



Comments on the Conceptual Draft Scope for the Long Island Nitrogen Action Plan

Seaturck Environmental Association
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The Seaturck Environmental Association is a not-for-profit 501(c)(3) organization, founded in 1989, that is dedicated to conserving Long Island wildlife and the environment. In pursuing our mission we advocate for conservation policy, conduct citizen science research projects and offer a wide-ranging environmental education program, including the operation of several public nature centers.

Seaturck recently adopted a multifaceted "Campaign for Long Island Wildlife", one focus of which is to improve water quality in surface and groundwater systems. Our goal is to promote the restoration of aquatic and estuarine habitats for the benefit of a wide variety of aquatic-dependent wildlife species and our overall coastal ecosystem.

To this end, we appreciate the opportunity to review and submit comments on the Conceptual Draft Scope for the Long Island Nitrogen Action Plan (the Plan) and look forward to working with the New York State Department of Environmental Conservation (DEC), the Long Island Regional Planning Council (Council), and other NGOs in implementing the Plan's various recommendations and strategies.

Specific recommendations and statements of support are underlined.

1.2 Goal Statement – We believe the four delineated goals of the Plan are worthwhile, important, and achievable, and view the fourth goal of "Developing implementation plan to achieve reduction endpoints" as being especially critical for success.

1.3 Workplans and Macro-planning Areas / Early Action LINAP – With regard to the Macro-planning Areas, while we recognize the need to divide the island into various regions for the purpose of organizing data collection and planning, the hydrological connections between the subdivisions cannot be ignored. In particular, we are concerned that the connection between western Great South Bay and the Western Bays not be downplayed.

While the Wantagh Causeway currently limits flow between the two embayments, there was historically greater hydrological connection and (as is discussed in greater detail below) we think improvements can, and should, be made in this area.

Regarding the “Early Action LINAP” section, we urge that it include an analysis of the impacts to eastern Great South Bay from Bellport Inlet. The breach through the Otis Pike Wilderness Area in the Fire Island National Seashore provided a rare opportunity for scientists to assess the effects of new inlets on water quality and the ecological health of the Great South Bay. A full compilation and analysis of the research that has been conducted over the past three years would inform the Plan’s positions related to the importance of hydrology, tidal influence and ocean exchange in the overall water quality and ecological health of the island’s estuaries. The impacts of nitrogen pollution in coastal embayments in inextricably linked to ocean flushing; the two must be understood and considered together. The Bellport Inlet provides a unique opportunity for a full appreciation of this connection.

1.8 1978 208 Plan – We support an effort to update the 208 Plan’s assessment of the quality of the streams of Nassau and Suffolk Counties. Long Island’s tributaries have long been underappreciated, mismanaged and marginalized. Impoundments, road crossings, and stream corridor development have greatly degraded their ecological health. Populations of native fish, particularly migratory species, have been decimated and countless acres of wetlands that fringed their edges destroyed. Reversals in this historic damage would benefit overall water quality. In many instances, the time has come to remove the impoundments that were created decades, even centuries ago to power mills, harvest ice and grow cranberries. These impoundments no longer serve their original purpose and only contribute to degraded ecological health and reduced water quality. In some cases, the removal of impoundments and the reestablishment of natural streams and tidal influence could provide room for gains in overall salt marsh acreage. In working to promote the restoration of river herring and other migratory fish Seatuck and its partners in the Long Island Diadromous Fish Workgroup have collected data on many Long Island tributaries that it could make available to the State.

2.1 Environmental Data – In Table 1 of this section, “sediment flux” should be added in the Transport Mechanisms category of the Pollution subsection. Fluxes of nutrients across the sediment-water interface are an important link between benthic and pelagic environments and can be a significant source of pollutants. In certain watersheds on Long Island, such as the Forge River in Brookhaven Town and Meetinghouse Creek in Riverhead Town, the legacy of highly organic sediments from past duck farm practices represent a substantial source of nitrogen pollution. A clear assessment of impacts from sediment flux is an important component of understanding pollution sources in our estuaries, especially since past estimates of this input source have been inconsistent and wide ranging.

2.1.3 Data Gaps – The collection of additional data is an important part of crafting a targeted and effective policy. We support the effort to eliminate existing data gaps and, in particular, encourage the improvement of data collection within the South Shore Estuary Reserve.

2.2 Wastewater Infrastructure Information – The narrative in this section states: “Areas that are sewerred with surface water discharges will be removed as wastewater contributions to groundwater from watershed models, but treated as loads to surface waters”. We believe this recommendation fails to recognize that sewer lines can and do leak, resulting in groundwater contamination and an unaccounted for source of nitrogen pollution. Instead of ignoring this source of nitrogen pollution, we urge the Plan to make a recommendation to investigate potential methodologies or models that could provide accurate data on quantifying the adverse groundwater quality impacts from leaking sewer lines and factor this data into whatever groundwater modeling approach the Plan utilizes.

3.3 Modeling – As part of its own, independent exploration of water quality issues in the Great South Bay, Seatuck was already planning to contract for hydrodynamic and water quality modeling of portions of the South Shore Estuary Reserve. We expect to contract the work to Dr. Gary Zarillo of the Florida Institute of Technology in early March 2016. Dr. Zarillo intends to use the EFDC/HEM3D model for the project, which Seatuck understands is the same platform used for the Peconic Estuary TMDL and is currently being used by consultants working with Stony Brook University and Southampton Town in Moriches and Shinnecock Bays. The EFDC hydrodynamic model will be setup on a grid that includes the morphologic details of the entire Great South Bay system. The model setup will include boundary conditions covering water level, freshwater inflows, salinity, temperature, air sea interaction, and ground water flux if available. Initial model runs will explore alternatives to improve flushing of GSB. Later, the coupled HEM3D water quality module could be used for simulation of nutrient driven water quality processes in Great South Bay. We are eager to partner with the DEC and Council to coordinate Seatuck’s modeling efforts to ensure they are consistent with and contribute to the overall goals of the Plan.

4.1 Residential Wastewater – Regarding sewers, while we support planned projects to extend the Bay Park Sewage Treatment Plant outfall pipe and to increase the capacity at Bergen Point Sewage Treatment Plant to handle expanded sewers, these facilities should be upgraded to tertiary treatment levels that remove nitrogen and other pollutants before discharging effluent into the ocean. As the 2015 New York Ocean Action Plan acknowledges, the New York Bight, which receives wastewater from more than a dozen facilities in both New York and New Jersey, is already showing signs of stress from excessive nutrient loading, including increasing occurrences of low oxygen zones. We simply cannot solve the pollution problem plaguing our estuaries by moving the problem out to the ocean. As the 208 Study recognized more than 30 years ago: “The ocean is not an infinite sink.” Further, we should remember that our estuaries are inextricable linked to the ocean; to the extent we pollute the ocean, we are, to some degree, polluting our estuaries.

4.4 Fertilizer Management – We’re concerned about potential ecological impacts of harvesting seaweed, depending on the species, source, and amounts. We urge that the Plan also evaluate traditional fertilizer or soil amendments, including composted leaves and grass. Further, the number of breweries on Long Island is increasing and, based on a survey we conducted, tens of tons of waste grain is generated each month. Instead of going to landfills

this grain can be used as animal feed and as a soil amendment. In fact, such alternative disposal options are already being used by many breweries in Brooklyn and Queens. We encourage the LINAP to include an investigation of spent grain as a potential source of material for soil enrichment.

In 2007 Suffolk County enacted the Suffolk County Fertilizer Reduction Initiative, a broad legislative measure that contains a number of elements designed to reduce fertilizer use through regulation and education, including a ban on fertilizer use from Nov. 1st to March 30th. However, it is not clear how effective the measure has been in reducing excess fertilizer use. We, therefore, urge that an evaluation of this sweeping legislation be included in the Plan and recommendations be made to improve or strengthen the law and enact it in both Suffolk and Nassau Counties.

LINAP contemplates the establishment of fee structures that discourage fertilizer use. Seatuck strongly supports the implementation of a tax on certain fertilizer products and formulations sold on Long Island (with the proceeds to be used on a variety of nitrogen monitoring and mitigation strategies) and an outright ban of certain quick release formulations.

Finally, with regard to the use of native species, Seatuck has adopted a Landscape Master Plan for its management of the Suffolk County Environmental Center in Islip that relies exclusively on native plants and organic materials and practices. In implementing the plan over the past 5 years we have achieved considerable success in beautifying the facility while providing habitat for pollinators and other wildlife and eliminating the use of artificial fertilizers. We encourage use of the Suffolk County Environmental Center as a demonstration site for the potential of organic, native landscaping.

4.5 Hydro-Modifications – High levels of nitrogen and pathogens have severely impacted Great South Bay and the rest of the South Shore Estuary Reserve. Diminished clam populations, harmful algal blooms and closed swimming beaches evidence some of the worst water quality problems on Long Island. Against this backdrop, the positive ecological effects of the 2013 Bellport Inlet (and the 1993 Little Pike’s Inlet before that) have provided a glimmer of hope that these conditions are not permanent and can be reversed.

Inspired by the story that’s unfolded over the past three years in eastern Great South Bay, Seatuck has been exploring opportunities for expanding the positive effects of greater ocean exchange. While recognizing that the ultimate solution to improved water quality starts with eliminating pollution and mindful of the adage that the “solution to pollution isn’t dilution”, we nevertheless think there is ample reason to support a comprehensive effort to increase ocean exchange in Great South Bay and beyond.

First, work already underway, as well as many of the actions contemplated in the LINAP, won’t produce tangible benefits for years and decades in the future. Source reductions from sewage treatment plants and on-site treatment units, for example will take many years to achieve. And even if these inputs could be stopped today, our south shore bays will still be impacted

by legacy nitrogen already in the ground for another 5 to 50 years. As Bellport Inlet has demonstrated, greater ocean exchange would help to mitigate these impacts in the interim.

Second, improving water quality through increased ocean exchange would give the estuaries a head start in recovering in the years and decades before the spigots of pollution could be turned off. Eelgrass beds, clam populations and schools of forage fish would benefit from the increased influence of clean ocean water. Lower overall nitrogen levels would also reduce adverse impacts to salt marshes, giving the precious remaining acreage a chance to hold (and gain) ground –especially in the face of rising sea levels– until nitrogen inputs can be reduced.

Finally, there is reason to conclude that even with nitrogen pollution under control the Great South Bay and other portions of the South Shore Estuary Reserve will continue to suffer water quality problems resulting from stagnation. Historically, breaches in the barrier islands regularly opened and closed, allowing greater ocean exchange and tidal flushing throughout the estuary. However, roadways, bridges and other infrastructure, as well as barrier island policies, now combine to nearly eliminate this natural process. The result is that some areas of the South Shore Estuary Reserve, including western Great South Bay and (until recently) Bellport Bay are flushed at rates far below historic levels.

For these reasons, we urge the State to conduct a comprehensive assessment of options for increasing ocean exchange and tidal flushing in the Great South Bay and other estuaries around Long Island. We encourage the State to consider and assess the following:

- *Improve Barrier Island Breach Policy* – Current state policy requires any breaches that form in the barrier island system to be closed as soon as possible. Yet, as evidenced by the water quality benefits to the eastern reaches of Great South Bay resulting from Bellport Inlet, breaches can mitigate nitrogen impacts and improving coastal water quality in estuaries, even over short-term periods. Recognizing this we urge that the Plan discuss the potential value of barrier island breaches to Long Island’s south shore estuaries and recommend the adoption of state legislation which creates a science-based decision-making framework for assessing whether or not, and when, a breach should be closed.
- *Improve Flow through Smith Point Bridge and Wantagh Causeway* – Tidal flow through the eastern and western ends of Great South Bay is restricted by inefficient bridges and causeways. Modifications could be made to infrastructure that would increase tidal exchange, including increases in the number/size of culverts and improvement in the efficiency of bridge footings. Similar efforts have produced positive results in other locations, including Indian Lagoon in Florida. We recommend an investigation of options to improve tidal flow through the eastern and western ends of Great South Bay.
- *Enhance Circulation* – Various technologies exist to enhance tidal momentum and increase circulation within estuaries. Increased circulation spreads the benefits of ocean water into stagnant areas, thereby improving water quality by reducing concentrations of nitrogen and other pollutants. Engineered solutions to improve circulation have been

employed successfully in other estuaries around the country, including Wilson Bay in North Carolina. Increasing flow momentum at New Inlet, for example, could stretch the beneficial ecological impacts further west into Great South Bay or east into Narrows Bay. Similar enhancements could help spread the positive influence of Fire Island Inlet and Jones Inlet. We recommend an investigation of technologies that could increase circulation within the Great South Bay and other Long Island estuaries.

• Augment Ocean Input – In lieu of new inlets in the South Shore Estuary Reserve, it may be possible to employ engineered solutions to increase the influence of ocean water throughout the estuary. The benefits of the Bellport Inlet might be replicated, perhaps on a smaller scale, in other areas. A recent *Newsday* article made it clear that others are thinking about such approaches – the paper reported that the Town of Southampton was exploring the possibility of piping ocean water into Shinnecock Bay to improve water quality. We recommend that the LINAP include an exploration of potential of engineered solutions to increase the influence of ocean water in the Great South Bay, perhaps including the implementation of a pilot project to assess possible approaches and to study effects.

• Increase Efficiency of Fire Island Inlet – Circulation within the Great South Bay is dependent primarily on inlets, particularly Fire Island Inlet. Despite being a large inlet by volume, the length and east/west orientation of Fire Island Inlet combine to limit its overall efficiency in flushing western Great South Bay. More than 75% of the tidal energy at the mouth of the inlet is lost before it reaches the bay, thereby limiting its effectiveness in diluting nitrogen rich water and lowering temperatures. The inlet's inefficiency, together with its high sand management costs and notorious navigational hazards, has spawned various realignment proposals since the 1970s, but none have been seriously considered due to the large expense and disruption to existing public and privately developed properties. However, a 2003 U.S. Army Corps of Engineers investigation of the idea of realigning Fire Island Inlet concluded that not only would it bring considerable flushing improvements to the Great South Bay, but that the cost of realigning the inlet could be recovered in maintenance savings in only a few decades (Krause, et al, "Hypothetical Relocation of Fire Island Inlet, NY", *Proceedings Coastal Sediments '03*. (2003)). The following year, an analysis of historical aerial and shoreline data similarly concluded that realigning the inlet was the most cost-effective way to deal with its perpetual shoaling problems (Bonisteel, et al, "Barrier Island Migration and Morphological Migration, Fire Island Inlet, NY" *Shore and Beach*, Vol. 72, No. 1 (2004)). While recognizing the financial and other hurdles to realizing such a proposal, we nevertheless think the idea may have scientific merit and deserve objective review and consideration. We recommend that the LINAP include an exploration of issues related to the inefficiency of Fire Island Inlet's current configuration.

4.9 Open Space Preservation and Restoration – Over the past half-a-century local governments and the State of New York have made a remarkable investment in the acquisition of open space on Long Island, totaling well over a billion dollars. Most notable has been the purchase of some 40,000 acres of lands in the Pine Barrens, situated above the Island’s Deep-flow Recharge Area. These acquisitions have been made, in part, in recognition of the many ways open space helps safeguard groundwater aquifers and coastal water quality. Specifically, preserved open space furthers water resource protection by 1) preventing additional development that could contribute contamination to ground and surface waters, 2) providing buffers to reduce pollution impacts to streams and embayments, and 3) in the case of near-shore uplands, by providing room for salt marshes to migrate inland as sea levels rise. In addition, vegetated open space also plays a valuable role in protecting water quality by assimilating atmospheric nitrogen, a significant source of nitrogen to fresh and tidal waters. Given these important functions we urge that an effort be made, as part of the proposed land use analysis that is to be undertaken for each watershed and sub-watershed, to prioritize undeveloped properties for preservation, identifying those along stream corridors and coastlines and overlying important recharge zones, that will help reduce inputs of nitrogen and other pollutants and protect Long Island’s overall water quality.

4.11 Water Reuse – We strongly urge that water reuse be one of the key strategies included in the Implementation Plan. It is a cross-cutting strategy that holds promise for improving water quality in dozens of watersheds and sub-watersheds across Long Island, as evidenced by the expected benefits of the Riverhead STP/Indian Island County Golf Course collaboration, which will reduce nitrogen loadings into the Peconic Bay by 2000 pounds a year while eliminating 62 million gallons of freshwater being pumped from the aquifer. To underscore this potential the Suffolk County Planner has identified 26 golf courses in the County situated within one-half mile of an STP.

We commend the Department and Council for including the promulgation of regulations to implement water reuse as a possible component in the “Early Action LINAP” phase of the Plan. However, we recommend that the development of reuse regulations not remain as a possible component in the “Early Action” phase of the Plan, but become an actual component. Further, we were disappointed the Plan failed to explicitly commit to the development of an island-wide water reuse feasibility study, which could provide a blueprint and roadmap for the future implementation of reuse projects. While this feasibility study may be envisioned to be a component of a “draft wastewater plan” that is proposed, we urge that the Department and Council make the commitment to a water reuse feasibility study and make that commitment explicit and clear.

5.0 Implementation – In an effort to give the public a sense of the progress being made towards nitrogen reduction, we urge that the scope include a timeline for completion of the short and long-term plans, and that the Final Plan include an implementation schedule, as highlighted in pages 43 and 44 of the Conceptual Draft, containing the expected delivery dates and timeframes for the implementation of various numerous work plan elements and tasks.

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In conclusion, the Seatuck Environmental Association appreciates the opportunity to comment on the Conceptual Draft Scope of the Long Island Nitrogen Action Plan and looks forward to participating in the formulation and implementation of the Plan in the months and years ahead.