

March 31, 2023

Bryce W. Wisemiller
Project Manager

U.S. Army Corps of Engineers New York District
Programs & Projects Management, Planning Division
Jacob K. Javits Federal Building, Room 17-401
c/o PSC Mail Center
26 Federal Plaza
New York, NY 10278



Re: Comments On New York-New Jersey Harbor and Tributaries Coastal Storm Risk Management Draft Integrated Feasibility Study and Tier 1 Environmental Impact Assessment

Dear Mr. Wisemiller and NYNJHAT Study Team:

Thank you for the opportunity to comment on the New York-New Jersey Harbor and Tributaries Study Draft Integrated Feasibility and Tier 1 Environmental Impact Statement (the "Draft EIS" or "Study"), in which the U.S. Army Corps of Engineers ("Army Corps" or the "Corps") seeks to develop a plan to protect the millions of people who live and work in the New York/New Jersey metropolitan region from the effects of coastal storm damage.

As the Army Corps is well aware, communities are already suffering from the impacts of the climate crisis. Extreme heat, repeated flooding, sea level rise, drought, and wildfires are displacing millions, harming people's physical and mental health, destroying costly public infrastructure, and deepening racial and social inequalities. To address these challenges head-on and anticipate future climate events, NRDC is working in this region and around the nation to develop plans and policies that will increase resiliency and reduce future harm. These include addressing the growing challenges of flooding and sea level rise. And in all such efforts, we must prioritize and work with the communities that are bearing the worst impacts due to the systemic racism that has rendered them most vulnerable to our changing climate.

In these comments, consistent with this lens, the Natural Resources Defense Council ("NRDC") reiterates our ongoing concerns regarding the Draft EIS for the NYNJHAT Project (the "Project") and highlights new concerns that have arisen as the Project moves forward. NRDC previously shared some of our concerns in its 2018 comments to the Interim Feasibility Study, attached here as Attachment A. We appreciate that the Corps recognized the significant opposition to harbor-wide storm surge barriers by designating as its Tentatively Selected Plan an alternative that consists instead of a series of smaller offshore barriers and on-shore structural measures. We hope that these comments will facilitate further progress toward the shared goal of ensuring an equitable approach to addressing climate change-related flood risk.

Our comments focus on three interrelated issues. First, the Draft EIS still fails to examine how the Plan will mitigate the harm caused by these large offshore structures, particularly in low-income communities and communities of color. At this stage of planning, the Army Corps seeks public comment and engagement from frontline community members without fully

explaining how the Alternatives set forth in the Draft EIS will impact their communities. We urge the Corps to rethink its community engagement process and create structures and procedures whereby frontline community members not only have a seat at the decision-making table, but also the full information and understanding necessary to provide meaningful feedback. In the absence of this information, we will continue to oppose the use of offshore storm surge barriers, as they can substantially and irreparably damage coastal communities and ecosystems.

Second, in addition to extreme storm surge, the Corps should use this opportunity to mitigate the effects of lower-level, higher-frequency flooding that also threatens our coastal communities. We urge the Corps to undertake a more comprehensive evaluation of flood risks in the New York-New Jersey Harbor and Tributaries Study Area ("Study Area") that does not leave communities vulnerable to higher-frequency flooding in favor of protecting against the most extreme storm surges.

And third, we recommend that the Corps incorporate natural and nature-based features ("NNBFs") into both its Alternatives Analysis and the Project as a whole. Natural and nature-based features do not just address flood risk; they simultaneously address other climate-related issues that also disproportionately burden low-income communities and communities of color, like extreme heat and air quality. Moreover, natural and nature-based solutions can be more resilient and cost-effective in the long term, compared to static structures.

It is critical that the Corps address these issues as you move forward with this and other climate adaptation projects. Regardless of the specific actions chosen, any project intended to make the New York-New Jersey coastline more resilient will serve as a benchmark for other climate adaptation work not just across the country but around the world. The Corps can and should rise to the occasion and ensure that this project—in both process and outcome—serves as a model for similar efforts around the world.

I. Background

A. The Natural Resources Defense Council

The Natural Resources Defense Council is an international, nonprofit environmental organization with more than three million members and online activists, including nearly 135,000 in New York and New Jersey. For more than five decades, NRDC has been committed to the preservation, protection, and defense of the environment, public health, and natural resources. And as noted above, NRDC is engaged regionally and nationally to mitigate the harms of climate change – including advising government officials on plans to protect residents against extreme heat, floods, sea level rise, and other climate-related hazards. To cite one recent example of our climate adaptation work, NRDC played a key role in pushing the Federal Emergency Management Agency ("FEMA") to overhaul multiple aspects of the National Flood Insurance Program.

NRDC scientists also track the health impacts of climate change and alert residents and local governments to potential risks associated with the climate crisis. And NRDC advances policies that give homeowners and renters the right to know about their home's flood risk, like New York's new law requiring disclosure of past flood damage to prospective renters and the

recent petition approved by the North Carolina Real Estate Commission requiring disclosure of flood risk to potential home buyers. NRDC also urges government officials at all levels to use natural and nature-based solutions to protect shorelines and to support communities with the resources they need to thrive in a climate-changed future.

B. Climate Change Exacerbates Coastal Flooding

Climate change is real and poses an increasing threat to flooding and storm surges. 2022 was the sixth-warmest year on record since 1880, continuing a years-long warming trend.¹ Atmospheric warming in turn leads to other climate impacts, such as coastal flooding. The East Coast suffers the most frequent coastal flooding in the United States, and it has experienced the largest increases in the number of days land is flooded.² Coastal flooding has been exacerbated by more extreme storm surges—for example, in the Study Area, coasts were battered by storm surges from Superstorm Sandy in 2013 and Hurricane Ida in 2021. The Atlantic hurricane season in 2021 had the third-highest number of tropical storms on record.³

While the expected increase in the number of severe storms does contribute to the expected increase in coastal flooding, it is just one of several climate change-related factors that do so. Another clear contributor to coastal flooding is sea level rise, which poses a particular threat to much of the low-lying coastal Study Area. The sea level around the Battery in New York City has risen about 9 inches since 1950, and the rate of sea level rise is accelerating as the polar ice caps melt and oceans warm in tandem with the atmosphere.⁴ The Intergovernmental Panel on Climate Change estimates that extreme flooding will increase by about 20% if sea levels rise six inches above 2020 levels by 2040.⁵ Sea level rise is particularly expected to exacerbate what is known as “tidal” or “sunny-day” flooding—that is, flooding due to normal high tide, not precipitated by a storm or rainfall. NOAA recently reported that the eastern U.S. will continue to experience a more than 150% increase in sunny-day flooding compared to the year 2000, with the Northeast Atlantic listed as one of the regions slated to experience the highest levels of such flooding.⁶

¹ Nat’l Oceanic & Atmospheric Admin., *2022 was world’s 6th-warmest year on record*, NOAA.gov (Jan. 12, 2023), [https://www.noaa.gov/news/2022-was-worlds-6th-warmest-year-on-record#:~:text=The%20planet%20continued%20its%20warming,for%20Environmental%20Information%20\(NCEI\).2021%20was%20among%20the%207%20warmest%20years%20since%201880,as%20well.%20See%20American%20Meteorology%20Society,%20State%20of%20the%20Climate%20in%202021,103%20Bull.%20Amer.%20Meteor.%20Soc’y%20Si,%20S9%20\(2022\),https://ametsoc.net/sotc2021/StateoftheClimate2021_lowres.pdf](https://www.noaa.gov/news/2022-was-worlds-6th-warmest-year-on-record#:~:text=The%20planet%20continued%20its%20warming,for%20Environmental%20Information%20(NCEI).2021%20was%20among%20the%207%20warmest%20years%20since%201880,as%20well.%20See%20American%20Meteorology%20Society,%20State%20of%20the%20Climate%20in%202021,103%20Bull.%20Amer.%20Meteor.%20Soc’y%20Si,%20S9%20(2022),https://ametsoc.net/sotc2021/StateoftheClimate2021_lowres.pdf).

² U.S. Env’tl. Prot. Agency, *Climate Change Indicators: Coastal Floodings*, EPA.gov (Aug. 1, 2022), <https://www.epa.gov/climate-indicators/climate-change-indicators-coastal-flooding>.

³ American Meteorology Soc’y, *supra* note 1, at S9.

⁴ Center for Operational Oceanographic Prods. & Servs., Nat’l Oceanic & Atmospheric Admin., *Tides & Currents*, NOAA.gov (last accessed Mar. 7, 2023), <https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=standard&bdate=19500101&edate=20171231&timezone=GMT&datum=MSL&interval=m&action=data>.

⁵ R. Misdary, “What the UN Climate Report Predicts for NYC,” GOTHAMIST (Mar. 1, 2022), <https://gothamist.com/news/what-un-climate-report-predicts-nyc>.

⁶ Nat’l Oceanic & Atmospheric Admin., *The State of High Tide Flooding and 2022 Outlook*, NOAA.gov (last accessed Mar. 6, 2023), https://tidesandcurrents.noaa.gov/HighTideFlooding_AnnualOutlook.html.

A warming atmosphere also leads to greater precipitation in between and during extreme coastal storms. Heavy precipitation events are projected to increase through the 21st century to a level between 50% and 300% of the historical average. While heavier rainfall does not automatically lead to floods, it certainly increases the likelihood of flooding. In the summer of 2022, heavy rainstorms caused flooding multiple times, often flooding subway stations and rendering streets impassable.⁷

There are many other factors that inform a place’s risk of coastal flooding, including the depth of the groundwater table, the rate of land sinking, and the flow of rivers nearby – and all of these are also undergoing some level of alteration due to climate change.⁸

C. Climate Change Disproportionately Threatens Low-Income Communities and Communities of Color

Like many of the harms caused by climate change, harm from flooding is disproportionately borne by communities of color—particularly Black communities—and this trend is only expected to worsen over the next decades.⁹ According to researchers at Stony Brook University, for example, census blocks with lower median income experienced greater damage from Superstorm Sandy than wealthier census blocks. They also found that the majority of New York City schools that reported flooding during Superstorm Sandy were located in African American and Latino neighborhoods. New York City Housing Authority (“NYCHA”) buildings, home to some of the city’s poorest residents, were also hit hard by Hurricane Sandy. According to an audit by the New York City Comptroller’s office, approximately 80,000 residents in 402 NYCHA buildings lost power, heat, and hot water because their heating and electrical systems were flooded. And once hit by these events, it is much harder for low-income households to recover from the devastation.¹⁰

⁷ ABC7, “Cleanup after torrential rain floods subways, wreaks havoc across Tri-State,” ABC7NY.com (Jul. 19, 2022), <https://abc7ny.com/nyc-subway-flooding-today-storms-trains/12060321/>; E. Shanahan & A. Wong, “Heavy Rains Pound New York City, Flooding Subway Stations and Roads,” New York Times (Jul 8, 2021), <https://www.nytimes.com/2021/07/08/nyregion/flooding-subways-nyc.html>; G. Hogan, “Flash flooding in NYC derails traffic, transit, impacts some at home,” Gothamist (Sept. 13, 2022), <https://gothamist.com/news/flash-flood-warning-as-thunder-and-rainstorms-barrel-through-nyc-snarling-traffic-and-transit>.

⁸ W.V. Sweet et al., Nat’l Oceanic & Atmospheric Admin., *Global and Regional Sea Level Rise Scenarios for the United States*, NOAA Technical Report NOS 01, at 1 (Feb. 2022), <https://aambpublicoceanservice.blob.core.windows.net/oceanserviceprod/hazards/sealevelrise/noaa-nos-techrpt01-global-regional-SLR-scenarios-US.pdf>.

⁹ O. Wing et al., *Inequitable patterns of US flood risk in the Anthropocene*, 12 Nature Climate Change 156 (2022), <https://www.nature.com/articles/s41558-021-01265-6>; U.S. Env’tl. Prot. Agency, *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts*, EPA 430-R-21-003 (2021), https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf.

¹⁰ C. Ratcliffe et al., *Insult to Injury: Natural Disasters and Residents’ Financial Health*, Urban Institute (April 2019), <https://www.urban.org/research/publication/insult-injury-natural-disasters-and-residents-financial-health>.

D. The Army Corps' Draft Integrated Feasibility Study and Tier 1 EIS

As you know, the Army Corps has been investigating coastal storm risk management strategies for the North Atlantic Coast since Hurricane Sandy hit in 2012.¹¹ As part of this investigation, the Corps has identified the Study Area as one that might benefit from a project “that will manage coastal storm risk while supporting the study area’s economic and community resilience.”¹² Accordingly, the Army Corps issued an Interim Feasibility Study in 2018 that provided a first look at the potential contours of the Project.

Now, in line with the National Environmental Policy Act (NEPA), the Army Corps has prepared a Draft Integrated Feasibility Report/Tier 1 Environmental Impact Statement for the Project. As the title suggests, this Draft EIS is tiered; in other words, the environmental review is completed in two parts, where Tier 1 is intended to provide a broad-level review and Tier 2 includes a more detailed review during the Preconstruction Engineering and Design phase of the Project. Federal regulations provide for tiered review as a way to streamline environmental review by allowing parties to “eliminate repetitive discussions of the same issues and to focus on the actual issues suitable for decision at each level of environmental review.”¹³ As required under NEPA, the Corps developed multiple alternative plans that each involve a distinct suite of coastal storm risk management measures; the DEIS is meant to evaluate these alternatives and analyze their relative benefits and disadvantages.

The Alternatives set forth by the Army Corps are as follows:¹⁴

- **Alternative 1: No Action Alternative** – this alternative assumes that there will be no action taken.
- **Alternative 2: Harbor-Wide Storm Surge Barrier with Shore-Based Measures** – this alternative contemplates two Storm Surge Barriers. One would run from Sandy Hook, New Jersey to Breezy Point, New York, while the other would span the East River just west of Throgs Neck. Each barrier would consist of surge gates, auxiliary gates, and static barrier connectors like seawalls.
- **Alternative 3A: Multi-Basin Storm Surge Barriers with Shore-Based Measures** – this alternative has two primary structural components. The first consists of storm surge barriers across the southern mouth of Arthur Kill, the Verrazano Narrows, and Throgs Neck; together, these three surge gate structures will require nearly 20,000 feet of shore-based measures like floodwalls, levees, and operable flood gates to connect to high ground. The second consists of storm surge barriers and connected shore-based measures

¹¹ U.S. Army Corps of Eng’rs, *Draft Integrated Feasibility Report & Tier 1 Environmental Impact Statement: New York-New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study* [hereinafter “DEIS”], at i (Sept. 2022), https://www.nan.usace.army.mil/Portals/37/NYNJHATS%20Draft%20Integrated%20Feasibility%20Report%20Tier%201%20EIS_3Oct2022.pdf.

¹² *Id.*

¹³ 40 C.F.R. § 1502.20.

¹⁴ DEIS, at 160-68.

lining southern Brooklyn, crossing the mouth of Jamaica Bay, and bordering the Rockaway Peninsula.

- **Alternative 3B: Multi-Basin Storm Surge Barriers with Shore-Based Measures (the “Temporarily Selected Plan”)** – this alternative contemplates a number of structural components that make up 1) a combination of storm surge barriers and shore-based measures that line southern Brooklyn, cross Jamaica Bay, and continue along the Rockaway Peninsula; 2) two storm surge barriers in the mouths of the Arthur Kill and Kill Van Kull tidal straits connected to shore-based measures along the northern New Jersey coastline; 3) storm surge barriers on the individual creeks of Gowanus, Newtown, and Flushing, with shore-based tie-in measures consisting of deployable flood barriers, elevated promenade, floodwalls, levees, and seawalls; and 4) structural shore-based measures including deployable floodwalls, elevated promenade, levees, and seawalls in Jersey City, East Harlem, and the lower west side of Manhattan.
- **Alternative 4: Single-Basin Storm Surge Barriers with Shore-Based Measures** – this alternative entails 1) storm surge barriers and shore-based tie-in measures along southern Brooklyn, Jamaica Bay, and the Rockaway Peninsula; 2) a storm surge barrier in the southern portion of the Hackensack river with shore-based tie-in measures; 3) storm surge barriers on the creeks of Gowanus, Newtown, and Flushing, with shore-based tie-in measures; and 4) shore-based structural measures in Jersey City, East Harlem, and the lower west side of Manhattan.
- **Alternative 5: Shore-Based Measures Only** – this alternative does not include any large in-water structures, and it also eliminates shore-based measures for areas the Corps has deemed cost-prohibitive in prior analyses. This alternative contemplates four primary structural shore-based measures located in the Hackensack Meadowlands, Jersey City, the lower west side of Manhattan, and East Harlem. The shore-based measures consist of deployable flood barriers, floodwalls, seawalls, elevated promenades, and tide gates.

For each alternative that includes storm surge barriers (i.e., Alternatives 2, 3A, 3B, and 4), the Corps has concluded that implementing these barriers will actually induce flooding in certain areas; to address this, the Corps incorporates “Induced Flooding-Mitigation Features” consisting of structural shore-based measures for those areas. The Corps also stated that it will incorporate “Risk Reduction Features” into these alternatives to address high-frequency flooding that would occur during the time the storm surge gates remain open; these features include structural measures like tide gates, nonstructural and natural/nature-based measures.

II. The Corps Can and Should Do Better on Community Engagement

NRDC stands with the community members and organizations calling for the institution of a Community and Environmental Justice Working Group for the Study, and we recommend that the Corps tailor its public engagement process to include sessions that delve deeper into location-specific aspects and impacts of the Project and alternatives. The process to date shows why we collectively need to develop better community engagement strategies for large climate adaptation projects, which often have years-long lead times and broad geographic scope. Typical approaches used for smaller projects and/or projects that address more isolated issues may not be applicable. In particular, projects with phased planning require very clear communication about

the purpose and timeframe of each phase. And where projects cover a broad geographic area, residents need information about the impacts on their neighborhoods even at the more general stages of project planning.

While the Corps is making progress in modernizing its community engagement practices to make them more accessible and equitable, there are still gaps in the Corps' knowledge that would benefit from community input based on lived experience. The Corps has held public meetings across the Study Area, but each session provided the same overview of the Project and alternatives, accompanied by complex and often overwhelming graphics.¹⁵ The Corps declined to answer many location-specific questions from members of the public, either describing them as outside the Corps' mandate for the Study or deferring them to a more detailed Tier 2 stage of environmental review. And although the Corps did expand the geographic reach of its public meetings on the Project, in the public meeting held on November 18, 2022, Project representatives said that they were "guessing" where to hold community meetings.¹⁶ Project representatives also said, "We know nobody cares until the bulldozer shows up in front of their house."¹⁷ This belies a disconnect from the lived experience of frontline community members; rather than indicating a lack of concern, this entry point for public engagement reflects that, for many, the start of construction is the first clear indication of how a large-scale regional infrastructure project will directly affect their neighborhood.

Just as it is not appropriate to inform a community about a finalized plan developed without their input, neither is it helpful to ask community members for feedback on a very broad proposal only to defer location-specific questions and concerns for a future round of review. We recognize that the intent of tiering this environmental review is to provide a high-level overview of the Project and save detailed planning for later. However, it is impossible for any member of the public to fully understand how each proposed alternative will impact them, or to provide meaningful comments that build on their own lived experience and knowledge, without a location-specific discussion of the proposed structural measures and how they will interact with nonstructural and nature-based measures in the vicinity.

As the Study moves forward, the Corps should consider the effectiveness of its community engagement strategies and partner with community-based organizations to identify approaches that will resonate with community members. We recommend that the Corps hold location-specific public information and comment sessions. The Corps has already significantly expanded the number and geographic spread of its public information sessions during this comment period, but the same consideration has been missing from the content of these sessions.

The gaps noted above also demonstrate the need for a Community and Environmental Justice Working Group to inform the Study. Incorporating such a working group at this still-early stage of the Project will help ensure that frontline community members can provide input

¹⁵ U.S. Army Corps of Eng'rs, "New York-New Jersey Harbor and Tributaries Coastal Storm Risk Management Study," at slides 9-10 (January 2023), https://www.nan.usace.army.mil/Portals/37/NYNJHAT%20Presentation_Jan2023_for_upload_1.pdf.

¹⁶ U.S. Army Corps of Eng'rs, New York & New Jersey Harbors and Tributaries Study Public Meeting, at 32:50 (November 2022), <https://www.youtube.com/watch?v=LBaVZfsleoM>.

¹⁷ *Id.* at 01:21:45.

on the Corps' work and flag early on where the Corps needs to provide further detail to allow for meaningful public comments. It is critical that the public be included in the work of shaping this Working Group, and that Working Group members are compensated for their time.

The Corps cannot be expected to bring both technical and community expertise to this study alone—that is why the institution of a Community and Environmental Justice Working Group is critical to ensure that frontline community members have a way to help shape the Study process. The Study is an opportunity for the Corps to model a more accessible, inclusive, and equitable process for meaningful community engagement, and we hope that the Corps takes this opportunity as the Project moves forward.

A. The Draft EIS Contains Insufficient Information for Vulnerable Communities to Compare the Potential Harms from Each Alternative

Storm surge barriers can harm coastal communities in two primary ways, and each is given short shrift in the Draft EIS. First, large static barriers can lead to the accumulation of sewage and contaminants in and near waterfront communities because they interrupt the natural flow and dissipation of wastewater discharged into the ocean. Second, offshore barriers can induce flooding in neighboring communities as large columns of water are diverted on either end of the barrier. It is critical to thoroughly understand how each alternative might generate these potential harms and how they will be mitigated – particularly when they are disproportionately borne by low-income communities and communities of color.

NEPA requires the Corps to “present the proposed action and the alternatives in comparative form” and “discuss each alternative in detail, including the proposed action, so that reviewers may evaluate their comparative merits.”¹⁸ In other words, a certain level of detail is required for members of the public to meaningfully assess which alternative of those presented is preferable—and that assessment includes looking at the potential harm posed by each alternative. However, the Draft EIS does not provide enough detailed analysis of the pollution and induced flooding risks connected to each alternative; it is nearly impossible to compare how each alternative might affect a particular coastal community. NRDC explored these risks in some detail in its 2018 Comments on the Interim Feasibility Study.¹⁹ We reiterate and expand upon them here to emphasize the continuing need for information about these risks – in particular, location-specific information – so that community members can adequately evaluate the alternatives presented.

i. The Draft EIS Does Not Discuss Barrier-Related Pollution Impacts or Induced Flooding to the Degree Required for Comparative Analysis

A significant drawback of installing static storm surge barriers is their potential to trap raw sewage and other pollutants near coastlines, but the Draft EIS does not evaluate the extent of this threat or assess the measures required to prevent it. New York City alone has 700 combined sewer outfalls that discharge a mix of raw sewage and stormwater into surrounding waters during

¹⁸ 40 C.F.R. § 1502.14(b).

¹⁹ See Attachment A.

combined sewer overflows (“CSOs”) that occur when the sewer system is overwhelmed.²⁰ Common sense dictates that the presence of large stationary barriers in these waters will change the ability of effluent discharged during CSOs to disperse into the ocean where it will be significantly diluted. But rather than explaining the potential frequency, health implications, or environmental impact of CSOs with storm surge barriers in place, the Draft EIS’s engineering appendix simply notes that “[i]nterior drainage requirements for areas with CSOs have not been evaluated at this stage of the study.”²¹

In addition to raw sewage, the effluent from CSOs also contains stormwater runoff, which picks up toxic chemicals when it flows over contaminated land. The Study Area is a predominantly urban and historically industrialized area; as the Corps acknowledges, “[t]he areas historically selected for industrial activities were intentionally located at or near the waterfront to make use of the New York and/or New Jersey port complexes.”²² The Army Corps estimates that there are approximately 212 Hazardous, Toxic, and Radioactive Waste (collectively, “Hazardous Waste”) sites collocated with or adjacent to the measures proposed in the Tentatively Selected Plan.²³ But rather than analyzing the potential health and environmental impacts arising from the proximity of these sites to the Project, the Corps simply states that the potential benefits of speeding up remediation at these sites cancel out the potential negative impacts of constructing and operating remedial measures on and near these sites.²⁴ The Army Corps does not explain why pursuing the Project would speed remediation of these sites or what the potential impacts associated with these sites might look like. Instead, the Corps goes on to say that “there is likely no alternative that avoids all major and minor contaminated Hazardous Waste sites.”²⁵ While this is true, given the industrial history of the region, it does not excuse the Corps from its responsibility to explain how the measures contemplated in each alternative might interact with Hazardous Waste sites in the vicinity or how it intends to mitigate these impacts.

While the Corps provides relatively greater detail regarding the Induced Flooding Mitigation Measures proposed for each alternative, this information is not presented in a way that encourages meaningful community engagement. Affected community members are expected to pore through thousands of pages of technical appendices to ascertain which Induced Flooding Mitigation Measures are relevant for the locations where they live, work, and play. Even at this Tier 1 stage, members of the public need more specific information about how the Tentatively Selected Plan and other proposed Alternatives will affect their communities’ exposure to pollution and flooding to be able to meaningfully weigh the Alternatives and provide feedback to the Corps.

²⁰ E.g., N.Y.C. Dept. of Env’tl. Prot., *Combined Sewer Overflows*, NYC.gov (last accessed Mar. 7, 2023), <https://www.nyc.gov/site/dep/water/combined-sewer-overflows.page>.

²¹ DEIS Engineering Appendix, at 78.

²² DEIS Appendix A9, at 118.

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

ii. *Low-Income Communities and Communities of Color Will Be Hardest Hit by These Harms*

These concerns are particularly worrisome because many of the communities directly adjacent to the proposed storm surge barriers are low-income and majority-minority communities. Residents of these communities already experience disproportionate environmental burdens from air and noise pollution, lack of access to clean water, and increased vulnerability to climate impacts like extreme heat and flooding. Alternative 3B, the Tentatively Selected Plan, identifies communities that either are not protected by the barriers or could face induced flooding. The tables below list these communities along with a very basic demographic overview:

Table 1: Neighborhoods Not Protected by Alternative 3B			
Neighborhood	Location	Percent Non-White Population	Percent of Population Below Tri-State Poverty Line
East Elmhurst	Queens	95%	14.60%
Breezy Point*	Queens	62%	23.80%
Castle Hill*	Bronx	98%	26.70%
Clason Point*	Bronx	98%	26.70%
Hunts Point*	Bronx	96%	36.60%
City Island	Bronx	74%	14%
Middletown-Pelham Bay	Bronx	74%	14%
Schuylerville	Bronx	74%	14%
Bay Ridge	Brooklyn	49%	15.70%
Long Beach	Long Island	26%	5.50%

Atlantic Beach	Long Island	12%	1.50%
Pelham Manor	Westchester	25%	3.90%
<p>*In recognition of the fact that Black communities face particularly disproportionate environmental harms, communities with a Black population greater than the national average are marked with an asterisk.</p> <p>Data for this table was obtained from the American Community Survey's Census Reporter database at www.censusreporter.org.</p>			

Table 2: Neighborhoods That May be Subject to Induced Flooding Under Alternative 3B			
Neighborhood	Location	Percent Non-White Population	Percent of Population Below Tri-State Poverty Line
Mott Haven*	Bronx	96%	36.60%
Inwood	Bronx	80%	21%
St. George	Staten Island	63%	16.70%
Tottenville	Staten Island	23%	6%
Perth Amboy	New Jersey	71%	12.20%
South Amboy	New Jersey	71%	12.20%
<p>*In recognition of the fact that Black communities face particularly disproportionate environmental harms, communities with a Black population greater than the national average are marked with an asterisk.</p> <p>Data for this table was obtained from the American Community Survey's Census Reporter database at www.censusreporter.org.</p>			

As these tables show, nearly all the communities that are left unprotected or subject to induced flooding under the Tentatively Selected Plan are communities of color with significant poverty rates. This is not coincidental: systemic racism ingrained in our institutional structures and processes has long led to vulnerable communities being overlooked. Based on the way this region has developed over time, low-income communities and communities of color are already

disproportionately exposed to coastal flood risk as they have been pushed to live in low lying areas with suboptimal infrastructure.²⁶

With this Project, Army Corps has an opportunity to address past systemic wrongs that have left these communities vulnerable to the forces of nature. Not only must the considerations of particularly vulnerable residents be at the forefront of Army Corps' planning, but the Corps must also actively engage with these communities and affirmatively provide location-specific information about the potential impacts of the Alternatives so that community members can provide meaningful feedback. Convening a Community and Environmental Justice Working Group with members from these communities can help facilitate this vital part of the Study process.

III. The Study Must Take a Comprehensive Approach to Climate Adaptation and Flood Protection, Rather Than Solely Focusing on the 100-Year Flood

The NYNJHATS process to date demonstrates the need for a comprehensive approach to climate adaptation, not one that tries to address individual climate impacts in a vacuum. Climate change affects all aspects of our society, and its impacts range broadly in severity, frequency, and scope. It is increasingly clear that siloed approaches by individual actors—and the resulting projects, often designed only to address individual hazards—are wholly insufficient to meet this challenge.

The Army Corps characterizes its Congressional charge as limited to creating and implementing a plan to address the 100-year storm surge scenario in the Study Area. The alternatives proposed for the Project were developed to “manage the risk of flooding from the 1% annual exceedance probability event including [Relative Sea Level Change] under the USACE intermediate scenario in the year 2095.”²⁷ At public meetings, Corps representatives responded to requests for nature-based solutions by stating that these features cannot protect against the 100-year storm surge.

However, it is not clear to what extent the measures considered appropriate to mitigate the risk of a 100-year flood will also address higher-frequency flooding and storm surges that do not rise to this level but can still cause harm—particularly when the storm surge barriers are not intended to operate below a certain sea level criterion. The Corps promises an adaptive approach to the operation of the storm surge barriers and shore-based measures, but it remains unclear whether the adaptations it contemplates—such as building seawalls higher or opening storm surge barriers more often—will be sufficient to address sea level rise beyond the intermediate scenario the Corps used for planning purposes.

It is critical that strategies to address coastal storms do not only consider the most acute potential scenarios; they must also account for the comprehensive threat that climate change poses by also addressing the everyday aspects of community health, stability, and sustainability

²⁶ See, e.g., Rebuild By Design, *Who Lives in NYC's Floodplain in the Year 2100?*, RebuildByDesign.org (last visited Mar. 28, 2023), <https://rebuildbydesign.org/who-lives-in-nycs-floodplain/>.

²⁷ DEIS, at 210.

that make a city resilient (see Section III.B, *infra*). Ultimately, the United States needs a nationwide vision to ensure that agencies' climate adaptation actions complement each other and form a holistic, well-coordinated strategy.²⁸ While that larger goal is beyond the scope of the current Study, the Corps can and should use this opportunity to model the type of comprehensive planning needed to fully address flood risks due to climate change.

i. Sea Level Rise Will Undermine the Efficacy of Static Storm Surge Barriers

The Corps does not sufficiently explain how its proposed alternatives, which nearly all rely on large static in-water structures, will stand up to rising sea levels over time. Like the rise in global temperatures, sea level rise connected to climate change has already surpassed expectations, and there is no reason to believe this will not continue. The National Oceanic and Atmospheric Administration (NOAA) released a 2022 report on global and regional sea level rise scenarios for the United States that incorporates the same data the Intergovernmental Panel on Climate Change used in its most recent global climate report. This report shows that relative sea level along the coasts of the continental U.S. is expected to rise as much over the next 30 years as it did over the last 100 years.²⁹ The report also indicates that the Corps' sea level rise projections may already be outdated; its high projection for relative sea level change is a 6-foot increase in sea level by 2107.³⁰ However, NOAA's high projection for relative sea level rise is 2.5 meters – or approximately 8 feet – by 2100.³¹ Similarly, while the Corps' intermediate projection for sea level rise is a 2-foot increase by 2098, NOAA projects a 3-foot rise by 2100.³² For the northeast region in particular, NOAA projects an intermediate scenario of a 1.8-foot rise in sea level by 2050, compared to the Corps' intermediate scenario of a 1-foot rise in sea level by 2057.³³ Similarly, the high scenario NOAA projects for the Northeast by 2100 is nearly 7 feet of sea level rise, compared to the 6-foot projection used by the Corps. NOAA's intermediate scenario for the Northeast projects 4.3 feet of sea level rise by 2100, more than twice the Corps' projected 2 feet of sea level rise by 2098.³⁴ NOAA's projections extend to 2150 for all of its scenarios, while the high-scenario projections used by the Corps for this Project stop at 2107—not even the full 100-year planning period that the Corps has said it is using.³⁵

²⁸ See, e.g., Letter from Natural Resources Defense Council to White House Council on Environmental Quality, Re: Comments on Federal Agency Climate Adaptation and Resilience Plans, Docket ID: CEQ-2021-0003 (November 2021), <https://www.nrdc.org/sites/default/files/nrdc-comments-federal-climate-adaptation-plans-20211119.pdf>.

²⁹ Sweet et al., *supra* note 8, at xii.

³⁰ DEIS, at 213.

³¹ Sweet et al., *supra* note 8, at 3.

³² DEIS, at 213; Sweet et al., *supra* note 8, at 3.

³³ *Id.*

³⁴ *Id.*

³⁵ The Corps states that it is using a 100-year “planning horizon” to “account for the effects of relative sea level change.” DEIS, at p. 142. However, the Corps uses a 50-year “economic period” to quantify the extent to which each alternative is expected to reduce the economic damages expected if no action is taken. *Id.* In other words, there is a fundamental mismatch between the time period used to develop the alternatives and the time period used to assess the benefits of each alternative. The economic period used to determine the relative benefits of each alternative should align with the planning period used to create those alternatives; otherwise, the benefits calculation lacks critical information about how these alternatives are expected to perform in the longer term.

The Corps' solution for adapting the proposed storm surge barriers to long-term sea level rise is to increase the number of times these barriers are deployed, but it does not address the consequences of more frequent closure in the draft EIS. The Corps explains that "projected increases in relative sea level could result in the storm surge barrier closure criterion being met more frequently with progressively higher-frequency storm surges."³⁶ However, increased operation of the storm surge barriers will lead to additional induced flooding, as well as additional risk of trapping raw sewage and pollutants behind the barriers. The Corps has not adequately examined or explained these potential impacts, nor has it offered any means of mitigating them. The Corps also assumes that "the closure criterion is adjusted up correspondingly for every foot of [relative sea level change]" and notes that each adjustment should be "accompanied with a modification of the plan to 'bridge the gap' in flood management levels caused by raising the closure criterion."³⁷ While the Corps provides some examples of modifications, like the construction of additional measures or height adjustments of existing measures like seawalls, the Draft EIS does not analyze where or to what extent these measures will be necessary. The Corps also does not explain why it has opted to defer investigation of nonstructural measures and risk reduction features rather than incorporating these measures at the outset where they could benefit coastal communities by helping to protect against flooding that does not rise to the storm surge barriers' closure criterion.

In addition to potentially causing greater environmental harm, increasing the operational frequency of storm surge barriers will fail to protect against any storm surge that exceeds the expected increase in relative sea level. If a storm surge overtops the barriers, it will not matter whether or not they are closed. When it comes to climate adaptation, the measures we use must themselves be adaptable and resilient (see Section VI *infra* for further discussion of what such measures could look like).

ii. Storm Surge Barriers Do Not Address High Tide or Sunny-Day Flooding

A comprehensive coastal storm risk management plan must account for not only storm surges, but also riverine flooding, tidal flooding, and flooding from heavy precipitation, as well as the potential compounding of impacts from these events in combination.³⁸ In its report, NOAA looks not only at the rise in mean relative sea level, but also at impacts from "extreme water levels" which are defined as changes in water level due to high tides and storm surges.³⁹ NOAA considers these "extreme water levels" as representative of events occurring at a frequency between the 100-year (i.e., 1% chance) event and events that occur 10 times per year.⁴⁰ By contrast, the Corps focuses on planning for the 100-year flood without interrogating how this Project could also adapt our coastlines to less extreme but still damaging flooding that will take place more often than once every 100 years.

³⁶ DEIS, at 213.

³⁷ DEIS, at 214.

³⁸ A. Gori et al., *Tropical cyclone climatology change greatly exacerbates extreme rainfall-surge hazard*, 12 *Nature Climate Change* 171 (2022), <https://www.nature.com/articles/s41558-021-01272-7>.

³⁹ Sweet et al., *supra* note 8, at 2.

⁴⁰ *Id.*

High-frequency flooding is not something the Corps can ignore, nor can it assume that other projects will address the potential impacts of tidal or sunny-day flooding. NOAA has calculated the average annual frequencies for minor, moderate, and major high-tide flooding at current (2020) sea levels and for expected 2050 sea levels. For the Northeast Atlantic region, NOAA expects to see more than 10 minor floods a year; six moderate floods a year; and four major floods every 10 years.⁴¹ The frequency of so-called “minor” yet still disruptive sunny-day flooding has increased in New York City from 5 days in 2000 to 10-15 days in 2020, and this increase will continue over the next decades.⁴² As NOAA states:

“Decades ago, powerful storms were what typically caused coastal flooding, but due to RSL [relative sea level] rise, even today’s common wind events and seasonal high tides are already regularly flooding communities, and they will do so to an ever-greater extent in the next few decades, affecting homes and businesses, overloading stormwater and wastewater systems, infiltrating coastal groundwater aquifers with saltwater, and stressing coastal wetlands and estuarine ecosystems.”⁴³

NOAA has calculated the average event frequency that coastal flood resilience measures should incorporate into their design to constrain the event frequency to once per year by 2060. Based on data collected at the Battery, NOAA recommends that coastal resilience designs in this area account for the 10-year flood.⁴⁴ The Corps’ focus on the 100-year flood, while important, will not protect coastline communities and ecosystems from the harms caused by higher-frequency flooding.

B. Analysis Pursuant to Section 113(b) of the Water Resources Development Act Can Illuminate the Certain Interplay of Sea Level Rise with This Project

Contrary to the Corps’ statements in the Draft EIS and in public meetings, the consideration of flood impacts beyond those arising from the most extreme storm events does fall within its mandate for the Project, and the Corps’ non-federal partners should exercise their ability to call for additional study to ensure that these impacts are fully considered. Congress recognized the importance of holistically assessing how sea level rise and inland flooding shape the need for coastal storm risk management projects in the Water Resources Development Act of 2020 (WRDA). Section 113(b) of the WRDA directs the Corps, when conducting a study for coastal storm risk management, to consider upon the request of its non-federal partners “whether the need for a project is predicated upon or exacerbated by conditions related to sea level rise or inland flooding.”⁴⁵ In carrying out this investigation, the Corps must, “[t]o the maximum extent practicable, . . . document the potential effects of sea level rise and inland flooding on the

⁴¹ *Id.*, at 41.

⁴² *Id.*, at 3.

⁴³ *Id.*, at 61.

⁴⁴ *Id.*, at 49.

⁴⁵ Water Resources Development Act of 2020, P.L. 116-260 [hereinafter “WRDA 2020”], § 113(b) (2020).

project, and the expected benefits of the project relating to sea level rise or inland flooding, during the 50-year period after the date of completion of the project.”⁴⁶

The federal Water Resources Development Act of 2022, which was signed into law on December 23, 2022, and provides additional funding and extended authorization for activities contemplated under the original WRDA, expands upon this mandate. It states that for any Corps feasibility study relating to a flood risk management or hurricane and storm damage risk reduction project, at the request of a non-federal interest, the Corps must formulate alternatives that “maximize the net benefits from the reduction of the *comprehensive flood risk* within the geographic scope of the study from the isolated and compound effects of:

- “(1) a riverine discharge of any magnitude or frequency;
- (2) inundation, wave attack, and erosion coinciding with a hurricane or coastal storm;
- (3) flooding associated with tidally influenced portions of rivers, bays, and estuaries that are hydrologically connected to the coastal water body;
- (4) a rainfall event of *any* magnitude or frequency;
- (5) a tide of *any* magnitude or frequency;
- (6) seasonal variation in water levels;
- (7) groundwater emergence;
- (8) sea level rise;
- (9) subsidence; or
- (10) *any other driver of flood risk* affecting the area within the geographic scope of the study.”⁴⁷

This legislation reflects Congress’ recognition that a coastal storm risk management plan cannot address any one of these risks in a vacuum because they are not isolated phenomena. An effective plan must holistically consider *and* work to reduce the impacts of flooding and the geological processes that contribute to flooding in all its forms. We believe that further study pursuant to Section 113(b) of the WRDA, as expanded by Section 8106 of the 2022 legislation, provides a focused vehicle for expanding the Corps’ analysis to the comprehensive approach required, and we urge non-federal partners in this Project to request the undertaking of this study.

⁴⁶ *Id.*

⁴⁷ Water Resources Development Act of 2022, P.L. 117-263 [hereinafter “WRDA 2022”], § 8106 (2022) (emphasis added).

IV. Natural and Nature-Based Measures Must Play a Larger Role in This Project

Despite communities' and environmental advocates' longstanding support for the inclusion of natural and nature-based solutions in coastal resiliency and climate adaptation projects, the Corps does not adequately consider these solutions in the Draft EIS. Natural and nature-based measures range widely in scope, from nurturing and restoring coastal wetlands that can help attenuate waves; to building berms and dunes to reverse coastal erosion and provide more of a storm barrier; and even to increasing inland green space to encourage greater absorption of floodwaters. Nature-based measures hold significant promise for addressing coastal flood risk and increasing community resiliency, and the Draft EIS must thoroughly explore this potential.

The Corps' approach to nature-based measures in the Draft EIS runs counter not only to years of environmental justice advocacy, but also to the federal government's recent recognition of the importance of natural and nature-based solutions. At the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change in 2022, the Biden administration announced a "roadmap for nature-based solutions to fight climate change, strengthen communities, and support local economies."⁴⁸ The roadmap acknowledges the important point that frontline community members and environmental justice advocates have repeatedly emphasized: that nature-based solutions can "increase resilience to threats like flooding and extreme heat, and can slow climate change by capturing and storing carbon dioxide."⁴⁹ This roadmap builds on President Biden's April 2022 Executive Order 14072 recognizing the importance of nature-based solutions to tackling the climate crisis.⁵⁰ And it affirms that "[t]he Biden-Harris Administration is committed to maximizing nature-based solutions as critical tools in its toolbox to confront climate change and other major challenges."⁵¹ As evidence of the efficacy of nature-based solutions, the roadmap cites several examples, including that "nature's wetlands saved communities and homeowners \$625 million in damages during Hurricane Sandy."⁵²

The Army Corps has nominally included natural and nature-based features in several of the Draft EIS alternatives, but without enough detail for the public to understand which natural or nature-based features will be deployed where, or how those features will interact with planned

⁴⁸ White House, *FACT SHEET: Biden-Harris Administration Announces Roadmap for Nature-Based Solutions to Fight Climate Change, Strengthen Communities, and Support Local Economies*, WH.GOV (Nov. 8, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/11/08/fact-sheet-biden-%E2%81%A0harris-administration-announces-roadmap-for-nature-based-solutions-to-fight-climate-change-strengthen-communities-and-support-local-economies/>.

⁴⁹ *Id.*

⁵⁰ Exec. Order No. 14072, 87 Fed. Reg. 24851 (Apr. 27, 2022), <https://www.federalregister.gov/documents/2022/04/27/2022-09138/strengthening-the-nations-forests-communities-and-local-economies>.

⁵¹ White House Council on Env'tl. Quality, White House Office of Sci. & Tech. Policy, White House Domestic Climate Policy Office, *Opportunities for Accelerating Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, and Prosperity* (Report to the National Climate Task Force) [hereinafter "CEQ Roadmap"] (2022), <https://www.whitehouse.gov/wp-content/uploads/2022/11/Nature-Based-Solutions-Roadmap.pdf>.

⁵² *Id.*

structural measures. The Draft EIS states that “[t]he details of nonstructural and [natural and nature-based features, or NNBFs] are conceptual and so are not presented in detail . . . The plans will be refined as more information is made available and documented in the final version of the report.”⁵³ This is another example of the Corps failing to provide sufficiently specific information that allows the public to meaningfully comment; moreover, the Corps seems to be proposing that it will provide important details in the final version of this document, effectively foreclosing the issue from meaningful comment in this public comment period and limiting potential comment to the shorter 30-day period that accompanies the Final EIS.

A. The Army Corps Must Heed Frontline Community Members’ Calls for Natural and Nature-Based Features

The Army Corps’ limited analysis of natural and nature-based features is inconsistent with calls from several environmental justice organizations in the region supporting the implementation of NNBFs and touting their many co-benefits. For example, in its 2020 New York City Climate Justice Agenda, the NYC Environmental Justice Alliance stated the following:

“Environmental justice and frontline communities often face intersecting climate, environmental health, and social risks. Industrial waterfront communities face the equally pressing challenges of gentrification and coastal flooding – and heat-vulnerable neighborhoods that lack open, green space and adequate heat mitigation plans often deal with substandard, energy-intensive housing, and the resulting high energy costs. The City must address the vulnerabilities facing frontline communities in a way that promotes the health, safety, and perspectives of coastal communities. The City must also equip communities with the resources they need to mitigate and prepare for looming climate emergencies such as heat waves and storms. . . . The City and State should prioritize funding holistic neighborhood-scale climate justice solutions that maximize local participation and control.”⁵⁴

While addressed specifically to New York City, the principles named in the statement above also apply to the federal government and its climate change adaptation work. In the same report, NYC-EJA named this Project and noted that it and its member organizations “recommended incorporating nature-based infrastructure into the proposed coastal protections project as an equitable solution for disproportionate climate vulnerabilities and negative public health outcomes historically overburdening low-income communities and communities of color.”⁵⁵ As NYC-EJA states, “nature-based coastal resiliency investments benefit NYC’s environmental

⁵³ DEIS, at 160.

⁵⁴ NYC Env’tl. Justice Alliance, *NYC Climate Justice Agenda: A Critical Decade For Climate, Equity, & Health*, at 50 (Apr. 2022), <https://nyc-eja.org/wp-content/uploads/2020/04/CJA-2020-FINAL-042020-for-web.pdf>.

⁵⁵ *Id.* at 51.

justice communities every day of the year by maximizing the numerous co-benefits of green infrastructure.”⁵⁶

The groups comprising NYC-EJA and others have recognized that natural and nature-based features not only protect against floods, but also provide a number of other community benefits. For instance, increasing tree cover and incorporating more green space could not only help reduce floodwaters through absorption, but also combat the relative dearth of tree cover and limited access to parks and green space wrought by systemic racism in communities of color and low-income communities.⁵⁷ In addition to protecting these communities from flooding, nature-based infrastructure holds the potential to slow climate change, address extreme heat, improve air quality, boost mental health, and more. The Corps must thoroughly explore the potential that NNBFs offer in this Project and account for their co-benefits in doing so.

B. The Army Corps Has Not Investigated the Use of Natural and Nature-Based Features as Congress Directed

The Army Corps must undertake a more detailed analysis of natural and nature-based features than what the Draft EIS presents. Congress has long required the Army Corps to evaluate nonstructural alternatives when planning projects intended to reduce flood risk.⁵⁸ In 2016, Congress explicitly required the Corps to consider natural and nature-based features as a planning requirement.⁵⁹ The Biden Administration has further recognized that nature-based solutions hold a wealth of untapped potential, and has even called for agencies like the Corps to “strengthen the use of nature-based solutions in hazard mitigation decisions” and “consider nature-based solution alternatives.”⁶⁰ However, examples of the Army Corps using natural and nature-based measures in its flood risk reduction projects remain few and far between.⁶¹ The Congressional Research Service cites the Corps’ North Atlantic Coast Comprehensive Study, a precursor to this Project, as one of the few instances where natural and nature-based features were considered. However, despite nodding to natural and nature-based features as part of the suite of measures that are to accompany storm surge barriers, the Corps does not provide any analysis of these features beyond noting that “NNBF types and locations will be further refined for the Final Integrated FR/Tier 1 EIS.”⁶²

The distinctions between the Corps’ proposed Alternatives demonstrate a barely cursory analysis of natural and nature-based solutions. Every Alternative except Alternative 5 prioritizes

⁵⁶*Id.*

⁵⁷ CEQ Roadmap, *supra* note 51, at 11.

⁵⁸ N. Carter & E. Lipiec, Cong. Research Serv., *Flood Risk Reduction from Natural and Nature-Based Features: Army Corps of Engineers Authorities*, R46328 (Apr. 27, 2020), <https://crsreports.congress.gov/product/pdf/R/R46328>; 33 U.S.C. § 701b-11.

⁵⁹ Carter & Lipiec, *supra* note 58; 33 U.S.C. § 2289a.

⁶⁰ White House, *Nature-Based Solutions Resource Guide: Compendium of Federal Examples, Guidance, Resource Documents, Tools, and Technical Assistance* [hereinafter “White House Nature-Based Solutions Resource Guide”], at 4 (November 2022), <https://www.whitehouse.gov/wp-content/uploads/2022/11/Nature-Based-Solutions-Resource-Guide-2022.pdf>; CEQ Roadmap, *supra* note 51, at 20-21.

⁶¹ Carter & Lipiec, *supra* note 58.

⁶² DEIS, at v.

the construction of storm surge barriers; they merely differ in whether barriers are harbor-wide or smaller multi-basin and single-basin structures. Alternative 5 contemplates only shore-based measures, but it still focuses on stationary structural measures like floodwalls, elevated promenades, and tide gates.⁶³ The Corps states that Alternative 5 does not include any identified Risk Reduction Features (which could consist of natural or nature-based features) because these features were considered necessary to address high-frequency flooding that might occur while storm surge barriers are open, and Alternative 5 does not contemplate deploying storm surge barriers.⁶⁴ However, the lack of storm surge barriers does not eliminate either the potential for high-frequency flooding or the relevance of nature-based measures (as noted above, high tide and sunny-day flooding will take place more frequently as sea level rises, whether or not storm surge barriers are installed).

Contrary to Congress’s 2018 direction that the Corps “consider the use of both traditional and natural infrastructure alternatives, alone or in conjunction with each other, if those alternatives are practicable,” the Draft EIS sets forth Alternatives that treat natural and nature-based features as an afterthought.⁶⁵ The proposed Alternatives are crafted such that natural and nature-based features are considered only when responding to a need created by the storm surge barriers – which are incorporated into every alternative except two as a matter of course. This lens makes it impossible for the public to understand how effective natural and nature-based solutions might be for this Project, or to what extent deploying these solutions could either reduce the need for large-scale structural measures or increase confidence in the Project’s ability to address flooding up to and including that threatened by a 100-year storm event.

C. Natural and Nature-Based Features Are Cost-Effective, Protective Against Flood Risks, and Resilient

There is a growing body of work to support the efficacy and cost-effectiveness of nature-based, green, and natural infrastructure in reducing climate change-based flood risks. While much of the investment in flood hazard mitigation to date has focused on the construction and operation of built structures like seawalls and storm surge barriers, these structures can cause further degradation of coastal ecosystems in a way that ultimately worsens flood risks over time.⁶⁶ Conversely, nurturing and restoring coastal ecosystems like wetlands, sand dunes, oyster reefs, and salt marshes can not only protect the coastline by slowing waves, trapping sediments, and attenuating storm surge, but also provide longer-term protection by adapting along with their changing environment.⁶⁷ In addition, natural and nature-based features are often more resilient than built structures, and they typically do not come with an end-of-use cost of replacement or

⁶³ DEIS, at 169.

⁶⁴ DEIS, at 58.

⁶⁵ See 33 U.S.C. § 2282.

⁶⁶ B. Reguero et al., *Comparing the cost effectiveness of nature-based and coastal adaptation: A case study from the Gulf Coast of the United States*, 13 PLoS ONE (2018), <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0192132>.

⁶⁷ *Id.*; see also White House Nature-Based Solutions Resource Guide, *supra* note 60.

removal.⁶⁸ In other words, NNBFs tend to become more cost-effective over time.⁶⁹ And natural and nature-based measures do not offer only the benefit of protection against flood damage; as noted in Section IV.A, *supra*, they also provide many other benefits, including the air quality, extreme heat, and mental health benefits tied to increasing green space, as well as the added tourism and recreational value of beaches and barrier islands.

Conclusion

NRDC appreciates the opportunity to comment on this important proposal. We are already seeing the impacts of anthropogenic climate change in the Study Area, and the Army Corps plays a critical role in helping our region adapt and increase our resilience. While such adaptation is vital, it must be undertaken in meaningful partnership with coastal communities, in a way that comprehensively addresses both the span of flood risks exacerbated by climate change and the multidimensional and intersectional nature of climate impacts on vulnerable communities.

Sincerely,



Sahana Rao
Staff Attorney
Natural Resources Defense Council



Anna Weber
Senior Policy Analyst
Natural Resources Defense Council

⁶⁸ CEQ Roadmap, *supra* note 51, at 12.

⁶⁹ Reguero et al., *supra* note 66. A recent study of potential restoration measures on the Gulf Coast found that a suite of measures that included local levees, sandbags, and dikes but also emphasized natural and nature-based adaptations like wetland and barrier island restoration, oyster reef restoration, and beach nourishment, was the most cost-effective solution for reducing coastal flood risk. *Id.*

Attachment A



November 5, 2018

Bryce W. Wisemiller, Project Manager
U.S. Army Corps of Engineers, New York District
Programs and Project Management Division, Civil Works Programs Branch
26 Federal Plaza, Room 2127
New York, NY 10279-0090

Re: New York/New Jersey Harbor & Tributaries Focus Area Feasibility Study

Dear Mr. Wisemiller:

Thank you for the opportunity to comment on the U.S. Army Corps of Engineers' New York/New Jersey Harbor & Tributaries Focus Area Feasibility Study (the "Feasibility Study" or "Project"), which seeks to develop a plan to protect millions of people who live and work in the New York/New Jersey metropolitan region from the effects of coastal storm damage.

We write on behalf of the Natural Resources Defense Council (NRDC) to raise some preliminary concerns about the Feasibility Study. In short, while we share the Corps' desire to address coastal storm risk, we strongly oppose the use of offshore storm surge barriers, which could cause serious and irreparable harm to the ecosystem and coastal communities of the region. *We recommend that, rather than construct a series of offshore barriers, the Corps adopt an integrated system of discrete onshore projects that would be less costly, more protective, and less destructive to the environment and local communities.*

We raise several main points in our initial concerns. Primarily, offshore storm surge barriers are not a long-term solution to the myriad coastline effects resulting from climate change—they are expensive, inflexible, harmful to the environment, and injurious to communities located close to, but outside of, the barriers. There are more affordable, more localized, and more effective solutions to the problem, such as the construction of dunes, floodwalls, levees, offshore breakwaters, local storm surge barriers, and wetlands, living shorelines, and reefs. Many of these proposed solutions also address other climate change vulnerabilities, such as sea level rise and sunny day tidal flooding. To the extent the Corps moves forward with this project, we urge the Corps to reject any proposal under the Feasibility Study that would erect offshore storm surge barriers in New York Harbor. Instead, we urge the Corps to consider adopting coastal projects, such as dunes, dikes, and levees, and natural options like wetland restoration, that would be less costly, more protective, and less destructive to the environment and local communities.

Our preliminary comments to the Feasibility Study are divided into six parts. Part I provides some relevant background information to place the project and our comments in context. Part II outlines how offshore storm surge barriers could significantly affect nearby communities. Part III describes how offshore storm surge barriers could significantly affect nearby water resources, wetlands, vegetation, and wildlife, especially aquatic flora and fauna. Part IV explains how such barriers would not be effective against sea level rise and may only have a relatively short lifetime until storm surge levels, compounded by sea level rise, exceed the

NATURAL RESOURCES DEFENSE COUNCIL

40 W 20TH STREET | NEW YORK, NY | 10011 | T 212.727.2700 | F 212.727.1773 | NRDC.ORG

height of the barriers. Part V outlines the potential monetary cost of offshore barriers. Part VI suggests other, less expensive, more effective, and more sustainable methods that should be considered to mitigate the effects of storm surge in lieu of offshore storm surge barriers. Finally, Part VII requests that the Corps enhance the public scoping process to ensure meaningful participation by the public and affected community members in the process.

I. Background

A. The Natural Resources Defense Council

The Natural Resources Defense Council is an international, nonprofit environmental organization with more than three million members and online activists, including nearly 130,000 in New York State. For five decades, NRDC has been committed to the preservation, protection, and defense of the environment, public health, and natural resources. NRDC has for more than 25 years been a principal advocate for pollution prevention and watershed protection for the Catskill and Delaware watersheds, which provide drinking water to more than nine million residents. In the 1990s NRDC brought federal Clean Water Act litigation that led to the establishment of total maximum daily load (TMDL) pollution standards in New York's upstate reservoirs and other state waterbodies. NRDC has also been a key advocate since the 1970s for full cleanup of toxic PCBs from the Hudson River. And NRDC played an important role in the successful public campaign leading to Governor Andrew Cuomo's announced ban on fracking, which avoided a major water quality threat to water supplies across New York State.

As part of our work to mitigate the harms from climate change, NRDC advises government officials on plans to protect residents against extreme heat, floods, sea level rise, and other climate-related hazards. NRDC scientists also track predicted changes in allergens, disease transmission, and other health impacts of climate change and alert residents and local governments to potential risks. In the New York metropolitan region, NRDC has actively supported federal, state, and local programs to purchase the land of residents whose property was adversely affected by storm surges and flooding. NRDC also urged government officials at all levels to use natural barriers to protect shorelines. For example, NRDC advocated for the adoption of the Staten Island Living Breakwaters Project, an innovative coastal green infrastructure project that utilizes breakwaters to both reduce the harm of storm surges while also providing habitat to local aquatic species.

B. Anthropogenic Climate Change is Real, and We Are Suffering Its Effects Now

We are undergoing a new phase in our planet's climatic history—Heat-trapping pollution is destabilizing the climate, posing a dire threat to public health and welfare. Higher temperatures worsen deadly heat waves, promote the spread of insect-borne diseases, intensify storms and flooding that cause death and injury and enormous property damage, displace wildlife and irreversibly alter ecosystems, and deepen droughts that threaten crops and water supplies. These harmful impacts are already being felt and they disproportionately affect children, the elderly, low-income populations, communities of color, indigenous populations, and developing countries. The U.S. National Oceanic and Atmospheric Administration (NOAA) ranked this past

3-month period, from May through July 2018, as the hottest period ever in the lower 48 states.¹ Sea levels have also risen about 3 inches higher than levels in 1993.² It is no coincidence that the amount of carbon dioxide in the atmosphere was found in 2017 to be at its highest level in 800,000 years.³ The threat of storm surges and sea level rise as a result of anthropogenic climate change is no longer a hypothetical scenario—it is real, it is currently happening and the need to protect New Yorkers is urgent.

These changes in climate are forcing the displacement of populations across the globe—in Bangladesh, for example, over six million people have already been displaced by the effects of climate hazards.⁴ And the displacement will only intensify as time goes on. By one estimate, sea level rise resulting from an increase in temperature of 2 degrees Celsius could submerge land that is currently home to 280 million people,⁵ and the risks of displacement are significantly higher among people living in poverty and in coastal communities.⁶

As the New York City Panel on Climate Change has observed, “climate risks in the New York metropolitan region are increasing and are projected to continue to increase throughout the 21st century.”⁷ Higher temperatures, heavy downpours, sea level rise, and intensified coastal flooding are expected to be the major climate hazards for the region.⁸ While these impacts cry out for new resiliency adaptations, it is imperative to carefully consider and disclose both the human health and environmental impacts of these projects as early as possible to ensure that their benefits outweigh their economic, social, and environmental cost.

¹ *Climate at a Glance: Global Mapping*, NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (Oct. 2018), <https://www.ncdc.noaa.gov/cag/>.

² Somini Sengupta, *2018 Is Shaping Up to Be the Fourth-Hottest Year. Yet We’re Still Not Prepared for Global Warming.*, N.Y. TIMES, Aug. 9, 2018, *available at* <https://www.nytimes.com/2018/08/09/climate/summer-heat-global-warming.html>.

³ AMERICAN METEOROLOGICAL SOCIETY, STATE OF THE CLIMATE IN 2017 Sxvi (Jessica Blunden et al. eds., 2018), *available at* https://www.ametsoc.net/sotc2017/StateoftheClimate2017_lowres.pdf.

⁴ EZEKIEL SIMPERINGHAM, DISPLACEMENT SOLUTIONS, CLIMATE DISPLACEMENT IN BANGLADESH: THE NEED FOR URGENT HOUSING, LAND AND PROPERTY RIGHTS SOLUTIONS 4–5 (2012), *available at* <http://displacementsolutions.org/wp-content/uploads/DS-Climate-Displacement-in-Bangladesh-Report-LOW-RES-FOR-WEB.pdf>.

⁵ BENJAMIN STRAUSS, ET AL., CLIMATE CENTRAL, MAPPING CHOICES: CARBON, CLIMATE AND RISING SEAS – OUR GLOBAL LEGACY 10 (2015), *available at* <http://sealevel.climatecentral.org/uploads/research/Global-Mapping-Choices-Report.pdf>.

⁶ JULIE-ANNE RICHARDS & SIMON BRADSHAW, OXFAM, UPROOTED BY CLIMATE CHANGE: RESPONDING TO THE GROWING RISK OF DISPLACEMENT 3 (2017), *available at* https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp-uprooted-climate-change-displacement-021117-en.pdf.

⁷ CYNTHIA ROSENZWEIG ET AL., N.Y.C. PANEL ON CLIMATE CHANGE, BUILDING THE KNOWLEDGE BASE FOR CLIMATE RESILIENCY: N.Y.C. PANEL ON CLIMATE CHANGE 2015 REPORT 107 (2015), *available at* <https://nyaspubs.onlinelibrary.wiley.com/toc/17496632/1336/1>

⁸ *Id.*

C. *The Corps' Proposal*

To date, the Corps has provided very little information about the five alternatives proposed in the Study—the publicly available information included in the Federal Register⁹ and on the Corps website¹⁰ provide only very general information about the five proposed alternative projects, failing to, for example, state what type of offshore barrier will be used,¹¹ the height of the proposed barriers, and what types of natural and nature-based features and non-structural measures will be included in each alternative, among other things. This paucity of detail related to the proposed alternatives makes it difficult to provide detailed comments to the Project during this phase of environmental review.

Our current understanding of the Project is as follows:

- **Alternative 2** proposes a 5-mile storm surge barrier from Sandy Hook in Monmouth County, New Jersey to Breezy Point in Queens, New York, flanked by approximately 10 to 12 miles of shoreline-based measures (floodwalls, levees, etc.) on both the New Jersey and New York coastlines. This alternative also includes a smaller-scale storm surge barrier at Throgs Neck.
- **Alternative 3A** proposes storm surge barriers at Arthur Kill, Jamaica Bay, Pelham, Throgs Neck, and the Verrazano Narrows. Several miles of shoreline-based measures would be placed along the Rockaway Peninsula and the Brooklyn coastline between Jamaica Bay and the Verrazano Narrows, as well as along the proposed barriers.
- **Alternative 3B** proposes storm surge barriers at Arthur Kill, Jamaica Bay, the Gowanus Canal, Kill Van Kull, Newtown Creek, and Pelham. Shoreline-based measures would be placed adjacent to each barrier (including along the Rockaway Peninsula and between Jamaica Bay and the Verrazano Narrows), as well as along East Harlem, the New Jersey Upper Bay/Hudson River Shoreline area (Jersey City), and the West Side of Manhattan.
- **Alternative 4** proposes storm surge barriers at Jamaica Bay, the Gowanus Canal, the Hackensack River, Newtown Creek, and Pelham, with placement of shoreline-based measures similar to Alternative 3B. Additional shoreline-based measures would be placed along the Hudson in certain locations between Yonkers and Albany.
- **Alternative 5** proposes shoreline-based measures at East Harlem, the Gowanus Canal, Newtown Creek, the New Jersey Upper Bay/Hudson River Shoreline area (Jersey City),

⁹ Notice of Intent To Prepare a Tiered Environmental Impact Statement for the New York New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study, 83 Fed. Reg. 6169 (Feb. 13, 2018).

¹⁰ *FACT SHEET - New York/New Jersey Harbor & Tributaries Focus Area Feasibility Study*, NEW YORK DISTRICT, U.S. ARMY CORPS OF ENGINEERS, <http://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/644997/fact-sheet-new-yorknew-jersey-harbor-tributaries-focus-area-feasibility-study/> (last updated Feb. 2018).

¹¹ Several types of gates are available for use when constructing offshore storm surge barriers, and could have different effects on the environment and nearby communities. These include: vertical lift gates, vertical rising gates, segment gates, rotary segment gates, sector gates, inflatable gates, flap gates, barge gate, and rolling gates. LESLIE F. MOOYAART ET AL., *STORM SURGE BARRIER: OVERVIEW AND DESIGN CONSIDERATIONS 3-14* (2014), available at <https://repository.tudelft.nl/islandora/object/uuid%3A8ca0ffc7-c317-4c80-aadb-d35323f51824>.

and the West Side of Manhattan, as well as unspecified “perimeter-based measures” in the Meadowlands area of New Jersey—it is unclear what these would involve. As in Alternative 4, additional shoreline-based measures would be placed along the Hudson in certain locations between Yonkers and Albany.

The Corps states that each alternative may also include the use of unspecified “natural & nature-based features” and non-structural measures; however, no information has been provided on the types of measures that would be considered and where they would be placed.

Because of the environmental, cost, logistical, and flood protection issues associated with large-scale storm surge barriers, Alternative 2 raises the most concerns. However, all proposals that form an impediment to the natural flow of water could have serious consequences for the New York-New Jersey region, as described below.

II. Storm Surge Barriers Could Harm Vulnerable Communities

Communities of color and low-income communities are disproportionately vulnerable to the health and economic effects of extreme weather events. While some observers have described extreme weather events as “social equalizers” that do not differentiate based on ethnicity, race, or class, data show that extreme weather events usually hit environmental justice communities the hardest.¹² According to researchers at Stony Brook University, for example, census blocks with lower median income experienced greater damage from Superstorm Sandy than wealthier census blocks.¹³ They also found that the majority of New York City schools that reported flooding during Superstorm Sandy were located in African-American and Latino neighborhoods.¹⁴ New York City Housing Authority (NYCHA) buildings, home to some of the city’s poorest residents, were also hit hard by Hurricane Sandy. According to an audit by the New York City Comptroller’s office, approximately 80,000 residents in 402 NYCHA buildings lost power, heat, and hot water because their heating and electrical systems were flooded.¹⁵ And once hit by these events, it is much harder for low-income households to recover from the devastation.

To be sure, we recognize that storm surge barriers could temporarily protect certain communities from storm surges. But at the same time, the barriers may lead to or exacerbate flooding, in areas adjacent to and outside of the barriers.¹⁶ Based on past experience, we are

¹² Kim Knowlton & Miriam Rotkin-Ellman, *Preparing for Climate Change: Lessons for Coastal Cities from Hurricane Sandy*, NATURAL RESOURCES DEFENSE COUNCIL 13 (2014).

¹³ Chris Sellers et al., *Median Income versus Damaged Housing*, CENTER FOR THE STUDY OF INEQUALITY, SOCIAL JUSTICE AND POLICY, STONY BROOK UNIVERSITY (2017) <https://inequality.studies.stonybrook.edu/wordpress/damaged-housing-by-median-income/>.

¹⁴ Chris Sellers et al., *Race, Ethnicity, and Flooding*, CENTER FOR THE STUDY OF INEQUALITY, SOCIAL JUSTICE AND POLICY, STONY BROOK UNIVERSITY (2017) <https://inequality.studies.stonybrook.edu/wordpress/mapping-sandys-inequalities/race-ethnicity-and-flooding/>.

¹⁵ OFFICE OF THE COMPTROLLER, CITY OF NEW YORK, AUDIT REPORT ON THE NEW YORK CITY HOUSING AUTHORITY’S EMERGENCY PREPAREDNESS 4 (Dec. 14, 2015), available at https://comptroller.nyc.gov/wp-content/uploads/documents/SR14_113A.pdf.

¹⁶ N.Y.C. ECONOMIC DEVELOPMENT CORPORATION, A STRONGER, MORE RESILIENT NEW YORK 41 (2013), available at

concerned that those adjacent areas will be disproportionately composed of low-income communities and communities of color.

Thus, it is critical that the interests of low-income communities and communities of color are not left out of this on-going process. This means, for example, that all communities should be proactively engaged in developing solutions that are part of regional climate mitigation efforts. At a minimum, the Corps should host additional stakeholder meetings in all potentially affected areas inside and near the Study Area at times when full-time employees are not at work and with translators for languages that reflect the diversity of languages spoken in those areas. If such proactive outreach engagement does not take place, the Corps may unintentionally exclude critically vulnerable communities.

As noted, because there is little detail at this time about the proposed alternatives, our comments are at best educated guesses about the potential impacts of each alternative. While all of the proposed alternatives may have unique and potentially detrimental community impacts, we are particularly concerned with Alternatives 2, 3A, 3B, and 4, as they include offshore barriers that threaten to exacerbate flooding in certain communities, including some environmental justice communities.

Alternative	Communities that may be protected by proposed offshore storm surge barriers		Communities that may experience increased flooding due to proposed offshore storm surge barriers	
Alternative 1	N/A		N/A	
Alternative 2	Queens County, NY	College Point The Rockaways* Whitestone	Queens County, NY	Bay Terrace Bayside
			Westchester County, NY	Pelham Manor
			Nassau County, NY	Inwood* Atlantic Beach Long Beach
	Bronx County, NY	Castle Hill* Hunts Point* Clason Point*	Bronx County, NY	City Island* Middletown-Pelham Bay Throgs Neck* Schuylerville
		Northern Jersey Shore from Highland to Long Branch		The Jersey Shore south of Long Branch

https://www.nycedc.com/sites/default/files/filemanager/Resources/Studies/Stronger_More_Resilient_NY/Ch3_Coastal_FINAL_singles.pdf

Alternative 3A	Bronx County, NY	Hunts Point* Portions of Throgs Neck*	Bronx County, NY	City Island* Middletown-Pelham Bay Schuylerville
	Kings County, NY	Bay Ridge* Brighton Beach* Coney Island* Sheepshead Bay*	Kings County, NY	Fort Hamilton* Bensonhurst* Gravesend
			Nassau County, NY	Atlantic Beach Inwood* Long Beach
	Queens County, NY	Whitestone Portions of the Rockaways*	Queens County, NY	Breezy Point* Bay Terrace Bayside
	Richmond County, NY	Portions of St. George	Richmond County, NY	Arrochar Tottenville
			Middlesex County, NJ	Perth Amboy* South Amboy
			Westchester County, NY	Pelham Manor
Alternative 3B	Bronx County, NY	Hunts Point* Clason Point* Castle Hill*	Bronx County, NY	City Island* Throgs Neck* Middletown-Pelham Bay Schuylerville Mott Haven*
			Middlesex County, NJ	Perth Amboy* South Amboy
	Kings County, NY	Bensonhurst* Brighton Beach* Coney Island* Gowanus Gravesend Greenpoint Sheepshead Bay*	Kings County, NY	Bay Ridge* Fort Hamilton* Red Hook* Greenpoint*
			Queens County, NY	Long Island City* Breezy Point* East Elmhurst* Jackson Heights*
	Queens County, NY	Astoria* Ditmars Steinway* Portions of the Rockaways*		
	Richmond County, NY	St. George	Richmond County, NY	Tottenville
			Nassau County, NY	Atlantic Beach Inwood* Long Beach
			Westchester County, NY	Pelham Manor
			Hudson County, NJ	Bayonne*

Alternative 4	Kings County, NY	Bensonhurst* Brighton Beach* Coney Island* Gowanus Gravesend Greenpoint Sheepshead Bay*	Kings County, NY	Bay Ridge* Carroll Gardens Fort Hamilton* Red Hook* Williamsburg
	Queens County, NY	Flushing* Portions of the Rockaways*	Queens County, NY	Breezy Point* East Elmhurst* Jackson Heights*
	Bronx County, NY	Hunts Point* Clason Point* Castle Hill*	Bronx County, NY	City Island* Throgs Neck* Middletown-Pelham Bay Schuylerville Mott Haven*
			Nassau County, NY	Atlantic Beach Inwood* Long Beach
			Westchester County, NY	Pelham Manor
Hudson County, NJ	Kearny, NJ	Essex County, NJ	South Ironbound* Newark*	
Alternative 5	N/A		N/A	

* Communities marked with an asterisk (“*”) have poverty rates above the national average, and, as a consequence, are especially vulnerable to storm surge and sea level rise.

As indicated in the above table, while some communities will be protected by the proposed barriers, many may well become sacrifice zones. And while some alternatives may protect areas that were flooded by Hurricane Sandy, like portions of the Rockaways (Queens County) and Coney Island (Kings County), others are still left vulnerable. These neighborhoods include Tottenville (Richmond County), the Battery (New York County), the Gowanus Canal (Kings County), and Sea Gate (Kings County). All of these neighborhoods were subjected to over 10 feet of storm surge during Superstorm Sandy.¹⁷

Further, if in future years, sea levels rise to eventually overtop the barriers, we are concerned that even low-lying communities behind the barrier could be vulnerable to storm surge. Due to lack of resources and support, low-income communities will be especially unable to respond to increased flood risk.¹⁸ These low-lying communities include: Red Hook (Kings County), Sunset Park (Kings County), Harlem (New York County), the Rockaways (Queens

¹⁷ N.Y.C. ECONOMIC DEVELOPMENT CORPORATION, A STRONGER, MORE RESILIENT NEW YORK 41 (2013), available at https://www.nycedc.com/sites/default/files/filemanager/Resorces/Studies/Stronger_More_Resilient_NY/Ch3_Coastal_FINAL_singles.pdf.

¹⁸ DISASTER TECHNICAL ASSISTANCE CENTER, SUBSTANCE ABUSE AND MENTAL HEALTH SERVICES ADMINISTRATION, GREATER IMPACT: HOW DISASTERS AFFECT PEOPLE OF LOW SOCIOECONOMIC STATUS 12-13 (2017).

County), Coney Island (Kings County), and areas of South Brooklyn, the South Bronx and Coastal Queens.

In summary, we strongly urge the Corps to carefully consider and disclose the impacts of the proposed alternatives on nearby communities—including which neighborhoods are protected, which may become sacrifice zones, and what criteria is used for protecting certain neighborhoods over others. We also respectfully request that, as soon as possible and as part of its environmental review, the Corps carefully examine and disclose the environmental justice implications of each alternative, and select a final alternative that does not lead to the flooding of any single community.

III. Offshore Storm Surge Barriers Could Significantly Harm the Marine Environment

The New York-New Jersey Estuary is a thriving, interconnected system of waterbodies that supports a great variety of estuarine species. The storm surge barriers proposed in Alternative 2 (Sandy Hook-Breezy Point and Throgs Neck), Alternative 3A (Jamaica Bay, Verrazano Narrows, Arthur Kill, and Throgs Neck), Alternative 3B (Jamaica Bay, Arthur Kill, and Kill Van Kull), and Alternative 4 (Jamaica Bay) could significantly disrupt the natural flow of water in the Hudson River, Long Island Sound, and New York-New Jersey Harbor, as well as their tributaries, potentially resulting in significant ecological impacts, described below.

The Study Area's marine resources are in many ways defined by their estuarine nature—the levels of salinity, distribution and movement of sediment, and the tidal movement of water to and from the New York-New Jersey Harbor, the Hudson River Estuary, and Long Island Sound. The estuary supports a high volume of algae, phytoplankton, and zooplankton, which in turn support a high variety of aquatic species, including the blue crab,¹⁹ ribbed mussel,²⁰ Shortnose Sturgeon,²¹ bottlenose dolphin,²² and the harbor seal.²³ While each of these estuaries has distinct features, they are all connected to each other by a variety of openings and tributaries. Any impediment to circulation in one waterbody could affect the characteristics in other parts of the system.

¹⁹ NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, SIGNIFICANT HABITATS AND HABITAT COMPLEXES OF THE NEW YORK BIGHT WATERSHED – LOWER HUDSON RIVER ESTUARY 4 (2011) *available at* https://www.nodc.noaa.gov/archive/arc0034/0071981/1.1/data/1-data/disc_contents/document/wp/low_hud.pdf.

²⁰ NEW YORK-NEW JERSEY HARBOR & ESTUARY PROGRAM, HUDSON-RARITAN ESTUARY COMPREHENSIVE RESTORATION PLAN 37, 82 (2016), *available at* <http://www.harborestuary.org/watersweshare/pdfs/CRP/FinalReport-0616.pdf>.

²¹ *Id.*

²² D. F. SQUIRES & J. S. BARCLAY, NEW YORK-NEW JERSEY HARBOR & ESTUARY PROGRAM, NEARSHORE WILDLIFE HABITATS AND POPULATIONS IN THE NEW YORK/NEW JERSEY ESTUARY 92 (1990), *available at* <http://www.harborestuary.org/pdf/NearshoreWildlife1990.pdf>.

²³ *Id.*

A. Offshore Storm Surge Barriers Could Change the Salinity of the New York-New Jersey Harbor

All three estuaries within the Study Area—the Hudson River, Long Island Sound, and New York-New Jersey Harbor—rely on the flow of saltwater upstream and flow of freshwater downstream to maintain the proper salinity levels to sustain aquatic life endemic to the region. Physical barriers could constrain the distribution of salt within the Study Area, altering the entire ecosystem.²⁴

The composition of benthic communities in the Hudson River, for example, is a strong function of salinity.²⁵ While marine species (those that thrive in salt water) like polychaetes and bivalves such as *mya* and *mocoma* are dominant downstream closer to Manhattan, freshwater species of oligochaetes, insects, and bivalves dominate upstream north of Newburg where the water is less salty.²⁶ A physical barrier could impede the natural flow of seawater into the river system, resulting in reduced salinity and a freshening of the Hudson River.²⁷

Changes in salinity can dramatically alter the types of organisms that live in a body of water—For example, changes in salinity have been found to alter some species' metabolic rates²⁸ and accumulation of cadmium,²⁹ a chemical that is toxic to all life.³⁰

B. Offshore Storm Surge Barriers Could Change the Sediment Distribution of the New York-New Jersey Harbor

Storm surge barriers could also alter the transport and distribution of sediment within the Study Area, encouraging the distribution of harmful contaminants throughout the New York-New Jersey Harbor. Typically, sediments tend to flow from the Atlantic Ocean and the Long Island Sound to the Upper Bay of New York Harbor.³¹ While difficult to model, the construction of in-water barriers could trap sediments outside of the barriers, filling the shipping channel,

²⁴ R.L. Swanson et al., *Storm Surge Barriers: Ecological and Special Concerns*, in AMERICAN SOCIETY OF CIVIL ENGINEERS, STORM SURGE BARRIERS TO PROTECT NEW YORK CITY AGAINST THE DELUGE 122, 124, 127 (Douglas Hill et al. eds., 2013)., available at <http://www.msaudcolumbia.org/summer/wp-content/uploads/2013/06/Storm%20Surge%20Barriers%20to%20Protect%20New%20York%20City-%20Against%20The%20Deluge.pdf>.

²⁵ David L. Strayer, *The Benthic Animal Communities of the Tidal-Freshwater Hudson River Estuary*, in THE HUDSON RIVER ESTUARY 266, 270 (Jeffrey S. Levinton & John R. Waldman eds., 2006), available at https://www.researchgate.net/publication/285877649_The_Benthic_Animal_Communities_of_the_Tidal-Freshwater_Hudson_River_Estuary.

²⁶ *Id.*

²⁷ *Id.* at 124.

²⁸ Marisela Aguilar et al., *The Effect of Salinity on Oxygen Consumption and Osmoregulation of Macrobrachium Tenellum*, 31 Marine and Freshwater Behav. & Physiology 105 (1998).

²⁹ D. A. Wright, *The Effect of Salinity on Cadmium Uptake by the Tissues of the Shore Crab Carcinus Maenas*, 67 J. Experimental Biology 137-146 (1977).

³⁰ Stuart M. Levit, *A Literature Review of Effects of Cadmium on Fish*, Nature Conservancy (2010), <https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/alaska/sw/cpa/Documents/L2010CadmiumLR122010.pdf>.

³¹ Swanson et al., *supra* note 21, at 127.

which could require more frequent dredging.³² This in turn could disrupt the seafloor and resuspend contaminated sediments that have settled to the bottom.³³

While the Hudson River and New York-New Jersey Harbor are naturally turbid waters,³⁴ increased turbidity could in turn increase the distribution of contaminants in the Study Area. Contaminants such as organic and inorganic toxins, PCBs, pesticides and other harmful substances bind to and are transported by suspended solids, expanding the distribution of these harmful chemicals as turbidity increases.³⁵ This could be dangerous for all life that relies on the New York-New Jersey Harbor, as described in more detail in Part III.C., below.

Changing sediment distribution could harm New York and New Jersey's growing shellfish population. Native shellfish, such as oysters, hard clams, and soft clams, rely on gravel bottoms and cobble bars free of mud and sediment for attachment, protection, feeding, and oxygen consumption.³⁶ A change in sediment distribution may result in changes to the shellfish population that are difficult to predict without additional study.

C. Offshore Storm Surge Barriers Could Expose the New York-New Jersey Harbor to Increased Sewage and Other Pollution

A storm surge barrier could also trap sewage and other pollutants behind the barriers for, at minimum, the time during which the storm surge barriers are closed, but also when they are open. There are approximately 460 Combined Sewer Overflow (CSO) outfalls in New York City alone.³⁷ When a wastewater treatment plant fails, or when it rains and the system is overloaded with water, raw sewage effluent is pumped out of CSO outfalls into New York City's waterways. A storm surge barrier, even when open, could restrict the movement of raw sewage out to sea, jeopardizing water quality and subjecting aquatic species and members of the public to health risks.

A barrier impeding the natural tidal flow of the estuaries could also diminish the effectiveness of current pollution control efforts and could require billions of dollars of additional pollution reduction investments to meet current water quality standards, as well as more stringent standards that the Environmental Protection Agency has deemed necessary to protect public health. Clean Water Act compliance efforts in New York, New Jersey, and Connecticut, are all based on hydrodynamic modeling of the New York-New Jersey Harbor estuary and Western Long Island Sound. Hydrodynamic modeling has been and continues to also be used as the basis for past and impending decisions concerning billions of dollars of infrastructure investment to reduce critical pollutants, such as nutrients discharged from wastewater treatment plants and raw sewage discharges from CSOs. These models assume the

³² *Id.*

³³ *Id.*

³⁴ Nancy Steinberg et al., *Health of the Harbor: The First Comprehensive Look at the State of the NY/NJ Harbor Estuary*, NY/NJ Harbor & Estuary Program (2004), at 26, <http://www.harborestuary.org/reports/harborhealth.pdf>.

³⁵ *Id.* at 29.

³⁶ Lucie M. Lévesque & Monique G. Dubé, *Review of the Effects of In-Stream Pipeline Crossing Construction on Aquatic Ecosystems and Examination of Canadian Methodologies for Impact Assessment*, 132 *Envtl. Monitoring & Assessment* 395, 400 (2007).

³⁷ Mem. from N. G. Kaul, N.Y. Dep't of Env'tl. Conservation Water Division Director, to Regional Water Engineers, Bureau Directors & Section Chiefs (Oct. 1, 1993), https://www.dec.ny.gov/docs/water_pdf/togs163.pdf.

natural tidal exchange of water moving across the “borders” of the areas where barriers are being considered. Barriers that impede that tidal flow could throw into disarray that entire Clean Water Act compliance effort.

This applies to, for example, the ongoing PCB cleanup process and related natural resources restoration in the Hudson River. That effort is based upon hydrodynamic models of how PCBs flow downstream in the tidal portion of the Hudson. While the current cleanup efforts are already insufficient, a barrier impeding the tidal flow could further diminish the effectiveness of the PCB cleanup and thereby endanger human health.

D. Storm Surge Barriers Could Serve As a Physical Barrier for Aquatic Life

The construction of barriers could also harm aquatic species endemic to the Study Area by creating a physical obstacle that impedes their migratory patterns. The Hudson River is home to a number of anadromous fish species, including river herring, striped bass, American shad, and Atlantic sturgeon, the latter two of which are listed by the National Marine Fisheries Service as “species of concern.”³⁸ These species travel upstream each year to spawn, and are able to return to their spawning location many years later.³⁹ The proposed storm surge barriers could interfere with the natural migratory patterns of aquatic species, potentially resulting in decreased spawning rates and lower population numbers.

Because offshore barriers could harm the local marine ecosystem as described above, we urge the Corps to select a project that does not include offshore storm surge barriers.

IV. Sea Level Rise Would Undermine the Efficacy of Offshore Storm Surge Barriers

The efficacy of offshore storm surge barriers would be significantly threatened by sea level rise. Specifically, the barriers could be rendered insufficient if sea level overtops the closed barriers—this scenario is not adequately considered by the Corps’ worst-case-scenario projection. Moreover, in any scenario, whenever the barriers are open, they would completely fail to protect the Study Area⁴⁰ from the effects of sea level rise, one of the greatest threats resulting from climate change.

³⁸ Swanson et al., *supra* note 21, at 129.

³⁹ Clyde L. Mackenzie, Jr., *The Fisheries of Raritan Bay, New Jersey and New York*, 52 *Marine Fisheries Rev.* 1 (1990).

⁴⁰ The Corps defines the Study Area as the area encompassing “approximately 2,150 square miles and includes parts of Bergen, Passaic, Morris, Essex, Hudson, Union, Somerset, Middlesex, and Monmouth Counties in New Jersey and Rensselaer, Albany, Columbia, Greene, Dutchess, Ulster, Putnam, Orange, Westchester, Rockland, Bronx, New York, Queens, Kings, Richmond, and Nassau Counties in New York. The Study Area extends upstream of the Hudson River to the federal lock and dam at Troy, New York, the Passaic River to the Dundee Dam, and the Hackensack River to the Oradell Reservoir.” Notice of Intent to Prepare a Tiered Environmental Impact Statement for the New York New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study, 83 Fed. Reg. 6169 (Feb. 13, 2018).

A. The Corps Is Underestimating Future Sea Level Rise, Undermining the Effectiveness of Any Proposed Offshore Storm Surge Barrier

Based on the little information provided by the Corps about the Project, it appears as if the Corps is underestimating the worst-case scenario for sea level rise. By underestimating potential sea level rise, the Corps risks constructing a storm surge barrier that could be overtopped in several decades, significantly undermining the Project's efficacy. According to the National Oceanic and Atmospheric Administration (NOAA), the worst-case scenario sea level rise could be as high as 9.8 feet in the Northeastern United States.⁴¹ In comparison, the Project assumes a worst-case scenario of seven feet of sea level rise,⁴² which is less than NOAA's worst-case scenario by almost three feet. Furthermore, NOAA's projections are only applicable up to the year 2100—sea levels will continue rising far into the future and, at some point, will exceed these projections in the next century, when it is likely that the study region would still be relying upon one of the proposed storm surge alternatives offered by the Corps.

Additional factors throw the Corps' sea level rise estimates into further uncertainty—while NOAA has estimated that there is a 0.1 percent probability that its worst-case-scenario will be exceeded, NOAA acknowledges that this probability increases if areas of Antarctica melt and destabilize faster than expected. There is now mounting scientific evidence that sensitive areas of the Antarctic are melting faster than current projections anticipate,⁴³ meaning that even NOAA's worst-case-scenario projections may be surpassed. NRDC requests that, when calculating for sea level rise, the Corps incorporate the worst-case-scenario reflecting the most up-to-date science.

Given these considerations, it is extremely risky to move forward with any alternative that would be rendered obsolete in the face of worst-case-scenarios for sea level rise.

B. Storm Surge Barriers Are Not Protective Against the Many Other Dimensions of Climate Vulnerability

Storm surge is not the only climate threat facing coastlines—the New York City metropolitan area can also expect to experience sea level rise, tidal or sunny day flooding,⁴⁴ and the expansion of floodplains due to high levels of precipitation and riverine flooding. As proposed, Alternatives 2, 3A, 3B, and 4 address only a single dimension of the Study Area's

⁴¹*Global and Regional Sea Level Rise Scenarios for the United States*, Nat'l Oceanic & Atmospheric Admin. (Jan. 2017), https://tidesandcurrents.noaa.gov/publications/techrpt83_Global_and_Regional_SLR_Scenarios_for_the_US_final.pdf. This projection of so-called “extreme” sea level rise includes global mean sea level rise of 2.5 m (8.2 feet) by 2100, *id.* at 21 – 22, with an additional 0.3 – 0.5 m (1.0 – 1.6 feet) in the Northeastern United States due to ocean currents and other regional differences, *id.* at vii.

⁴² *New York/New Jersey Harbor & Tributaries Coastal Storm Risk Feasibility Study*, U.S. Army Corps of Engineers, <http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/nj/coast/NYNJHATS/NJHatPres.pdf?ver=2017-10-16-141621-747> (last visited Oct. 26, 2018).

⁴³ See Robert M. DeConto & David Pollard, *Contribution of Antarctica to Past and Future Sea-Level Rise*, 531 *Nature* 591-597 (Mar. 2016); see also Robert E. Kopp et al., *Evolving Understanding of Antarctic Ice-Sheet Physics and Ambiguity in Probabilistic Sea-Level Projections*, 5 *Earth's Future* 1217–33 (2017).

⁴⁴ See *Seeking Higher Ground: How to Break the Cycle of Repeated Flooding with Climate-Smart Flood Insurance*, Natural Resources Defense Council (July 2017), at 5, <https://www.nrdc.org/sites/default/files/climate-smart-flood-insurance-ib.pdf> for more information.

future vulnerabilities—namely, the surge associated with coastal storms. Because the gates will remain open during non-storm events, these open water barriers will contribute little or nothing to addressing the long-term risks associated with any of the future sea level rise scenarios.

As sea levels rise, water levels will rise on both sides of the open water barriers, doing nothing to mitigate tidal or sunny day flooding, the direct inundation of vulnerable areas, or the expansion of floodplains due to high levels of precipitation and riverine flooding. Indeed, after construction of the barriers, forty-three miles of New York City's coastline, or eight percent of the total, could remain vulnerable to tidal flooding in 2050.⁴⁵

Because offshore storm surge barriers as designed do not account for the worst-case scenario for sea level rise and because they may be rendered ineffective after several decades of sea level rise, we urge the Corps to select an alternative that relies on other methods to protect the New York-New Jersey metropolitan region from the effects of climate change.

V. Storm Surge Barriers May Not Be Worth the Cost

Large-scale storm surge barriers can be extremely expensive and, given their many negative effects on the community and environment, may not be worth the extraordinary cost. Construction of existing barriers in Europe and the United States cost millions of dollars per meter, plus millions more each year for operations and maintenance.⁴⁶ According to a report by the New York City Economic Development Corporation, a system of New York City/New Jersey barriers might cost \$20 to \$25 billion.⁴⁷ Depending on the configuration of the barriers, annual maintenance costs could be over \$125 million,⁴⁸ and these costs would presumably need to be borne by any local governments who will ultimately own or operate the structures.⁴⁹ Some researchers estimate even higher operations and maintenance costs for similar structures—perhaps up to ten percent of the initial construction costs per year.⁵⁰

Rising sea levels would likely cause maintenance costs to increase over time as greater water depths, increased erosion, and larger wave heights put stress on the structures.⁵¹ Greater frequency of coastal flooding would also mean that gates and sluices are opened and closed more

⁴⁵ *A Stronger More Resilient New York, Chapter 3: Coastal Protection*, N.Y.C. Office of the Mayor (2013), at 42, https://www.nycedc.com/sites/default/files/filemanager/Resources/Studies/Stronger_More_Resilient_NY/Ch3_Coastal_FINAL_singles.pdf.

⁴⁶ See Jeroen C. J. H. Aerts et al., *Cost Estimates of Storm Surges*, *Annals N.Y. Acad. Sci.* 69 (2013); see also Leslie Mooyaart, *Storm Surge Barrier: Overview and Considerations*, 34 *Coastal Engineering* 1 (2014).

⁴⁷ *A Stronger More Resilient New York*, *supra* note 44, at 49.

⁴⁸ Jeroen C. J. H. Aerts, *supra* note 44, at 69.

⁴⁹ Congressional Research Service, *Locally Operated Levees: Issues and Federal Programs*, CRS Report for Cong. ii (Apr. 5, 2011) (“No general federal authorities exist for the Corps to assist with the regular operation and maintenance of locally operated levees.”).

⁵⁰ Robert J. Nicholls, *The Management of Coastal Flooding and Erosion*, in *Future Flooding and Coastal Erosion Risks* (Colin R. Thorne et al. eds., 2007).

⁵¹ Ian Townsend & Kevin Burgess, *Methodology for Assessing the Impact of Climate Change Upon Coastal Defence Structures*, 29 *Coastal Engineering* 1 (2004).

often, leading to increased wear on moving parts. Studies also show that maintenance of onshore structures like dikes, levees, and floodwalls grow more costly as sea levels rise.⁵²

These funds would be better spent on more effective, locally tailored strategies that can be adjusted to reflect changing conditions. Offshore storm surge barriers are fixed in place and, as explained in Part II, would commit the New York City region to our current predictions for extreme weather and sea level rise. Such a permanent structure likely cannot not be adjusted if weather patterns, land use, or other risk factors change during the construction or operation phases of the barriers. And if the predicted lifespan of the structures is shorter than currently predicted, the barriers will prove even less protective. And because offshore storm surge barriers do not protect against sea level rise outside of storm surge events, onshore flood protection measures will be necessary regardless of whether offshore barriers are built. Instead of locking in an expensive capital project with limited utility and an estimated 20 to 30-year design, approval, and construction process,⁵³ shoreline measures can be implemented in the near term, in more flexible ways and at a lower cost.

Because of the extraordinary cost associated with offshore storm surge barriers, we urge the Corps to abandon the consideration of these barriers as part of the Feasibility Study.

VI. There Are Better Alternatives to Offshore Storm Surge Barriers

Offshore storm surge barriers protect against only one aspect of a potential hazard, while potentially exacerbating flooding in some communities and contributing to environmental and coastal degradation. Other alternatives, such as the use of natural infrastructure, the restoration and expansion of existing natural features such as dunes, assisted relocation of residents most vulnerable to sea level rise and storm surge, and the erection of onshore storm surge barriers can be designed to address multiple dimensions of vulnerability—we recommend substituting offshore storm surge barriers with a combination of these alternatives, as they are both more localized, more environmentally sustainable, and more affordable than the construction and maintenance of offshore barriers.

Use of natural infrastructure and the restoration and expansion of existing natural features, for example, can provide similar protection against storm surge, while also providing water quality improvements, enhancing habitat for wildlife as well as freshwater and marine species, and improving resilience to other types of flooding. Many studies show that nature-based interventions in coastal areas that incorporate wetlands and other green infrastructure provide more economic, environmental, and resiliency value to communities.”⁵⁴

⁵² Sebastiaan N. Jonkman et al., *Costs of Adapting Coastal Defences to Sea-Level Rise – New Estimates and Their Implications*, 29 J. Coastal Res. 1212 (2013).

⁵³ NYC OFFICE OF THE MAYOR, A STRONGER MORE RESILIENT NEW YORK (2013), https://www.nycedc.com/sites/default/files/filemanager/Resources/Studies/Stronger_More_Resilient_NY/Ch3_Coastal_FINAL_singles.pdf.

⁵⁴ ALLYSON SCHRIER, ET AL., WHAT IS YOUR PLANET WORTH? A HANDBOOK FOR UNDERSTANDING NATURAL CAPITAL (2013), available at <https://www.yumpu.com/en/document/view/33070059/a-handbook-for-understanding-natural-capital-earth-economics>.

In the aftermath of Sandy, for example, areas with established dunes and natural features fared much better in terms of damage and losses.⁵⁵ According to the New York City Economic Development Corporation, areas on the Rockaway Peninsula with established dunes, such as Beach 56th Street, suffered substantially less damage and less sand migration into neighborhoods than areas without them, such as Beach 94th Street.⁵⁶

Helping people relocate from areas vulnerable to flooding and rising seas is another strategy that has multiple benefits, providing the only guaranteed and permanent mechanism for reducing and eliminating the potential for damages while also creating new areas where green infrastructure, natural infrastructure, and ecological restorations can take place.⁵⁷

Even onshore storm surge barriers, when thoughtfully designed, can provide multiple dimensions of protection against flooding, sea level rise, and other benefits. Some examples of onshore protections that provide multiple benefits are in the Study Area, such as projects initiated through Rebuild By Design, including The Big U and Hunts Point Lifelines projects.⁵⁸ It is important to note, however, that sea walls and structural shoreline protections are not without their own risks, as they can create a “bathtub effect” for floodwaters, inhibiting floodwaters from draining away in the aftermath of a major storm and necessitating the construction of large pumps to remove water. Failure of any aspect of these more complex structural systems can make flooding worse and can lead to a Katrina-like disaster as experienced by New Orleans in 2005.

The New York City Economic Development Corporation, in an assessment of available climate resiliency measures, has observed the following about offshore barriers:

As attractive as the concept of a single ‘silver bullet’ solution may be, though, a closer examination of this strategy strongly suggests that relying on such a solution would pose significant risks to the city that far outweigh its theoretical benefits. Given this, the City believes that the right approach to coastal protection is an integrated system of discrete coastal projects, that together would constitute the elements of a multilayered approach also involving resiliency measures for buildings and protections for critical infrastructure.⁵⁹

We urge the Corps to take heed of the New York City Economic Development Corporation’s findings and reconfigure its alternatives to exclude the construction of offshore storm surge barriers.

⁵⁵ NYC OFFICE OF THE MAYOR, *supra* note 53, at 43.

⁵⁶ NYCEDC, “Coastal Protection,” in *A Stronger, More Resilient New York*, 2013, 43, https://www.nycedc.com/sites/default/files/filemanager/Resources/Studies/Stronger_More_Resilient_NY/Ch3_Coastal_FINAL_singles.pdf.

⁵⁷ See *Seeking Higher Ground: How to Break the Cycle of Repeated Flooding with Climate-Smart Flood Insurance*, *supra* note 43, for more about relocation assistance.

⁵⁸ See descriptions of these projects and status of implementation at *Hurricane Sandy Design Competition*, *supra* note 50.

⁵⁹ *A Stronger More Resilient New York*, *supra* note 44, at 50.

VII. The Corps Should Ensure Meaningful Public Participation in the Environmental Review Process

The National Environmental Policy Act (NEPA)⁶⁰ “makes environmental protection a part of the mandate of every federal agency and department.”⁶¹ It provides that “‘it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy,’ to avoid environmental degradation, preserve ‘historic, cultural, and natural’ resources, and promote ‘the widest range of beneficial uses of the environment without . . . undesirable and unintended consequences.’”⁶²

Under NEPA, before an agency undertakes any “major Federal action[] significantly affecting the quality of the human environment,” it must produce and make publicly available a document known as an environmental impact statement (EIS).⁶³ This includes a requirement that federal agencies engage in “scoping” before preparing the EIS.⁶⁴ “The primary purpose of the scoping period is to notify those who may be affected by a proposed government action which is governed by NEPA that the relevant entity is beginning the EIS process; this notice requirement ensures that interested parties are aware of and therefore are able to participate meaningfully in the entire EIS process, from start to finish.”⁶⁵ “It is clear from the CEQ regulations that scoping will be effective only if people who are, or may become, interested in the proposed action are involved. To ensure awareness on the part of such persons, the regulations require the agency to publish a notice in the Federal Register, invite them to participate in the scoping process, and encourage meetings with the public about the impact statement’s scope.”⁶⁶

Consistent with NEPA and its implementing regulations,⁶⁷ we request that the U.S. Army Corps of Engineers ensure meaningful participation in the environmental review process. Specifically, we ask that the Corps: (1) provide additional public meetings throughout the area affected by the project; and (2) make additional information about the proposed alternatives, framed in publicly-accessible, clearly-understood language, publicly available.

Unfortunately, notice of the Feasibility Study and of the time and location of the public scoping meetings was disseminated in a manner that minimized true public participation. Instead, notice of the Feasibility Study was provided only via publication in the Federal Register and an e-mail to a small number of individuals on a Corps mailing list, and the Corps provided the public with just several days’ notice of the meetings. As noted, the proposed Project, if advanced, would affect millions of people who work and live in and around the New York metropolitan region. The limited advanced notice to such a small subset of the potentially

⁶⁰ National Environmental Policy Act, 42 U.S.C. § 4321 (1970).

⁶¹ *Calvert Cliffs’ Coordinating Comm’n, Inc. v. U. S. Atomic Energy Comm’n*, 449 F.2d 1109, 1112 (D.C. Cir. 1971).

⁶² *Id.* (quoting 42 U.S.C. § 4331(b)).

⁶³ 42 U.S.C. § 4332(2)(C).

⁶⁴ 40 C.F.R. § 1501.4(d) (2012).

⁶⁵ *Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1116–17 (9th Cir. 2002), *abrogated by Wilderness Soc’y v. U.S. Forest Serv.*, 630 F.3d 1173 (9th Cir. 2011).

⁶⁶ *Northwest Coal. For Alternatives to Pesticides v. Lyng*, 673 F. Supp. 1019, 1023 (D. Or. 1987), *aff’d* 844 F.2d 588 (9th Cir. 1988) (citing 40 C.F.R. §§ 1508.22, 1501.7(a)(1), 1501.7(b)(4)).

⁶⁷ 42 U.S.C. § 4331; 40 C.F.R. § 1501.7 (2012); 33 C.F.R. § 230.12 (2011).

impacted population provided the public little time to prepare and organize for these meetings. While we greatly appreciate the Corps' decision to extend the comment period deadline to November 5 and the addition of public forums in Brooklyn, Westchester and Long Island, these steps are not sufficient to overcome the other shortcomings of the notice and comment process described above.

Moreover, information about the Feasibility Study is not sufficient to adequately notify the public of the potential scope of environmental impacts of the Project. As explained above, the lack of information about each alternative necessarily permits only general comments about the Feasibility Study.

To make this a truly public process, we ask that the Corps improve opportunities for the public to learn and comment on the Feasibility Study by holding more public meetings and providing more detailed information about each alternative. Granting these requests would be fully consistent with both federal law and Army Corps regulations, which provide that the process should be "early and open,"⁶⁸ and require all federal agencies to "[m]ake diligent efforts to involve the public."⁶⁹ This is especially critical since the combined effects of climate change and any of these five proposed storm barrier Alternatives could have appreciable harmful impacts on community health. As the Corps regulations emphasize, the scoping process "is the key to preparing a concise EIS and clarifying the significant issues to be analyzed in depth."⁷⁰ As such, we request that the Corps undertake the necessary steps to ensure public participation going forward.

CONCLUSION

NRDC thanks the Corps for the opportunity to comment on this important issue. The effects of human-induced climate change are real, and we are grateful that the Corps is exploring steps to mitigate some of its most severe effects. While we recognize the need for action in the face of storm surges and sea level rise, there are more effective and affordable options that protect the people and environment of the region than the construction of offshore storm surge barriers, which could be expensive, ineffective, harmful to the environment, and injurious to the health and economic well-being of communities throughout the region. Any actions should be part of a comprehensive approach that considers ecological effects, impacts to vulnerable communities, and long-term effectiveness.

Sincerely,



Kimberly Ong
Staff Attorney
Natural Resources Defense Council

⁶⁸ 40 C.F.R. § 1501.7.

⁶⁹ 40 C.F.R. § 1506.6.

⁷⁰ 33 C.F.R. § 230.12.