

NYC Emergency Management- Community Preparedness

NYC EMERGENCY MANAGEMENT is a City agency that offers a variety of tools and training to help communities be more prepared. To learn more visit nyc.gov/emergencymanagement or call 311.

How Can Gowanus be More Resilient?

KNOW YOUR ZONE EVACUATION ZONE FINDER: Evacuation zones are designated based on risks associated with hurricanes, tropical storms, and nor'easters. nyc.gov/knowyourzone

NOTIFY NYC: Official source of information about emergencies and services. Sign up for free alerts through email, text, twitter. nyc.gov/notifynyc.

ADVANCE WARNING SYSTEM (AWS): Organizations that serve people with disabilities or access/functional needs can register for AWS for hazard and emergency information. advancewarningsystemnyc.org.

NYC CITIZEN CORPS: A community readiness program for nonprofits and locally-based organizations. Build your capacity to prepare for and respond to emergencies by joining the Citizen Corps network. nyc.gov/citizencorps.

COMMUNITY EMERGENCY RESPONSE TEAM (CERT): members are trained in basic skills needed for fire safety, light search and rescue, disaster medical operations, and traffic control. CERT members assist first responders and help prepare their communities. nyc.gov/cert.

PARTNERS IN PREPAREDNESS: helps organizations prepare their employees, services, and facilities for disasters. Once registered, partners gain access to events and webinars and receive other preparedness resources. nyc.gov/partnersinpreparedness

The **READY NEW YORK** campaign encourages New Yorkers to be ready for all types of emergencies. Anyone can complete a readiness workbook, request an event or guide (in 13 languages and audio guides) to educate their community about preparedness.



Notify **NYC**

NYC Emergency Management
ADVANCE WARNING SYSTEM

NEW YORK CITY
citizen★*corps*



READY
NEW YORK

What Makes a Building Flood Resilient?

In order to be flood resilient a building must locate living spaces and critical systems above the DFE and utilize flood resilient materials that inhibit mold growth. **Older buildings are generally not designed to withstand a flood event without significant and sometimes costly retrofits. New or substantially improved buildings must follow requirements to ensure that expected flooding events will not damage them or endanger residents.**

The Department of City Planning released the **Flood Resilience Zoning Text Amendment** which was adopted on a temporary, emergency basis. The text amendment allows buildings to rebuild and retrofit according to FEMA and NYC Building Code standards and includes the following zoning solutions to facilitate retrofitting and resilient redevelopment:

- measuring building height from latest FEMA flood elevations,
- accommodating building access from grade,
- locating mechanical systems above flood levels, and
- accommodating off-street parking above grade.

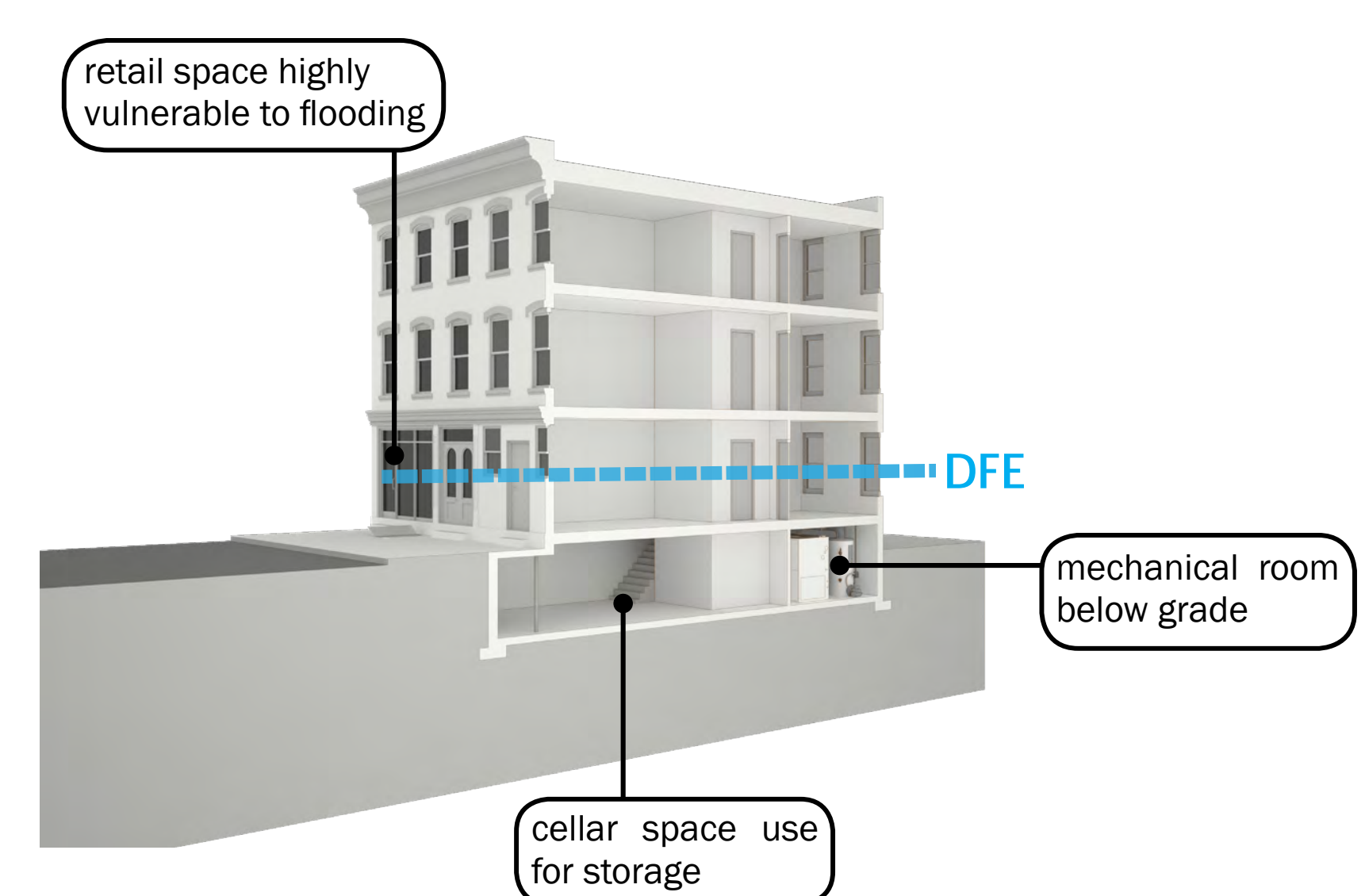
Existing Buildings

Many existing buildings in the floodplain have ground floors partially located below the DFE which can place residential units at risk from flooding. Below grade spaces such as basements and cellars can also include critical systems such as boilers and electric panels. **To meet FEMA regulations, building owners have to fill in below grades spaces and relocate critical systems to above the DFE or enclose them in a watertight vault.**

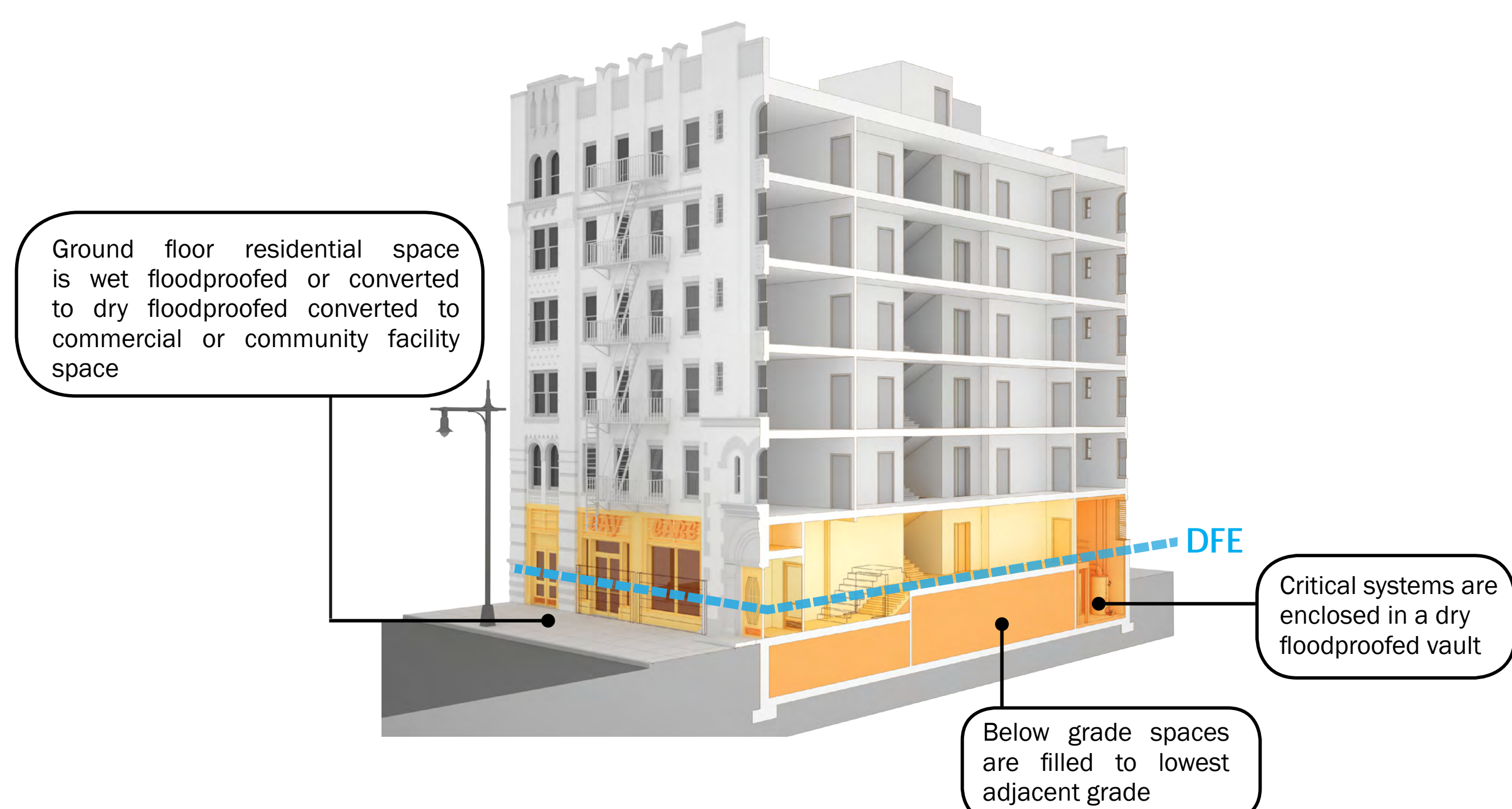
Mid-rise Apartment building



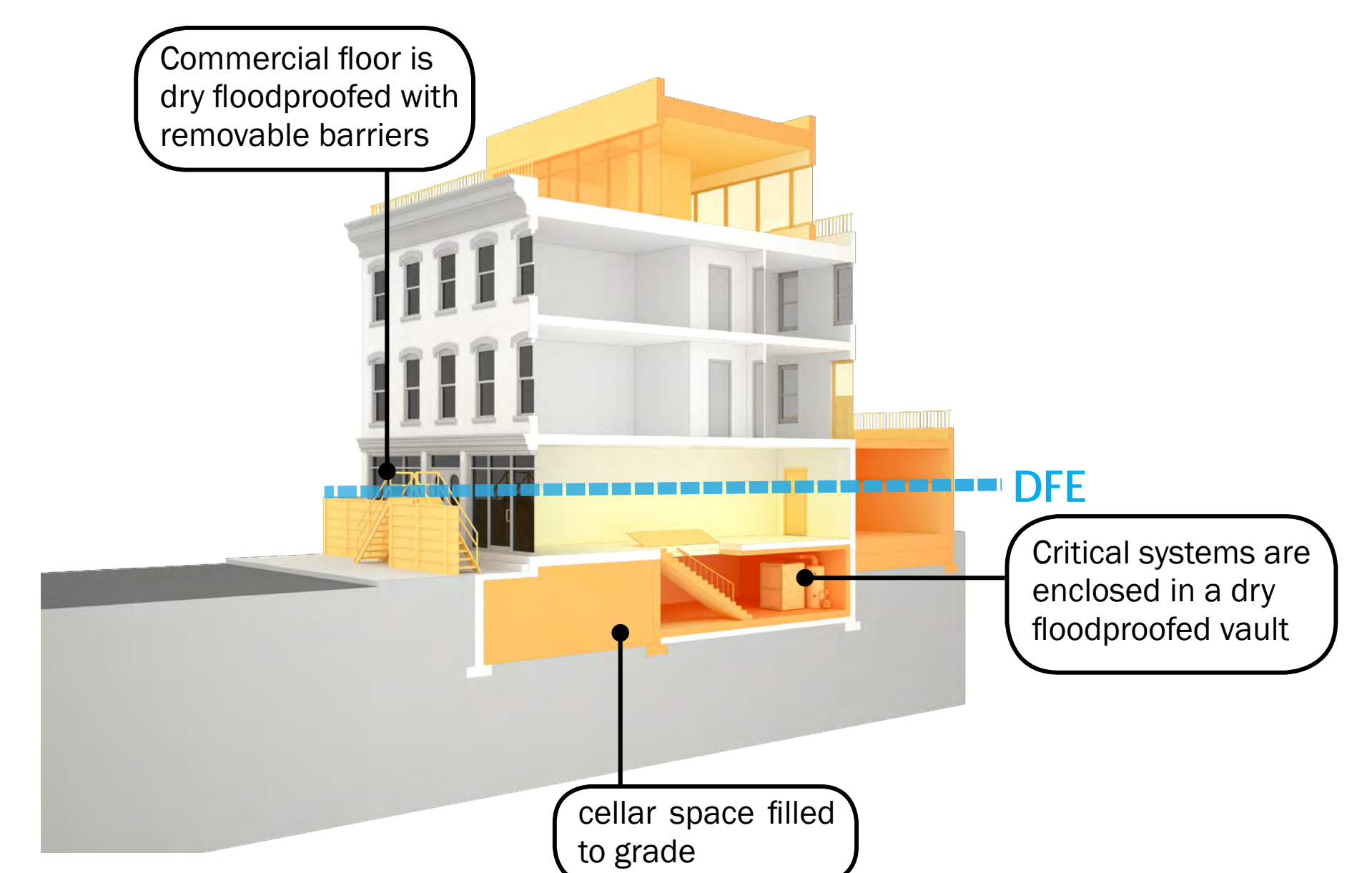
Low-rise mixed use building



Mid-rise Apartment building retrofit

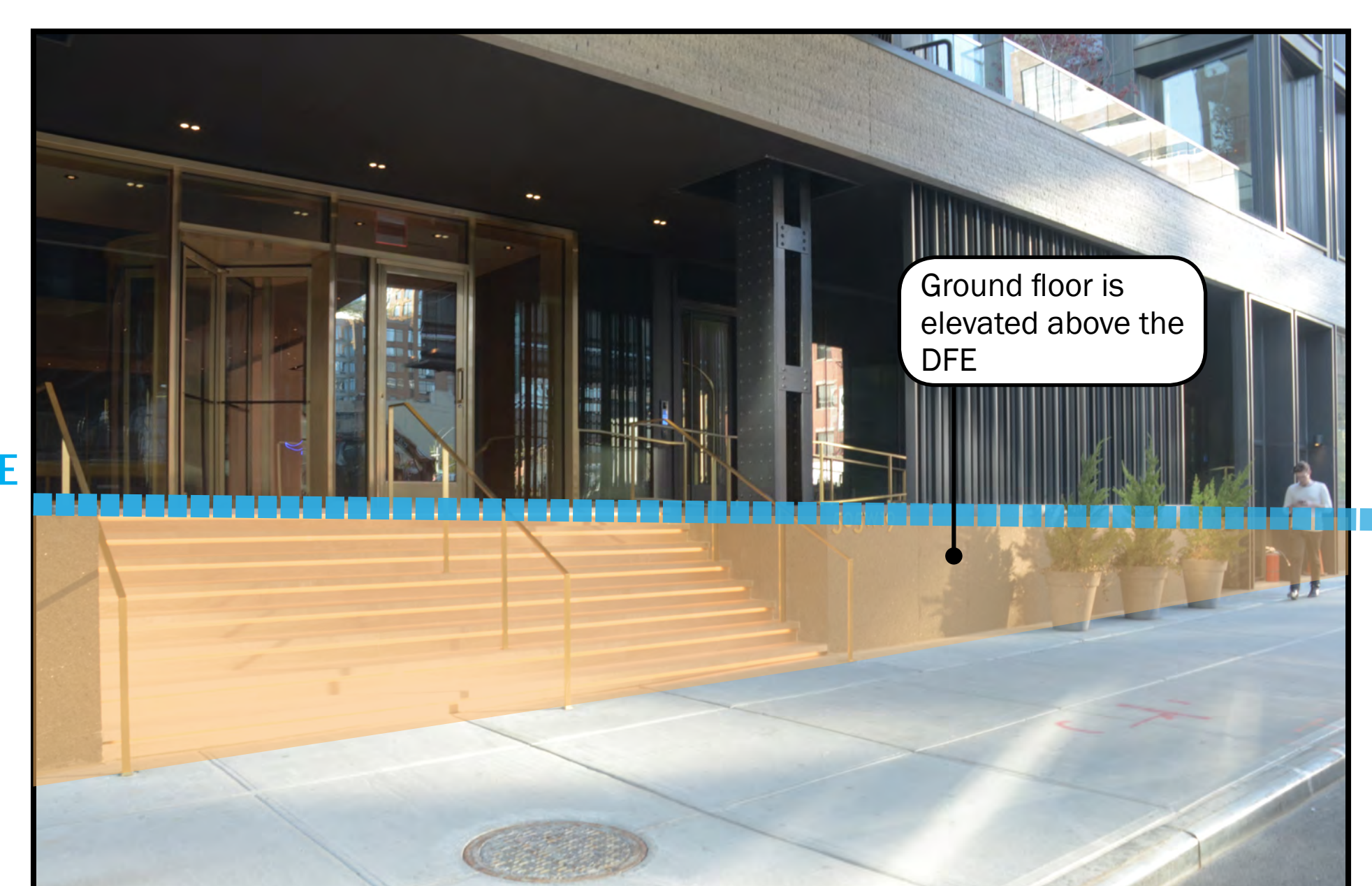
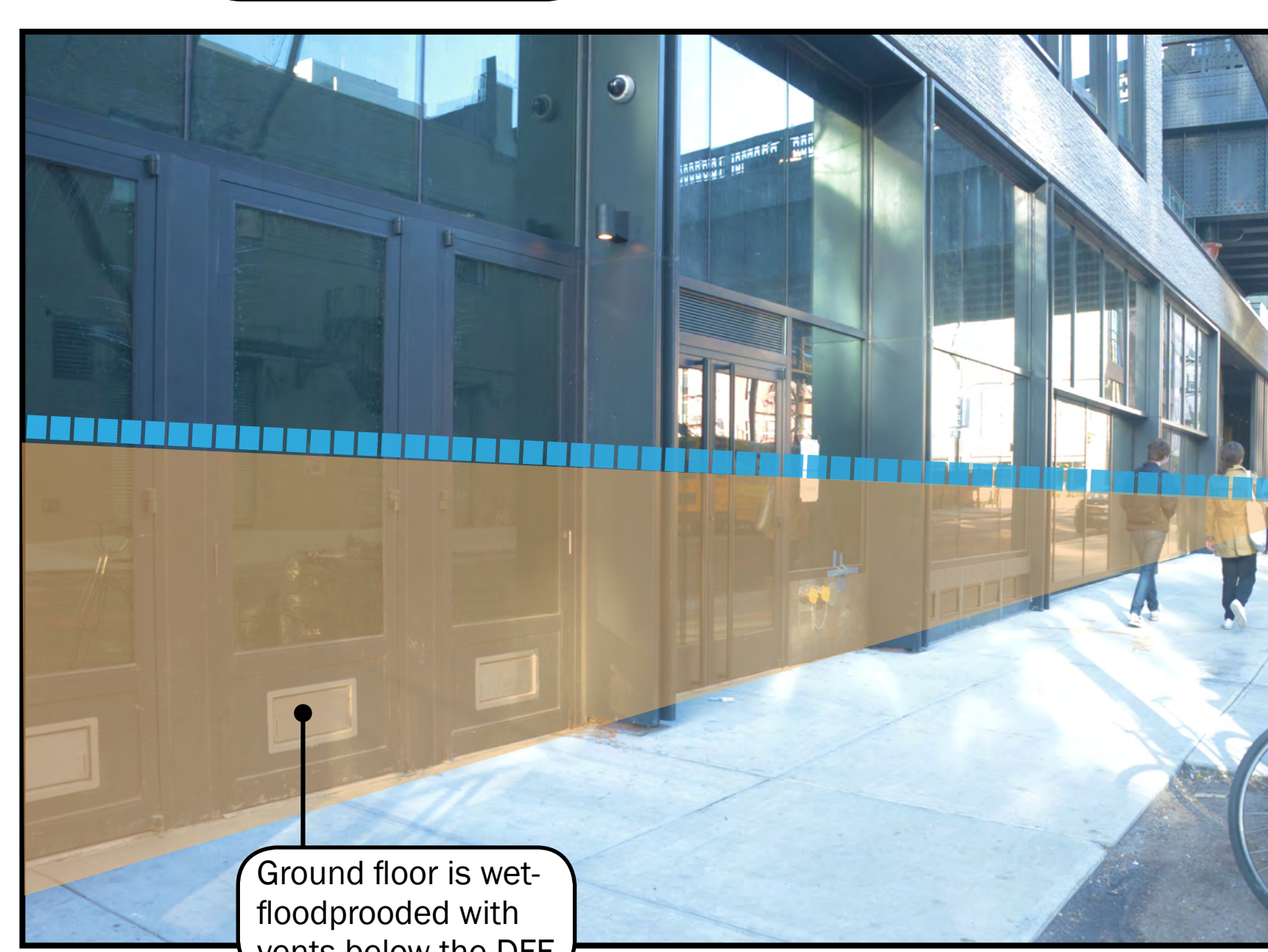


Low-rise mixed use building retrofit

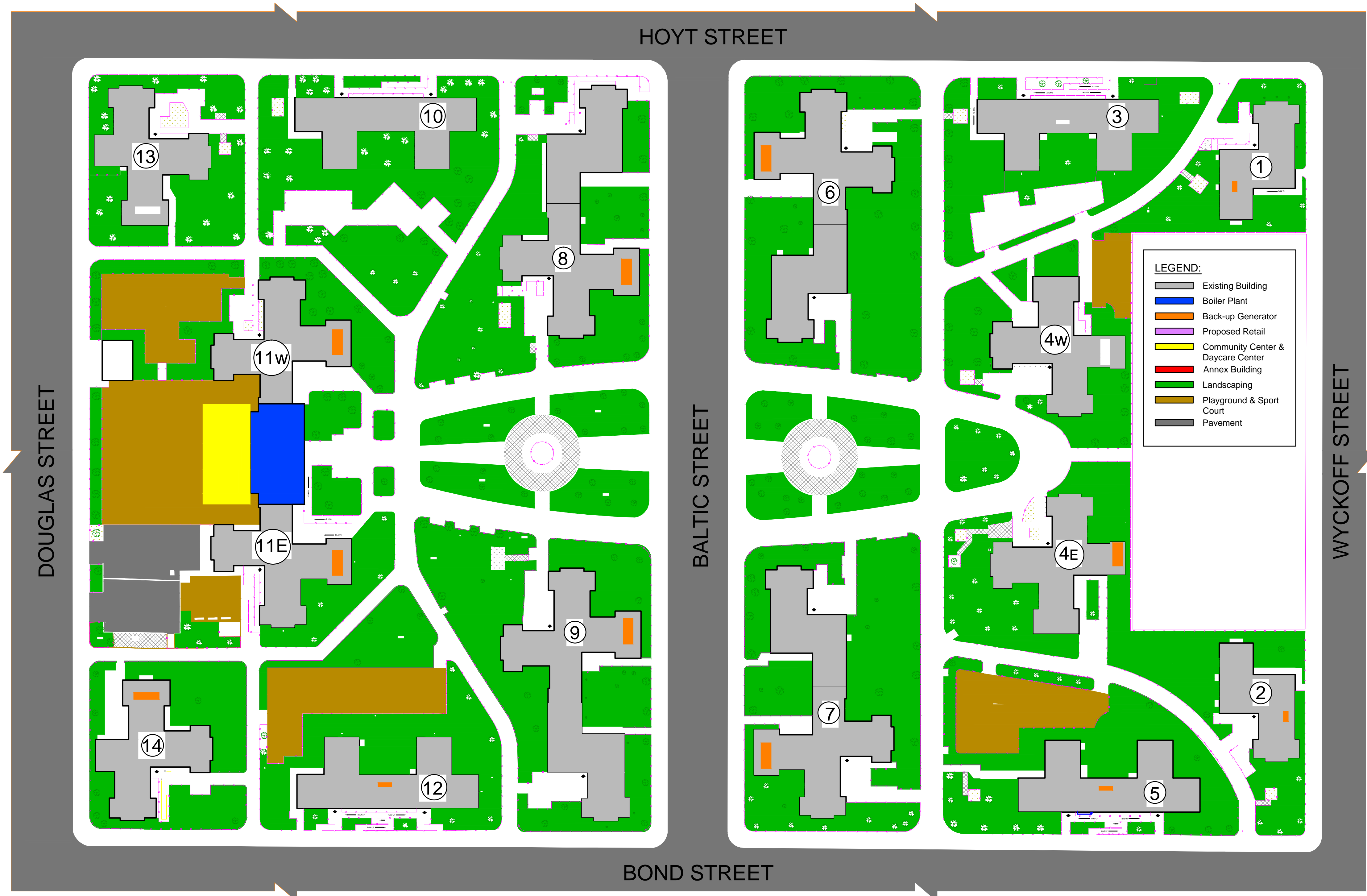


New Construction

New buildings throughout the city's floodplains are required to build to flood resilient standards as outlined by Appendix G of the NYC Building Code. **Residential uses are elevated above the DFE and storage and parking are wet-floodproofed.**



NYCHA Gowanus Houses



CAPITAL PROJECTS
DIVISION
RECOVERY AND RESILIENCE

GOWANUS HOUSES
Brooklyn, NY
Conceptual



NEW YORK CITY HOUSING AUTHORITY
SANDY RECOVERY PROGRAM MANAGEMENT OFFICE

Sandy Recovery Program
Permanent Repairs

Development	Current estimated allocation necessary for FEMA scope	Total #	Districts							
			Residential Buildings	Apartments	Population	Acreage	Congressional	State Assembly	State Senate	City Council
GOWANUS	\$ 99,285,000		16	1,137	2,728	12.57	7	52	25	33
Est. Construction Start*	Q1-17	# of Damaged Bldgs. funded by FEMA**	12	934	2,231					
FEMA 428 Scope										
<ul style="list-style-type: none"> Site Restoration (sidewalks, asphalt resurfacing, fencing & ground fill to positive drain, etc...) of Sandy damaged areas as well as any areas that may be affected by construction Full roof replacement at damaged buildings Repair & restore architectural features doors, frames & hardware of common areas damaged by flooding Restoration of Sandy damaged portions of mechanical, electrical & plumbing systems CCTV & Layered Access Systems(LAC) at damaged buildings Installation of stand-by generators to provide full back-up power at damaged buildings Partial replacement of underground conduits & full site lighting Abate & restore building crawl spaces at damaged buildings New & existing electrical rooms to house new C/T cabinets at damaged buildings(Development not in flood zone) 										

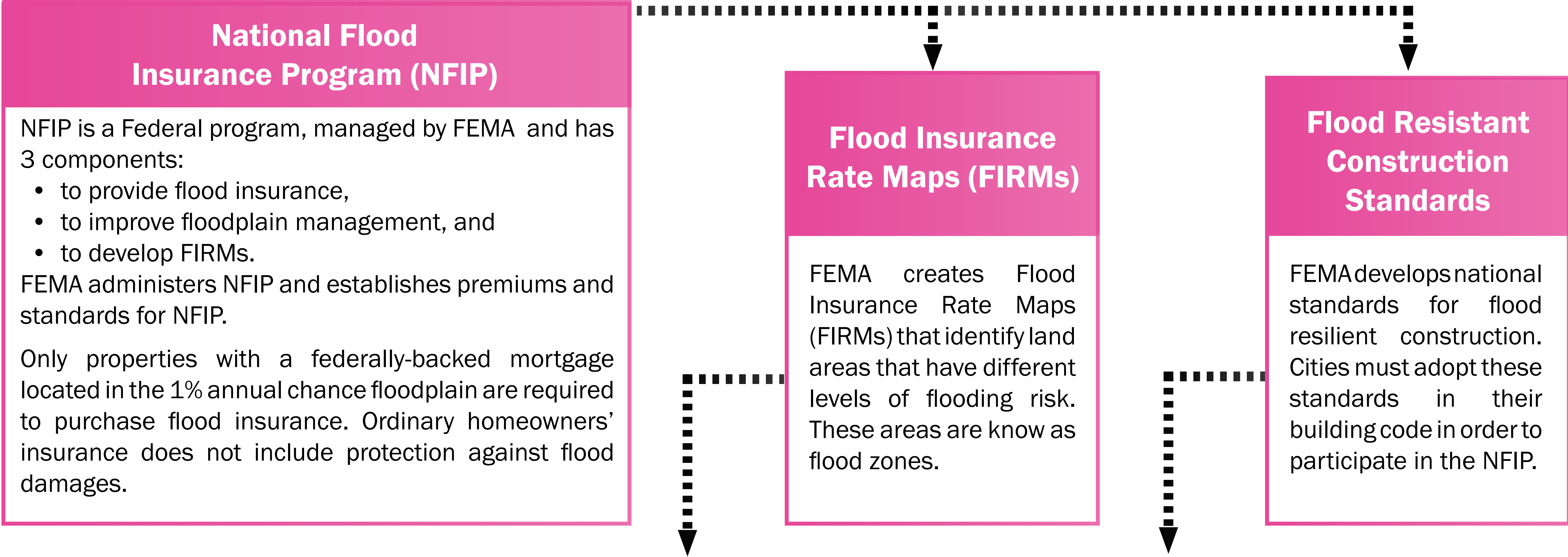
DFE - Design Flood Elevation

* These are estimated dates and are subject to change


**The determination of whether a building was damaged by Sandy and eligible for funding was made by FEMA

How are buildings in the floodplain regulated?

Federal Emergency Management Agency (FEMA) Regulations




Local NYC Regulations



NYC Building Code

Appendix G of the NYC Building Code requires that all new buildings or substantial improvements within the 1% annual chance floodplain meet FEMA requirements for flood resilient construction.



NYC Zoning Resolution

Following Sandy, the Department of City Planning developed a citywide **Flood Resiliency Zoning Text Amendment** which was adopted in 2013 on a temporary, emergency basis. The amendment modified regulations to allow buildings the flexibility to rebuild and retrofit according to FEMA and NYC Building Code standards.

Could a storm surge barrier prevent flooding from the Gowanus Canal?

Study Purpose and Goals

The areas surrounding the Gowanus Canal are low lying and vulnerable to coastal flooding. During Hurricane Sandy, canal waterways were overtopped, leading to extensive flooding in the Gowanus, Red Hook and Sunset Park neighborhoods. The City commissioned a study with the following goals.

Goals:

- Identify a flood protection strategy that benefits communities in the study area
- Produce a study that complements and informs City and USACE planning activities
- Understand how the project could:
 - enhance water quality and ecology
 - increase public access to and recreational enjoyment of the waterfront
 - strengthen physical connections between neighborhoods
 - promote appropriate development of upland areas

Key Findings:

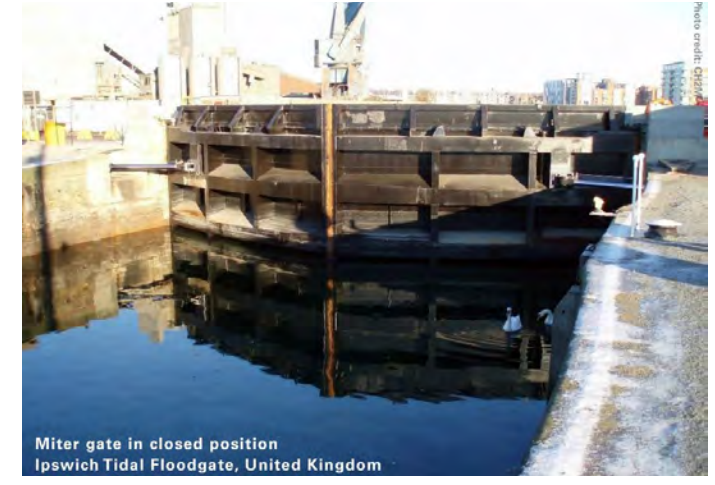
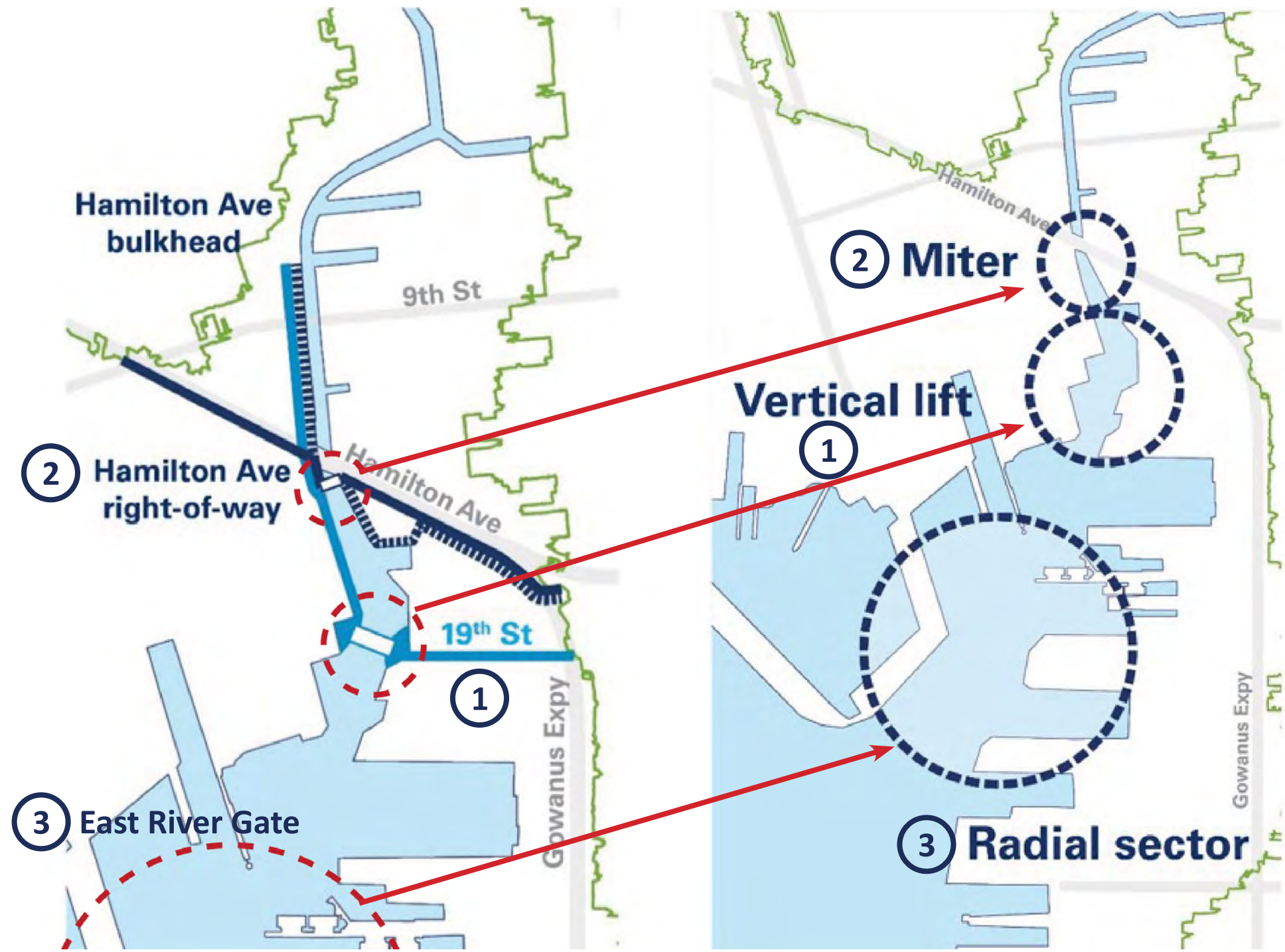
- Flood defense system could be designed for the 500-year flood event
- Would have minimal impacts on tidal exchange with East River
- Pumping stations would be required for interior rainwater
- Future studies should further consider benefits beyond avoided damages, such as lower insurance premiums & increased property values



Next Steps:

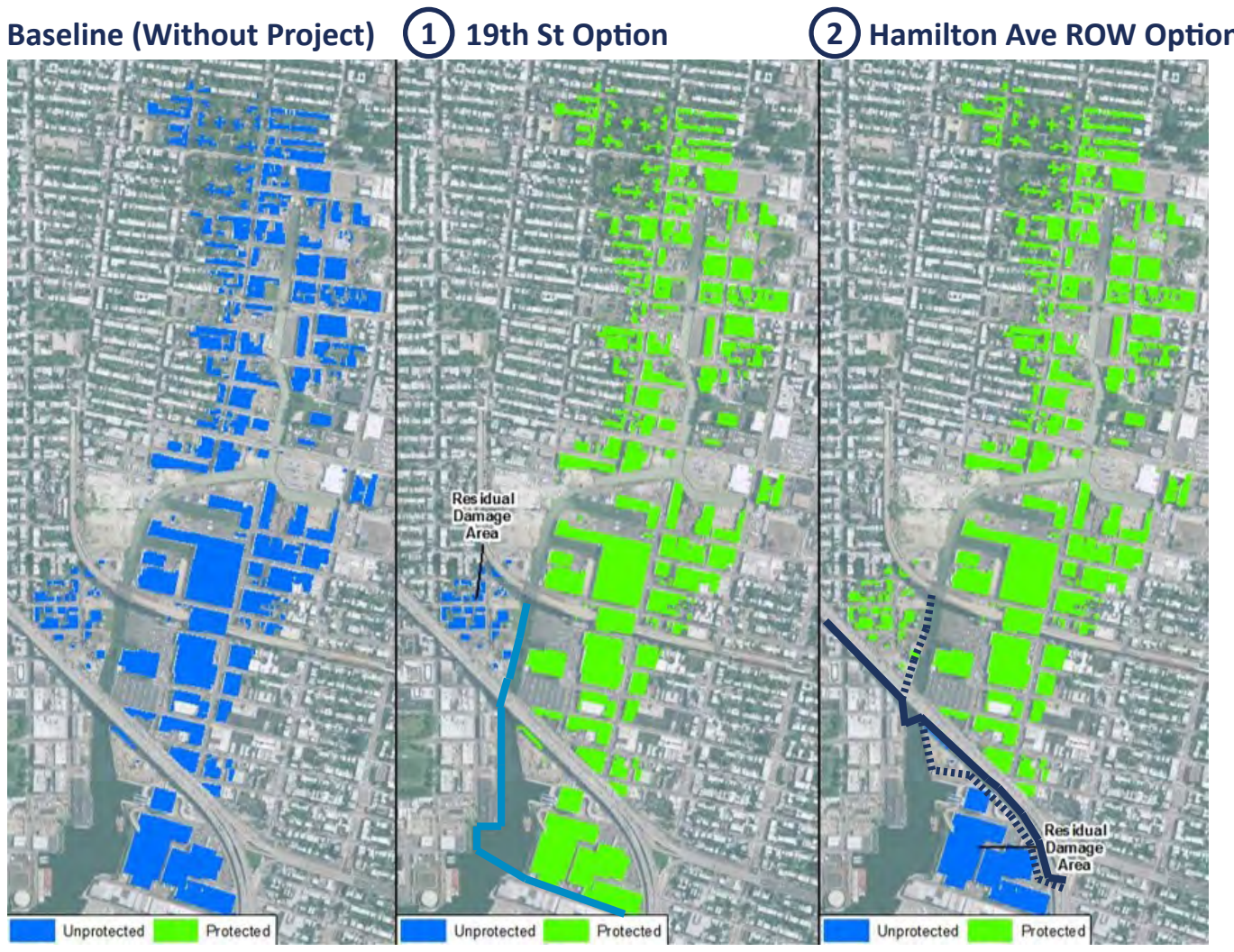
- Transfer all study data to USACE
- Advocate for Gowanus Canal to be a Focus Area for additional study in the New York-New Jersey Harbor and Tributaries Study

Barrier Locations and Types (3 Options)



② Miter
① Vertical Lift
③ Radial Sector

Storm Surge Impacts



Concept Option Evaluation

Criterion	② Hamilton Ave		
	① 19th St	bulkhead	right-of-way
Cost			
Total cost	Yellow	Green	Green
Ability to leverage other investments	Yellow	Green	Green
O&M costs	Red	Red	Yellow
Benefit			
Protects jobs	Green	Yellow	Yellow
Protects homes	Green	Green	Green
Utilizes green infrastructure	Grey	Grey	Grey
Minimizes impact on public safety	Yellow	Yellow	Red
Reliability			
Extent of in-place vs deployable barriers	Yellow	Green	Red
Number of responsible parties	Red	Red	Green
Complexity of legal/planning approvals	Red	Red	Green
Implementation			
Disrupts access for residents & businesses	Red	Yellow	Green
Maintains view corridors	Grey	Grey	Grey
Maintains waterfront access	Grey	Grey	Grey
Improves neighborhood connections	Yellow	Yellow	Yellow
Reliance on third-party commitments	Grey	Grey	Grey
Potential tie-in to Red Hook IFPS	Green	Green	Green

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was New York Long Island State Plane FIPSZONE 3104. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NIMS-512
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3182
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was provided in digital format by the Department of Information Technology and Telecommunication, City of New York (DoITT). This information was derived from digital orthophotos produced at a scale of 1:1,200 with 2-foot pixel resolution from photography dated April 2008.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

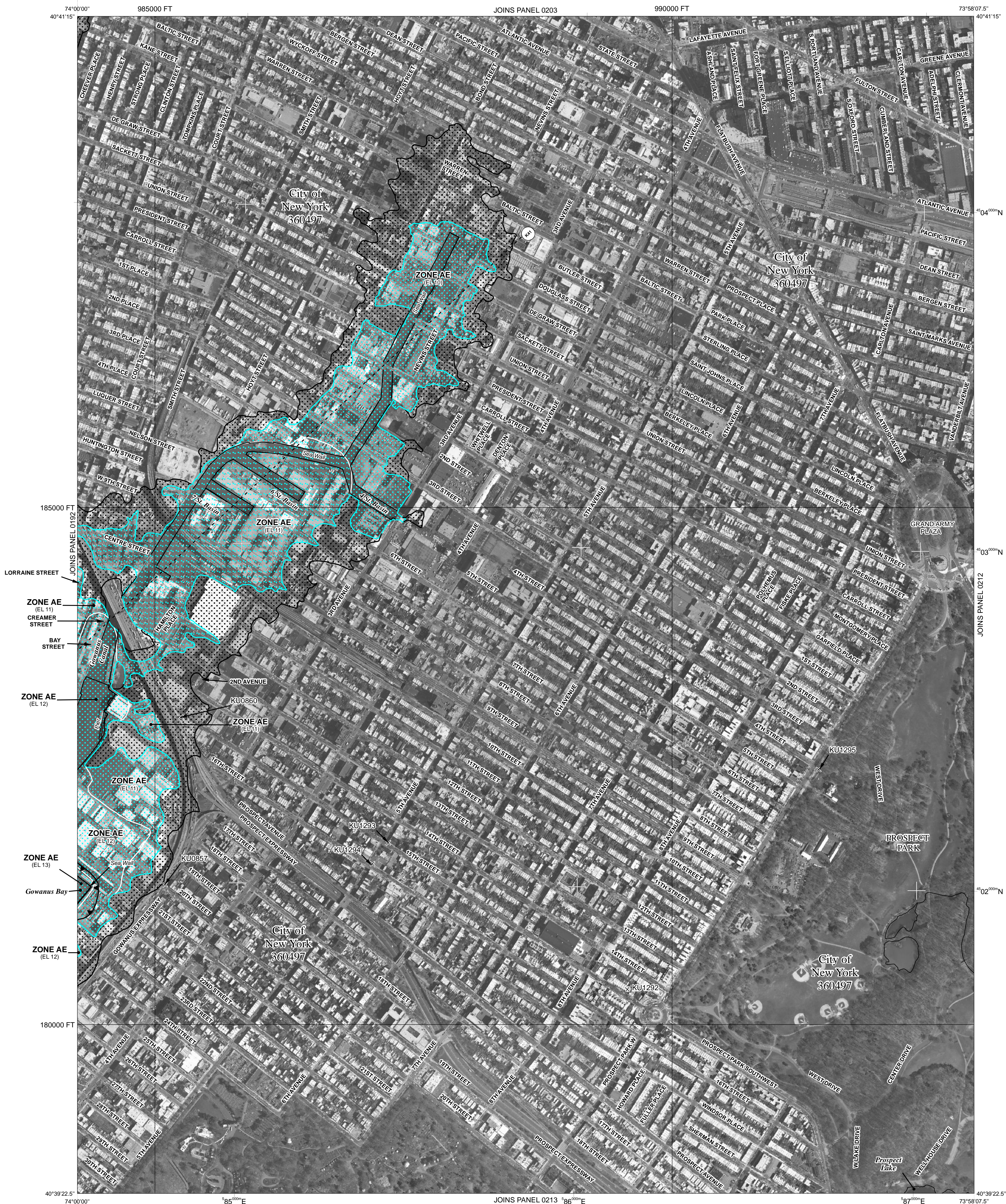
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LIMWA)**. The LIMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LIMWA (or between the shoreline and the LIMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip>.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AD** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decommissioned. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AB9** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

Limit of Moderate Wave Action

Base Flood Elevation line and value: elevation in feet* (EL 987)

* Referenced to the North American Vertical Datum of 1988

Cross section line

Transit line

Culvert, Flume, Penstock or Aqueduct

Road or Railroad Bridge

Footbridge

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

1000-meter Universal Transverse Mercator grid values, zone 18

60000 FT

5000-foot grid values: New York State Plane coordinate system, Long Island zone (FIPSZONE 3104), Lambert Conformal Conic projection

Bench mark (see explanation in Notes to Users section of this FIRM panel)

• M1.5 River Mile

MAP REPOSITORY

Refer to listing of Map Repositories on Map Index

INITIAL NFIP MAP DATE
June 28, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS
June 11, 1978

FLOOD INSURANCE RATE MAP EFFECTIVE
November 16, 1983

FLOOD INSURANCE RATE MAP REVISIONS

For descriptions of revisions see Notice to Users page in the Flood Insurance Study report.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0211G

FIRM

FLOOD INSURANCE RATE MAP

CITY OF, NEW YORK

BRONX, RICHMOND, NEW YORK, QUEENS, AND KINGS COUNTIES

PANEL 211 OF 457
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
NEW YORK, CITY OF	360497	0211	G

PRELIMINARY
DECEMBER 5, 2013

Notice to Users: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

FEDERAL EMERGENCY MANAGEMENT AGENCY

MAP NUMBER
3604970211G

MAP REVISED