## Chapter 11.1: Responses to Comments on the DGEIS

# A. INTRODUCTION

This chapter of the Final Generic Environmental Impact Statement (FGEIS) has been prepared for the purposes of summarizing and responding to all substantive comments on the Mid Island Drainage Plans Draft Generic Environmental Impact Statement (DGEIS). The public comment period began with the DGEIS completion and release for public review on September 27, 2011. The comment period remained open until December 16, 2011 (it was extended from November 27, 2011). During this public review period a public hearing was held on Thursday, October 27, 2011, 7:30 PM, at the meeting hall of Staten Island Community Board 2 in the Seaview Hospital Complex, 460 Brielle Avenue, Staten Island, NY. Speakers at the public hearing are listed below. In addition, written comments on the DGEIS were received between September 23, 2011 and December 16, 2011.

Section B, below, lists all commentators who spoke on the DGEIS at the public hearing or submitted comments in writing. The comments are then summarized and responded to in Section C. Where there are multiple comments on a similar subject, a single comment combines and summarizes those individual comments. The organization and/or individual that commented is identified after each comment.

# B. LIST OF ORGANIZATIONS AND INDIVIDUALS WHO COMMENTED ON THE DGEIS

1. New York City Landmarks Preservation Commission (LPC), written comments dated October 13, 2011.
2. New York State Office of Parks, Recreation and Historic Preservation (SHPO), written comments dated October 28, 2011.
3. New York City Department of Transportation (DOT), written comments dated November 23, 2011.
4. New York State Department of Transportation (NYSDOT), written comments dated December 13, 2011.
5. New York State Department of Environmental Conservation (NYSDEC), written comments dated December 14, 2011.
6. Ralph Marra, written comments dated October 6, 2011.
7. John Rooney, written comments dated October 8 and November 6, 2011.
8. Eileen Pepel, spoken testimony and written comments dated October 27, 2011.
9. John Pepel, spoken testimony and written comments dated October 27, 2011.

10. Yasmin Ammirato, President; Debi Vadola, Vice President; Rosemary Vasquenz, Secretary/Treasurer; Sal Monforte, Sergeant of Arms, Midland Beach Civic Association, written comments dated November 9, 2011.
11. Dolores and Philip Sabbatino, written comments dated November 10, 2011.
12. Carol Donovan, President, Richmondtown and Clarke Avenue Civic Association, written comments dated November 21, 2011.
13. Jack Vokral, Chairman, Environmental Protection Committee and Dana T. Magee, Chairman, Community Board 2, Staten Island, written comments dated December 7, 2011.
14. Paul DeFresco, spoken testimony.
15. Dee Vandenberg, Staten Island Taxpayers Association, spoken testimony.
16. Alan Benimoff, College of Staten Island, spoken testimony.
17. Rosemary Vasquenz, Midland Beach Civic Association, spoken testimony.
18. Yasmine Amarato, Midland Beach Civic Association, spoken testimony.
19. Inga Avitabile, Midland Beach Civic Association, spoken testimony.
20. Patricia Guinta, spoken testimony.
21. Veronica Skibinski, spoken testimony.
22. Jane Caravello, spoken testimony.
23. Joseph Morrissey, spoken testimony.
24. Mila Spendla, spoken testimony.
25. Joseph Loughran, spoken testimony.
26. Joseph McAllister, President, South Beach Civic Association, spoken testimony.
27. Steve Elias, President, Ocean Breeze Civic Association, spoken testimony.
28. Vincent Caravello, spoken testimony.
29. Debbie Badola, Midland Beach Civic Association, spoken testimony.
30. Marty Fastaia, spoken testimony.
31. Tom Guinta, spoken testimony.
32. Katherine Greene-Manzi, spoken testimony.

## C. RESPONSE TO COMMENTS

### PROJECT DESCRIPTION FOR THE OAKWOOD BEACH DRAINAGE PLAN (CHAPTER 3.1)

**Comment 1:** Page 3.1-1 References the two proposed, but not built, parkways. Has DEP received permission from NYSDOT to conduct activities or build structures within the roadways? (5)

**Response:** *NYSDOT reviewed the DGEIS and is aware and supportive of the proposed project. As stated in the DGEIS and this FGEIS, DEP would obtain all required approvals from NYSDOT prior to construction.*

**Comment 2:** [BMPs OB-1 and OB-2]. The DGEIS describes an excavation of 1.5 feet for BMP OB-1 and 2 feet for BMP OB-2 to create sufficient retention capacity. The DGEIS consistently refers to this area as low lying without clear definition of the area. What are the boundaries? What are the existing elevations within and adjacent to the proposed BMP? What are the seasonal surface water elevations? The DGEIS needs to describe flow patterns under each possible scenario. How will elevations be established for a permanent pool and an ephemeral pool? The low lying topography may make their creation doubtful. Excavation of 1.5 feet with shelves appears to indicate that BMP OB-1 will be a smaller wetland area surrounded by shelves which will function as uplands or transition zones. Excavation of 2.0 feet with shelves appear to indicate that OB-2 will be a smaller wetland area surrounded by shelves which will function as uplands or transition zones. Berm construction adjacent to shelves will likely promote establishment of upland species. Describe how the desired plant community will be established in each zone. The groundwater discussion and monitoring wells raise concerns over whether a retention capacity is feasible in the subject locations. (5)

**Response:** *The assessments for low-lying areas and water surface elevations in the Mid-Island watersheds are based on GIS analyses and hydrologic hydraulic modeling, as described in the Hydrology section of Chapter 2.1"Methodology for All Drainage Plan EIS Analyses." At the proposed locations of BMPs OB-1 and OB-2, the existing surface elevations are generally six or more feet lower than the road elevations at Fox Lane, Kissam Avenue, Mill Road, Tysens Lane, and the Lower Bay shoreline. These conditions are also present at BMP OB-3, in relation to surrounding residential properties and Aviston Street. The existing and proposed peak water surface elevations for 10- and 100-year storm events are provided in Table 3.9-4 (page 3.9-17) and Table 3.9-5 (page 3.9-18). Figures 3.1-4, 3.1-5, and 3.1-6 illustrate the projected flow patterns and hydrologic zones for proposed BMPs OB-1, -2, and -3 in the Oakwood Beach watershed. As shown in Figure 3.1-4, the permanent pool elevation for OB-1 is -3.5 feet (Staten Island Datum). At OB-2, the permanent pool elevation is -1.0 feet (Staten Island Datum, see Figure 3.1-5). At OB-3, the permanent pool elevation is -1.5 feet (Staten Island Datum, see Figure 3.1-6). These surface water elevations would be established by the invert of the low-flow orifices at the BMP outlet structures. At all BMPs, the proposed project would result in*

*reductions of peak water surface elevations of nearly two or more feet during the 10-year storm, thereby alleviating flooding conditions at adjacent residential properties. The proposed BMPs would provide the necessary stormwater management and detention capacity for this watershed to relieve flooding, taking into consideration the shallow groundwater conditions that were monitored during the preparation of the DGEIS in the Lower Watershed. Moreover, the proposed BMPs would provide wetland habitat diversity.*

*BMP OB-1 is typical of an extended detention wetland in that it would provide open water and vegetated shelves that are surrounded by an upland transition zone. The open water zone, the deepest one, would typically be centrally located in the BMP. These zones serve to facilitate movement of water through the BMP, from the storm sewer outlets to the downstream weirs. The open water is surrounded by more shallow vegetated areas, referred to as "planting shelves." These shelves are typically six inches deep and are fully vegetated with native wetland emergent plants that serve as "filters," improving water quality. The emergent plants uptake the excessive nutrients in the water and pump oxygen into the hydric soils supporting beneficial aerobic bacteria. The plants also serve a secondary function of providing wildlife habitat. The shelves would include species such as arrow arum, lizard's tail, bulrush, hibiscus, sagittaria, and buttonbush.*

*BMPs also have upland transition zones that range from the moist water's edge to the dry uplands. The moist margin of the BMPs would be vegetated with plants such as soft rush, cardinal flower, rice cutgrass and sedges that are tolerant of wet conditions. The intermediate zone would be vegetated with plants and shrubs that can tolerate both occasional flooding and drier conditions. These include species such as boneset, New York aster, switchgrass, New York ironweed and silky dogwood. The uppermost zone would consist of herbaceous plants, shrubs and trees adopted from dryer conditions, such as goldenrods, asters and little bluestems, shadblow, oaks and hickory. Thus, the proposed BMPs would provide a more diverse wetland assemblage and plant community than under existing conditions.*

*Berms are not considered to be wetland areas since they would be elevated mounds, usually dry on the top, would provide a secondary level of flood protection and would be planted as upland buffers. The berms are, therefore, not counted in the wetland acreages shown in the DGEIS for each of the proposed BMPs; rather, they are counted as uplands. No ephemeral pools are proposed at these proposed BMP locations.*

**Comment 3:** Page 3.1-5, 6 [BMP OB-3]. The DGEIS describes an excavation of 3.5 feet to create sufficient retention capacity. What are the boundaries, existing elevations within and adjacent to the BMP and seasonal surface water elevations? The DGEIS needs to describe flow patterns under each possible scenario. Will flows enter the adjacent Gateway property during storm events? Will Gateway flows enter the BMP structure? Why has the Gateway National Park Property been excluded from the drainage plan? How will elevations be established for a wooded island? The existing soils may limit the species selection for this location. How will the desired covertype be established? Excavation indicates that OB-3 will be a smaller wetland area dominated by watercourses. What is the functional habitat value of this BMP? The groundwater discussion and monitoring wells raise concerns over whether a retention capacity is feasible in the subject location. (5)

**Response:** *Stormwater runoff from Gateway property has been accounted for in all drainage calculations. All flows from the Gateway property via the West Branch were taken into consideration in the DGEIS hydrology analysis for the Oakwood Beach Watershed. The new drainage plans do not show sewers on Federal property since that is the Federal government's responsibility. Proposed BMPs are generally located on City-owned property.*

*BMP OB-3 would be an open water area with low-flow channels from the proposed storm sewer outlets with large vegetated wetland shelves. All design-storm flows would be contained within the BMP and no design-storm flows associated with the proposed BMP would overflow to the Gateway property. Elevations of all wooded islands would be established above the BMP water surface elevation so that these ecological features function as wooded islands. Soils would be imported to the site to support the creation of new islands, as necessary. Please refer to comment 2 and related response for relevant information on BMP excavation, flow patterns and groundwater conditions.*

**Comment 4:** Construction of the berm [at proposed BMP OB-1: Kissam Avenue] would separate a portion of the wetland from the newly constructed system. Please quantify the amount of isolated wetland. How was the berm location, parallel to Kissam Ave. and Lower Bay, selected? How large an area of wetland will be isolated by the installation of the berm? The area between Kissam Ave. and the future berm will be converted to upland due to the hydrologic isolation. Describe the need for this structure, how the location was selected and the habitat loss associated with its future installation. (5)

**Response:** *In general, berm locations for all BMPs were selected to minimize impacts to existing wetlands. For example, the designs of BMPs OB-3,*

*NC-8, -9, -10, and -17 were modified during the DGEIS preparation process to limit such impacts. The berm locations as presented in the DGEIS are conceptual designs. During subsequent and more detailed design phases, the proposed berms will be sited as close to the edge of the existing wetlands as possible, while still allowing for proper drainage of neighboring properties, thereby preventing backyard flooding. Therefore, land area outside proposed BMP berms would be functional wetlands and would receive overland runoff from adjoining properties, identical to existing conditions. This discussion of berm development is based on the assumption that houses, next to the proposed berms and affected by Hurricane Sandy, would be rebuilt. For example, some of the berms associated with BMPs OB-1 and OB-2 would protect houses along Kissam Avenue, some of which were destroyed by Hurricane Sandy. This analysis assumes the reconstruction of those houses, in addition to Kissam Avenue.*

*Regarding berm installation, berms would be moved as far from the existing wetlands as possible given property ownership. For instance, at BMP NC-17, the berms have been moved closer to the edges of the property line in response to comments received (see Figure4.1-14). Similar changes were made to the schematic for BMP NC-10 (see Figure 4.1-10). The length and height of berms would be reduced based on the surveyed topography where possible. For instance, the detailed site survey at BMP NC-7 is complete and it appears as if the total length of berm will be reduced and potentially shortened. In general, the berms shown on the schematics are the most conservative estimate of berm length and height, as is appropriate for the generic nature of the EIS. Additionally, DEP added the following additional information to Chapter 1.1, "Overall Project Description" (page 1.1-13): In addition to maintaining existing flow patterns on neighboring private properties, another objective during final design of the berms would be to minimize (or eliminate) impacts on existing wetland hydrology. The berms will be sited as far from existing wetlands as possible given the property limits of the Bluebelt and without adversely impacting adjoining private property. The berm heights and lengths as presented in this FGEIS are a conservative estimate based on current information. To minimize or eliminate hydrologic (or indirect) berm impacts on wetlands, the design details will take into consideration the existing topography, existing wetland hydrology, functions and boundaries, presence of limiting structures such as roadways and buildings, and berm design alternatives (described above) with respect to berm height, location and composition.*

*Specifically, proposed BMP OB-1 is at a lower elevation than BMP OB-2 due to the very low elevation of Kissam Avenue, Fox Lane and the*

*adjacent residential properties. Kissam Avenue was selected to provide secondary protection for properties along the east side of Kissam Avenue from the stormwater conveyed to BMP OB-2. Therefore, a low landscaped berm (6 to 36 inches in height) is necessary along the Kissam Avenue boundary to contain storm flows within the BMP while preventing flooding at Kissam Avenue and the existing residential properties. If the berm were not built, Kissam Avenue and the adjacent residential properties may be flooded during heavier storms. The area between Kissam Avenue and the berm parallel to it is expected to function as a wetland because it would continue to receive runoff from the land along the east side of Kissam Avenue. Therefore, no wetlands would be hydrologically isolated. The proposed berm on the southerly side of BMP OB-1, parallel to the Lower Bay, is necessary to prevent the Oakwood Beach East Branch from overflowing into BMP OB-1. This creek is the outlet for BMP OB-2 and is therefore at a higher surface water elevation than BMP OB-1. If the berm were not built, BMP OB-1 would be inundated with water from the East Branch, thereby reducing storage in BMP OB-1 and its capacity to accept runoff from the surrounding areas. The East Branch is parallel to the berm and thus, no wetlands would be hydrologically isolated.*

*Habitat loss associated with berm creation is accounted for in the wetland calculations provided in Table 3.9-7. Under the proposed amended drainage plans, freshwater would continue to flow into the Oakwood Beach East Branch from BMP OB-2, which is directly upstream and adjacent to the BMP (please see Figure 3.1-4). The construction of BMPs OB-1 and OB-2 would instead enhance the existing wetland areas at the project site. Construction of the berm at the proposed site of BMP OB-1 would not separate wetland areas from the newly constructed system. The site of proposed BMP OB-1 is at a lower elevation relative to the surrounding area and the stream south of the BMP. Based on these topographic conditions, the berm would prevent the stream from spilling into the BMP. During large storm events, the berm would contain storm flow within the BMP footprint, which would ensure the function of the BMP, and prevent flooding on local streets and private properties. Berm construction at this BMP would not result in isolation of wetlands, because all areas bounded by berms would still remain connected to wetland areas in the BMP.*

**Comment 5:** Figure 3.1-4. [BMP OB-1] Is it advisable to construct and operate an ocean outfall beneath the existing Oakwood Beach creek? (5)

**Response:** *Due to the low topography of BMP OB-1 relative to BMP OB-2 and adjacent areas, an ocean outfall is necessary in order to drain the proposed BMP. The outfall would be constructed with the appropriate*

*cover conditions and would be encased with concrete to minimize infiltration and inflow. Appropriate erosion control and stream restoration procedures would be adopted in order to prevent impacts to the stream during construction of the outfall.*

**Comment 6:** [BMP OB-1] Will the wooded area adjacent to Fox Lane be preserved or removed? Mature trees are limited in this watershed; their preservation should be encouraged. (5)

**Response:** *The wooded area adjacent to Fox Lane would be preserved, as depicted in Figure 3.1-4.*

**Comment 7:** Figure 3.1.3. What are the plans for storm sewers in the area of Rene Drive, Clarke Avenue, and Wilder Avenue? Are there plans based on the 1961 Potter Plan or was discussion of this area an omission? (12)

**Response:** *The proposed sewers for this area would be installed in accordance with the current drainage plan: the Potter Plan. No drainage plan modifications are proposed in this area because the Potter Plan is constructible in this area and therefore, amending the drainage plan was not necessary and was not covered in the DGEIS or this FGEIS.*

**Comment 8:** Page 3.1-8. Increase in street grades. The report states that some street grades will be raised (maximum 2 feet) to ensure gravity flow of the proposed drainage plan. The normal drainage of the residential areas adjacent to these raised streets, which are currently at or lower than the street level, will be aggravated further. The report has not addressed clearly as to how this issue will be handled. Up to 2 feet in height, may create local ponding or need for storm water diversions. Developed parcels, such as those along Kissam Avenue, may not be able to connect to the proposed storm sewers. How will impacts be addressed at each street location? (5)

**Response:** *Sewer projects are proposed in areas of the City that either lack this infrastructure currently, or where flooding is experienced. Standard procedure during sewer improvement and reconstruction projects is to raise streets in low-lying areas in order to provide proper cover over proposed storm sewers when necessary, and the City has done this on many projects. As part of the capital project design, site-specific surveys would be performed to determine the actual street elevation conditions for each individual project, and all design techniques would be utilized to limit the raising of street grades to the maximum extent possible. During this process, DEP and the New York City Department of Design and Construction (DDC), the agency that would manage the project through design and construction, would meet with each individual homeowner prior to construction to limit the impacts of street grade*

*changes and to assist homeowners in developing the best possible drainage solution. Please refer to pages 3.1-9, 4.1-17 and 5.1-8 for additional information.*

**Comment 9:** Page 3.1-7, 8. [BMP OB-5] Can the stormwater capacity of OB-5 be further enhanced by increasing the size of the stormwater pond or adding a second pond downstream? (5)

**Response:** *The size of proposed BMP OB-5 was determined based on projected inflows. As stated in the DGEIS and this FGEIS, the drainage area for this BMP is limited due to its location in the upper watershed and it is not feasible to drain more than 25 acres into this proposed BMP due to existing topography (see Figure 3.1-7). Thus, expanding this BMP would not increase upstream detention capacity and it would not reduce downstream flooding.*

**Comment 10:** Page 3.1-8, Figure 3.9-2. This section mentions a pond at Thomas Street/Combs Avenue/Riedel Avenue, in the Willowbrook Parkway right-of-way (Amundsen Trailway). How will this pond be maintained? (12)

**Response:** *The pond at this location is currently fed by runoff from Combs Avenue. Under the proposed amended drainage plan, stormwater from the existing watershed would continue to flow into this pond via overland runoff. A stabilized outlet at the edge of Combs Avenue would also be installed. DEP would maintain the pond and associated infrastructure.*

**Comment 11:** Page 3.1-10. Construction phasing needs to be described in greater detail. What impacts will occur when a large area such as OB-1 and OB-2 is installed? What is the time frame for construction? What mitigation measures will be employed to reduce impacts on residents, businesses, wildlife, etc.? (5)

**Response:** *The size of the work area for the installation of the proposed storm sewers would be a portion of the existing street, which is necessary to install the pipes. The work area for each BMP would be the footprint of the BMP. These work areas, along with the proposed construction activities, are provided in the DGEIS and this FGEIS for each watershed (see Table 6.1-1: Oakwood Beach Proposed BMP Construction Activities, Table 6.1-2: New Creek Proposed BMP Construction Activities and Table 6.1-3: South Beach Proposed BMP Construction Activities). The work areas include construction vehicle access to the nearby street which would then be integrated into each BMP for permanent maintenance access. Phasing of the construction needed to build the drainage networks is described in the FGEIS on*

*pages 1.1-16 (overall program). 3.1-10 (Oakwood Beach Watershed), 4.1-21 (New Creek Watershed), and 5.1-10 (South Beach Watershed).*

*DEP does not expect that any areas outside of the proposed BMP footprint would be disturbed as part of the proposed construction. As part of the proposed project, all work areas would be restored to existing conditions and landscaped as part of the final phase of construction. DEP's Bluebelt Program instituted numerous measures to avoid, rather than mitigate, construction impacts in the South Richmond area of Staten Island. Similarly, mitigation measures are expected to be limited in the proposed project. However, as described in Chapter 8.1, "Mitigation," mitigation measures would be implemented with respect to rare, threatened and endangered plant and animal species and fish resources to avoid potential impacts during construction.*

**PROJECT DESCRIPTION FOR THE NEW CREEK WATERSHED (CHAPTER 4.1)**

**Comment 12:** Page 4.1-6 [BMP NC-6 and BMP NC-11]. Mature trees are limited in this watershed; their preservation should be encouraged. Can more of the wooded area adjacent to Midland Avenue be preserved? What benefit is derived from a perched pool depicted in this location? Can the extended detention area be reduced in size at BMP NC-11? Can retention capacity be located in the upper watershed? Can recreational facilities, adjacent to the existing watercourses, be relocated or altered to serve dual benefits for the community? (5)

**Response:** *Every effort has been made to minimize the proposed BMP footprints around the most valuable trees, while still providing the flood storage capacity necessary at these sites to reduce downstream flooding. The proposed perched pool would not affect the area to be cleared, or the preservation of additional trees along Midland Avenue. The proposed perched pool would increase habitat diversity and would lead to additional ecological benefits.*

*As stated in the DGEIS and this FGEIS, the upper portion of the New Creek watershed is more heavily wooded with mature trees than the lower portion of the watershed. Thus, potential impacts to the upper watershed are limited in the proposed amended drainage plan and BMP designs. BMPs such as NC-6, therefore, play an important role in stormwater control and flood management for the lower watershed. Increasing stormwater detention in the upper watershed in the Todt Hill neighborhoods would not achieve the stormwater management objectives of the proposed project and, moreover, enlarging upper watershed BMPs is likely to result in more significant impacts on forested wetlands and trees, such as in Reeds Basket Willow Swamp Park. DEP has examined the upper watersheds for potential areas of*

*detention. However, in order to take advantage of the natural flow patterns and topography of the Mid-Island watersheds, especially for New Creek, only utilizing open space adjacent to the existing streams in the lower watershed is feasible. In New Creek, for example, the only other open spaces available adjacent to the existing waterways are recreational facilities (e.g., baseball fields), and priority was placed on utilizing unprogrammed open space and natural areas where the proposed BMPs would have limited impacts on community facilities while still providing opportunities for wetland enhancement. Thus, DEP has examined this option and has determined that there are no areas in the upper watershed that would be available or suitable for additional detention, or that would reduce environmental impacts. DEP has designed the proposed BMPs to limit their size and clearing while meeting the project objectives of stormwater management.*

*As requested, DEP has further investigated the feasibility of the following locations to manage stormwater, thereby allowing for the downsizing of the proposed BMP at Last Chance Pond. The table below shows that site #1, the Little League baseball field complex at Sever Avenue and Joyce Street, is fatally flawed because it is not a publically-owned site. Site #2, MacArthur Park on the opposite side of the railroad tracks from Last Chance Pond, while publically-owned, is not a feasible location for a BMP because it is not in a location hydraulically connected to the watershed's drainage features.*

| ***Site #*** | ***Site Name*** | ***Criterion #1*** | ***Criterion #2*** | ***Criterion #3*** | ***Criterion #4*** | ***Criterion #5*** | ***TOTAL CRITERIA MET*** |
|---|---|---|---|---|---|---|---|
| *1* | *Baseball fields adjacent to Last Chance Pond* | *No* | *No* | *No* | *Yes* | *Yes* | *2* |
| *2* | *MacArthur Park* | *Yes* | *No* | *No* | *No* | *Yes* | *2* |

| | |
|---|---|
| ***Criteria*** | *1. BMP site on publicly owned property.* |
| | *2. BMP site on vacant, unprogrammed open space.* |
| | *3. BMP site hydraulically connected to watershed with water course, existing stormwater runoff, existing sewer pipe discharges, etc.* |
| | *4. BMP site at low elevation (i.e., wetlands) to minimize excavation costs and/or hydrologic change to the watershed.* |
| | *5. BMP site situated at location in watershed where valuable flood storage is available.* |

*Regarding reconfiguration of the proposed BMPs south of Hylan Boulevard, DEP has already reconfigured these BMPs to the greatest*

*extent practicable. All BMPs in the lower reaches of the watershed were designed and redesigned to maximize flood storage capacity.*

*Regarding modification of the proposed storm sewer system so that additional flows are directed to the West Branch and also modification of the proposed storm sewer system so that some portion of storm flows bypass Last Chance Pond, DEP has completed a thorough effort to modify the drainage plan in such a way that less water is directed to Last Chance Pond, thereby creating an opportunity for reducing the size of the Last Chance Pond BMP footprint. DEP did not consider directing more flow to the West Branch of New Creek because that would mean the expansion of BMP NC-6 and greater impacts to natural resources at that site. Therefore, DEP considered diverting flow around Last Chance Pond on the east side down to the East Branch of New Creek where there is additional capacity for storage. That additional capacity is the wetland mitigation site between Dongan Hills Avenue and Buel Avenue at Olympia Boulevard. The property to be donated to the Bluebelt has only a few trees around the perimeter and, therefore, would be a favorable expansion site for the East Branch BMPs (NC-18 and NC-19).*

*With the purpose of making Last Chance Pond smaller, two alternative approaches for diverting flow to the East Branch were considered. In the first alternative, a flow splitter at the intersection of Zoe Street and Stobe Avenue and the elimination of the outfall at Cletus Avenue and Naughton Avenue into Last Chance Pond would divert approximately 30 percent of the flow out of Last Chance Pond towards the East Branch of New Creek. The hydrologic and hydraulic mathematical model (HEC-HMS) of the watershed predicted that this alternative would result in an under two inch reduction of the peak water surface elevation at BMP NC-11, and approximately one inch reductions in the peak water surface elevations at other locations along the West Branch and Main Channel of New Creek, and an one inch increase in the peak water surface elevation along the East Branch. Due to the small reduction in the peak water surface elevation at BMP NC-11, the footprint of the BMP could not be reduced.*

*This alternative maximizes the flow into the existing Naughton Avenue storm sewer downstream of Husson Street, so that no new storm sewer would be needed on Naughton Avenue below Husson Street. In order to accommodate the flow from Zoe Street, the existing storm sewer from Buel Avenue and Husson Street cannot be directed towards the Naughton Avenue storm sewer via Dongan Hills Avenue and instead must continue down Buel Avenue. Therefore, this alternative would result in the upsizing of pipes to 6 feet X 4 feet box sewers along Zoe*

*Street and Naughton Avenue upstream of Husson Street, as well as upsizing at Buel Avenue, and downsizing of pipes along Dongan Hills Avenue between Husson Street and Hylan Avenue. This option is estimated to cost $3,700,000 (inclusive of a 20 percent contingency). This alternative will not be incorporated into the drainage plan because it does not allow for the reduction of the Last Chance Pond footprint.*

*The second alternative would divert almost the majority of the flow into the Stobe Avenue outlet just southeast of Zoe Street from BMP NC-11 to the East Branch. About 77% of the flow would be diverted from the pond, that amount being the maximum that can be practically rerouted. The majority of this stormwater runoff would be rerouted along Zoe Street to Dongan Hills Avenue where it would drain to a new outfall into BMP NC-18 (Patterson Avenue) at that property which is being donated. The HEC-HMS model predicts for this alternative an approximately one foot drop in the peak water surface elevation at BMP NC-11, with a slight increase (approximately two inches) at BMP NC-18. This would allow the extended detention volume by one foot, reducing the footprint by approximately one acre. Considering that the total footprint of the proposed BMP is 8.8 acres, this reduction in size would not be significant. BMP NC-18 would be expanded to incorporate the donated wetland north of Olympia Boulevard, increasing the work area by approximately two acres.*

*This second alternative, a 77% diversion, would require over 4,600 linear feet of new double barrel 8 feet X 6 feet high box sewer as compare to the plan evaluated in this FGEIS, an additional siphon under an existing water main in Hylan Avenue, and the excavation of approximately two additional acres at proposed BMP NC-18, for a total estimated cost of $23,000,000 (inclusive of a 20% contingency). That extra expense is too costly for only a one-acre reduction in the size of the proposed Last Chance Pond BMP. Furthermore, there are considerable constructability issues with the proposed pipe routing on Dongan Hills. The streets have very flat topography, so pipe cover limitations may restrict the ability to build the sewers per plan. Additionally, Dongan Hills Avenue is a narrow road and has existing utilities that may preclude the ability to install a new double barrel sewer. For instance, there is one sanitary sewer in Dongan Hills Avenue currently, but with the addition of an 8 feet X 5 feet double barrel storm sewer, a parallel sanitary sewer may be required. Other utilities are not shown on the drainage plan such as potable water, gas and electric lines, and there may be conflicts both with the width of the street, as well as the ability for service connections to reach the adjacent homes in the presence of a large new trunk storm sewer. These issues limit the feasibility of implementation of this option.*

*DEP has made every effort to reduce the impacts at Last Chance Pond by reconfiguring the drainage plan. Although the second alternative is not viable from a cost perspective and does not provide a sizeable reduction in the size of Last Chance Pond, it is presented in this FGEIS as the smaller Last Chance Pond alternative in Chapter 7.1, "Alternatives" (page 7.1-15).*

**Comment 13:** Page 4.1-7. The DGEIS does not clearly identify the location of the stream to be abandoned adjacent to BMP NC-7. How large an area of mapped wetlands will no longer be functional? Please provide a table which lists each segment of wetland area and size that will not be functional upon completion of the BMPs. (5)

**Response:** *Figure 4.1-9 in the DGEIS and this FGEIS depicts the portion of stream adjacent to BMP NC-7 known as the West Branch of New Creek that would be relocated. A wetland loss would not occur because the stream would not be removed, but relocated to the east. The existing West Branch is filled with sediment, is overgrown with phragmites and is therefore highly degraded. Table 4.9-11 includes the impacts of installing berms and upland buffers at these BMPs and depicts these installations as a reduction in wetland acreage. For example, the reduction at BMP NC-7 is attributable to the proposed berm, as shown in Table 4.9-11.*

**Comment 14:** Page 4.1-8. The DGEIS needs to clarify the location of the proposed berm. Will it only be within NC-9 or within NC-7, 8, and 9? Please provide a table that lists each segment of wetland area and size that will be occupied by a berm structure. Please note that the assumption is that the berm structure will no longer function as wetland, but as upland. (5)

**Response:** *The locations of proposed berms for BMPs NC-7, NC-8 and NC-9 are shown in Figure 4.1-9. Table 4.9-11 accounts for the impacts of these berms and upland buffers that would be installed at these proposed BMPs.*

**Comment 15:** Page 4.1-11 [BMP NC-11]. This appears to be the only location specifically identified for plant salvage. Please identify the species, the habitat value and proposed relocation area. Will the relocation site be in this watershed? Please defend relocation outside of this watershed, if this is proposed. (5)

**Response:** *Please refer to Table 4.9-16: "Changes in Vegetative Cover with the Proposed BMP NC-11: Last Chance Pond." Table 4.9-16 delineates anticipated changes in vegetative cover under the proposed design for the Last Chance Pond site. The changes within the 15.2 acre site would include loss of some ecologically significant cover types; however,*

*anticipated losses would be offset by increases in other cover types and an increase in diversity of wetland habitats at the site.*

*The majority of the anticipated habitat losses would be of cover types with little natural resource value. For example, the riverine community at the headwater stream of New Creek is heavily degraded. The terrestrial modified street edge is characterized by fill piles, exotic trees and understory with very little vertical structure in the wooded areas. In addition, the large stand of phragmites monoculture on the site is not a diverse or native habitat.*

*The primary existing habitat type with significant natural resource value that would be reduced under the proposed project is red maple/hardwood swamp (red maple/sweet gum dominated). The anticipated 3.91 acre loss would be offset by a number of improvements on the site. 3.53 acres of successional southern hardwoods cover type would be added to the site through the conversion of existing terrestrial modified street edge and terrestrial cover type (successional old field). The proposed conversion would be accomplished by removal of debris, fill piles and invasive trees and understory. Furthermore, these areas would be intensively reforested with native canopy trees, understory trees, shrubs and groundcover to recreate a full vertical structure within the restored woodland. A small portion of the increase in the successional southern hardwoods cover type (0.36 acres) would be the result of clearing, grading and aggressively reforesting a narrow sliver of the red maple/hardwood swamp (red maple/sweet gum dominated) for the proposed basin.*

*Under the proposed project, the red maple/hardwood swamp (silver maple dominated) along Husson Street between Seaver and Naughton Avenues would increase by 0.53 acres. Portions of the existing phragmites cover type along the edge of the existing silver maple swamp would be cleared, graded and planted with silver maples to allow for this expansion.*

*In addition to the introduction of the successional southern hardwoods cover type, the proposed project would bring three new ecological zones to Last Chance Pond:*

- *Ephemeral pools (with arrow arum and wetland grasses);*
- *Open water (with aquatic plants); and*
- *Shallow emergent marsh (swamp rose mallow predominant).*

*These three new zones would bring significant ecological benefits to the site by diversifying the vegetative cover and resulting habitat values. For example, the ephemeral pools would provide amphibian habitat,*

*currently lacking at the site under existing conditions. The open water areas would create opportunities for fish habitat. The full planting palette for each of these new zones is presented in Table 1.1-1 in the DGEIS and this FGEIS.*

*With regard to the existing shallow emergent marsh (arrow arum predominant) cover type on the site, the anticipated loss of that cover type in two existing wetland areas on the site, separated by a narrow walkway, would be offset by new shallow emergent marsh areas with salvaged and planted arrow arum, in addition to arrow arum plantings in the ephemeral pools. The total area of the existing arrow arum marshes is 0.67 acres. The new replacement arrow arum marshes would total 1.11 acres (0.70 acres in the new shallow emergent marshes and 0.41 acres in the ephemeral pools).*

*In summary, the proposed Last Chance Pond site plan and design would effectively offset losses in ecologically significant cover types by providing new and enhanced habitats and replacing existing habitats.*

**Comment 16:** Figure 4.1-14 [BMP NC-17]. This figure depicts a stream abandonment and a proposed berm. Describe the location and the impact on wetland area being removed from the system. How large an area of mapped wetlands will no longer be functional? Please provide a table which lists each segment of wetland area and size that will not be functional upon completion of the BMPs. (5)

**Response:** *Under the proposed amended drainage plan, the segment of the existing stream north of Quincy Avenue, called the West Branch of New Creek, would be relocated to the interior of the proposed BMP site. Therefore, no wetlands would be removed from the system, and a new stream would be reconstructed. The existing stream is filled with sediment, is overgrown with phragmites and is therefore highly degraded. The flow from the southern end of the stream, adjacent to Graham Boulevard and outside the proposed berm for BMP NC-17, would be reversed and would discharge into proposed BMP NC-10, allowing the stream to continue to function. The existing stream within BMP NC-17 would be converted into a flood-tolerant wetland shelf. Stream functionality would shift west in the proposed BMP to the proposed low-flow channel. Therefore, under the proposed amended drainage plan, the only wetland area that would be non-functional would be the area of the berm, which is accounted for as a wetland loss in the wetland calculations provided in Table 4.9-11.*

*Figure 4.1-14 was amended for the FGEIS to show that the existing stream through the proposed BMP NC-17 site would not be abandoned, but would be incorporated into the proposed BMP wetlands. Table 3.9-*

*7a: Freshwater Wetland Habitat Impacts: Oakwood Beach Watershed," Table 4.9-11a: Freshwater Wetland Habitat Impacts: New Creek Watershed," and Table 5.9-8a: Freshwater Wetland Impacts: South Beach Watershed," in this FGEIS show the changes in wetland habitats with the proposed project for each BMP in each watershed. Additional tables have been added to this FGEIS to specifically identify the changes in wetland acreage at each BMP. These tables include Table 3.9-7b: Freshwater Wetland Acreage Impacts: Oakwood Beach Watershed," Table 4.9-11b: Freshwater Wetland Acreage Impacts: New Creek Watershed," and Table 5.9-8b: Freshwater Wetland Acreage Impacts: South Beach Watershed." In addition to the expansion of wetlands due to removal of fill, the acreage tables identify any decreases in wetland habitat that may be attributable to BMP structures that may need to be placed in existing wetlands (e.g., berms, weirs) as well as any indirect impacts to wetlands resulting from the redirection of runoff or changes in hydrology that may result from the proposed sewer system.*

**OPEN SPACE OF THE OAKWOOD BEACH DRAINAGE PLAN (CHAPTER 3.5)**

**Comment 17:** Page 3.5-2. The wetlands and open space in the area of the Willowbrook Parkway right-of-way could be maintained through the Mid-Island Bluebelt Drainage Plan. For example, in figure 3.1-8, the following is noted: "…proposed street demappings"-- a number of segments of mapped but unbuilt streets are proposed for demapping in order to accommodate construction of the BMPs and as a measure necessary to consolidate Bluebelt property acquisitions and land transfers (see Table 3.1-2). Future ULURP actions are required to formally demap these unbuilt streets and would be implemented by DEP at a later date. …" Also, wetlands in the area of Gateway National Park are already maintained as a natural area, and that area has from time to time been suggested as a path for roadways. The DEP could maintain the wetlands area as part of the Bluebelt program, just as Greenbelt properties that are in the areas where the Willowbrook and Richmond Parkways are mapped, are maintained as parkland. (12)

**Response:** *DEP has proposed a BMP in the Willowbrook Parkway right-of-way, OB-5. DEP would maintain this BMP as a wetland, subject to all agreements with the Willowbrook Parkway property owner, NYSDOT.*

**HISTORIC AND CULTURAL RESOURCES OF THE OAKWOOD BEACH, NEW CREEK AND SOUTH BEACH DRAINAGE PLANS (CHAPTERS 3.7, 4.7 AND 5.7)**

**Comment 18:** The LPC is in receipt of the historic resources chapters of the DGEIS for New Creek, Oakwood Beach, and South Beach Drainage areas, dated 9/23/11. The LPC notes that in each, the conclusions regarding

archaeology should be changed to state that in addition to the Phase 1B, subsequent phases of archaeology will be completed as appropriate as per the CEQR Technical Manual 2010. In order to complete the architectural review, photographs of all potential resources should be provided, labeled with block/lot and address, and keyed to a Sanborn map or equivalent. (1)

**Response:** *LPC reviewed and approved the Phase 1a report. All requested additional information was submitted to LPC on March 19, 2012. The requested modifications were implemented in this FGEIS. DEP will perform the Phase 1b for the requested parcels and will submit the necessary pre-investigation protocols and field testing results to LPC for review.*

**Comment 19:** These comments are those of the SHPO and related only to the Historic/Cultural resources. They do not include other environmental impacts to the New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8). Our architectural historian for Staten Island offers the following comments: She requests additional information [clear, original photographs] on Oakwood Heights Community Church at 345 Guyon Avenue and the frame house at 309 Guyon Avenue. She notes that the Cedar Grove Beach Club Historic District is eligible for listing on the National Register of Historic Places and is at the proposed Tysens Lane and Ebbitts Street outfalls. As such, please provide plans illustrating any impacts to this historic district. (2)

**Response:** *All requested additional information was submitted to SHPO on March 19, 2012. The DGEIS and this FGEIS disclosed that the proposed Cedar Grove Beach Club is within the Oakwood Beach watershed and the proposed outfall would not require any clearing of structures or contextual impacts to the proposed historic district (please see page 3.7-4).*

**NATURAL RESOURCES OF THE OAKWOOD BEACH DRAINAGE PLAN (CHAPTER 3.9)**

**Comment 20:** Page 3.9-14. The endangered species sightings referenced in the text has been compiled from known reference sources. Has NYCDEP attempted to confirm presence or absence of these species within the basin? This information is critical – how will it be incorporated into BMP design work? (5)

**Response:** *As stated in the DGEIS and this FGEIS, information on rare, threatened and endangered species is comprehensive and compiled from a combination of sources including a literature review, contact with other City and State agencies (including DPR and NYSDEC's Natural Heritage Program), other sources (e.g., local naturalists) and AKRF field observations. Chapter 8, "Mitigation," also includes the steps that would be implemented to avoid, minimize or mitigate (if necessary) impacts to rare, threatened and endangered species. DEP field investigations recorded any observations of these species, and field reconnaissance was performed to identify these species at suspected locations. All field information has been compiled and will help inform final BMP designs. Additional survey work, proposed in the Pre-Design Protocol for Mitigation Implementation, will also inform final BMP designs (see Chapter 8, "Mitigation"). The site locations for the listing of protected species and the source of the data are also provided in Appendix C.2, "Protected Plants and Wildlife and Species of Interest." All baseline data is listed in Appendix C: Natural Resources Data Inventory.*

**Comment 21:** Table 3.9-3. Slender blue iris is identified as being present in OB-1 and potentially in other BMPs. What measures will be undertaken to assure presence and future existence of this species? Will suitable habitat exist upon completion of the project? Turks-cap lily and cinnamon fern were observed in the OB-1 area. With the removal of the only existing wooded area in the basin, what will be done to preserve or protect this species? (5)

**Response:** *As stated in the DGEIS and this FGEIS, wooded areas, including the edges of BMP sites and hummocks (e.g., BMP OB-1), are outside of the denser phragmites stands and would be preserved. In fact, the proposed design for BMP OB-1 includes preserving the existing wooded hummock along Fox Lane. Figure 3.1-4 in the DGEIS and this FGEIS was modified to further illustrate these protected edges. As stated in Chapter 3.1, "Project Description of the Oakwood Beach Watershed," and in Chapter 8.1,"Mitigation," the proposed final design for this BMP would include a detailed survey that would allow for the protection of these species and wooded island habitats. Plant rescue would be employed if any stands of slender blue iris could not be avoided in the final design. As stated in the DGEIS and this FGEIS, plant rescue and salvage would be used at each BMP site, as appropriate, to relocate protected plants.*

**Comment 22:** Page 3.9-22. The DGEIS describes only wetland impacts as a result of installation of the BMPs. There is no discussion of secondary construction impacts associated with installing the BMPs. Issues such as

soil erosion, water diversions, etc. should be described for the reader. The installation of berms within the BMP needs to be described and evaluated as both a construction impact and permanent impact. Location of a berm may separate and effectively isolate a portion of the wetland. In addition, the berm location will convert a portion of wetland to upland. Area (size) should be provided for the reader's information. (5)

**Response:** *Standard construction practices and environmental controls would be implemented during all construction projects. These practices are delineated in Chapter 6, "Impacts During Construction." Permanent wetland impacts associated with berm construction are presented in the Natural Resources chapter for each watershed. Berm construction at proposed BMP sites would not result in isolation of wetlands because all areas bounded by berms would still remain connected to wetland areas within the BMP footprint. Berm locations for all BMPs, however, have been reconsidered in order to minimize isolation of adjacent wetlands. As such, berm locations for BMPs OB-3 and NC-8, -9, -10, and -17 have been adjusted. Please refer to comment 4 and related response for additional information on berm construction.*

*In addition, current conceptual designs present the worst case scenario for the proposed BMPs. Site-specific assessments conducted during the design phase would determine the location and sizes of proposed berms. As described in Chapter 1.1, "Project Description," a variety of techniques, including velocity attenuators, drain tiles and perforated pipes would be used to avoid negatively affecting existing drainage patterns for adjacent residents. The diversion would not flood existing private properties. Once final designs have been completed, a more detailed assessment of the impacts will be initiated. This assessment would be submitted to NYSDEC under the typical review process for wetland permitting.*

**Comment 23:** Table 3.9-7. The column identifiers are difficult to compare and assess (i.e., is "water area" comparable to "open water" or "permanent pool?"). The "Notes" in the table are poor descriptions. The column identified as wetland impacts cites only "habitat improvements" and mixes different agencies, NYSDEC and NWI, in the column. The "Notes" is confusing to the reader. How is the acreage number calculated? Is it just a size change or some other feature which is an improvement? (5)

**Response:** *The format of Tables 3.9-7, 4.9-11 and 5.9-8 have been revised to better demonstrate the habitat changes associated with the proposed BMPs. Table 3.9-7 contains notes and definitions that mirror the State's freshwater wetland definitions (Part 664.6) to the greatest extent possible. All BMPs would be constructed in existing wetlands. Habitat improvements are labeled as such when a proposed BMP would not*

*result in a change in wetland acreage after construction. These proposed BMPs would improve wetland conditions at these sites by increasing wetland diversity (i.e., expanded open water and greater plant diversity). The impact column includes both NYSDEC and NWI wetland acreages because the majority of the proposed BMP sites are mapped as both (see Figures 3.9-9 and 3.9-10). The acreages of impact were calculated based on the size of the proposed BMP, projected wetland elements and existing mapped wetlands at each site. Projected increases in wetland acreage are due to the removal of existing fill, or the expansion of wetlands. A table has been added to the FEIS which provides all the details about how the wetland impact numbers were calculated. These changes are described in the impact analyses for each BMP, where appropriate.*

**NATURAL RESOURCES OF THE NEW CREEK DRAINAGE PLAN (CHAPTER 4.9)**

**Comment 24:** Page 4.9-3. The groundwater discussion and monitoring wells raise concerns over whether detention capacity is feasible in portions of the watershed. The low lying nature of a significant portion of the watershed coupled with high groundwater table may hinder the retention function of the proposed BMPs. Continuous data collection should be implemented immediately. This should include soil conductivity and hydraulic gradients. This information should be utilized during future design work. (5)

**Response:** *The groundwater monitoring program will monitor the groundwater levels quarterly at the 11 existing wells for the foreseeable future, until, in consultation with NYSDEC, it is deemed that the groundwater monitoring program is not providing any new information. Additionally, BMP designs will be informed by further geotechnical information gathered during the pre-construction period, including soil borings in adjacent roadways and in the vicinity of any structures which will provide more information about soil characteristics. This data will supplement the one year of groundwater monitoring data collected in 2010, when the wettest March on record occurred. In addition to being the wettest March on record, data was collected when the groundwater table was unusually high and soil conditions were assumed to be highly permeable. All groundwater data and information will be used to set the low flow orifices, which will be adjustable in order to adapt to variations in groundwater inflows.*

*Specifically, DEP began year-long quarterly groundwater monitoring for the proposed extended detention BMP NC-7 beginning in spring 2012. Depth to groundwater would be recorded on a quarterly basis. A preliminary groundwater report at 90% design completion will be submitted to NYSDEC for review. Similarly, DEP will submit all year-*

*long monitoring data to NYSDEC as seasonal averages for spring, summer and fall periods. DEP will utilize this data to refine designs accordingly and will also implement any design revisions, per NYSDEC's review of the data.*

**Comment 25:** Page 4.9-10 Please provide a site specific mitigation plan for the removal of the mature woods in NC-6. (5)

**Response:** *As stated in this FGEIS, DEP will develop a site-specific mitigation plan for all potential tree clearing at BMP NC-6, based on pre-design tree survey data that would be completed. The BMP designs presented in the DGEIS are reasonable worst case scenarios and are conceptual. This FEIS presents a further developed preliminary site plan for this BMP based on a site-specific survey. This more fully developed plan was prepared with a tree survey of the site that allowed for design modifications to save particular trees or stands of trees especially around the perimeter. The next step in the proposed BMP design process is to refine the tree mitigation plan as part of the pre-design protocol, described in Chapter 8, "Mitigation." Once impact minimization has been optimized, DEP would develop a tree mitigation plan in coordination with DPR. Please refer to Chapter 8 for additional information. Please also refer to "Appendix Table F-2: New Creek Monitoring Program for Protected Species, Fisheries and Key Habitats to be Used in Final Design" for details on the monitoring and sampling program that would be implemented for New Creek BMPs, including NC-6.*

**Comment 26:** Page 4.9-11 [BMPs NC-7, -8, -9, -10]. DGEIS refers to non-functional streams. How large an area of mapped wetlands will no longer be functional? Please provide a table which lists each segment of wetland area and size that will not be functional upon completion of the BMPs. (5)

**Response:** *As stated in the DGEIS and in this FGEIS on page 4.9-1, existing streams in this reach of the West Branch are in poor condition and have constricted channels and sediment deposits. Stream function is currently limited due to these sediment deposits which have accumulated over time and are associated with many decades of development in the New Creek watershed. The design and function of the proposed BMPs would improve existing wetlands by restoring the natural flow patterns of the streams and increasing vegetative diversity. Therefore, the functionality of these streams and the quality of the wetland habitats would be improved under the proposed project (see also Tables 4.9-11a and 4.9-11b on pages 4.9-30 through 4.9-34).*

**Comment 27:** Page 4.9-12. Mature trees associated with diverse wetland plant assemblages are unique in this watershed; their preservation should be a priority. BMP NC-11 should be substantially reduced or eliminated. (5)

**Response:** *The minimum extended detention volume required for BMP NC-11: Last Chance Pond in order to minimize downstream flooding is 11.7 acre-feet, as indicated in the Draft GEIS and the Hydraulic and Hydrologic Report, submitted to NYSDEC for review in April 2012. With two feet of storage, between the permanent pool at elevation -3.0 and the top of weir at elevation -1.0, this translates to an 8.8 acre BMP footprint, plus extra buffer area that would be disturbed due to the grading activities associated with the BMP construction. This would be kept to a minimum but is expected to generate a footprint of approximately 10 acres.*

*DEP has changed the proposed extended detention area. The areas of fill along Stobe Avenue have been included in the part of the site that would be excavated to create the extended detention basin. To accomplish this, the wooded buffer along Stobe has been narrowed. The proposed area of excavation adjacent to Vera Street has also been expanded. Finally, the extended detention pond has been increased in size at the Naughton Avenue/Zoe Street corner, which currently contains fill and is vegetated with Japanese knotweed.*

*DEP has expanded the extended detention basin at several locations, which provides opportunities for limiting the extent of excavation at portions of the site with high natural resource values. For example, the area of preservation for the existing silver maple swamp along Husson Street has been expanded towards Zoe Street along a line parallel to Husson Street. At the Naughton Avenue/Husson Street corner where a number of large trees came down during Hurricane Sandy, one low quality, small and isolated sliver of silver maple swamp would be included in the constructed wetland zone. This would allow for fill removal at the Naughton/Husson corner where Japanese knotweed is the only understory. In addition, this area would be vegetated to restore the silver maple swamp, thus expanding the total silver maple swamp acreage on the property. A strip of red maple cover type along Zoe Street close to the Zoe/Naughton corner would be included in the area of excavation in order to allow for the expansion of the silver maple swamp preservation zone. In addition, the graded area above the proposed extended detention zone would be restored to a red maple swamp habitat. Because the detention pond is expanding at other locations, additional high quality red maple cover type at the corner of Zoe Street and Stobe Avenue would also be preserved. In addition to mature trees, the woodland that would be preserved also has good vertical structure, with skunk cabbages and spice bush as understory.*

*Please also refer to comment 12 and related response for additional information.*

**Comment 28:** Page 4-9-18. Endangered and threatened species are protected under state law. Please describe the 2009 and 2010 reconnaissance in greater detail so the reader can assess the usefulness of the data. The DGEIS identifies five species that were present within the project area. How will the project activities impact the identified species? Describe measures to reduce or eliminate negative impacts. (5)

**Response:** *Regarding the baseline assessment for all target species, information on rare, threatened and endangered species is based on field surveys, literature sources and agency records, including NYSDEC data (Natural Heritage Program) and United States Fish and Wildlife Service (USFWS) records. For the New Creek Watershed, rare, threatened and endangered species are listed on Table 4.9-6 (page 4.9-19). This list includes 2 wildlife species, shortnose sturgeon and peregrine falcon (both endangered), and 6 plant species, including green milkweed (threatened), Jacob's ladder (endangered), lowland fragile fern (endangered), cinnamon fern (exploitably vulnerable), royal fern (exploitably vulnerable), and spinulose fern (exploitably vulnerable). The protection status for each species is provided in Table 4.9-6 and the methodology for the field investigations is provided in Chapter 2, "Methodology." Appendix C also provides additional data on the lifecycle and habitats of all protected species that were identified as potentially occurring in each of the watersheds.*

*The DGEIS and this FEIS disclose the potential for impacts on these species (page 4.9-55 for the New Creek watershed). Chapter 8.1, "Mitigation," presents the measures that DEP would take during project design to avoid, minimize, or mitigate (if necessary) impacts to rare, threatened and endangered plant and animal species. Regarding a schedule for verifying baseline conditions over the 30 or more years of project build out, DEP has committed to revisiting the baseline data in Appendix C every five years and updating the baseline data, as necessary. In addition, as individual capital projects are selected to move forward and into final design, supplemental site-specific natural resources data collection would be performed. For example, as one or more BMPs are selected to be funded in a particular fiscal year (e.g., 2018) a site specific natural resources data collection program would commence. As described in Chapter 8.1,"Mitigation,"the supplemental natural resources data collection would include 1-3 years of data collection. This survey work would then be used, as necessary, to develop the final BMP designs which could then avoid impacts either through design approaches or construction protections. Additional*

*details on the supplemental survey program are provided for each BMP in Appendix F: Multi-Year Pre- Final Design Natural Resources Investigations for Protected Species in the Three Mid-Island Watersheds. For avian and other wildlife species, for example, survey work would be used to determine if a species is nesting or foraging at a proposed BMP site and would need to be avoided. Similarly, for plants, additional survey work would be performed in the appropriate season to determine if a rare, threatened, or endangered species is present and, if so, how to avoid that species through design modifications and other measures. The Pre-Design Protocol for Mitigation Implementation on page 8.1-5 in Chapter 8.1,"Mitigation" describes specific mitigation protocols that DEP would perform before and during the design phases, prior to construction.*

*Regarding a pre-final design effort for select species one year prior to construction, DEP has included in this FGEIS "Appendix E: Pre-Final Design Natural Resources Investigations for First New Creek Capital Project." Appendix E represents the pre-design survey work completed for the proposed fist capital project. This is provided as an example of pre-final design surveys that would be performed for all future capital projects. This FEGIS includes a diagram and description of the first capital project in the west branch of the New Creek Bluebelt.*

**Comment 29:** Page 4.9-23. Describe, in greater detail, the nature of berm construction, location and the impact on wetland area. An estimate of wetland loss should be calculated for each berm location. (5)

**Response:** *Permanent wetland impacts associated with berm construction are provided in the DGEIS and this FGEIS in Tables 3.9-7, 4.9-11 and 5.9-8. These impacts represent a conservative, reasonable worst case scenario and are based on conceptual BMP designs described in the DGEIS and this FGEIS. DEP will provide DEC with detailed site-specific assessments during the design and permitting phases and will present the location and sizes of proposed berms in greater detail. This assessment would be submitted to NYSDEC under the typical review process under the New Creek watershed-level permit process and would be compared with the data presented in the FGEIS to determine if the impacts are within the disclosed acceptable range. Please also refer to comment 4 and related response for additional information on berm construction.*

**Comment 30:** Page 4.9-27. The DGEIS fails to include stream abandonment, berm construction and other features that will reduce wetland acreage in the discussion of wetland impacts. The document needs to be revised to assess these project impacts. (5)

**Response:** *The DGEIS and this FGEIS include these data in Tables 3.9-7, 4.9-11, and 5.9-8. This FGEIS includes a table that details all the calculations that went into the wetland acreage impact analysis. Berm and stream designs have also been modified to minimize wetland impacts, and these modifications are included in the DGEIS and this FGEIS. For example, BMP NC-17 was modified to preserve wetland hydrology and expand extended detention wetlands. Please refer to comment 4 and related response for additional information on berm construction.*

**Comment 31:** Page 4.9-24. Depth to groundwater and potential impact to BMP function needs additional data collection and analysis. Continuous data collection should be implemented immediately. This should include soil conductivity and hydraulic gradients. This information should be utilized during future design work. (5)

**Response:** *Information on additional groundwater data collection is presented in Chapter 8.1, "Mitigation." Please refer to comments 2 and 24 and related responses for information on DEP's groundwater monitoring efforts.*

**Comment 32:** Page 4.9-27. The DGEIS proposes the loss of 9 acres of wet woods in a section of the watershed that is dominated by emergent marsh. This impact is not offset by referencing wooded areas in the upper section of the watershed. An appropriate mitigation plan should be developed for this significant impact. In addition, the DGEIS must demonstrate that the impact is not avoidable. (5)

**Response:** *BMP designs presented in the DGEIS and this FGEIS represent the worst case scenario. Therefore, the proposed loss of nine acres may be less when final BMP designs are completed. Woodland and tree clearing impacts and related mitigation strategies have been disclosed in the DGEIS and this FGEIS. Mitigation strategies include minimizing tree impacts through design refinement and developing a tree mitigation plan during future design phases. Please refer to the Pre-Design Protocol for Mitigation Implementation on page 8.1-6 for additional information on measures DEP will implement to avoid impacts to wet woods and other natural resources. As stated in the DGEIS and this FGEIS, impacts to some woodlands in the watershed cannot be avoided in order to achieve the project objectives of improved stormwater management and reduced flooding. Chapter 7.1, "Alternatives," in the DGEIS and this FGEIS includes a "No Action" alternative that evaluates and compares the environmental impacts under both the proposed project and the No Action alternative.*

**Comment 33:** Pages 4.9-35 and 4.9-50 [BMP NC-6]. The BMP NC-6 footprint represents a significant impact on the existing natural resources. Negative impacts will occur for birds, amphibians and mammals. References to change in covertypes and plant assemblages is not sufficient replacement for the identified negative impacts. Additional actions should be proposed to attract avian use\presence at the BMP. (5)

**Response:** *Chapter 8.1, "Mitigation," including the Pre-Design Protocol for Mitigation Implementation, presents mitigation measures for key habitats at proposed BMP sites including BMPs NC-6 and NC-11. As stated in the DGEIS and this FGEIS, additional survey data would be collected given the long-term schedule for building out the proposed project and used to further minimize impacts and to incorporate features that would support expanded use of the site by wildlife.*

**Comment 34:** Page 4.9-49. Endangered and threatened species are protected under state law. Please describe the 2009 and 2010 reconnaissance in greater detail so that the reader can assess the usefulness of the data. The DGEIS identifies several plant species that were present or suspected within the project area. Additional survey work is required now, prior to the design phase. This will provide the maximum opportunity to avoid impacts to the species. Waiting to the final design phase is not acceptable. (5)

**Response:** *Design would occur in stages and survey work would be completed prior to the design phase. Please refer to comment 28 and related response for details on DEP's efforts to reduce and mitigate impacts to endangered, threatened and special concern species. Chapter 8.1, "Mitigation," also includes the Pre-Design Protocol for Mitigation Implementation, which presents mitigation measures that DEP would implement, prior to the proposed BMP design process.*

**Comment 35:** Page 4.9-51. The DGEIS refers to sedimentation of the main channel. This channel was dredged by NYCDEP during the 1990's. A comparison of current conditions and the past dredging should be provided for the reader's information. Rate of sedimentation in this basin would be useful for the reader. (5)

**Response:** *The main channel was dredged, but was subsequently impacted by sediment from runoff, which underscores the need for a comprehensive stormwater management plan for the New Creek watershed. The proposed amended drainage plans would result in less sediment conveyed to the main channel, compared to existing conditions. Velocity attenuators are proposed at each affected stream to decrease storm flow velocities and surges, as well as capture and retain sediments that contain nutrients and organics. Settling would also be facilitated by*

*non-turbulent flow and is enhanced by the quiescence provided within a BMP. Forebays, stilling basins, and extended detention wetlands encourage settling of pollutants and would therefore control sediment that enters BMPs.*

*Additionally, all construction activities would be performed in accordance with NYSDEC technical standards for erosion and sediment control (e.g., use of silt fences, hay bales and containment booms) and would be implemented in accordance with an approved Stormwater Pollution Prevention Plan (SWPPP). As part of each capital project's final design documents, DEP would identify additional locations, as appropriate, for the installation of sediment basins outside the proposed BMP locations. In each case, the use of sediment traps, basins, and/or filters would remain installed until construction activity is complete and ground surface is stabilized. Please refer to Chapter 6.1, "Construction Impacts," for additional information on sedimentation controls that would be implemented during construction.*

**NATURAL RESOURCES OF THE SOUTH BEACH DRAINAGE PLAN (CHAPTER 5.9)**

**Comment 36:** Page 5.9-1. Data on the bathymetry of Brady's Pond should be discussed in the text. Locations of the measurements for Cameron's Lake should be provided for the readers use. (5)

**Response:** *Six bathymetry readings were taken of Cameron's Lake by DEP. The deepest reading was 4.5 feet in the middle of the lake and the remaining readings indicate a depth of 4 feet at various locations. This data is provided in the DGEIS and this FGEIS on page 5.9-2. Brady's Pond is a privately-owned waterbody and therefore, DEP has not collected any bathymetry data of Brady's Pond.*

**Comment 37:** Page 5.9-2. Groundwater data is based upon a single year of sampling. Are there other data sources that could validate the 2010 observations? Depth to groundwater and potential impact to BMP function needs additional data collection and analysis. Continuous data collection should be implemented immediately. This should include soil conductivity and hydraulic gradients. This information should be utilized during future design work. Identify what actions, such as long-term groundwater monitoring, should be implemented now rather than waiting for a future capital project. (5)

**Response:** *Groundwater monitoring data gathered during DGEIS preparation indicate that the local groundwater table is shallow, which would allow the proposed permanent pool and deep pools to be established. The groundwater discharge would also support the hydrologic regime of the proposed created wetlands. As discussed in the groundwater*

*methodology sections (pages 2.1-12 and 2.1-13), monitoring to date was performed during one of the wettest springs on record in New York City. Therefore, a relatively high groundwater table has been accounted for in the conceptual designs presented in the DGEIS and this FGEIS. Please refer to comments 2 and 24 for additional information, including additional groundwater monitoring commitments.*

*The proposed BMPs will function as proposed, given the shallow groundwater table of the area. However, test pits, soil borings and topographic surveys would be performed to provide greater detail on soil characteristics and properties. BMP designs would be adjusted to reflect this data and to ensure that adequate retention capacity is achieved. For example, if future field data indicate higher rates of groundwater inflow, hydraulic structures would be upsized and the adjustable low-flow orifices enlarged to accommodate both groundwater baseflow and BMP storage of flood waters. Therefore, DEP believes soil conductivity and hydraulic gradient data is not necessary because the outlet structures would be flexible and the orifices would be adjustable to account for variances in groundwater flow. As a model for how future groundwater monitoring will be performed for future capital projects, DEP is proposing pre-design groundwater monitoring and data collection for the first capital project.*

**Comment 38:** Page 5.9-6. Peregrine falcons have consistently nested on the Verrazano Bridge. Foraging behavior has been observed within the South Beach Watershed. Will this species be impacted by the proposed project? (5)

**Response:** *As stated on page 5.9-29 in the DGEIS and this FGEIS, the proposed project would not impact peregrine falcon breeding or foraging habitats. The project area does not provide nesting habitat for peregrine falcons. With respect to foraging or flyover, peregrine falcons are primarily aerial foragers and it is expected that the proposed BMPs would enhance foraging opportunities for peregrine falcons. Peregrine falcons were not identified in the NYSDEC NYNHP database for the Mid-Island study area. However, based on prior comments received by NYSDEC (July 1, 2011), peregrine falcons were included in the DGEIS and this FGEIS. Therefore, as stated in the DGEIS and this FGEIS, a pre-construction survey would be performed, but it is not expected that the proposed project would impact peregrine falcons.*

**Comment 39:** Page 5.9-7. The hydrologic conditions of the ponds in the vicinity of Sand Lane and Oceanside Avenue should be compared and discussed in greater detail. The pond at the dead-end of Crestwater Court was constructed as mitigation for the residential development. The pond has consistently held water during dry periods. The large pond at the dead-

end of Quincy Avenue is very shallow and has been observed without standing water during the late summer months. (5)

**Response:** *Field observations performed in preparation of the DGEIS and this FGEIS are in agreement with the above observations and are presented in the DGEIS and this FGEIS on page 5.9-24 and in Figure 5.1-3. Currently, this site is dominated by a common reed, or phragmites, monoculture. This site also contains fill material and has little topographic variation. The proposed project would improve natural resource values by removing fill, reducing the dominance of common reed, introducing new plant communities and variations in topography. These improvements would create open water areas and ecological niches for a range of wetland planting types, thereby providing greater habitat complexity. As stated in the DGEIS and this FGEIS [page], the ponds at the ends of Quincy Avenue and Crestwater Court would be expanded with the proposed BMP SBE-1B: Sand Lane with a new permanent pool that would connect this system to the pond at the dead-end of Crestwater Court. Stormwater from the inlets of Andrews Street, Wentworth Avenue, Orlando Street, Quincy Avenue and Oceanside Avenue would flow into a proposed low-flow channel (please see Figure 5.1-3), thus improving hydrologic inputs in this area.*

**Comment 40:** Page 5.9-7. Can you more clearly locate the native transitional area adjacent to SBE1-A and Vulcan so that the reader understands whether this area will be removed by the BMP construction? (5)

**Response:** *The requested information was added to Figure 5.1-3 in this FGEIS.*

**Comment 41:** Page 5.9-7. Ocean Breeze Park appears to have been omitted from inclusion in the watershed. Please provide a rationale. (5)

**Response:** *Ocean Breeze Park is within the South Beach watershed, as shown in Figure 5.1-1. Storm flows from the park area are included in calculations performed to create the drainage plan. However, a drainage network for the park is not proposed in the drainage plan because drainage within a city-owned park is not under the jurisdiction of DEP.*

**Comment 42:** Page 5.9-11. The document lists endangered\threatened species as being within the watershed. The DGEIS identifies several plant species that were present or suspected within the project area. This will provide the maximum opportunity to avoid impacts to the species. For each endangered\threatened species identified within the watershed the DGEIS must describe key life stages and relate them to the watershed project. Does the bird species nest in the watershed? Will the BMP activities remove nesting sites? Reduce or increase forage species?

Additional survey work is required prior to the design phase. This will provide the maximum opportunity to avoid impacts to the species. Waiting to the final design phase is not acceptable. (5)

**Response:** *The DGEIS and this FGEIS includes discussions on the protection status of each species and the source of all observations (Table 5.9-3 on page 5.9-12 for the South Beach Watershed). Chapter 8.1, "Mitigation," also includes the Pre-Design Protocol for Mitigation Implementation, which presents mitigation measures that DEP would implement, prior to the proposed BMP design process due to the long term build out and schedule for the proposed project. Providing all data now would not be useful because conditions will change over the 30 year build-out period. This FGEIS provides the framework for collecting data, refining designs and minimizing impacts over time, all under the oversight of NYSDEC.*

**Comment 43:** Page 5.9-14. Diversion of storm water away from Brady's Pond would have a significant impact on the natural resources within the pond. The document estimates a diversion of a six acre drainage basin flow to the pond will not impact the existing water level and quality. Data needs to be produced to support this conclusion. Currently, water quality within the pond benefits from the seasonal input. Reduction in flow will severely impact the function of the pond. The DGEIS locates the stormwater control facilities within the lower portion of the watershed. Would retention within Brady's Pond reduce the need for larger BMPs downstream? (5)

**Response:** *The diversion of urban stormwater away from Brady's Pond is not expected to adversely affect water quality in the pond. For the few streets where the topography makes it infeasible to route the storm sewers away from the pond (e.g. Manorville Court, Overlook Terrace and Hillcrest Court and Terrace), and which currently contribute overland flow from local roads to the pond, outlet stilling basins or infiltration basins are proposed. These proposed stabilized outlets would provide pollutant removal for runoff from streets where currently no such removal is provided. As a result, water quality in the pond would not be adversely impacted from these stormwater systems, but would benefit from the proposed pollutant removal of the new outlets that would allow pollutants to settle out in a stilling basin or be removed through an infiltration basin before the collected stormwater reaches the pond either through surface or groundwater discharges, respectively. Any proposal to remove the existing outfall to the pond would not occur without first undertaking a thorough analysis of the potential impacts to the pond and providing a mechanism to maintain*

*the necessary stormwater flows to maintain water quality and quantity in the pond.*

**Comment 44:** Page 5.9-14. Diversion of stormwater away from Cameron's Lake would have a significant impact on the natural resources within the lake. Reduction of the inflow by 30% coupled with changes in flow patterns within the lake need to be examined in greater detail. The lake is very shallow. The document should identify bottom elevations and any changes that will be required to install the BMP at Normalee Road. Windermere Road adjacent to the lake is substandard and situated on an elevated embankment. What will be required to install the storm sewer and BMP in this location? (5)

**Response:** *For Cameron's Lake, the weir height in the proposed outlet structure would be set at the lake's current level; therefore, the water surface elevation is not anticipated to vary from existing conditions. As a result, aquatic conditions in the lake, such as temperature, are not anticipated to change significantly as a result of the proposed project. This is important since Cameron's Lake has an existing fish population and supports other aquatic wildlife. With the addition of outlet stilling basins at discharge points for storm sewers into the Lake, the proposed project would have a positive impact on lake water quality, because sediment and concomitant contaminants would be intercepted there with the potential to improve conditions for fish populations living within the lake. In addition, the proposed BMP and riser box outlet sited at the south end of the lake should improve flow through and flushing in the lake, which would benefit water quality.*

*As stated in the DGEIS and this FGEIS on page 5.9-14, a potential reduction of flow to Cameron's Lake is associated with the construction of storm sewers in the drainage area, which would divert overland flow into the new sewer system. Proposed BMPs SBE-2A, -2B, and 2C are limited to the construction of storm sewer inlets and outlets and their associated forebay and micropools. The existing water surface elevation of the lake would be maintained, and excavation would be limited to provide for areas of sediment accumulation rather than extended detention. Proposed elevations would be provided to NYSDEC during the design phase, based on topographic surveys of the site. The DGEIS and this FGEIS identifies the bottom elevations in Cameron's Lake on page 5.9-2. Any changes in the lake itself would be limited to the installation of the proposed structure off of Normalee Road. The installation of the sewer in Windemere Road and the adjacent BMP in the lake would be constructed with appropriate erosion controls to protect the lake from undue sedimentation.*

**Comment 45:** Page 5.9-17. The installation of berms at McLaughlin Street needs to be described and evaluated as both a construction impact and permanent impact. Location of a berm may isolate and effectively convert a portion of the wetland area into upland. In addition, the berm location itself will convert a portion of wetland to upland. Area (size) should be provided for the reader's information. Please provide a table which lists each segment of wetland area and size that will not be functional upon completion of the BMPs. (5)

**Response:** *The permanent and construction period impacts of installing berms at McLaughlin Street are disclosed in the DGEIS and this FGEIS. Table 5.9-8 lists permanent impacts. Construction period impacts are provided in Chapter 6.1, "Construction." The berms proposed at SBE-1A, -1B, and 1C are necessary in order to protect residential properties on McLaughlin Street, which are located at significantly lower grades relative to the adjacent area, from flooding. Thus, this topography requires the construction of a protective berm. Please refer to comment 4 and related response for additional information on berm creation.*

**Comment 46:** Page 5.9-17. The DGEIS proposes future substantial revisions to the BMPs if groundwater fluctuations are identified. Depth to groundwater and potential impact to BMP function needs additional data collection and analysis. Continuous data collection should be implemented immediately. This should include soil conductivity and hydraulic gradients. This information should be utilized during future design work. (5)

**Response:** *Information on additional groundwater data collection is presented in the Pre-Design Protocol for Mitigation Implementation on page 8.1-6 in Chapter 8.1, "Mitigation." Please refer to comments 2 and 24 for additional information, including additional groundwater monitoring commitments.*

**Comment 47:** Page 5.9-20. DGEIS states that 7.67 acres of wetland will be created. Clarify how the 7.67 acres number was obtained. Where are the violation fill areas? Please identify for the reader. Table 5.9-8 identifiers are difficult to compare and assess (i.e., is "water area" comparable to "open water" or "permanent pool?"). The "Notes" in the table are poor descriptions. The column identified as wetland impacts describes only "habitat improvements." (5)

**Response:** *The format of Table 5.9-8 has been revised to better demonstrate the habitat changes associated with the proposed BMPs. In addition, the table on the following page illustrates the additional wetland created by fill removal in both the New Creek and South Beach watersheds. A new table has been added to this FGEIS to document the calculations used*

*for the wetlands impacts analysis (see also Tables 5.9-8a and 5.9-8b on pages 5.9-23 and 5.9-24).*

*Table 5.9-8 contains notes and definitions that mirror the State's freshwater wetland definitions (Part 664.6) to the greatest extent possible. All BMPs would be constructed in existing wetlands. Habitat improvements are labeled as such when a proposed BMP would not result in a change in wetland acreage after construction. These proposed BMPs would improve wetland conditions at these sites by increasing wetland diversity (i.e., expanded open water and greater plant diversity). The impact column includes both NYSDEC and NWI wetland acreages because the majority of the proposed BMP sites are mapped as both (see Figures 5.9-8 and 5.9-9). The acreages of impact were calculated based on the size of the proposed BMP, projected wetland elements and existing mapped wetlands at each site. Projected increases in wetland acreage are due to the removal of existing fill, or the expansion of wetlands. These changes are described in the impact analyses for each BMP, where appropriate.*

**Comment 48:** Page 5.9-20. Project phasing needs to be described for the reader. Can a generic timeline be presented in the DGEIS? How many capital projects would be required for this watershed? How large an area will be disturbed during one capital project? What would be the time sequence of each potential project? Since capital projects extend over several years, is there a possibility of overlap between projects? (5)

**Response:** *In general, one capital project is completed in one area, before a second capital project begins. Construction of one capital project typically lasts about two years. Construction crews are never on one street block for more than one to two weeks. Watermain work is typically done first, followed by sanitary sewer work, the laying of temporary pavement over sanitary sewers, storm sewer construction, catch basin construction and finally, connections to the sewer system. This sequencing is typical because outlet work must be completed first.*

*It is not feasible to identify how many capital projects would be required for each amended drainage plan because capital projects are subject to available funding with each year's capital budget. As stated in the DGEIS and this FGEIS, it is expected that implementation of the proposed amended drainage plans would require multiple capital projects over at least three decades. Details about the first capital project, the restoration of the West Branch of New Creek, and are shown on Figure 4.1-19 and described on page 4.1-21. Construction of the first capital project is anticipated to begin in December 2013.*

**Comment 49:** Page 5.9-21. Are wooded islands feasible within the BMP? (5)

**Response:** *DEP and its design team believe wooded islands can successfully be incorporated into BMP designs. The presence of existing wooded hummocks provides guidance for the proposed wooded islands. Under the proposed amended drainage plans, the wooded island would be constructed with the use of on-site fill generated during excavation of the extended detention zones and permanent pool of the proposed BMP. The proposed island would be at a higher grade than the BMP and would be landscaped as forested habitat with diverse vertical structure. Prior to design, the location of the island would be finalized according to more detailed analysis of site conditions. Groundwater would also be monitored prior to design and data would be used to inform design of the wooded islands.*

**Comment 50:** Page 5.9-21. How will the BMP excavation and high groundwater table allow the establishment of the desired habitat components such as open pools, extended detention areas and diverse planting palette? (5)

**Response:** *Information on additional groundwater data collection is presented in the Pre-Design Protocol for Mitigation Implementation on page 8.1-6 in Chapter 8.1, "Mitigation." Please refer to comments 2 and 24 for additional information, including additional groundwater monitoring commitments.*

**Comment 51:** Page 5.9-26 Can Whitney Woods receive additional activities that would be beneficial for stormwater control? wetland creation? (5)

**Response:** *Proposed BMP NC-3: Whitney Woods is a small BMP that would be located at the headwaters of the South Beach watershed. The design objective for this BMP is to manage locally generated stormwater. BMP NC-3 would handle a small drainage area (approximately 11 acres) and it would not be feasible to increase stormwater control beyond what is proposed. In addition, Whitney Woods is significantly wooded and DEP has minimized use of this site in the proposed amended drainage plans to reduce tree removal.*

**IMPACTS DURING CONSTRUCTION (CHAPTER 6.1)**

*METHODOLOGY*

**Comment 52:** Construction impacts listed in Chapter 2.1, "Methodology for All Drainage Plan EIS Analyses," are not adequately addressed in the subsequent discussion of each watershed. The reader requires a clear identification of project impacts such as construction impacts, permanent impacts, etc. (5)

**Response:** *The design and construction program for the proposed sewers and BMPs identified in the three Mid-Island amended drainage plans are*

*similar in all three watersheds. Therefore, a generic construction chapter was provided in the DGEIS and this FGEIS, rather than individual construction impact analyses for each watershed. As a result, permanent (i.e., long-term) impacts of the proposed project are identified in each individual watershed chapter, while Chapter 6.1, "Impacts During Construction," identifies the temporary (i.e., short in duration) construction impacts for each watershed. Please refer to Chapter 6.1 for construction phasing and impacts for all three watersheds, and to comment 48 and related response for additional information.*

*CONSTRUCTION PHASING*

**Comment 53:** Construction phasing should be expanded to explore issues such as size of work area, construction impacts on a scale relative to work area, potential mitigation activities that will be implemented, etc. (5)

**Response:** *Construction phasing is based on the recording of an amended drainage plan, availability of capital funds (e.g., a typical capital project is between $15 and $20 million), sequence and size of individual projects and coordination with the New York City Department of Transportation (DOT) regarding street reconstruction closures and other transportation-related issues. Because the proposed project is currently in the planning phase and the subject of a generic environmental review, current conceptual designs present the worst case scenario for the proposed BMPs and specific construction phasing details are unknown. Please refer to Chapter 6.1, "Impacts During Construction," for additional information on general construction phasing, construction phasing for each watershed, typical construction activities (e.g., typical outfall and BMP construction) and probable impacts during construction.*

*STREET RECONSTRUCTION AND STREET GRADES*

**Comment 54:** The DGEIS states that all sewer installation would involve street reconstruction once sewers are installed. The DGEIS also states that certain streets would need to be elevated to ensure positive drainage flow toward the best management practices (BMPs) and provide adequate cover over storm sewer in accordance with City street design standards. Detailed street surveys would be completed as part of each capital project and necessary street elevations would be identified. Please indicate which agency will be responsible for the costs associated with street reconstruction, as well as if funding has been secured. Please indicate which agency will be responsible for any future environmental review and ULURP applications resulting from each capital project's design, such as the modification of legal grades. Please provide a list of

the streets requiring reconstruction and their limits, anticipated start data and duration of reconstruction. Once this information is provided we may have additional comments. Please see attached for maps showing all of NYCDOT's current projects on Staten Island. Please provide us with a list of those streets requiring reconstruction as part of DEP's project that overlaps with NYCDOT's projects. NYCDOT's Land Use Review will provide comments on the proposed action once the mapping proposal is received as part of the ULURP application. (3)

**Response:** *DEP would be responsible for the costs associated with street reconstruction and funding for street reconstruction would be secured as part of individual capital projects. All costs associated with street work that is related to installation of sewers is the responsibility of DEP. NYCDOT would be responsible for work involving widening or other improvements related to traffic flow. DEP would be responsible for any future environmental review and ULURP applications resulting from the drainage aspects of each capital project design, such as the modification of legal grades. As requested, DEP will provide NYCDOT with a listing of the streets requiring reconstruction and their limits, anticipated start data and duration of reconstruction, as information becomes available for each capital project. Also, as requested, DEP will provide NYCDOT with a listing of those streets requiring reconstruction that overlaps with NYCDOT's projects, as information becomes available for each capital project. In general, the determination of whether the raising of street grades is required is made during the design process, after street surveys are completed.*

*NATURAL RESOURCES*

**Comment 55:** Page 6.1-16. Wildlife-General discussion of wildlife impacts provides little information for the reader. Text does not identify animal groups (i.e. birds, mammals, and amphibian) which each may react differently to the proposed construction activity. Fish and Other aquatic – Discussion provides little information for the reader. Text assumes, incorrectly, that all construction impacts are small in scope and area and thus concludes incorrectly that impacts will be minor. Text does not discuss endangered or rare species that might be present during construction activities. (5)

**Response:** *The proposed amended drainage plans would expand wetlands, diversify wetland habitats, expand water area and improve the watershed habitats for fish and other aquatic resources. The DGEIS and this FGEIS disclose that temporary disturbance to existing wetland habitats would occur during construction. However, these impacts would be short-term and temporary in duration (e.g., six months to one year for the larger BMPs) and the associated construction of BMPs*

*would provide greater ecological benefits than under existing conditions. The proposed project would include several protection measures to avoid impacts on natural resources and wildlife during construction. These measures include erosion and sediment control protections (page 6.1-7), protection of wetlands (page 6.1-8), vegetation and trees (page 6.1-16) and fish and aquatic resources (page 6.1-17). For permanent impacts, Chapter 8.1, "Mitigation," including the Pre-Design Protocol for Mitigation Implementation, presents mitigation techniques to avoid impacts on rare, threatened and endangered wildlife and plant species, in addition to measures to avoid impacts to fish and aquatic resources. As stated in the DGEIS and this FGEIS, additional protection measures are likely to evolve over the several decades of implementing capital projects. In addition, DEP would implement the additional measures required by NYSDEC and USACE that will likely be required during the permitting processes.*

**ALTERNATIVES (CHAPTER 7.1)**

**Comment 56:** Page 7.1-1. An additional alternative should be analyzed which places a BMP structure in the upper watershed rather than the lower portion of each watershed. Retention in the upper reaches of the watershed would be more cost effective than the proposed action. Several facilities, adjacent to the existing watercourses, could be used to a greater extent to serve the need of this community. (5)

**Response:** *Please refer to comment 12 and related response. As stated in the DGEIS and this FGEIS, stormwater retention in the headwaters of the watershed would not eliminate or reduce the sizes of the lower watershed BMPs. This is because the lower watersheds in each drainage plan generate the majority of the runoff and the lower watershed BMPs are proposed to relieve street and property flooding when the tide gates are closed. DEP performed reconnaissance and analysis and is not aware of any undeveloped properties in the upper watershed that are properly sized, could provide the necessary stormwater detention, and would reduce environmental impacts. Therefore, this is not a viable alternative for analysis.*

*The upper portion of the New Creek watershed is more heavily wooded with mature trees than the lower portion of the watershed. Thus, potential impacts to the upper watershed are limited in the proposed amended drainage plan and BMP designs. BMPs such as NC-6, therefore, play an important role in stormwater control and flood management for the lower watershed. The DGEIS presents a current conceptual design plan for BMP NC-6, which was modified during the DGEIS preparation process. This preliminary design minimizes vegetation impacts and preserves quality habitats, including woodlands*

*along Midland Avenue and the southwest portion of the site (see Figure 4.1-8). Further, as stated in this FGEIS, DEP will continue to coordinate with DPR and NYSDEC to develop a tree mitigation plan that addresses the loss of mature trees at the site. The perched pool in the proposed BMP does not affect the area that would be cleared, and would not prevent the preservation of additional trees along Midland Avenue.*

*The lower portions of each watershed generate the majority of the runoff and the lower BMPs are also proposed to relieve street flooding in the lower watershed when the tide gates are closed. Therefore, additional stormwater retention at the headwaters of the watershed would not eliminate or reduce the sizes of the lower watershed BMPs. In addition, DEP is not aware of any undeveloped properties in the upper watershed that are properly sized, could provide the necessary stormwater detention and would reduce environmental impacts. One of the two recreational facilities, adjacent to the existing watercourses, is a ball field complex north of Hylan Boulevard between Joyce and Vera Streets off of Sever Avenue which is privately owned. The other ball field is at Mason Avenue between Bedford and Midland Avenues. Both of these facilities cannot be relocated because there are no vacant parcels large enough that are not mapped wetlands.*

**MITIGATION (CHAPTER 8.1)**

**Comment 57:** The DGEIS needs to substantially expand and explore all mitigation opportunities. The DGEIS proposes a radical change in the watersheds and there are obvious opportunities to mitigate impacts associated with project implementation. (5)

**Response:** *The DGEIS and this FGEIS provides appropriate mitigation for all significant impacts identified during the environmental review process, including potential impacts to vegetation and trees, protected plant and animal species and tidal wetlands. Chapter 8.1, "Mitigation," including the Pre-Design Protocol for Mitigation Implementation, presents mitigation techniques to avoid impacts on rare, threatened and endangered wildlife and plant species, in addition to measures to avoid impacts to fish and aquatic resources. As stated in the DGEIS and this FGEIS, additional protection measures are likely to evolve over the several decades of implementing capital projects. In addition, DEP would implement the additional measures required by NYSDEC and USACE that will likely be required during the permitting processes. Future examination of impacts, including Minor Modifications to the FGEIS, would be used as necessary to document potential site-specific impacts of BMPs that may differ from conclusions and mitigation strategies presented in the FGEIS.*

**Comment 58:** Page 8.1-1 Tree removal within these basins is a major impact to the natural resources. Conducting a tree survey, while useful in BMP design, is not adequate mitigation for the described impacts such as removal of 4,000 trees in a single BMP. Avoidance, minimization and finally replacement should be fully evaluated in the document. Additional investigations are warranted. (5)

**Response:** *As stated in the DGEIS and this FGEIS, a tree survey is not a mitigation strategy, but rather an important step during the pre-design process and will be utilized to avoid and minimize tree impacts. For trees that cannot be avoided, a tree mitigation and replacement plan would be developed by DEP in conjunction with DPR and NYSDEC, as appropriate, during the project permitting process. Since issuance of the DGEIS, detailed tree and topographic surveys of proposed BMP sites NC-6 and NC-11 were made available and preliminary designs, presented in this FGEIS, have been prepared. The tree impacts of those two BMPs have been more accurately defined in this FGEIS – 856 trees instead of 4,000.*

**Comment 59:** Page 8.1-1. Habitat exchange is a recurring topic in the document and requires a detailed analysis. The DGEIS proposes a radical change in the watersheds. How has the habitat been evaluated, i.e. number of trees, number of animal species, functionality, etc.? Habitat enhancement needs to be defined for the reader. The document should compare the pre- and post- habitat based upon specific parameters. Features such as plant community, covertype, water regime, etc. should be used to inform the reader what changes will occur and their future benefits. The reader can then assess if the new habitat is beneficial or requires mitigation. The reader must have this information in order to assess the proposed future condition. (5)

**Response:** *The DGEIS and this FGEIS provides an analysis of habitat exchange at the watershed and BMP level and at the majority of BMP sites, habitat changes would be an improvement over existing conditions and in the future without the proposed project (i.e., the No Action Alternative). For key habitats, Chapter 8.1, "Mitigation," including the Pre-Design Protocol for Mitigation Implementation, presents mitigation techniques to avoid impacts on rare, threatened and endangered wildlife and plant species, in addition to measures to avoid impacts to fish and aquatic resources. The benefits of BMPs have long been recognized by the success of the South Richmond Bluebelt Program, which is why the program was expanded to Mid-Island.*

*The proposed BMPs that would result in the greatest habitat change would be constructed in areas largely dominated by monotypic stands of phragmites. Phragmites chokes out desirable native plants, reduces*

*floral and faunal diversity, encroaches on streams, expands into private property and is prone to wildfires. The proposed BMP construction would, therefore, diversify the habitat and vegetation at these BMP sites. Proposed BMPs would include wetlands of varying water depths, diverse and native plantings, creation and restoration of habitat through the removal of invasive plants, restoration of hydrology and the creation of nesting and feeding areas for wildlife. The new ecological communities would provide food and cover for a wide variety of insects, waterfowl and other wildlife species. Additional features, such as ephemeral pools, vegetated islands and coves would further enhance the BMPs as wildlife attractors. DEP believes that a reduction in phragmites and the creation of a system containing several native plant communities, such as open and vegetated wetlands, perched and ephemeral pools, wildlife habitat features, and uplands would provide a significant benefit to the natural resources of the three watersheds.*

*Site-specific BMP designs, including plant community, covertype and water regime, would be based on field conditions at each site and would be specified during the design phase. DEP will continue to coordinate with NYSDEC during the design and construction phases. NYSDEC will receive detailed survey and design information in advance of DEP's construction drawings, which will also be forwarded to NYSDEC for review during the permitting process.*

**Comment 60:** Chapter 8 of the PDEIS discusses mitigation and includes fisheries as a Technical Area in Table 8.1-2. Under this item the DEP proposes to perform supplemental fish surveys, determine needs for fish passage along the channel, create in-stream structures allowing fish passage throughout the channel and BMPs, and identify construction windows to minimize impacts to fish. These Mitigating Protocols are encouraged and should be extended beyond the Lower Watershed BMPs, as is currently proposed, to all BMPs where fish could be present. (5)

**Response:** *Chapter 8.1, "Mitigation," including the Pre-Design Protocol for Mitigation Implementation, presents mitigation techniques to avoid potential significant disturbances to fish and aquatic resources (e.g., Main Channel in the lower New Creek watershed). In other proposed BMP areas where disturbance would be limited, there would not be potential significant adverse impacts to fishery resources and thus, additional data gathering under a mitigation protocol would not be required per CEQR.*

**Comment 61:** Page 8.1-3. Recent amendments to the ECL prohibit the destruction of endangered species and their habitat. Applicants are required to demonstrate a need for the specific action and can be required to

implement a mitigation plan for the species. The DGEIS identifies several species that are present within the project area. It appears that project activities will negatively impact the identified species. The DGEIS should describe all possible measures to reduce or eliminate negative impacts. Data collection should take place as soon as possible to define the potential impact to the species. Endangered and threatened species require extraordinary mitigation measures as a result of their status in New York State. The document states "….. Some species have been observed during field investigations, others have been recently reported in the watershed, and some are suspected of being in the watershed…" The NYCDEP must identify measures to confirm their presence and extent within a work location. Pre-construction investigation coupled with a request for incidental take permit is not acceptable. NYCDEP must ensure the greatest latitude in project design to avoid the taking of an endangered species. If a taking is unavoidable a species specific mitigation plan will be required. Rare\threatened\endangered wildlife investigations should have a minimum of three years of data collection. NYS DEC is available to assist in the design of a suitable sampling program. If a species is identified in a project location, the project should be modified to avoid an incidental take. Rare\threatened\endangered plants investigations should have a minimum of three seasons of data collections. If a species is identified in a location, the project should be modified to avoid the species. NYCDEP should also consider the creation of suitable habitat for the species and implement a mitigation plan that would encourage expansion of the plant population. (5)

**Response:**

*The DGEIS discloses all potential impacts to protected plant and wildlife species and includes information on the protection status and source of observations for each species. For permanent impacts, Chapter 8.1, "Mitigation," including the Pre-Design Protocol for Mitigation Implementation, presents mitigation techniques to avoid impacts on rare, threatened and endangered wildlife and plant species, in addition to measures to avoid impacts to fish and aquatic resources. As stated in the DGEIS and this FGEIS, additional protection measures are likely to evolve over the several decades of implementing capital projects. In addition, DEP would implement the additional measures required by NYSDEC and USACE that will likely be required during the permitting processes.*

*There are limited "endangered" species in the Mid-Island watershed that may be protected under the Environmental Conservation Law (ECL Part 182). All endangered, threatened and special concern species that may be present at the BMP sites in each of the watersheds are listed in Table 8.1. Two wildlife species, the Peregrine Falcon (endangered) and*

*Northern Harrier (threatened), have been identified as within the watershed. All other identified species are of special concern or special interest and the referenced "incidental taking" law would not apply. The Northern Harrier was observed by AKRF in flyovers of the Oakwood Beach BMP sites OB-1 through OB-3 during the summer only and was not observed nesting or foraging at any of the proposed BMP sites. Moreover, it is unlikely that this species is attracted to or derives essential support from any of the proposed BMP sites. Northern Harrier typically forage and nest in field or marsh-like settings with low grasses and shrubs. They are not attracted to thick and tall common reed that typifies the majority of the lower watershed wetlands. Additionally, Northern Harrier would not be found in the wooded forests of the upper watershed. The proposed amended drainage plans would create favorable, marsh-like habitat for the Northern Harrier. Since the Northern Harrier was observed in a flyover, the DGEIS conservatively proposes a pre-construction site inspection at these proposed BMP sites.*

*DEP would take all the necessary design and pre-construction protocol steps to avoid impacts on these species before applying for any ECL permits. In the long term, the proposed project is not expected to affect habitat that is sensitive, regularly, or uniquely attractive to these species. DEP believes that data collection on protected species within one to three years of the construction of each capital project is the preferred data collection method. This method ensures that the design and construction of each capital project is based on accurate and timely data. Data collected years or decades before the construction of each capital project would be outdated and likely irrelevant.*

**Comment 62:** Table 8.1-2. Groundwater monitoring should be multi-year periods with continuous rather than seasonal averages. The goal should be to identify a continuous reliable pattern. (5)

**Response:** *DEP will submit all year-long monitoring data to NYSDEC as seasonal averages for spring, summer and fall periods for all capital projects. DEP will utilize this data to refine designs accordingly and will also implement any design revisions, per NYSDEC's review of the data. Please refer to comments 2 and 24 and related responses for additional information on groundwater monitoring DEP has committed to.*

**NATURAL RESOURCES – GENERAL COMMENTS**

*PHRAGMITES*

**Comment 63:** *Phragmites* is invasive and can easily, in a short period of time, dominate a habitat. Presence of this species within the watershed is an

indication of suitable soil and hydrology. The document proposes removal of this species and the replacement with standing water or other plant species. This activity needs to be described in greater detail so that the reader can assess the likelihood of success. What will be the short-term and long-term methods to control this species? Will routine herbicide applications be utilized? Will NYCDEP rely on water levels to contain expansion? Will NYCDEP over excavate the upland areas adjacent to BMPs to contain expansion? Describe the long-term plan, cost and effort that will be implemented to prevent re-invasion of the BMPs. It should be noted that the DGEIS depicts *phragmites* suppression as a result of BMP excavation. However, the ideal water depth may not be present in the structure due to the inclusion of shelves, pools and channels. In addition, the separation of the BMPs from adjacent parcels, which will not be excavated, may allow re-invasion of *phragmites*. (5)

**Response:**

*The proposed BMPs would reduce phragmites–dominated habitat in the Mid-Island lower watersheds through the excavation of rhizomes (roots) during BMP construction, creation of standing water pools, implementation of a diverse planting plan and in some cases, "over excavation." In addition, DEP would implement and follow a BMP maintenance plan, which would include mechanical removal and the application of herbicides to control the spread of phragmites and prevent it from significantly recolonizing. Under the proposed maintenance plan, regular cleanup, monitoring of BMPs and replanting would occur.*

*In general, a regular water depth of 18 to 30 inches, as proposed, sufficiently suppresses phragmites growth. In shallower areas of the proposed BMPs (e.g., planting shelves), phragmites may reappear over time. The proposed maintenance plan would therefore be used to pre-empt the expansion of phragmites. Phragmites in small amounts and kept under control would not be a detriment to the BMPs. In concert with other planting regimes, phragmites can provide avian habitat (e.g., red-winged blackbird) and can also contribute to improved water quality through the rapid uptake of nutrients.*

*"Over excavation" of the upland areas of the BMPs may be utilized to further reduce phragmites. This process involves excavating below the depth of existing rhizomes to ensure their removal. A layer of clean fill or sand is then placed on the excavated area and is seeded and landscaped per BMP specifications. The use of clean sand is a technique that has yielded positive results in other DEP projects and has inhibited recolonization of phragmites. Many native plants can thrive in nutrient poor soils including clean subsoil or sand, whereas*

*phragmites and other invasive plants often only thrive in nutrient rich soils.*

*WILDLIFE*

**Comment 64:** Describe avian use of typical BMP. There is a size, depth and area requirement that comes in to play when attracting avian species to open waters. Waterfowl preferences are different than those of shorebirds. How will the design of the BMP ensure that these factors are incorporated into BMP design? The various maps show large open water with notation such as deep pool, perched pool, ephemeral pool that need better definition if one is to conclude that they will be an avian attractant. Is a perched pool possible in the subject locations? What soil type will be utilized to create this feature? (5)

**Response:** *Water depth, wetland size and appropriate food type are the common determinants in attracting a larger and more diverse population of waterfowl species then is currently attracted to the Mid-Island lower watersheds. Water depth is found to be the primary predicator of species diversity and is the base of many habitat management plans. Shallow water depths (four to eight inches) are found to support the greatest diversity of waterfowl. This depth corresponds with the proposed six inch depth of the plant shelves at the proposed BMP sites. The deeper pools and channels at the BMP sites would be the appropriate depth for local species that prefer deeper water (e.g., cormorants and mergansers). The majority of common species in the New York City region can be found in Staten Island wetlands that range in size from 0.25 acre to greater than five acres. The proposed BMP sites in the lower watershed are between 25 and 30 acres and are expected to attract and support a variety of species. This conclusion is supported by both literature and observations of the wide variety of species that inhabit constructed Bluebelt BMPs on, the South Shore of Staten Island. These species include dabbling ducks, wading birds such as egrets and herons, and diving birds (see Table 28-1). Perched pools in BMPs also provide greater diversity and habitat choice for wildlife that may otherwise not be drawn to larger wetlands. These features would also provide further opportunity to plant a greater variety of native plants.*

*FISHERIES*

**Comment 65:** Impacts to fisheries resources from this project include loss of underwater habitat, increased water turbidity and obstruction of fish passage. The DGEIS has a “Fish Resources” section, citing fish species from DEC New Creek and Oakwood Beach Wetland Designation Reports; these reports were finalized in 1986. While some of the fish

species mentioned in these 25 year-old reports may be present in New Creek and Oakwood Beach streams, it is highly likely changes in species assemblages have occurred since 1986 therefore fish species information must be supplemented by more recent studies. While limited fish sampling was performed by DEP and mentioned in the DGEIS, this sampling did not produce enough information on which to make impact assessments. Potential project impacts to fishery resources have therefore not been adequately quantified and characterized. Since historical fisheries data is not available and adequate sampling for fisheries cannot be undertaken until next spring (at the earliest) DEP should plan to perform extensive fisheries sampling in areas of proposed work, especially in areas of stream channel BMPs. Changes to individual project elements (i.e., BMPs) and/or mitigation, may be required based on the results of future fisheries surveys. Since the project as proposed is at an early stage, design considerations minimizing impacts to fisheries resources should probably occur at the permit level. (5)

**Response:**

*Data on existing fisheries in the watersheds was presented in the DGEIS for each of the proposed BMPs where there are existing surface waters and the potential for fisheries may be present. These data are contained in Appendices C.2, C.3 and C.4 which provided natural resources inventory data for the Oakwood Beach, New Creek, and South Beach watersheds, respectively. Waterbodies where fish were observed included the West Branch of the Oakwood Beach Watershed and the Main Channel of the New Creek Watershed. The sampling provided in the DGEIS and this FGEIS has therefore identified water bodies where fish may be present. The Pre-Design Protocol for Mitigation Implementation in Chapter 8.1, "Mitigation," presents mitigation techniques to avoid impacts to measures to avoid impacts to fish and aquatic resources. DEP agrees that because the project designs are at an early stage and the DGEIS presented a generic assessment of impacts, additional data on fishery resources is needed. Appendix F also provides additional details on how the additional fisheries data collection would be performed as the project implementation moves forward.*

*If changes in fisheries have occurred since 1986, it is not expected that they have improved. Rather, it would be expected that they have declined in the absence of any comprehensive stormwater management plan in the Mid-Island region of Staten Island. Moreover, the existing streams in Mid-Island, with the exception of the Oakwood Beach West Branch, have been impacted by tide gates, filling, sedimentation, extensive growth of phragmites, and urban development. These impacts have diminished the aquatic habitats of all three watersheds. The*

*proposed amended drainage plans improve fishery resources habitat by improving streams and expanding water area by widening channels, expanding ponds and restoring flowing water.*

*VEGETATION*

**Comment 66:** How is the project impacted by the city ordinance regarding tree removal and replacement? (5)

**Response:** *As stated in the DGEIS and this FGEIS, DEP will comply with all City laws pertaining to tree clearing and replacement. A tree mitigation plan would be developed in coordination with DPR for each BMP where tree clearing would be required.*

**Comment 67:** Plantings in all BMPs shall attempt to establish a high degree of botanical diversity via the selection of species and make every reasonable effort not to utilize the same species combination and numbers within the various planting areas. Describe how this will be accomplished in the watersheds. Plantings should consist of native species common in the northeast region. These species should be adapted to the designated habitat such as wetland, upland, roadway borders, etc. Table 1.1-1 Identifies only a small selection of potential species. This limits the potential botanical diversity. (5)

**Response:** *Table 1.1-1 in the DGEIS and this FGEIS provides a base selection of plants most commonly used in Bluebelt BMP design (five in the wet/permanent pool zone, eight in the moderately wet zone, and eight in the upland zone). To date, DEP's Bluebelt Program has built over 50 BMPs. Analysis of plant material utilized has yielded a "core" list of native plants that have persisted over time and have adapted well to local urban conditions, such as compacted and fill soils. This group of successful plants, as presented in Table 1.1-1, such as boneset (Eupatorium perfoliatum), switchgrass (Panicum virgatum), and arrow arum (Peltandra virginicum), would be the core of each planting plan.*

*The full range of species used in practice is much greater, too numerous to list and will be based on individual conditions at each site. The specifications for previously installed BMPs are routinely provided to NYSDEC in tandem with final BMP designs. NYSDEC reviews and approves these specification and plans before any work can begin. The planting list will most likely expand during the next 30 years of project implementation. Each proposed BMP planting design would be subject to NYSDEC review and approval during the permit review process, identical to previous projects. The planting program for the proposed BMPs would utilize a variety of native species, thereby creating diverse habitats. Native plant selection would take into account historical*

*records for Staten Island dating back to 1879. Additionally, project specifications would mandate that plant material come from local sources to ensure appropriate genetic makeup and adaptation to local conditions. Landscaped plans, where appropriate, would also include locally extirpated and rare species to create a more diverse and ecologically rich vegetative community. The Bluebelt program also has a long history of undertaking plant salvage operations at BMP sites, whereby significant native plants found at the site are moved to a suitable location in the final design of the BMP.*

**GENERAL COMMENTS**

*PROJECT DESIGN*

**Comment 68:** As specified in previous correspondence sent to you (our May 26, 2010 letter appears below, and the July 15, 2004 letter appears as an attachment in the email), our community believes a greater portion of the Oakwood Beach Watershed should be included in the Mid-Island Bluebelt Drainage Plan. There is still an opportunity for you to include the area we requested in the Mid-Island Bluebelt Drainage Plan. Maintenance of this area in the Bluebelt Drainage Plan would greatly benefit stormwater management in the community, and help protect the sensitive ecosystem in the area. (12)

**Response:** *The section of the Oakwood Beach drainage area west of the Willowbrook Parkway is tributary to the Oakwood Beach Bluebelt. Stormwater runoff from this area currently flows to the Oakwood Beach Bluebelt streams via the West Branch. However, the existing drainage plan (the Potter Plan) shows a full storm sewer system that is not proposed to be amended, and no Bluebelt features are proposed for this area. A number of storm sewers have already been built in this area, including a lengthy one that runs in the Willowbrook Parkway right-of-way from the Staten Island Rapid Transit viaduct to Hylan Boulevard. This sewer daylights in Great Kills Park and drains into the creek that flows into the Oakwood Beach Bluebelt, as do other storm sewers in streets to the west which are perpendicular to Hylan Boulevard. Although this section of the Oakwood Beach drainage area is not analyzed in this FGEIS because its drainage plan would not be changed by the proposed action, these stormwater flows into the Bluebelt have been accounted for in all Oakwood Beach Bluebelt drainage planning efforts.*

**Comment 69:** In the Final Scope of Work, DEP responded to Comment 49 with "the proposed project is not a flood hazard mitigation study under which a buyout alternative may be studied." Why is this? Is it some sort of law or regulation? (7)

**Response:** *The purpose of the proposed Mid-Island Bluebelt Amended Drainage Plans is to provide comprehensive stormwater management and reduce chronic street and property flooding while preserving and enhancing wetlands under DEP's Bluebelt Program. The proposed drainage plans have been completed, utilizing the drainage plan criteria of the City of New York. The proposed project is not a storm surge hazard mitigation study under which a buyout alternative may be considered. The purpose of the EIS is to disclose all impacts associated with the proposed project and to examine all viable alternatives to the proposed project. A buyout alternative to the proposed project is not considered because the goals of the plan can be achieved with the use of vacant wetland property only. A buyout alternative is also not considered because of the impacts to residents who would be required to relocate and the tremendous expense of acquiring and excavating properties that have been filled and developed.*

**Comment 70:** Expeditiously implement the cleaning and shaping of the West Branch of New Creek in accordance with the requirements represented on the new Drainage Plan. (13)

**Response:** *As stated in the DGEIS and this FGEIS, restoration of the West Branch would be the first project in the Mid-Island area.*

**Comment 71:** Implement upstream detention basins to attenuate flow from upper reaches in each of the watersheds to reduce storm flow in downstream flatter areas. As an example in the New Creek watershed, this would involve using the Last Chance Pond area for detention. Carry out the same strategy in the naturally occurring streams and planned detention areas in the South Beach and Oakwood Beach watersheds. (13)

**Response:** *An objective of the proposed project is to detain stormwater upstream where possible and to use the wetlands at the head of the Lower Watershed streams for the purposes of reducing flooding impacts. This includes the use of Last Chance Pond property and other City properties in the South Beach and Oakwood Beach watersheds.*

*PROJECT PERMITS AND PROPERTY OWNERSHIP*

**Comment 72:** Even though the report noted, in general, that the implementation of proposed projects will be regulated and permitted from the various Federal, State, and City agencies, there is no clear statement that, besides CEHA permits, pertinent SPDES General Permits will be required for Stormwater Discharges from Construction Activities for the projects. The current SPDES Construction General Permit (GP-0-10-001) requires permit coverage for one-acre or more soil disturbance activity (including linear projects like road/street works and utility line

installation/repair) or even for less than one acre, if it is in a common of development. (5)

**Response:** *As stated on pages 1.1-3 and 1.1-4 of the DGEIS and this FGEIS, the proposed project would require a number of permits including SPDES permit for activities during construction.*

**Comment 73:** In various places in the DGEIS, DEP states that the Willowbrook Parkway is owned by the NYSDOT. This is not correct. At my request, in the late '90's, NYSDOT Counsel in Albany did an extensive review of the matter, and reached the same conclusion, notifying PPOW in writing. NYSDOT has an "interest" in the Willowbrook Parkway, given the naming in State Law, but that is all. NYSDOT does not have title. It is my understanding that management of the unbuilt Richmond Parkway (which is owned by NYSDOT) and Willowbrook Parkways (which is not owned by NYSDOT) was delegated exclusively to NYCDPR by an executive order by Mayor Koch, coincident with his creation of the Greenbelt Administrators office. (7)

**Response:** *The Willowbrook Parkway right-of-way is still mapped and, therefore, NYSDOT has an interest in the right-of-way. DEP faced the issue of building in this corridor in the late 1990s when BMP RC-8, a large extended detention pond, was constructed in the right-of-way at Rockland and Meisner Avenues. In that case, DEP obtained the permission of both NYSDOT and DPR to build the facility. DEP expects the same scenario with this BMP in the Oakwood Beach watershed.*

**Comment 74:** The report does not state if the NY State Standards & Specifications for Erosion and Sediment Control and the NY State Stormwater Management Design Manual will be followed in designing and implementation of various Stormwater management practices under the SPDES Construction Permit. (5)

**Response:** *The New York State Standards and Specification for Erosion and Sediment Control would be utilized in developing specifications for erosion control and sedimentation during construction of the proposed BMPs. The New York State Stormwater Management Design Manual would be used, as feasible, to design the proposed BMPs. However, due to the urban nature of the watershed and flood storage needs mandated by the tidal cycle, deviations would be required. This text has been added to the FGEIS.*

**Comment 75:** Work Permit from our Maintenance Group to construct the facility and a Use and Occupancy permit to authorize it remaining in the right of way of the Willowbrook Parkway would be required by NYSDOT. A

State Environmental Quality Review (SEQR) determination needs to be issued before permits (Work/Use & Occupancy) are granted. (4)

**Response:** *As stated in the DGEIS and this FGEIS, DEP would obtain these permits from NYSDOT prior to construction.*

*GREEN INFRASTRUCTURE*

**Comment 76:** The drainage plan includes implementation of various BMPs, located mostly in down gradient areas, for drainage and stormwater management throughout the project. But no Green Infrastructure (GI) practices have been considered at all. Now-a-days, GI practices (e.g. green roofs, rain gardens, rainwater harvesting, bio-swales, permeable pavements etc.) are very popular and well-accepted for Stormwater Volume Reduction and onsite retention/infiltration on private and public property for efficient and sustainable management of stormwater. DOW recommends that various GI practices should also be considered in conjunction with proposed BMPs, for implementation throughout the project area where ever applicable to reduce the stormwater runoff load on the BMPs, and sustainable better management of the stormwater of the drainage shed. (5)

**Response:** *The Alternatives analysis in the DGEIS (Chapter 7.1) includes a green infrastructure alternative. This alternative considers a best case scenario for a system of source control devices that would encourage infiltration of stormwater rather than surface runoff to storm sewers and eventually BMPs. At this time, while green infrastructure is an important emerging part of stormwater management for New York City, the BMPs proposed in the amended drainage plans have been designed according to established drainage plan criteria, standards and practices, and have proven successful at detaining and treating stormwater, especially for larger areas.*

*DEP is currently implementing green infrastructure in combined sewer areas primarily to achieve combined sewer overflow (CSO) reductions in New York City waterways. Green infrastructure can store and slow the runoff contribution to the combined sewer, thereby freeing up capacity in the system during rain events. Under the City's plan, green infrastructure has been utilized as a CSO reduction tool and thus would not be suitable for Staten Island, which is largely separately sewered. In addition, Bluebelt BMPs would achieve similar benefits as the BMPs installed under the NYC Green Infrastructure Plan while also reducing flooding and erosive velocities, and improving water quality. Finally, green infrastructure would not be a viable replacement for Bluebelt BMPs because green infrastructure practices are not large enough to store the volume of water necessary to prevent downstream flooding.*

*Therefore, incorporating elements of the NYC Green Infrastructure Plan would not be a viable alternative to the proposed project.*

*SEA LEVEL RISE AND STORM SURGE*

**Comment 77:** The PDEIS does not mention predicted effects of climate change on Bluebelt Drainage Plans. The predicted end year for construction of this project is 2043. According to conservative projections sea level will have risen between 7-12 inches by the 2050's www.dec.ny.gov/energy/45202.html#Projections The project area will experience this change in sea level (http://geology.com/sea-level-rise/new-york.shtml) How will the projected rise in sea level affect construction, fate and effectiveness of BMPs? (5)

**Response:** *The BMPs preserve open space, maintain the natural floodplains, and provide more flexible infrastructure, all of which are adaptive features, in response to climate change. In the case of sea level rise, the low flow orifices can be enlarged with adjustable weir plates and/or valves to allow for faster draw down of the extended detention basins. This will address both the increase in sea level (shorter tidal cycle when the tide gate is open) and the higher groundwater levels (greater outflows). With regard to climate change, the alternative of a gray infrastructure system would be infeasible since there would be no flexibility with the sewer pipes fixed in place. The alternative of no formal sewer system at all would mean greater flooding due to the limitations of the tide gates on the existing storm sewer outfalls.*

*In the proposed BMPs, the current design complies with the central estimate of a nine-inch projected sea level rise, used by DEP at the direction of the New York City Council on Climate Change. The proposed BMPs are not designed to accommodate a sea level rise above nine inches. The low flow orifices have flexibility, so that when fully open, they allow for faster drawdown. The low flow orifices are designed so that rather than draining the extended detention volume in six hours, as they would be set initially, they have the ability to draw down the BMP in approximately four hours. That four hour time frame corresponds to the period during which the tide gates, at their current elevations, would be open with a nine-inch rise in sea level, as well as the peak groundwater inflow.*

*DEP has drafted an additional section for the FGEIS addressing climate change, found in the Natural Resources chapters for all three watersheds (chapters 3.9, 4.9 and 5.9). Please refer to this section for additional information.*

**Comment 78:** I'm concerned about hurricane storm surge. If you look at a topographic map of the Narrows Quadrangle that covers this, you see a paucity of contour lines at the ten-foot contour level. We were lucky that -- this passed time -- if that hurricane tracked farther to the west, it would have put us in the northeast quadrant in the hurricane where the storm – where the forward speed and the wind speed add up. And that could have produced a large storm surge. I've seem models for storm surge for this -- for this part of Staten Island. It could be up to 20 feet. Okay? So that's my concern and that should be addressed in this. Thank you. Encourage the Army Corps of Engineers (USACE) to expedite their storm surge and hurricane protection study to aid in the overall stormwater protection strategy. They should expedite the sea wall project. (13, 16, 22)

**Response:** *The Bluebelt project provides stormwater conveyance up to DEP's design storm event, which addresses a rain event coupled with the tidal cycles of the bay up to a mean high tide. This standard is based on storm rainfall total and peak rainfall intensity. The Bluebelt is not a strategy against extreme tidal surges, and additional shoreline protection measures may still be necessary to address these storm events. The USACE is studying the potential need for additional shoreline protection measures, and DEP has coordinated with USACE in the preparation of this DGEIS. The timeline for that project is under the jurisdiction of the USACE. Please refer to comment 77 and related response for additional information on climate change.*

*FIRES*

**Comment 79:** We on Kissam Avenue have dealt with a lot of things. I moved into my house in 2000. And I thank God that when I moved in, not all of my children came with me. How many people wake up at 4:00 in the morning when they hear a fire truck and go outside and see if their house is on fire? How many people when it starts raining, go downstairs and check to see if they're going to have hot water or heat? I know a lot of people deal with this. Do I have to worry about coming home and finding my wife dead in the house because she didn't hear the fire trucks? I mean, what are we waiting for here? Are we waiting for death? Come on. Totally unacceptable. How many children -- how many infants -- how many of you people have your neighbors' keys because you're worried about them going into Brooklyn or Jersey or whatever and you have to rescue their pets? Everybody on my block has each other's keys, knows how many dogs and cats they have and where their children sleep. (28)

**Response:** *As stated in the DGEIS and this FGEIS, in addition to the stormwater management and ecological benefits, the proposed BMPs would provide*

*a secondary benefit of fire protection and reduced fire risk by clearing out large contiguous stands of phragmites, expanding open water, and providing maintenance access that could be used in emergencies.*

*INFRASTRUCTURE IMPROVEMENTS*

**Comment 80:** Acquisition of properties for the Bluebelt and installation of stormwater infrastructure needs to proceed as soon as possible. Wetlands are very important and can protect us from the flooding. It's been more than 10 years since this project started. I've lived here for 35 years and never had water in my house and now it floods—three times last month. I was very excited when the Bluebelt Project was first presented to us. I was told it would decrease flooding in the area and clean up the creek. The creek would become a viable water way again. We would be able to put a little dock out and paddle small kayaks or canoes the way people used to do many years ago here. Instead, the creek dredging was started from the top, with no thought to where the water would go! Our end of the creek had not been addressed at all; it is overgrown and cannot absorb the increased water that is being sent to it. We have had water damage to our foundation. We had never had an issue with water in all the years that the house has been in the family. The West Branch was filled in illegally and the fill was never removed. It all washed into the creek and nothing has been done to correct the problem. That's why we have the flooding at places like Hunter Avenue. We need the sewers to address out chronic and sever sewer problem which are only getting worse by the day. Our homes are flooding like they never have before and we're losing use of our properties. Sediment has washed into the creeks and filled them. The waterways and creeks that are silted need to be dredged, opened and restored. DEP should also expeditiously advance the reconstruction and reshaping of the West Branch in accordance with the drainage plan. It's time to help the people who need it. This is a huge undertaking but we can't wait 30 years. Sewer backups are causing major flooding and impacting our property. When I was growing up, the creek was 20 to 25 feet wide and 1-1/2 to 3 feet deep and there were ponds with wildlife. It's all been filled and impacted by developers and the flow has been reduce to a trickle. The impacts to the area have been devastating. Before the creek was destroyed flooding was non-existent, now it floods in every good sized storm. Why are there so many streets with inbuilt sewers. Something should have been done a long time ago. Kissam Avenue is particularly hard hit. There has been a lot of building without the proper sewers in place. (7, 8, 9, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29, 30, 31, 32)

**Response:** *As stated in the DGEIS and in this FGEIS, the proposed project is currently in the planning phase and would be constructed over many*

*decades. Completion of the EIS process does allow the project to move forward, with the adoption of the amended drainage plans and the initiation of the additional work needed to design the sewer network and the proposed BMPs. As stated on page 6.1-1, relocation and improvement to the West Branch of the New Creek watershed is the first of the proposed capital projects in these watersheds. Construction phasing is based on the recording of an amended drainage plan, availability of capital funds (e.g., a typical capital project is between $15 and $20 million), sequence and size of individual projects and coordination with the New York City Department of Transportation (DOT) regarding street reconstruction closures and other transportation-related issues. Because the proposed project is currently in the planning phase and the subject of a generic environmental review, current conceptual designs present the worst case scenario for the proposed BMPs and specific construction phasing details are unknown. Please refer to Chapter 6.1, "Impacts During Construction," for additional information on general construction phasing, construction phasing for each watershed, typical construction activities (e.g., typical outfall and BMP construction) and probable impacts during construction.*

**Comment 81:** All the storm water from Railroad Ave. south down from Hamden Ave., Hunter, Adams, Hill and Jefferson Aves. all flow to the corner of Hylan Blvd. and Jefferson Ave. causing major flooding. I suggest a storm sewer along Husson Street from Hamden Avenue to Stobe Avenue flowing into Last Chance Pond adjacent to Stobe Avenue. (6)

**Response:** *The proposed drainage plan includes a series of storm sewers long Husson Street from Hamden Avenue and leading to Last Chance Pond (see Figure 4.1-2d).*

*INFRASTRUCTURE-SANITARY WASTEWATER*

**Comment 82:** For 35 years the sanitary sewers did not flood our homes. Now those sewers flood our homes repeatedly. During heavy rainstorms sanitary sewage backs up into our house and floods our homes. Our quality of life is declining and it's dangerous and unsanitary. The flooding affects our septic systems. I was in one house where the windows were actually blown in and the sewage line was up over the windows. The water is bubbling out of the sewers—where does it go? Every time it rains a few inches the sanitary sewer starts to back up. If it rains 6 inches the sanitary sewer backs up into my home and all of my neighbors! I believe some of the storm sewers in Midland Beach are illegally connected to the sanitary sewers by builders, especially on Hunter and Boundary Aves. The City developed an idea for this storm sewer system

that very efficiently brings the storm water from Mid-island to the beach communities and on into the ocean through open flood gates; except when it rains heavily and there is a high tide, then the flood gates close and all of this storm water now has no place to go. When the tide gates do close and the water starts ponding very quickly on the side streets at this point I know I can't flush my toilets or use water in any way because it will back up into my home. It is at this point that the sanitary sewers cannot handle the deluge and stop working Since the water is still running down towards the beach communities, it now comes back up out of the storm sewer grates and floods the streets. Then, it mixes in with the sanitary sewer and backs up into our homes. People who have never experience flooding in parts of Midland Beach now find themselves inundated with this backup of mixed unsanitary liquid. This problem began a few years ago and has accelerated within the past year. We need a solution to this now. The sanitary sewers must be cleaned and upgraded to handle all the new homes that were without any consideration of the effects it would have on our natural drainage system, which has systematically been wiped out. We're drowning in our own sewer water. We've had periods of time when we'd go for four or five days where you can't take a shower, you can't flush your toilet, I mean, these are unsanitary conditions. The raw sewage comes up from our basements, toilets and sinks. There has been a lot of building without the proper sewers in place. (6, 10, 11, 14)

**Response:** *Sanitary sewer improvements are typically installed in tandem with storm sewers. Please refer to comments 11, 48 and 53 and related responses for information on capital project phasing.*

**Comment 83:** Expedite the upgrade of the South Beach Pump Station. When is it going to start? It's going to take 18 months to complete. Wasn't it upgraded in 2003 after 70 years? It was built in 1933. (13)

**Response:** *Yes, the Mason Avenue Pumping Station was upgraded in 2003-5. The Mason Avenue Pumping Station is a sanitary pumping station that also receives large amounts of stormwater during rain events. When the pumping station is full, the force main overloads the intercepting sewer, which can cause flooding within the area tributary to the pumping station. To address this problem, DEP will be extending the force main to discharge to another manhole on the interceptor downstream from this area. The new force main would reduce the amount of flooding in the pumping station drainage area. This infrastructure improvement would require another upgrade of the existing pump station, including a new wet well and electrical equipment and larger pumps. The design process of this upgrade is anticipated to begin in Fiscal Year 2015.*

✷