

Southern Barnegat Bay Watershed Restoration Plan

Project Advisory Committee

Meeting 5

Wednesday, June 21, 2023

1 – 2:30 pm

Meeting Notes

1:00 Welcome, Introductions and Overview

Amanda Archer, Jacques Cousteau Reserve

- As a project refresher, this project focuses on Southern Barnegat Bay-Little Egg Harbor Tributaries comprising of seven sub-basins. Because of watershed urbanization, Barnegat Bay has been identified as a highly eutrophic estuary with nonpoint source pollution being a major source of nutrient enrichment. Therefore, the decline in ecological health of Barnegat Bay can be attributed to high nutrient loading. NJDEP has identified nitrogen and sediment as the primary pollutants of concern in the Bay. The focus of this project is to enhance the integrity of the watersheds that drain to Southern Barnegat Bay.

1:15 Buildout Analyses & Stormwater Infrastructure “gaps”

Dr. Rick Lathrop, Rutgers University

Dr. Subhasis Giri, Rutgers University

- A prospective look at future development based on the zoning and land use policies will help inform the watershed planning effort to identify potential future growth areas.
- Accordingly, we developed a spatially explicit build-out model in a GIS framework to identify specific areas of the watershed that are “vacant and developable”.
- By then incorporating zoning information, we estimated the possible amount and intensity of future commercial and residential development that may be expected in the future if those lands are developed as zoned.
- Resulting maps and tabular data were vetted by various municipal officials.
- As part of this Phase II, we proposed that the investment of future funding in new or rehabbed stormwater infrastructure should be optimized by first determining what areas should be priority for such investment.
- Our objective was to identify areas that may be under-served by existing stormwater infrastructure (i.e., “stormwater infrastructure deserts”) where both surface and groundwater quality and quantity might be compromised as well as where stormwater runoff might be exacerbating local flooding issues.
- The results of the Hot Spot analysis identified clusters of neighborhoods with comparatively low numbers of residential-oriented SWM basins.

Conclusions

- Some of the identified vacant and developable parcels may be candidate areas for open space conservation, whether through fee simple purchase or easement.

- Where additional urban development does move forward, it is critical any development includes well designed and maintained stormwater management infrastructure to minimize runoff, enhance infiltration and reduce the export of nutrients and suspended sediment to the Bay.
- Some older portions of the Watershed were developed before New Jersey's more stringent stormwater runoff regulations were in place, thus these areas may be lacking adequate stormwater management infrastructure. These areas could benefit from a variety of green infrastructure approaches from rain barrels to bioswales to enhanced riparian buffers to reduce storm and nutrient runoff.
- In designing new or retrofitted SWM infrastructure, the NJ Stormwater Best Management Practices Manual (NJDEP, 2021) provides guidance on the construction of new infrastructure to address the performance standards in New Jersey's Stormwater Management rules, N.J.A.C 7:*8, but also guidance in how to retrofit existing infrastructure.
- **Draft reports on website – sent in draft form, taken comments to improve and posted. StoryMaps take reports and condense them down with graphics. [Developing a Watershed Restoration Plan for Southern Barnegat Bay-Little Egg Harbor Tributaries CRSSA at Rutgers SEBS](#)**

1:30 Update on Water Quality Enhancement Projects

Dr. Subhasis Giri, Rutgers University

Dr. Zhiming Zang, Stevens Institute of Technology

Dr. Zeyuan Qui, NJIT

- Pinelands Regional High School Culvert – Students taking water samples from Oct 2022- April 2023
 - No significant change in pH caused by the green filter media
 - Variation in total suspended solids (TSS) concentration; Average TSS was reduced during most sampling events
 - Initial P conc. reduction rate – 59%; Efficiency decreased over time; Clogging of the geotextile bags by **silt, wax, and microalgal growth**, possibly contributed to nutrient accumulation
 - The previous bag was replaced with a new bag, Spent filter media was sampled, P in the leachate was 0.09 µg/L, indicating that Ps was irreversibly adsorbed on the green filter media
- Stafford Twp Bioswale Project
 - Whole site was divided into 3 sections: Wet Meadow, Medium Wet Meadow, Dry Meadow
 - For each basin plant material cost was estimated based on landscape and planting design
- Mill Creek Park Bioswale
 - Designs are being conducted
- Giffordstown Bog
 - Conceptual Design to Enhance the Ecological Functioning of the Pinelands HS Stormwater Basin created by Ashley Stoop, MS Rutgers University Landscape Architecture

- Challenge: to meet dam safety standards, existing dam structure has been removed and will not be replaced; thus water levels will remain low.
- Objective: based on public input, promote the development of a Hemi Marsh/Marsh Mosaic Hybrid
- Riparian Restoration Sites
 - To improve the ecological health of study area, we identified 7 potential sites for restoration
 - Goal is to reach out to each private landowner and introduce them to the NRCS program and/or other potential funding opportunities for restoration of their property

Discussion of different planning scenarios: Project Team and local stakeholders

- Britta with similar 319 grant pursuit – Matt concerned with price of basins and wants to combine funding. More money to do more – would like to take advantage of that. High vis projects on main roads for folks to see benefits. Matt requested to scale back plants to do all the basins – easier to maintain and hits all three basins at once. Matt requested an informational board (signage) to show off projects. Highlighted for institutions.
- Karen – use buzz words for funding: etc “Green infrastructure & native plants” Co benefits of plants – primary function controls erosion and nutrients/water, secondary – pollinator plants. Longer term maintenance. Need big plants – contracts to maintain the first couple years of implementation.
- **Poll Launched to prioritize what Water Quality Implementation Project(s) to pursue**

1:50 SWAT Modeling

Dr. Subhasis Giri, Rutgers University

- A SWAT model is the physically based model, therefore, it requires different input data such as digital elevation model(DEM), soil, land use, meteorology, and management operations. Digital elevation model was downloaded from New Jersey DEP, Soil data was obtained from USDA, Land use data was received new Jersey DEP. Meteorology data consisted of daily precipitation and minimum and maximum temperature were downloaded from NOAA.
- The primary model outputs are streamflow, surface runoff, sediment, nitrogen, and Phosphorus. This model provides output data in three different scales: 1) daily time scale, 2) monthly, and 3) annually
- Next steps include the application of the SWAT Watershed Model to estimate land use influences on runoff and nutrient loading at Buildout.
- **Looking for feedback on potential scenarios on future climate change that would be of particular interest**

2:15 Next Steps & Conclude

- SWAT Model for Mill Creek & Tuckerton Creek
- Pollutant Loading Coefficient Model for remaining basins
- Permitting and Implementation of Watershed Conservation Measures