Zoning for Coastal Flood Resiliency

Update and Summary of Preliminary Recommendations

Bronx Community Board 1, Economic Development, Land Use, and Housing Subcommittee

September 11th, 2019
Hurricane Sandy

Port Morris

Source: dna.info

City Island

Source: dna.info

Hunts Point

Source: Bronx Ink

Locust Point

Source: Daily News
A more resilient NYC is one where neighborhoods, buildings and infrastructure can withstand and recover quickly from flooding and climate events.

Coastal defenses are strengthened as first line of defense against flooding and sea level rise.

Buildings are designed to withstand and recover from flooding.

Infrastructure is protected from climate hazards.

Residents and businesses are prepared.
Introduction
DCP’s work since Hurricane Sandy

2012 Hurricane Sandy

Zoning Text (emergency-basis)

2013 “Flood Text 1” Temporary Rules

Research & Outreach Process

2015 “Recovery Text” Temporary Rules


Community Outreach + Workshops (2016-2018)

Proposal (permanent-basis)

Zoning for Coastal Flood Resiliency (2019)
# Flood Risk in the Bronx

NYC’s flood risk is high.

The floodplain affects a large geography and most community boards and council districts.

The vast majority of the floodplain is already developed.

<table>
<thead>
<tr>
<th></th>
<th>1% annual chance floodplain (high risk)</th>
<th>0.2% annual chance floodplain (moderate risk)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citywide Total # of Lots</td>
<td>65,582</td>
<td>36,723</td>
<td>102,305</td>
</tr>
<tr>
<td>Bronx Total # of Lots</td>
<td>3,536</td>
<td>3,389</td>
<td>6,925</td>
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</tbody>
</table>

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<thead>
<tr>
<th></th>
<th>1% annual chance floodplain (high risk)</th>
<th>0.2% annual chance floodplain (moderate risk)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citywide Total # of Buildings</td>
<td>80,907</td>
<td>44,636</td>
<td>125,539</td>
</tr>
<tr>
<td>Bronx Total # of Buildings</td>
<td>6,055</td>
<td>3,922</td>
<td>9,977</td>
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</tbody>
</table>
Flood Risk Bronx CD 1

1% Annual Chance Floodplain (High Risk)

0.2% Annual Chance Floodplain (Moderate Risk)
Building typologies in the Bronx floodplain

- Residential-detached
- Residential-attached and semi-attached
- Residential-bungalow
- Industrial
- Commercial and Mixed Use
Flood Risk Bronx CD 1: Land Use

In both the high and moderate risk floodplains, the majority of land use is manufacturing, followed by multifamily residential, mixed use, and other.

### High Risk

<table>
<thead>
<tr>
<th>Buildings in Floodplain</th>
<th>Number</th>
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<tbody>
<tr>
<td>Total</td>
<td>316</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>178</td>
</tr>
<tr>
<td>Commercial Only</td>
<td>19</td>
</tr>
<tr>
<td>Mixed Use Buildings</td>
<td>39</td>
</tr>
<tr>
<td>Semi Detached Homes</td>
<td>3</td>
</tr>
<tr>
<td>Attached</td>
<td>1</td>
</tr>
<tr>
<td>Campus Complex</td>
<td>6</td>
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</table>

### Moderate Risk

<table>
<thead>
<tr>
<th>Buildings in Floodplain</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>460</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>219</td>
</tr>
<tr>
<td>Commercial Only</td>
<td>41</td>
</tr>
<tr>
<td>Mixed Use Buildings</td>
<td>60</td>
</tr>
<tr>
<td>Semi Detached Homes</td>
<td>15</td>
</tr>
<tr>
<td>Attached</td>
<td>4</td>
</tr>
<tr>
<td>Campus Complex</td>
<td>26</td>
</tr>
</tbody>
</table>

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0 Buildings

0 Detached Homes

0 Semi Detached Homes

0 Attached

0 Campus Complex

6 Multi Family Buildings

19 Commercial Only

2 Community Facility

68 Manufacturing

89 Other
Flood Risk Bronx CD 1: Dwelling Units

In both the high and moderate risk floodplains, the majority of dwelling units are located in multifamily or mixed use buildings.
How are buildings in the floodplain regulated?

FEMA

Flood Insurance Rate Maps (FIRMs)
Determine where floodplain regulations apply

National Flood Insurance Program
Set up Insurance Rates depending on building elevation and other requirements

Construction Standards (ASCE 24)
Design minimum construction requirements for flood hazard areas

Building Code (DOB)
Requires new buildings and substantial improvements to meet FEMA standards (Appendix G)

Zoning Resolution (DCP)
Zoning accommodates these regulations and improves neighborhood character
Flood resilient construction standards require residential buildings to elevate the lowest floor used for living purposes, as well as mechanical equipment, above the Design Flood Elevation (DFE).

Design Flood Elevation (DFE)

- Mechanical systems are elevated above DFE
- Site is filled to lowest adjacent grade
- Use below DFE is restricted to parking, storage or access
- Living spaces are elevated above DFE

Flood resilient construction Required by DOB
Flood resilient construction standards require residential buildings to elevate the lowest floor used for living purposes, as well as mechanical equipment, above the Design Flood Elevation (DFE).
Zoning for Coastal Flood Resiliency
Overview of Goals

Goals:
1. Encourage resiliency throughout the current and future floodplains
2. Support long-term resilient design of all building types through flexibility in zoning
3. Allow for adaptation over time through incremental retrofits
4. Facilitate future storm recovery

Proposal:
- Applicability
- Building Envelope
- Ground Floor Design
- Partial Resiliency Strategies
- Emergency Rules
Permanent regulations would facilitate buildings to **proactively** incorporate resiliency improvements to fully meet or **exceed** flood-resistant construction standards while maintaining the same allowable *Building Envelope*.

*Flood-resistant construction standards: building-code standards for buildings located in the 100yr floodplain, as set forth in Appendix G of NYC’s Building Code*
Zoning for Coastal Flood Resiliency

An enhanced Building Envelope

Allowances coupled with design requirements would allow building owners to accommodate sea level rise projections when designing new or retrofitting buildings, without creating negative impacts on the streetscape. This would increase the building and its content’s safety and allow flood insurance costs to be reduced.

2. Support long-term resilient design of all building types through flexibility in zoning

**Height Allowances**
for all building-types by allowing the envelope to be measured from the DFE or a higher Reference Plane (10’ or 5’, depending if within 1% or 0.2% floodplain)

**Floor Area Exemptions**
for active uses (commercial and community facilities) that are dry-floodproofed and kept at grade, and any wet-floodproofed spaces
Zoning for Coastal Flood Resiliency

Alternatives for the relocation of important equipment

Building owners would have additional zoning flexibility to relocate mechanical, electrical and plumbing equipment or install back-up systems such as generators above areas at risk of being flooded, including on roofs or in new separate structures.

3. Allow for adaptation over time through incremental retrofits

Floor Area Exemptions for existing industrial buildings allow the creation of small mezzanine space or a 2nd floor to store important spaces/equipment

More flexible permitted obstructions provide more options for MEP to be relocated to either above the roof or within separate structures
Zoning for Coastal Flood Resiliency
Future storm recovery

Rules that make it easier for damaged buildings to be reconstructed would be enabled in the event of a future disaster. This would allow residents and neighborhoods to recover faster and allow the City to more quickly offer disaster assistance to those who are impacted.

4. Facilitate future storm recovery

Reconstruction allowances
Substantially-damaged non-conforming or non-complying buildings can rebuild to at least minimum resiliency standards

Documentation process
Aerial photographs/tax bills can be used to establish the existence of a building. A survey may be used to document non-compliances
Zoning for Coastal Flood Resiliency Update

Project Timeline

2017  2018  2019  2020

- Q3  Q4  Q1  Q2  Q3  Q4  Q1  Q2  Q3  Q4  Q1  Q2  Q3

- Outreach Summary
- Finalize Recommendations
- Environmental Review
- Scoping
- Referral
- Public Review Process

- Summarize Feedback
- Weekly DCP Working Group meetings
- Additional Research
- Coordination with Other Agencies

- Public engagement on resiliency (briefings, newsletter, events, video)

* Timeline subject to change
Resources

Flood Insurance information: https://www.floodhelpny.org/

NYC Flood Hazard Mapper: www.nyc.gov/floodhazardmapper


Community District Profiles: https://communityprofiles.planning.nyc.gov
Resources Continued:

Resilient Industry Study

- Identify emergency preparedness guidelines for industrial businesses

- Promote cost-effective physical and operational strategies to protect businesses and the environment

- Identify financial and insurance challenges unique to businesses in industrial flood zones

www.nyc.gov/resilientindustry