Flood Resilience Zoning Text Update

Throggs Neck Homeowners Association

September 26, 2017
Hurricane Sandy

Port Morris
Source: dna.info

Harding Park
Source: Bronx Ink

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.
Flood Resilience Zoning
Projects at DCP

2013
“Flood Text”
initial temporary regulations to facilitate recovery

2018
“Flood Text Update” improve upon, and make permanent, the Flood Text
DCP Resilient Neighborhoods Outreach Summary

Late 2013
Kick off of Harding Park and Edgewater Park studies

Early 2014
Engagement of leadership in Harding and Edgewater park and identification of neighborhood-scale challenges

August 2014
DCP coordinates interagency workshops with DCP and the Mayor's Office of Resiliency and Recovery

October 2015
Summary reports are released

Ongoing
DCP coordinates with Edgewater Park and Harding Park stakeholders and leadership to advance resiliency measures on private and public levels
NYC’s flood risk is high and it will only continue to increase.

<table>
<thead>
<tr>
<th></th>
<th>100 year (1% annual chance) floodplain</th>
<th>2015 PFIRMS</th>
<th>2050s Projected FIRMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents</td>
<td></td>
<td>400,000</td>
<td>808,900</td>
</tr>
<tr>
<td>Buildings</td>
<td></td>
<td>71,500</td>
<td>118,000</td>
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</tbody>
</table>

Buildings: 80% 1-4 units, 7% 5+ units, 13% nonresidential
Residential Units: 30% 1-4 units, 70% 5+ units

50 of 59 Community Boards
45 of 51 Council Districts

Map analysis based on Preliminary Flood Insurance Rate Maps (PFIRMS)
Future flood zone impacts based on NPCC2 90th percentile sea level rise projections
A significant portion of the Bronx’s critical infrastructure and institutions, building stock, and population is located in the 100 year floodplain.

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<th>2015 PFIRMS</th>
<th>2050s Projected FIRMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents</td>
<td>16,700</td>
</tr>
<tr>
<td>Buildings</td>
<td>3,900</td>
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</tbody>
</table>

Map analysis based on Preliminary Flood Insurance Rate Maps (PFIRMS)
Future flood zone impacts based on NPCC2 90th percentile sea level rise projections
Community District 10 is one of the most vulnerable in the Borough with 60% of the Bronx’s floodplain population and nearly 80% of floodplain building stock.

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<th>2015 PFIRMS</th>
<th>2050s Projected FIRMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents</td>
<td>10,100</td>
<td>17,800</td>
</tr>
<tr>
<td>Buildings</td>
<td>3,100</td>
<td>5,200</td>
</tr>
</tbody>
</table>

Map analysis based on Preliminary Flood Insurance Rate Maps (PFIRMS)
Future flood zone impacts based on NPCC2 90th percentile sea level rise projections
Bronx Flood Risk
Land use + Common Building Typologies

- One & Two Family Buildings: 66%
- Parking Facilities: 3%
- Vacant Land: 12%
- No Data: 1%
- Open Space & Outdoor Recreation: 3%
- Public Facilities & Institutions: <1%
- Transportation & Utility: 3%
- Industrial & Manufacturing: 6%
- Commercial & Office Buildings: 1%
- Mixed Commercial & Residential Buildings: 2%
- Multifamily Buildings: 3%

Analysis based on 2014 PLUTO data
Bronx Flood Risk
Land use + Common Building Typologies

- Vacant Land 27%
- Open Space & Outdoor Recreation 15%
- Parking Facilities 5%
- No Data 3%
- One & Two Family Buildings 18%
- Multifamily Buildings 2%
- Commercial & Office Buildings 2%
- Mixed Commercial & Residential Buildings 2%
- Industrial & Manufacturing 22%
- Transportation & Utility 4%
- Public Facilities & Institutions <1%

% Acres

Analysis based on 2014 PLUTO data
How are buildings in the floodplain regulated?

**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

**Zoning Resolution (DCP)**
Zoning accommodates these regulations and improves neighborhood character
Flood resilient construction
Required by DOB

**Required** for all **new** buildings

**Not required** for **existing** buildings (unless substantially damaged or improved)

Building Code (DOB)

Requires new buildings and substantial improvements to meet FEMA standards

Substantially Damaged: Restoring Cost ≥ 50% Market Value
Substantially Improved: Improvement Cost ≥ 50% Market Value
Flood resilient construction

Terms

A building’s Base Flood Elevation (BFE) and Design Flood Elevation (DFE) affect the regulatory and building code requirements and may have an impact on flood insurance premiums.

The expected height of flooding from the 1% annual chance flood for each flood zone, is known as the **Base Flood Elevation (BFE)**.

The **Design Flood Elevation (DFE)** is the height of the lowest inhabited floor.

Additional height between the BFE and the DFE is known as **freeboard**.
Flood resilient construction standards require certain buildings to elevate the lowest floor, as well as mechanical equipment, above the Design Flood Elevation (DFE).
Flood resilient construction standards require certain buildings to elevate the lowest floor, as well as mechanical equipment, above the Design Flood Elevation (DFE).
Flood insurance rates
Set by FEMA

Raising or retrofitting your building or home will reduce costs

FEMA's flood insurance premiums are lowest when the lowest inhabited floor (any area not used solely for storage, access or parking) is elevated above the Base Flood Elevation (BFE).

- **4 FEET OR MORE BELOW BFE**: ~$9,000 Annual premium
- **AT BFE**: ~$1,400 Annual premium
- **3 FEET OR MORE ABOVE BFE**: ~$450 Annual premium
2013 Citywide Flood Text
Amended zoning in six key areas

1. **Height**
   Measured from flood elevation

2. **Access**
   Flexibility for stairs, ramps, lifts

3. **Parking**
   Flexibility to relocate parking

4. **Systems**
   Flexibility to relocate/elevate

5. **Ground Floors**
   Account for costs of new flood risk

6. **Streetscape**
   Require features to mitigate blank wall
Flood Text Update
Need for a new citywide text amendment

1. Make the provisions of the current, temporary 2013 Flood Text permanent

2. Fix and improve provisions based on studies, lessons learned, and outreach

3. Begin to promote new development + proactive retrofitting to high resiliency standards
Flood Text II
Zoning and land use strategies

Where flood risk is exceptional, including where sea level rise will lead to future daily tidal flooding.

Limit
Zoning and other tools should limit exposure to damage and disruption by limiting the density of future development.

Accommodate
Adjust zoning to allow buildings to retrofit, by providing flexibility and removing obstacles to resiliency investments.

Encourage
Encourage construction of new development built to a higher standard of flood protection.

Where risk from extreme events can be managed and infrastructure and context support growth.

*stakeholder input factored into zoning and land-use strategy throughout
Flood Text II
Fix and improve provisions based on lessons learned

1. **Height**
   Homeowners may face the loss of subgrade spaces when retrofitting.

2. **Height**
   Property owners may want to address future risk by over-elevating.

3. **Ground Floors**
   Current incentives to keep active ground floors may not be enough.

4. **Homes in M Districts**
   Existing homes in M. Districts, if damaged, may not be able to rebuild.

5. **Old Homes in Small Lots**
   Old homes on small lots may need more flexibility to rebuild in the future.

6. **Improve Streetscape**
   Mitigate the effects of elevated buildings on neighborhood character.
As part of this outreach process, DCP will:

- **Partner with stakeholders** to educate and promote awareness of flood risk and resiliency issues
- **Explain how zoning tools** relate to resiliency
- **Explore unique neighborhood issues** through in-depth public presentations and workshops
- Develop a proposal through an **iterative process** that is shaped by feedback

Schedule is tentative and subject to change
Outreach Resources

NYC Flood Hazard Mapper

[Link to NYC Flood Hazard Mapper]

Info briefs on Flood Resilience Zoning, Flood Risk, Flood Resilient Construction, and Flood Insurance

[Link to info briefs on Flood Resilience Zoning, Flood Risk, Flood Resilient Construction, and Flood Insurance]
Thank you!

For more information, and to stay involved, email
resilientneighborhoods@planning.nyc.gov
ccamilleri@planning.nyc.gov