm)	512	LF	\$6,750	\$3,456,000
Battery Place Berms - Parkland (Landscaping)	58,774	SF	\$10	\$587,740
GENERAL PROVISIONS				
Flood Gates	25	EA	\$1,000,000	\$25,000,000
Stormwater Ejector Pump Facilities	--	LS	--	\$20,000,000
Utility Relocation Contracts	--	LS	--	\$10,000,000

Contingency (30%)	\$65,700,000
Escalation (10%)	\$21,900,000
Professional Services (25%)	\$76,600,000
Compartment 3 Total	\$383,900,000

BENEFIT COST ANALYSIS SUMMARY



Compartments C1, C2, and C3 showing buildings at risk in the flood zone.

	Benefits of Protection (\$NPV)	Costs of Protection (\$NPV)	Economic B/C Ratio	Key Social & Environmental Benefits
C1	\$778,800,000	\$371,000,000	2.1	Over 150,000 people live in this flood zone who support hundreds of small local businesses to create a vibrant urban community. The design of the flood protection levee in this area creates better connections for the community to access East River Park as well as a noise and air quality buffer between the park and the FDR
C2	\$242,600,000	\$241,200,000	1.0	This diverse community will be drawn to new waterfront public space which brings residents out into the water for fishing, relaxation and exercise. Tidal wetlands along the waterfront continue to enhance water quality and aquatic habitat in the East River.
C3	\$1,912,200,000	\$355,000,000	5.3	Nearly 200,000 people work in the flood zone in the Water Street Corridor. The BIG 'U' activates the waterfront for millions of tourists who visit this area through activated flood protection structures which draw locals and visitors to the waterfront without creating a barrier.

Total \$2,933,000,000 \$967,200,000 3.03

C1: EAST RIVER PARK

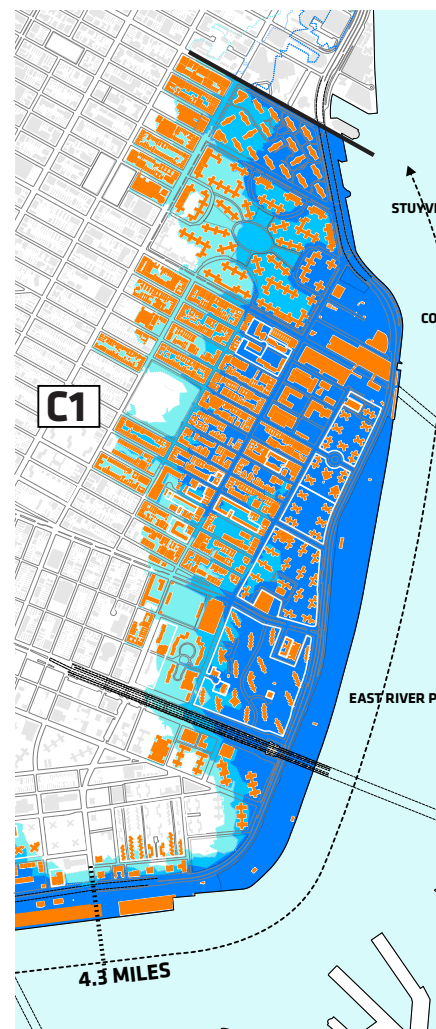
The flood zone protected by the East River Park levee berm is home to nearly 150,000 people, many of whom are NYCHA residents or low-income families living in other forms of subsidized housing. Estimates of avoided damages for this compartment are driven by displacement and relocation costs for this vulnerable residential population. This zone also has thousands of housing units at ground level which were flooded during Sandy, but will be protected with the implementation of this project. The ConEd 13th Substation which failed during Sandy is further protected with this investment.

NET PRESENT VALUE OF
AVOIDED DAMAGES IN **C1**
FOR THE NEXT 50 YEARS:

\$778M

ASSETS IN C1 FLOOD ZONE

120,000	Residents
29,000	NYCHA units
1	Power Plant and Substation
1	DEP Primary Sanitary Pump Station
300	Small Businesses (estimate)



Flood Zone and Risk Assessment for Assets in Compartment 1

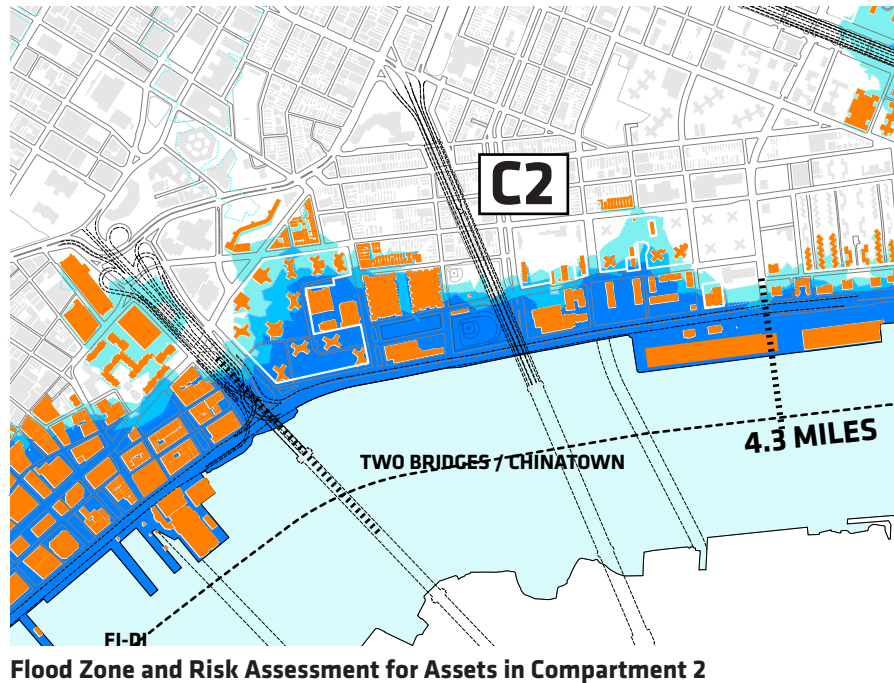
Recurrence Interval	Total Estimated Damages 2014	Total Estimated Damages 2050
10 Year	\$15,000,000	\$271,000,000
50 Year	\$251,000,000	\$832,000,000
100 Year	\$583,000,000	\$1,129,000,000
500 Year	\$1,370,000,000	\$2,234,000,000

	Annual Estimated Damages for Assets in 2014 (2014\$)	Annual Estimated Damages for Assets in 2050 (2014\$)
Compartment 1 Totals	\$9,400,000	\$30,500,000

BENEFIT COST ANALYSIS SUMMARY

C2: TWO BRIDGES

The neighborhood between the Brooklyn Bridge and Pier 35 is a less extensive flood zone, but is home to thousands of vulnerable Chinatown, Latino and New York residents. Smith Houses NYCHA campus will be protected by the proposed investment in this compartment.



ASSETS IN C2 FLOOD ZONE

11,000 Residents
2,500 NYCHA units
30 Small Businesses (estimate)

NET PRESENT VALUE OF
AVOIDED DAMAGES IN **C2**
FOR THE NEXT 50 YEARS:

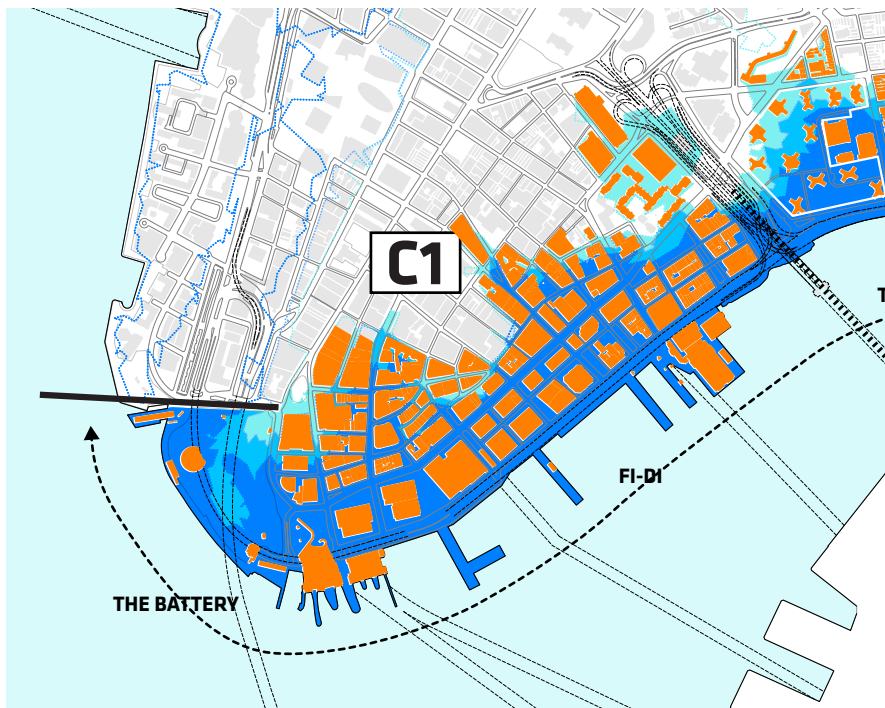
\$242M

Recurrence Interval	Total Estimated Damages 2014	Total Estimated Damages 2050
10 Year	\$18,000,000	\$97,000,000
50 Year	\$106,000,000	\$222,000,000
100 Year	\$172,000,000	\$281,000,000
500 Year	\$349,000,000	\$611,000,000

	Annual Estimated Damages for Assets in 2014 (2014\$)	Annual Estimated Damages for Assets in 2050 (2014\$)
Compartment 2 Totals	\$7,500,000	\$18,800,000

C3: BATTERY TO BKLN BR

The flood zone in this compartment includes over 60M sf of office space in the Financial District, two entrances to the Brooklyn Battery Tunnel and many historic buildings and structures. During Sandy flooding in this area flooded subway stations and tunnels, major telecommunications hub and homes to thousands of downtown residents. A substantial portion of the Financial District business community remains at risk, and loss of business revenue from these businesses drives the exceedingly high estimated damage assessment in this zone.



Flood Zone and Risk Assessment for Assets in Compartment 3

ASSETS IN C3 FLOOD ZONE

64,000,000 sf	Commercial Office Space
200,000	People Working in Flood Zone (estimate)
15,000	Residents
25	Historic Structures (estimate)
2	Brooklyn-Battery Tunnel Entrances
17	Subway Entrances & Vent Shafts (estimate)

NET PRESENT VALUE OF
AVOIDED DAMAGES IN **C3**
FOR THE NEXT 50 YEARS:

\$1,912M

Recurrence Interval	Total Estimated Damages 2014	Total Estimated Damages 2050
10 Year	\$117,000,000	\$886,000,000
50 Year	\$947,000,000	\$1,742,000,000
100 Year	\$1,391,000,000	\$2,042,000,000
500 Year	\$2,299,000,000	\$3,134,000,000

	Annual Estimated Damages for Assets in 2014 (2014\$)	Annual Estimated Damages for Assets in 2050 (2014\$)
Compartment 3 Totals	\$28,500,000	\$72,500,000

BENEFIT COST ANALYSIS SUMMARY

ECOLOGICAL BENEFITS OF THE BIG-U

The environmental conditions from the Battery to the Lower East Side are currently highly urbanized with minimal ecological habitat. 95% of ground surfaces in Community Board 1 and Community Board 3 are impervious. Many streets are prone to localized flooding during heavy rain events. Therefore resilient approaches of the BIG 'U' incorporate green infrastructure in all compartments and provide broad environmental benefits.

Not only does the Big 'U' proposal protect the Battery, Two Bridges, and the Lower East Side from storm surge. Bioswales and rain gardens protect streets and buildings from inland flooding during rain events and mitigate combined sewer overflow events which improves water quality in the East River. Vegetation traps noxious gases and particulate material, improving air quality. Plants, especially large, old trees store carbon, decrease the amount of the greenhouse gas CO₂ in the atmosphere. Increased connections along the waterfront will encourage bicycle transportation in lieu of automotive transport, also decreasing greenhouse gas emissions. Vegetation decreases the urban heat island effect. Plants reduce air and surface temperature by shading the ground, buildings and people. Evaporation of water from leaf surfaces cools the air. The levees and the vegetation act as sound buffers, reducing both noise volume and the distance noise travels. The levees, stormwater gardens and green bridges will be planted with native, salt-tolerant, coastal trees, shrubs, vines, grasses and wildflowers, providing resiliency to future storms. Wildlife diversity, as well as plant diversity will increase, since our bees, butterflies and birds have evolved over millennia to survive on our local flora. Perhaps we can even attract some hawks to help address the NYC rat problem.

Green corridors, which start in East River or Battery Park and continue back through street plantings, bioswales, green bridges, NYCHA campuses and former-vacant-lot-community gardens provide essential connections for supporting biodiversity in the city. These green connections facilitate seed, pollen and wildlife movement, supporting larger population sizes with increased survival prospects, and granting refuge space from unfavorable conditions such as storms, vandalism, and development.

Green cities support regional biodiversity. Migratory species find stopover sites. Nearby natural areas are buffered from species loss into a "concrete jungle". Interactions with nature fosters a conservation ethic among city residents, who make decisions that affect biodiversity worldwide.



A Greener Lower East Side

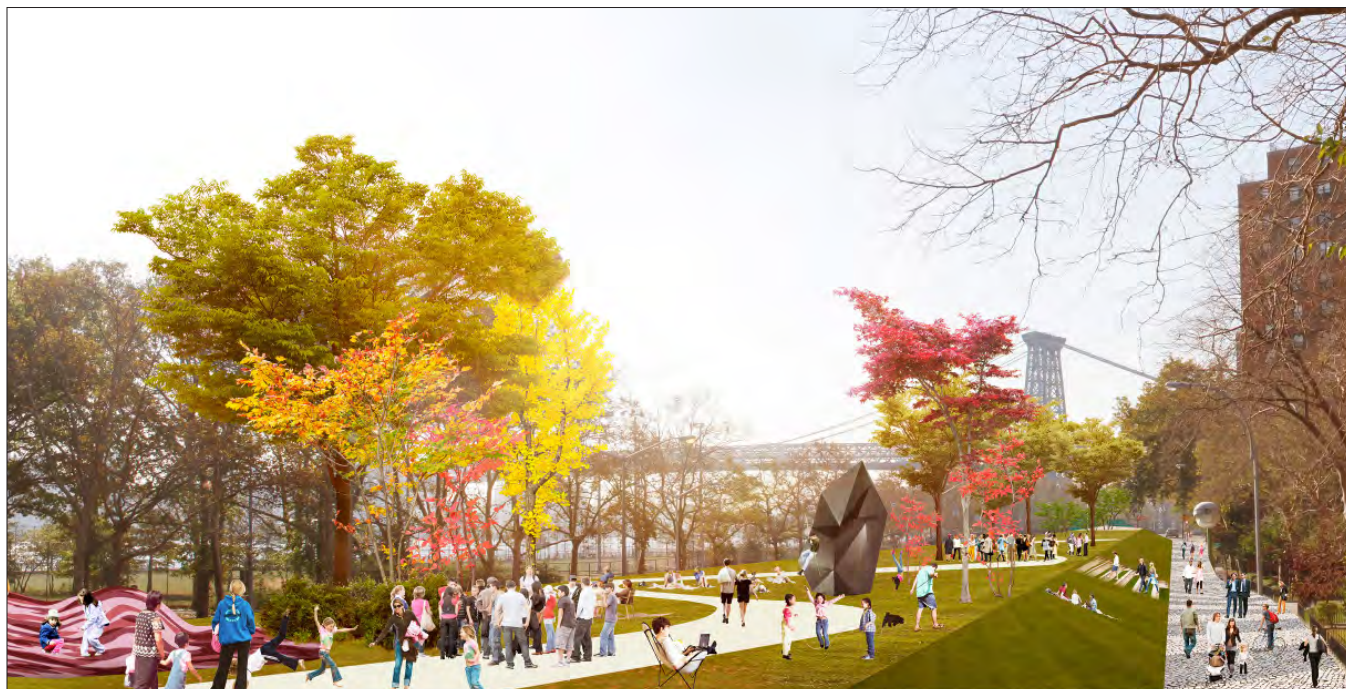
SOCIAL AND EQUITY BENEFITS OF THE BIG-U

The Lower East Side and Chinatown communities, working with NYCHA, will benefit from increasing economic opportunity and neighborhood connectivity through new commercial activity in certain repurposed ground floor NYCHA spaces that would house shared work spaces and business incubators. The NYCHA Resident Training Academy would connect residents to employment-linked training opportunities connected with the new jobs generated through federal investment in resilience, and should increase available vocational training class slots specific to the skill set required for jobs created directly and indirectly by the BIG U.

The community values connectivity to the City and the waterfront. Lack of good transportation connections, the FDR Drive and the spatial organization and condition of the public housing isolate these waterfront neighborhoods from the vibrant urban fabric to the west. Given the need for a network of compelling outdoor social spaces and richer bio-diversity, spatial quality is related to performance in these areas. The community also values places to relax, gather and play which feel inviting and safe. The East River Park levee concept which includes extensive bridge crossings over the FDR will significantly improve connections to East River Park so as to make the park an even more integrated and important part of the community.

Flood protection pavilions under the FDR in the Two Bridges neighborhood and along the South Street corridor have significant community spaces which will be programmed by community groups to meet the needs of local residents. Improved lighting, visibility and access will improve the safety along the East River Park and under the FDR. Green markets under the FDR may provide greater access to healthy foods for NYCHA residents. The BIG U plan proposes to expand successful affordable housing preservation efforts by replenishing the Chinatown / LES Acquisition.

East River Park improvements includes easier access over the FDR as well as upgrades to bike lanes both of which increase recreational value for residents. Another design factor for the project includes improving community gardens on the NYCHA campus which will provide greater access to healthy foods for NYCHA residents.



A More Civic Waterfront

BENEFIT COST ANALYSIS SUMMARY

NET PRESENT VALUE OF PROJECT COSTS

C1: East River Park

\$72M	Flood Protection Structures
\$27M	Landscape, Furniture and Architectural Features
\$87M	Utilities and Stormwater
\$53M	Bridges
\$83M	Total of All Soft Costs
\$94M	Contingencies & Escalation
36 mo	Design and Permitting Phase
36 mo	Construction Phase
\$2M	Annual Increased O&M Costs

NET PRESENT VALUE OF
COST OF CONSTRUCTION AND
MAINTENANCE IN **C1**
FOR THE NEXT 50 YEARS:

\$371M

C2: Two Bridges

\$56M	Flood Protection Structures
\$14M	Landscape, Furniture and Architectural Features
\$28M	Utilities and Stormwater
\$65M	Wet Feet, New Building
\$57M	Total of All Soft Costs
\$65M	Contingencies & Escalation
36 mo	Design and Permitting Phase
36 mo	Construction Phase
\$500k	Annual Increased O&M Costs

NET PRESENT VALUE OF
COST OF CONSTRUCTION AND
MAINTENANCE IN **C2**
FOR THE NEXT 50 YEARS:

\$245M

C3: Battery to Brooklyn Bridge

\$62M	Flood Protection Structures
\$18M	Landscape, Furniture and Architectural Features
\$54M	Utilities and Stormwater
\$50M	BMB Plaza Structure
\$35M	Periscope Building
\$76M	Total of All Soft Costs
\$87M	Contingencies & Escalation
36 mo	Design and Permitting Phase
36 mo	Construction Phase
\$3M	Annual Increased O&M Costs

NET PRESENT VALUE OF
COST OF CONSTRUCTION AND
MAINTENANCE IN **C3**
FOR THE NEXT 50 YEARS:

\$355M

ASSUMPTIONS

Value of Money

5%	Discount Rate
7%	Sensitivity Test Discount Rate
2%	Average Economic Growth Rate

Residential Building Replacement Value

C1	\$ 294 /sf
C2	\$ 233 /sf
C3	\$ 238 /sf

Commercial Building Replacement Value

C1	\$ 286 /sf
C2	\$ 209 /sf
C3	\$ 209 /sf

Loss of Business Revenue

\$ 50 /sf / yr	Residential and Commercial Rental Rate
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FEMA's BCA Toolkit v4.8 was used to analyze potential future damages and produce the expected benefits obtained by eliminating these damages. The project useful life of the proposed floodwall was assumed to be 50-years. GIS data was used to determine the ground surface elevations, building height, first floor square footage, and commercial or residential square footage for each building within each compartment. Available building data from each compartment was evaluated to determine the property damages and displacement losses associated with each of the thousands of buildings in the study area. Injury and loss of life costs were not included in this preliminary analysis.

The FEMA Building Replacement Value standard value for commercial retail space is \$82.63/sf and for multi-dwelling residential buildings it is \$131.93/sf but these values were not used as lower Manhattan has significantly higher construction costs than most areas of the United States. Instead, RSMeans was used to determine average commercial and residential building construction costs based on zip code, average building height, and average building square footage and are summarized below.

The FEMA standard value for commercial retail trade loss of rent is \$1.25/sf/month, and for residential multi-dwelling units it is \$0.65/sf/month; however these values were not used as rental values in lower Manhattan are much higher than the rest of the United States. Commercial and residential rental values were researched and based on 2014 values a rental average of \$50/sf/year was used for both commercial and residential buildings.

BIG U

5 IMPLEMENTATION

Over the past eight months, the BIG Team has sought to undertake a thorough review of Lower Manhattan coastal flooding issues as well as the opportunities that may exist in the implementation of new resilience infrastructure. The team has engaged in a public process that has involved dozens of meetings with diverse groups of stakeholders. These discussions have included a spectrum of issues, including parks, transportation, green infrastructure, social equity, economic opportunity, urban design and land use, affordable housing, creative culture, and implementation. On the basis of this input, as well as discussions with public agency staff and considerable research and analysis by the consultant team, the recommendations of this concept plan for the BIG U have emerged. The particular elements of the Big U must now be vetted to ensure consistency with City and other public policies and priorities and individual departmental budget planning.

LOCAL GRANTEE: CITY OF NEW YORK

THE CITY OF NEW YORK IS THE INTENDED LOCAL GRANTEE FOR THE BIG U PROJECT

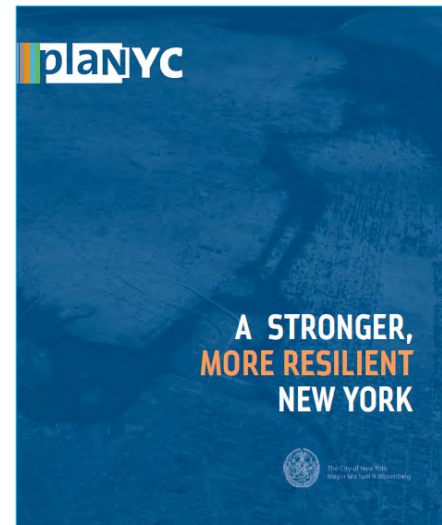
During the research phase of RxD, The Mayor's Office of Long-Term Planning and Sustainability (OLTPS) identified an alignment of interests between the SIRR action plan objectives for flood protection and those under investigation through the RxD initiative. As such, that office has become an integral participant in planning and policy discussions around the Sandy-affected areas of the BIG U plan along the East River. Working closely with the BIG Team and RxD staff, the Mayor's Office has assumed a leadership role in an extensive interagency consultation and planning process involving numerous federal, state, and local agencies that might have some role in planning, funding, permitting, regulatory review and / or operations of some aspect of the BIG U.

A specific agency within the City of New York will be identified as the implementing agency for whom the project will ultimately be delivered, though this requires further deliberations to align appropriately with the new administration.

The BIG U has been planned in the context of existing NYC planning and

policy frameworks including SIRR, PlaNYC, the Vision 2020 waterfront plan, and other priority initiatives. OLTPS issued the Special Initiative for Rebuilding and Resiliency (SIRR) report in June 2013, which presents actionable recommendations both for rebuilding the communities impacted by Hurricane Sandy and increasing the resilience of infrastructure and buildings citywide. The initial research and design phase of the BIG U flood protection proposal sought to align with the recommendations contained in the SIRR report for affected areas of Lower Manhattan, including Chinatown and the Lower East Side.

From our extensive discussions with agencies that have some jurisdiction or other possible involvement in the geography of the BIG U, we do not believe there are any significant areas of legal, budgetary or policy conflict with current City initiatives and regulations. In fact, it appears from these consultations and working sessions that there is significant alignment of public goals and objectives between City agencies and BIG U-related initiatives.



IMPLEMENTATION

PARTNER

A lead agency within the City of New York must be identified with the authority, staffing and capacity to project manage and implement a project of the scale and complexity of the BIG U. This lead agency must be able to work across agencies, political cycles and community boundaries.

A Technical Working Group of relevant stakeholder agencies should be formed to guide and support the planning and implementation of the project.

A broadly representative Community Advisory Committee should be formed including elected representatives to guide the planning and implementation of the project.

Potentially Involved Public Agencies / Entities:

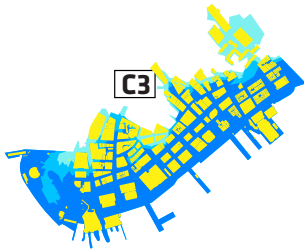
NYC Mayor's Office / OLTPS
NYC Mayor's Office of Housing and Economic Development
NYC EDC
NYC OMB
NYC DOT
NYC DCP
NYC DPR
NYC DEP
NYCHA
NYC LPC
NYC DCAS
NYC DOS
NYPD
FDNY
NY City Council Districts 1,2,3,4
NYS Governor's Office
NY Rising
MTA--City Transit / Bridges and Tunnels
NYS DOT
NYS DEC
NYS OPRHP
ESDC
BPCA
PANYNJ
NYS Senate Districts 26, 27, 28, 31
NYS Assembly Districts 65, 66, 67, 73,74, 75
HUD
USACOE
NOAA
Coast Guard
US Dept of Homeland Security
NPS
US DOT
US EPA
US GSA
US Congressional Districts 8, 12, 14
NYC Community Districts 1, 2, 3, 4, 6
Parks Governance Entities:
The Battery Conservancy
Hudson River Park Trust
Friends of the High Line

IMPLEMENTATION PHASING

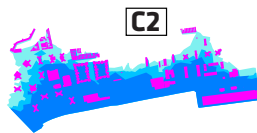
The three compartments in the BIG U proposal, while linked together, function independently in terms of flood protection, and thus can be implemented one at a time, or all together. The following implementation plan has been developed assuming only one of the three compartments will be progressed immediately with CDBG funding, though all three can be progressed simultaneously.

Implementation of the proposal can start at any of the three compartments. This flexibility, part of the essence of the Big-U, allows implementation to start swiftly. While risks have been minimized as much as possible in this phase, unresolved issues that might come to light in design development can simply change the order of implementation.

The BIG-team's proposal is quickly implementable and highly integrated, yet organized such that higher levels of integration, and new, longer term opportunities and necessities, can slowly be incorporated. Changing regulations might make it possible to build resiliency measures in water and soft edges. The City's affordable housing strategy can generate new opportunities and imperatives for housing preservation. Sea level rise can accelerate. Construction elsewhere on the shore or in the water can impact the necessary design heights.



AND/OR



AND/OR



C1: EAST RIVER PARK

IMPLEMENTATION PLAN

This compartment begins on the North with a deployable wall along 23rd Street which connects to a series of pavilions under FDR Drive. At the land-side, these can be programmed with the commercial functions and other amenities the area now lacks. On the water side, they can be programmed with recreational amenities. Between the pavilions, the use deployables maintains the relationship with the waterfront. Around the Con-Ed plant, a new flyover with an integrated levee will provide the link along the waterfront. In East River Park, an undulating berm at the location of the service road to the FDR Drive will provide flood protection. The berm is shaped such that existing sports fields can be maintained. Generous landscaped bridges will connect the East River Park to the community. By fortifying the new Pier 42 Park, the flood protection continues to Montgomery Street, where a deployable will help maintain the on-ramp to the FDR Drive.

Risks in C1:

Area at risk: 290 acres

50 year Value of Benefits: \$ 778,850,000

Flood protection measures:

- Berm along FDR
- Flyover along ConEd facility
- Pavilions under FDR
- Deployable barriers along 23rd St

Levee Wall Height: +15 ft (NAVD88)

Costs: \$ 418,250,000

Additional Benefits:

- Improved connections to waterfront
- Amenities in Peter Cooper Village
- Improved waterfront bike path
- Improved public spaces

STAKEHOLDER COALITION:

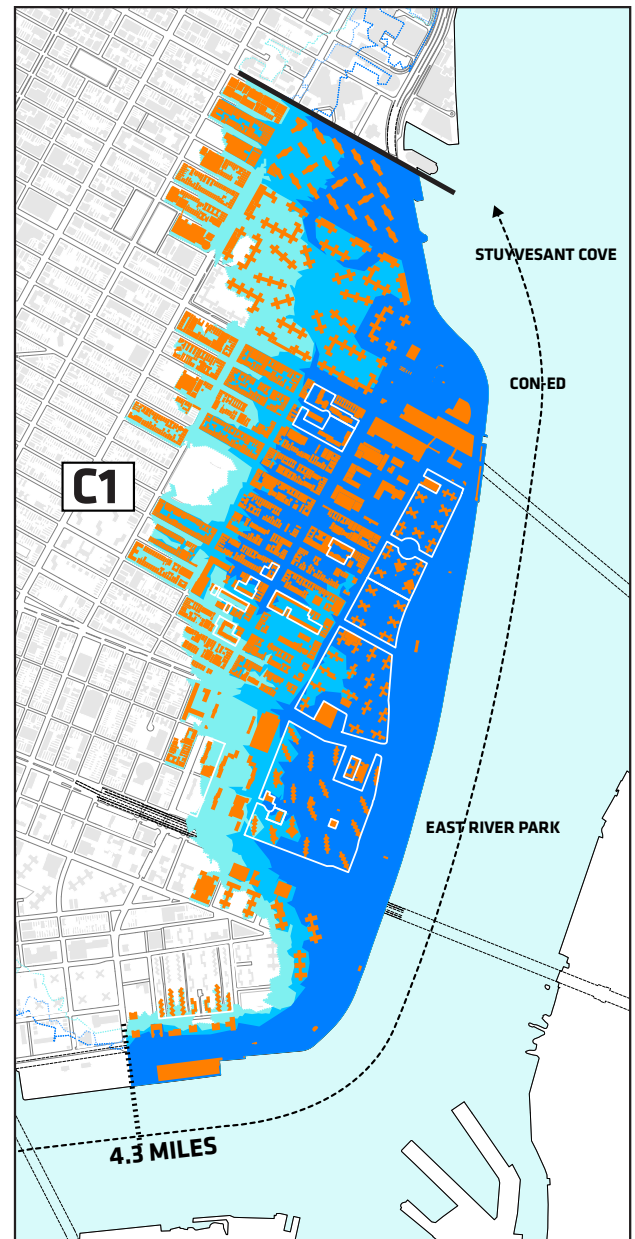
LES-Ready (and all constituent orgs)

NYCHA

NYC Parks

NYC DOT

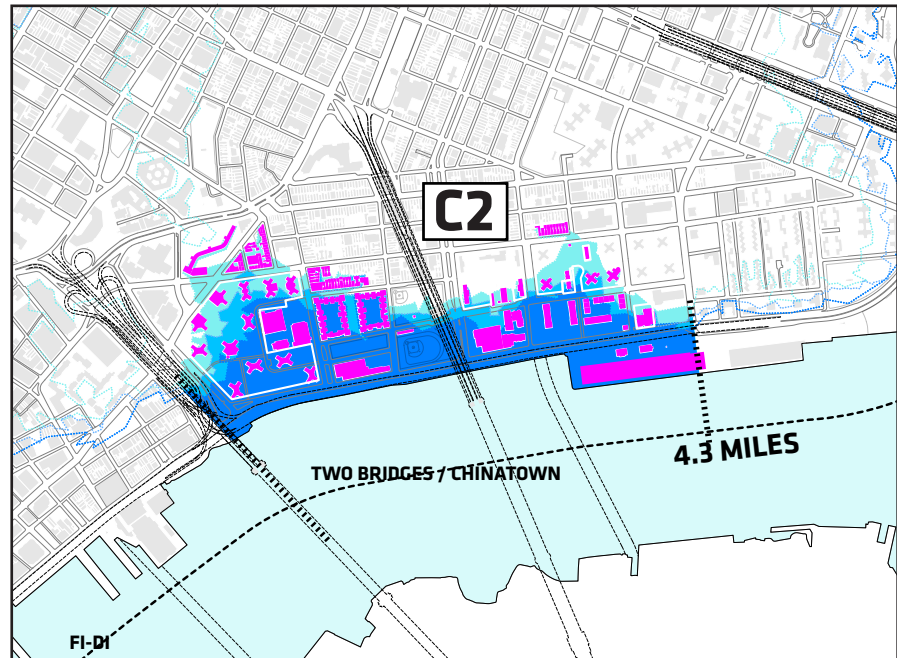
NYS DOT



Compartment C1

C2: TWO BRIDGES/ CHINATOWN IMPLEMENTATION PLAN

At Two Bridges, the limited space between the residential areas and the waterfront has resulted in a mixed-flood-protection strategy. A limited height flood protection (to protect against most recurrent floods while allowing for views to the waterfront) is complemented by a so-called 'wet feet' strategy that allows the community to deal with the incidental much bigger flood. Special attention is given to using the resiliency measures to add much needed amenities for the public housing.



Compartment C2

Risks in C2:

Area at risk: 62 acres

50 year Value of Benefits: \$242,580,000

Flood protection measures:

- Deployable barriers under FDR
- Low T-Wall
- Wet Feet concept for buildings

Levee Wall Height: +15 ft (NAVD88)

Costs: \$ 285,000,000

Additional Benefits:

- Improved public space under FDR
- Amenities for local residents
- Improved waterfront bike path
- Improved public spaces

STAKEHOLDER COALITION:

LES-Ready (and all constituent orgs)

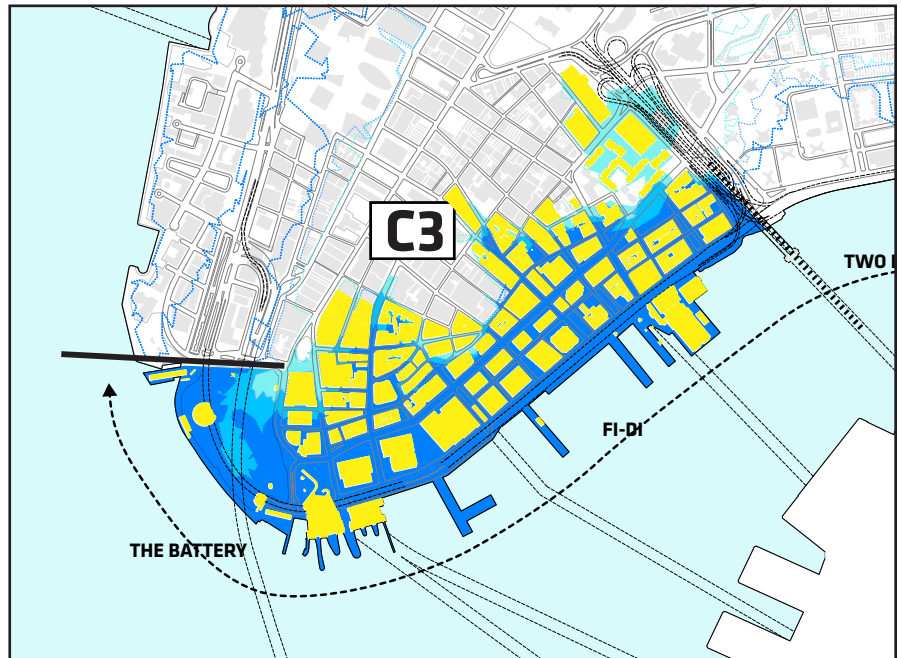
NYCHA

NYC DOT

NYS DOT

C3: BATTERY TO BKLN BR

Berms in Battery Park, strategically located such that they also protect the ducts of the infrastructure below, are complemented by deployables. In lieu of the coastguard building a new building is foreseen. Continuing east, a floodwall connects through the Staten Island Ferry building and aligns with the FDR at the Battery Maritime Building. A plaza on top connects the surroundings at level with the monumental mezzanine floor of the BMB. Continuing further in the form of an elevated bikeway, the flood protection is partly integrated into a series of pavilions, partly made of deployables that are connected to the underside of the FDR Drive.



Compartment C3

Risks in C3:

Area at risk: 129 acres

50 year Value of Benefits: \$ 1,912,000,000

Flood protection measures:

- Pavilions under FDR
- Deployable barriers under FDR
- Low T-Wall
- Landscape Berms in Battery

Levee Wall Height: +15 ft (NAVD88)

Costs: \$ 383,900,000

Additional Benefits:

- Protection of Critical Infrastructure
- Improved public space under FDR
- Amenities for local residents
- Improved waterfront bike path
- Improved tourist attractions

STAKEHOLDER COALITION:

Battery Conservance
Downtown Alliance
NYC DOT
NYS DOT
Business Community

FUNDING

The Implementation Plan includes two components of funding: the comprehensive long term planning and community engagement process, and the construction of a Priority Project (likely Compartment 1: East River Park).

Discussions with implementation partners have guided the project toward selecting Compartment 1: East River Park as the Priority Project, though the Jury and future funding will make the final decision. CDBG-DR funding for Flood Protection in East River Park would implement a relatively simple, high impact project with multiple recreational, ecological and health benefits for an underserved community. The 1.5 mile long berm has a benefit cost ratio of more than 2.0: it is a passive system, under the single ownership of New York City Parks & Recreation, and based on our outreach has unanimous community and agency support. This project would protect a vulnerable community in a broad zone of the floodplain; a community with an extensive network of supportive community based organizations, but without the financial resources to invest in flood protection.

During Stage 3 the BIG Team engaged with many stakeholders to begin the lengthy process of determining the funding sources for the construction of a large scale flood protection project. Many funding opportunities currently exist in the context of Sandy recovery. Aside from the HUD CDBG-DR funding for which this project is competing for directly, many other federal, state and city funding opportunities have been identified, but not confirmed. FEMA 406 and 428 Hazard Mitigation Grants seem to be potential funding sources based on discussions with City and Federal partners knowledgeable in FEMA applications. State of New York funding sources exist such as NY Rising, but seem less likely at this point. City of New York may be another sources of funds through EDC, Capital Budget or Agency budgets.

In the Priority Project Feasibility Study, outlined on the next page, the City of New York and the team will determine whether there is additional funding sources for portions of the BIG U beyond building C1 in Phase One. Based on the possibilities to leverage funds, more than 1 compartment might be implemented using this CDBG-DR funding.

The following are potential sources of funding identified during Stage 3:

- CDBG-DR
- EPA
- FTA
- FEMA 406
- FEMA 428
- NY RISING
- CITY OF NEW YORK CAPITAL BUDGET

CONTINUED PLANNING AND COMMUNITY

OUTREACH

Continuing the long-term planning and community outreach for the entire 10 mile BIG U must be done in tandem with progressing detailed implementation work. The entire waterfront community must continue to be engaged with the planning process which will bring flood protection to all waterfront communities in New York City eventually.

The team proposes a 3-year ongoing planning study which engages the entirety of the BIG U and the communities for which it protects. This planning process will include defining the specific project areas for the multiple community zones along the waterfront.

This process will continue to review for consistency with SIRR, PlaNYC, NY Rising initiatives, other city policies, priorities and budget planning.

Based on the stakeholder engagement and resilience needs for each zone, projects and actions will be refined. The culmination of the planning work will be the production of resilience plans for each community zone along the BIG U and recommendations for future resilience implementation.

Potential Scope of Work Outline for Long-Term Planning and Outreach for Entire Big U

Task 0: Work Plan

Task 1: Define Community Zones around BIG U

Task 2: Define Stakeholders for Community Zones
Community Organizations
City Agencies
State Agencies
Federal Agencies
Business Community

Task 3: Define Resilience Needs for Community Zones
Flood Protection
Community Resilience
Other Needs

Task 4: Engage Stakeholders
Community Workshops
One-on-One Engagements

Task 5: Develop Resilience Projects / Actions
Flood Protection Projects
Community Education

Task 6: Prepare Resilience Plans for Community Zones
Comprehensive Resilience Plans

Estimated Budget: \$5.4M over 3 years

36 month ongoing planning and community engagement
approx. \$150,000 per month

PRIORITY AREA

FEASIBILITY STUDY TASKS

Based on the momentum of the Rebuild By Design process and the urgency to see physical results from the Sandy Recovery Act and the many planning processes since Sandy, the team proposes to immediately begin a professional feasibility study for the priority project area which will be selected by the Jury.

This feasibility study will be similar in scope and scale to the Seaport City feasibility study. It will include a full detailed assessment of existing conditions and the pathway to regulatory approvals. This study will re-visit and confirm many design assumptions from the Rebuild By Design process.

Potential Scope of Work Outline for Priority Area Feasibility Study

Task 0: Work Plan

Task 1: Existing Conditions

- 1.1: Existing Site Conditions
- 1.2: Ongoing Projects in Study Area
- 1.3: Legal and Regulatory Framework
- 1.4: Permitting process
- 1.5: Base Map

Task 2: Design Options Assessment

- 2.1: Conceptual Design Options Analysis
 - Conceptual Design Plan
 - Technical/Engineering Strategies
 - Infrastructure Impacts
 - Cost Estimates

Task 3: Evaluate Project Impacts

- Environmental
- Cost Benefit Analysis
- Financial Analysis
- Implementation

Task 4: Funding Applications Support

Task 5: Project Recommendations

REGULATORY AND PERMITTING PLAN

Before Permitting

Environmental Impact Statement

Under National Environmental Policy Act (NEPA) or
New York State Environmental Quality Review Act (SEQRA)

Both require Alternatives Analysis: reasonable alternatives to project, specifically
alternatives that would lessen amount of impacts

Select Lead Agency at Federal level

Possibly US Army Corps of Engineers

“Co-lead” agency could be designated at state level.

Water-based Permits

Federal (USACE)

(Required for all aspects of the project impacting the East River)

Section 10 of Rivers and Harbors Act:

Survey Activities, Minor Dredging, other activities

Section 404 of Clean Water Act:

General (Regional) Permit or Individual Permit

State (NYSDEC)

Environmental Conservation Law Article 15, Title 15

New York Code of Rules and Regulations Title 6, Part 608.9

Federal Water Pollution Control Act Section 401

United States Code Title 33, Section 1341

Protection of Waters Permit; 401 Water Quality Certification

Protection of Waters Permit (e.g. Navigable Waters)

Tidal Wetlands Permit

Land-based Permits

Federal (FEMA)

Code of Federal Regulations Title 44, Chapter 1, Parts 65 and 70

Federal (USFWS)

Code of Federal Regulations Title 50, Part 17 Endangered Species Act Section 7

State (NYSDOT)

New York Highway Law Article 52:

Highway Work Permit for Utility Work; Highway Work Permit for Non-Utility Work

New York Code of Rules and Regulations Title 17, Part 126:

Transportation Enhancement Program Project Application

Divisible Load Overweight Permit; Special Hauling Permit

City (NYCDOT)

New York City Charter Chapter 71, New York City Highway Rules Section 2-02:

Canopy Permit, Construction Activity Permit, Sidewalk Construction Permit, Sidewalk,
Curb, and Roadway Permit, Street Opening Permit, Revocable Consent, Oversize-Permit

City (NYCDEP)

New York City Charter Chapter 71, New York City Highway Rules Section 2-06:

Land Contour Permit

Rules of New York City Title 62, Chapter 5 – New York City Executive Order No. 91

City Environmental Quality Review Environmental Impact Statement

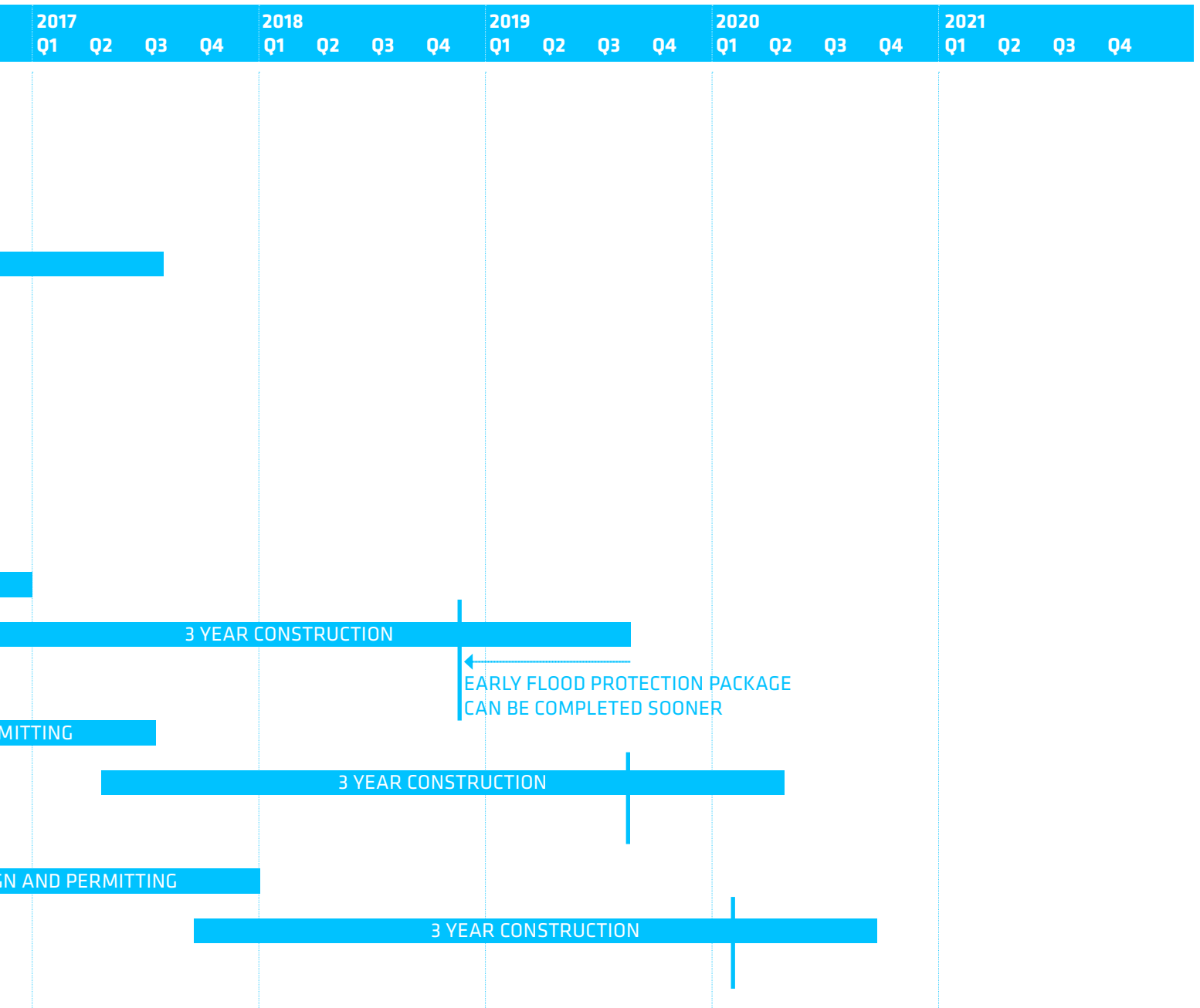
City (NYCDPR)

Rules of New York City Title 56, Chapter 1, Section 1-04

Street Tree Removal, Tree Planting Permit, Tree Work Permit

TIMETABLE

THE BIG U		TIMETABLE											
GEOGRAPHY	ACTIVITY	2014			2015				2016				
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
PLANNING													
C1 / C2 / C3	FINALIZE FUNDING ALLOCATION	3 MONTHS											
ENTIRE BIG U	LONG TERM PLANNING & COMMUNITY OUTREACH				3 YEAR ONGOING COMMUNITY ENGAGEMENT								
PRIORITY PROJECT	FEASIBILITY STUDY FOR PRIORITY PROJECT	6 MONTHS											
IMPLEMENTATION													
C1 (PRIORITY PROJECT)	DESIGN, ENGINEERING & PERMITTING (18-30MO)				2 YEAR DESIGN AND PERMITTING								
	CONSTRUCTION (24-36MO)								1 YEAR CONSTRUCTION				
C2	DESIGN, ENGINEERING & PERMITTING (18-30MO)								2 YEAR DESIGN AND PERMITTING				
	CONSTRUCTION (24-36MO)												
C3	DESIGN, ENGINEERING & PERMITTING (18-30MO)								2 YEAR DESIGN AND PERMITTING				
	CONSTRUCTION (24-36MO)												



SUMMARY OVERVIEW OF BENEFITS

A MORE RESILIENT, CONNECTED, EQUITABLE CITY

COST TO PUBLIC SECTOR		RESILIENT	CONNECTED	EQUITABLE
\$\$\$	Flood Protection Structures:			
	T-Walls			
	Berms			
	Deployables			
\$\$	Pedestrian bridges over FDR			
	Eco-pier and swimming pool			
	BMB Plaza			
\$-\$	Parks and public realm			
	Ground floor wetproofing			
	CoGen Energy Facilities			
\$	Greenways and blueways			
	Affordable housing preservation			
	Affordable housing production			
	Ferries			
UNKNOWN/ VARIES	Expanding access to economic opportunity			
	Increase cultural and arts programming for community			
	Community-based retail			

The BIG Team asks for two elements of this plan to be funded by CDBG-DR funds: the BIG U comprehensive, multi-year planning and community engagement process, as well as implementation of Compartment 1: L.E.S. North - East River Park.

For the choice of which compartment to build first, at this time Compartment 1 (East River Park) is the logical one. CDBG-DR funding for flood protection in East River Park would implement a relatively simple, high impact project with multiple recreational, ecological and health benefits for an underserved community. The 1.5 mile long berm has a benefit cost ratio of more than 2.0: it is a passive system, under the single ownership of New York City Parks & Recreation, and based on outreach has unanimous community and agency support. This recreational berm would protect a vulnerable community in the broadest zone of the floodplain; a community with an extensive network of supportive community based organizations, but without the financial resources to protect itself from the major impacts of climate change.

The funding request breakdown is as follows:

1) BIG U Comprehensive Planning and Community Engagement Process:

Process Management: 36 months at \$ 20,000	\$ 720,000
Planning, Design and Engineering: 36 months at \$ 100,000	\$ 3,600,000
Hydraulic and Economic Modeling	\$ 1,000,000
Community Outreach and Logistics (Manhattan CB 1, 2, 3, 4, 6)	\$ 500,000
TOTAL	\$ 5,820,000

2) Compartment 1

Implementation costs	\$ 418,250,000
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3) Replenishing the Chinatown / Lower East Side Acquisition Fund	\$ 50,000,000
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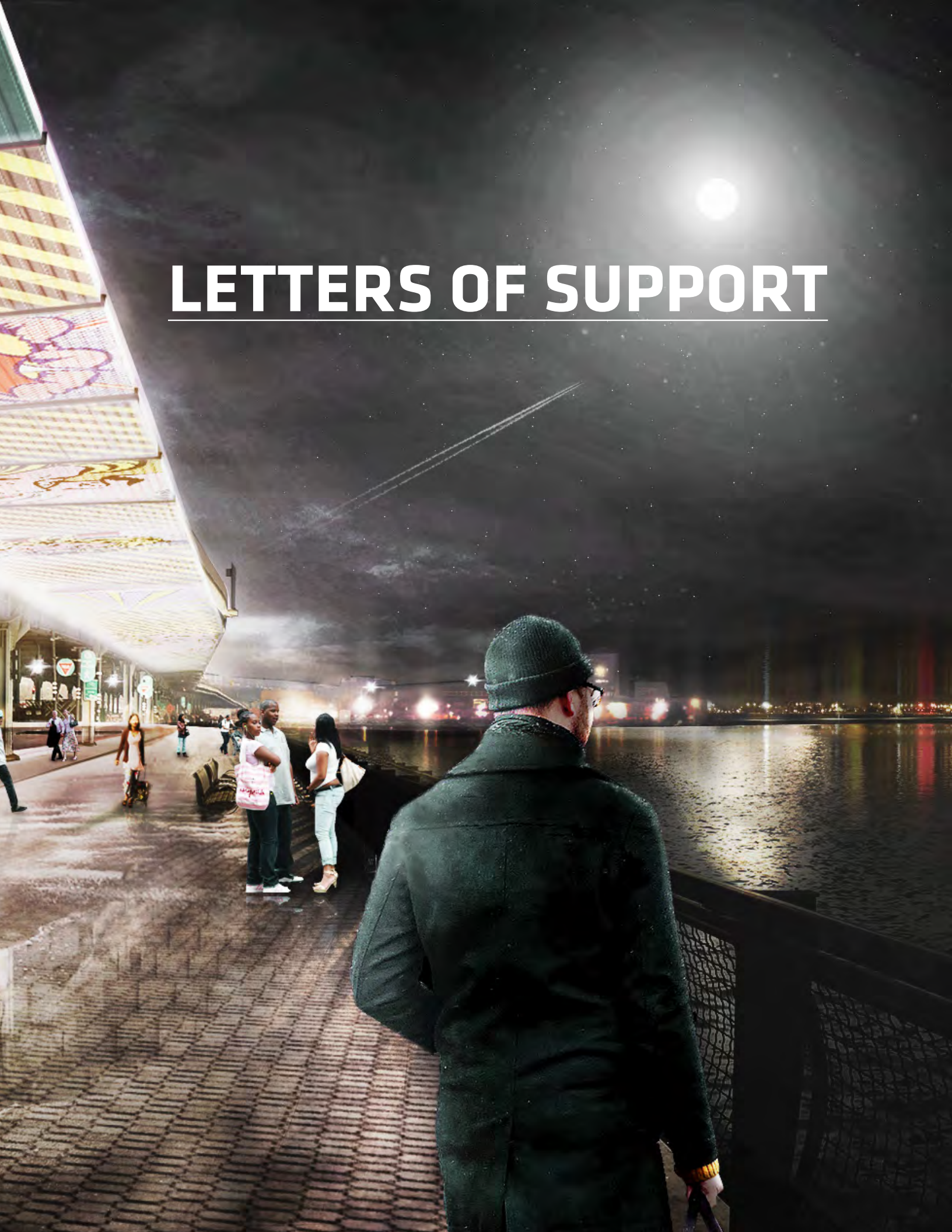
TOTAL	\$ 474,070,000
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In the first step of the implementation phase, a feasibility study will be prepared to determine whether there is additional funding sources for portions of the BIG U beyond building C1 in Phase One. Based on the possibilities to leverage funds, more than 1 compartment might be implemented using this CDBG-DR funding.



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LETTERS OF SUPPORT



LETTERS OF SUPPORT

U.S. SENATOR CHARLES E. SCHUMER

CHARLES E. SCHUMER
NEW YORK

United States Senate
WASHINGTON, DC 20510

COMMITTEES:
BANKING
FINANCE
JUDICIARY
RULES

The Honorable Shaun Donovan
Secretary
U.S. Department of Housing and Urban Development
451 Seventh Street, S.W.
Washington, D.C. 20410

Dear Secretary Donovan,

I write in support of the "BIG U," one of ten finalist proposals in the Rebuild by Design (RBD) competition.

The BIG U proposes a flood protection system along nearly ten miles of flood-prone Manhattan waterfront that was seriously impacted by Hurricane Sandy in 2012. The geographic area extends from West 57th Street along the Hudson River down to The Battery and north along the East River to East 40th Street.

The BIG U covers a geographic area that is a dense, diverse, critically important and vulnerable economic engine for the region and country; and it was hit hard by Sandy. Hundreds of thousands of people live and work in these affected Manhattan neighborhoods. Hundreds of millions of dollars in property damage and lost economic activity are at risk without new protections. Locations for a Phase One RBD project have focused on an area of greatest vulnerability, the flood-prone high-density, predominantly low-income community of the Lower East Side.

The BIG Team and RBD sponsors have undertaken extensive community and stakeholder engagement in the Sandy-affected communities of Manhattan during the research and planning phases of the RBD process. The BIG Team proposal includes a funding request for continued planning and community engagement along the entire length of the BIG U, as new flood protection and other resilience investments are an imperative in all of these vulnerable Manhattan waterfront neighborhoods.

Public investments in coastal resilience infrastructure post-Hurricane Sandy provides a unique opportunity for NYC to overlay enhancements to the urban social fabric of the city, particularly to create appealing new civic open spaces and strengthen upland communities' relationship and connections with their waterfront. The inclusion by the BIG Team of specific proposals to fund initiatives that seek to create greater access to economic opportunity for local residents, as well as those that would increase affordable housing production and preservation. In doing so, the BIG U expands the range of planning and policy ideas beyond flood protection to address ways we might achieve the shared vision for a more resilient, equitable and just city.

Thank you for your consideration of the BIG U as one of the Rebuild by Design proposals

Sincerely,



Charles E. Schumer
United States Senate



OFFICE OF THE PRESIDENT
BOROUGH OF MANHATTAN
THE CITY OF NEW YORK

1 Centre Street, 19th floor
New York, NY 10007
(212) 669-8300 p (212) 669-4306 f
www.manhattanbp.nyc.gov

Gale A. Brewer, Borough President

March 25, 2014

Bjarke Ingels
Founding Partner
Bjarke Ingels Group (BIG)
601 West 26th Street, Suite 1255
New York, NY 10001

Dear Mr. Ingels:

I want to thank you and your staff for briefing my staff and I on February 18, 2014 regarding the "BIG U" Proposal.

As the only Manhattan proposal in the federal Rebuild by Design competition that is being considered by the US Department of Housing and Urban Development (HUD), the BIG U covers a critically important and vulnerable economic engine for the region and country, and a geographic area that is rapidly growing in residential density.

The Big U's flood protection system extends from West 57th Street along the Hudson River down to the Battery and north along the East River to East 40th Street, nearly ten miles of flood-prone Manhattan waterfront that was seriously impacted by Hurricane Sandy in 2012.

I am pleased that the BIG Team and Rebuild by Design sponsors understand the need for extensive community and stakeholder engagement in this process. I am further encouraged that the BIG Team proposal includes a funding request for continued planning and community engagement along the entire length of the BIG U, as new flood protection and other resilience investments are imperative in all of these vulnerable Manhattan waterfront neighborhoods. I also commend the BIG Team for exploring ways to combine resiliency with creating new economic opportunity for local residents, ways to increase affordable housing production and preservation, creating new open spaces, and strengthen communities' relationship with their waterfront.

In summary, the BIG U appears to contain innovative and flexible proposals to protect critical portions of Manhattan and I hope that you can continue the work that you have begun.

Sincerely,

A handwritten signature in black ink that reads "Gale A. Brewer". The signature is written in a cursive, flowing style. Below the signature, the name "Gale A. Brewer" is printed in a small, sans-serif font.

Gale A. Brewer

CITY COUNCIL MEMBER MARGARET CHIN

DISTRICT OFFICE
165 PARK ROW, SUITE 11
NEW YORK, NY 10038
(212) 587-3159
FAX: (212) 587-3138

CITY HALL OFFICE
250 BROADWAY, SUITE 1804
NEW YORK, NY 10007
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chin@council.nyc.gov



THE COUNCIL OF
THE CITY OF NEW YORK
MARGARET S. CHIN
COUNCIL MEMBER, 1ST DISTRICT, MANHATTAN

CHAIR
LOWER MANHATTAN REDEVELOPMENT

COMMITTEES
PUBLIC HOUSING
EDUCATION
SMALL BUSINESS
CIVIL RIGHTS
WOMEN'S ISSUES
AGING

March 25, 2014

Honorable Shaun Donovan
Secretary, US Department of Housing and Urban Development
451 7th Street S.W.
Washington, DC 20410

Dear Mr. Secretary:

I am pleased to write in support of the efforts of the "BIG U," one of ten finalist proposals in the federal Rebuild by Design (RxD) competition that is being considered by your agency for flood protection and disaster recovery funding for Hurricane Sandy-affected areas. We understand that the Rebuild by Design competition was a recommendation of President Obama's Hurricane Sandy Rebuilding Task Force, which you chaired to identify ways to rebuild more resilient, sustainable, and vibrant communities in the flood-impacted areas of the Northeast.

The BIG U proposes a flood protection system along nearly ten miles of flood-prone Manhattan waterfront that was seriously impacted by Hurricane Sandy in 2012. The geographic area extends from West 57th Street along the Hudson River down to The Battery and north along the East River to East 40th Street. A significant portion of this study area is in the 1st Council District that I represent.

The BIG U covers a geographic area that is a dense, diverse, critically important and vulnerable economic engine for the region and country; and it was hit hard by Sandy. Hundreds of thousands of people live and work in these affected Manhattan neighborhoods. Millions of dollars in property damage and lost economic activity continue to be at risk without new protections. Locations for a Phase One RxD project have focused on an area of greatest vulnerability, the flood-prone high-density, and the predominantly low-income community of the Lower East Side and Chinatown.

The BIG Team and Rebuild by Design sponsors have undertaken community and stakeholder engagement in partnership with local non-profits, residents, and community leaders. We think it is important to note that the BIG Team proposal includes a funding request for continued planning and community engagement along the entire length of the BIG U, as the need for new flood protection and other resiliency measures remain

imperative for these vulnerable Manhattan waterfront neighborhoods. We urge that that highly collaborative and consultative approach to resilience planning and design be funded through the CDBG-DR program and continue during future phases of initiatives such as this one.

We support BIG Team's premise that public investments in coastal resilience infrastructure post-Hurricane Sandy provides a unique opportunity for NYC to not only protect our communities but also enhancement the urban social fabric of the city, particularly to create appealing new civic open spaces and strengthen upland communities' relationship and connections with their waterfront. We commend the inclusion by the BIG Team of specific proposals to fund initiatives that seek to create greater access to economic opportunity for local residents, as well as those that would increase affordable housing production and preservation. In doing so, the BIG U expands the range of planning and policy ideas beyond flood protection to address ways we might achieve the shared vision for a more resilient, equitable and just city.

We urge HUD to select the BIG U as one of the Rebuild by Design proposals that will advance to the implementation phase and receive the requested allocation of federal Community Development Block Grant Disaster Recovery (CDBG-DR) funding for further project planning, including ongoing community engagement, for the entire BIG U geographic area, and implementation of a Phase One project.

Please feel free to call my office at (212) 788-7259 if you have any questions.

Sincerely,



Margaret S. Chin
New York City Council Member
District 1 - Manhattan



THE CITY OF NEW YORK MANHATTAN COMMUNITY BOARD 3

59 East 4th Street - New York, NY 10003
Phone (212) 533-5300 - Fax (212) 533-3659
www.cb3manhattan.org - info@cb3manhattan.org

Gigi Li, Board Chair

Susan Stetzer, District Manager

March 5, 2014

At its February 2014 monthly meeting, Community Board 3 passed the following resolution:

VOTE: Community Board 3 Resolution to Support Rebuild by Design efforts and Pilot Project in CD 3

Whereas, Rebuild by Design is an initiative of the President's Hurricane Sandy Task Force and HUD aimed at developing long-term resiliency planning in the aftermath of Hurricane Sandy through a design competition; and

Whereas, Rebuild by Design has engaged in extensive and collaborative community outreach within lower Manhattan, including Community District 3, to develop long-term design solutions to protect from future flooding events; and

Whereas, the designs presented to the Land Use and Housing Committee also incorporate community social goals such as increasing open space and promoting social interaction and welfare; now

Therefore be it resolved, Community Board 3 supports participatory and collaborative planning efforts such as those undertaken by Rebuild by Design, and supports a pilot project being initiated within Community District 3 should they be awarded funding from the U.S. Department of Housing and Urban Development.

If you have any questions, please contact the community board office.

Sincerely,

Gigi Li, Chair
Community Board 3

Linda Jones, Chair
Land Use, Zoning, Public and Private Housing Committee



Long Term Recovery Group of the Lower East Side of Manhattan

March 24, 2014

Honorable Shaun Donovan
Secretary, US Department of Housing and Urban Development
451 7th Street S.W.
Washington, DC 20410

Dear Mr. Secretary:

LES Ready, a coalition of 26 community groups, organizations and institutions that came together in response to Hurricane Sandy, is pleased to write in support of the “BIG U,” one of ten finalist proposals in the federal Rebuild by Design (RxD) competition that is being considered by the US Department of Housing and Urban Development (HUD) for flood protection and disaster recovery funding for Hurricane Sandy-affected areas. We understand that the Rebuild by Design competition was a recommendation of the President’s Hurricane Sandy Rebuilding Task Force, which you chaired to identify ways to rebuild more resilient, sustainable and vibrant communities in the flood-impacted areas of the Northeast.

The BIG U covers a geographic area that is dense, diverse, critically important and vulnerable economic engine for the region and country; and it was hit hard by Sandy. Hundreds of thousands of people live and work in these affected Manhattan neighborhoods. Hundreds of millions of dollars in property damage and lost economic activity are at risk without new protections. The BIG U proposes a flood protection system along nearly ten miles of flood-prone Manhattan waterfront that was seriously impacted by Hurricane Sandy in 2012. The geographic area extends from West 57th Street along the Hudson River down to The Battery and north along the East River to East 40th Street. Locations for a Phase One RxD project have focused on an area of greatest vulnerability, the flood-prone high-density, predominantly low-income community of the Lower East Side.

The focus of LES Ready is to build community awareness and training for future disaster. We meet regularly to strategically plan disaster response effects and resources for the residents of the Lower East Side. As a community initiative we will ensure that all residents are prepared and trained for disasters through LES Ready disaster preparedness workshops.

We are pleased that the BIG Team and Rebuild by Design sponsors have undertaken extensive community and stakeholder engagement in the Sandy-affected communities of Manhattan during the research and planning phases of the Rebuild by Design process and to ensure that any infrastructural amenities created to mitigate the impacts of climate change will also enhance

LES Ready c/o GOLES 173 AVENUE B NEW YORK NY 10009 212.358.1231 WWW.LESREADY.ORG

residents quality of life, create employment and economic opportunities for long-time residents, and not lead to displacement of long-standing neighborhood residents. We think it's wise that the BIG Team proposal includes a funding request for continued planning and community engagement along the entire length of the BIG U, as new flood protection and other resilience investments are an imperative in all of these vulnerable Manhattan waterfront neighborhoods. We urge that that highly collaborative and consultative approach to resilience planning and design be funded through the CDBG-DR program and continued during future phases of initiatives such as this one.

We support BIG Team's premise that public investments in coastal resilience infrastructure post-Hurricane Sandy provides a unique opportunity for NYC to overlay enhancements to the urban social fabric of the city, particularly to create appealing new civic open spaces that will engage the residents along the waterfront and strengthen inland/upland communities' relationship. We commend the inclusion by the BIG Team of specific proposals to fund initiatives that seek to create greater access to economic opportunity for local residents, as well as those that would increase affordable housing production and preservation. In doing so, the BIG U expands the range of planning and policy ideas beyond flood protection to address ways we might achieve the shared vision for a more resilient, equitable and just city.

We urge HUD to select the BIG U as one of the Rebuild by Design proposals that will advance to the implementation phase and receive the requested allocation of federal Community Development Block Grant Disaster Recovery (CDBG-DR) funding for further project planning, including ongoing community engagement, for the entire BIG U geographic area, and implementation of a Phase One project.

Sincerely,



Damaris Reyes
Chair of LES Ready
Executive Director of GOLES



ASIAN AMERICANS FOR EQUALITY

108-110 Norfolk Street, New York, NY 10002
Tel: 212-979-3988 Fax: 212-979-9811 www.aafe.org

March 25, 2014

Honorable Shaun Donovan
Secretary, US Department of Housing and Urban Development
451 7th Street S.W.
Washington, DC 20410

Dear Mr. Secretary:

Asian Americans for Equality is pleased to write in support of the “BIG U,” a finalist proposal in the Rebuild by Design (RxD) competition sponsored by your agency, the US Department of Housing and Urban Development (HUD), which intends to award flood protection and disaster recovery funding for Hurricane Sandy-affected areas..

The interdisciplinary team of designers, engineers, planners and ecologists, led by BIG Architects, has proposed a flood protection concept that focuses on the heavily damaged areas of Chinatown and the Lower East Side of Manhattan. As you well know both from your current vantage point as HUD Secretary but also your years as NYC HPD commissioner, the Chinatown and LES communities contain some of the most economically vulnerable residential populations in Manhattan, as well as some of the oldest building stock which presents a whole set of issues around housing quality, housing preservation and code compliance.

We support the BIG Team’s proposed funding request for continued planning and community engagement along the entire length of the BIG U, as new flood protection and other resilience investments are an imperative in all of these vulnerable Manhattan waterfront neighborhoods.

We commend the inclusion by the BIG Team of specific proposals to fund initiatives that seek to create greater access to economic opportunity for local residents, as well as those that would increase affordable housing production and preservation. Specifically, we urge you to approve the request for \$50 million to replenish the Chinatown / Lower East Side Acquisition Fund, which you helped to establish while at HPD, to preserve at-risk private affordable rental housing in our communities. The Chinatown submarket continues to face considerable real estate market pressures that are putting the area’s remaining rental housing units affordable to low and moderate-income households at risk. Targeted housing preservation strategies such as the Acquisition Fund have proven to be an effective component of a public-private collaboration to address this pressing issue for our communities.

We urge HUD to select the BIG U as one of the Rebuild by Design proposals that will advance to the implementation phase and receive the requested allocation of federal Community Development Block Grant Disaster Recovery (CDBG-DR) funding for further project planning, including ongoing community engagement, for the entire BIG U geographic area, replenishment of the Chinatown / LES Acquisition Fund, and implementation of a Phase One flood protection infrastructure project.

Sincerely,



Thomas Yu, Managing Director
AAFE

**United States Department of the Interior**

NATIONAL PARK SERVICE
National Parks of New York Harbor
26 Wall Street
New York, New York 10005

IN REPLY REFER TO: (A40) NPNH

March 24, 2014

James Lima and Laura Starr
c/o BIG NYC
601 W. 26th St. Suite 1255
New York, NY 10001

Dear James and Laura,

The BIG U is an impressive imagining of a different approach to resiliency planning and design.

It is clear from the proposal that the BIG team and Rebuild by Design sponsors have undertaken extensive community and stakeholder engagement in the Sandy-affected communities of Manhattan during the research and planning phases of the Rebuild by Design process. This sort of highly collaborative approach to resilience planning and design reflects what the National Park Service is striving for in our own resiliency planning.

The BIG U proposal covers a geographic area that is a dense, diverse, critically important and vulnerable economic engine for the region and country. This area was hit hard by Hurricane Sandy in 2012. Hundreds of thousands of people live and work in these impacted Manhattan neighborhoods that extend from West 57th Street, along the Hudson River, down to The Battery and north along the East River to East 40th Street. Within these ten miles of flood-prone Manhattan waterfront, hundreds of millions of dollars in property damage and lost economic activity are at risk without new protections. The National Park Service is keenly aware of this as Castle Clinton National Monument, located on The Battery, was significantly impacted by Hurricane Sandy.

We understand the BIG Team's premise is that public investments in coastal resilience infrastructure post-Hurricane Sandy provides a unique opportunity for NYC to overlay enhancements to the urban social fabric of the city, particularly to create appealing new civic open spaces and strengthen upland communities' relationship and connections with their waterfront. As the National Park Service is working to improve public access to our sites – especially those closest to the harbor, we are cognizant of the need to engage the neighborhoods and communities that utilize public open spaces. We also commend the BIG Team for putting together a proposal that expands the range of planning and policy ideas beyond flood protection to address ways New York City might achieve the vision of a more resilient, equitable and just city.

The ideas and concepts about resiliency planning the BIG U advances deserve everyone's support, including the National Park Service, as the proposal moves through the application process for Community Development Block Grant Disaster Recovery funding.

Sincerely,

Joshua Laird
Commissioner
National Parks of New York Harbor

THE BATTERY CONSERVANCY



March 25, 2014

Honorable Shaun Donovan
Secretary, US Department of Housing and Urban Development
451 7th Street S.W.
Washington, DC 20410

Dear Mr. Secretary:

The Battery Conservancy (TBC) is pleased to support the "BIG U," one of ten finalist proposals in the federal Rebuild by Design competition that is being considered by the US Department of Housing and Urban Development (HUD) for flood protection and disaster recovery funding for Hurricane Sandy-affected areas. We understand that the Rebuild by Design competition was a recommendation of the President's Hurricane Sandy Rebuilding Task Force, which you chaired to identify ways to rebuild more resilient, sustainable, and vibrant communities in the flood-impacted areas of the Northeast.

The Battery, New York City's public park at the southern tip of Manhattan, was hit hard by Sandy's surge. As the leading advocate for The Battery's revitalization and the non-profit partner of the City of New York's Department of Parks & Recreation in maintaining and operating this essential public space, TBC is extremely excited by the BIG Team's ideas for protecting Lower Manhattan. We are eager to help develop the team's concept for a robust protective system of berms weaving through the park and connecting to adjacent sites. This infrastructure will enhance the park while protecting some of Lower Manhattan's most valuable economic assets, many of which were incapacitated by Hurricane Sandy.

The plaza at Pier A (western boundary of The Battery) and the cove alongside the Coast Guard site (eastern boundary of The Battery) acted as major inlets during the storm, allowing floodwaters to rush into lower Manhattan and shut down the nation's – and the world's – premier financial district. The BIG U's continuous curve of protection would plug these two major gaps along the coastline and join them to landscape features in the Battery, integrating essential infrastructure into a coherent, attractive, and economically productive waterfront. The enhanced Battery would buffer highly valuable commercial, residential, and infrastructural assets while continuing to serve local residents and workers as well as millions of visitors from around the world.

The BIG Team has already begun a remarkable process of engaging the varied stakeholders invested in this key to New York Harbor and New York City, including: federal (Coast Guard, National Parks Service, Environmental Protection Agency), state (Department of Transportation, Department of State), city (Department of Transportation, Department of Parks & Recreation, Mayor's Office of Long-Term Planning and Sustainability), Manhattan Community Board 1, and public-private partnerships (The Battery Conservancy, Alliance for Downtown New York, Hudson River Park Trust). We cannot lose this unprecedented opportunity to focus these many viewpoints on the challenges of storm surge and sea level rise for an area fundamental to the history, economy, and societal development of the United States.

The BIG U's engagement effort around the turn of the U echoes its continuing work throughout the full length of the U. TBC strongly endorses the team's proposal that funding be included for continued planning and community engagement. New flood protection and other resilience investments are an imperative in all of the vulnerable Manhattan waterfront neighborhoods that outline the U. The BIG U's proposal to work in consultation with local communities to integrate flood protection into quality of life enhancements that will strengthen New York City and its many neighborhoods is a natural fit for allocation of federal Community Development Block Grant Disaster Recovery (CDBG-DR) funds.

The Battery Conservancy
One Whitehall Street, 17th Floor, New York, NY 10004 T 212.344.3491 F 212.344.3496 E info@thebattery.org
www.thebattery.org

offers a unique opportunity to create appealing new civic open spaces and increased access to economic opportunity for local residents. The BIG U expands the range of planning and policy ideas beyond flood protection to address ways to achieve a shared vision for a more resilient, equitable, and just city.

The Battery Conservancy urges HUD to select the BIG U as one of the Rebuild by Design proposals that will advance to the implementation phase and receive the requested allocation of federal CDBG-DR funding for further project planning, including ongoing community engagement for the entire BIG U geographic area, along with implementation of a Phase One project.

Sincerely,



Hope Cohen
Chief Administration & Finance Officer

ALLIANCE FOR DOWNTOWN NEW YORK



Alliance for Downtown New York, Inc.
120 Broadway, Suite 3340
New York, NY 10271
212 566-6700 Fax 212 566-6707
www.DowntownNY.com

Jessica Lappin
President

March 25, 2014

Honorable Shaun Donovan
Secretary, US Department of Housing and Urban Development
451 7th Street S.W.
Washington, DC 20410

Dear Mr. Secretary:

On behalf of the Alliance for Downtown New York, which manages the Downtown-Lower Manhattan Business Improvement District, I am writing to express support of the "BIG U," one of ten finalist proposals in the federal Rebuild by Design (RxD) competition that is being considered by the US Department of Housing and Urban Development (HUD) for flood protection and disaster recovery funding for Hurricane Sandy-affected areas.

We understand that the Rebuild by Design competition was a recommendation of the President's Hurricane Sandy Rebuilding Task Force, which you chaired, to identify ways to rebuild more resilient, sustainable and vibrant communities in the flood-impacted areas of the Northeast.

The impact of the storm created significant challenges for Lower Manhattan, the nation's fourth largest central business district with 312,000 daily workers, nearly 60,000 residents, and 1,082 storefront businesses. The storm surge inundated many parts of Lower Manhattan below Chambers Street, including areas both in and out of Flood Zone A. Sewers and storm drains were overwhelmed, while tunnels, train stations and many buildings took on millions of gallons of water. The BIG U proposes a flood protection system along nearly ten miles of flood-prone Manhattan waterfront that was seriously impacted. The geographic area extends from West 57th Street along the Hudson River down to The Battery and north along the East River to East 40th Street.

The BIG U has done extensive community outreach throughout the research and planning process engaging residents and workers to understand the issues related to flood protection. We have seen lots of support for the BIG U's focus on integrating flood protection into the social fabric of the city with a goal of creating more resilient communities. Their proposal provides the best opportunity to address the challenges faced by Lower Manhattan.

We urge HUD to select the BIG U as one of the Rebuild by Design proposals that will advance to the implementation phase and receive the requested allocation of federal Community Development Block Grant Disaster Recovery (CDBG-DR) funding for further project planning, including ongoing community engagement, for the entire BIG U geographic area, and implementation of a Phase One project.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jessica Lappin".

Jessica Lappin
President

**Hudson River Park Trust**

March 25, 2014

Honorable Shaun Donovan
Secretary, US Department of Housing and Urban Development
451 7th Street S.W.
Washington, DC 20410

Dear Mr. Secretary:

Hudson River Park Trust is pleased to write in support of the “BIG U,” one of ten finalist proposals in the federal Rebuild by Design (RxD) competition that is being considered by the US Department of Housing and Urban Development (HUD) for flood protection and disaster recovery funding for Hurricane Sandy-affected areas.

The BIG U proposes a flood protection system along nearly ten miles of flood-prone Manhattan waterfront that was seriously impacted by Hurricane Sandy in 2012. The geographic area extends from West 57th Street along the Hudson River down to The Battery and north along the East River to East 40th Street.

Hudson River Park comprises the western section of the BIG U, stretching from West 59th Street to Chambers Street. Although the new park piers and esplanade were designed to ‘drip-dry’ and largely withstood the impact of the flooding, the Park’s other infrastructure was hit hard by Sandy. The utility infrastructure and older building were severely damaged by the sustained flooding with brackish water. The Park, which receives 17 million visits annually, was without lights for almost a year and still is finalizing its recovery.

The Trust met with the BIG Team and Rebuild by Design sponsors during the research and planning phases of the Rebuild by Design process. We appreciated the team’s emphasis on community engagement and its innovative designs that aim to protect the lower west side of Manhattan and Hudson River Park.

We urge HUD to select the BIG U as one of the Rebuild by Design proposals that will advance to the implementation phase and receive the requested allocation of federal Community Development Block Grant Disaster Recovery (CDBG-DR) funding for further

Madelyn Wils | President & Chief Executive Officer

Pier 40, 2nd Floor, 353 West Street, New York, NY 10014 • p: 212.627.2020 • f: 212.627.2021 • mwils@hrpt.ny.gov

www.hudsonriverpark.org

project planning, including ongoing community engagement, for the entire BIG U geographic area, and implementation of a Phase One project.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'Madelyn Wils', written in a cursive style.

Madelyn Wils
President & CEO

FRIENDS OF THE HIGHLINE



The Diller – von Furstenberg Building 820 Washington Street New York, NY 10014 (212) 206-9922 www.thehighline.org

March 25, 2014

Honorable Shaun Donovan
Secretary, US Department of Housing and Urban Development
451 7th Street S.W.
Washington, DC 20410

Dear Mr. Secretary:

Friends of the High Line is pleased to write in support of the “BIG U,” one of ten finalist proposals in the federal Rebuild by Design (RxD) competition that is being considered by the US Department of Housing and Urban Development (HUD) for flood protection and disaster recovery funding for Hurricane Sandy-affected areas.

The BIG U covers a geographic area that is dense and diverse, and is a critically important yet vulnerable economic engine for the region and country. We are pleased that the BIG Team and Rebuild by Design sponsors have undertaken extensive community and stakeholder engagement in the Sandy-affected communities of Manhattan during the research and planning phases of the Rebuild by Design process. We think it’s wise that the BIG Team proposal includes a funding request for continued planning and community engagement along the entire length of the BIG U.

We urge that that highly collaborative and consultative approach to resilience planning and design be funded through the Community Development Block Grant Disaster Recovery (CDBG-DR) program and continued during future phases of initiatives such as this one.

We support BIG Team’s premise that public investments in coastal resilience infrastructure post-Hurricane Sandy provides a unique opportunity for NYC to overlay enhancements to the urban social fabric of the city, particularly to create appealing new civic open spaces and strengthen upland communities’ relationship and connections with their waterfront. In doing so, the BIG U expands the range of planning and policy ideas beyond flood protection to address ways we might achieve the shared vision for a more resilient, equitable and just city.

We urge HUD to select the BIG U as one of the Rebuild by Design proposals that will advance to the next phase and receive the requested allocation of federal CDBG-DR funding for further project planning, including ongoing community engagement, for the entire BIG U geographic area, and implementation of a Phase One project.

Sincerely,

Peter Mullan
Executive Vice President
Friends of the High Line

Contact:
peter@thehighline.org
212-206-9922



100 YEAR FLOOD

HURRICANE SANDY
50 YEAR FLOOD

MEAN HIGH WATER

MEAN SEA LEVEL

MEAN LOW WATER



THE BIG TEAM WOULD LIKE TO THANK...

Secretary Shaun Donovan / US Department of Housing and Urban Development
Henk Ovink / Senior Advisor to Secretary Shaun Donovan, Principal, Rebuild by Design
Amy Chester / Project Manager, Rebuild by Design

Adam Wolff / NYC DCP
Alda Chan / NYC Parks, Planning and Parklands
Alejandro Baquero / Vice President, Development, NYCEDC
Alex T. Zablocki / New York City Regional Lead, CRZ Program
Alexis Taylor / Rebuild by Design
Alyssa Cobb Konon / Assistant Commissioner, Planning and Parklands, NYC Parks
Amelia Muccio / Hagerty Consulting
Andrew Breslau / Senior Vice President, Downtown Alliance
Andrew Fraiser / Partner, Foreign Legal Consultant, Allen & Overy
Anna Pycior / Communications Director & Community Liaison, Office of Assemblymember Brian Kavanagh
Assemblymember Brian Kavanagh / District 74
Barbara Koz Paley / Art Assets
Barbara Repeta / US National Parks Service
Bill Bernstein / Acting President and CFO, Downtown Alliance
Board Chair Gigi Li / CB3
Carolina Salguero / Director, Portside New York
Carrie Grassi / Senior Policy Advisor, NYC Mayor's Office
Carter Craft / Outside New York
Catherine McVay Hughes / Chairperson, CB1
Cecil House / General Manager, NYCHA
Charles Chesnutt / Coastal Engineer, United States Army Corps of Engineers
Chelsea Muller / Co-Lead New York City CRZ Program
Christine Datz-Romero / Executive Director, Lower East Side Ecology Center
Christopher Blanco / NYC OMB
Claudia Filomena / Co-Lead New York City CRZ Program
Connie Chung / Senior Analyst, HR&A, CRZ Program
Councilmember Daniel Garodnick / District 4
Councilmember Margaret Chin / NYC City Council, District 1
Courtney Smith / Rebuild by Design
Curtis Cravens / Senior Program Manager / NYC Mayor's Office
Damaris Reyes / Executive Director, GOLES
Dan Tainow / Director of Education, Lower East Side Ecology Center
Dan Zarrilli / Director of Resiliency, NYC Mayor's Office
Daniel J. Ackerman / Chief of Staff, Downtown Alliance, CRZ Program
David Kimball-Stanley / Press Secretary, Office of Daniel Garodnick
Deborah Helaine Morris / Director of Resiliency Planning, NYC HPD
Diana Switaj / Director of Planning and Land Use, CB1
District Manager Susan Stetzer / CB3

Douglas Pabst / EPA Region 2, Chief, Sandy Recovery Team
 Doug Sundstrom P.E.,CFM / Chief, Planning Branch - Engineering Services Division, U.S. Coast Guard
 Douglas McNevin / Program Director, NYCHA
 Emil Martone / EDC
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 Erik Bottcher / NYS Special Assistant to Governor Cuomo for Community Affairs
 Fred Sham / Director of Planning, Operations Downtown Alliance
 Giovania Tiarachristie / Planner, Pratt Institute
 Goldi Guerra / Occupy Sandy
 Heather Roiter / OEM
 Henk Ovink / Senior Advisor to Secretary Shaun Donovan, Principal, Rebuild by Design
 Hope Cohen / Chief Administration and Finance Officer, Battery Conservancy
 Ian Francis / Project Assistant, State of New York DOT
 Ingrid Gould Ellen / NYU Furman Center
 Jaclyn Sachs / HR&A, CRZ Program
 James Carrington / NYC Department of Transportation
 James Desimone / Chief Operations Officer, Staten Island Ferry
 Jamie Springer / Partner, HR&A Advisors, CRZ Program
 Jane K. Brogan / NYC OMB
 John Gendall / Rebuild by Design
 John Pilter / NPS, Director, Liberty and Ellis Island
 Joseph Musso / NYC HPD
 Josh Sawislak / US Department of Housing and Urban Development
 Joshua Laird / US National Parks Service
 Juan Camilo Osorio / Policy Analyst, NYC Environmental Justice League
 Julie Stein/ Project Manager, NYCEDC
 K. Diane Hoskins / Director of Government Relations, Restore America's Estuaries
 Kate Collington / Partner, HR&A, CRZ Program
 Kerri Culhane / Associate Director, Two Bridges Neighborhood Council
 Lauren Siciliano / Vice President - Strategic Investments Group, NYCEDC
 Lawrence V. Mauro / Capital Projects, NYC Parks
 LCDR Eric G. Para / Engineer Officer USCG Sector New York
 Leslie Peoples / Capital Projects, NYC Parks
 LESReady! Core Planning Group
 Lilah Mejia / Disaster Relief Coordinator, GOLES
 Linda Jones / Boardmember, CB3
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 Luis Calderon / Acting Director of Planning and Program Management, State of New York DOT
 Madelyn Wils / President CEO, Hudson River Park Trust
 Marc Boddewyn / Vice President Design and Construction, Hudson River Park Trust
 Margarita Lopez / NYCHA
 Mark Ginsberg / Principal - Curtis + Ginsberg Architects LLP
 Mark Kimball / NYC DCP
 Mark Mischak / Hagerty Consulting
 Mary Cooley / District Director, Office of Daniel Squadron
 Mary Rowe / Municipal Art Society
 Mary Weselcouch / Data Manager and Research Analyst, NYU Furman Center
 Matt Dixon / Capital Projects Division - Deputy Director, NYCHA
 Matthew Noltz / SVA, NYCHA
 Matthew Viggiano / Office of Margaret Chin
 Mauricio Pazmino / Community Liaison, Office of NY Senator Daniel Squadron
 Melinda Hanson / Rebuild by Design

Mercedes Narciso / Urban Planning Consultant, Pratt Institute
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Michael Marrella / Director - Waterfront and Open Space Planning, Department of City Planning
Michael Rosen / NYCHA
Murray Fisher / NYHF
Namshik Yoon / Chief of Operations Manhattan, NYC Parks
Nancy Prince / Deputy Chief for Design, Capital Projects, NYC Parks
Naomi Renek / Deputy Director - Federal Policy and Disaster Recovery, MTA
Nick Halstead / NYC Mayor's Office
Nicole Dooskin / Hudson River Park Trust
Nicolette Witcher / Vice President Environment and Education, Hudson River Park Trust
Pat Kirshner / VP Capital Operations, Brooklyn Bridge Park
Persephone Tan / District 1 Office Manager
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Robert Pirani / Hudson River Foundation, RPA
Rob Lane / RPA
Ron Wolfgang / President, Operations, Downtown Alliance
Roselle E. Henn / Environmental Team Leader, USACE
Rosie Mendez / Councilwoman District 2, New York City Council
Sam Carter / Rebuild by Design
Scott G. Davis / Director, Disaster Recovery and Special Issues Division , HUD
State Senator Daniel Squadron /
Suzan Rozen / Specialist Community Recovery, Red Cross
Todd M. Goldman / Manager, Regional Transportation Planning, PANYNJ
Tom McGuire / Assistant Commissioner, NYC Department of Transportation
Uchenna Madu / Director, Planning and Project Development, State of New York DOT
US Congressman Jerrold Nadler /10th District
US Congresswoman Nydia Velasquez / 7th District
Vin Cipolla / Municipal Art Society
Warrie Price / President, Battery Conservancy
William G. Smith II / Commanding Officer, US Coast Guard, Providence, R.I. Unit

Aixa Torres / Community Member
Alicia Gonzalez / Community Member
Allison Lace / Community Member
Alysha Lewis-Coleman / Community Member
Andrea Wenglowczyk / Community Member
Andrew Martini / Community Member
Andy Pugh / Community Member
Anthony Durran / Community Member
Anthony Feliciano / Community Member
Blanca Frangui / Community Member
Brenda Siders / Community Member
Campbell Jangles / Community Member
Candace Eng / Community Member
Candida Rodriguez / Community Member
Carlina Rivera / Community Member
Carmen Figuerra / Community Member
Carmen L Negron / Community Member

Carmen Yurs / Community Member
Carmon Quinones / Community Member
Tanya Castro / Community Member
Chelsea Kelley / Community Member
Christine Bookin / Community Member
Christy Yanis / Community Member
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Cynthia Bonano / Community Member
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D Benize / Community Member
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Dammy Lee / Community Member
Dan Meyers / Community Member
Dan Tardin / Community Member
Danny Chang / Community Member
Dario Quinsac / Community Member
Debrella Neshitt / Community Member
DeReese Huff / Community Member
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Elaine Hoffman / Community Member
Elisa Espimdu / Community Member
Elizabeth Keene / Community Member
Emmanuelle Cuny-Diaz / Community Member
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Erma Campbell / Community Member
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George Carmona / Community Member
Ginger Lopez / Community Member
Gladys Feliziano / Community Member
Gloria Chao / Community Member
Gloria Quenores / Community Member
Goldi Guerra / Community Member
Grace Mak / Community Member
Grusel Castro / Community Member
Hasan / Community Member
Hoffman / Community Member
Holland / Community Member
Ing Yuan / Community Member
Ing Yuen / Community Member
Jacob Ley / Community Member
James Rogers / Community Member
James Saracini / Community Member
Jamie Rogers / Community Member
Jan Werner / Community Member
Jenica Santana / Community Member
Jesus Salas / Community Member
Joann Wypingewski / Community Member
Joe Dolice / Community Member
Joel Kolkmonn / Community Member

John Von Hartz / Community Member
Johnny Johnson / Community Member
Jon Keller / Community Member
Jose A Sanchez / Community Member
Joseph Garba / Community Member
Joseph Puma / Community Member
Joy Luaryphaky / Community Member
Juliana Dutasly / Community Member
Justine Shapiro-Kline / Community Member
Kamala Mottl / Community Member
Karen Lee / Community Member
Kathy Gruber / Community Member
Kathy Von Hartz / Community Member
Katie Brennan / Community Member
Laura Timme / Community Member
Lawrence Breedlove / Community Member
Lily Fu / Community Member
Liz Flock / Community Member
Liz Go / Community Member
Lorraine Vega / Community Member
Louis Kleinman / Community Member
Lozano M / Community Member
M Callahan / Community Member
Madelyne Hidalgo / Community Member
Mae Lee / Community Member
Maia Harris / Community Member
Mak / Community Member
Marcela Medina / Community Member
Maria Crez / Community Member
Maritsa Moreles / Community Member
Maryann Khahazi / Community Member
Mauricio Pazmino / Community Member
Max Dopsch / Community Member
Melena Malha / Community Member
Melissa Aase / Community Member
Michael Steele / Community Member
Miguel Rodriguez / Community Member
Mike Shopong / Community Member
Milogry Lours / Community Member
Miriam Corda / Community Member
Nancy Ortiz / Community Member
Nathalie Alegre / Community Member
Nydia Vasquee / Community Member
Olga Calderon / Community Member
Olga Rivera / Community Member
Patrick Chong / Community Member
Paula Jaimez / Community Member
Pedro Cardi / Community Member
Persephone Tan / Community Member
Ramona Paubino / Community Member
Ricarda Soto / Community Member
Robin Hermann / Community Member

Ron Hine / Community Member
Sam / Community Member
Sam Jimenez / Community Member
Sandra Along / Community Member
Sandra Alonto / Community Member
Sara Romanoski / Community Member
Sharon Vega / Community Member
Sheila Rodriguez / Community Member
Shelly / Community Member
Shirley Yanis / Community Member
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Silvia Torres / Community Member
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Sonia Kirkland / Community Member
Sonia Virland / Community Member
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Teresa Dean / Community Member
Teresa Pedroza / Community Member
Tessa Huxley / Community Member
Trever Holland / Community Member
Tyan Alonzo / Community Member
Udo Drescher / Community Member
Umberto Yanis / Community Member
Vaylateera Jones / Community Member
Victor Hui / Community Member
Vince DeCapio / Community Member
Wendy Brawer / Community Member
Willie O Riveve / Community Member
Wilson Lee / Community Member
Wo Kwomku / Community Member
Xuan Qiongyu / Community Member
Yanis / Community Member
Yuan Etzh / Community Member

Team OMA, RxD

Team HR&A Advisors

Team Interboro, RxD

Team PennDesign/Olin, RxD

Team MIT/ZUS, RxD

Team Sasaki/Rutgers/Arup, RxD

Team SCAPE, RxD

Team WXY/West 8, RxD

Team WB Unabridged/Yale/Arcadis, RxD

TEAM

BIG

Bjarke Ingels
Kai-Uwe Bergmann
Thomas Christofferson
Iben Falconer
Jeremy Alain Siegel
Daniel Kidd
Kurt Nieminen
Sun Yifu
Dammy Lee
Chooghyo Lee
Jack Lipson
David Spittler
Kenneth Amoah
David Dottelonde
Blake Smith
Hector Garcia
Ricardo De Palma
Daisy Zhang
Yaziel Jaurbe
Taylor Hewitt
Patricia Correa Velasquez

ONE Architecture

Matthijs Bouw
Ivo de Jeu

Starr Whitehouse

Laura Starr
Stephen Whitehouse
Jeffrey Poort
Andrea Parker
Melon Wedick
Brian Schundler
Nina Hatch
Julia Price
Joseph Salas
Wendy Andringa
Ashley Wolff

James Lima Planning + Development

James Lima

Buro Happold

Craig Schwitter
Erleen Hatfield
Steven Baumgartner
Angie Neefus

Level Infrastructure

Byron Stigge

Arcadis

Peter Glus
Roni Deitz

Green Shield Ecology

Christina Kaunzinger

AEA Consulting

Adrian Ellis
Daniel Payne
Cathy Li

Project Projects

Prem Krishnamurthy
Aileen Kwun

School of Constructed Environments at

Parsons the New School for Design

Andy Bernheimer, Director, Masters Program
Veronica Acosta
Guilherme Arnon
Rose Botholmey
Megan Hershman
Rebecca Rand
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Vera Leung
Jessica Kwok
Oni Lloyd
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CONTACT



BIG - Bjarke Ingels Group
Contact: Jeremy Alain Siegel

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