South Shore of Staten Island, New York

Project Features (final design underway)

- 4.5 miles buried seawall
- 0.6 miles levee & road raising
- 0.35 miles floodwall
- Natural storage & excavated ponds
- Tidal wetlands

Typical Project Cross-Sections

(Several project design revisions are currently underway)

<table>
<thead>
<tr>
<th>Section</th>
<th>Length</th>
<th>Height @ NAVD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1/2 (levee)</td>
<td>3,400 ft</td>
<td>+16.9 ft</td>
</tr>
<tr>
<td>A-3 (floodwall)</td>
<td>2,100 ft</td>
<td>+19.4 ft</td>
</tr>
<tr>
<td>A-4 (seawall)</td>
<td>22,700 ft</td>
<td>+21.4 ft</td>
</tr>
</tbody>
</table>

Hurricane Sandy Inundation

- Flood-prone, high risk, low-lying area, low-capacity storm sewers
- Nearly 7,300 structures; over 30,000 people

Critical infrastructure:
- Wastewater Plant; Staten Island Hospital; Fire/police stations; schools & senior centers

Project Area Key Facts

- Water levels peaked at +12.5 ft NAVD
- Flooding depths over 10 ft
- 4 ft higher than prior record
- 24 Staten Island deaths
- 43 total in New York City
- 80% structures damaged in project area
- Over $1B in damages

Residual Flooding After Project Construction

Source: FEMA MOTF Hurricane Sandy Impact Analysis

Levee

Floodwall

A4

Seawall

Seawall

(Halcyon thru Miller Field)

(Halcyon to Ft Wadsworth)

Aug / Sep 2022

US Army Corps of Engineers
New York District
BUILDING STRONG®
Project is technically feasible, economically justified, environmentally acceptable
- Federally funded through Public Law 113-2
- Assistant Secretary of Army approved Final Feasibility Report, EIS, Record Of Decision, Director’s Report, with Congressional notification, Dec 2016
- 3-party agreement with Corps, NYS (sponsor), NYC (party) executed 15 Feb 2019
- Initial Construction cost-shared 65% Federal, 35% Non-Federal
- Project Operation & Maintenance is State/City of New York 100% responsibility
- Residual Risk – project annual exceedance probability is 0.3% (300-yr event)
- Resiliency – allows emergency response in previously flooded areas; accelerated recovery
- Reliability – proven engineering solution to withstand multiple storms
- Adaptability - project can be modified in future to address sea level rise, if required
- Design Phase of entire project is currently underway: Surveys/mapping, utilities, geotechnical, cultural investigations, physical modeling, interior drainage modeling, construction contract designs, plans, specifications, various contractual packages
- Coordination is underway with various sponsors/stakeholders: Corps of Engineers, State of New York, Gov Office, City of New York, Mayor Office, City Parks/DEP/DOT, Boro Pres Office, National Park Service, FEMA, Congressional and local interests
- Design of all construction contracts are currently underway, including significant coordination with the State and City of New York in order to finalize specific project design details

**Estimated Project Cost (Cost updates are underway)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Construction Cost (ESTIMATED)</td>
<td>$615,231,000</td>
</tr>
<tr>
<td>Project Cost-share – Federal (65%)</td>
<td>$399,900,150</td>
</tr>
<tr>
<td>Project Cost-share – Non Federal (35%)</td>
<td>$215,330,850</td>
</tr>
<tr>
<td>Annual Operation &amp; Maintenance (Non Federal)</td>
<td>$679,000</td>
</tr>
</tbody>
</table>

**Estimated Project Schedule**

- Project Partnership Agreement
  - Executed between Corps, NYS, NYC
  - 15 Feb 2019
- Phragmites control efforts
  - Interior Areas B, C, E
    - 2019 (mow)
    - 2020 (spray)
- Estimated Start Construction
  - Interior E (Fall 2022)
  - Interior C (Spring 2023)
- Estimated Project Total Completion
  - Schedule is under revision

**Estimated Project Schedule**

- **Anticipated Contract Breakouts with Estimated Contract Award Timelines**
  - **Several project design, cost, and schedule revisions are currently underway**

- Site preparation (Phragmites Control) Interior Areas B, C, E
  - Dec 2019 (mowing) + Aug 2020 (spraying) COMPLETED

- Levee, Tide Gate, Interior A
  - @ Great Kills Park Area (TBD)*
  - *requires Radiological cleanup

- Road Closure Gate, Levee
  - Hylan Blvd @ Buffalo St (TBD)

- Floodwall @ Oakwood Waste Water Treatment Plant (TBD)*
  - *requires Radiological cleanup

- Miller Field Offset
  - Forest Enhancement Next to New Corp HS (TBD)

- Seawall, Tide Gates (2), Outfall Gates, Tidal Wetlands
  - Interior B (Corps + DEP efforts) @ Oakwood thru Miller Field (TBD)

- Seawall, New Boardwalk, Outfall Gates, Interior D
  - @ Midland Beach to Ft Wedsworth (TBD)

- Interior E (Corps + DEP efforts)
  - @ South Beach (Fall 2022)

- Interior C (Corps + DEP efforts)
  - @ Midland Beach (New Creek) (Spring 2023)

- **Legend**
  - Seawall
  - Tide Gate
  - Treatment Plant
  - Road Closure Gate
  - Floodwall
  - River
  - Shoreline
  - Boundary
  - Water Trends

**US Army Corps of Engineers (website)**