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THE NEW YORK CITY COUNCIL

COMMITTEE ON ENVIRONMENTAL PROTECTION
JAMES F. GENNARO, CHAIRMAN

BRIEFING PAPER OF THE INFRASTRUCTURE DIVISION

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January 31, 2012

Oversight - Challenges Facing Wetlands in New York City, and a Review of New York City's Efforts to Protect Wetlands, Including Local Laws 71 of 2005, 83 of 2005, 21 0f 2009, 31 of 2009 and the Wetlands Protection Goals Contained in PlaNYC.

Introduction

On Tuesday, January 31, 2012, the Committee on Environmental Protection, chaired by Council Member James Gennaro, will hold a hearing on the above-listed oversight topic

I. Background

Wetlands are transition areas between uplands and aquatic habitats.[1] Generally, wetlands include swamps, marshes, bogs and wet meadows.[2] The New York State Department of Environmental Conservation ("DEC") defines wetlands as "areas where land and water meet. As transitional areas between aquatic and upland plant and animal communities, wetlands often

[1] http://www.dec.ny.gov/lands/305.html
[2] http://water.epa.gov/type/wetlands/upload/2005_01_12_wetlands_overview.pdf, id.

have some of the qualities of both kinds of animal and plant communities. Wetlands also occur where the groundwater occurs near or at the surface, saturating the soil and the root zone of the plants that grow there."[3] These most prevalent and widely distributed wetlands in North America are non-tidal marshes, which are mostly freshwater marshes.[4] Tidal marshes are freshwater, brackish (somewhat salty), or saline (salty), and … are most prevalent in the United States on the eastern coast from Maine to Florida and continuing on to Louisiana and Texas along the Gulf of Mexico."[5]

There are many functions that tidal marshes perform that are beneficial to bodies of water. For example, tidal marshes buffer stormy seas and prevent flooding, slow shoreline erosion, and absorb excess nutrients before they reach the oceans and estuaries. High concentrations of nutrients can result in oxygen levels low enough to harm wildlife. Wetlands also provide vital food and habitat for clams, crabs, and juvenile fish, as well as offering shelter and nesting sites for species of migratory waterfowl.[6]

The marshes of New York are of great ecological importance and perform an essential role in controlling floods and in protecting a vast swath of the City's shorefront from storms and erosion."[7] Furthermore, wetlands "are vital for protection of the environment and public health. Wetlands are transitional areas that act as buffers between open waters and uplands and provide functions that: filter pollution, purifying our drinking water, and protecting rivers, lakes, and coastal waters from pollution, such as sediment, nutrients, chemical contaminants, and

[3] http://www.dec.ny.gov/lands/305.html
[4] http://water.epa.gov/type/wetlands/upload/2005_01_12_wetlands_overview.pdf
[5] Ibid.
[6] Ibid.
[7] "Jamaica Bay", Eric Goldstein of the Natural Resources Defense Council (NRDC), GothamGazette.com - Environment, August, 2002 http://www.gothamgazette.com/environment/aug.02.shtml

bacteria…"[8] Moreover, "[i]n the New York City drinking water watershed, the pollution filtration and aquifer recharge provided by wetlands is extremely important for protecting the quality of water that serves over nine million people. Wetland environments act as buffers for streams, rivers, lakes, and drinking reservoirs because they trap, uptake and transform harmful nutrients, heavy metals, pesticides, and organic pollutants before they can flow into downgradient water bodies."[9]

Coastal wetlands are said to be the most productive ecosystems on Earth.[10] The bidirectional movement of water caused by tides is believed to augment this productivity.[11] More than half of the commercially harvested fish in the United States spend some portion of their life cycle in estuaries and coastal waters[12]. Coastal habitats are spawning grounds and provide habitat and shelter for finfish, shellfish and other wildlife.[13] Coastal habitats also provide resting, spawning and breeding habitat for eighty-five percent of waterfowl and migratory birds and forty-five percent of the nation's endangered and threatened species.[14] Studies show that the economic value of coastal habitats is likely in the hundreds of billions of dollars.[15] Finally, wetlands provide areas for recreation, education and research.[16] Often wetlands are the only green space remaining in an increasingly developed urban area.[17]

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[8] New York State Wetlands Legislation Proposed, Riverkeeper, p. 4 at http://www.rivekeepeer.org/campaign.php/wateshed/you_can_do/672
[9] Ibid.
[10] Stedman, S. T.E. Dahl. 2008. Status and Trends of Wetlands in the Coastal Watersheds of the Eastern United States (1998-2004), at p. 3, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, U.S. Department of Interior, Fish and Wildlife Service.
[11] Ibid.
[12] Ibid.
[13] Ibid.
[14] Ibid.
[15] Ibid.
[16] http://www.dec.ny.gov/lands/4937.html
[17] Ibid.

New York City once contained 224,000 acres of freshwater wetlands, and these extensive wetlands provided a wide range of environmental services, including controlling floods, erosion prevention, filtering water, and the like. Of those original wetland systems, only 2,000 acres, or less than one percent, remain, and many species that once called these wetlands home have been lost forever.[18] Coastal wetlands in New York historically covered approximately 100,000 acres, but seventy-five percent of coastal wetlands in New York City have also been lost. The loss of these wetlands has resulted in the loss of the species that inhabited them, the loss of species diversity and the loss of ecosystem diversity, which is the loss of variation in the collection of assemblages, communities and habitats within a region. The loss of ecosystem diversity can threaten the elimination of entire community in a habitat.[19]

II. Recent City Wetland Initiatives

Over the better part of the last decade the City has taken a number of initiatives related to protecting wetlands, including several efforts instigated by the City Council. These latter efforts include the development of a plan to protect Jamaica Bay's wetlands, a plan to transfer appropriate wetlands to the jurisdiction of the Department of Parks and Recreation for protection, and the development of a citywide wetlands protection plan. The Mayor's sustainability plan, PlaNYC 2030, A Greener, Greater New York, as updated in 2011, also contains wetland protection policies.

a. Watershed Protection Plan for the Watershed/Sewershed of Jamaica Bay

One of our nation's few urban national parks, Gateway National Recreation Area, which includes the Jamaica Bay Wildlife Refuge—a shelter for rare and endangered birds—is located

[18] http://www.nycgovparks.org/parks/ardenwoods/highlights/11086

[19] Robin Kundis Craig, Protecting International Marine Biodiversity: International Treaties and National Systems of Marine Protected Areas, Florida State University Journal of Land Use & Environmental Law, 20 J. Land Use & Envtl. Law, 333-338 (2005).

within Jamaica Bay.[20] The Wildlife Refuge is "one of the most important urban wildlife refuges in the United States," and it is nationally and internationally renowned "as a prime birding spot where thousands of water, land and shorebirds stop during migration."[21]

Approximately 95% of Jamaica Bay falls under federal jurisdiction as a result of the Gateway National Recreation Area Act, passed in 1972.[22] The United States Department of the Interior holds primary responsibility for administering the Recreation Area, including the Jamaica Bay Unit of the park, and "shall administer and protect the islands and waters within [that Unit] with the primary aim of conserving the natural resources, fish, and wildlife located therein and shall permit no development or use of this area which is incompatible with this purpose."[23] The United States Army Corps of Engineers was also provided with the authority to "undertake or contribute to water resource developments, including shore erosion control, beach protection, and navigation improvements . . . on land and/or waters within the recreation area . . ." that are "mutually acceptable to the Secretary of the Interior and the Secretary of the Army and which are consistent with both the purpose of the [Gateway National Recreation Area] Act and the purpose of existing statutes dealing with water and related land resource development."[24]

Approximately eight miles long, four miles wide, and covering twenty-six square miles, Jamaica Bay is situated within the boroughs of Brooklyn and Queens, and opens into the Atlantic Ocean via the Rockaway Inlet.[25] The Bay's waters, with a mean depth of only 13 feet, "and low-lying island marshes stretch over some 13,000 acres, providing a unique interconnection between

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[20] Barbara Stewart, *Scientists Are Baffled by Loss of Marsh From Jamaica Bay* ("*Scientists are Baffled*"), NEW YORK TIMES, July 6, 2001.
[21] Brooklyn Bird Club, Local Area Hot Spots, Jamaica Bay, *at* http://www.brooklynbirdclub.org/jamaica.htm.
[22] Pub. L. 92-592, Sec. 1, Oct. 27, 1972, 86 Stat.1308.
[23] 86 Stat. 1308, § 3(a).
[24] Ibid at § 3(d).
[25] U.S. Army Corps of Engineers, New York District, Jamaica Bay, Marine Park and Plumb Beach, NY, Arverne, Fact Sheet, *at* http://www.nan.usace.army.mil/project/newyork/factsh/pdf/jamarver.pdf.

the natural environment and the nation's largest city. With its freshwater ponds and saltwater wetlands, the refuge offers sanctuary to more than 300 species of birds and nearly 100 species of fish, as well as amphibians, reptiles and small mammals."[26]

Although Jamaica Bay is considered by many to be a significant ecological resource and is one of the largest and most productive coastal ecosystems in the State of New York, as well as within the Northeastern United States, its future is in severe jeopardy because the Bay's marshy islands, which serve as nesting and feeding areas for an abundance of birds and other wildlife, are rapidly and mysteriously vanishing.[27] Scientists predict that the Jamaica Bay marshlands will continue to vanish rapidly if protective measures are not taken.[28]

Jamaica Bay has experienced a significant and continuing decline in the size of its tidal marshes in the past 100 years.[29] In 1995, local fishermen and bird-watchers first noticed the disappearance of Jamaica Bay's marshes.[30] Moreover, unlike wetlands across the country, "the Jamaica Bay island marshes have been disappearing much more quickly, and the rate seems to be increasing each year."[31]

According to Eric Goldstein, co-director of the Urban Program at the Natural Resources Defense Council, "[f]rom 1924 to 1974, the bay was losing perhaps 10 acres a year, probably due to natural forces such as erosion. From 1974 to 1994, the data show, this trend increased, and average annual losses climbed to 22 acres a year. Since 1999, the rate of loss has spiked to 50 acres per year."[32] Although there are many existing theories, scientists are still unsure of the

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[26] Eric Goldstein, Jamaica Bay, *at* http://www.gothamgazette.com/environment/aug.02.shtml.
[27] *Scientists Are Baffled.*
[28] http://www.dec.ny.gov/environmentdec/39171.html

[29] Ibid.
[30] Ibid.
[31] Ibid.
[32] Jamaica Bay, *at* http://www.gothamgazette.com/environment/aug.02.shtml

specific cause of the marshes' disappearance.[33] Consequently, scientists and environmentalists are currently uncertain as to how specifically to remedy the problem of the mysteriously vanishing marshlands.

In order to help understand and remedy the loss of wetlands in Jamaica Bay, and following oversight hearings on the topic in 2002 and 2005, the Council passed in June 2005 and the Mayor signed in July 2005 Local Law 71 of 2005. Under the law the DEP Commissioner was required to assess the technical, legal, environmental and economic feasibility of including, at a minimum, various measures in the plan, including best management practices for the minimization and control of soil erosion and stormwater runoff and reduction of both point and non-point source pollution; various measures to address threats to aquatic habitat; land acquisition and land use planning practices and opportunities; a protocol for coordination with appropriate federal, state and City governmental entities that have jurisdiction over the Jamaica Bay area; a protocol for coordination with the Office of Environmental Coordination regarding environmental assessments and reviews of projects within the Jamaica Bay watershed/sewershed; a public education program; and a program to target enforcement efforts to help reduce polluting behaviors and operations that may adversely impact Jamaica Bay.

Local Law 71 also required biennial reporting regarding the DEP's progress in implementing the watershed protection plan and created a Jamaica Bay watershed protection plan advisory committee to provide advice to the Commissioner of Environmental Protection ("Commissioner") and recommendations to the Commissioner and the Speaker of the Council regarding the watershed protection plan. In August of 2006, Local Law 71 was amended to give

[33] Ibid.

DEP an additional year to complete the study, as per their request, as well as to make some other structural and temporal changes to the law.

Working closely with the advisory committee, a seven-person group appointed by both the Mayor and the Speaker of the City Council, DEP produced a draft Plan on March 1, 2007, which was reviewed by the public, the advisory committee, the Council, and others, and then a final Plan on October 1, 2007. The Final Jamaica Bay Watershed Protection Plan consists of two volumes: Volume 1, the Jamaica Bay Regional Watershed Profile, provides extensive information on the physical attributes of the watershed, Jamaica Bay watershed quality, and other background information, as well as a compilation of issues of concern facing the Bay; and Volume 2, the Watershed Protection Plan, which lays out a management strategy for the Bay, including strategies and actions to achieve a wide array of objectives meant to help solve the issues facing the Bay. Volume two placed these issues into six major categories: water quality, restoration ecology, stormwater management through sound land use, public outreach and education, and implementation coordination. It then recommended hard and soft infrastructure projects, innovative alternatives, pilot studies, regulatory initiatives, and public outreach efforts designed to respond to the complex issues facing the Bay.[34]

As per Local Law 71 of 2005, the DEP has produced two updates to the original Plan, one in 2008 and one in 2010. The updates review accomplishments over the update period, track the progress of ongoing initiatives, and, where relevant, list changes to the Plan. For example, the 2008 update lists an array of accomplishment, including the completion of phase 1 of a drainage plan for southeastern Queens, construction of the Paerdergat Basin CSO detention tank, the completion by the Office of Long-Term Planning and Sustainability of a draft Stormwater

[34] New York City Department of Environmental Protection , Emily Lloyd Commissioner, *Jamaica Bay Watershed Protection Plan*, October 1, 2007. Found at http://www.nyc.gov/html/dep/html/dep_projects/jamaica_bay.shtml.

Management Plan to evaluate the use of best management practices for improved stormwater capture rates, and many others. It also provides a matrix updating the scores of initiatives from the original Plan.[35] Similarly the 2010 Update provides accomplishments such as a broad agreement with the state and others to spend $115 million dollars on water quality upgrades and marsh loss mitigation, increased water quality testing, the release of a Green Infrastructure Plan for more sustainable stormwater management, and many others, as well as a new matrix showing the progress of the Plan's many initiatives.[36]

b. Wetland Transfer

Local Law 83 of 2005, signed by the Mayor on August 31, 2005, established a temporary task force to evaluate City-owned wetlands and advise the Mayor and the Speaker of the City Council as to the technical, legal, environmental, and economic feasibility of transferring those wetlands to the Department of Parks and Recreation (DPR) for protection. The need for such a task force, first proposed by Council Member James Gennaro, arose from a joint oversight hearing of the Council's Committee on Parks and Recreation and the Select Committee on Waterfronts held July 20, 2003.[37]

The 7-member task force, appointed by the Mayor and the Speaker of the City Council and consisting of City employees and representatives of several non-profits, reviewed all properties in the Department of Citywide Administrative Services portfolio that contained wetlands. Of the 2,000 such properties, about half were already under the jurisdiction of DPR or were under the control of DEP's Blue Belt program and so considered protected. The

[35] See http://www.nyc.gov/html/dep/pdf/jamaica_bay/JBWPP_Update_100108_FINAL.pdf.
[36] See http://www.nyc.gov/html/dep/html/press_releases/10-91pr.shtml.

[37] The New York City Wetlands Transfer Task Force, *Recommendations for the Transfer of City-Owned Properties Containing Wetlands*, September 2007. Found at http://www.nycgovparks.org/sub_about/parks_divisions/nrg/wttf/assets/Wetlands%20Task%20Force%20Report%20-%2009.28.2007.pdf.

remaining 900 plus properties were mapped, evaluated by the appropriate criteria, and assigned a priority level. The task force then undertook a public outreach process, including meeting with stakeholders, holding public meetings, and setting up a web site to take comments. The task force then selected properties it recommended for transfer for DPR.[38]

Of the properties reviewed, 82 were recommended for transfer to DPR, 68 in Queens, 13 in Staten Island, and 1 in the Bronx; 76 were recommended to be transferred to DEP's Blue Belt program, all in Staten Island; and 111 were classified for "special review," meaning that they should be transferred to DPR at some point, but that such a transfer is made more difficult due to technical, legal, or other issues. In all, properties in these three categories totaled more than 700 acres. The task force also made some recommendation about general wetland policies as well.[39]

To date the City has reviewed all of the 193 parcels recommended to be transferred to NPR or recommended for special review. Of those 193, nine have been transferred to DPR. Others may be suitable for transfer soon, but the City found that the vast majority are degraded and often impacted by encroachment or dumping issues.[40]

c. Comprehensive Wetland Policy

On May 26, 2009, the Mayor signed Local Law 31 of 2009, requiring the City to develop and implement a Comprehensive Wetlands Protection Plan (CWMP) for wetlands in the City. Under this law, the Office of Long-Term Planning and Sustainability (OLTPS) was required to survey wetlands in the City by aerial or satellite imagery by September 1, 2010, and shall then develop a CWMP that meets the requirements of the law.

[38] Ibid.
[39] Ibid.
[40] The City of New York, *PlaNYC: A Greener, Greater New York*, April 2011 update.

The law requires, among other things, that OLTPS first develop a preliminary CWMP by December 31, 2011, and a final CWMP by March 1, 2112, the goals of which will be to conserve, protect, enhance, stabilize, restore and expand City wetlands; to achieve no net loss of wetlands in the city; and to standardize the City's approach regarding wetlands management, improve the management of wetlands and associated buffer areas and balance the needs for wetlands protection with other, competing land uses that are in the public interest, such as the construction of schools or affordable housing. The strategy is required to consider current protections as well as the value of wetlands to the City in terms of economic value, ecological functions, and aesthetics.

In addition, the law requires that the CWPS includes consideration of standardizing City agencies' approaches to wetlands; coordination with federal and state entities; land acquisition and land use planning designed to accommodate wetlands retreat; opportunities to allow for wetlands retreat as sea level rises; reporting mechanisms for wetlands indicators; and a public education program to increase awareness about the ecological, economic, aesthetic and other values of wetlands and their associated buffer areas.

In September of 2010 the City submitted the preliminary wetland maps developed through remote satellite imagery. On January 18, 2012, the City released a draft CWMP. The draft will be reviewed and commented on by the public prior to the release of a final CWMP on February 18, 2012.[41]

The first half of the draft CWMP includes background information about wetlands in general and wetlands in New York City. Topics covered include ecological services wetlands provide, the history of wetlands management in New York City, how wetlands are regulated at

[41] The City of New York, Mayor Michael R. Bloomberg, *New York City Wetland Strategy, Draft Submitted for Public Comment* (Draft Plan), January 18, 2012.

various levels of government, wetlands mitigation strategies, and challenges to protecting wetlands.

The second half of the draft CWMP lays out the City's proposed plan for protecting City wetlands moving forward. The plan is broken down into four areas: Protection, Mitigation, Restoration, and Assessment that, collectively, contain 12 initiatives.

There are three initiatives under the "Protection." Initiative 1 calls for strengthening the protection of vulnerable wetland parcels. The first discussion under this initiative evaluates the potential to pass a local law to protect city wetlands not covered by state or federal regulations. After pointing out that the City has the authority, under state law, to regulate wetlands, as long as the regulations are at least as stringent as state regulations, and that other localities have passed ordinances protecting local wetlands, nonetheless the plan concludes that "the benefits of creating a new local wetland protection ordinance to protect a relatively small number of wetlands would not outweigh the costs of establishing and enforcing a new regulatory regime," in part because "the vast majority of small unprotected freshwater wetlands are publicly-owned," as "fewer than 100 acres of freshwater wetlands, approximately 2% of all wetlands in the city, are privately-owned."[42]

Instead of passing a local law to protect wetlands, the discussion under initiative 1 turns to implementing some of the recommendations of the Wetlands Transfer Task Force, discussed above. The draft CWMP points out that 9 parcels, totally 96 acres, have already been transferred to DPR, while DPR has initiated the transfer of an additional 11 parcels, totaling another 98 acres. Together, these transfers would represent 31% of the properties recommended for transfer or marked as "special review" by the Task Force. Other properties, according to the draft CWMP, will continue to be reviewed but have complicating factors that will delay their

[42] Ibid.

transfer to DPR. The draft CWMP then states that the City has transferred 62 of the 76 Staten Island parcels recommending by the Task Force for transfer to DEP under the Bluebelt Program, totally 12 acres, and that an additional 9 would be transferred soon, while the remaining 5 were not suitable for transfer.

Initiative 2 calls for an increase in wetland acquisition. After an overview of recent acquisitions by DPR and DEP, and after lamenting that federal and state wetland acquisition efforts are underfunded, the draft CWMP states that "[t]he City will work with local, state, and federal partners to evaluate opportunities for additional wetlands acquisitions," with particular focus on "privately-owned small freshwater wetlands parcels that are not protected by state or federal regulations."[43] The draft also states that DEP will continue to evaluate parcels for the Bluebelt Program, and that the City will look to work more closely with the Nature Conservancy and the Trust for Public Lands to acquire wetland properties.

Initiative 3 calls for updating the Waterfront Revitalization Program (WRP), a process already underway, to better protect coastal wetlands. The Waterfront Revitalization Program is meant to ensure that proposed actions along the City's waterfront that require City, state, or federal discretionary approvals conform with the policies included in the WRP. WRP compliance typically takes place as part on an environmental review and is overseen by the Department of City Planning (DCP). The WRP recognizes three areas, known as Special Natural Waterfront Areas (SWNAs), as containing important wetland resources: Jamaica Bay, East River/Long Island Sound, and Northwest Staten Island.

DCP is proposing to designate new areas outside of the SWNAs as Recognized Ecological Complexes. These areas, though less intact that SWNAs, still contain natural resources worth protecting or restoring. Under the WRP designation, projects proposed for

[43] Ibid.

these areas should identify natural resources and include designs to restore natural areas as designated in one of a number of existing plans. The draft CWCP, for the WRP update, the City "will consider designating additional sites of ecological importance, such as the Upper Bronx River, Arverne, Plumb Beach, the southern portion of the Arthur Kill shoreline, portions of the Raritan Bay shoreline, the Staten Island Greenbelt, and Staten Island South Shore Bluebelts" in order to better protect them.[44]

The next two initiatives fall under the "Mitigation" category. Initiative 4 calls for working with the state and federal governments to revise mitigation guidance. The draft CWCP points out a range of problems with current mitigation policies, including that they are not conducive to meeting the needs of a complex urban environment and that they tend to be small, on-site efforts that often fail to get completed or to meet the desired goals of the restoration. The City would argue that policies such as mitigation banking allow for larger, off-site restorations that are more likely to recreate the true functions of healthy wetlands.

The City has already convened a working group that includes the DEC, the Army Corps, and other stakeholders to look at new mitigation approaches. The goal is to create a clear mitigation policy based on existing scientific information that includes guidance on requirements for types of mitigation, ecological criteria and assessment of impacts, amounts of compensation and replacement ratios, financial guarantees, monitoring and maintenance, and geographic service area," as well as "to seek acceptance for creative approaches that are suited to New York City's unique urban conditions, such as receiving mitigation creation for debris removal and hazardous material remediation."[45]

[44] Ibid.
[45] Ibid.

Initiative 5 calls for the creation of mitigation banking and in-lieu fees for public projects. Mitigation banking allows project applicants to purchase "credits" from third parties who have undertaken wetland or other water resource mitigation, enhancement, or protection. The value of the credits is based on habitat or ecological services provided by the restored, enhanced, or protected system. In-lieu fees allow project applicants to pay for a third party with expertise in natural resource restoration to complete a wetland restoration. This program would allow for better, more functioning wetland projects. According to the draft CWMP, these two strategies provide a host of advantages over small-scale, on-site mitigation efforts and would allow for achieving economies and ecologies of scale for mitigation efforts.

The next three initiatives fall under the heading of "Restoration." Initiative 6 calls for the completion of City-funded wetland restorations. In addition to mitigating wetland losses, as discussed in Initiative 5, the City must also, according to the draft CWMP, continue to restore lost and degraded wetlands around the City to meet the goal of "re-establishing appropriate hydrologic regimes, soils, and native wetland vegetation communities through fill removal, re-grading, clean soil placement, native plant installation, erosion control, and invasive plant management."[46] Such efforts will add to the 80 acres of freshwater wetlands and 90 acres of salt marshes DPR has already restored. The draft CWMP lays out a number of ongoing projects, such as White Island in Marine Park and Freshkills Park in Staten Island and points to the City's announcement in 2010 to commit $15 million wetland restoration projects in Jamaica Bay, among other projects.

Initiative 7 calls for the creation of a "Natural Areas Conservancy," a public/private entity designed to protect and enhance natural systems. Such a City-based entity, according to the draft CWMP, would be the first of its kind in the nation. This Conservancy would be

[46] Ibid.

modeled on the Central Park Conservancy and the Prospect Park Alliance which, according to the draft Plan, have successfully leveraged private funding to help manage and maintain public parks. The Natural Areas Conservancy would enhance the efforts of DPR's Natural Resources Group to help protect and restore critical natural areas in the City.

Initiative 8 calls for the City to work with federal and state governments to implement the Comprehensive Restoration Plan (CRP). The CRP, developed by various levels of government and an array of stakeholders, scientists, and the like, has identified a wide range of potential projects related to protecting and restoring wetland and other water resources. The draft CWMP calls for completing the CRP by 2013 and to move forward toward implementing projects.

The final initiatives fall under the category "Assessment." Initiative 9 calls for improved wetlands mapping. Such maps would, according to the draft CWMP, "help to quantify threats to wetlands and determine management and restoration strategies" and "are a necessary foundation for environmental planning and effective natural resources management." Pursuant to Local Law 31 of 2009, the City created preliminary wetland maps. According to the draft CWMP, these maps offer an alternative method to mapping wetlands, based on current, high-resolution remote sensing and combined with archival images, to identify potential wetlands based on factors such as standing water and vegetation. These maps, with additional refinement and field verification, have the potential to lead to new, more accurate, wetland maps for the City.

The City has also recently acquired Light Detection and Ranging (LiDAR) data for the City "to more accurately assess the physical characteristics of New York City's natural and built environment." Such data will "will be particularly useful to determine where there are

opportunities for migration of wetlands, and where natural or built impediments will require other strategies to help protect and conserve tidal wetlands."[47]

One desired outcome from this mapping, according to the draft CWMP, would be for the state to use this information to develop updated wetlands maps for the City in order to "reflect changes in wetland location and composition over the past 20 years and to provide greater certainty to regulators and landowners alike."[48] The City would cooperate in such an effort with the state.

Initiative 10 calls for monitoring tidal wetlands to understand the potential impacts of sea level rise and other future climate scenarios on those resources. Such monitoring would provide better data and a greater understanding of "what these scenarios mean for short and long-term wetland vulnerability, what our options are to protect them, and what this means for the way we manage and prioritize efforts."[49]

Initiative 11 calls for assessing the condition of New York City wetlands. This effort would lead to more and better data about the City's wetlands in order to better manage them. To this end, DPR has developed and piloted a Freshwater Wetland Rapid Assessment Protocol intended to "provide an overview of wetland conditions, identify management needs, and help prioritize sites for further assessment, maintenance and monitoring." DPR will also use a modified version of the Mid-Atlantic Tidal Rapid Assessment Method (MidTRAM), which uses GPS and field data, at six sites where ongoing monitoring is taking place. Part of the reason for these initiatives is "to better determine how specific wetland systems can be

[47] Ibid.
[48] Ibid.
[49] Ibid.

protected by green infrastructure and other best management practices, and how these systems also contribute to New York City's green infrastructure." [50]

Initiative 12 calls for the development of a research agenda to address wetland challenges. According to the draft CWMP, "[r]esearch and environmental monitoring are critical components to the successful design and implementation of wetlands protection and restoration efforts[,] and therefore "[i]t is important to undertake scientific research to understand the causes of habitat degradation and to facilitate a coordinated approach toward corrective actions, thereby enhancing restoration success and sustainability in New York City." These efforts will include ongoing research on a wide array of topics conducted by DPR's Natural Resources Group, ongoing collaborative research on Jamaica Bay's wetlands, ongoing work with the North Atlantic Coast Cooperative Ecosystem Studies Unit, and other efforts.[51]

A final section of the main body of the CWMP discusses implementation of the Plan, including an overview of several education and outreach programs as well as a brief discussion of how implementation of the Plan will be reported. Several appendices include wetland maps and a discussion of Local Law 31 of 2009.

III. Conclusion

Wetlands play a critical role in the natural environment in New York City. The City and the Council have taken many actions to protect the relatively few wetlands still left in the five Boroughs. The aim of today's oversight hearing is to review those actions, including but not limited to efforts that arose from Council legislation, to evaluate how well these actions are working and what, if anything, needs to be improved or corrected.

[50] Ibid.
[51] Ibid.