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B E F O R E: COSTA G. CONSTANTINIDES
Chairperson

COUNCIL MEMBERS:
RAFAEL L. ESPINAL, JR.
STEPHEN T. LEVIN
CARLOS MENCHACA
DONOVAN J. RICHARDS
ERIC A. ULRICH
KALMAN YEGER

A P P E A R A N C E S (CONTINUED)

Jainey Bavishi
Mayor's Director of Resiliency

Joseph Seebode
Deputy District Engineer and Chief of Programs For the New York District of the U.S. Army Corps Of Engineers

Tom Wynne
New York City Department of Environmental Protection

Mike DeLoach
Deputy Commissioner, Public Affairs at the New York City Department of Environmental Protection

Jessica Roff
Director of Advocacy and Engagement at Riverkeeper

Paul Gallay
President of Riverkeeper

Danielle Manley
Climate Change Researcher at the Center for Climate systems Research at Columbia University's Earth Institute, Program Manager for the New York City Panel on Climate Change

Perry Sheffield
Pediatrician Environmental Health Researcher and Parent

Teresa Herrera
Recent Graduate and Public Health from Mount Sinai

Kevin Cabrera
Medical Student, 4th Year at Hofstra North Well School of Medicine

Kieley O'Conner Chapman
4th Year Medical Student at Mount Sinai

A P P E A R A N C E S (CONTINUED)

Daniel Gutman
Resident of the West side of Manhattan, Involved In Hudson Yard Project, Member of Storm Surge Working Group

Catherine Mcvay Hughes
Chair or Vice Chair for 20 Years on Manhattan Community Board One

Gregory O'Mullan
Environmental Microbiologist Specializing in Issues of Water Quality and Water Resource Management, Associate Professor at Queens College At the City University of New York

Jonathan Goldstick
Registered Professional Engineer that Specializes In Waterfront Issues, Representing the Metropolitan New York/New Jersey

Joanna Crispe
Director, Community Engagement and Education at The Municipal Art Society of New York, MAS,NYC

Julie Welch
Program Manager for the Stormwater Infrastructure Matters Coalition, SWIM

Rebecca De La Cruz
Environmental Program Associate for Scenic Hudson

Michelle Luebke
Director of Environmental Stewardship at Bronx River Alliance, SWIM Coalition

Karen Imas
Senior Director of Programs at Waterfront Alliance

John Ingram
Climate Activist Group 350 NYC, Representing Mark Laster and Dan Miner, Co-Chairs of the Forest Hills Green Team

Tracy Brown
Director of Save the Sound

A P P E A R A N C E S (CONTINUED)

Robert Friedman
Environmental Justice Policy Advocate at the Natural Resources Defense Council, NRDC

Jay Lehr
Science Director at the Heartland Institute

Bob Schneck
Downtown New York City Resident for Over 30 Years

Andrew Juhl
Resident of Nyack, New York; Research Professor At Columbia University

Richard Reiss
Runs a Project Called City Atlas

Bryce Wisemiller
Project Manager of the U.S. Army Corps of Engineers

[gavel]

CHAIRPERSON CONSTANTINIDES: Good morning, I am Costa Constantinides Chair of the Environmental Protection Committee and today we're holding a hearing on oversight on the topic of resilience in the face of sea level rise. We will also hear my Resolution Number 509, which calls on the United States Army Corps of Engineers to reconsider the proposals made in the New York/New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study pursuant to the National Environmental Policy Act and to consider sea level rise in addition to storm surge. Climate change is occurring at an unprecedented rate and the current trend of warming in the earth's climate system over the past several decades is clear. The atmosphere and the ocean have warmed, sea level has risen, and snow and ice levels have decreased. In December 2015, world leaders came together and agreed on a landmark international accord, the Paris Climate Agreement to combat climate change and to fast track and strengthen actions towards a lower greenhouse gas emissions future. Through the climate… Paris Climate Agreement almost every country in the world committed

to work to curb greenhouse gas emissions in order to increase… to limit the increase in the global average temperature to below two degrees Celsius above pre-industrial levels and to pursue the efforts to limit the temperature increase to 1.5 Celsius above pre-industrial levels recognizing that this would significantly reduce the risks and impacts of climate change. President Trump has since pulled the United States out of the Paris Agreement and I command all the states and municipalities including our own who can either work towards the goal of the Paris Accord. Two weeks ago, we found the situation even more urgent than first thought when the U.N.'s intergovernmental panel on climate change released a special report on the impacts of global warming of 1.5 degrees Celsius above pre-industrial levels. The report indicates that human activities have already caused an increase in global warming with a likely range of .8 degrees Celsius to 1.2 degrees Celsius. The report further finds that global warming is likely to reach 1.5 degrees Celsius between 2030 and 2052. If peak temperatures reach two degrees Celsius some impacts such as ecosystem loss may be longstanding and irreversible. The report also finds

that temperatures on land on extremely hot days with mid latitudes are expected to warm by three degrees Celsius at a global warming of 1.5 degrees Celsius and by four degrees Celsius at a global warming of two degrees Celsius. Marine ice sheet instability could be triggered around 1.5 to two degrees Celsius, coral reefs are expected to climb by 70 to 90 percent with a warming of 1.5 degrees Celsius and with larger losses at two degrees Celsius. Finally, populations at disproportionate higher risks of adverse consequences include disadvantaged populations, indigenous people and local communities depending on agricultural and coastal livelihoods, this is the backdrop for today's hearings. New York City has 520 miles of coastline, this makes our city particularly vulnerable to flooding related to sea level rise, storm surge, high tide and sunny day flooding. On October 29th, 2012 nearly six years ago, superstorm Sandy approached New York City from the Southeast causing high winds and a 14-foot storm surge, sections of Lower Manhattan, Staten Island, Brooklyn and Queens were inundated with sea water. Superstorm Sandy flooded approximately 17 percent of New York City's total land mass or 51 square miles. Leading

city efforts to build a stronger more resilient New York is the Mayor's Office of Recovery and Resiliency. The Office is guided with scientific data and analysis of the New York City Panel on Climate Change and works to ensure that New York City's communities, economy and public services can withstand and combat the impacts of 21st century threats such as climate change. This work includes spearheading a resiliency program with a 20-billion-dollar budget. We look forward to hearing details about this work at today's hearing. In addition to city efforts, the New York City… the New York… the U.S. Army Corps of Engineers is investigating measures to address future flood risks in the New York/New Jersey harbor region. This includes the New York/New Jersey Harbor and tributaries focus area feasibility study which is the subject of Resolution 509 being heard today. Today we will be considering the efforts of the city and the Army Corps of Engineers to manage the threats from climate change, increased precipitation, sunny day flooding and sea level rise and the era of significant challenges to our ability to adapt. I don't see any of my colleagues here yet, so I look forward to hearing

testimony from the administration on the urgency of the work that must be done. When we see the emissions models and, and the precipitation models where large swaths of New York City will be challenged by climate, by sea level rise and climate change we must act, we must act quickly and, and the time to, to walk down that path is long since past, we have to start running in a much quicker way so I look forward to hearing on the work that we're doing together. Commissioner and you'll be sworn in by our, our Attorney Samara Swanston.

COMMITTEE CLERK SWANSTON: Could you please raise your right hand? Do you swear or affirm to tell the truth, the whole truth and nothing but the truth today?

JAINEY BAVISHI: I do. Good morning, I am Jainey Bavishi, the Mayor's Director of Resiliency. I want to thank Chairperson Constantinides and the members of this committee for this opportunity to speak about the De Blasio administration's work to build a stronger, more resilient city in the face of sea level rise caused by climate change. Six years ago, hurricane Sandy devastated New York City with unprecedented force claiming 44 lives and causing

over 19 billion dollars in damages and lost economic activity. It was the costliest natural disaster we have ever faced. As we took stock of the damage, it was clear that we could not just plan to simply recover from the storm, instead we needed to use the moment to address the risks of another Sandy while broadening our approach to prepare for the chronic impacts of climate change including sea level rise. The necessity of this work has never been clearer. Hurricanes Florence and Michael which tragically devastated communities in the Southeast and the panhandle of Florida combined with the recent intergovernmental panel on climate changes findings on limiting global warming to 1.5 degrees Celsius have reaffirmed the need for our climate resiliency work and highlighted its urgency. That's why we are making bold and innovative investments in resiliency. With 520 miles of coastline, sea level rise is among the most challenging climate risks facing the city. Since 1900 we have already witnessed one foot of sea level rise, a fact that made hurricane Sandy so devastating for New Yorkers. The New York City Panel on Climate Change or the NPCC projects that sea levels will rise up to an additional 30 inches by the

2050's. preparing our city for sea level rise is at the core of our multilayered One NYC resiliency plan which has become a global model for other cities striving to build resilience in the face of climate change. To be clear, as we mark the sixth anniversary of hurricane Sandy and take stock of our progress, our city is safer and more resilient than it was before hurricane Sandy and we have much more work to do before we'll be satisfied. I'd like to provide the highlights of the city's progress on addressing sea level rise through our One NYC resiliency plan comprised of a multilayered approach to coastal defenses, infrastructure, buildings and land use and neighborhoods. Needless to say, our resiliency work to date is a product of a massive team effort led out of the Mayor's Office and implemented by nearly every city agency and which includes state and federal agencies as well as a myriad of community organizations and private philanthropic and academic partners. I also want to thank the City Council for being a partner in our efforts. This high level of interagency, intergovernmental and cross sector engagement underscores the progress that's being made towards mainstreaming consideration of sea level rise

into our actions and investments across various levels of government and in partnership with the private sector. Our coastal protection efforts protect against long-term sea-level rise. Every major coastal protection project we undertake incorporates the latest sea level rise projections. For example, the Eastside Coastal Resiliency Project is more than just a storm barrier, it is being intentionally designed to address long-term sea-level rise. This is true of other projects citywide including coastal barriers that are being implemented by the U.S. Army Corps of Engineers in Staten Island and the Rockaways. Our raised shorelines citywide program is investing 125 million dollars to reduce the impacts of tidal flooding and address sea level rise through strategic localized investments in vulnerable communities. An RFP has been issued for a 47-million-dollar project to raise the edge of Coney Island Creek which proved to be the most vulnerable breach in the neighborhood during hurricane Sandy. Our infrastructure investments account for sea level rise now and into the future. After Sandy, Con Edison agreed to use the NPCC sea level rise projections to inform their storm hardening efforts which included

spending over one billion dollars to harden, protect and elevate key electric, gas and steam assets. We are working with national grid on a similar effort to protect customers and key assets from flooding impacts. Other infrastructure systems are being adapted as well. The Department of Environmental Protection undertook a comprehensive climate risk study of its 96 pumping stations and 14 wastewater treatment plants and has begun implementing cost effective protective measures tailored to each facility to improve resiliency in the face of future flood events. Additionally, in April 2018, we released version 2.0 of our climate resiliency design guidelines to ensure that future capital investments both new construction and significant rehabilitation are designed to withstand the impacts of a changing climate. The guidelines provide designers and engineers with step by step instructions and tools to incorporate sea level rise and other climate projections into the design and construction of capital projects. Our building and zoning codes and standards are climate smart. Hurricane Sandy demonstrated that structure is built to the latest codes perform well in storms and better protect their

inhabitants. We have learned from this and have upgraded the city's building codes including 16 new local laws thanks in no small part to the council's leadership to account for vulnerabilities related to extreme weather and climate change. Additionally, FEMA in partnership with the city is drafting new, more precise flood insurance rate maps that will more accurately communicate risks and keep premiums affordable. The city is working with FEMA to create a second first of its kind flood risk product reflecting future conditions that account for sea level rise. Finally the City Planning Commission has created a new zoning designation, the special coastal risk district to limit exposure to damage and destruction in the most vulnerable communities by limiting future development especially in areas where sea level rise is projected to lead, lead to regular tidal flooding and the Department of City Planning is currently working with community members and property owners across the city's flood plain to update the flood resilience zoning rules through a future citywide zoning text amendment. Our communities are better prepared. We are working to strengthen social cohesion in our neighborhoods to ensure there is

improved coordination between community based, health services and faith-based organizations and the government during an extreme weather event which could be made worse by sea level rise. One example of these efforts is securing dedicated staff at New York City emergency management to conduct emergency preparedness trainings for community-based organizations. We're also working to strengthen social infrastructure such as the small businesses that communities rely on during and after emergencies. Through the Business Prep Program, the Department of Small Business Services sends a team of emergency planning and insurance experts to small… to small businesses in flood prone areas to review their physical space, operations and insurance coverage and provide assistance with preparedness planning. Businesses are then eligible to receive a small grant to implement measures like flood pumps and portable generators that can reduce their risk in the event of a disaster or destruction. Through Rise NYC, the economic development corporation is providing innovative resiliency technologies to Sandy impacted small businesses to help prepare for future storms and sea level rise. It is also crucial that New

Yorkers remain aware of their current and future flood risks. To ensure residents keep their homes and finances safe, the city's Consumer Education Campaign is directing residents to Flood Help NY dot, dot org, a one stop shop for flood risk information. And we know that this outreach is making a difference, flood insurance enrollment in New York City doubled from 25,000 in 2012 to 55,000 in 2018. Our environment is cleaner, the city has achieved its One NYC goal of remediating, remediating 119 lots in the coastal flood plain, 19 more than proposed in 2015. These clean ups make the city more resilient to climate change and sea level rise by greatly reducing the risk these properties pose from erosion and pollutant release during future storms. Finally, the Department of Environmental Protection not only requires facilities that store hazardous chemicals to file a risk management plan, but it also now requires special protection for chemicals stored in the flood plain. In the event of a flood these facilities will be better prepared to avoid environmental contamination that can lead to public health exposures in our coastal communities. We believe that there is no silver bullet solution and that a

tailored and multilayered approach is best. As we look to the future we will also have to begin to consider where we may not be able to keep the water out and the strategies needed to allow people to safely with water. Communities will play a vital role in grappling with these hard questions and the De Blasio administration is committed to working with communities across the city. It is also important to keep in mind that sea level rise… sea level rise is not the only risk of climate change that New York City faces, we are simultaneously working to address the risk of storm surge, extreme precipitation and extreme heat all of which impact the city now and into the future. As I conclude my testimony I would like, like to thank the committee for this opportunity. Building resilience in the face of climate change is a long term and ongoing process. We will always need to innovate and adapt to account for rising sea levels and rising temperatures. I look forward to working with you to adapt our city to the risks of climate change, your partnership is critical to build a stronger, more resilient New York. We'd be happy to take your questions.

CHAIRPERSON CONSTANTINIDES: Thank you Commissioner. So, I'm just going to ask a bunch of questions and I look forward to hearing your answers. So, in your opinion how prepared are we for another Sandy, another super storm?

JAINEY BAVISHI: The city is safer than it was during hurricane Sandy and we are better prepared than we were six years ago. We have improved our… my… emergency preparedness measures including our evacuation plans, we have hardened our infrastructure to minimize disruptions during and after an extreme event, we have improved social cohesion in our neighborhoods which is a really important factor in allowing neighborhoods to bounce back more quickly, we have updated our building codes and our zoning codes and we have implemented coastal protection measures and there's a lot more to come on that front.

CHAIRPERSON CONSTANTINIDES: So, talk to me a little bit about these building measures, these, these, these… looking at the DOB and, and talking through some of those changes in the building code that we have implemented, what happens to those buildings that were not… that were in those regions

but not effected by Sandy that weren't raised or you know how do we… how are we helping those homeowners have… you know take advantage of the opportunity to change over their homes to be resilient, to be safe, what are we doing in those neighborhoods to work with them?

JAINEY BAVISHI: So, we have updated our building code, they account… the building code now accounts for the latest flood plain maps that we have from FEMA, the 2013 preliminary flood insurance rate maps so this is the best indicator of flood risk we have.

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

JAINEY BAVISHI: We have passed 16 local laws to also update our building codes. I could go into this in detail, but the highlights are basically to make sure that we're maintaining basic services of a building in the event of a flood event… in the event of a… of a flood or a storm. And we are… also we have released these climate resilience design guidelines which actually go beyond the code and take our projections for sea level rise, storm surge, extreme precipitation and extreme heat and provide

guidance to designers and engineers on how to incorporate those projections into the design and construction of buildings and infrastructure moving forward.

CHAIRPERSON CONSTANTINIDES: So, one of the questions I have, I know in my own community we were… yeah, there was a flooding on the Hallets Cove Peninsula, eight buildings in the Astoria Houses were impacted, the other buildings there were not. FEMA and this is more of a FEMA question, right, which you're not qualified here to ask… answer but the only buildings now in that development that are getting their infrastructure moved to their roofs and getting the things done that need to happen for resiliency are the eight buildings that were impacted if the Hallets Cove Peninsula would be able to be… were tragically hit again the other buildings would not be as prepared so how are we working with the federal government who I know is not helpful in a… in a meaningful way to make sure that we're getting actually of our buildings on our coastal areas in, into resiliency especially public housing who those residents definitely need our help?

JAINEY BAVISHI: So, we have been providing feedback to various, you know federal policy proposals about the need to ensure that we have proactive funding streams to address these inherently proactive measures that you're talking about. Unfortunately, a lot of the federal funding that comes to cities like ours to do this inherently proactive work is inherently reactive and flows after a disaster but with this in mind we are trying to create a policy environment to ensure that building owners can proactively take these measures to protect their, their buildings and their inhabitants from future flood risk.

CHAIRPERSON CONSTANTINIDES: So, the federal government as, as I could probably guess is not being helpful at all to being proactive in looking at climate change and sea level rise and storm surge in these areas?

JAINEY BAVISHI: Well I wouldn't quite go that far, I think that the federal government is certainly taking sea level rise into account…

CHAIRPERSON CONSTANTINIDES: Okay, that's good to hear… [cross-talk]

JAINEY BAVISHI: …in, in various projects and investments they're making. You had asked me specifically about whether there are FEMA dollars flowing to address, you know raising electricals and other utilities… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Right, uh-huh… [cross-talk]

JAINEY BAVISHI: …in buildings that were not impacted by a previous storm and that, that has not been the case. With that said, you know recently there was legislation passed in Congress that created a new pool for pre-disaster mitigation dollars, I think we have yet to see exactly how those dollars will be allocated but I think New York City is in a good position to capture some of those resources and we should continue to advocate for that kind of funding going forward.

CHAIRPERSON CONSTANTINIDES: So, we will be looking… when, when that… when those dollars… when… so the criteria that's put out to apply for those dollars New York City will be there ready to make our case to why we need those dollars?

JAINEY BAVISHI: Certainly.

CHAIRPERSON CONSTANTINIDES: Alright, so moving forward what are the areas of the city you feel are most at risk to sea level rise or storm surge?

JAINEY BAVISHI: Well we have 520 miles of coastline, so our coasts are certainly at risk to sea level rise and storm surge.

CHAIRPERSON CONSTANTINIDES: Alright, what is our planning around different areas of the city; Brooklyn, in the Red Hook Coney Island area, in Southeast Queens, Northeast Queens areas such as those that have even been previously hit or, or have… in a flood zone that they will… could potentially be hit by a major storm?

JAINEY BAVISHI: So, we are taking a phased approach in terms of protecting our communities against the risk of sea level rise and storm surge, we're implementing short term, medium term and long-term measures simultaneously to make sure that we're putting protection in, in place as quickly as possible. So, in the short term we're working with New York City Emergency Management to install interim flood protection measures including in Astoria. These are temporary measures that protect

against five to 50-year level storms including sea level rise that consist of Hesco bags and deployable tiger dams to ensure that we're keeping infrastructure safe now, these are things that we can do immediately. We're also investing in protections to protect communities against the, the risk of sea level rise and tidal flooding through our raised shorelines program so this is the 125-million-dollar investment that I mentioned in my testimony. And we're… and so the… those… kinds of sea level rise protections I would qualify as kind of medium term protections there's another great example of this in the Rockaways where the Mayor announced last year during the Sandy anniversary that we were keeping the money that was saved through the Rockaway Boardwalk in the Rockaways and investing it in bayside communities to protect those communities against the risk of sea level rise. Those projects are all in design and construction should begin as early as next year. We are also investing in major coastal protection projects that are much more complicated and take longer to implement. Examples of these projects are the East Side Coastal Resiliency

Project, the tributaries project in Manhattan and… [cross-talk]

CHAIRPERSON CONSTANTINIDES: I didn't mean to… [cross-talk]

JAINEY BAVISHI: …the project… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …I didn't leave, leave to… I didn't mean to leave our friends from Manhattan out of my… when I asked about Brooklyn and Queens so…

JAINEY BAVISHI: No worries.

CHAIRPERSON CONSTANTINIDES: No, they're right there.

JAINEY BAVISHI: That's why I'm mentioning it now and, and projects that we're implementing in part… that, that… the Army Corps of Engineers I should say is implementing in partnership with the city which I'm sure you'll hear more about in the Rockaways and Staten Island and throng the New York… New York/New Jersey Harbor Tributary Study. So, the… we're taking a multipronged approach. I think it's also important to mention that coastal protection is not the only solution to protect communities against the risk of sea level rise and

storm surge, we're also taking a policy focused approach that's why we have updated our building codes, we have updated our zoning codes, we will continue to do that. We are working with FEMA on making sure we have more accurate scientifically sound flood maps to ensure that we're keeping flood insurance rates affordable, we're doing outreach to ensure that communities or our residents are aware of their flood risk and know how to buy flood insurance. We are working on incorporating future risk through our climate resiliency design guidelines into the construction of capital projects. So, we are taking this multipronged approach to protect communities across the city from the risk of sea level rise and storm surge.

CHAIRPERSON CONSTANTINIDES: So, just a couple of questions on, on that answer… [cross-talk]

JAINEY BAVISHI: Yep… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …that, that you just gave number one, so when… let's say I, I do a parks project, right, they give me an estimation of how much it would cost, built into that cost is the resiliency measures or is that something that the, the administration is putting in separately, how are

we coordinating with city agencies on the resiliency and sustainability piece when it comes to renovations of, you know schools, parks, libraries things of that nature?

JAINEY BAVISHI: So, we are… we released version 2.0, the climate resiliency design guidelines last April, they provide tools to ensure that agencies are able to conduct their own benefited cost analysis for projects moving forward, we will have to continue to work with OMB on exactly how the budgeting for these projects work, this is a, a fairly new policy so we'll continue to do that. We're actually in the process of developing a risk assessment methodology to accompany the, the guidelines so this is a work in progress for sure, we released a preliminary version of the guidelines in 2017, test fitted those guidelines, learned about how they work on, on actual projects but while we're improving the guidelines to make sure they're as applicable and user friendly as possible we are also applying those guidelines so DEP has already started applying those guidelines on several projects and, and we'll continue to do that.

CHAIRPERSON CONSTANTINIDES: I mean I've seen some great examples in my neighborhood when it comes to partnering with DEP on, on making it more resilient, on, on rain gardens and other opportunities for us to capture rainwater, I'm… but those… many of those were CPI parks… [cross-talk

JAINEY BAVISHI: Uh-huh… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …and I just want to make sure that, you know we're, we're doing that for every project because we've seen a lot of really great examples but these were large amounts of money that were spent and it was a partnership between the administration and our office and the borough president which was great but I just want to make sure for the smaller parks projects and, and for other projects as well as we renovate our libraries and I know many of them are in our flood zones that we're doing the same thing.

JAINEY BAVISHI: And we'd like to make sure of that as well.

CHAIRPERSON CONSTANTINIDES: And you talk about the outreach to communities that are… have a… that are found to be within the flood map, what does… what does that outreach entail, how much are we

spending on that outreach, talk to me a little bit about what, what that looks like?

JAINEY BAVISHI: So, we've partnered with the state and a nonprofit organization, the Center for New York City Neighborhoods on that outreach to ensure that consumers are aware of their flood risk, the city has invested about a million dollars into that into a consumer education campaign called Flood Help NY dot org which directs consumers to a website where they can understand exactly what zone they're in and what steps they can take to ensure that they're protected. The state has also invested in, in this program and we have flood insurance outreach events happening on a very regular basis. In fact, the Housing Recovery Office will be hosting two events this week during… city hall in your borough in Queens.

CHAIRPERSON CONSTANTINIDES: Oh, where, where are those going to be?

JAINEY BAVISHI: I do not know off the top of my head…

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: Okay, great, great, thank you. And we do a lot of sort of reach…

you know trying to get people there, right, we're, we're doing a lot of outreach as well to make sure that people know this event is happening and so on…

JAINEY BAVISHI: Definitely.

CHAIRPERSON CONSTANTINIDES: I, I just want to acknowledge that we're joined by my colleague, Carlos Menchaca from Brooklyn. So, talk to me a little bit about how are we addressing ground water rise… ground water table rise in areas like Southeast Queens that have traditionally had ground water but now are exacerbated by sea level rise, what are we doing in those communities to deal with both of those issues?

JAINEY BAVISHI: I'd like to actually defer to my colleague Tom from DEP to speak to that…

CHAIRPERSON CONSTANTINIDES: Yeah, Tom, Tom come, come to the microphone. We just got to… we just got to swear you in Tom and we'd… and be happy to hear from you. And Mike as well…

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: Alright, there… more, more the merrier, it sounds good.

COMMITTEE CLERK SWANSTON: Can you please raise your right hand. Do you swear or affirm to tell

the truth, the whole truth and nothing but the truth today?

MIKE DELOACH: I do. Could you repeat the question Council Member?

CHAIRPERSON CONSTANTINIDES: Sure, and now you're making me think a little bit harder. So, I had asked about, you know areas like in Southeast Queens that have a ground water table that is already pretty high, I know that we've invested close to two billion dollars in sewer infrastructure there but what are we doing as sea level rise exasperates that problem and is making ground water rise… [cross-talk]

MIKE DELOACH: I'll start and then go to the… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Yep, uh-huh…

MIKE DELOACH: So, you know in addition to the two billion dollars of unprecedented funding that we've done in Southeast Queens as you know we did the radial study… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

MIKE DELOACH: …radial collection study this past year and while it proved to be feasible it showed that it was difficult to be able to find sort

of a direct route that would reduce the table in terms of getting access to property and also the cost so we're disappointed sort of that that doesn't seem as feasible as we had hoped but we also as you know passed… your legislation passed to require us to do a study on the geothermal technique that we're going to look and see, so we're going to continue to review… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Very excited about that…

MIKE DELOACH: Yeah, so we're going to continue to work on that pilot, we're going to, you know continue to figure out what we can do to find a solution to this problem. I know there's about a dozen or so organizations that seem to be most troubled by this issue and so we continue to work, you know with you to figure out the best method possible to help alleviate some of that flooding. I don't know if you want to talk specifically about the… [cross-talk]

TOM WYNNE: Well just on the radial groundwater. So, we… I mean we haven't completely given up on the concept, it, it, it's mostly tied to being able to find a free discharge and with the

elevations in Southeast Queens that can be a real challenging to find a waterway we can made it to, but we are furthering that study.

CHAIRPERSON CONSTANTINIDES: And in what… I know that the Commissioner had talked a little bit about the wastewater treatment since I've got you sitting here I might as well ask those questions so you don't have to get up and get back but talk to me a little bit about the wastewater treatment plants, what is… what is being done, I know you talked about it… that the Commissioner talked about it generally but talk to me, you know drill down a little bit with me on how we're making those wastewater treatment plants more resilient and at the same token we know that there's going to be more rain, we know that precipitation is going to be increasing so what are we doing to make those wastewater treatment plants even more effective or to add new ones, what, what is our plan for this additional rainwater that's going to be hitting our sewers as well?

MIKE DELOACH: Sure, so I'm going to talk a little bit up front, so the Bureau of Water Treatment who is wastewater treatment who is not here has the plan, the resiliency plan on our 14

wastewater treatment facilities, I don't have the individual details but I know we have sort of a targeted approach and you know new need list for each of the different types of resiliency efforts we need to do which differ sort of across the board depending on where in the city they are so we'll… that we'll follow back up on the specific details. We have a, a publicly accessible resiliency plan online but in terms of the detailed description of each I don't have it yet. In terms of, you know dealing with increased precipitation a lot of work at DEB has gone into that and I'm going to let Tom talk a little bit more specifically about what that entails.

TOM WYNNE: So, for the increased precipitation we are currently within our drainage plans looking at both the, the current climate and 50 years from now and what the impacts could be then where, where it can… where it makes the most sense from cost benefit analysis especially along the coastal lines. We're, we're looking at whether or not we can increase sewers, raise elevations and, and try to mitigate the sea level rise and, and make the sewers large enough to capture all the water. The, the challenges will obviously be having enough room

in the streets to build these sewers and also some of your elevations are already fixed due to the low-lying areas.

CHAIRPERSON CONSTANTINIDES: But we're actively seeking out solutions to these challenges you just raised, right?

TOM WYNNE: Yes, we're, we're currently investigating all opportunities.

CHAIRPERSON CONSTANTINIDES: Great and then I guess the… I know you have questions, indulge me two more and, and I'll… and I'll let you do your thing, absolutely, I don't want to take up the whole hearing, I know you want to hear from Carlos as well. So, what are we doing on resiliency upgrades for our food distribution hubs for instance Hunts Point Terminal Market, how are we making sure that in a large storm that these areas will be protected in the long term?

TOM WYNNE: Yeah, that's not us so…

CHAIRPERSON CONSTANTINIDES: Yep, that goes back to the Commissioner.

JAINEY BAVISHI: So, we conducted a food resiliency study and it turned out that one of… one of… one of the main findings was that our food supply

chain is actually more distributed than we thought it was which is good news, that's what we like to see when we're thinking about resiliency to ensure that there is… that we don't have fail points in, in certain areas so we are working our Office of Food Policy and the Economic Development Corporation to implement some of these recommendations but in, in short there's good news on this front in that it is… it's not the… it… we're not as vulnerable as we, we once thought.

CHAIRPERSON CONSTANTINIDES: That's, that's good to hear. Okay, so last question I'll ask before I turn it over to my colleagues is talk to me about the, the Army Corps of Engineers plan, do we think that any of the six resiliency alternatives address sunny day flooding as well as sea level rise in, in the plans that are currently out there?

JAINEY BAVISHI: Well I would say… yeah and you're going to hear more from the Army Corps of Engineers directly on this but I would say that we're very, very early in the process so, you know the one thing that I would say is that the Army Corps is certainly taking sea level rise into account even as they're proposing storm surge barriers, you know we,

we have to account for future storm surge when we're planning for storm surge across the city and they're also considering some shoreline protection measures but these projects are first of all a very long way off, past the, the study which you'll hear more about directly from them, there's a congressional appropriations process that would have to happen in order for these projects to become realities and there would be still a massive amount of public engagement so that the public can chime in and provide input into these, these options and construction could take a very, very long time for some of the kinds of things that are being proposed in this study and so, you know the city is not wasting any time, that… this is why we are implementing… we're investing 20 billion dollars across the city into resiliency now to implement coastal protection measures now so that we are not caught flat footed and, you know we, we are not… we're not just depending on, on this one process. We are fully at the table with the Army Corps of Engineers studying these options with the states of New York and New Jersey however.

CHAIRPERSON CONSTANTINIDES: Thank you Commissioner, I look forward to hearing from them as well this morning. With that I'll turn it over… I know that we're joined by Council Member Kalman Yeger from Brooklyn, thank you for being here and I'll turn it over to questions to Council Member Menchaca.

COUNCIL MEMBER MENCHACA: Thank you Chair and thank you all for being here today. So, I, I think it was really great to hear about the, the food distribution and that, that you're feeling confident, is there… is there a study that, that could be presented as far as the analysis on, on that that you can share with the committee on that?

JAINEY BAVISHI: I'd be happy to share the study with the committee, I'm not prepared to present the study right now.

COUNCIL MEMBER MENCHACA: That's fine if you can just share that then we can… we can kind of move forward.

JAINEY BAVISHI: Sure.

COUNCIL MEMBER MENCHACA: That would… and I think we're all thinking about that and how to… how to bring it back to the community with, with some analysis. The second thing is, is really more of a…

kind of multi-agency conversation that I'm hoping is happening and if you can kind of talk to me a little bit about how it works around… and I'll give you an example how it works when, when the, the kind of resiliency investments are coming into our communities and the new park is birthed and questions around on site storm water management, surge storm management, water surge and, and where… what's your role in that… in that conversation within let's say the Parks Department? There's a question here about the building codes and so what, what role do you play and then I have a more specific question but just give me a sense about what, what's happening right now with the admin?

JAINEY BAVISHI: Sure, so you know it's, it's, it's extremely important that resiliency and the, the mission of implementing resilience measures across the city doesn't just sit with the Mayor's Office but rather is owned by every city agency across the administration and so we… to that… to that end we have updated our building codes, we've updated our… updated our zoning codes, we've developed climate resiliency design guidelines that provide guidance to every capital agency on how to

incorporate sea level rise, storm surge, heat and, and precipitation projections into the design and construction of capital projects and we're very happy to provide technical assistance to agencies as new projects come online in order to ensure that we are taking resilience into account. The Mayor's Office of Recovery and Resiliency first and foremost is a policy leadership shop across the, the city to provide this kind of guidance to create the policy, tools and levers that are needed to make sure that we're taking resilience into account and I think we made some good progress on this front and there's a lot more work to do.

COUNCIL MEMBER MENCHACA: And, and you have and, and I've, I've seen… I've seen documents where agencies show that vision, it's in the implementation that I think we're, we're still struggling with some of that and you offer to connect to projects and be a leader and join them in that… the kind of design, what is your… what has been your role in, in parks projects say across the, the city as a whole?

JAINEY BAVISHI: Well there are many parks projects that have taken resilience into

account, coastal parks projects; a great example is the… are the projects that were announced in Council Members Richard's district last Sandy anniversary that are… is using the, the savings that we were able to capture from the Rockaway Boardwalk Project to invest in parks improvements and resiliency improvements on the… at the bayside of the Rockaways. So, we have been working with the Parks Department to identify some of these opportunities and bake resilience measures into the projects even if at time someone… at times the projects weren't originally conceived as resilience projects, but I think the Parks Department has been… has been a great partner in working to make sure that we capture those opportunities where possible.

COUNCIL MEMBER MENCHACA: Great, this is… this is exciting, and I think that's where the… this energy can really help move things forward especially when, when there's a lot of momentum with agencies that want to construct a certain way and, and really helping them think differently. I'll follow up with you in your office about Hal Ickes and the skate park, it's a three-million-dollar project in Red Hook… [cross-talk]

JAINEY BAVISHI: Okay… [cross-talk]

COUNCIL MEMBER MENCHACA: We're not really happy with, with the Parks Department's response to storm water management on site and I think everything that you just presented today, everything we're talking about today, every, every inch of work that happens from here on out must be met with the fiercest commitment to resiliency as we think about storm water management, resiliency, sea level… sea level rise and, and hope that you can join us in that advocacy as we… as we build multimillion dollar projects in our… in our neighborhoods especially a place like Red Hook. So, thank you, thank you so much for your time and, and sharing with us. The analysis would be great to get for the food… [cross-talk]

JAINEY BAVISHI: Yep… [cross-talk]

COUNCIL MEMBER MENCHACA: …and then also the food distribution… [cross-talk]

JAINEY BAVISHI: Yep… [cross-talk]

COUNCIL MEMBER MENCHACA: …but also, I'll follow up specifically on the Red Hook project… [cross-talk]

JAINEY BAVISHI: Sounds good… [cross-talk]

COUNCIL MEMBER MENCHACA: …or your, your, your advocacy…

JAINEY BAVISHI: Great, we look forward to working with you… [cross-talk]

COUNCIL MEMBER MENCHACA: Thank you.

CHAIRPERSON CONSTANTINIDES: Thank you Council Member Menchaca, I guess I'll take the liberty of asking a few questions. So, you spoke of the different coastal projects that obviously we work with the Parks on, we're working with Parks and can you give me an… aa status report on where we're at with those projects?

JAINEY BAVISHI: So, all seven projects are currently in design… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Yep, uh-huh… [cross-talk]

JAINEY BAVISHI: …and we expect construction on all seven to begin by 2020.

CHAIRPERSON CONSTANTINIDES: So, by 2020 all seven and then can you just speak a little bit more to your coordination with the Army Corps, what does that look like, how often is City Hall

communicating with the Army Corps so I know some of those projects along the bay, yu know conflict possibly with some of the work that Army Corps would, would, would be doing I guess in 2022 so can you speak to a little bit about the coordination between your, your department and, and the Army Corps?

JAINEY BAVISHI: Sure, we speak to the Army Corps on a regular basis and the, the projects that are proposed on the bayside of the Rockaways do not conflict with the… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay, so there's no… [cross-talk]

JAINEY BAVISHI: …with the Army Corps plan, we're making sure that all of that is well coordinated, we don't want to spend dollars afflictively in any way so all of that should be coordinated and synergistic.

CHAIRPERSON CONSTANTINIDES: And can you just speak to any of the resiliency projects going on in Staten Island, I know my district where we have some of those projects but Staten Island, Manhattan, I know Carlos covered Brooklyn, can you just speak a little bit more of what your strategy is in Manhattan and Staten Island?

JAINEY BAVISHI: Sure, so we're moving forward with a great urgency on projects in, in both boroughs. In Staten Island we're working with the Army Corps of Engineers on an armored levee on the East shore of Staten Island I think Geotech surveys have begun and there's, there's much more to come very soon. In Manhattan we are working… by the way on those Staten Island levee construction is expected to start in late 2019. In Manhattan many of you may have heard that we're… we've, we've just announced a, a development with the Eastside Coastal Resiliency Project that will allow us to deliver the flood protection an entire year sooner than we originally expected so we're excited to be moving forward with that and be able to deliver flood protection to this vulnerable community as, as quickly as possible, Eastside Coastal Resiliency will protect 110,000 residents including several important NYCHA developments. We have… we're in schematic design on the two bridges project which… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

JAINEY BAVISHI: …which is just south of the Eastside Coastal Resiliency Project and we're

also working on a long-term study for the lower Manhattan Coastal Resiliency Project which is South of two bridges and it's around the tip of lower Manhattan and look forward to being able to share results from that study very soon as well.

CHAIRPERSON CONSTANTINIDES: Now these things are all going to cost money and so I'm interested in knowing, so are there any concern on the city's part on these projects being fully funded from the Army Corps, is the city willing to fill some of these gaps, so can you speak a little bit to your understanding on funding and is this funding secured, are we ready to really move in 2020, so can you speak to that?

JAINEY BAVISHI: So, I may have misunderstood the original question not all of these projects are funded by the Army Corps of Engineers… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Right… [cross-talk]

JAINEY BAVISHI: …and I should be very clear about that… [cross-talk]

CHAIRPERSON CONSTANTINIDES: But the… but the portions that are funded by Army Corps?

JAINEY BAVISHI: Okay, so we have several federal partners that provide funding to these coastal protection projects; the Army Corps of Engineers is one of them, there's also the Department of Housing and Urban Development, HUD is another important partner and FEMA is also another important partner, so I just want to make that clear. No, the administration for all the projects that we have… that I just went over the administration is absolutely fully committed to making sure that they become a reality and so they are… there's no concern about funding, we will make… we will move forward with them with great urgency and, and especially with Eastside Coastal Resiliency we… where we have recently announced that there is a, a new need the city has said it will fill those gaps.

CHAIRPERSON CONSTANTINIDES: And can you speak to groundwater issues in Southeast Queens, so how you work, and I know DEP is in the room… [cross-talk]

JAINEY BAVISHI: Yes… [cross-talk]

CHAIRPERSON CONSTANTINIDES: How are we looking at that… [cross-talk]]

JAINEY BAVISHI: And DEP will… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Hi Mike DeLoach… [cross-talk]

MIKE DELOACH: Hi… [cross-talk]

JAINEY BAVISHI: …talk to address that question.

MIKE DELOACH: So, we actually… the Chair had asked that… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Wait, actually state your name for the record and… [cross-talk]

MIKE DELOACH: Michael DeLoach, I did, I was sworn in earlier…

CHAIRPERSON CONSTANTINIDES: Okay, oh you did, okay.

MIKE DELOACH: So, as I mentioned previously, we did the radial collection study which didn't prove to be as successful as we had hoped but, you know with the Council passing the, the bill to mandate us to do the geothermal… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay… [cross-talk]

MIKE DELOACH: …pilot we're going to shift gears and see if that direction works but we are definitely heavily focused on finding out a solution, you know to help eliminate the need for pumping in the basements of some of these institutions… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay and how soon will the pilot start?

MIKE DELOACH: I think we have a year to do it, but I'll get you the specific timing, we won't wait a year.

CHAIRPERSON CONSTANTINIDES: And then my last question is on wastewater treatment plants so I'm not sure if that was brought up… [cross-talk]

MIKE DELOACH: That one was… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …it was, it was as well, okay. Sorry, I had to vote across the street…

MIKE DELOACH: That's okay.

CHAIRPERSON CONSTANTINIDES: And then… yeah, if you can just touch a little bit on… so what are you doing in the event of major storms when the gate… when it comes to the gates if gates would be closed would that impair or hamper water treatment?

MIKE DELOACH: The tidal… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Yeah.

MIKE DELOACH: The tidal gates, I'm going to have Tom come back because that's a little bit more technical than I'm able to do, I don't think…

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: And if you could touch on long term… [cross-talk]

TOM WYNNE: I'm sorry, could you… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …control plans as well… [cross-talk]

TOM WYNNE: …repeat the question?

CHAIRPERSON CONSTANTINIDES: So, let's start with… so, obviously we have the combined sewer wall overflow issue especially in parts of Queens, you know how are you… what is your strategy to deal with this and how are you coordinating with NY/New Jersey Hat study?

TOM WYNNE: I'm not familiar with the study… [cross-talk]

JAINEY BAVISHI: Yeah, so these, these are… [cross-talk]

MIKE DELOACH: A couple of things bleeding together so I think… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay, I got it. Alright, let's start with the overflow plan so what are we doing?

TOM WYNNE: So, as, as part of our overall drainage plan, we're looking at the impacts of both sea level rise as well as increased precipitation and where feasible we're looking at sizing the sewers in order to try to attempt to manage that. There, there are limitations to that and it'll all be driven by the location of the sewers and, and how much real estate is available as well as the elevations.

CHAIRPERSON CONSTANTINIDES: And you know obviously precipitation is picking up more and is exacerbating the issue a little bit more around wastewater so what is your strategy around dealing with this issue?

TOM WYNNE: With regards to the wastewater treatment plants?

CHAIRPERSON CONSTANTINIDES: Yes, so flooding wastewater entering the system and how are

you looking to deal with that as we know storms become more intense?

TOM WYNNE: So, we, we do have a map… a wastewater management plan, I'm not actually with the wastewater group so its… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay… [cross-talk]

TOM WYNNE: …not my strength. As far as, you know the surface flows we are also looking at locations where we'll be installing storm sewers such as Southeast Queens where there is very little infrastructure and that should significantly help the managing the flows that are on the streets.

CHAIRPERSON CONSTANTINIDES: And I do want to commend DEP for the work that they've been doing in Southeast Queens which is making sure as we know more precipitation… I know Howard Beach had some issues I think maybe a year ago, where are we at with that, did we put an infrastructure up there?

MIKE DELOACH: In Howard Beach?

CHAIRPERSON CONSTANTINIDES: Yeah, I remember they had a bad flood up there…

MIKE DELOACH: Yeah, I'm not… I don't know of any actual capital projects that we've done

recently but I'm happy to look, I mean you know we do… our sewers, you know can only handle what they can handle so sometimes with heavy rains we do see isolated flooding instances, we're continuing to, you know invest in our infrastructure to where possible and ensure that we can, you know deal with the additional precipitation water.

CHAIRPERSON CONSTANTINIDES: Last question before I… we have to go to the next panel. So, One NYC plan, where are we at with implementation, that's you right? So, where are we at, I remember being a part of that very early on a few years ago, where are we at with implementation around a lot of the recommendations that were made in that plan or any updates on that particular plan that would address… [cross-talk]

JAINEY BAVISHI: So… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …any of the issues… [cross-talk]]

JAINEY BAVISHI: …there are certainly initiatives in, in the One NYC plan and, and specifically in the resiliency vision of the plan that address the issues that we're talking about here today, there are hundreds of initiatives. In the One

NYC plan we release a progress report every year, the last one was released on Earth Day of this year that provided the latest progress on those initiatives and there's a… there's a very detailed report. I would also say that we're in the process of updating the One NYC plan, the last… it, it came out in 2015 so there hasn't been… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Yep… [cross-talk]

JAINEY BAVISHI: …a wholesale update in almost four years so that update will, will be released in April of next year.

CHAIRPERSON CONSTANTINIDES: So, April of next year?

JAINEY BAVISHI: Uh-huh…

CHAIRPERSON CONSTANTINIDES: Okay, I'm sure the Chair will hold a hearing on that so… alright, well I thank you all for coming out if there are no other question; Espinal, Yeger, alright, no other questions. Thank you.

MIKE DELOACH: Thank you very much.

CHAIRPERSON CONSTANTINIDES: Thank you. Alrighty, Danielle Manley, New York City Panel on Climate Change; Jessica Roff, Riverkeeper; Joseph

Seebode, U.S. Army Corps of Engineers, my favorite; Paul Gallay, Riverkeeper. Well I think I'm reading this right, Paul Gallay, Riverkeeper; Joseph Seebode, U.S. Army Corps; Jessica Roff, Riverkeeper; Danielle Manley, NYC Panel on Climate Change. Yeah. Army Corps?

JOSEPH SEEBODE: Army Corps is here.

CHAIRPERSON CONSTANTINIDES: Alright, sit on the hot seat, I'm playing, it was a joke.

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: I'm going to ask the Army Corps to go first.

[off mic dialogue]

JOSEPH SEEBODE: We have slides that are being loaded up here… we're trying to get some slides up here…

CHAIRPERSON CONSTANTINIDES: No problem, I think they're working on it.

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: We're just waiting for IT to come down. You're my hero.

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: Alrighty, we're ready, as my two-year-old would say tada.

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: And we'll just ask you to state your name and title for the record and organization and then you may begin.

JOSEPH SEEBODE: Good morning members of the New York City Council and good morning to everyone here today who is participating to learn more about this important topic. My name is Joseph Seebode and I am the Deputy District Engineer and Chief of Programs for the New York District of the U.S. Army Corps of Engineers. With me today on my immediate left is Mr. Bryce Wisemiller who is a senior Project Manager with the New York District. I want to begin today by thanking the Council for the opportunity to present information on the important topic of sea level rise and efforts underway by the Corps of Engineers to identify comprehensive options to reduce risk to lives and property from coastal storm impacts in the future. I have a few slides that I will use to illustrate the path forward on that study. Slide two. When hurricane Sandy hit the New York/New Jersey Metropolitan area in late October 2012 it caused major damages from storm surge and wave action, which was exacerbated by sea level rise.

This slide depicts the coastal storm flooding probability from intense storms such as hurricane Sandy. Unfortunately, 43 individuals lost their lives from the storm impacts in… from Sandy in New York State including 24 on Staten Island and there were tens of billions of dollars of economic damage to the region. Three months after Hurricane Sandy, Public Law 113-2 was signed into law. That Emergency Supplemental bill made available federal appropriations to improve and streamline disaster assistance after Hurricane Sandy. The U.S. Army Corps of Engineers received approximately five billion dollars to repair and restore damaged coastal storm risk and navigation infrastructure in the region and build new projects to provide resiliency and risk reduction. Repairs to over 30 projects within the New York district's region have been completed and we are actively working on the remaining portfolio of authorized projects, which will include among others, major projects in Staten Island, Jamaica Bay and the Rockaways. A unique feature of Public Law 113-2 was language that provided 20 million dollars to perform a study to establish vulnerabilities and resiliency options for the North Atlantic coast from Maine to

Virginia. Completed in January of 2015, the North Atlantic Coast Comprehensive Study concluded with a finding that there exist nine vulnerable locations known as focus areas along the coast that warrant greater study and evaluation to look at resiliency options for the future. One of the nine focus areas identified is the New York/New Jersey Harbor and Tributary Study. A feasibility study has been initiated. The states of New York and New Jersey have signed on to be the cost share partners for the study, and New York City is a full partner in the steering group for this study. The study will look at a series of comprehensive options to reduce the long-term risks to the coastal system from storms, including the effects of seal level rise. While early in the study process, the study will be done using the latest sound science, and with multiple levels of review, not only within the Corps, but with other involved federal, state and local agencies, to include an independent peer review and review by interested stakeholders and the public. Slide four is a graphic which depicts the Corps projections for relative sea level change at the Battery in Lower Manhattan with the yearly averaged actual measured

levels for the past 25 years. It shows a trend data line that is being used in developing alternatives for comprehensive resiliency. These projections are comparable to those developed by the two states as well as New York City. As so much uncertainty is associated with sea level rise, we will be performing sensitivity tests in the study to ensure that resiliency plans being considered are adaptable, adaptable should sea level trends change. We are currently in the scoping phase for the study with an expectation to identify a tentatively selected plan in early 2020. Slide five shows the current timeline for the study, please note particularly the yellow dots at the bottom of this graphic, which depicts the numerous times where agencies, stakeholders and the public will have opportunities to review information and attend public meetings on the study. I would like to emphasize that we are early in the study, which we expect to take several years to perform. We are evaluating a wide arrange of significant sized and significant costed measures, all of which have been successfully implemented in other areas of the country or the world. Our initial array of alternatives, which are various, various combinations

of measures, span the spectrum of conceptualized solutions for this unique geographic area. There is no decision pending today or in the near term to recommend, much less implement, any alternative as we continue to collect and synthesize information received from contractors, partners and the public. Slide six provides links to information and points of contact for anyone interested in this study or wishing to provide comment during, or after the current scoping period which closes on November the 5th of this year. Finally, slide seven summarizes the key factors related to this study we would encourage the Council to consider as you discuss the serious risk that New York City faces from coastal storms, now and into the future. That completes my testimony, I'd be happy to answer any questions.

CHAIRPERSON CONSTANTINIDES: So, I, I want to start off with an apology, I apologize for having to run across the street, they were voting on a land use item in my district that I had to be present for so I apologize for having to miss the beginning of your testimony and having to step out during this hearing but I, I'm a Council Member I got to juggle as you guys do several things at once. So,

I guess the first question that I have is how does the Army Corps of Engineers engage… oh wait, here we go. Talk about the storm surge barrier, how does… how does it positively or negatively affect dissolved oxygen in our harbors?

BRYCE WISEMILLER: If I might Councilman, storm surge gates, barriers as they're commonly referred are one measure that is common within a number of the alternatives in a number of locations throughout the estuary. We are just now initially evaluating them using existing modeling tools that we have which are… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

BRYCE WISEMILLER: …primarily based on physical factors; flow, looking at conditions during ambient conditions as well as during storm conditions. Should any of those surge gates in those various locations make it past this first initial screening the subsequent stages of this study would evaluate the more complicated factor such as water quality and those type of effects. We're very early in the study and there's a number of different locations. The vast spread or spectrum of these

alternatives that we have are so broad that we needed to do an initial screening to try to hone in on which ones might show promise if any. At this point in time we don't know that any of the alternatives that we've identified are economically justified or environmentally acceptable, they're just conceptual approaches that looking at what's been done elsewhere and looking at this region might be workable here.

CHAIRPERSON CONSTANTINIDES: So, I mean I, I have other questions about how it would affect CSO discharge but I'm guessing the same answer would be… [cross-talk]

BRYCE WISEMILLER: We would… that would… if those measures and those various alternatives are carried forward, we'd would have to evaluate that in far more… greater rigor.

CHAIRPERSON CONSTANTINIDES: Alright, what about for those areas not within the barriers, what would the… what would some of these plans mean for those areas just, just outside the storm barriers?

BRYCE WISEMILLER: Well your question of induced flooding which I believe is what you're talking about… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

BRYCE WISEMILLER: …the barriers are closed; the water goes somewhere else… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Right, it has to go somewhere… [cross-talk]

BRYCE WISEMILLER: Right? That, that's a common… that doesn't always apply to coastal storm surge system, fluvial systems, river systems that's a more common feature. With that being said that is a good question, it's something that we are looking at using the existing tools that we have now related to some of the storm surge barriers, I should point out though that that question that you raised is not specific to just surge gates, the Eastside Resiliency Project those types of issues have been raised with that type… where you have shoreline base measures so induced flooding is a common consideration to any coastal storm management alternative.

[off mic dialogue]

BRYCE WISEMILLER: And I should point out that if there is induced flooding that that would have to be mitigated as part of that alternative and that's true if its surge gate or shoreline base

measure, they would have to deal with those induce flooding as part of that measure and the cost for dealing with, with it would be factored into it. So, this is not a net win scenario, no one gets to benefit at the cost of others.

CHAIRPERSON CONSTANTINIDES: That's important and I guess the, the, the next question I have and I think I'm going to let our friends from Riverkeeper testify and then we can kind of have a more sort of… a, a deeper discussion, our… you know it's… what does it mean when you had said that you were taking sea level rise into account in, into these plans, I know they're very early… I know if this was a baseball analogy, we wouldn't be in warm ups yet, we'd still be back in the dugout like getting ready so… but still how… what does this do to take sea level rise into account?

JOSEPH SEEBODE: Oh absolutely, yeah, yeah, yeah…

BRYCE WISEMILLER: Our initial screening is focused on the severe coastal storm systems and that is primarily because a lot of the measures that are involved with alternatives are very high cost alternatives. Surge gates are if anything expensive,

so we are trying to use this initial economic screening to try to hone in on those if any that might show promise for further evaluation. With that being said we would… no, I'm sorry… could you repeat that, I, I got lost in my thought there?

CHAIRPERSON CONSTANTINIDES: No worries, its early in the morning and, and, and… the question I had was that, you know when you talk about… and, and we're very early in our thought process, very… you've made that very clear that this is very early in our processes but that being… with… leaving the baseball analogy aside the… what does it mean that you're taking sea level into account as part of these early plans?

BRYCE WISEMILLER: Yes. So, the design on these… this initial array of alternatives that we have, there are five with project and then the no action or future without project conditions is the sixth alternative that we use as a baseline for comparison so for initial screening we're designing them all to the same standard which is the 100 year storm event with the intermediate sea level rise so, with the shoreline base measures those deal with both the high frequency and low frequency flood events so

sea level rise is embedded within them but with the surge barriers they deal with the surge and sea level rise during storm events and dealing with sea level rise was part of its ambient risk if you will that is to say sea level rise is a very slow moving millimeters per year type of activity… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

BRYCE WISEMILLER: Right, so the communities that are affected by it will change as time goes on and so dealing with those localized floods like what you see at Broad Channel or Coney Island Creek and then other neighborhoods in the future. If barriers are done dealing with sea level rise in those other locations over that time span can be done but it doesn't have to be the 15 foot flood wall that holds back both storm surge and sea level rise it just needs to be the three foot or five foot or whatever it is to deal with just the sea level rise because the barriers hold back the catastrophic storms that can cause death and, and severe damages throughout the study area. There's a little dichotomy in how the surge barriers work, they're not meant to work as the magic bullet they have to be done in

tandem and in combination with other measures, it's a systems approach.

CHAIRPERSON CONSTANTINIDES: Okay, I'm, I'm actually going to at this point turn it over to my colleague, Donovan Richards who has a few questions before he has to go to a meeting and then we'll have Riverkeeper go unless anyone has any…

[cross-talk]

COUNCIL MEMBER RICHARDS: Thank you…

[cross-talk]

CHAIRPERSON CONSTANTINIDES: …questions beyond… prior to Riverkeeper's testimony. Okay.

COUNCIL MEMBER RICHARDS: Thank you Chair. So, we've heard the study of the study of the study for many years happening so my question is on implementation are you fully funded and is there enough funding in the budget right now and if you can give me the total cost of for instance the Rockaway reformulation plan, how much will that cost to, to build these barriers and is that… is the funding fully in place as we speak right now?

JOSEPH SEEBODE: For the large scale…

[cross-talk]

COUNCIL MEMBER RICHARDS: Large scale, uh-huh… [cross-talk]

JOSEPH SEEBODE: …comprehensive study… [cross-talk]

COUNCIL MEMBER RICHARDS: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …we have money available and our sponsors, the states of New York and the states of New Jersey have committed their share to bring this study all the way to and all… and the identification of an alternative…

COUNCIL MEMBER RICHARDS: Okay, so… [cross-talk]

JOSEPH SEEBODE: …that's going to be… [cross-talk]

COUNCIL MEMBER RICHARDS: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …about 15 million dollars…

COUNCIL MEMBER RICHARDS: 15 million to carry out… [cross-talk]

JOSEPH SEEBODE: 15 million for… [cross-talk]

COUNCIL MEMBER RICHARDS: …the… [cross-talk]

JOSEPH SEEBODE: …the study.

COUNCIL MEMBER RICHARDS: Okay…

JOSEPH SEEBODE: Now I'm… [cross-talk]

COUNCIL MEMBER RICHARDS: And so that's a… [cross-talk]

JOSEPH SEEBODE: I mentioned… I mentioned… [cross-talk]

COUNCIL MEMBER RICHARDS: …pricey study.

JOSEPH SEEBODE: It is. I mentioned in, in my remarks that Public Law 113-2 provided five billion dollars to the Corps to execute a whole series of different types of projects after Hurricane Sandy, we have expended all of the money successfully to repair and restore all of the projects that were damaged after Sandy so we put sand at, at Rockaway and Coney Island and a number of other locations in the region. We are currently now working through the remainder of our portfolio to execute projects that were previously authorized by Congress but had not received an appropriation, so we are… we are going to begin by the end of next year as you heard earlier the 650 million dollars South Shore of Staten Island

project. We are going to proceed with the approximately 450-million-dollar Rockaway and Jamaica Bay project next year…

COUNCIL MEMBER RICHARDS: Now that, that funding is in place?

JOSEPH SEEBODE: That funding is available… [cross-talk]

COUNCIL MEMBER RICHARDS: Its available… [cross-talk]

JOSEPH SEEBODE: …and it will be locked in… [cross-talk]

COUNCIL MEMBER RICHARDS: Okay… [cross-talk]

JOSEPH SEEBODE: …upon signatures by the state and the city and the Corps on documents that we call a project partnership agreement.

COUNCIL MEMBER RICHARDS: And when do we anticipate that… [cross-talk]

JOSEPH SEEBODE: We are actively processing those documents and I'm hopeful we are going to sign them very, very shortly and that will lock… [cross-talk]

COUNCIL MEMBER RICHARDS: Shortly, a month, two, a three and I… and I just… I'm just… [cross-talk]

JOSEPH SEEBODE: This year… [cross-talk]

COUNCIL MEMBER RICHARDS: …speaking… okay, this year… [cross-talk]

JOSEPH SEEBODE: This year… [cross-talk]

COUNCIL MEMBER RICHARDS: Okay, so we got them on the record, this year.

JOSEPH SEEBODE: This year… [cross-talk]

COUNCIL MEMBER RICHARDS: Alright… [cross-talk]

JOSEPH SEEBODE: …for the PPA… [cross-talk]

COUNCIL MEMBER RICHARDS: Okay… [cross-talk]

JOSEPH SEEBODE: …on Staten Island.

COUNCIL MEMBER RICHARDS: Okay, for, for Staten Island but not the Rockaways?

JOSEPH SEEBODE: Rockaway early next year.

COUNCIL MEMBER RICHARDS: Early next year; summer, spring, fall?

JOSEPH SEEBODE: Our goal is the spring.

COUNCIL MEMBER RICHARDS: Okay, the spring. So, you spoke of coastal erosion a little bit and I'm sure you've been hearing about some of the issues we've been having in the Rockaways, how are you working with NYC Parks, do we anticipate Army Corps coming back out to deal with… [cross-talk]

JOSEPH SEEBODE: We had a great relationship with the city and particularly with the Parks Department at Rockaway where we have done projects in the past very successfully where we have integrated into our navigation projects where we're dredging in places like East Rockaway Inlet and Rockaway Inlet, opportunities to use that sand beneficially in highly erosional areas on the ocean front of Rockaway and we are looking currently at projects that we will be funded for in '19 hoping that Rockaway or East Rockaway Inlet are… is in there and if so we'll work with the city to try to use that sand beneficially… [cross-talk]

COUNCIL MEMBER RICHARDS: And I want to commend you for the work that you've done but there's still some gaps and so you're saying FY '19 we could possibly see some progress there or…

JOSEPH SEEBODE: We're… we have… we're, we're waiting… [cross-talk]

COUNCIL MEMBER RICHARDS: Okay… [cross-talk]

JOSEPH SEEBODE: …to see which projects are funded in, in FY '19 by the… by the administration and… [cross-talk]

COUNCIL MEMBER RICHARDS: By NYC Parks or by the federal… [cross-talk]

JOSEPH SEEBODE: No, by the federal… [cross-talk]

COUNCIL MEMBER RICHARDS: …administration… [cross-talk]

JOSEPH SEEBODE: …administration…

COUNCIL MEMBER RICHARDS: Federal administration, okay. Okay, there's an urgency with that, you did some great work out there but there's… [cross-talk]

JOSEPH SEEBODE: we're actively engaged with this… [cross-talk]

COUNCIL MEMBER RICHARDS: And you're aware of the beach having to close a section of it…

JOSEPH SEEBODE: We're actively engaged with the city and the state and others to seek opportunities to improve that situation.

COUNCIL MEMBER RICHARDS: And let's speak of… are you looking at… so, when these projects are implemented are you looking at them from standpoint of… in… with EJ lens and I'll, I'll say this because a lot of times projects start and for instance whether… and want the whole entire peninsula to reap benefits because we all no matter what our socioeconomic status was or religion or color we all were hit by Sandy, she didn't discriminate but one of the things we've always run up against is projects not being equitably started or… so, so from my point of view and the community that I represent which is about 70 percent of the population who largely comprise of public housing residents and, and low income residents what is your strategy to ensure that we are protecting the most vulnerable amongst us who may not have the resources to get our homes rebuilt… [cross-talk]

JOSEPH SEEBODE: So, it is… it is a… it is a topic that… [cross-talk]

COUNCIL MEMBER RICHARDS: Okay… [cross-talk]

JOSEPH SEEBODE: …can be difficult given the way the federal system is set up to determine whether projects are able to proceed, we call it the benefit cost ratio… [cross-talk]

COUNCIL MEMBER RICHARDS: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …your tax dollar and mine when, when being considered for a project have to… we have to be able to demonstrate that there is a one to one benefit for the cost of the tax payer dollar and sometimes when you're trying to build smaller projects the benefits are not able to be accrued to get you there that's one of the reasons we're doing the comprehensive study and we're looking at comprehensive solutions for the larger New York/New Jersey Harbor area. It's clear that when we combine all of the potential benefits for the region that we have a lot of opportunity to use federal tax dollars because we can… we can get to that benefit, one to one benefit cost ratio. That notwithstanding we have been successful in most of the locations we have worked in around New York City to be able to

justify federal expenditures under the Sandy bill for projects, there are a few areas where it's a pretty significant stretch and we're working through looking at opportunities to have betterments paid for by the city and the state to support our efforts but I think we've done a lot of good but the, the… as we proceed we will have to discuss this as, as an issue particularly in the context of the harbor tributaries study.

COUNCIL MEMBER RICHARDS: I'm going to wrap up, I think we could walk and chew gum at the same time so I'm hoping that, you know as plans shape up and, and implementation begins that, you know we're looking at perhaps starting simultaneously these projects so that once again there's a benefit to the diversity of the Rockaways economically and socially.

JOSEPH SEEBODE: I will only conclude with I showed the slide with the points of contact and… [cross-talk]

COUNCIL MEMBER RICHARDS: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …places folks can get information on the comprehensive study and we… I want

to encourage everyone to participate, this is the… this is a federal study in partnership with the two states and the city and we want public engagement, we want the public to help us develop the alternative that this region ultimately will go forward and seek federal appropriation for.

COUNCIL MEMBER RICHARDS: Thank you, I look forward to continuing to work together. Thank you.

CHAIRPERSON CONSTANTINIDES: Thank you Council Member Richards, Council Member Menchaca.

COUNCIL MEMBER MENCHACA: Thank you for coming and testifying today. Council Member Richards I'll give you a quiz really quick well I… for the whole committee, there's something else that costs around ten to 15 million dollars in the study that the Mayor wants to use money for and that's the BQX, it's a lot of money, you're absolutely right and I think we… this is why we need to really think about how and… we move forward for something so, so big and so my question to you all is and, and I hope that I didn't miss it in your testimony but whether or not you're studying any other alternatives that don't have a gate component?

BRYCE WISEMILLER: I would say absolutely…

COUNCIL MEMBER MENCHACA: You are… you are, can you tell us a little bit about what… [cross-talk]

BRYCE WISEMILLER: Sure… [cross-talk]

COUNCIL MEMBER MENCHACA: …what that looks like?

BRYCE WISEMILLER: So, I mentioned earlier we have this initial array of alternatives, five of them that span a spectrum so at one end of the spectrum there is a large barrier system that's been proposed actually for decades that goes from Rockaway, Sandy Hook with land tie ins to high ground along Rockaway Peninsula as well as Sandy Hook and then at the Throggs Neck, there's also outside of that a gate system proposed in the Pelham Bay area in the Bronx. At the other end of the spectrum there are nothing but land-based measures so in between that the three that we have are basically hybrids that involve either surge gates at different locations further into the harbor area combined with shoreline-based measures. For example, in alternative… I, I don't expect you to know these, they're on our

website if anybody wants to look them up, alternative 3B involves a, a surge gate on the Arthur Kill Channel, it's actually Title Street and the Kill Van Kull Channel so a lot of the harbor area is still left open to coastal storm risks so for that measure there are shoreline based measures in Jersey City that tie into what New Jersey is planning in Hoboken, a rebuild by design project similar to what the city has in Eastside resiliency on Lower Manhattan, we tie… have a shoreline base measures that tie off where the two bridges ends, goes around the Battery and of course we're going to be looking to build off of what the city is advancing for that planning effort that they have going from the two bridges down to the Battery but that basically completes the big U, it also has shoreline based measures in East Harlem, it has a shoreline based measure in Camden with surge gates that has been developed separately under the Rockaway, Jamaica Bay reformulation which covers the Rockaway and Jamaica Bay area. Then it also has a surge gate structure that the city had studied in Gowanus Creek and Newtown Creek, it has shoreline based measures in Long Island City, Astoria, Flushing Bay and Creek, the Bronx, East

Harlem so there's a whole number of shoreline based measures that are in a lot of these alternatives, the idea is to identify all of the areas that have high risks that do not have existing plans in place or… to deal with coastal storm risk and to try to build off of that to make sure that we have as much comprehensive protection throughout the estuary. The idea is to try to identify which of these alternatives shows the biggest promise and then… one or two and then to focus in on those, there are then… right now they're very much focused on this 100 year storm event but we need to also look at the natural… nonstructural measures that might also be complimentary to these alternatives that would be folded into these alternatives as we flush them out further as the study proceeds.

COUNCIL MEMBER MENCHACA: So, just so I could understand, and I want to go back and look at some of this myself but… so, I represent Red Hook and Sunset Park… [cross-talk]

BRYCE WISEMILLER: Sure… [cross-talk]

COUNCIL MEMBER MENCHACA: …the coastal community and what you're saying is separate and apart from these larger gates, sea gates that you're

looking at shoreline options that, that kind of speak to a kind of shoreline gate style but on the shore not on or in the ocean for, for mitigation, is that right?

JOSEPH SEEBODE: That's… it's generally correct but what I think what you're asking is, you know not withstanding this larger study for a comprehensive long term solution that would likely cost billions and currently does not have money appropriated for it has many years of study left to proceed before we're ready to make a recommendation and a conclusion in concert with the region and the states and the city, what are we doing now and, and, you know I mentioned in, in my testimony we had completed over 30 projects the corps but there is a whole host of agencies that are spending money at all levels of government to improve resiliency and, and Miss Bavishi did a great job identifying some of the things the city is doing with their 20 billion dollars; FEMA, HUD, EPA, New York City Parks, New York City DEP, New York State, there are many, many agencies and as this resiliency continues to be brought into the city and the region we're getting… we're getting more robust in our resiliency. Our big

issue though will be will we have enough to stop a storm of the magnitude of Sandy even with all of these residency measures in place and some of the things we're proposing like the buried sea wall at Staten Island we believe would have completely changed the outcome there if it was in place before Sandy had hit. In Coney Island we, we've modified some of the groins there, we built T-groins, we placed sand on the beach, we're… we put a lot of sand in Rockaway, we're doing a lot of projects on the New Jersey Bay Shore, there's a lot of additional resiliencies that has been put in place but we need to finish this study knowing that sea level rise is going to continue, knowing that storms may intensify in, in the future and see if we come up with a project that ultimately is, I, I won't say palatable but a necessity for us to, to be able to maintain the economic engine of New York City and not put us in a place where the fragility or the vulnerability exists to a point where it, it effects our, our quality of life.

COUNCIL MEMBER MENCHACA: And thank you for kind of retooling the question and really kind of posing an answer that there are… there, there are

measures being taken for immediate responses to resiliency. As we take care of this larger question of comprehensive and, and really I don't know if you were here earlier when I spoke to a… just a park getting reconstructed in, in Red Hook, an incredibly vulnerable flood plain not just for a possible future surge but a kind of daily occurrence during rain storms and flooding and possible storm surge and, and I, I think that, that the Parks Department is, is failing us there and really kind of meeting us at that juncture of collaborate effort and so I hope that you can maybe join us in that, that review of the skate park that's fully funded by the city, three point some million dollars and has an opportunity to be a game changer and add to the multiple pieces that any one neighborhood would need so I, I… will you… can, can you join us in that… in that conversation with the Parks Department in your, your relationship with them?

JOSEPH SEEBODE: I'm not familiar with that particular project but if… I don't know whether it would require some kind of a permit from us but happy to talk with you more about it… [cross-talk]

COUNCIL MEMBER MENCHACA: Good and you'll get an invitation from me for sure and that might be enough, that'll be your permit deputizing you to be part of… part of the solution here. Thank you, thank you.

CHAIRPERSON CONSTANTINIDES: Thank you Council Member Menchaca, I just want to let the other members of the panel which I apologize I, I walked in halfway through so I just assumed everyone was together but then I realized afterwards, it took me a minute, no coffee today so I'll let, let Riverkeeper testify and then we can ask kind of our questions to the whole panel if that's… if that's alright with the Army Corps. Oh, Danielle… alright, so Danielle.

JESSICA ROFF: Jessica.

CHAIRPERSON CONSTANTINIDES: Jessica, no Danielle.

JESSICA ROFF: Did you want her first?

CHAIRPERSON CONSTANTINIDES: You guys are there so we'll just go in that direction, here we go. You guys are… but you're a part of the panel as well, right? Have we called you yet?

DANIELLE MANLEY: Yes.

CHAIRPERSON CONSTANTINIDES: Okay, great. Alright, I'm catching up. Alright, go ahead.

JESSICA ROFF: Okay… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Jessica, thank you… [cross-talk]

JESSICA ROFF: Yep… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …that's what I thought.

JESSICA ROFF: Good morning Chairperson Constantinides and Council Members, we thank you for holding this hearing on the Army Corps of Engineers New York/New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study and all the alternatives that are outlined within it and thank you especially to Samara Swanson, Legislative Council for all the work that you put into making sure this hearing had a wide range of voices to be heard. My name is Jessica Roff, I'm the Director of Advocacy and Engagement at Riverkeeper and I'm here today with Paul Gallay, the President and Hudson River Keeper. Riverkeeper is a membership organization with nearly 55,000 members and constituents which protects the environmental, recreational and commercial, commercial integrity of the Hudson River, its

watershed and Tributaries working with and advocating for communities throughout the region and safeguards the drinking water of millions of New Yorkers. We're here today and we've been active every day since we learned about this process because we have major concerns about the process and about the substance involved with this New York/New Jersey hat study. To begin with we are in… we are in captured in this process that the Army Corps has… is using called the three by three by three rule which requires them to do this first, first initial study within three years for under three million dollars and engaging three levels of the Army Corps. As you've heard there is an extensive amount of information, there's a massive impact zone of this project and there's no way to viably do this initial study within the confines of this rule which is actually a policy. So, there needs to be a waiver and the Army Corps has the authority internally to waive it themselves but that has not yet happened and so as a result this entire process is being framed in a way that is making it destined for failure because there's no way to get all of what we need within that… within the context. So, that's the first step and that, that way… that three by

three by three rule is also therefor affecting all of these other pieces of the puzzle; the timeline is untenable, we've had a number of dates that have shifted in the course of the last six or seven months, there's now as, as was presented in the… by the Army Corps they have moved back a decision point of winnow down the six alternatives to one or two of them until 2020 but the, the stop… the end, you know the end goal, the end timeline hasn't shifted so now what they're doing is they're moving internally and we're just going to compress time in other places and as we can see there's six massive proposals that are still incredibly new and still need a lot more information to be put into them and without that we're really in trouble if we don't have the time and the place and the resources to get that into it. obviously three million dollars in that context also feels very small given the other numbers that are being floated in the context of the study. It also leaves out major pieces that will need to be studied and inherently disadvantages the environment because as we keep hearing about all we're dealing with is a cost benefit analysis and there's no financial value being placed on ecosystems, there's nothing… there no

monetary value according the Army Corps of, you know a flowing waterway or of the marine species that live in the water so we… when we're only looking at a cost benefit analysis we're inherently looking at the wrong things and we're not going to have a full picture and that's the only studies that are being done before the process gets winnowed down so we're literally just looking at an environmental… we're not looking at any of the environmental issues and as Council Member Richards pointed out if you're looking also at cost benefit analysis you're disadvantaging the environmental justice communities and other disadvantaged communities throughout the area because of where the dollar values get invested in the city and where they don't so that's another really big concern of ours. And then there's a number of issues… and those are the procedural concerns in particular but there's a number of issues that fit into both procedural and substantive and we have problems obviously with the substantive as well. We keep hearing this reference to the fact that these processes are going to address sea level rise and, and, and I, I was very encouraged to hear the question from, from you Chairperson to ask about how

this was actually being incorporated but the answer doesn't actually assuage any of our concerns because in fact the bit… especially the big barriers will not deal with sea level rise, none of the things in the water are going to do that because as sea level continues to rise they're… they remain open, right, this is one of the biggest shipping channels in the world in New York so the, the barriers are supposed to be open most of the time in that event there's equal levels of water on both sides of the barriers so clearly as sea level is rising there is no actual addressing of that issue in any of the water bound barriers and as we've all seen from the IPCOMMITTEE CLERK SWANSTON most recent report the numbers we've been looking at are just… we need to accelerate, you know how we're… how we're setting out our timelines for everything and how we address everything and that sea level rise is going to continue to exponentially get worse and in addition to that in the, the issues that were raised earlier about how that's going to effect, you know command sewage overflow and storm water overflow like none of those things are being incorporated clearly yet because everything is clearly still just getting figure out as we see. So,

the problem is that in addition to this promise of these being infrequent closures they… the… we're building a system that's going to require the barriers to actually be closed more and more to deal with sea level rise which also means that we're not addressing the full scope of what it means to implement them. So, the Army Corps has really been tasked with the wrong question to begin with by not being asked to look directly at sea level rise and to be looking at storm surge and coastal flooding, it needs to shift the entire way that the study is being framed and in order to get a good understanding of what the full impacts are its critical that there is deep engagement in communities and in community groups throughout the impact region, that is a really important piece of this puzzle that has been quite frankly very poorly implemented. We were told at the very first meeting that an email went out to 714 people to inform them of the meeting, this impact zone is more than 2,100 square miles, involves three states and multiple dozens of millions of people, to you feel like 700 emails is anything close to an appropriate beginning of outreach is really problematic. To make a point I've been now at five

meetings and have sat across the table from direct meetings with the Army Corps, I have yet to receive a single email from the Army Corps about any of their meetings or anything they are doing. I have also offered to help with outreach and engagement and haven't heard about that. It's really important that we have… that people's voices are heard in this process. As, as it was pointed out by all of you representing all of your different communities you all have specific interests and specific issues that happen where you live and if that is not being directly integrated into this process then this process isn't going to deal with our problems properly and its clearly not going to do that if the outreach and engagement isn't inherently part of the process and also part of the record. We keep being told that there are places that, that… the… that there will be more places for engagement further down the line but they're after certain comment periods close or they're when records are closed and so if it's not on the record that's also a really big piece of the problem. We have specific recommendations which are in our testimony that I've put… given to copies of… copies to you… for all of you and I'm

going to read those in particular. The Corps needs to develop a comprehensive plan to inform the public and to engage communities around their process. Here are just a few ways that they can make some of those changes: they must share which studies that are planning to evaluate and which they will undertake and when; they need to have and communicate with a comprehensive mailing list of everyone who has attended a meeting, commented, or communicated with the Corps in the area of potential because I know for a fact there are other community groups and environmental groups that meet regularly with the Corps on other issues none of whom were informed of this when it came down the pike either; the Corps must undertake outreach to community groups, local elected officials, and environmental groups, they especially need to do authentic outreach and engagement with environmental justice communities and groups who as the most impacted by storm surge and sea level rise often have many solutions but may not have the resources to implement them. The Corps and New York State must also consult with federal and state recognized tribes who will be affected by this study, to date there has been no mention of tribal

nations. These must be real conversations with intentional information exchange. And so just to say also that we, we have submitted edits to the proposal for the resolution as well with our testimony and to encourage that it… it's really important that this… that this study involves as many voices as possible and I know that means it has to slow down but if we're going to do it correctly I think it's clear from the IPCOMMITTEE CLERK SWANSTON that while time is shorter than what we thought we had it is also critical that it is thoughtful, intentional, engaged and really responsive to the needs that we have otherwise if we don't have solutions that meet all of those we're just going to be building ourselves into, into a corner again and we're going to have to fix all of these things down the line and that's going to be billions and billions of more dollars to make things better actually going to respond to the situations we'll find ourselves in very shortly. Thank you.

PAUL GALLAY: May I add a couple of specific points in addition to my colleague, Miss Roff's points but first may I thank the Council, thank the Army Corps, the city administration, New

York State DEC and the other partners in this process. My name is Paul Gallay, as Miss Roff said I'm the President of Riverkeeper, I'm a former member of the New York City Regional Office of the New York State Department of Environmental Conservation so I'm no stranger to government process, I was involved in the closure of Fresh Kills Landfill recycling plant on Staten Island and any number of other processes involving city waste water treatment plants and the like so I offer these comments with, with that perspective in mind and I want to say first that if there's anyone in this room or watching this testimony who doubts the seriousness of this issue, this issue could not be more serious and could not be more real. When you have the administration of President Donald Trump saying as they did in July of 2018 through the National Transportation Safety Administration that it is expected by them that there will be seven degrees Fahrenheit warming by 2100, seven degrees Fahrenheit warming by 2100, the laws of thermodynamics suggest that this issue of sea level rise and storm surge could not be more real or more serious. It's coming soon, it has been with regard to Sandy and any number of other storms already here, I

know that when Sandy hit in 2012 at the end of October, I was bailing steps in my office, our pump having failed, and it became a very physical tangible thing which is nothing compared to what others experienced. According to city data issued this April, there will be a minimum of 11 inches and as much as 24 inches of sea level rise just by 2050. Again, I'm going to repeat that just because it's going to catch a lot of people by surprise, that can't be true, can it? Well the city has good data that suggests that it will be between 11 and 24 inches of sea level rise in addition to what we've already experienced by 2050 which is just over 20 years from now. Riverkeeper is all in on this, we have been very critical of the process to date but behind the scenes we have been actively engaging everyone in every manner we possibly can including the Army Corps and we are very grateful for an invitation from the Army Corps received just in the last weeks to come in and begin a dialogue with them and I believe that dialogue can be extremely productive. I do want to echo what my colleague, Miss Roff has said, barriers are not an answer for sea level rise, sure they will be built to take into

account sea level rise, but they'll only deal with storm surge, we cannot parcel out solutions in a systems approach as Mr. Wisemiller properly suggested that we take up here. A systems approach will not only deal with sea level rise and storm surge it will also be community based as my colleague, Miss Roff… my… Miss Roff has said. If we are going to get where we need to go on this critical issue, we are going to need to follow principals of equity, we're going to need to be creative, we're going to need courage and we're going to need luck but most importantly we're going to need to be community based and I want to remind the council of their excellent work in 2012 when they created Local Law 42 and Local Law 42 of 2012 which Riverkeeper worked with and which was passed unanimously and signed by former Mayor Bloomberg requires the Office of Long Term Planning and Sustainability for the city to develop a community or borough level communication strategy intended to ensure that the public is informed about the findings of the New York City Climate Change Adaptation Task Force including the creation of a summary of the report for dissemination to city residents and in developing such a communication

strategy the Director shall consult with non-governmental and community based organizations. If we are not community based with these solutions, we are not going to come close to success on this issue. If you look at the best learning on solving problems of this magnitude you'll see that so many of them are nonstructural, so many of them are socially based, so many of them are based on strong community resilience at the neighborhood level, at the organizational level, so many of them are based on more creative approaches to land use, we have to re-envision how we are handling our land use, others are specializing in issues which are generally referred to as the architecture of accommodation, that sounds very jargony [sp?] but at the very granular level they are working so that the storm surge and sea level rise that they cannot barrier off or wish out of existence is managed constructively and thoughtfully and intentionally. So, in summary, please implement Local Law 42. I call on the Army Corps to complete the waiver process, they're going to need not only more time but more funding. It is essential, we cannot just say we don't know how it will effect dissolved oxygen if we build these barriers and then decide

whether or not to make the barriers one of the solutions, that's flying blind and this is not a time to be flying blind, we need the money to do these studies right before you select projects and you need to consider sea level rise at the deepest and most fundamental level. So, thank you for giving us this opportunity to testify. I'm going to relinquish my chair, so you'll have the opportunity to do so…

DANIELLE MANLEY: If I can get my computer actually… I have a… [cross-talk]

CHAIRPERSON CONSTANTINIDES: PowerPoint, yep, uh-huh.

DANIELLE MANLEY: Yeah.

BRYCE WISEMILLER: Okay.

CHAIRPERSON CONSTANTINIDES: We have that loaded up and…

DANIELLE MANLEY: Oh, okay.

[off mic dialogue]

DANIELLE MANLEY: Good morning, my name is Danielle Manley, I work at the Center for Climate Systems Research at Columbia University's Earth Institute as a Climate Change Researcher. I serve as Program Manager for the New York City Panel on Climate Change and I want to thank you for having me

here today. In 2010, the New York City Panel on Climate Change released its first report detailing… sorry. The New York City Panel on Climate Change or NPCC for short is a panel of scientific experts from around the New York metropolitan region who advise the Mayor's Office on the latest climate science that's relevant here for New York City. It was formed in 2008 under then Mayor Michael Bloomberg, who saw climate change as a critical issue that needed to be addressed and managed by New York City and that science-based decision making was key to this response. Since 2008, the Panel has provided regular climate science updates to the city of New York. In 2010, the Panel released its first report detailing risks to the region. The report was called Climate Change Adaptation in New York City; Building a Risk Management Response. In 2012, under Local Law 42, the New York City Panel on Climate Change was established as an ongoing body that is mandated to provide regular climate science updates to the city of New York. After Hurricane Sandy, the NPCC provided an update to its findings in climate risk information 2013 and the most recent full report of the panel was released in 2015, titled Building the Knowledge Base

for Climate Resiliency, which provided the most up to date analysis on climate trends, future projections and future coastal flood risk maps for New York City. The next report is due to come out in March of 2019. The panel takes a metropolitan region approach to its analysis because changes in climate don't stop at the municipal boundaries of the city and much of the cities infrastructure and community network extends across the region. By looking at historical trends, we see that sea levels are already rising across the globe. According to the intergovernmental Panel on Climate Change, globally, sea level rise has trended about 1.7 millimeters per year or about 7.8 inches since the year 1900. Across the New York metropolitan region, we have observed sea levels of over one foot since the year 1900, at a rate of about 2.8 millimeters per year in Bridgeport and in Lower Manhattan and about four millimeters per year in Sandy Hook, New Jersey. This means that the New York City region is experiencing sea level rise at nearly double the rate as the rest of the globe. Many groups around the region understand and are working towards improving resilience to the risks that sea level rise is already been posing to our coasts. Nearly six

years ago on October 29th, 2012, Hurricane Sandy hit New York City bringing unprecedented sea water into Lower Manhattan, Brooklyn, Queens, Staten Island and across the New Jersey coastline. The floodwaters reached a height of 14.1 feet in Manhattan, setting the record at the Battery tide gauge. The storm left the region 11 days without telecommunications ability at critical facilities, two million people losing power, all of New York City's tunnels into and out of Manhattan shut down displacing nearly five and a half million weekday riders, closing six hospitals evacuating 2,000 in patients and at least 60 fatalities across New York and New Jersey. The events of Sandy were a renewed strengthening of action on climate change in this city which was already looking to understand the risks. The storm was evidence that city… the city is already vulnerable today to sea level rise and coastal storm surge. Here are just some of the photographs of the floodwaters that came into the region during Hurricane Sandy. The top left shows waves crashing against and over the top of a sea wall adjacent to a park in Brooklyn, you can see the Verrazano Bridge there in the background. The park itself is a buffer zone that absorbs floodwater

which protects some homes that are just beyond it. the top right shows coastal flooding in Seaside Heights, New Jersey during Sandy which is a small community town on a narrow barrier island roughly midway between Atlantic City and Sandy Hook. In, in general the barrier islands of New Jersey are eroding in part due to historic sea level rise and in part due to the presence of hard structures. Storms like Sandy continue to produce extensive beach erosion. The bottom left shows water moving into the former World Trade Center site when it was still being built in Lower Manhattan and finally the bottom is a right… the bottom right is an image of flood water moving into the entrance of the PATH station in Hoboken, New Jersey. These images show the impacts that coastal storm surge flooding can have on our region. Severe storms also generate high waves and water levels that will lead to beach erosion and shoreline retreat. Sea level rise will generally increase these erosion rates. As sea levels continue to rise across the globe and in our region, storm surges from storms of similar magnitude to Hurricane Sandy will be able to reach further inland due to a higher baseline sea level. Coastal flood risks will be higher in the New

York metropolitan region and all regions around the globe because of sea level rise regardless of how the intensity of storms is affected by climate change. The magnifying effects that sea level rise is having and will continue to have on coastal flooding cannot and should not be ignored. Here are some of the latest projections that the New York City Panel on Climate Change provided in our 2015 report. These projections are based upon the same global climate models that are used by the intergovernmental Panel on Climate Change. The NPCC provides a range of future projections for sea levels here in New York City resulting from the analysis of 24 global climate models across two greenhouse gas emissions scenarios, a medium emissions scenario RCP 4.5 and a high emissions scenario, RCP 8.5 as well as based on literature reviews and expert analysis. All projections shown here are in reference to sea levels in the baseline years spanning the years 2000 to 2004 and are shown as a low, middle range and high estimate for future sea levels across the 21st century. All of these possible future scenarios demonstrate that sea levels will continue to rise. Middle range projections estimate that the New York

metropolitan region could experience 11 to 21 inches of sea level rise by the middle of the century and 18 to 39 inches by the 2080s. the high end of projections estimate that sea level rise could be as high as six feet here in New York City by the year 2100. These rising seas will exacerbate the effects of future coastal flooding, enabling storms of similar frequency and magnitude today to produce higher floodwaters in the future. Historically, the 100-year flood, or a flood that has a one percent chance of occurring in any given year, is 11.3 feet in New York City. The data shows us that this level of flooding will likely become more frequent in the coming decades because of sea level rise. Today's 100-year flood could become a 50-year flood by midcentury and by the 2080s could become a 20-year flood or even an eight-year flood. The future one percent flood heights are likely to increase as well, where today's 100-year flood of 11.3 feet could become 12 to 13 feet by midcentury and up to 16 feet in the 2080s. The key message here in all of this analysis is that coastal flooding is very likely to increase in frequency, extent and height due to increasing sea level rise. This flood map developed

by the NPCC in our 2015 report illustrates the changing extent of the 100-year flood zone in New York City as a result of heightened sea level rise. The purple areas indicate coastal flood risk today based upon the 2013 Preliminary Flood Insurance Rate Maps, the light and dark green areas show how far those storm surge waters could reach in the next few decades in the 2020s and 2050s and the yellow to red areas shows how those floodwaters move even further inland by the 2080s and 2100. By the end of this century, we see that the 100-year flood zone nearly doubles in its extent compared to today's levels and coastal flooding… and coastal neighborhoods and infrastructure across the city will be at increasing risks. Some of the neighborhoods in New York City that are at high… at the highest risk due to the effects of sea level rise will have on coastal flooding include southern and western Queens, parts of Brooklyn, Staten Island, Lower Manhattan and parts of the Bronx. Policies and responses to coastal flooding cannot ignore the exacerbating effects that sea level rise will impose on our regions coasts. New York City is already taking into account future sea level rise in planning for the future, like with the

Climate Resiliency Design Guidelines that have been mentioned earlier today. These guidelines are a science-based policy that incorporates forward looking climate data into the design of New York City's capital projects including sea level rise. Tools like New York City's Flood Hazard Mapper helped to illustrate to planners where facilities will be at heightened risk over time. While nations around the world are reaching agreements about how we can limit our greenhouse gas emissions, governments and their actions need to be responsive to the realities that we are facing. Given that we know that sea levels have been rising and that they will continue to rise, this type of practice in preparing for current and future sea levels should be the norm. the coasts of New York and New Jersey will continue to be at heightened flood risk as a result of sea level rise for decades to come. Here's the bottom line, based on our research using the best available science, we know that sea levels have already been rising across the New York metropolitan region, and that these rates have been nearly twice the global average. We are confident that sea level will enable storm surge waters to reach further inland across the New York

metropolitan region today and into the future. We understand that coastal neighborhoods and infrastructure will continue to be at increasing risk from coastal flooding and storm surge as a result of this continued sea level rise over the 21st century. And we believe that the United States Army Corps of Engineers should consider sea level rise in addition to storm surge in the New York/New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study pursuant to the National Environmental Policy Act. And finally, we believe that in order for adequate preparation for the effects of storm surge and sea level rise throughout our region that cross jurisdiction coordination across the city, state and federal, federal responses will be necessary. Thank you.

CHAIRPERSON CONSTANTINIDES: Thank you, did, did I get everybody on the panel this time?

COMMITTEE CLERK SWANSTON: Yes.

CHAIRPERSON CONSTANTINIDES: Alright, I got everybody now, alright. So, asking a few questions, back to the Army Corps, this issue of… I wanted to wait until the testimony of the Riverkeeper to talk about this issue of three by three by three,

can you discuss how you view this, this limitation on the work that you're doing and how can we… how do we move forward from that in a way that… it, it, it seems that it's absolutely limiting your work both in time and dollars?

JOSEPH SEEBODE: I do not disagree for the most part with the, the comments made by, by Paul and Jessica, the three by… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay… [cross-talk]

JOSEPH SEEBODE: …three by three is a federal law… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …it was put in place to push the Corps and, and… to push the Corps of Engineers to complete studies faster and for less cost so that we could get to a decision as quickly as possible on whether a project should go forward or not. It was set up in the law by Congress as a one size fits all, it obviously is not a one size fits all, we have requested a waiver and we are looking for additional time and many additional millions of dollars to enable us to do a deeper dive into this

overall issue so that we can come up with a good technically sufficient evaluation so that a recommendation with our partners at the state and the city and, and everyone involved is, is ultimately determined to be justified.

CHAIRPERSON CONSTANTINIDES: So, you're unable to waive it yourself and you need Congress to waive it for you or…

JOSEPH SEEBODE: It needs to go up to the, the, the Assistant Secretary of the Army.

CHAIRPERSON CONSTANTINIDES: Okay, so within… [cross-talk]

JOSEPH SEEBODE: So, we've requested the waiver.

CHAIRPERSON CONSTANTINIDES: You've requested the waiver… [cross-talk]

JOSEPH SEEBODE: And, and… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay… [cross-talk]

JOSEPH SEEBODE: …frankly, I mean the waiver has not been granted but I will… I expect the waiver will be granted knowing that we've, we've asked for a very significant sum of money, you heard the multimillion-dollar figure I… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Right, uh-huh… [cross-talk]

JOSEPH SEEBODE: …discussed earlier, I, I'm expecting we will get most or all of that initially to continue to proceed through this study.

CHAIRPERSON CONSTANTINIDES: So, with that… and what sort of timeline do we expect for your request, when will that be answered?

BRYCE WISEMILLER: The request was advanced this fiscal year because the appropriation bill that the federal government has for our agency was passed last month… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay… [cross-talk]

BRYCE WISEMILLER: …so the work plan that the Corps is developing now… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

BRYCE WISEMILLER: …for how to use the funds that Congress identified for us in that appropriation bill is expected to be released on November 21st or before, so the exemption process was accelerated for that reason and so… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Right… [cross-talk]

BRYCE WISEMILLER: …I would expect that we should know within the month.

CHAIRPERSON CONSTANTINIDES: Within a month, okay and, and at that time… [cross-talk]

BRYCE WISEMILLER: Yeah… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …then we'll have an opportunity to have a wider conversation, there will be a… additional dollars that are being put into this, additional time to look at it and are, are we still going to limit ourselves to these six current options or are we going to be a little bit more expansive?

JOSEPH SEEBODE: Right now, the scoping period remains open until November the 5th, we're accepting public comment and there are members of the public and, and agencies and others who are suggesting other alternatives that we should potentially look at. Once we have synthesized all those comments, we will… we will put together our… essentially our work plan on how to proceed. One of the things you heard today is very significantly is the, the desire to see a greater integration of sea

level rise, that is actually being considered by us… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …but our authority under law is coastal storm risk reduction, that's the authority, we're not in this to… this is… we do not have the authority to go forward with measures to essentially stop sea level rise but we do have the authority in the context of our project to identify ways to essentially mitigate or potentially ameliorate sea level rise though some of the actions we're going to take and so that's to be looked at and developed over time. Every one of these project alternatives that we're looking at there are three key things we will do… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …we will have to determine that they are engineeringly feasible, environmentally acceptable and economically justified that's the benefit cost ratio on the economic side and those are three hurdles that every alternative will have to go through and Bryce talked earlier

about the study effort to, to look at environmental factors like fisheries and, and dissolved oxygen and water circulation and, and, and engineering issues like backwater flooding or, or the actual ability to build some of these multibillion dollar projects with the current technology that we have before us. Some of these have been built, large surge barriers, large walls, pump stations, dunes, reinforced dunes, burms, you name it, a lot of these things have been built around the world but when you start to think about how much it's going to cost potentially to armor or protect 520 miles of coastline you're talking a very significant amount of money… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …does the country have the appetite for that, does the region have the appetite for that, that will all play during the course of the process as we work together to focus in on and winnow down the alternatives to those that we deem are reasonable.

CHAIRPERSON CONSTANTINIDES: I mean the challenge that I have is that I look at a November 5th date for the end of the comment period and then I

have a… the three by three by three rule that may sort of help us expand the scope of your, your, your opportunity to look at these things, the opportunities to, to engage but the comment period will be closed so I'm hoping I'm in the bucket of maybe we should take the time to… because you know the issues of that I asked earlier about dissolved oxygen, the earlier… issues, issues around environmental ecosystems, the issues around CSOs, the issues about communities outside of those barriers, under… right now we're so early in the process that those things are not being taken into account I'd like for us to… before we whittle down have that be part of the discussion prior to that…

JOSEPH SEEBODE: And Mr. Chairman we are closing on November the 5th, the scoping period… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay… [cross-talk]

JOSEPH SEEBODE: …so we are accepting comment on what should be the overall scope, we did present the five or six preliminary identified alternatives once we have all the scoping comments synthesized, synthesized we're going to develop a

report and collect the information that I think you're hoping we will collect to be able to… [cross-talk]

CHAIRPERSON CONSTANTINIDES: More than hoping… [cross-talk]

JOSEPH SEEBODE: …further… to further develop which of these alternatives… what are the potential impacts pro and con associated with each of them that will ultimately be a draft report that will go out to the public again for a… for comment and review, public scope… meetings and, and the like so that we continue to have public engagement.

CHAIRPERSON CONSTANTINIDES: Alright, so that, that leads me right into my next set of questions with public engagement so how do we get past… how do we expand our, our scope of folks that we're speaking to in, in relation to this public engagement, how do we engage the communities of 520 miles of coastline to make sure that they're part of this process and those that do not live around the coastline but are very interested in what happens in the city of New York?

JOSEPH SEEBODE: I'm going to let Bryce address this in, in a second, I'll, I'll start by

saying that we are New York City and, and, and you know I went to school in this city, I, I've, I've been here a long time this is probably going to be the largest Corps of Engineers civil work study ever done in the history of our country so we go into it, we're New York, we're big, we're going in big.

CHAIRPERSON CONSTANTINIDES: Awesome… [cross-talk]

JOSEPH SEEBODE: Okay and it's going to be… [cross-talk]

CHAIRPERSON CONSTANTINIDES: I'm glad to hear that… [cross-talk]

JOSEPH SEEBODE: …a very expensive study and it's going to have very expensive alternatives. We have reached out at the… at the initiation of the study to everybody that we could that we believed would be interested in this and I know it's only a very small percentage of the folks that… [cross-talk]

CHAIRPERSON CONSTANTINIDES: There are more people on the… [cross-talk]

JOSEPH SEEBODE: …we think need to… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …N train this morning… [cross-talk]

JOSEPH SEEBODE: …be involved. So, so we are… we are continuing to expand our mailing list… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …again I showed the slide that had the contact information I encourage folks to contact us through those… through those links, through those email addresses and to get on our mailing list and I… its building and Bryce I'll let you make… any… [cross-talk]

BRYCE WISEMILLER: Thank you. I think you laid it out very well Joe. It's a daunting challenge trying to reach out to everybody and, and Councilman I would just say that, you know within… it's not just 520 miles, the study area actually has over 900 miles of shoreline when you count the Hudson River and… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

BRYCE WISEMILLER: …all the New Jersey shoreline areas as well so it's a daunting challenge and, and we are looking to partner with other groups as possible and try to build the outreach effort. The

goal is to try to advance the sound science solutions that this region can support to address coastal storm risk including sea level rise as we go into the future because it's only going to get worse.

CHAIRPERSON CONSTANTINIDES: Alright, I guess the next question that I have is, is really more of a statement, I'll say that we're happy to participate in those outreach efforts and engage the millions of New Yorkers that want to have the opportunity to comment on what's going to happen in the future of their city, you know we most certainly want to make sure that everyone and everyone have an opportunity to be a part of it especially in those communities that will be the most impacted and as Donovan Richards talked about earlier have the… are going to be the most impacted and the least financial opportunity to do something when something happens. You talk about cost benefit analysis and certain communities that I see on the map that Miss, Miss Manley put forward many of those communities are, are residents of public housing, low income communities that don't have the… don't have a choice to say well I'll just move somewhere else because there is… there is no somewhere else for many of these residents, we

have to make sure that we're protecting those most vulnerable and I know they want to make sure that they have a voice in what's happening in the future of their neighborhoods. So, I want to make sure we, we're doing those strong outreaches in those environmental justice communities as well that we can engage and we're happy to partner with you and you have my commitment that we'll do so if you'll meet us halfway.

JOSEPH SEEBODE: We, we're putting everything up on, on a website as the documents are developed, as information is developed and again any, any opportunities… we, we welcome to ensure that the word is getting out when those documents are uploaded that people can go in and, and review them and, and comment on them.

CHAIRPERSON CONSTANTINIDES: Carlos do you have any more questions? So, I mean I, I'll, I'll just say this, I mean we, we really need… I will be following up with you, we most certainly need to see the three by three by three rule waiver granted, I'm happy to write a letter to, to the Army in, in support of that and, and with the… with the full voice of the City Council behind us, we want to make

sure that we continually engage with the Army Corps as… on outreach and make sure that this process takes in… I know that it can't… if you're saying it directly can't look by sea level rise by law, but we can bring sea level rise in as part of that conversation, we need to have that.

BRYCE WISEMILLER: If… if I might Councilman.

CHAIRPERSON CONSTANTINIDES: Sure Bryce, absolutely…

BRYCE WISEMILLER: Sea level rise has been a requirement for the Corps to incorporate into our civil works projects for decades and over the decades we have advanced based on the latest sound science the protocols by which we do that so sea level rise absolutely has to be in all of our formulations for plans in this area, it's a mischaracterization to say that we are not.

CHAIRPERSON CONSTANTINIDES: Well I… he, he just said before by law you weren't able to sort of directly act on that maybe I'm misinterpreting, I apologize for that.

BRYCE WISEMILLER: To incorporate into our plans…

CHAIRPERSON CONSTANTINIDES: Okay, well… [cross-talk]

BRYCE WISEMILLER: …in effect to sea level rise so while some measures have to be done in tandem with that, it is also important to keep separate the risks that you have from sea level rise from those that you have from coastal storm surge. Sea level rise is a very slow process and it slowly eats away at various low-lying communities; Broad channels, Coney Island Creek, what channel… community is next after those I don't know but that's a very long-term process. Coastal storm surge kills people, it causes tens of billions of dollars in damage, sea level rise makes coastal storm surge worse… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

BRYCE WISEMILLER: …and will over time, we have to deal with them both but they don't need to be dealt with necessarily as… they're not the same thing we need to be very careful about how we consider those alternatives for the solution because the best alternative might be to deal with one, one way the other another way, and that needs to be done

with good coordination with other agencies… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Sure, Paul go ahead… [cross-talk]]

BRYCE WISEMILLER: …and the public… [cross-talk]

PAUL GALLAY: Well first of all there's been a lot of agreement today and a lot of coming together today and I think that the process is more likely to succeed because of what you are all doing today but I do want to say that that last comment by Mr. Wisemiller I think does not represent best practices. I think when they take into account sea level rise, they do it in terms of designing for managing storm surge, they do not co-design for storm surge and sea level rise management and that's what this process has got to be changed to do. The waiver gets us to a time frame and a funding level that can allow us to have success but if the only authorized goal of this study is to manage storm surge not to manage storm surge and sea level rise their solutions won't get funded to deal with both storm surge and sea level rise, a systems approach as Mr. Wisemiller said that we need to follow earlier in his commentary

extends to this study dealing with both issues and I would take issue with the idea that storm surge kills people and sea level rise would not kill people because if you're going to have 11 to 21 inches or as much as 30 inches of sea level rise that puts people at far greater risk of life and limb as well so, this study has got to continue to evolve as, as, as Mr. Seebode indicated this is the most complex project that the Army Corps has ever undertaken, it cannot be done with halfway measures or compartmentalization.

JESSICA ROFF: Can I just add that obviously we're, we're also seeing that the… because of sea level rise them smaller and smaller storms become more and more dangerous and more and more deadly so if these are not going to be addressing all… and Mr. Wisemiller basically just said that one effects the other but we're not going to address one of them in the process… [cross-talk]

BRYCE WISEMILLER: I did not say that I said… [cross-talk]

JOSEPH SEEBODE: Let me… let me… [cross-talk]

JESSICA ROFF: Wait… just to say that to keep them separate in any part of this process is not

going to give a full picture to either one of them because each of them are, are directly effecting each other and so we need to make sure that all of these processes are actually asking that as a formulative question and not just that it's taking it into consideration like there, there's very careful language that's being used here, right, you can hear that they're saying they're taking it into consideration it has to frame the question but its not saying it's the actual question that they're being asked to address, those are two different things.

JOSEPH SEEBODE: This, this is an excellent discussion and it elucidates the… a challenge that we… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

JOSEPH SEEBODE: …acknowledge we have here, we have sea level rise occurring over time, our authority that we were given by Congress was to go and do a study to look at ways to ameliorate coastal storm risk so we're not doing a project review and a study to evaluate how to address sea level rise, we're, we're doing a study to evaluate how to reduce

the risk of major coastal storms and we are fully considering sea level rise and acknowledging that that's going to continue to have an impact on the size, intensity and the reach in terms of inundation of, of these storms so we… I fully acknowledge that sea level rise is a major component of this but when you start to think about some of these comprehensive solutions I'm not sure ultimately that we are going to get to a place where we can build a robust system of protections from coastal storm risk that are going to address all of the places that over time are going to see sea level rise, I think we will have places where we get the dual protections but on a day to day basis we heard earlier about land use modifications, we heard about money being invested by, by numerous government agencies to, to, to flood proof and, and, and buy out and do things that are going to have the longer term benefit of the day to day impact mitigation from sea level rise. As I say it's a challenge, we're, we're, we're going… we're meeting with the Riverkeeper in the future, we're working with everyone, we're looking to figure out how best to deal with this knowing this is something new and

something… it's a mega study for us and, and we're going to have to figure it out.

CHAIRPERSON CONSTANTINIDES: That's the study of our lifetime, right, this is… this is going to, you know really frame how New York City and, and this sort of area of the country is going to function moving forward over the next 100 years, right, so the… I appreciate the complexity of it, I just know that the more that we stay in contact with one another the more that we… I think we need to engage with each other more not less here so, I, I… and I think that maybe the… and I know you're limited by the scope of the question that you were given to by Congress, right, so I think that as we look to the future of that scope may need to have a more expansive view but that's beyond the purview of what you currently have but with… in the scope of the work that we can do we recognize that the sea level rise is playing a, a role in what's going to happen with storm surge, we have to address both and it's something that we can accomplish, we can get done but we need to engage with as many people as possible and, and make sure that we're spending dollars on the right things and come up with a plan that protects

the ecosystems and, and, and waterways and oxygenation and all those things and, and take all of these things into account and not be limited by three by three by three or find really any limits here because we need to look at… in, in a larger scope, right, that, that we can agree about. Alright, so with that I, I think… Danielle… [cross-talk]

DANIELLE MANLEY: I just… I had one last point… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Absolutely… [cross-talk]

DANIELLE MANLEY: …that I wanted to add on in terms of a comment that was made about treating the sea level rise and coastal flooding separately, just to reiterate again the points that we have understood and our research is that because of sea level rise today's 100 year flood could become more frequent and a one in 50 year flood by midcentury and a one in 20 or a one in eight year flood by the end of the century and to treat them separately would mean that you're ignoring this fact that you are… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Absolutely… [cross-talk]

DANIELLE MANLEY: …that these storms are becoming more frequent because of sea level rise and you can ameliorate coastal flooding by addressing sea level rise, so I just wanted to make that… [cross-talk]

CHAIRPERSON CONSTANTINIDES: I, I… [cross-talk]

DANIELLE MANLEY: …that point… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …wholeheartedly agree with you in here, yeah, absolutely. Alright, so with that I'm going to let this panel go and I appreciate all of your time and all of your efforts, I know it's, it's, it's a lot of work so thank you. Alright, so next up we have Kevin Cabrera…

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: Kieley O'Conner Chapman, Teresa Herrera, Perry Sheffield, Greg O'Mullan, and Catherine McVay Hughes if you can all step forward, thank you. Alright, so being that you're not… you're not a representative of any city governmental agency or state or federal governmental agency I don't have to swear you in so I'll just…

we'll start here on the left and we'll work our way forward.

PERRY SHEFFIELD: Hi, the four of us are actually as a… as a group should… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Yes, uh-huh…

PERRY SHEFFIELD: I'm Perry Sheffield, a Pediatrician Environmental Health Researcher and Parent.

TERESA HERRERA: My name is Teresa Herrera and I'm a recent graduate in Public Health from Mount Sinai.

KEVIN CABRERA: My name is Kevin Cabrera, I'm a Medical Student, 4th year at Hofstra North Well School of Medicine.

KIELEY O'CONNER CHAPMAN: And my name is Kieley O'Conner Chapman, I'm also a 4th year Medical Student at Mount Sinai.

CHAIRPERSON CONSTANTINIDES: Alright, go ahead.

PERRY SHEFFIELD: Hi, thank you for this opportunity to testify for the invitation. We, we have witnessed events like superstorm Sandy and also the amazing New York City government leading on climate change, preparedness and prevention but we

can and must do more to protect all New Yorkers and especially vulnerable populations like children. Climate change research tells us that sea rise is directly linked as we've heard today to the worsening storm surges and more frequent flooding that our city has endured in the recent decades and we must plan for sea rise otherwise Sandy level flooding is predicted to occur potentially as often as every five years as soon as 2030.

TERESA HERRERA: As pediatricians, pediatricians to be and public health specialists we are especially concerned about the impact of flooding on our city's children. A flood disaster as we saw with superstorm Sandy severely disrupts the basic determinant of a child's health. These includes access to clean water, adequate sanitation systems and nutritious diet, safe housing and safe areas for learning and play. In turn whole family's lives are disrupted as often parents cannot return to work when children's school or child care setting is still closed. Children's developing bodies and brains are especially sensitive to environmental hazards and children living in poverty are the most vulnerable and most likely suffer long term damage.

KEVIN CABRERA: We want to share and describe a story of Jason who's a fictionalized but realistic child who's living in a post major storm event. He's just five years old when Sandy ravages his home Rockaway Beach, Queens. After enduring hours of hurricane winds and rain atop a roof awaiting rescue by boat Jason and his family were relocated to a refugee like tent camp where they lived with suboptimal heat for weeks. Jason is often hungry and clean water is scarce, his entire family comes down with a nasty stomach virus that sweeps through the tent camp. Jason's school is also heavily damaged, and he misses over a month of kindergarten. Time passes, and Jason and his family are able to return home, but their home now bears the scars of water damage which is mold, mold is rampant, and roaches scurry out of faulty plumbing. Jason's mother also notices changes in his behavior, he is more irritable, and he now refuses to play outside or go to the beach, he also has trouble sleeping and when he does, he's awakened by frequent nightmares. Jason represents the thousands of New York children like him who have or will suffer in these ways at the next big storm.

KIELEY O'CONNER CHAPMAN: Disasters like Sandy threaten the basic health and safety of our children. Flooding acutely disrupts access to food and clean water, it also exacerbates existing food insecurity by delaying vital services like WIC and SNAP during recovery. Damage to water sanitation systems can place children whose immune systems are immature at high risk for infection and dehydration. Flooding can destroy homes, schools and areas of play, areas that are crucial safe havens for children become contaminated toxic zones. Structural damage increases the risk of a child's exposure to lead and asbestos. Water damage increases mold, a known trigger for asthma. Lastly, neuroscience research tells us that such trauma in early childhood from disruption of routine like we just described negatively impacts social and cognitive development. Trauma can also manifest as childhood depression, anxiety and PTSD and these disorders often persist into adulthood.

PERRY SHEFFIELD: We know Jason is not alone in bearing witness to and suffering the lasting effects of disaster trauma and for Jason and the thousands of New York City children whose story he

represents sea rise is at the root of the damage we describe. We strongly support the New York City, City Council to pass this resolution urging the Army Corps to consider sea rise to the full extent possible to help protect the health and safety of New York's children. Thank you very much.

CHAIRPERSON CONSTANTINIDES: Thank you, next…

PERRY SHEFFIELD: Do you… do you need us to stay for questions or should we step back and… [cross-talk]

CATHERINE MCVAY HUGHES: I have two testimonies so unfortunately one person had to catch a plane and he's an expert witness and my testimony depends on his so I will start with… my name is Daniel Gutman, I live on the West side of Manhattan and over the years I've been involved with several planning and design projects on the west side waterfront starting with Westway in the late 1970s and including Riverside South in the late 1980s and 1990s and Hudson Yards more recently. I've worked with several environmental groups including the Natural Resources Defense Council and the Environmental Defense Fund. I am currently a member

of the Storm Surge Working Group. The U.S. Army Corps of Engineers has made several proposals in the Harbor and Tributary Study to protect the New York/New Jersey region from the kind of storm surge that occurred during Hurricane Sandy. The Army Corps' study is currently in an early scoping and public comment phase, that's what we heard again and again today. No study of environmental impacts of the Corps' initial proposals has yet been conducted. Consequently, some whereas clauses in Resolution 509 regarding the environmental impacts are either premature or inaccurate. For example, the resolution states that the Corps should conduct a more thorough review of the environmental impacts of each alternative measure but then even in the absence of that thorough review the resolution concludes that "barriers are likely to restrict the migration of dot, dot, dot fish species important to the Hudson estuary". We simply don't know yet whether fishery impacts are likely or not. A lot depends on barrier design, which the Corps has not even begun. The resolution also concludes that the storm surge barriers would quote, "restrict natural flushing from the ocean dot, dot causing contamination to once

again being concentrated in New York Harbor" unquote. Yet engineers studying barriers or sea gates for the New York City have long believed that the gates can be operated to improve flushing and water quality in New York Harbor. How and whether such a system could work would be part of the Corps' forthcoming environmental study. The resolution calls on the Corps to include consideration of sea level rise in addition to storm surge. But the Corps is already doing that by adjusting its proposals to account for future sea level. What it cannot do is sponsor projects whose main purpose is addressing sea level rise. That's the job of the city, which the Mayor long has embraced. A 2013 report by the Mayor's Special Initiative for Rebuilding and Resiliency identified 43 miles of coastline vulnerable to sea level rise. In its latest progress report, the administration claims to have already addressed 25 miles of coastline. If you are interested in protecting neighborhoods from sea level rise, the Mayor's resiliency program might be a worthy subject for an oversight hearing. Resolution 509 refers to 60 fatalities and billions of dollars of damage due to Hurricane Sandy and acknowledges that six years after

Sandy, storm surge remains a significant risk. The Army Corps' study is the only effort underway with a sufficiently broad mandate to evaluate a full range of alternatives. Inclusion of regional storm surge barriers in the project scope is essential to informed decision making and an opportunity that we cannot afford to miss. I will email… I'll make sure that a copy of the revised proposed with some minor tweaking on your resolution gets sent to you. You know I have your email.

CHAIRPERSON CONSTANTINIDES: I, I know you do and… [cross-talk]

CATHERINE MCVAY HUGHES: So… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …and, and… [cross-talk]

CATHERINE MCVAY HUGHES: I… and Mr. Gutman I, I just… some of what you're saying today but since you're not here to be cross examined I, I will move on to your testimony…

CATHERINE MCVAY HUGHES: Okay, great, thank you very much. Okay, I will… okay, I have an appendix here which might come in handy so first of all I want to thank you Chair Constantinides for speeding up the phase out process of dirty heating

oil in power plants and more recently for working on the Urban Green Framework to reduce carbon emissions in large buildings by 20 percent between 2020 and 2030 which is waiting to be translated into legislation… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Almost there… [cross-talk]

CATHERINE MCVAY HUGHES: …and I'll promise you I'll be back…

CHAIRPERSON CONSTANTINIDES: Its full, we'll be back… [cross-talk]

CATHERINE MCVAY HUGHES: Okay and I hope other people in this room will be too. Okay, so one, greenhouse gas emissions need to be immediately… oh, wait, the… we need to immediately decrease greenhouse gas emissions by increasing energy efficiency and trans, transitioning rapidly to renewable fuels from carbon based. We already talked about the IPCOMMITTEE CLERK SWANSTON and that… but that report exposes a closing window that we have to choose which future we want so that's really important. So, in September of 2014, New York City committed to reduce greenhouse gases, 80 by 50, Local Law 66 with an interim target goal of 40 by 30 so we have a lot to do in the next

11 years to reduce it 25 percent and then on top of that we have another layer with the EPA and the National Highway Traffic Safety Administration proposing to freeze the Federal Corporate Average Fuel Economy or CAFÉ Standards and it would be great if you can incorporate that into your congestion pricing discussions since we know that two thirds of the greenhouse gas emissions in the city are from buildings and roughly one third are from transportation. Item two, incorporate proposed clarifications and updates by the Storm Surge Working Group into Resolution 509. You heard from expert witness Dan Gutman and you'll be hearing from someone else shortly and I just wanted to draw your attention to slide 11 of their presentation which actually addresses sea level rise. It has three bullet points; adapting to sea level rise is not optional, it is a shared responsibility. This study incorporates the most recent, sound science analysis of how to adapt coastal storm risk measures to increased future sea level rise in their design analysis and it concludes that this includes assessing risk and uncertainty based in uncertain future. So, I also just want to make sure that you know about this Vox and

ProPublica, they have a video called… about high levees and the impact that there could be other areas that are not protected so I want to draw you to the map on the next page to remind you where we are in the big U. So, on the big U we heard earlier about the ESCR, East Side Coastal Resiliency Plan which is roughly 2.4 miles from Montgomery to 25th Street so the city has now thrown in some more money on top of the HUD for a total budget of 1.45 billion dollars to be completed by 2023. So, two bridges which is .82 miles South of that between the federal funds and the city has a total budget of 203 million, we do not have a date for that. I'm representing the FiDi Neighborhood Association which is… represents roughly 50,000 residents. We, we fall under the South Street Seaport financial district area where the city has only allocated 100 million and then eight million for the park for a total of 108 million, total budget to be determined, date to start to be determined, date to be completed to be determined. The Battery Park City Authority plans is… plans to issue a resiliency bond to cover their 1.15 mile. Basically, the big U is far from complete and we've had that discussion before as we approached the six-year anniversary. So,

I just wanted you to focus on that. The third item is constructing a layered defense of local sea walls and a regional New York Harbor gate system to address future storm surges. A local perimeter land based sea walls as proposed by the Riverkeeper would be necessary to protect… protection from rising sea levels over the decades and centuries ahead, huge storm surges are best addressed by a layered defense system built around a regional storm surge barrier system that vastly shortens the coastline, in this situation roughly 1,000 miles down to less than ten miles and provides comprehensive protection against the devastation caused by occasional but massive storm surges. And the current study also includes a nature and nature-based feature. Examples such as tidal marsh, vegetated dune, oyster reef, and freshwater wetland so it's imperative to save the metropolitan region while maintaining a healthy Hudson and East River but as you know it's a straight… okay. So, just two more key facts here is the future of the National Flood Insurance Program is uncertain and is due to expire shortly, next month, November 30th, 2016, we do not know if or how much the federal government will assist in rebuilding our

communities after the next superstorm Sandy and two, Moody's, a major credit rating agency, recently added climate to credit risks and warns cities to address their climate exposure or face rating downgrades, lower ratings which shut cities off from investments they need to adopt to climate change and to recover from future storms. So, just following up from my prior testimony on April 12th, on page four I wanted to ask for a status update on the hurricane Sandy Task Force which remember passed unanimously last year. I haven't heard about the task force being formed or the one-year report being created, and the financial neighborhood district association is very concerned. The second thing is also from the April 12th, 2018 testimony is the Mayor's Management Report, it has ballooned up to a 450 page document that was released last month in September from its 372 page preliminary report released last February and there's still… it fails to report on the city's targets and goals to meet its c40 commitment by 2020 and its 80 by 2050 target. Since the MMR also reflects the city's values and priorities, this document needs to be updated to include indexes that are annually measured and publicly shared so that the

progress can be monitored and evaluated going forward. Also, Local Law 22 of 2008 requ5res 30 percent reduction citywide greenhouse gas emissions by 2030 and requires inventory and analysis of greenhouse gas emissions no later than every September 7th and to post on the city's website a report regarding action taken, where is that 2017 data? Thank you very much for the opportunity to testify.

CHAIRPERSON CONSTANTINIDES: Well thank you. Thank you.

GREGORY O'MULLAN: Thank you for the opportunity to speak today on this important topic. It's essential that the city council and the people of New York are deeply engaged in the issues of… [cross-talk]

CHAIRPERSON CONSTANTINIDES: What's, what's your… [cross-talk]

GREGORY O'MULLAN: …climate… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …name I'm sorry?

GREGORY O'MULLAN: Gregory O'Mullan… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Okay, great, great, great…

GREGORY O'MULLAN: It's important that we're in… deeply involved in the issues of climate response and protection. The issues of storm surge protection, sea level rise and the need for broader climate change responses are real and are… and require serious planning and action. My name is Gregory O'Mullan, I'm an Environmental Microbiologist specializing in water quality and water resource management. I'm an Associate Professor at Queens College in the City University of New York as, as I am aware, you're an alum, we're proud of the work that you do. We have… I have 20 years' experience as a scientist and I've studied local water quality issues for more than a decade. The scientific evidence is clear, climate is changing, sea level is rising. We have repeatedly seen the devastating consequences of intense storms on coastal cities, including New York. In the days following superstorm Sandy, I saw the impacts of coastal flooding firsthand and the… and the interaction with environmental pollution, as I was sampling water quality in the streets and basements as well as storm

debris along Newtown Creek in the days following superstorm Sandy. The Intergovernmental Panel on Climate Change reports provide a very high degree of confidence that sea level will continue to rise and on a scale that's relevant to coastal flooding in New York City. There's a high degree of confidence that storms will intensify. The combined risk is real and it's essential to take action, but carefully considered action. The Army Corps of Engineers is proposing large scale storm surge barriers as part of a fast moving or initially fast-moving process with extremely limited information about the proposed alternatives at this time. The expenditures are enormous and while that's likely appropriate… while that is appropriate given the scale… the magnitude of this issue, it also requires that the investments are well placed. For example, it's important that storm surge barriers be carefully considered in the context of rising sea level. The environmental and infrastructure interactions of various alternatives can be far reaching. The majority of options being considered include large open water barriers that can limit tidal flow that would be closed during storm events. These are extremely… there are extremely

important questions that need to be answered: how much tidal restriction, how often would they be closed, do the requirements of a barrier for protection for, for storm surge change with sea level rise, what are the consequences for habitat, environmental health, what are the consequences for pollution in the estuary? These are just a few of the questions among them we should be considering giving the expenditure what can't we do if we do this? Can we… can we continue with the shoreline protections that are so essential in the… in the context of sea level rise if we proceed with large open water barriers? The cost benefit analysis must include the value of our environment and the consequences for environmental pollution. These aren't simple questions and we need to provide adequate information related to these and sufficient time to consider these interactions of environmental pollution and our other infrastructure projects. Based on more than a decade's experience studying water quality and sewage pollution, I've seen the influence of tidal circulation on the local water quality. New York continues to deliver large quantities of untreated sewage as well as untreated storm water, something

that we're only now really starting to address, to our waterways. Pipes delivering pollutants regulated and currently unregulated, are abundant along our shoreline. Areas with restricted tidal, tidal circulation tend to have poor water quality due to the local density of pollution sources. The timescale of recovery of those conditions whether we're talking about fecal bacteria, whether we're talking about oxygen or unregulated pollutants such as pharmaceuticals, this all depends on tidal exchange. We are spending billions on sewage infrastructure and CSO long term control plans. I've spoken to the Council earlier on those issues, even with the scale, even with the billions that are being brought to that issue we're still not fully addressing the issue so what's the interaction, how will altered tidal circulation influence those plans that we previously talked about in relation to our sewage infrastructure? We need to consider that. How much worse will our pollution… our pollutant concentrations and exposure be in the scenario where circulation is reduced? We have to consider these things and we need time to do so. We should be responding to climate change, we should be preparing

for sea level rise and intensified storms. Its likely that shoreline protections are a more prudent course of action than estuary wide barriers. We must respond to climate change and coastal flooding in a way that allows us to also address our infrastructure and environmental needs. I don't have all the answers. Respectfully, you don't have all the answers either. But I do know it's my professional opinion that there are important questions that we must have better answers to before we're able to proceed with selecting alternatives. It's also my professional opinion that large scale tidal gates are problematic and that we should make sure that shoreline measures are prioritized in this process. Thank you very much for your time.

CHAIRPERSON CONSTANTINIDES: Thank you very much and please give everybody my regards at Queens College…

GREGORY O'MULLAN: Will do…

CHAIRPERSON CONSTANTINIDES: Go ahead.

JONATHAN GOLDSTICK: Good afternoon, I'm Jonathan Goldstick, I'm a Professional Engineer who specializes in waterfront issues and I am here representing the Metropolitan New York/New Jersey

Storm Surge Working Group. We are an affiliation of professionals dedicated to exploring regional approaches to reduce the risks to the whole region from flooding due to storm surges and rising sea levels. We've reviewed the resolution and agree that the limited information provided so far by the Corps isn't sufficient to allow the public to comment on a number of issues. But we're troubled by a number of other premises that… in the resolution that either aren't factual or just misleading, and I'll summarize those in a moment. But, more important, if we're to accept all of the statements as correct, we can't understand the logic behind the resolution. In short, the resolution states that Sandy was a devastating storm, had a devastating effect and that some of the options the Corps is studying to reduce the risk of future events include storm surge barriers. And it goes on that because these storm surge barriers could have negative environmental impacts, the City Council calls upon the Corps to reconsider its proposals by including consideration of sea level rise, that's, that's, that's how it reads. I, I understand from the discussion in this room that maybe that wasn't the intent. But the Corps already intends to study

environmental impacts and the Corps already considers sea level rise when formulating proposals. So, while this lack of clarity alone should probably be enough to amend the resolution, I want to address a few other issues and premises in there. The first is a statement that surge barriers, flood walls and levee systems do not address sea level rise. A preliminary conclusion of a Hudson River Foundation study released about two weeks ago by researchers at the Stevens Institute of Technology and the Woods Hole Oceanographic Institution concluded that a large storm surge barrier probably decreased the tidal range in the Hudson River. And while that has a number of environmental implications, it also means that it reduces the high tide this elevation in areas behind the barrier which does counteract some of the impact of sea level rise. Then there are two statements that no coastal risk management project can eliminate the risk of flooding and that in water barriers could have adverse impacts. Both statements are true, but they imply that the other risk reduction strategies being considered by the Corps have lower impacts. Because all of the options have different impacts and provide different benefits, the

Corps has a rigorous process for comparing the costs, from construction costs to environmental impacts, to the benefits, and those could include that… the infrastructure is not damaged, the lives that are not lost, and the costs related to business interruptions. So, the Storm Surge Working Group believes that it is extremely important to ensure that accurate cost and benefit data is used for all of the options so that we can compare… make comparisons among them. The final statement has to do with this statement in the resolution that talks about restricting natural flushing causing contamination to once again be concentrated in New York Harbor, one, one of your concerns. And while this is certainly a possibility scientist have also proposed timing the opening of barriers to actually increase the flushing which would… which would improve water quality. In at least two recent publications with their partners, the, the Corps with the Mayor's Office of Recovery and Resiliency and the New York State DEC, the Corps has stated that the study will incorporate sea level rise in the analysis and design. And while the feasibility study does not include an evaluation of sea level rise generally on

the study area, the city already conducted such an evaluation in 2013 and the city is studying, designing and building flood walls and other measures to protect communities from sea level rise. The city needs to be protected from both and we don't get to choose between them and sea level rise exacerbates storm surge, so we believe it's appropriate for the Corps and the city to cooperate in a two-tiered approach in which the Corps focuses on measures to address storm surge while the city acts to protect neighborhood from sea level rise. So, in conclusion, there are flaws in the resolution and it is calling upon the Corps do something its already doing, namely incorporating, incorporating sea level rise in their analysis and design. So, we would recommend the resolution be modified to call upon the Corps to provide the level of detail that an informed public requires, including environmental analysis and to call upon the city administration to prioritize shoreline projects designed to protect communities from the effects of sea level rise. Thank you very much.

CHAIRPERSON CONSTANTINIDES: Thank you. And I think that we… there seems to be disagreement

on our panel here so I'll… what I'll say is that I think we want to have a detailed level of conversation, no resolution, no bill is introduced and then not amended so I, I, I am not married to every word and, and period and, and semicolon in, in my resolution but I am willing to recognize that there is a conversation that has to happen here and the underlying need of making sure that we're making sure… looking at the environmental impacts, looking at how to get this right is of the supreme importance here and how we get there is… and making sure we're not limiting our options is extremely important to all of us so I think we need to have those discussions and I think that we will continue to have those discussions as part of this legislative process on the resolution but more importantly as the Corps moves forward we are going… looking… we're looking for a larger community engagement and an opportunity to think about these things in a real way prior to whittling down ideas and, and, and moving forward. So, I appreciate all of your testimonies.

JONATHAN GOLDSTICK: Thank you.

CATHERINE MCVAY HUGHES: Thank you so much.

CHAIRPERSON CONSTANTINIDES: Thank you. Alright, so next up we have Joanna Crispe; Julie Welch; Rebecca De La Cruz; and Michelle Luebke, sorry. With a name like Constantinides I also want to try to do my best to get it right. You can start there on the left.

JOANNA CRISPE: Hi. Thank you, I'm Joanna Crispe, I'm here to read testimony on behalf of the Municipal Art Society of New York… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh… [cross-talk]

JOANNA CRISPE: …I'm going to read a high-level summary of our testimony and I'm distributing a more detailed version…

CHAIRPERSON CONSTANTINIDES: Great, thank you.

JOANNA CRISPE: …for you to review. The Municipal Art Society of New York finds the alternatives proposed by the U.S. Army Corps of Engineers for the New York and New Jersey Harbor Regional Storm and Tributaries Coastal Storm Risk Management Feasibility Study to be patently inadequate as long-term protection to coastal storm risks for a number of reasons. In general, we find

the Army Corps' structural approach to storm resiliency to be self-defeating in the battle against the effects of climate change. In the event that massive in water barriers are constructed, tens of thousands of properties would still face risks on a daily basis due to future tidal flooding. Despite the enormous financial investment in infrastructure, the barriers would fail to protect residents and property in the long term and would have long lasting, wide spread adverse ecological consequences. We find that the alternatives as proposed directly contradict the recommendations in the Army Corps' own Hudson Raritan Estuary Comprehensive Restoration Plan. In stark contrast to the massive structural approaches offered in the Feasibility Study, the Restoration Plans for its natural ecosystem restoration programs, increasing awareness of resiliency within coastal communities and protecting valuable infrastructure and property against the impacts of future storms. Furthermore, for a project of this magnitude, we find the public outreach and level of detail in the information provided by the Army Corps to be woefully insufficient. At a minimum, we… at a minimum, we expect the Army Corps to hold additional

informational meetings with effected communities before moving forward with this project. According to information provided by the Army Corps, the barrier projects would cost an estimated 10 to 36 billion dollars to build and 100 million to two and a half billion dollars to maintain every year. The Army Corps has stated that maintenance and operation costs would not be covered by the federal government instead these costs will fall on local municipalities. MAS finds it unacceptable to saddle local communities with the burden of astronomical infrastructure expenditures that ultimately would still leave thousands of properties and people at risk and lead to potentially harmful impacts on water quality and marine habitat. In consideration of the magnitude of the proposed structures, the astronomical costs that communities would face and the potential ecological destruction that could occur, MAS finds that the Army Corps' community outreach efforts and information provided to be woefully inadequate. Without effective community engagement, the project will fail to respond to the needs of people most likely to be affected by the impacts of these structures, storm surge and climate

change. Therefore, we urge the Army Corps to reconsider the proposed alternatives and engagement strategy. Thank you for the opportunity to comment on this vitally important proposal.

CHAIRPERSON CONSTANTINIDES: Thank you.

JULIE WELCH: Thank you, I'm Julie Welch, I'm the Program Manager for SWIM Coalition which is Stormwater Infrastructure Matters. We are a group of 70 plus organizations who advocate for swimmable, fishable water quality in New York City through sustainable stormwater management practices in our neighborhoods. Our members are a diverse group of community based, citywide, regional and national organizations, recreational water users, scientists, architects, institutions of higher education, and businesses. Thank you very much to the Committee for Environmental Protection and to the full team who has called this hearing today, we appreciate the opportunity to provide testimony and we thank the Army Corps for being here to hear our voices and for this robust conversation that we are having today, its greatly appreciated and this is of dire concern certainly for all of us and we, we thank you for bringing us together so that we can work together and

find the solutions that we need. I'm going to give a summary also of our testimony for the sake of time because many people have stated the facts that I was going to include in mine. So, we recognize and appreciate that the Army Corps Feasibility Study is intended to identify potential solutions to protect New York and New Jersey from catastrophic storm surge scenarios like those experienced with Sandy. We are very concerned about the environmental impacts of the in-water barrier alternatives in the study and what impacts they would have on our neighborhoods and on our waterways and their long-term effectiveness in the face of sea level rise. I won't quote the many statistics that have already been quoted here about the sea level rise in New York City, we're all painfully aware of them and losing sleep every day about them. We're very concerned about the cost, if any of these barriers are actually built, being spent and then not actually giving us the protection we need in the face of sea level rise and so we do support the call for the inclusion of worst case scenario sea level rise so that we can understand how these barriers are going to be impacted by it. In addition to including cost effective on shore

measures which can be built now and perhaps more readily modified as needed over time. In our recent public comment letter to the Army Corps, we… which we've attached to our testimony, we did call for a series of critical comprehensive, environmental evaluations of each and every one of these alternatives in the study so that the public can fully understand all of the ramifications both environmental, social and economic of these potential barriers that should they go into the waterways we fully understand the impact over the long term way out into future generations long after we're gone, we're responsible for leaving our coastlines in good order long after we depart. And with that in mind, I believe I'll just go to the closing statement rather than list all of the environmental studies that we hope that you will include in yours when you get your waiver and when you move forward with your report. The public must be provided with a thorough review of social, environmental and economic impacts of each alternative before any decisions are recommended or made. Thank you again for the opportunity to speak with you today and we look forward to the robust conversation ahead.

CHAIRPERSON CONSTANTINIDES: Thank you.

REBECCA DE LA CRUZ: Good afternoon. Good afternoon, my name is Rebecca De La Cruz, I'm the Environmental Program Associate for Scenic Hudson and I wanted to thank the New York City Council for providing the opportunity to comment on Resolution 509 and we commend the New York City Council for considering this resolution and calling on the Army Corps to reconsider their proposals to include storm surge as well as sea level rise considerations. Scenic Hudson is a 501(c)(3) organization based out of Poughkeepsie, New York; we own over 1,000 acres of land along the river's edge and we have been studying the potential impacts of flooding, storm surge and sea level rise on Hudson River waterfronts since 2006. Notably, Scenic Hudson's online sea level rise mapping tool offers cutting edge models to project how sea level rise will affect the Hudson's tidal wetlands and shores. This tool has been used by conservation groups and local governments across the state to inform decisions that reduce risks to people, property and nature and make Hudson River shorelines more resilient for future generations. Our Conservation Science staff has worked with… directly

with officials and citizens in several communities to convene waterfront resilience task forces notably in Kingston, Piermont and Catskill, we've been able to accurately assess the risks, understand their options and begin planning for safe, secure and vibrant waterfronts in the future. And finally, staff co-authored a report detailing the effects of sea level rise on the resilience and migration of tidal wetlands along the Hudson River. While we are generally supportive of the Army Corps effort to manage the risk of coastal storm damage, we're concerned that some of the coastal storm risk management alternatives the Army Corps is considering could dramatically and permanently harm the Hudson River ecosystem while doing nothing to address the ongoing and long-term damages caused by sea level rise. It is our understanding that the CR… CSRM alternatives include, include sea level rise projections as they relate to storm risk reduction, however the alternatives would not address sea level rise independent of severe storm events. Specifically, open barriers would do nothing to alleviate daily coastal inundation and tributary flooding. In their closed state, barriers could

exacerbate flooding for upstream communities when storms bring both coast, coastal surge and heavy rain and runoff. Water flow, including fresh water discharge and tidal regimes, will affect sediment transport, deposition, salinity, and potentially contaminant levels and dynamics. Altered sediment deposition and tidal regimes may compromise the natural ability of the Hudson River's Estuary's tidal wetlands to adapt to sea level rise by migrating vertically or horizontally. This year the Hudson River Foundation and the New York/New Jersey Harbor and Estuary Program commissioned a preliminary evaluation of the potential physical influences that large barriers could have on the estuary. Now this report was referenced so it is preliminary. The report found that hypothetical storm surge barriers that were modeled could potentially alter the Hudson River Estuary ecosystem during non-storm conditions. Modeling scenarios were conducted to evaluate potential impacts resulting from fixed infrastructure across the estuary, ocean entrance. Findings from the report indicate more restrictive barriers would lead to stronger tidal currents and mixing near barrier openings, a reduction in tidal range, currents and

mixing throughout the estuary, an increase in stratification, and greater salinity intrusion. Although findings from this report are preliminary, they provide a credible baseline for further study to evaluate the physical changes resulting from surge barriers in the Hudson River. In summary, Scenic Hudson fully supports Resolution Number 509 calling on the Army Corps to reconsider the proposals made in the New York/New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study pursuant to the National Environmental Policy Act to consider sea rise in addition to storm surge. Scenic Hudson also requests that the New York City Council call on the Army Corps to prioritize the study of shoreline-based measures that have the potential to help address sea level rise and exclude in water barrier alternatives that do not offer protection from daily inundation resulting from sea level rise. In addition, given the unique hydrology and ecology of the Hudson River and the New York/New Jersey and… Harbor and Tributary was identified as the largest and most densely populated high risk area out of nine in the North Atlantic Comprehensive Coastal Study, Scenic Hudson urges the New York City Council to

request that the Army Corps exempt their New York… New York/New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study from the three by three by three rule. As established protocol, the District Commander must submit this request, and should it be endorsed to the Senior Leaders Panel by the Majority… Major Subordinate Command Commander. Finally, we urge the New York City Council to call on the Army Corps to take into consideration the perspectives of the Hudson Waterfront communities, a dozen or more who have expressed their concerns with in water barriers through the adoption of resolutions. Thank you for the opportunity to comment, I've provided my contact information should you have further questions. Thank you.

CHAIRPERSON CONSTANTINIDES: Thank you very much.

MICHELLE LUEBKE: Hi, good afternoon. I'm Michelle Luebke, I'm with the Bronx River Alliance, I'm also with the SWIM Coalition. Thank you so much for holding this hearing today and for putting forth the Resolution to consider our concerns. I will also be abbreviated in my comments because you're… you've

been provided with a written copy but also it, it reiterates a lot of what my colleagues have already presented. A little bit of information about our organization, the Bronx River Alliance serves as a coordinated voice for the river and works in harmonious partnership with more than 100 organizations and agencies to protect, restore and improve the Bronx River as an ecological, recreational, educational and economic resource for the communities through which the river flows. Each year through our diverse programming, we engage over 1,500 paddlers, 2,000 students and educators, and thousands of volunteers who come in contact with the river from… some for the first time. Through our ecology program, we restore habitat for local diadromous fish, including river herring and American eel, and have spent considerable time and resources on reestablishing their populations in the Bronx River. We are deeply concerned about the significant environmental impacts and other consequences that could result from the storm surge barrier alternatives. That is where I'm going to leave it on… in terms of that but what I would like to say not necessarily from my organization, but my professional

background is fluvial geomorphology and with all due respect sir water is water even if it has salt in it or not. One of the major things that I would like for you guys to understand, I like to use this analogy, I'm a scientist but I'm also an educator so when you have a hose, right and you put your thumb over half of the hose, what happens to that water? It speeds up, right because by definition discharge, which is the volume of water per unit time, the, the, the formula for that is cross sectional area times velocity so let's say in our hose example, we cut the cross sectional area in half, by definition we have to double the velocity so that means that if we were to put in not only in water storm surge barriers but also land based storm surge barriers what we're doing is we're basically channelizing the water and instead of having the entire New York City to flood we are putting it into a tube which means it's going to taller, it's going to be stronger, it's going to undermine underneath, it's going to go over the top of and, and affect communities that would normally… otherwise have considered themselves to be safe, it will also find the areas of weakness that are not protected and it will devastate communities that

otherwise were not protected. What you said earlier, you made the point of what happens to the areas that weren't affected and thus don't have these protections, this is a major concern of mine that, that if we are to go with a hard structure solution to storm surge that what we're going to be doing is basically making a worst problem for ourselves down the road not only because of sea level but also because of the barriers themselves. What I propose is looking at softening our shorelines, look at areas where we can put more rough things so plants and wetlands at our coastal areas and, and also invest in like the SWIM Coalition stands for, green infrastructure so that we can start soaking up some of these stormwater flows in and infiltrate them back into the ground where they belong as opposed to just trying to shunt them all into our, our actual waterways because what it's going to do is just make this problem a lot worse and so what we're recommending is… or no, wait… I am recommending is that we look at more sustainable resilient long-term solutions to this growing water concern that will also have co-benefits and offer ecosystem services. So, rain gardens that use pollinator friendly plants

can also help us with our food security issues, can also help take up excess CO2 and help combat global climate change, all of these things we think need to be considered and should be considered as an alternative rather than just hardscapes that will just be changing how the water flows and not necessarily for the better. Thank you.

CHAIRPERSON CONSTANTINIDES: I really want to thank you all for your testimony and I appreciate the, the time that you've spent here today, I know we're on three plus of our hearing so the fact that you stayed and gave a thoughtful testimony is much appreciated and I look forward to continuing our dialogue with one another. Thank you.

MICHELLE LUEBKE: Thank you.

CHAIRPERSON CONSTANTINIDES: Next up I… we have John Ingram from 350 NYC; Tracy Brown from Save the Sound; Robert Friedman from NRDC and Karen Imas from the Waterfront Alliance.

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: We have one panel left so after… if, if you're on that last panel if you signed in you will be called. Alright, great, I guess we'll, we'll start there on the left Karen.

KAREN IMAS: Good afternoon Chairman Constantinides. Thank you for holding this hearing today. My name is Karen Imas, I'm the Senior Director of Programs at Waterfront Alliance. Waterfront Alliance as, as some of you know is a nonprofit civic organization and coalition of more than 1,000 community and recreational groups, educational institutions, businesses and other stakeholders and our mission is to inspire and enable resilient, revitalized, and accessible coastlines for all communities. The intergovernmental panel on climate change report released by the UN earlier this month has only reinforced the need to prepare our region for increased flood hazards and the accelerating pace of sea level rise increases certainty that the 100-year flood plain is not a fixed boundary. In low lying neighborhoods with historically disenfranchised problems face higher risks of hazards during and following storms. With respect to the U.S. Army Corps of Engineers Coastal Storm Risk Management Feasibility Study, we support the intent of the resolution introduced here today. A large-scale study is needed to assess the potential solutions to adapt the New York/New Jersey Harbor and waterfront to sea

level rise and an increased frequency of coastal storms. It in… it is important that this study is consistent with that need and the New York City context. We want to underscore that there is no silver bullet to prepare for the impact of climate change on New York's waterfront and we've heard that many times today. Decisions are being made every day by both public and private stakeholders about how our shorelines are developed. And from policy to program to build projects, there are multiple solutions, the diversity of which should match the diversity of contexts, uses, and needs exhibited by New York City's waterfront. We recommend that the Army Corps of Engineers use the moderate and high scenarios in keeping with developed by the New York Panel on Climate Change to determine the approach taken and target design level for each strategy. We face serious impacts from regular future tidal flooding as well as storms, and this consideration, and the fact that strategies may be different for each, must be thoroughly considered. And we submitted comment to the Army Corps with more detailed information. A number of the projects being considered in the Army Corps' study are long term and costly as you know.

Near term strategies and tools are needed. The full range of these include and these have been mentioned today; investments prioritizing green infrastructure, financing strategies, managed retreat, education, incentives and we encourage you to look at the design standards for best practices called the Waterfront, Waterfront Edge Design Guidelines developed at the Waterfront Alliance. This is a complicated multi-jurisdictional landscape. That is why the Waterfront Alliance is actually convening a high-level task force over the next several months comprised of experts from various sectors to recommend climate change adaptations for our region, as well as undertake a public advocacy and educational campaign on coastal resiliency. One last thing I'll say is we feel strongly that there's a need in New York City for a single manager that oversees the city's varied waterfronts, this is a dynamic space requiring constant maintenance, repair and oversight especially with everything going on with the climate change and as some of you know there is a bill introduced in the council which would establish an office at the waterfront that would be responsible for coordinating among the various agencies that handle matters

related to waterfront use and protection and that would harmonize the many pieces that make up its whole. In conclusion, we look forward to working with the council and other stakeholders to ensure that New Yorkers are able to meet the increased threats caused by climate change and we thank you for the opportunity to present this testimony today. Thank you.

JOHN INGRAM: Thank you for the opportunity to speak, I'm… my name is John Ingram, I'm a Climate Activist Group 350 NYC and I'm reading a statement by Mark Laster and Dan Miner who are Co-chairs of the Forest Hills Green Team and Dan Miner is one of our members in 350… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Uh-huh, I know Dan.

JOHN INGRAM: Yes. The U.S. Army Corps of Engineers is considering how to protect NYC from future storm surges, they expect to dwindle the list of six alternatives in their plan to two likely to occur by the winter of 2020. The Corps' alternatives center on building in water flood barriers to close off entrances to the New York Harbor in the event of storms. The Corps estimates river barriers

alternative number two could cost up to 140 billion dollars without counting for annual maintenance or cost overruns. It would be difficult to modify the gates to cope with higher sea levels and they could have a functional life span of as little as 20 years and as they will remain open most of the time these and water barriers will not address sea level rise. In contrast one of the alternatives would be to make our shorelines more resilient by building land-based flood walls, dunes and levees. This approach is already being taken by New York City, it is supported by environmental organizations and would address both storm surge and sea level rise. The Corps estimates this alternative would cost between two billion to four billion. Shoreline measures can improve quality of life for waterfront communities, can be individually customized, can be modified or expanded over time and will have very small maintenance costs and will be essential for local sea level rise protection whether off shore barriers are built or not. New Yorkers should be able to review federal projects to protect our shoreline and to reject plans likely to fail while wasting tax payer money. We urge all Queens' elected officials and Community Boards,

Boards to request that the Corps extend its public comment period, scheduling… schedule hearings in Queens and to submit their own responses and resolutions. It's time to look more carefully at New York City's own plans for its low-lying areas. Climate change is guarantees that level… sea levels will rise and, and will the frequency and strength of storms even if the details are uncertain. Besides ensuring that the Corps helps make our shorelines more resilient, we should do our part to minimize future, future damage by avoiding more construction of flood plains instead of encouraging it. Thank you.

CHAIRPERSON CONSTANTINIDES: Thank you.

ROBERT FRIEDMAN: Good afternoon Chairman Constantinides. My name is Robert Friedman, I'm a Policy Advocate focusing on environmental Justice at the Natural Resources Defense Council. Thank you for having me today. In support… in, in short, we support Resolution 509. Hurricane Michael is the latest monster storm to rip into the coastal United States; one of a string of extreme weather events that have brought destruction to countless communities, from here in New York City to Puerto Rico and beyond. And as the latest IPCOMMITTEE CLERK SWANSTON report has

warned, these events will continue to wreak havoc on our communities unless we change course, quickly. And yet, despite the, the scale of this crisis, the Army Corps' proposed alternatives to mitigate storm surge specifically those that include offshore barriers, miss the mark and could cause irreparable harm to the city and the surrounding region. To date, very little information has been provided about the five alternatives proposed in the Army Corps' study. We don't know what type of off shore barriers could be used, the height of the proposed barriers and what types of natural features and nonstructural measures will be included in each alternative. Furthermore, the Army Corps' public engagement process around their proposals has been troubling, rushed and lacking transparency. This paucity of detail related to the proposed alternatives makes it very difficult to fully evaluate them. What we do know right now is that increased storm surge is not the only impact that that will result from climate change, the New York City metropolitan area can also expect to experience sea level rise and so-called sunny day flooding, the direct inundation of low-lying areas and the expansion of flood plains due to higher

levels of precipitation. As proposed, the Army Corps' alternatives only address a limited dimension of the region's vulnerabilities. Average sea levels are three inches higher than, than levels found in 1993, with no sign of plateauing. According to the National Oceanic and Atmospheric Administration, the worst-case scenario sea level rise could be as high as 9.8 feet in the Northeastern United States by 2100. In comparison, the Corps alternatives assume a worst-case scenario of just under seven feet of sea level rise, below NOAA's worst-case scenario by almost three feet. That doesn't even include the melting of the polar ice sheets which is only becoming more likely. What happens I ask when the proposed offshore storm surge barriers overtop due to sea level rise? Offshore storm barriers are not a long-term solution to climate change, they are expensive, inflexible, harmful to the environment and injurious to the environmental justice communities and other communities located close to but outside of the barriers. Offshore storm barriers would change the natural flow of water between the Hudson and East Rivers, Long Island Sound, Jamaica Bay and the Atlantic Ocean and cause sewage, contamination and

other pollution to accumulate along our waterfronts. They would wreak havoc, havoc on communities located outside of the barriers including New York City's numerous low-income environmental justice communities like Sunset Park, Hunts Point, East Elmhurst, and the Rockaways. It is completely insufficient to leave EJ considerations to chance. We must center those considerations and those communities. In addition, there are hundreds of languages spoken in this… in this city, all of the engagement that our Corps is engaged in thus far has been in English, that's a problem. The proposed barriers also risk restricting the habitats of migratory runs of native species from the barnacle to the bottle nosed dolphin to the endangered Atlantic sturgeon. On top of all of this, we cannot just treat the symptoms of climate change, we also need to treat the root problem by improving energy efficiency, transitioning to renewable energy and ending our deadly addiction to fossil fuels. But building huge barriers to keep out the ocean only sounds appealing in its simplicity. Unfortunately, solutions to complex problems like climate change are rarely so simple and as the infrastructure failures in New Orleans during Hurricane Katrina demonstrated,

the perils of relying too heavily on a single solution can be catastrophic. In closing, we urge the Committee to move forward with the proposed resolution. We thank you for your continued leadership to address the impacts of climate change and look forward to continuing to work with you as we strive for climate justice in New York City. Thank you.

TRACY BROWN: My name is Tracy Brown, I'm Director of Save the Sound. I want to thank the Chairman for holding these hearings, thank you so much and also thank the representatives of the Corps for coming and for staying and listening to everybody's testimony so thank you for your, your time and attention. Save the Sound's mission is to protect and restore Long Island Sound and its environs. We recognize the inextricable link between our warming planet, climate change and water quality so Save the Sound has a climate and energy program. Our team provides technical expertise and leadership on issues of climate and energy policy as well as coastal resiliency. In this capacity we've been carefully tracking this project, we're very concerned as others have expressed today about both the

substance of the alternatives that are proposed in the study currently and also the process, this three by three by three rule just really does seem very insufficient to a project of this scale and we're encouraged to hear that the Corps has requested a waiver from that process and we strongly support that. Save the Sound recognizes the urgent need for robust measures to protect coastal communities and critical infrastructure from strengthening storm surges and sea level rise. We support the stated purpose of the study, to manage the risk of coastal storm damage in New York and New Jersey Harbor and Tributaries while contributing to the resilience of communities, critical infrastructure and the environment. However, we are concerned about fast tracking such massive projects before all the impacts intended and unintended have been thoroughly researched and assessed. I've included with my written testimony our public comment letter to the Corps, it currently has signatures from 15 entities that include private businesses, not for profits and educational institutions including groups in Queens and the Bronx, Westchester, Nassau County, Connecticut. Most of the signatories on our letter

and the focus of our letter are communities that are going to find themselves just outside of the barriers. The impacts of the storm surges, you know could really be more detrimental than beneficial to those communities and that's of great concern. We do appreciate that the Corps has recently expanded the public outreach and will be meeting on Long Island tomorrow and to come to Westchester County which weren't in their initial scope, but we also urge them to continue to reach out to those communities and, and also Connecticut as a major stakeholder. On Long Island Sound we've invested billions of dollars in the health and resiliency of that estuary and it is really incredibly important to the whole Eastern Seaboard and the way… the web of life, the marine life, you know estuaries are nurseries and without that nursery to allow fish to come in and reproduce we are really putting our, our food supply at risk so New York City alone recently completed an investment of nearly a billion dollars to reduce nitrogen coming into the Sound from East River Wastewater Treatment Plants, that was part of a more than two billion dollars invested in communities all around the Sound and as we saw in a recent report card that Save the

Sound published last month, we are actually seeing a really positive return on that investment. We had a Western Sound that was dying for low oxygen with fish washing up on the shorelines and massive algae blooms, a situation that we now see in the Gulf of Florida and this community rallied and made a huge investment and now we're seeing oxygen levels coming back up, we're seeing a return of marine life and it's a… it's a wonderful story, it's not only good for our local economies and communities but it's also a model for all these other urban estuaries around the world that are facing the same stresses. So, it's really important that we be mindful of those investments and that progress made and the other ways in which these estuaries that really have… are, are what makes New York City great, this is why the city is here this confluence of estuaries around Manhattan Island and I'm really here today to urge the Corps to value all of the different benefits, the ecosystem benefits, the benefits to our local economies, of living estuaries, living water systems as well as real estate and infrastructure and the other pieces that we also recognize are important. So, we've invested a lot in that living estuary, I know our

colleagues have invested a lot in the Hudson and the East River is also an estuary and they're a part of what supports our life as well as our, our grid and the other parts of our infrastructure we're here to talk about and protect. So, with that I'll just wrap up. We support the City Council Resolution 905, we in our comments support alternative five of the Corps' current alternatives based on the limited information we have available that's the perimeter only solution which does not include the in-water barriers. And we thank you for the opportunity to speak today and to submit our written testimony. Thank you.

CHAIRPERSON CONSTANTINIDES: I thank you for all of your testimonies, I know it's been a long wait, I know it's been a long hearing and I appreciate you still coming out with thoughtful testimony and contributing to this conversation and I think that we all agree that we want to make sure that as we move forward that there aren't any unintended consequences that the solution is… puts us in a place that's worse than we were before so… I think we share that goal and I think we will all work together to get there so thank you for your time and efforts.

TRACY BROWN: Thank you.

ROBERT FRIEDMAN: Thank you.

CHAIRPERSON CONSTANTINIDES: Alright, so last panel Andrew, Andrew Juhl; Rob Schneck; Jay Lehr and Richard Reiss, Reiss, Reiss, okay great.

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: Alright, so I've got four cards and four people so we're in good shape, alright. Start there on the left and…

[off mic dialogue]

CHAIRPERSON CONSTANTINIDES: Alright, make sure you're… make sure everything on, there you go.

JAY LEHR: Our home… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Thank you… [cross-talk]

JAY LEHR: …office is in Arlington Heights, Illinois, we're a free market think tank and I've been Science Director there for 25 years, but I grew up on the streets of New York, attended Princeton University, moved West, got my PhD in water resources and environmental science from the University of Arizona. I have been studying climate change since the mid-70s when the global cooling was

the concern, pretty much every major news magazine had pictures of the forthcoming glacier. We switched to global warming about 15 years later when Al Gore came along but I've been studying sea level for really since the mid-70s and am considered an expert in that area and I want to tell you that during the Obama Administration, Mr. Obama asked the National Oceanographic and Atmospheric Agency to, to really double their efforts in studying sea level as a result of the concern that climate change would have an effect on it and they instituted an update on 200 sea level tidal gauges around the United States on the East coast, the West coast, the Gulf of Mexico, six island sets out in the Atlantic, seven in the Pacific and then they did a ten study… ten city study on the most stable land masses in the… in the world and those included Denmark and Spain, Australia and also looking at Honolulu and they… very stable records in Alaska along the California coast and the Atlantic coast but the poster child for sea level understanding is the Battery right here in New York. We have 160-year record there and it has been rising steadily at 11 inches per century and the projection of all of those records taken monthly for 160 years

is that the sea level will continue to rise at 11 inches per century for the next century. Kings Point has about… almost 100-year record and it's the same rate of, of rise. As you look around the world in Australia, sea level is a very local measurement and, and while maybe we're a few inches higher per century here in the metropolitan area elsewhere in the world its considerably lower. Honolulu is about six inches a century; Denmark, Spain and Mumbai, India are under four inches a, a century. The highest sea level rise rates happen to be in Atlantic City in the Gulf coast which are around 15 inches per century but the numbers… and, and I want to applaud the, the council and everything they're doing to increase the resiliency against the next superstorm Sandy. In fact, pretty much everything I've heard here about things that are being done to protect the citizens and the environment are, are really splendid. The one thing that's wrong is to take… [clears throat] excuse me… is to take into account the idea that sea level may rise here… [clears throat] excuse me… a few feet, three feet or seven feet, these numbers simply are unsupportable scientifically so I, I think that basically you're on track to do all the right things

considering you don't want to have the destruction of another superstorm Sandy but I think you shouldn't be considering the catastrophic projections of sea level rise, they're, they're not there, you can't support them, they're not going to happen but by in large what the Corps is doing I think is outstanding. Thank you.

CHAIRPERSON CONSTANTINIDES: Thank you, I'll, I'll… we'll come back. We'll come back.

BOB SCHNECK: Okay, I just… I just wanted to… my name is Bob Schneck, I'm a downtown resident for over 30 years and I've been through a lot as part of the community and I… after, after Sandy I think I have been concerned just and, and tense just because of the threat that we continually face downtown and in New York and that this is really… this is really something that takes really long term solutions so I had an experience that I want to share that was really profound for me which is I happened to be on the first Cathay Pacific flight landing after Typhoon Mangkhut in Hong Kong and I was right there after I, I experienced what happened to New York after Sandy the fact that we're still kind of repair… we'll be repairing the subway for years but in Hong Kong they

had the whole thing in order over the, the entire experience so for example they had a thing called a red alert which they had never used before. The… everyone apparently responded correctly to that and so all the subways and buses were up within 24 hours, the schools were back in place by 48 hours. The major thing that happened was that the… this particular storm had never… Hong Kong for all of its experience with storms had never experienced anything of this intensity before so the lesson… so they are, are taking this to the next level which is maybe they have to build levels above levels because, because it can be that the intensities to… of these storms and the measures we have things like 100 year measures like 100 year frequencies they probably aren't right, probably there are new levels of forces involved with this although I… god knows I'm not a scientist that way but it feels like we not only have to account for more storms but also more powerful ones and it's the power that was the big difference in the Hong Kong storm and that is that probably one out of every ten trees that Hong Kong built on, on a very… a steep terrain so it has huge forests in the middle of it amazingly and in those forests one out of every ten

trees were ripped out, it was… the amount of… the amount of damage that they sustained was incredible however the city went on, didn't miss a beat and I think that that is a… that's a standard I'd like to see us work towards here. I think that there's… in studying resiliency he had a number of… you, you kind of look globally and we've kind of looked to Europe for solutions but by god they somehow or another Hong Kong got that right and we should really learn from them. I have no idea what they have done in terms of storm surge but in terms of organizing their city, in terms of having systems for looking after people, in terms of having… they have amazing tall buildings all over the place and they held just fine so they have to have building codes and resiliency codes that actually they thought through years ago so that all of the standing structures are in place. So, I just wanted to note that it might be of some use to understand the, the resiliency practices of a place like Hong Kong. One thing I did when I returned is I went to the Manhattan Community Board three Coastal Resiliency meeting because I'm, I'm curious about resiliency and I think it's important for every citizen to care about these things and I was shocked

that the community, community board three had been involved for four years working with the government to come to an understanding of what they were going to do so the person who, who had been in charge of that process who had the job, got promoted and someone else got promoted so this other person came into place and he decided on his own that that wasn't the best plan and he overthrew the whole thing, came in with a completely different plan that no one had ever seen before and claimed that he had… that he had used community input because what he was going to use is what the community said about programming, everything they said about their parks, what they thought about the, the trees that they had, all of the agreements they had about timing, all of those things went away and the price of the project doubled which I think is a horrifying fact that the, the… that a governing agency should take the… take the cost of things so lightly so I, I just wanted to say that I'm very concerned as a… as a downtown resident I'm concerned that when… as the big U comes into our space we should demand better process and consideration in how those… these plans move forward because they are major matters for the public and

major matters of protection and concern for the people that actually live under them. I wanted to say that I really think that the Army Corps of Engineers is, is really stepping back and thinking about the process and just intrinsically engineering the… to be engineers to solve problems and I think that the… I think that the Army Corps of Engineers is doing a fairly exceptional job of backing off of this and kind of fight… doing something that's a little bit strange for them which is addressing community concerns on a large scale that they really haven't been called upon to do before. So, that… I, I hope this is helpful and that there could be some useful follow up on any of this so… and thank you for your patience in, in doing this.

ANDREW JUHL: Well thank you for the opportunity to testify… [cross-talk]

BOB SCHNECK: Made sense… [cross-talk]

ANDREW JUHL: My name is Andrew Juhl, I'm a resident of Nyack, New York where I have view of the Hudson River from my home and I appear here today as a… simply as a concerned citizen of the Hudson, Hudson Valley but I should also point out that I'm a Research Professor at Columbia University and I've

been studying water quality in the Hudson River for the last 12 years and in that capacity I've co-authored a, a number of scientific publications related to many different aspects of the Hudson River water quality and I was also recently the lead author of the Waste and Stormwater Target Ecosystem Characteristics report that was part of the Hudson River Comprehensive Restoration Plan which was commissioned by Partners Restoring the Hudson and in my written testimony I have some links to those reports. I also want to point out that I was a resident of Piermont, New York during Hurricane Sandy and while my own home was not damaged by the storm, many of my neighbors were not so lucky and so many parts Piermont sustained extensive flooding and so I have a personal appreciation of the goal that the… that the Corps is trying to address in their proposals and I'm actually very encouraged by many of the things that happened in this meeting so thank you very much for taking the time to do this. So, with regard to many aspects of water quality, the good news, which I think probably doesn't get said often enough, is that the situation in the Hudson and New York Harbor is greatly improved compared to 30 or 40

years ago and there are many examples of this. Most of my work relates to fecal indicator bacteria and counts of fecal indicator bacteria around New York City are, are generally much, much lower now than they were in the past. Hand in hand with those improvements in water quality which can be measured in many different ways has come a rediscovery of the Hudson River as a recreational and aesthetic resource and you see this up and down the Hudson River Valley. In my work we travel the entire distance of the Hudson once a month for sampling purposes and as we go along we see cities and towns from New York to Albany recognizing the newly improved value of their waterfront property and that comes in the form of new parks, access points, marinas, waterfront restaurants and cafes, residential developments of all kinds and this is one of the ways these types of public and, and, and private investment in waterfront lands are one of the ways that we can see that the citizens of the… of the Hudson River Valley which includes the citizens of the city have changed their relationship with the Hudson River. And they now value being close to the waterfront which was not always the case and that change in my opinion is directly connected to

the decade's long improvement in water quality that we've experienced of course. The more that that waterfront is valued the, the greater the incentive to protect that land from flooding and storm damage and obviously that's why the Corps is taking this feasibility study… undertaking this feasibility study. However, given that there is a connection between water quality and the value of waterfront lands, its… it is imperative that any mechanism to protect such lands and property does not damage water quality. If a flood protection mechanism was put in place that caused water quality to decline that protective mechanism would degrade the value of waterfront land and property just as effectively as flooding would. It would happen in a different way, it would probably happen at a very different time scale, but it would happen never the less. And it's currently impossible to predict with any confidence the degree to which water quality would be impacted by any of the proposals that have been described there. Intentionally… this is a very early stage of the process obviously and so they are intentionally vague so we lack any kind of sufficient detail but we can anticipate that any alternative that's based on

barriers is going to negatively impact water quality within the Hudson and New York Harbor even when the barriers are open and of course much more dramatically when the barriers are closed, that is an inevitable consequence of flushing through the system. One of the things that really surprises people when I talk to them about the data that we've collected about microbial water quality and the sampling in the Hudson is that our the waters around New York City generally share similar water quality as locations that are much further North, locations that have much lower populations and to some extent that is the result of public investment in infrastructure related to sewage and storm water handling. But it is also very largely because the system is extremely well flushed, the residents time is quite short and when we do see spikes in poor microbial water quality around New York City they're typically triggered by rainfall which leads us to our overflows as has been mentioned but those are quite short lived and again the reason for that is because you have the short residence time because there's a tremendous amount of input of clear… cleaner water that flushes out the system and it is inevitable that

building any kind of barrier is going to… that will require some in water structures that will impede the flow in and out of the system to some degree, we don't know what degree that will be because we don't know exactly what kind of barriers will be built but they will certainly impede flow and that is true whether the barriers are open or closed, they have to have some obstruction to the flow in order to put something there and, and then of course obviously when you close the barriers you get a much bigger impact. Initially of course the barriers are going to be designed to be closed only infrequently but as sea level continues to rise the frequency and perhaps as storms become more intense, the frequency of closures is going to similarly increase and so you're going to have result and impacts on water quality increasing through time. So, the idea that you would have a, a buildup of contaminants is one potential issue, the other potential type of water quality problem that could be exacerbated by impeded flushing and increased residence time is algal blooms. Under current conditions, algal blooms in the main channel of the Hudson and the waterways around Manhattan are largely inhibited because of high turbidity and

vertical mixing but if you impede the flow you will decrease mixing, you will increase stratification and allow turbidity to set out… settle out which will all improve conditions from the perspective of algal growth and given the high levels of nutrients that are available for algal growth in the Hudson there's a lot of potentially negative impacts, simple things like being unsightly or smelling bad but also the possibility of transmission of toxins to wildlife and hypoxia. So, I want to emphasize that my statements about potential water quality impacts of impeded flow are, are not idle speculations. We see these types of changes all over the place currently but only in very limited areas and we sample a lot of embayment's around New York City and along the East River and almost in every single one of these embayment's as we go into them the, the embayment represents a, a gradient of flushing by cleaner water and so as you go deeper into any particular embayment you'd see decreased flushing, you see greater contaminant concentration, you see higher levels of stratification typically, turbidity often declines, you get algal blooms those are accompanied by localized or temporary hypoxia. So, you know that

highlights the importance of flushing or the restriction of flushing I guess to water quality in our local waters. So, it is actually pretty easy to, to predict the general consequences of, of impeded flushing to, to water quality although we don't know to what extent we are going to have impedance of the flow, obviously that depends on the details of the plan but even if the initial impacts on flow and water quality are predicted to be minimal as sea level rises the impacts are going to increase and, and that is going to effectively drive us further along that gradient towards the problems that we now see in more restrictive waterways. And then finally just a personal note, as sea level rises at some point any in water barrier system is going to be overtopped as people have mentioned earlier today and so at that stage we're going to have to resort to some other mechanism for protecting shorelines and so it might be prudent to think about what those solutions are going to be eventually and perhaps if we incorporate those into our planning now we may come up with solutions that are more resilient and less expensive and do not negatively impact the water quality that is essential to the value of our

waterfront lands. So, thank you very much for the opportunity to testify.

RICHARD REISS: Thank you and, and thank you for your patience, I'll, I'll try to be as brief as possible. My name is Richard Reiss, I run a project based at 100 College called City Atlas which is about the future of New York City, our Advisor is Bill Solecki, who's the Co-Chair of the City's Climate Panel. But I, I'm speaking here on my own behalf. We launched in 2011 with a grant from the Rockefeller Foundation, the goal was to provide a sort of frontend for the city's climate information and I'd say if everybody could have spent the last seven years doing what I've been doing this would be a different meeting. I, I actually think the Army Corps is making a sincere effort at trying to do something that's really hard, I'm also new to this process by the way so I checked the wrong box on my, my note for the Resolution, I'm actually skeptical of the Harbor barrier for reasons that have to do both with the ecological reasons and because sea level will overtop it. so, I, I'm just going to make a brief comment on sea level and I… we have a twitter feed, City Atlas and I will share this stuff on

twitter this afternoon. Richard Alley, who's probable the top glacier expert, sea level expert in the U.S., in September he did an online seminar and mentioned that ten foot or above before 2100 is a, a real possibility and the reason things are going in that direction is because ice cliffs in Antarctica are unstable and they seem to have a maximum height that they can reach before they collapse, before they tumble and the mechanisms behind that are they don't have a defined timeline so up until ten years ago they felt that this was just decades and centuries, centuries process but they, they don't necessarily feel that. So, the… obviously that makes a big difference because if in two years or five years there's a paper showing this timeline moving forward then the commitment to a harbor barrier would, would change. And I think that goes to the whole question of what we're doing because it… a commitment of 20 billion dollars for coastal defense maybe the point is how do we commit to the mitigation goal that the IPCOMMITTEE CLERK SWANSTON report frames and, and that's where I would… that's basically the… to some my observation is that… is that the message of the IPCOMMITTEE CLERK SWANSTON report is about the

target, the mitigation target which is extremely ambitious. So, I think that's, that's really where we should shift the focus and the city could help do that and that doesn't necessarily mean a harbor barrier is ruled out, it just means that the public dialogue is informed on it so people will understand if we can… if we can make the two degree target, I think that 1.5… also being honest right now, I think 1.5 might be a little bit in the rearview mirror but if we aim for two that will at least hopefully help give us better odds on issues like abrupt sea level rise. That means a lot for New York because New York is not mitigating on a… you know the, the culture hasn't absorbed this at, at the depth necessary and what I'll share on, on twitter is Paris has a plan that is directed to the public and I think that's the next step for New York is really to make an open plan to talk about… talk about it to everybody in the city and frankly I think at, at the highly educated and high income level part of the city has to start to reframe to take this into… to absorb this, internalize it. Thank you.

CHAIRPERSON CONSTANTINIDES: Thank you for your testimony and, and, and so Mr. Lehr I want

to kind of come back to you my friend. Alright, so you've come a long way from New York City… [cross-talk]

JAY LEHR: Yes, I flew in this morning and hope to back this evening.

CHAIRPERSON CONSTANTINIDES: I'm, I'm glad… [cross-talk]

JAY LEHR: But I, I grew up… [cross-talk]]

CHAIRPERSON CONSTANTINIDES: …so what, what… [cross-talk]

JAY LEHR: …right here, I… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …inspired this trip?

JAY LEHR: I love New… coming here to make a statement because it's interesting that everybody here is so worried about increasing sea level rise when the National Oceanographic and Atmospheric agency has the best record on the planet right here at Battery Park 160 years which shows no increase in the rate of sea level rise while the increasing carbon dioxide has been 30 percent over the last 40 years, the rate of sea level rise in the metropolitan area has not changed at all and they are

predicting it will not change, it's been about 11 inches a century at the Battery, 11 inches a century at Kings Point and NOAA predicts the same thing and the gentleman who just mentioned the ice coming off, NOAA has records at Sitka, Alaska of sea level change and there where supposedly glaciers are melting and icebergs are melting, the prediction Sitka, Alaska is a decline in sea level rise of nine inches over the next century so there is this catastrophic fear that is… [cross-talk]

CHAIRPERSON CONSTANTINIDES: So, you're… so, you're telling me that the New York City Panel on Climate Change has completely got this wrong, that everyone in this room has somehow gotten this wrong today that… [cross-talk]

JAY LEHR: I am definitely… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …the… there… let me… let me finish… [cross-talk]

JAY LEHR: Okay… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …it's my turn to talk. So, the middle range that they show are about… the low range estimate is 15 inches, the high estimate is 75 inches so you're telling us we're nowhere near any of that, we're all… [cross-talk]

JAY LEHR: But I am… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …talking at ourselves… [cross-talk]

JAY LEHR: I am… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …for no reason.

JAY LEHR: Costa I am saying exactly that, you are no longer… you're nowhere near that and you're ignoring our own government agency, NOAA is an outstanding agency, you're, you're ignoring a very liberal president that thought climate change was a problem who directed NOAA to really double their efforts in collecting data and the data they collected does not at all support your view of climate change but we're not talking about carbon… [cross-talk]

CHAIRPERSON CONSTANTINIDES: My view is climate change… [cross-talk]

JAY LEHR: …dioxide… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …so let's talk about that. So, I see that… [cross-talk]

JAY LEHR: Okay… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …you have put up publications recently why the UN Climate Report cannot be trusted… [cross-talk]

JAY LEHR: Absolutely… [cross-talk]

CHAIRPERSON CONSTANTINIDES: How Al Gore built the global warming fraud…

JAY LEHR: That's correct.

CHAIRPERSON CONSTANTINIDES: So, I thought… [cross-talk]

JAY LEHR: I am the author of those documents.

CHAIRPERSON CONSTANTINIDES: You are the author of those documents… [cross-talk]

JAY LEHR: I am… [cross-talk]

CHAIRPERSON CONSTANTINIDES: So, you do not believe that climate change is manmade, and you do not believe we're contributing at all… [cross-talk]

JAY LEHR: Absolutely not.

CHAIRPERSON CONSTANTINIDES: Okay, that's, that's good that… [cross-talk]

JAY LEHR: And, and I flew all the way here… [cross-talk]

CHAIRPERSON CONSTANTINIDES: And, and we're all somehow wrong and somehow, you're the one that's right… [cross-talk]

JAY LEHR: Well I… you're wrong only because you're not looking at real science and I flew here just to be one voice of, of scientific reason rather than emotion.

CHAIRPERSON CONSTANTINIDES: Okay, so I'm… as I may… no one from the crowd please, we got it… we want to keep some level of the quorum. So, where does the Heartland Institute get its funding from?

JAY LEHR: Individuals, we are a very small organization, we get no money from oil companies or large… [cross-talk]

CHAIRPERSON CONSTANTINIDES: No money from Exxon Mobile at all?

JAY LEHR: Not in the last 15… I've been there 25 years, I would say not in the last… [cross-talk]

CHAIRPERSON CONSTANTINIDES: So, nothing… [cross-talk]

JAY LEHR: …20… [cross-talk]

CHAIRPERSON CONSTANTINIDES: So, the Guardian article that exposed Exxon Mobile as a big funder in the Mercer family was completely… [cross-talk]

JAY LEHR: All… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …wrong?

JAY LEHR: The… nothing from Exxon Mobile for sure, I don't know anything about funding from the Mercer family and I don't think they're in the oil business…

CHAIRPERSON CONSTANTINIDES: Oh, no they're not in the oil business but they are a large climate denier.

JAY LEHR: We, we have a budget of six and a half million dollars a year that about 80 percent of it comes from individual small donations.

CHAIRPERSON CONSTANTINIDES: Individual small donations…

JAY LEHR: Individual small… we are not a mouthpiece for… [cross-talk]

CHAIRPERSON CONSTANTINIDES: I, I… [cross-talk]

JAY LEHR: …any corporation… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Really?

JAY LEHR: What's… yeah, really, we turn… [cross-talk]

CHAIRPERSON CONSTANTINIDES: Can you say that with… [cross-talk]

JAY LEHR: …down… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …a straight face?

JAY LEHR: We turned… oh, easily, we turned down money from the Koch Foundation because they wanted to run our organization, we don't do that. Basically… [cross-talk]

CHAIRPERSON CONSTANTINIDES: But… [cross-talk]

JAY LEHR: …we are a free market organization that wants to see… to keep government out of our pocketbooks and look at things objectively rather than emotionally.

CHAIRPERSON CONSTANTINIDES: Keep government out of your pocketbooks how?

JAY LEHR: Individual freedom.

CHAIRPERSON CONSTANTINIDES: Individual freedom… [cross-talk]

JAY LEHR: Individual freedom, yes, I think… [cross-talk]

CHAIRPERSON CONSTANTINIDES: But wouldn't it… [cross-talk]

JAY LEHR: We're a libertarian organization.

CHAIRPERSON CONSTANTINIDES: Oh, okay so, so if, if, if things do… if somehow our view is right, and your view is wrong and, and so… but then there is an economy but you're okay with that?

JAY LEHR: No, I'm not okay with that, there's no chance of you being right and me being wrong.

CHAIRPERSON CONSTANTINIDES: Really?

JAY LEHR: Really. Not on climate change, no chance at all and I hope we all live long enough to see it. In fact, its… [cross-talk]

CHAIRPERSON CONSTANTINIDES: I, I… as do I, I'm, I'm… I've got… [cross-talk]

JAY LEHR: Okay… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …a nine-year-old son… [cross-talk]

JAY LEHR: In 20… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …who's, who's… [cross-talk]

JAY LEHR: …in 20 years… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …will be very impacted by this… [cross-talk]

JAY LEHR: …in 20 years New York City will be making some resilient adjustments to the fact that probably will be entering a period of global cooling as a result of the fact that the, the sun spots are at, at a very low point and we could probably look for it in 20 years to maybe a degree and a half Fahrenheit cooler and we'll manage, we're, we're resilient, you've proved your resilience in this room, I'm, I'm absolutely astounded of all the terrific things you're doing for the citizens of New York with regard to protecting against storm surges and the like, it just isn't about… [cross-talk]

CHAIRPERSON CONSTANTINIDES: So, all these… [cross-talk]

JAY LEHR: …sea level… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …all these 100-year storms that keep blowing through in different parts of the world are, are of no consequence, they're just… [cross-talk]

JAY LEHR: They're not man made… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …blowing… [cross-talk]

JAY LEHR: …that's for sure… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …they're not man made?

JAY LEHR: No.

CHAIRPERSON CONSTANTINIDES: Nothing?

JAY LEHR: No, it's arrogant to think they are manmade because nature is so overwhelming compared to what the impact that we have… you can change a microclimate. In Phoenix, Arizona people used to go there when they had breathing problems before they built 125 golf courses and irrigated them, Phoenix, Arizona is no longer so dry, you, you impact small areas, but you can't impact the planet at all.

CHAIRPERSON CONSTANTINIDES: And, and the other 99 percent of the scientists who believe that you argue is right… [cross-talk]

JAY LEHR: That isn't true at all, that… the, the… 99 percent… that's ridiculous, 97 percent of… nobody agrees with everything. We have a… we sent out a, a statement to 33,000 scientists that all

said, you know man caused global warming is ridiculous and it is ridiculous.

CHAIRPERSON CONSTANTINIDES: I, I, I am astounded but I, I appreciate your time in being here and I appreciate you taking my abuse in, in the way that you have… [cross-talk]

JAY LEHR: I don't mind it at all and I think you're amazing, you've been sitting there for four hours, your patience and, and paying attention, you are amazing, my, my hats off to you.

CHAIRPERSON CONSTANTINIDES: But, but I, I think we will strongly agree to disagree on this one… [cross-talk]

JAY LEHR: Oh absolutely… [cross-talk]

CHAIRPERSON CONSTANTINIDES: …and, and I… and I, I think that… yeah, we're, we're just going to agree to disagree and I'll… have a, a measure of the decorum here.

JAY LEHR: No problem and I appreciate being invited to come and speak.

CHAIRPERSON CONSTANTINIDES: I always appreciate everyone who speaks… [cross-talk]

JAY LEHR: And I… and I was invited by the Council.

CHAIRPERSON CONSTANTINIDES: I always appreciate the opportunity for everyone to come here and have a, a spirited debate, I definitely appreciate the Army… I… I'm going to dismiss this panel so thank you very much…

JAY LEHR: Thank you.

CHAIRPERSON CONSTANTINIDES: I want to thank the Army Corps of Engineers, I, I appreciate the end of this hearing livening up so thank you for that, but I appreciate the Army Corps of Engineers, I look forward to your partnership and all of the Mayor's Office and everyone who took the time to testify today. Thank you to our Attorney Samara Swanston, Nadia Johnson, Jonathan Seltzer, my Legal Counsel Nick Wildzowski and, and all of you and I look forward to… really to the Army Corps of Engineers to getting this right so let's have a long and, and fruitful discussion. With that this hearing is now gaveled closed.

[gavel]

C E R T I F I C A T E

World Wide Dictation certifies that the foregoing transcript is a true and accurate record of the proceedings. We further certify that there is no relation to any of the parties to this action by blood or marriage, and that there is interest in the outcome of this matter.

Date November 7, 2018