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MAYOR ADAMS, DEP HONOR FIRST ANNIVERSARY OF HURRICANE IDA, ANNOUNCE SUITE OF STORMWATER INFRASTRUCTURE INITIATIVES TO MAKE NYC MORE RESILIENT TO INTENSE RAINFALL

New York City's Nation-Leading Green Infrastructure Program Now Includes Thousands of Rain Gardens, Bluebelts, Green Roofs, Other Assets Across Five Boroughs

Network of Green Infrastructure Expansion, Real-Time FloodNet Sensors, Cloudburst Pilot Projects, Bluebelt Program Expansion, and Porous Pavement Among New Stormwater Management Tools

NEW YORK – New York City Mayor Eric Adams and the New York City Department of Environmental Protection (DEP) today marked the one-year anniversary of Hurricane Ida by announcing a suite of stormwater infrastructure initiatives aimed at making the city more resilient to extreme rainfall in the future. Today's announcement took place in South Ozone Park, Queens, where the city recently completed the construction of 2,300 new curbside rain gardens. For more than a century, New York City's network of catch basins and sewers have served as the primary drainage tool across the five boroughs. As New Yorkers continue to experience the increasing impacts of climate change, the city is accelerating plans for a multi-layered system of adaptive infrastructure that will make New York City more resilient to Ida-level rainstorms, and an implementation plan to guide this long-term effort is underway.

"One year ago, Hurricane Ida brought the heaviest rainfall in our recorded history and flooded our streets, subways, and basements, and, worse, claimed the lives of 13 of our neighbors," said **Mayor Adams**. "Our neighbors were victims of climate change, which is bringing longer droughts, stronger storms, and heavier rainfall to places all over the globe, but we will not simply stand by and do nothing. We are taking action to protect our city and prevent future tragedies, by ramping up flood protection with sewer advancements and curbside rain gardens, as well as by building out our cloudburst infrastructure and expanding other flood mitigation options, including the bluebelt drainage system. New York City is adapting to the realities of climate change in real time and doing everything we can to keep New Yorkers safe and honor all that we lost one year ago today."

“Sadly, extreme and unpredictable storms are no longer anomalies — they are our reality. So, we are building stormwater resilience into every aspect of our city infrastructure,” said **Deputy Mayor for Operations Meera Joshi**. “When it comes to flood and storm protection, in addition to upgrading our sewers, we are adding sensors to provide New Yorkers with advance flood warnings and readying more of our green and play spaces to absorb and hold stormwater, so it does not damage property and endanger the lives of New Yorkers.”

“Climate change is sending us weather that our sewers were not designed to handle,” said **New York City Chief Climate Officer and DEP Commissioner Rohit T. Aggarwala**. “It will take time, but we will make New York City resilient to Ida-level storms through green infrastructure like rain gardens, bluebelts, and cloudburst infrastructure. In the meantime, we need New Yorkers to be aware when there are dangerous storms and to take steps to protect themselves and their property.”

“We’re taking bold action to transform, adapt, and prepare our city — investing not only to protect New Yorkers from climate hazards, like extreme rainfall, but also to make our city cleaner, greener, and a better, more equitable place to live,” said **Mayor’s Office of Climate and Environmental Justice (MOCEJ) Executive Director Kizzy Charles-Guzman**. “From nature-based solutions like bluebelts and rain gardens to large-scale infrastructure projects, all New Yorkers deserve to benefit from our climate work today and in the future.”

“Last year, we experienced a devastating storm, and our city mourned the loss of life due to unsafe, illegal basements. We must use this anniversary as a reminder that we can do more to create safe, legal homes for New Yorkers who are currently living in basements,” said **Chief Housing Officer Jessica Katz**. “We will continue working with the City Council to pass the ‘City of Yes’ Zoning for Housing Opportunity text amendment and with our partners in Albany to finally see successful state accessory dwelling unit legislation. We know future storms will hit our city, and it is imperative we build to weather future storms and protect our neighbors.”

“Hurricane Ida’s deadly deluge demonstrated New Yorkers’ vital need for immediate access to real-time flooding information,” said **New York City Chief Technology Officer Matthew C. Fraser**. “When future storms threaten our city, New York City FloodNet will save lives by informing the safety-related decisions made by city agencies, emergency responders, and residents. My office is proud to have partnered with numerous city government agencies and universities on this innovative tech project that exemplifies Mayor Adams’ mission to ‘Get Stuff Done’ for New Yorkers.”

“The Department of Design and Construction is proud to be part of a multi-agency effort addressing the wide-ranging impacts of climate change, including events like Hurricane Ida,” said **New York City Department of Design and Construction (DDC) Commissioner Thomas Foley**. “We are building new sewers in parts of the city that didn’t have them, increasing capacity to handle heavier rainfall events in others, rolling out innovative efforts to divert stormwater away from our sewer system, and installing thousands of green infrastructure projects across the five boroughs. Our work is not done, and we are finding ways to actually accelerate delivery so we can bring these projects online even faster in the future.”

“Holistic, resident-informed cloudburst planning is essential to helping the authority mitigate the impact of heavy rainfall events, which can cause serious flooding and threaten the safety of public housing residents,” said **New York City Housing Authority (NYCHA) Chair and CEO Greg Russ**. “Today, NYCHA has dozens of stormwater and wastewater management projects in the pipeline, thanks to strong interagency collaboration and the tireless support of a mayoral administration that recognizes the urgent need for multi-purpose resilient landscapes that combat the worst effects of global climate change.”

“A year ago, Hurricane Ida left a permanent wound in the hearts of New Yorkers due to the loss of life and devastation in our neighborhoods and homes. It is important that every New Yorker has an emergency plan and access to accurate information to keep them and their loved ones safe as climate change continues to create more and more intense weather events," said **New York City Emergency Management Commissioner Zach Iscol**. “And, as we adapt to this new normal, our team will continue to strengthen our vulnerable neighborhoods and communities through active preparedness, response, recovery, and mitigation efforts.”

“Hurricane Ida’s tragic impact on our neighborhoods amplified the critical importance of innovative, sustainable stormwater management,” said **New York City Economic Development Corporation (NYCEDC) President and CEO Andrew Kimball**. “NYCEDC is proud to partner with DEP on countless green infrastructure projects across the city, and we will continue to work with our city, state, and federal partners to invest in programs and projects that protect our communities from environmental impacts caused by climate change.”

“Hurricane Ida showed us that we must continue to invest in stormwater mitigation and capture, and I’m proud that this administration is taking action to advance this much-needed work,” said **New York City Department of Parks and Recreation (NYC Parks) Commissioner Sue Donoghue**. “In addition to the work we are currently doing, such as water capture infrastructure in new park builds, expanding our green roofs program, tree plantings, and wetland reconstruction projects, these new and ongoing green infrastructure and stormwater management initiatives will make a big difference in our city’s fight to be more resilient towards heavy rain and flooding.”

Sewer Infrastructure

DEP is working with the DDC to upgrade and build out the sewer system to modern standards. In Southeast Queens, the city is investing $2.5 billion to install upgraded sewers. DDC is working in Gowanus, Brooklyn to complete a $39 million storm sewer project that will lead to cleaner water in the canal and reduce flooding in that area. Completion is scheduled for November 2022.

In the neighborhoods of Woodside, Maspeth, Middle Village, and Glendale in central Queens, the city has completed several projects to eliminate chronic flooding. The city is currently using advanced micro-tunneling technology to double the size of sewers and reduce or eliminate flooding. This $119 million project is expected to be completed in 2023.

The city also completed a $47 million project to raise streets and add almost half a mile of new storm sewers to reduce flooding in Broad Channel, Queens — an area frequently inundated by Jamaica Bay during high tides and storms. Phase Two — an $83 million project that will add an additional 3,200 linear feet of new storm sewer on previously unsewered blocks — is anticipated to be completed in 2024.

To alleviate flooding in South Beach, Staten Island, the city completed a $98 million project that encompasses 61 individual blocks and includes the reconstruction of over three miles of storm sewers, ranging from 12 inches in diameter up to rectangular sewers that are 8.5 feet wide by four feet high. The work included the installation of 200 new catch basins to better capture stormwater and direct it to new storm sewers.

In Southern Brooklyn, the city completed a $166 million project that included the construction of 6.5 miles of new sewers. Building new sewers and separating previously combined sewers creates additional capacity in the drainage system to reduce flooding and cut sewer overflows into Fresh Creek by 189 million gallons annually.

To ensure the city's sewers perform optimally, the city will continue existing data-driven approaches to system maintenance and monitoring. For example, DEP's field crews are strategically inspecting catch basins before they fill with debris — reducing flooding for New Yorkers and increasing efficiencies for staff.

DEP is also currently evaluating other technologies to gain more analyzable insights into the city's sewer system —– allowing it to target inspection and maintenance efforts to reduce flooding and sewer backups. For example, new technology could help the city develop programs to identify emerging issues in the city's sewers before they become more severe.

While catch basins and sewers will continue to serve as the backbone of the drainage system, in many places, sewers cannot be built any larger than they are. To manage increasing volumes of stormwater, new drainage and absorption tools must be added to increase protection and resilience.

Curbside Rain Gardens

New York City is investing heavily in curbside rain gardens. Today's addition of 2,300 new curbside rain gardens is a milestone in the city's effort to build out the country's largest and most aggressive green infrastructure program. More than 11,000 installations have already been constructed, and construction is set to begin on 1,000 more rain gardens by the end of this year.

More than 70 percent of New York City is covered by surfaces that are not absorbent. As a result, heavy rain can mean tremendous volumes of stormwater streaming towards the city's catch basins and sewer system. Green infrastructure absorbs stormwater from streets, sidewalks, roofs, and other hard surfaces before it reaches the sewer system and causes local flooding.

The 2,300 newly constructed rain gardens are located across Queens and the Bronx. Each rain garden has the capacity to collect and absorb up to 2,500 gallons of water during each storm. It is

estimated that newly installed green infrastructure will capture more than 369 million gallons of stormwater annually.

- In Queens, a total of 1,811 rain gardens and infiltration basins now exist in Kew Gardens Hills, Hillcrest, Fresh Meadows, Utopia, Flushing, Murray Hill, and Auburndale. It is estimated the newly added rain gardens will capture more than 264 million gallons of stormwater annually, helping to reduce the risk of flooding for residents and businesses in the area, while also improving the health of Flushing Creek and Flushing Bay.
- In the Bronx, 565 rain gardens and infiltration basins were installed in Belmont, Crotona, West Farms, Van Nest, Westchester Square, Morris Park, Pelham Gardens, Pelham Parkway, Allerton, Laconia, Williamsbridge, and Olinville. Modeling shows these assets will manage approximately 105 million gallons of stormwater annually, reducing the risk of flooding while also improving the health of Westchester Creek and the Bronx River.

FloodNet Sensors

NYC FloodNet is a new, innovative flood data collection program that will provide real-time street-level flood information to city agencies, residents, emergency response teams, and researchers. The information provided by the sensors can give critical information on the need for road closures or travel bans, inform residents of the need to deploy sandbags and flood barriers, validate existing flood models, and provide data for future drainage investments.

The city has already installed 29 sensors this year alone and will install 50 this year and 500 FloodNet sensors in priority areas citywide over the next five years. These areas are and will continue to be determined by an analysis of stormwater risk, tidal flooding risk, storm damage, environmental justice history, social vulnerability, critical infrastructure, and proximity to wireless network connections.

FloodNet is a cooperative of communities, researchers, and New York City government agencies working to better understand the frequency, severity, and impacts of flooding in New York City. FloodNet is a collaboration between The City University of New York, New York University, MOCEJ, and the New York City Office of Technology and Innovation.

Cloudburst Management

New York City has been partnering with the city of Copenhagen to share best practices for stormwater management. An outgrowth of that work in New York City are pilot cloudburst projects to help manage extremely intense cells of rainfall that can impact portions of the city during a storm. These intense rain events can drop a large amount of water over a short period and can overwhelm the city's sewer system capacity.

A "cloudburst" is a sudden, heavy downpour where heavy rains fall in a short amount of time. Cloudbursts can cause flooding, damage property, disrupt critical infrastructure, and pollute New York's rivers and harbor. Cloudburst management implements a combination of methods that absorb, store, and transfer stormwater to minimize flooding. The city's new cloudburst

projects will seek to utilize open spaces to store stormwater until the rainfall event passes, and there is capacity in the drainage system to manage it.

The city's first cloudburst pilot project will take place at NYCHA's South Jamaica Houses. Project design is now complete, and construction is expected to begin in 2023. The city is expected to invest $4-5 million on this project and will focus on channeling stormwater to three areas on the NYCHA grounds: Two open grassy areas that will be designed to hold a large amount of stormwater and a basketball court that will be rebuilt at a lower elevation so water will naturally flow there.

When completed, this cloudburst installation will capture and hold approximately 300,000 gallons of stormwater. In addition, upgrades will be made to complement this work, including new lighting and seating.

Another cloudburst pilot project at the St. Albans/Addisleigh Park neighborhood in Southeast Queens is currently in design. NYCHA's Clinton Houses in East Harlem, Manhattan has also been selected for a cloudburst pilot project. This project — currently in design — is the recent recipient of an $8.31 million grant from the federal government.

Citywide Bluebelt Program Expansion

The city remains committed to expanding its Bluebelt Program. Bluebelts utilize existing streams, ponds, and wetlands and partner them with storm sewers to safely drain large volumes of stormwater and naturally filter it before eventually flowing to the New York Harbor. Today, there are 94 bluebelts citywide, with 83 providing drainage for more than a third of Staten Island, 10 in Queens, and one in the Bronx. There are several additional bluebelts currently in the pipeline, and DEP engineers are looking across the city to determine what sites are feasible for future bluebelts.

The city has also partnered with Eric Sanderson — a senior conservation ecologist with the Wildlife Conservation Society — for this project. Sanderson is an expert in the natural history of New York City and has written extensively on the buried streams and wetlands across the five boroughs and the correlation of those waterways with chronic flooding conditions today.

As part of this partnership, maps will be created that overlay historical wetlands and streams with our current built infrastructure and data on reports of flooding. A public website with these maps is expected to be available to the public in 2023.

Daylighting

The city has begun an ambitious project to "daylight" parts of the southern section of Tibbetts Brook, south of Van Cortlandt Lake in the Bronx. This means bringing a previously buried stream back to the surface, redirecting the flow of the Tibbetts Brook out of the sewer system and allowing it to run closer to its historical course towards the Harlem River.

By daylighting Tibbetts Brook and removing its clean water from the sewer system, the project will create additional capacity in the area's sewer network and should help to mitigate flooding along Broadway and other areas of the Tibbetts Brook watershed, while also reducing sewer overflows into the Harlem River.

Tibbetts Brook is a small stream that begins its journey in the City of Yonkers and flows south into Van Cortlandt Park in the Bronx. The stream cuts through the middle of the park, where it was dammed to form Van Cortlandt Lake. Historically, Tibbetts Brook flowed through southern portions of the Bronx before emptying into the Harlem River. Roughly a century ago, however, this southern portion of Tibbetts Brook was redirected into the city's sewer system at a rate of 4 to 5 million gallons per day on dry weather days, and the bed of the waterway was reclaimed for other purposes. The freshwater of Tibbetts Brook then travels through the sewer system, occupying space that could otherwise be used by stormwater to the Wards Island Wastewater Resource Recovery Facility.

Porous Pavement

As part of an ongoing pilot program, more than three miles of porous pavement have been installed within roadways in Queens and the Bronx. Porous pavement manages more stormwater runoff than typical curbside rain gardens and is easier to site. Engineers are currently designing more than 56 additional miles of porous pavement for Brooklyn and the Bronx.

Onsite Retention

Earlier this year, DEP finalized the Unified Stormwater Rule, which requires any newly developed or redeveloped property to include infrastructure, such as a green or blue roof, rain gardens, or storage, that will retain additional stormwater on-site. By keeping stormwater on-site, and not allowing it to drain onto sidewalks and eventually into the city's sewer system, the new rule will help ease pressure on the sewer system, mitigate flooding, and reduce sewer overflows.

Flood Insurance and Financial Counseling

The city is expanding outreach and counseling to homeowners and tenants through FloodHelpNY, an online platform that provides residents with information and resources about flood risk, flood insurance, and flood resiliency retrofits. Since 2016, FloodHelpNY has educated and equipped more than 700,000 New Yorkers with resources to prepare themselves and their homes. The city has proposed a significant expansion of the program using federal grant funding that will help homeowners better prepare to recover from a flood. In addition to launching a coordinated marketing campaign around flood insurance, the city aims to leverage FloodHelpNY to offer in-home engineering inspections and financial counseling sessions for property owners in certain flood-prone neighborhoods.

Post-Ida Recovery and Mitigation

The city is receiving $188 million by way of the Community Development Block Grant Disaster Recovery funding from the U.S. Department of Housing and Urban Development to support long-term recovery efforts following Hurricane Ida. The funds will be used for programs to strengthen the resiliency of NYCHA and the affordable housing stock, help homeowners increase the resiliency of their homes, and plan for increased awareness and improved mitigation of flood risk across the city. These programs — in the final stages of being approved — include proactive measures around emergency response, expanded homeowner counseling through FloodHelpNY, and planning for resiliency and recovery from future climate events.

Other Investments

In the weeks after the remnants of Hurricane Ida flooded many parts of the five boroughs, the city took immediate steps to begin accelerating the funding for the programs that can help to manage extreme rainfall. This includes:

- $2.1 billion in new capital funding to build sewers and green infrastructure;
- $238 million of capital funds accelerated for sewers and green infrastructure; and
- $400 million in new capital funding advanced for the New York City Department of Transportation (DOT), New York City Department of Education, and NYC Parks, as well as NYCHA for green infrastructure and other stormwater management initiatives. These projects are ongoing.

"One year ago, the remnants of Hurricane Ida struck Queens and tragically took six of my constituents' lives; today's announcement by Mayor Adams is a step in the right direction to make New York City resilient to intense storms," said **U.S. Representative Grace Meng**. "I will continue fighting to make sure these infrastructure initiatives are brought to my district, and as New York's senior member of the House Appropriations Committee, I'm proud to have helped secure federal funds to help our city recover. I applaud Mayor Adams for his leadership and look forward to continuing our partnership together to protect Queens and New York City from flooding."

"This is a very somber anniversary," said **U.S. Representative Alexandria Ocasio-Cortez**. "Our community lost beloved neighbors, and so many are still struggling to rebuild their homes. This flooding was preventable, and, going forward, we must use every tool at our disposal to prevent and mitigate climate disasters — acting at the city, state, and federal levels."

"The devastation caused by Hurricane Ida one year ago and all climate emergencies underscore the urgent need for investments in green infrastructure," said **New York City Council Speaker Adrienne Adams**. "Historically underserved communities, like those in Southeast Queens, continue to bear the brunt of climate change, the result of environmental neglect. The types of targeted investments we are announcing today remain critical to redress these wrongs and is another step in delivering essential improvements for our neighborhoods. As a city, we must protect all communities by making them more resilient to extreme rainfall, chronic flooding, and storms."

"One year ago today, thousands of Queens residents from Flushing to Hollis and beyond saw their lives change in an instant. From the scenes of devastation many of us in Queens saw first-

hand, the picture was clear: Our city was deeply unprepared for a disaster of Ida's magnitude, and lives were lost because of it," said **Queens Borough President Donovan Richards Jr**. "We are in desperate need of new grey and green infrastructure across the five boroughs to resist the onslaught of climate change, and investments like these are critical steps in that push. I look forward to working with the mayor's office to replicate and expand these investments in all corners of Queens."

"Dealing with a storm like Hurricane Ida, which dumped more than three inches of rain on our city in less than an hour, is always going to be difficult," said **New York City Councilmember Joann Ariola**. "With these measures, however, we can better ensure that our residents in both coastal and pluvial flood areas are much better prepared when another storm inevitably rolls around. There is still plenty of work to be done going forward, but with these things in place, we are more ready than ever before to confront whatever weather conditions we may be faced with in the future."

"On the one-year anniversary of Hurricane Ida, we remember the lives lost and the devastating impact the storm's flooding had on Queens. Today's announcement of new stormwater infrastructure shows that the mayor and his team are prioritizing New York City's resiliency," said **New York City Councilmember Linda Lee**. "Thousands of residents in Eastern and Southeastern Queens live in neighborhoods that are highly susceptible to flood damage. These measures to add green infrastructure and improve New York City's network of catch basins and sewer systems will mitigate the impact of these superstorms, preparing our city to withstand some of the most harmful effects of climate change. I applaud the leadership of Mayor Adams and the New York City Department of Environmental Protection for this initiative that will make our city more resilient and greener, while ultimately saving lives in the process."

"Our aging infrastructure has caused chronic flooding in neighborhoods across the city during even average rainfall events, and these investments in the city's sewer system will bring much-needed relief," said **New York City Councilmember Sandra Ung**. "But the deadly rainfall, including three people in my district who lost their lives, brought by Hurricane Ida taught us that it will take more than just improvements in our sewers to meet the daunting challenges posed by climate change. This ambitious set of new initiatives will combine natural solutions, such as rain gardens, expanded bluebelts, and the reclamation of historic waterways, with advances in technology, like real-time flood sensors, porous pavement, and cloudburst management techniques developed in Copenhagen, to create a safer and more resilient New York City. The investment in mitigation and recovery programs will help homeowners, like many in my district who lost everything in Ida, survive and recover from unforeseeable weather emergencies. I want to thank the Adams administration and the city for realizing the need for a multi-pronged solution to this very serious issue."

"During the one-year anniversary of Hurricane Ida, I remember our neighbors who were devastated in the aftermath," said **New York City Councilmember Julie Won**. "I remember the family in Woodside who died tragically after their basement apartment was flooded. I remember our neighbors in Woodside Houses who had to live with no heat and hot water in the dead of winter when Hurricane Ida flooded the outdated heating plants. Queens has had the least amount of investment for sewage infrastructure in all of New York City — we must act now.

Strengthening the city's stormwater infrastructure, in partnership with our federal partners, is an absolute necessity to ensure that we never lose a life ever again."

"The Southeast Queens community has historically suffered from flooding issues. The effects of Hurricane Ida are simply a symptom of this systemic issue," said **New York City Councilmember Nantasha Williams**. "The storm brought significant damage to the area, and many residents are still struggling to get back on their feet. I commend New York City Mayor Eric Adams and the New York City Department of Environmental Protection for bringing initiatives to assist with flood mitigation and stormwater management. It is my hope that we continue to support residents who are still reeling from Hurricane Ida, that DEP continues to expedite sewage infrastructure upgrades for the Southeast Queens community, and that we find a real solution for the longstanding groundwater issue."

"RPA applauds the release of this report, which demonstrates that the Adams administration understands the degree of risk that extreme precipitation poses to our communities and infrastructure, as we tragically realized one year ago with Ida," said **Robert Freudenberg, vice president, energy and environment, Regional Plan Association (RPA)**. "This vision lays the groundwork for a comprehensive approach to manage stormwater with all of the tools at our disposal, from grey and green infrastructure to nature-based solutions. We look forward to working together with DEP, MOCEJ, DOT, and other agencies to meet this challenge head-on."

"The mayor's vision for stormwater management recognizes that we will need to complement our sewers with extensive, strategic investments in green infrastructure in order to make our city resilient," said **Amy Chester, managing director, Rebuild by Design**. "The next step — as the vision document promises — is to turn this vision into an actionable, funded strategy with implementation timelines. We look forward to working with DEP, MOCEJ, and other city agencies on that effort."

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