

November 17, 2014

New York City Department of Environmental Protection  
Customer Service Center  
59-17 Junction Boulevard, 13<sup>th</sup> Floor  
Flushing, NY 11373

Re: NYCDEP Flushing Creek LTCP Retained Alternatives, November 17, 2014

Dear NYCDEP,

Thank you for your continued efforts to maintain and improve the health of Flushing Creek through the reduction of combined sewage discharges. These efforts will continue to improve the water quality of the Creek, enhancing ecosystems and allowing increased recreational opportunities for the benefit of the community. At a recent NYCDEP hosted public meeting, the LTCP retained alternatives were discussed which included recreation season treatment of combined sewage discharges to the Creek with chlorine, and the implementation of tidal wetland restoration or enhancement. Please find my comments below for consideration:

#### **Permitting Residual Chlorine Discharges and Mixing in a Narrow, Shallow Tidal Creek**

In response to the retained alternative to treat combined sewage discharges to Flushing Creek with chlorine during the recreation season, the residual chlorine that will be discharged to the Creek as part of the treated combined sewage effluent will likely be a challenge to permit. Because of the narrowness and shallowness of the Creek, the mixing zone is likely to be large and acute levels of chlorine exposure to existing tidal ecosystem components (phytoplankton, *Spartina*, bivalves, etc.) may be significant.

Because of the potential challenges and complexity with permitting and implementation, will the permitting process be explored sooner than normal in the planning process, before the LTCP is finalized, to verify that this option will be feasible to meet water quality standards without sacrificing the health of existing or future aquatic ecosystem components in the Creek?

#### **Fecal Coliform Reduction Benefits Provided By Tidal Ecosystems**

In response to NYCDEP's plan to include tidal wetland restoration in the LTCP efforts, are the benefits of existing or planned tidal ecosystem components (i.e. *Spartina Alterniflora* fringe marsh, ribbed mussels, mud flat, other bivalves such as clams or oysters) on fecal coliform reduction in the Creek being included in the receiving water model? It is understood that the receiving water hydrodynamic and water quality model is very coarse grid, but it may be beneficial to lump the ecosystem service benefits into the coarse grid hydrodynamic model, if not already?

The literature indicates that tidal wetland vegetation such as *Spartina Alterniflora* will trap and remove suspended sediments, and bivalves (such as ribbed mussels, clams, and oysters) will remove suspended sediments and chlorophyll a. Fecal coliform, which is typically bound to suspended sediments (especially fine sediments) will then be stored on the platform of the wetland and filtered by bivalves, removing them from the water column. Additionally, the shallow water depths of the mud flats and tidal wetland combined with the bivalve filtration of the water column allow for increased sunlight penetration through the water column, which is the ultimate source of fecal coliform die off.

Developing quantitative fecal coliform benefits created by the existing and proposed tidal ecosystems may increase the justification of their benefit for LTCP planning in combination with other upstream “grey infrastructure” treatments. It is expected that as the upstream treatments begin to reduce loadings to the receiving waters, the ecosystem components and their associated benefits will begin to increase as well. With the benefits of both the grey infrastructure and the natural ecosystems beginning to work in tandem, the receiving waters will likely move to a more natural, healthy state faster than using grey infrastructure alone.

Thank you for your time and consideration of these items,

A handwritten signature in black ink, appearing to read 'V. DeCapio', with a stylized flourish at the end.

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