# Sebonac Creek Subwatershed Management Plan

June 2013


**Prepared for:**

**The Peconic Estuary Program**
Suffolk County Department of Health Services
Office of Ecology
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and the
**Town of Southampton**

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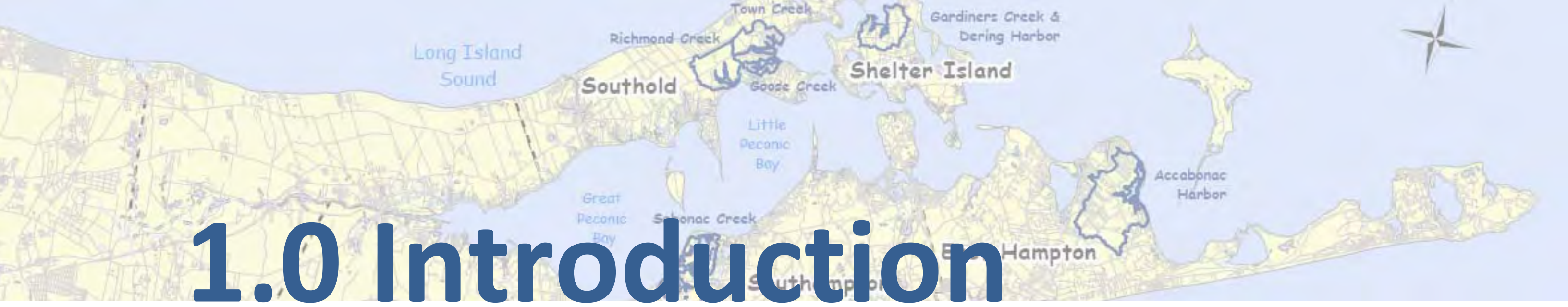



# 1.0 Introduction

This plan is part of the on-going efforts of the Peconic Estuary Program (PEP), operating from the Suffolk County Department Health Services' Office of Ecology, to improve water quality in the Peconic Estuary and its watersheds. In 2001, the PEP adopted a final Comprehensive Conservation and Management Plan (CCMP) that identifies four priority management issues: control of pathogens, nitrogen, toxins, and enhancement of habitat and living resources. In 2003, Horsley Witten Group (HW) completed a regional stormwater assessment and management project for the Peconic Estuary Program that focused on developing a regional, storm-event-based, pollutant loading model to help prioritize management efforts for four pilot watersheds within the greater Peconic Estuary system based on the contributions of pathogens and nitrogen from each watershed. In 2006, HW completed management plans for those four pilot subwatersheds. The development of this Subwatershed Management Plan for the Sebonac Creek Subwatershed in the Town of Southampton, along with plans for 5 other subwatersheds in the Towns of Southold, Shelter Island, and East Hampton, continues the work of those initial projects.

## 1.1 Peconic Estuary Watershed Issues

The Peconic Estuary is located on the eastern end of Long Island, New York between the North and South Forks (see Figure 1-1). It is one of 28 estuaries in the National Estuary Program (NEP), administered by the United States Environmental Protection Agency (USEPA) under Sec. 320 of the Clean Water Act to protect and preserve nationally significant estuaries which are threatened by pollution, development, or overuse. The Peconic Estuary was accepted into the program as an "estuary of national significance" in 1992. Its waters cover approximately 158,000 acres with 450 miles of shoreline and support a wide array of wildlife. There are several smaller bays recognized throughout the greater Peconic Estuary including Flanders Bay, Great Peconic Bay, Shelter Island Sound, Gardiners Bay, and Little Peconic Bay. Bordering this estuary are the towns of East Hampton, Southampton, Brookhaven, Riverhead, Southold, and Shelter Island. The region is popular for vacationing and supports a wide variety of both recreational and commercial activities and contains abundant natural resources. Boating, swimming and sunbathing are a few of the many recreational activities that draw thousands of people to this region. Fishing and shellfishing are two of the predominant local industries that are directly dependent upon the water quality of the estuary. Economic studies of the overall Peconic Estuary region have estimated that those businesses and industries directly tied to the estuary produce upwards of $450 million of annual income within the region (PEP CCMP, 2001).

Unfortunately, many of the tidal creeks within the Peconic Estuary, including the Sebonac Creek Complex (Sebonac and Little Sebonac Creeks and their tributaries), are currently not meeting water quality standards and are classified as impaired water bodies. Specifically, the shellfishing beds in the Peconic Estuary have been monitored for several decades by the New York State Department of Environmental Conservation (NYSDEC) in order to assess the safety of these shellfish for consumption. High levels of coliform bacteria have resulted in the closure, either periodic or year-round, of much of the most productive beds in the estuary. Coliform bacteria, specifically fecal coliform (FC), are produced in the intestinal tracts of warm-blooded animals and are present in high concentrations in their fecal matter. FC bacteria are used as an indicator for the presence of other, potentially harmful pathogens. In 2006, a Total Maximum Daily Load (TMDL) for pathogens was developed for the impaired waterbodies in the estuary, and in 2007, a TMDL for nitrogen was developed. One of the sources of both pathogen and nitrogen loading to the estuary is from stormwater runoff. High pathogen and nitrogen loads to the tidal creeks within the estuary are problematic and directly affect water quality by causing the following common issues:

- Reduction in water clarity;
- Bacteria levels in excess of acceptable levels for human contact or consumption of shellfish;
- Overabundance of nitrogen leads to over stimulation of plants and/or algae, resulting in excess plant decay and low dissolved oxygen levels during summer months. The low levels of dissolved oxygen threatens aquatic life and can result in fish kills; and
- Excess algae, plants, and decaying plant material can cause the loss of other plant species (e.g., eel grass) that are important to the aquatic ecosystem.

Within the CCMP, non-point source pollution, including stormwater runoff, is designated as the highest priority for remedial efforts. Carefully planned and implemented stormwater management practices and strategies can reduce loadings of both bacteria and nitrogen. These strategies would therefore work to help accomplish several of the goals outlined within the Peconic CCMP including reopening shellfishing areas, reducing overall nitrogen loading, and decreasing the occurrence of brown tide.

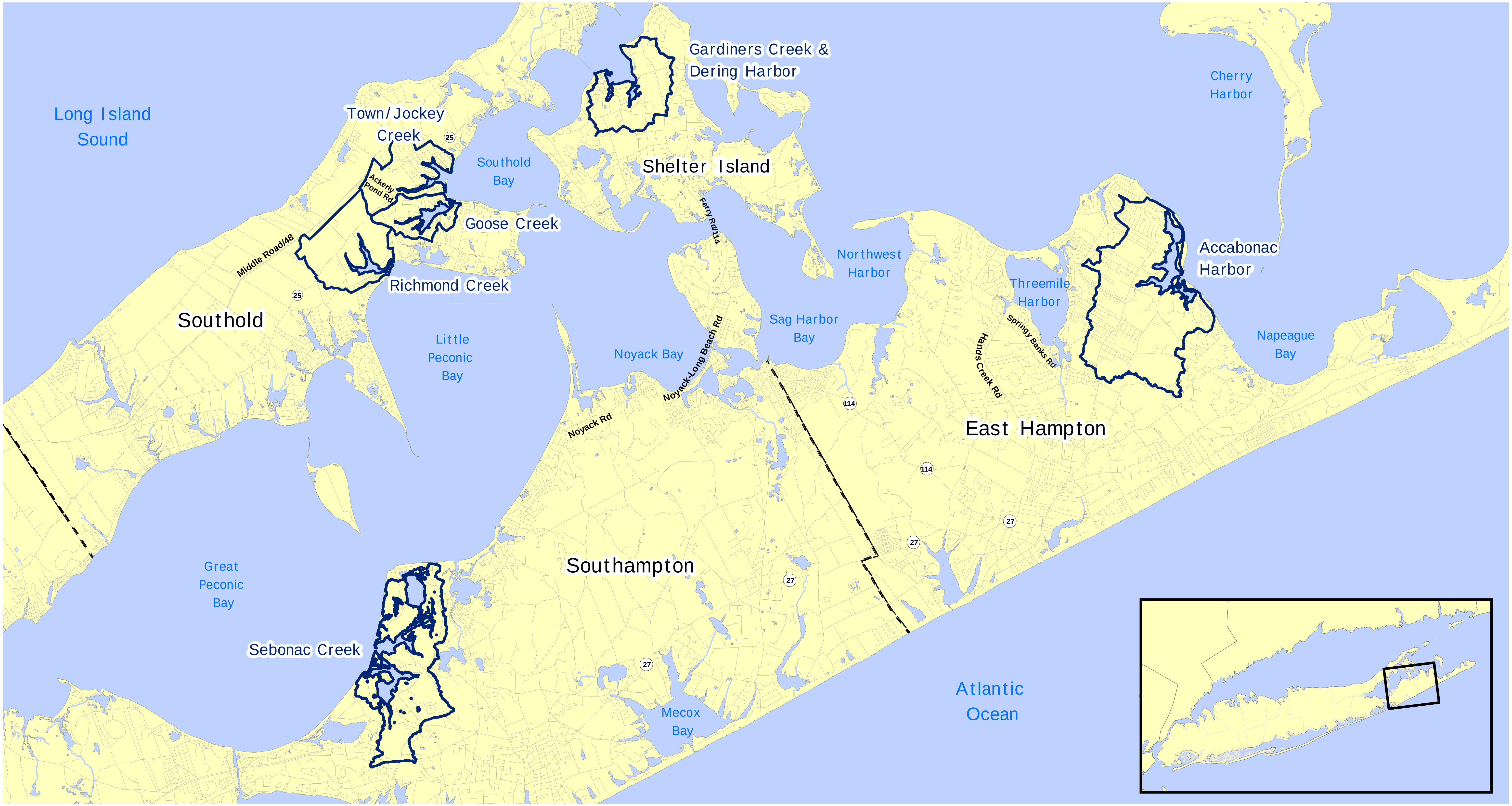
## 1.2 Purpose of the Plan

This plan focuses on identifying cost-effective structural and non-structural practices to reduce overall pollutant loadings (i.e. bacteria, sediment, nutrients) and runoff volume to the Sebonac Creek Complex. The approach included rapid field assessment for stormwater management throughout the watershed. The stormwater assessment was used to identify likely stormwater pollutant sources as well as areas where best management practices (BMPs) could be installed to improve the management and treatment of stormwater in the watershed. Successful implementation of this plan is expected to help reduce stormwater runoff pollution; maintain or improve overall water quality conditions, shellfish harvesting capacity, eelgrass habitat, and degraded marsh areas.

### *Caveats*

The following limitations on the information presented in this plan should be considered:

- While field investigations and stakeholder meetings were conducted, the list of stormwater retrofits and restoration opportunities presented here should not be considered exhaustive.
- Project ranking is intended to inform the implementation process; actual implementation frequently occurs as other opportunities arise, and the ranking should not be viewed as an absolute sequence for implementation.
- Where planning level construction costs are provided, these costs are based upon unit cost data compiled from various sources and should be used for general planning purposes and comparison between candidate projects only.
- This document is not intended as a compliance plan for the Town of Southampton's Municipal Separate Storm Sewer System (MS4) permit issued by New York's State Pollutant Discharge Elimination System (SPDES). Rather, it is intended to provide watershed-wide restoration opportunities to be implemented by not only the Town, but by PEP and/or other organizations, and private business and homeowners.

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Subwatersheds Evaluated as Part of this Assessment

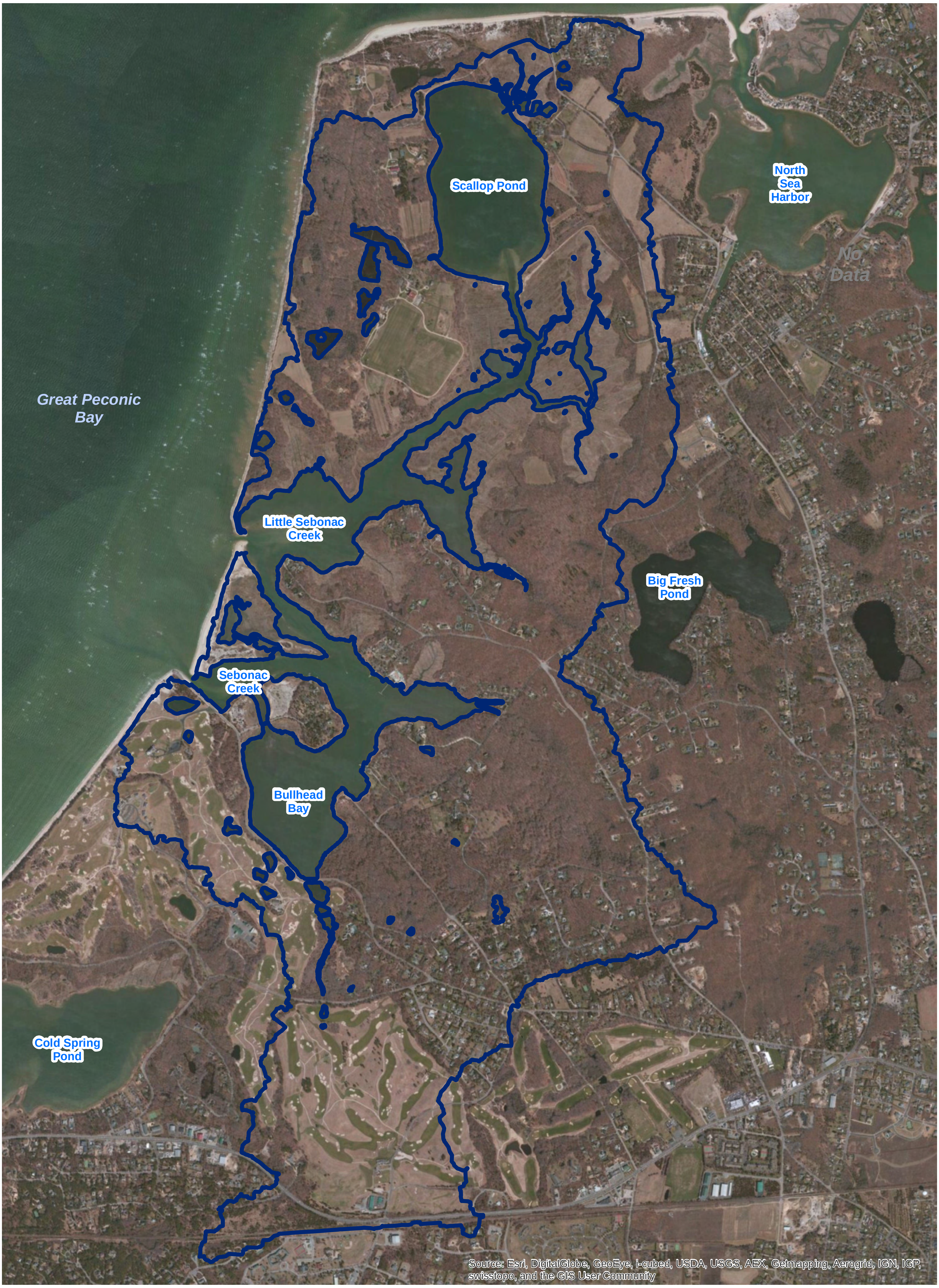
N
W E
S

Horsley Witten Group
Sustainable Environmental Solutions

The Peconic Estuary Region Vicinity and Subwatershed Context Map

Date: 6/30/2013

Figure 1.1

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Sebonac Creek Subwatershed

N

Feet

1,600

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Aerial
Sebonac Creek Subwatershed
Southampton, NY

Date: 6/30/2013

Figure 1.2

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# 2.0 Sebonac Creek Subwatershed

This section summarizes baseline information specifically for the Sebonac Creek/Little Sebonac Creek (hereafter "Sebonac Creek") Subwatershed, including a description of the unique subwatershed characteristics and a summary of existing water quality conditions.

## 2.1 General Subwatershed Characteristics

The Sebonac Creek Subwatershed is located within the Town of Southampton on the northwestern side of Long Island's South Fork. The subwatershed area is approximately 2,315 acres, of which approximately only 112 acres (4.8%) are impervious. Topography in the subwatershed ranges from sea level to a maximum elevation of 120 feet in the southeastern corner of the subwatershed. The subwatershed is bounded to the north and west by Great Peconic Bay, and by residential and undeveloped lands to the east and south. Scallop Pond is a major water feature in the north central portion of the subwatershed. Millstone Brick Road and North Sea Road are the primary roadways, running primarily north-south in the central and eastern sections of the subwatershed. A map identifying these general subwatershed characteristics is included in Appendix A.

## 2.2 Land Use and Infrastructure

Sebonac Creek is primarily rural-residential with a few well-established neighborhoods, many larger private estates, portions of two private golf courses (Shinnecock Hills Golf Course and National Links Golf Course), and large areas of undeveloped lands. More than 50% of this subwatershed consists of open space or otherwise undeveloped lands owned either by the Town of Southampton, Suffolk County, NY, the federal government (U.S. Fish and Wildlife Service), or other private land trusts. Residential neighborhoods are primarily located to the far north and in the central portion of the subwatershed, with an additional cluster of residential development located in the southeastern portion, and appear to have been developed at different time periods during the 20th Century (early 1900s, 1930s/1940s, and 1960s/1970s), with recent construction (defined as less than 10 years) limited mostly to reconstruction or renovation of existing homes. The neighborhoods along Sebonac Creek are generally low density, with a small percentage of medium density. The highest density of development occurs in the central and southeastern portions of the subwatershed; very few of the residences within established neighborhoods directly abut Sebonac Creek or its associated tributaries and wetlands. Table 2.1 shows a summary of the land uses in the subwatershed, and a land use map is provided in Appendix A.

**Table 2.1. Land Use Summary**

| Land Use | Percent of Subwatershed |
|---|---|
| Low Density Residential | 33% |
| Medium Density Residential | 5% |
| High Density Residential | 0% |
| Commercial | 0% |
| Industrial | 0% |
| Institutional | 0% |
| Open Space | 34% |

| Land Use | Percent of Subwatershed |
|---|---|
| Agricultural | 0% |
| Vacant | 22% |
| Transportation | 4% |
| Utilities | 0% |
| Waste Handling | 0% |
| Surface Water | 2% |

Existing stormwater infrastructure within the subwatershed generally consists of swales, gutters, and leaching catchbasin collection systems that rarely discharge directly into the creek or adjacent wetlands. A common practice on Town roads is the use leaching catchbasins to infiltrate runoff. However, it appears that many of these catchbasins are clogged because of high accumulations of sediment and organics and infrequent maintenance. In addition, it appears that during higher intensity rain events, many leaching catchbasins are inadequate to handle all the runoff from roadways and adjacent contributing properties. This has resulted in some channelized overflows that have caused erosion and sedimentation into the creek and/or surrounding wetlands in some locations.

## 2.3 Soils and Hydrology

The soils in the subwatershed are mapped by the USDA Natural Resources Conservation Services as Carver and Plymouth sands, Montauk silt loam, Plymouth Loamy Sand, and Tidal Marsh, with lesser amounts of Riverhead sandy loam and Sudbury sandy loam. The hydrologic soil group (HSG) indicates the infiltrative capacity of the soils, with A indicating high infiltration rates (i.e., sands and gravels) and D representing very poorly drained soils. Table 2.2 provides a breakdown of the HSGs found in the subwatershed. Sixty-eight percent of soils in the Sebonac Creek Subwatershed are classified as either A or B, signifying that infiltration is a feasible stormwater practice in this area. A map of the soil conditions is provided in Appendix A.

**Table 2.2. Summary of Soil Conditions**

| Soil HSG | Percent in Subwatershed |
|---|---|
| A | 59% |
| B | 9% |
| B/C | 1% |
| C | 17% |
| D | 14% |

## 2.4 Existing Water Quality

To comply with the Clean Water Act, the NYSDEC compiles a Priority Waterbodies List (PWL). Sebonac Creek/Bullhead Bay is included under PWL# 1701-0051, and Little Sebonac Creek is listed as PWL# 1701-0253. Both are identified as impaired water bodies, and in 2006, a TMDL for pathogens was developed for these areas with urban stormwater runoff identified as a pollutant source, along with inputs from forest runoff and waterfowl. In addition, the NYSDEC has designated the Sebonac Creek Complex as "growing area 62" for shellfish, which is seasonally closed for shellfishing.

# 3.0 Field Assessment of Restoration Opportunities

This chapter describes both the methodology used for the watershed assessment and the proposed recommendations to help improve the water quality of the Sebonac Creek Subwatershed. The proposed options range from site-specific stormwater retrofits to non-structural control measures. A map showing the recommended restoration opportunities is included as Figure 3.1.

## 3.1 Assessment Methods

In April 2011, an initial field reconnaissance was performed in the subwatershed to identify preliminary retrofit and restoration sites. Following the site walk, a “desktop analysis” was performed for those preliminary sites, which included using GIS information from the New York State GIS database and the Town of Southampton to identify soils, wetlands, other site constraints, approximate drainage areas, and any known stormwater infrastructure. This information was used to prepare field forms, aerial plans, and overall watershed maps to be used in the field to verify site conditions and finalize assessments.

The full field reconnaissance was conducted in May 2011. Field teams used the data collected from the preliminary site walk and desktop analysis, as well as information from Town staff, to assess the previously identified sites and identify any additional opportunities throughout the subwatershed. Restoration opportunities were evaluated using watershed assessment protocols originally developed by the Center for Watershed Protection (Kitchell and Schueler, 2004; Wright et al. 2005; and Schueler et al., 2007) and adapted by HW for application on Long Island. The completed field reconnaissance forms can be found in **Appendix B**.

### *Stormwater Retrofits*

At each candidate location, the field teams evaluated drainage conditions, identified site constraints, and selected stormwater retrofit options with the best reported pollutant removal capability for the pollutants of concern (nitrogen, bacteria, and sediments) and have the highest runoff reduction potential. Examples include but are not limited to:

- Bioretention (or raingardens, where applicable);
- Infiltration systems;
- Permeable pavement;
- Dry swales (linear practices that contain amended soils);
- Wet swales (linear practices with emergent wet vegetation); and
- Constructed stormwater wetlands.

Vegetated infiltration and filtering practices have the best bacteria and nitrogen removal potential and were recommended where feasible based on soils and estimated groundwater elevations. In areas of high suspected groundwater, wet swales and constructed wetlands were proposed. In general, all of these practices can be adapted as necessary to several different drainage configurations including larger open areas, roadside drainage, and parking lots. Additional information and details on the design of each of these practices can be found in the 2010 update of the New York State Stormwater Management Design Manual. In addition, the 2010 Rhode Island Stormwater Design and Installation

Standards Manual is an additional resource for the design and assessment of stormwater management practices.

A preliminary ranking process was conducted to determine which of the retrofit design concepts should be further refined – the full methodology and results are included in Appendix C.

### *Neighborhood Assessments*

A rapid watershed assessment of neighborhoods was conducted in the subwatershed to help identify and assess a range of non-structural stormwater practices. The methodology used was adapted from the Upland Subwatershed and Site Reconnaissance (USSR), Residential Source Assessment (Wright et al., 2004). This assessment evaluates neighborhood pollution potential and weighs the importance of specific sources (e.g., evidence of pet waste, over fertilize lawn, trash and debris) with specific management strategies (e.g., pet waste management, car washing) to help target watershed education and outreach efforts. The assessment also evaluates general conditions of the street and drainage network to determine the relative importance of street sweeping and catchbasin cleanout as potential management priorities. Neighborhood assessments were conducted to help identify and document if the neighborhoods are likely to generate pollutants of concern (e.g., nitrogen, bacteria, sediment), to identify the sources common within each neighborhood, and which areas/sources should be targeted for watershed stewardship activities.

### *Hotspot Assessment*

During the rapid watershed assessment, field teams also identified land uses that have the potential to contribute a high level of pollutants to the creeks and their tributaries, also known as stormwater hotspots. Sites were then identified as candidates for both structural and non-structural pollution prevention controls.


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## 3.2 Stormwater Retrofits

Multiple sites were identified by project partners and through field assessment as potential stormwater improvement opportunities. Table 3.1 summarizes candidate projects that were considered during the subwatershed planning process. A more detailed description of existing conditions and potential opportunities at these sites are provided below.

**Table 3.1. Summary of Stormwater Retrofits**

| Site ID/ Name | Description | Ranking |
|---|---|---|
| SC-RI/ North Sea Road and South Street | Dry swale/bioretention at corner lot on N. Sea Road with overflow to marsh. Add "bleed offs" from N. Sea Road toward existing wetlands | Medium-Low |
| SC-R2/ End of Island Creek Road | Bioretention at end of road. Construct berm at end to divert flow to bioretention area | Medium |
| SC-R3/ End of West Neck Road | Constructed pocket wetland and wet swales adjacent to existing wetland in low point | High |
| SC-R5/ Drainage culvert crossing Millstone Brook Road | Dry swale with check dams at low point in road. | High |
| SC-R9/ Intersection of Sebonac Inlet Road and Sebonac Road | Pavement removal/intersection reconfiguration. Bioretention at intersection with connection pipes from low points. Bioretention cells or dry swales along roadway. | High |
| SC-R12/ Intersection of Millstone Brook and Millstone Lane | Bioretention and dry swale system draining from intersection of West Neck/N Magee St. Dry swale would extend on either side of low point at culvert crossing. Bioretention adjacent to informal gravel parking area. | High |

### *North Sea Road and South Street - North Sea Beach Colony Association (SC-R1)*

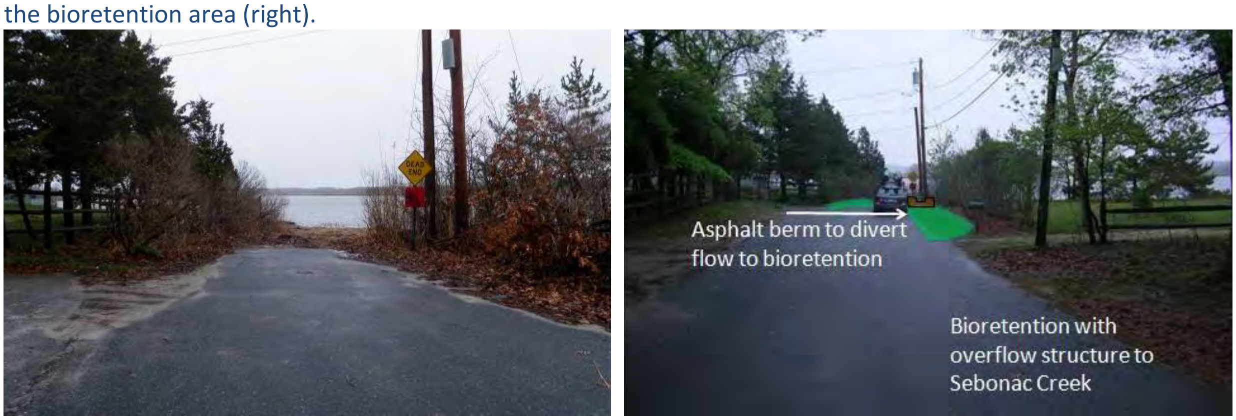
The intersection at North Sea Road and South Street is at the far northern end of the subwatershed at the entrance to the North Sea Beach Colony Homeowners Association. In this location, the existing stormwater infrastructure consists of leaching catchbasins, many of which are partially or fully clogged with sediment. Stormwater and sediment collects within the roadway. The proposed stormwater retrofit concept in this location includes construction of a **dry swale/bioretention** along the right-of-way (ROW) with an overflow to the salt marsh along Scallop Pond. Possible constraints include the width of the ROW to accommodate an adequately sized swale/bioretention system for the drainage area. In order to treat additional stormwater flow, an easement from the property owner may be needed. The proposed retrofit concept also includes paved “bleed-offs” along the east side of the roadway directed to two existing ponds located southeast of the intersection to allow for overland flow of stormwater away from the marsh. The retrofit concept will allow for improved water quality treatment and some groundwater recharge.

**Figure 3.2.** Existing conditions along North Sea Road and Intersection with South Street (top). Proposed dry swale/bioretention along right-of-way with overflow to salt marsh (lower left) and paved bleed-offs along roadway to the south of the intersection (lower right).


### *End of Island Creek Road (SC-R2)*

Island Creek Road is located in the north central portion of the subwatershed and dead ends at the marsh along an inlet of Little Sebonac Creek, where untreated drainage flows directly into the marsh. Accumulated sediments and debris were observed along the roadway and at the edge of the marsh. The proposed retrofit concept would involve the construction of a **bioretention area** at the end of road to allow for water quality treatment, with a constructed asphalt berm to divert flow toward the bioretention area and away from the marsh. The bioretention area would be equipped with an overflow structure to Little Sebonac Creek. Project constraints include impacts to off-road parking in this location.

**Figure 3.3.** Proposed bioretention area at the end of Island Creek Road with a constructed berm to divert flow into the bioretention area (right).



### *End of West Neck Road (SC-R3)*

The end of West Neck Road is located directly south of Island Creek Road, which dead ends at a paved pier and boat ramp to Sebonac Creek. Existing stormwater infrastructure consists of leaching catchbasins, many of which are partially or fully clogged with sediment. As a result, stormwater ponds within the roadway, and sediment and debris were observed along the low points in the road. The proposed retrofit concept involves the construction of a **wet swale** along the north side of West Neck Road with overflows to a **constructed pocket wetland** located across from the westernmost intersection with West Neck Circle. This location appears to be a “vacant” lot, where lawn and landscaping waste are dumped. Further south, there appears to be a small wetland area. The pocket wetland would be designed with a surface overflow weir structure; a paved flume would also direct surface flow toward the pocket wetland. Construction of this retrofit concept would require an easement from the property owner and would allow for water quality treatment.

**Figure 3.4.** Existing conditions at the end of West Neck Road (top). Proposed retrofit concept consisting of a wet swale with inlet to overflow (right) to a constructed pocket wetland (right).


### *Drainage culvert crossing Millstone Brook Road (SC-R5)*

Millstone Brook Road extends in a northeast-southwest direction between North Sea Road and Barkers Island Road in the central portion of the subwatershed. There are a series of crushed and or presumably clogged culverts at the low point in the roadway, which is flanked to the north and south by existing wetlands. Some minor erosion was observed along the road and sedimentation was evident within the downgradient wetland. Private driveways contribute minimally to drainage, which discharges to a small stream. The proposed retrofit concept includes construction of a **dry swale** along the downgradient side of Millstone Brook Road to provide stormwater attenuation and water quality improvements within the downgradient resources.


**Figure 3.5.** Crushed and failing culverts at the low point in Millstone Brook Road and sedimentation within wetland areas (top photos). Proposed dry swale along downgradient side of road (left) will allow for stormwater attenuation and water quality improvements.

### *Intersection of Sebonac Inlet Road and Sebonac Road (SC-R9)*

The intersection of Sebonac Inlet Road and Sebonac Road is located in the far southeastern section of the subwatershed, where partially or fully clogged leaching catchbasins causing water to pond along the roadway. The intersection is marked by a small triangular center island. The proposed retrofit concept would involve **reconstruction of the intersection geometry, pavement removal,** and construction of **bioretention cells** within the intersection area and along the grassed right-of-way to the southeast of the intersection with overflow to **leaching chambers**. The proposed concept would allow for water quality improvements and groundwater recharge, depending on underlying soil constraints. The existing utilities (water main and overhead wires) may pose possible conflicts for construction of this retrofit practice.

**Figure 3.6**. Existing clogged leaching catchbasins at the intersection of Sebonac Inlet Road and Sebonac Road Proposed bioretention cells with overflow to leaching chambers will allow for increased groundwater recharge and water quality improvements within the drainage area.


### *Intersection of Millstone Brook and Millstone Lane (SC-R12)*

The intersection of Millstone Brook Road and Millstone Lane is located in the center of the subwatershed, and just northeast of SC-R5 (see above). Millstone Lane is an unimproved gravel roadway. The existing stormwater management system includes leaching catchbasins and bermed construction along the roadway. The proposed retrofit concept would modify the existing catchbasins to divert flow into **bioretention areas and dry swales** with overflow inlets to **leaching chambers** within the roadway. The proposed stormwater retrofit would result in improved water quality and recharge within the drainage area. Possible conflicts for the design include mature trees and adjacent wetlands along the roadway.

**Figure 3.7.** Existing conditions along Millstone Road at the intersection with Millstone Lane (top). Proposed bioretention areas and swales with overflow inlets to leaching chambers will improve water quality and recharge within the downgradient wetland system.


## 3.3 Neighborhood Assessment Summaries

A summary of general neighborhood conditions is provided below in order to identify which neighborhoods are likely to generate pollutants of concern, what the common sources are, and which areas/ sources should be targeted for watershed stewardship activities. Unless otherwise noted, it is assumed that neighborhoods consist of single-family detached residences, with on-site septic systems, and paved roads with curb and gutter collection systems. Table 3.2 is a comparative summary of each neighborhood assessed, and more detail is provided below. Pollution source is determined by the number of observed pollutants (<1 = Low; 1-2 = Medium; >2 = High).

**Table 3.2.** Neighborhood Inventory Summary

| Site ID/ Name | Pollutant Loading | Main Pollutant Source | Stewardship Activities |
|---|---|---|---|
| SC-N1/ North Sea Road and South Street - North Sea Beach Colony Assoc | Low | Sediment | Low feasibility for pollution prevention practices; possible on-site retrofit (see S-R1) |
| SC-N2/ Island Creek Road | -- | -- | Not a typical neighborhood. No Action. |
| SC-N3/ Country Club Drive and Knollwood Drive | Medium | Sediment | Some potential for small rain gardens in lot areas, but low pollutant reduction potential |

| Site ID/ Name | Pollutant Loading | Main Pollutant Source | Stewardship Activities |
|---|---|---|---|
| SC-N4/ West Neck Circle (associated with SC-R3 Retrofit) | Medium | nutrients, bacteria, sediment | Some potential for rain gardens and buffer management for houses along shoreline |

### *North Sea Road and South Street - North Sea Beach Colony Association (SC-N1)*


North Sea Beach Colony Association (North Sea Road and South Street) is an older, well-established neighborhood founded in 1915 that is located in the far northeastern reaches of the subwatershed. The overall size of the neighborhood is approximately 23 acres. Single-family detached dwellings estimated to be constructed between the 1910s and 1940s are situated on smaller lots typically ¼ acre in size. Approximately 10% of the homes are newly remodeled or reconstructed. Since lots are smaller, average impervious cover is approximately 50%, typically with lawn areas medium maintenance lawn areas (35%), and 15% landscaped beds. About 60% of the yards appear to require a medium level of maintenance, and the remaining 40% of the yards appear to be even split among those requiring either a high or low level of maintenance, and approximately 10% of the lawns have permanent irrigation systems. Less than 10% of the houses in this neighborhood have garages, and approximately 50% have impervious driveways. The neighborhood was clean at the time of observation without visible pet waste, trash, or illegal dumping.

Paved roads within the neighborhood are somewhat variable: some being in generally good condition while others display cracked or broken pavement. The stormwater system primarily consists of individual leaching catchbasins. Many of the leaching catchbasins are in poor or failing condition and have high accumulations of sediment and organic matter. As a result, runoff is bypassing up gradient basins in the neighborhood study area and entering down-gradient catchbasins that directly discharge to the creek via Scallop Pond.

**Figure 3.8.** Typical roadway and driveway conditions within the North Sea Beach Colony Association neighborhood.

Opportunities for pollution prevention within the neighborhood include homeowner education on fertilizer use with emphasis on reduction or elimination. Many of the existing catchbasins would benefit greatly from more frequent cleaning and maintenance, while clogged and underperforming leaching catchbasins should be replaced with systems that can trap sediments/organics and provide pretreatment prior to infiltration. The homeowners association is encouraged to work with the Town to address storm drain maintenance and repair, as well as roadway repairs. On-lot retrofit practices (e.g., raingardens) appear to be feasible on at least some of the lots.

### *Island Creek Road (SC-N2)*

The neighborhood surrounding Island Creek Road in the central part of the subwatershed is comprised of larger lots with significant forest cover, with a varied age of development. This neighborhood was not considered to be a typical neighborhood for the Sebonac Creek watershed, and thus, no further assessment was made during this subwatershed study.

### *Country Club Drive and Knollwood Drive (SC-N3)*

The neighborhood surrounding Country Club Drive and Knollwood Drive is located just south of Sebonac Inlet Road (see SC-R9 above). This is a somewhat newer neighborhood by comparison, with most houses constructed in the 1960s-1970s. The overall size of the neighborhood is approximately 60 acres and is nearly entirely devoid of mature canopy cover. Lots are typically ½-¾ of acre in size, of which approximately 35% of the area is impervious, 60% is lawn cover, and 5% is landscaped beds. About 10% of the yards appear to have high maintenance requirements, with the majority having at least medium level maintenance requirements. Ninety-five percent of the private driveways are impervious, and many appear to have been resurfaced somewhat recently.

Paved roads within the neighborhood are 28 feet wide and are generally in good condition. No curbs are present, but the adjacent raised turf acts as curbing during the growing season. The stormwater system primarily consists of individual leaching catchbasins. Many of the leaching catchbasins are in poor or failing condition and have accumulations of sediment and organic matter. As a result, stormwater runoff ponds on the roads.

**Figure 3.9.** Typical overly-wide roadways within the Country Club Drive/Knollwood Drive neighborhood.

Opportunities for pollution prevention within the neighborhood include homeowner education on fertilizer use with emphasis on reduction or elimination. In addition, the Town should address storm drain maintenance and repair. Clogged and underperforming leaching catchbasins should be replaced with systems that can trap sediments/organics and provide pretreatment prior to discharge to infiltration basins. Similarly, many of the existing catchbasins would benefit greatly from more frequent cleaning and maintenance. The Town should also consider reducing the amount of runoff to Sebonac Creek by removing excess impervious pavement in the neighborhood; many of the roads in the neighborhood are wider than necessary (measuring 28 feet), and it may be possible to reduce this width to 24 feet when road work is performed. There is some potential for on-lot retrofit practices (e.g., raingardens).

### *West Neck Circle (SC-N4)*

The West Neck Circle neighborhood is an older neighborhood of single-family detached dwellings that appear to be approximately 60 to 80 years of age (1930s-1950s construction). The overall size of the neighborhood is 13 acres, with lot sizes ranging from ¼-½ an acre. A typical lot is 40% impervious cover, with a maintained yard condition of 40% grass cover and 20% landscaped beds, although this varies somewhat. About 90% of the yards appear to have low maintenance requirements, and the remaining 10% require a medium level of maintenance. Approximately 50% of the driveways are impervious.

**Figure 3.10.** Typical lots and roadways within the West Neck Circle neighborhood.

At the time of observation, the neighborhood was clean without visible trash or illegal dumping with the exception of a vacant lot where yard and landscape debris is dumped (see SC-R3 site above). However, there are indicators within the neighborhood that there is potential for pollutant accumulation, particularly, sediment and organic matter, nutrients, and bacteria (pet waste).

The storm drain system in this neighborhood consists of leaching catchbasins, many of which are in poor state of maintenance and have high accumulations of sediment and organic matter. As a result, runoff either ponds on the roads or in some places bypasses the clogged and underperforming basins and enters downgradient catchbasins that directly discharge to the creek at the end of West Neck Road where there is a small boat launch and paved pier. Flooding in the roadways appears to remain long after storm events. Opportunities for pollution prevention include increased maintenance and repair of the existing leaching catchbasins. A neighborhood retrofit opportunity providing wet swales with inlet that overflow to a constructed pocket wetland bioretention area to allow for water quality treatment (see SC-R3 above).

## 3.4 Stormwater Hotspot Inventory

A summary of hotspot conditions is provided below in order to identify which hotspots are likely to generate pollutants of concern, what the common sources are, and which areas/sources should be targeted for pollution control activities. Table 3.3 is a comparative summary of each hotspot. More detail is provided below.

**Table 3.3. Hotspot Inventory Summary**

| Project ID/ Site Name | Description | Ranking |
|---|---|---|
| SC-H1/ Bullhead Yacht Club | Recommended signage for boat washing and minor maintenance activities by boat owners | Medium-Low |

| Project ID/ Site Name | Description | Ranking |
|---|---|---|
| SC-H2/ National Links Golf Club | Clubhouse parking lot could benefit from stormwater retrofit. Golf course could include enhanced buffer plantings along Bullhead Bay Inlet pond. Irrigation pond shows eutrophic conditions (Bing Maps) | Low |
| SC-H3/ Shinnecock Hills Golf Club | No Action | Low |

### *Bullhead Yacht Club (SC-H1)*
The Bullhead Yacht Club is a very small private yacht club located at end of West Neck Road and immediately southeast of the West Neck Circle Neighborhood. The boatyard is gravel/unimproved, with a boat launching facility, storage areas, small grassed areas, and a snack bar, with no observed significant maintenance facilities. The yacht club is more of a boat storage facility. However, boat owners likely perform small-scale boat maintenance (washing, painting). There is a low to medium risk of contaminants from heavy metals from paint on boats, and possible oil/grease from boat engine repair. Stormwater from the site either infiltrates or flows directly into Sebonac Creek. Educational signage for boat washing and minor maintenance activities by boat owners is recommended.

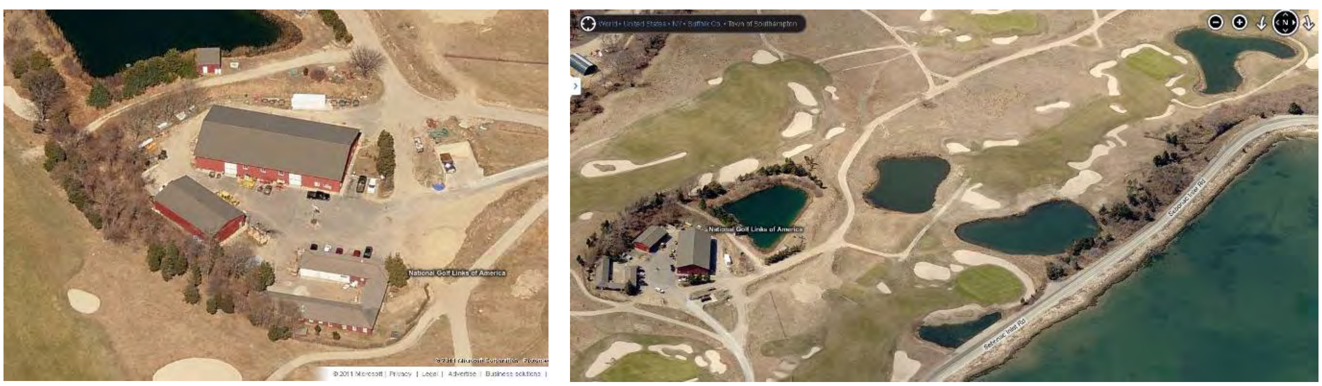
**Figure 3.11.** Bullhead Yacht Club facilities. The site could benefit from educational signage for boat owners on environmentally responsible boat maintenance practices.

### *National Links Golf Club (SC-H2)*
National Links Golf Course is located at the southwestern extreme of the subwatershed, and only approximately half of the golf course is located in the Sebonac Creek subwatershed. The maintenance building is not within the subwatershed, and was not investigated during this study. A review of aerial photographs indicates that the maintenance building appears to be mostly enclosed with some storage of materials outside.

**Figure 3.12.** National Links Golf Club near Bullhead Bay Inlet pond (left) where buffer plantings would provide increased nutrient uptake and water quality benefits. The clubhouse parking lot may benefit from a stormwater retrofit practice such as installation of a bioretention area (right).

The clubhouse parking lot is relatively small but may benefit from incorporation of a bioretention area or other retrofit BMP. The Golf Club could also include enhanced plantings of native vegetation along Bullhead Bay Inlet pond, which increases vegetative buffering along the shoreline while also discouraging waterfowl from gathering along maintained surfaces, potentially reducing bacteria within stormwater runoff.

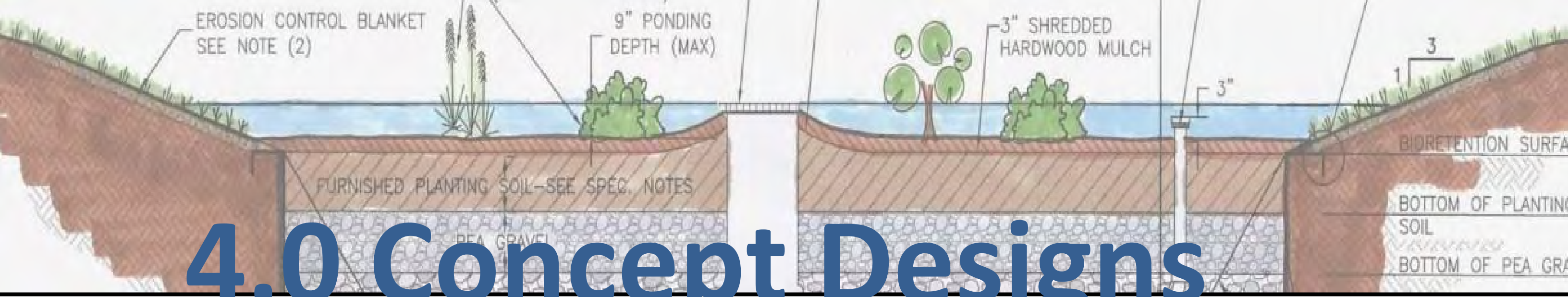
**Figure 3.13.** National Links Golf Club maintenance building and apparent eutrophic conditions within irrigation ponds (top) and closer view of maintenance facility (left) (Source: Bing Maps).




### *Shinnecock Hills Golf Club (SC-H3)*

Shinnecock Hills Golf Club occupies the majority of the southern portion of the subwatershed. The maintenance facility was investigated and found to have a covered fuel storage area with containment and indoor storage of materials. The mowing equipment cleaning area is contained and drains to a leaching system with pretreatment with a down-gradient detention pond. No action is recommended for this site.

**Figure 3.14.** Shinnecock Hills Golf Club (top). The maintenance facility includes covered fuel and materials storage, a contained equipment maintenance facility (bottom).




# 4.0 Concept Designs for Priority Retrofits

This section provides concept designs for the top-ranked retrofits identified in Section 3 and Appendix C. These concepts are planning-level designs that use the estimated drainage area, impervious cover, and proposed practice design criteria to identify the size, pollutant removal effectiveness, and estimated costs for each retrofit. In addition, necessary next steps are identified. The purpose of the concept designs is to provide sufficient level of detail to be used in grant applications for funding the full implementation of the proposed retrofits. The concepts were provided in fact sheet formatting so that they can be used as stand-alone documents as needed. Design criteria and pollutant removal assumptions were based on information in the New York State Stormwater Management Design Manual (2010 update), as well as the Rhode Island Stormwater Installation and Design Standards Manual (2010).

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# SC-R3. End of West Neck Road — Wet swales and constructed pocket wetland

## Site Description

The end of West Neck Road is located directly south of Island Creek Road, which dead ends at a paved pier and boat ramp to Sebonac Creek. Existing stormwater infrastructure consists of leaching catchbasins, many of which are partially or fully clogged with sediment. As a result, stormwater ponds within the roadway, and during larger storm events, flows directly into Sebonac Creek. Sediment and debris were observed along the low points in the road. Near the intersection with West Neck Circle and a small wetland area, a "vacant" private lot is being used for dumping lawn and landscaping wastes.

## Proposed Concepts

Due to the close proximity of natural wetlands, groundwater is likely high in this area. Thus, the proposed retrofit concept involves the construction of wet swales along the northwest side and the southwest side of the westernmost intersection with West Neck circle with overflows to a constructed pocket wetland located across the street in the right-of-way adjacent to the private "vacant" lot with the existing small wetland area further to the south. A paved flume would also direct surface flow toward the constructed pocket wetland, and it would be designed with a surface overflow weir structure.

## Practice Sizing/Design Considerations

Wet swales and constructed pocket wetlands have a shallow permanent pool and are planted with native wetland vegetation to provide pollutant uptake and wildlife habitat. For planning purposes, wet swales and constructed wetlands that are designed for treating the water quality volume are roughly 1.5% of the total drainage area to the practices. This equates to approximately 2,400 SF of required treatment area. The available surface area along the right-of-way for the swales, assuming that they are ~4-6 ft wide, is about 900 SF, with 700 SF available for the constructed pocket wetland. This layout provides treatment for 66% of the water quality volume. As this design is advanced, the possibility of extending the wet swales should be explored to try to treat the full water quality volume. Construction of this retrofit concept would require an easement from the property owner of the "vacant" private lot.

## Pollutant Removal

Wet swales and constructed wetlands are expected to remove 85% TSS; 48% TP; 30% TN; and 60% bacteria (RI Manual, 2010). This assumes the full design treatment volume can be provided.

## Project costs

The planning-level construction cost of Site SC-R3 is approximately $25,000. An additional $7,500 should be added for an estimated 10% fee for final engineering design and permitting and a 20% contingency. Long-term operation and maintenance costs are likely to be about 5% of the construction costs, or $1,250, annually.

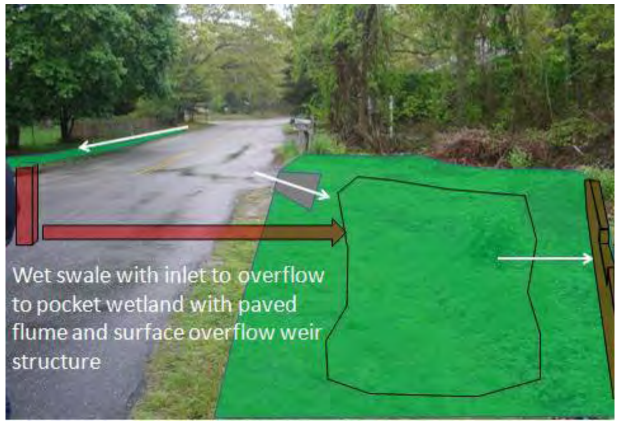
## Next steps

- Confirm soil and groundwater conditions;
- Complete a topographic survey;
- Map existing utilities;
- Map existing resource area boundaries and buffers;
- Approach private landowner about acquiring a drainage easement; and
- Advance design for permitting and construction.

| Site ID | Drainage Area (ac) | % Impervious | Water Quality Volume (cf)* | Practice Area Required (sf)* | Practice Area Available (sf)* |
|---|---|---|---|---|---|
| SC-R3 | 3.7 | 22 | 4,000 | 2,400 | 1,600 |

*Design Water Quality Volume: WQv (cf) = (1.2”)(Rv)(A)/12; where Rv = 0.05+0.009(I), A = drainage area (sf), I = percent impervious cover (per NY State Stormwater Design Manual, 2010).
*Practice Area Required is calculated based on practice-specific design assumptions.
*Practice Area Available is estimated from available mapping. Actual practice area may be adjusted as needed during pre-construction.

### Proposed Concept Sketch


### Examples of a pocket wetland (left) and a newly constructed wet swale (right)


**Legend**

- Sebonac Creek Watershed
- Retrofit Sites
- Retrofit Footprint
- Retrofit Drainage Area
- Retrofit Impervious
- Hot Spots
- Neighborhoods
- Catchbasins (HW)
- 5ft. Contours
- Hydrography
- Hydrography
- Parcels
- Public Properties

N

Feet
100

Horsley Witten Group
Sustainable Environmental Solutions

Retrofit 3
Sebonac Creek Subwatershed
Southampton, NY

Date: 7/5/2013

Path: H:\Projects\2009\9072 Peconic-Sub WS Mgt Plans\GIS\Maps\FieldMaps\130701_Sebonac_blowups_landscape_9072.mxd

# SC-R9. Intersection of Sebonac Inlet & Sebonac Roads

## —Intersection Reconfiguration and Bioretention facilities

### Site Description

The intersection of Sebonac Inlet Road and Sebonac Road is located in the far southeastern section of the subwatershed, where partially or fully clogged leaching catchbasins are failed or failing, and water ponds along the roadway. The intersection is marked by a small triangular center island.

### Proposed Concepts

The proposed retrofit concept would involve reconstruction of the intersection and construction of bioretention cells within the center island and along the grassed right-of-way to the southeast of the intersection with overflow to leaching chambers. The proposed concept would allow for water quality improvements and groundwater recharge, depending on underlying soil constraints.

### Practice Sizing/Design Considerations

The bioretention areas should be sized to treat the water quality volume, while the leaching chambers should be sized for handling the overflows from at least the 10 year design storm event. The bioretention surface area should be approximately 8,500 SF of total treatment area. The available surface area at this location is about 5,500 SF (~65% of required size) but could possibly be enlarged through additional pavement removal. Any amount of pavement removal would also decrease the amount of required treatment area. The existing utilities (water main and overhead wires) may pose possible conflicts for construction of this retrofit practice.

### Pollutant Removal

Bioretention areas and dry swales are expected to remove 90% TSS; 30% TP; 55% TN; and 70% bacteria (RI Manual, 2010). This assumes the full design treatment volume can be provided.

### Project costs

The construction of Site SC-R9 is expected to cost approximately $162,000. An additional $48,600 should be added for an estimated 10% fee for final engineering design and permitting and a 20% contingency. Long-term operation and maintenance costs are likely to be about 5% of the construction costs, or $8,100, annually.

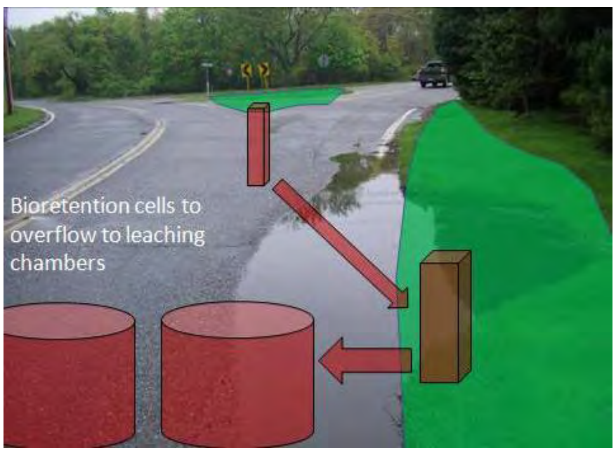
### Next steps

- Investigate modifying intersection geometry to reduce excess pavement;
- Confirm soil and groundwater conditions;
- Complete a topographic survey;
- Map existing utilities;
- Map limits of right-of-way; and
- Map existing resource area boundaries and buffers.

| Site ID | Drainage Area (ac) | % Impervious | Design Treatment Volume (cf)* | Practice Area Required (sf)* | Practice Area Available (sf)* |
|---|---|---|---|---|---|
| SC-R9 | 5.6 | 36 | 9,200 | 8,500 | 5,500 |

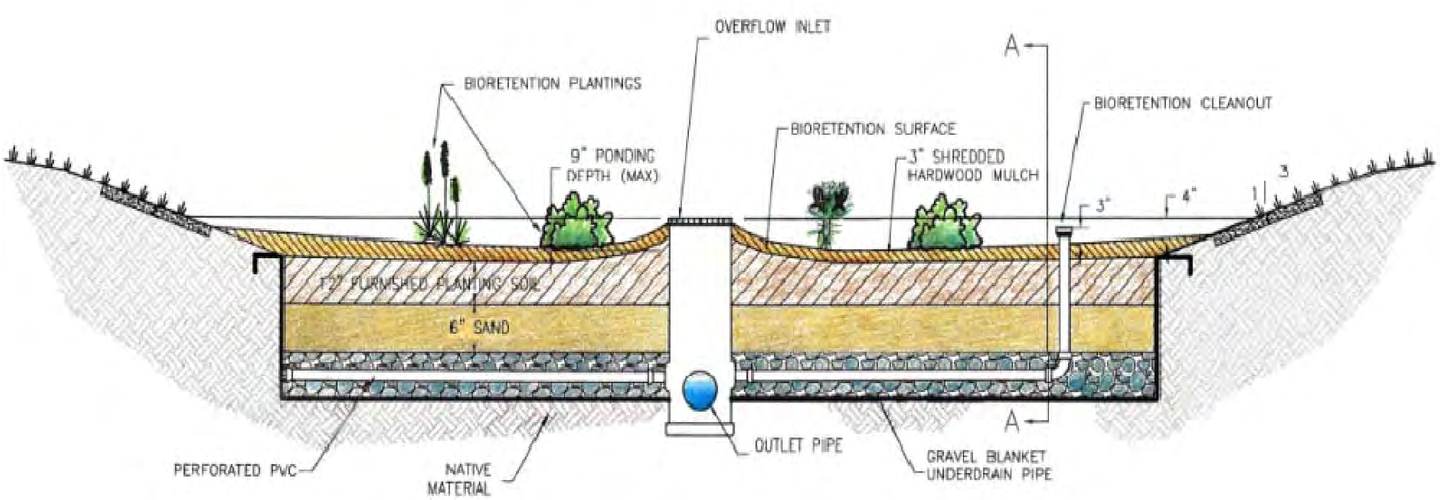
*Design Water Quality Volume: WQv (cf) = (1.2")(Rv)(A)/12;  where Rv = 0.05+0.009(I), A = drainage area (sf), I = percent impervious cover (per NY State Stormwater Design Manual, 2010).
*Practice Area Required is calculated based on practice-specific design assumptions (per NY State Stormwater Design Manual, 2010).
*Practice Area Available is estimated from available mapping with limited field verification. Actual practice area may be adjusted as needed during pre-construction.

### Proposed Concept Sketch





### Typical bioretention facility detail, showing filter media, plantings, underdrain if needed, and overflow structure.




**Legend**

- Sebonac Creek Watershed
- Retrofit Sites
- Retrofit Footprint
- Retrofit Drainage Area
- Retrofit Impervious
- Hot Spots
- Neighborhoods
- Catchbasins (HW)
- 5ft. Contours
- Hydrography
- Hydrography
- Parcels
- Public Properties

N

Feet

200

Horsley Witten Group

Sustainable Environmental Solutions

Retrofit 9
Sebonac Creek Subwatershed
Southampton, NY

Date: 7/5/2013

*Path: H:\Projects\2009\9072 Peconic-Sub WS Mgt Plans\GIS\Maps\FieldMaps\130701_Sebonac_blowups_landscape_9072.mxd*

# SC-R5. Drainage culvert crossing Millstone Brook Rd — Dry swale with check dams

## Site Description

Millstone Brook Road extends in a northeast-southwest direction between North Sea Road and Barkers Island Road in the central portion of the subwatershed. There are a series of crushed and presumably clogged culverts at the low point in the roadway, which is flanked to the north and south by existing wetlands. Some minor erosion was observed along the road, and sedimentation was evident within the downgradient wetland. Private driveways contribute minimally to the road drainage area, which discharges to a small stream.

## Proposed Concepts

The proposed retrofit concept includes construction of a dry swale in the right-of-way along the downgradient side of Millstone Brook Road to provide stormwater attenuation and water quality improvements within the downgradient resources. A dry swale combines shallow surface storage that has gentle side slopes and is planted with grass with the underlying filter media used in a bioretention facility.

## Practice Sizing/Design Considerations

The dry swale should be sized to treat up to the water quality volume from the contributing impervious surface. This equates to approximately 1,500 SF of required treatment area. The available surface area at this location is about 1,100 SF, or approximately 73% of the required area. The proposed swale is 4 feet wide on average and approximately 275 feet long. The swale should have no greater than 2:1 side slopes. Check dams should be used as necessary to prevent erosion in the bottom of the swale and provide increased filtration in each cell. The dry swale should have an average water depth of 9 inches and no more than 18 inches. An underdrain should be used if underlying native soils are not conducive to infiltration (HSG C/D) and/or if there is a high groundwater table at the site.

## Pollutant Removal

Dry swales are expected to remove 90% TSS; 30% TP; 55% TN; and 70% bacteria (RI Manual, 2010). This assumes the full design treatment volume can be provided.

## Project costs

The construction of Site SC-R5 is expected to cost approximately $21,500. An additional $6,450 should be added for an estimated 10% fee for final engineering design and permitting and a 20% contingency. Long-term operation and maintenance costs are likely to be about 5% of the construction costs, or $1,075, annually.

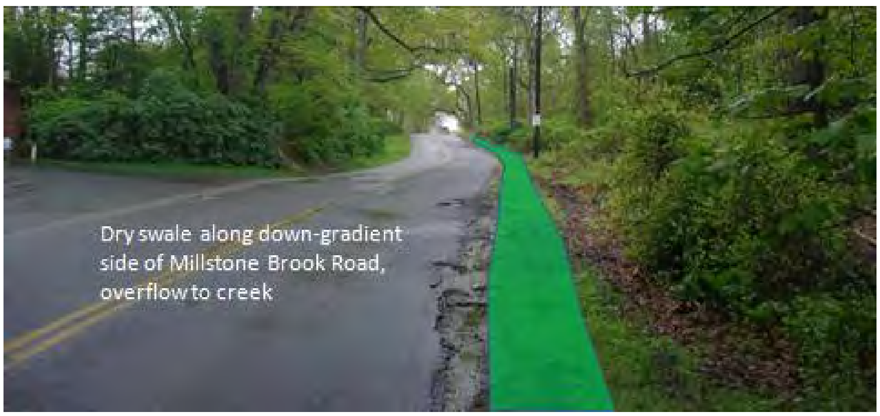
## Next steps

- Confirm soil and groundwater conditions;
- Complete a topographic survey;
- Map existing utilities;
- Map limits of right-of-way; and
- Map existing resource area boundaries and buffers.

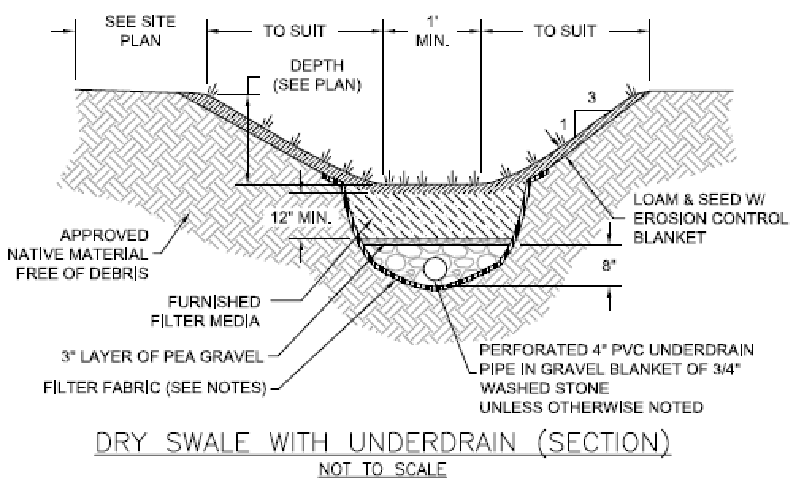
| Site ID | Drainage Area (ac) | % Impervious | Design Treatment Volume (cf)* | Practice Area Required (sf)* | Practice Area Available (sf)* |
|---|---|---|---|---|---|
| SC-R5 | 0.6 | 66 | 1,700 | 1,500 | 1,100 |

*Design Water Quality Volume: WQv (cf) = (1.2")(Rv)(A)/12; where Rv = 0.05+0.009(I), A = drainage area (sf), I = percent impervious cover (per NY State Stormwater Design Manual, 2010).
*Practice Area Required is calculated based on practice-specific design assumptions.
*Practice Area Available is estimated from available mapping. Actual practice area may be adjusted as needed during pre-construction.

### Proposed Concept Sketch




### Typical Dry Swale Detail




**Legend**

- Sebonac Creek Watershed
- Retrofit Sites
- Retrofit Footprint
- Retrofit Drainage Area
- Retrofit Impervious
- Hot Spots
- Neighborhoods
- Catchbasins (HW)
- 5ft. Contours
- Hydrography
- Hydrography
- Parcels
- Public Properties

N

Feet

80

Horsley Witten Group
*Sustainable Environmental Solutions*

Retrofit 5
Sebonac Creek Subwatershed
Southampton, NY

Date: 7/5/2013

Path: H:\Projects\2009\9072 Peconic-Sub WS Mgt Plans\GIS\Maps\FieldMaps\130701_Sebonac_blowups_landscape_9072.mxd

# SC-R12. Intersection of Millstone Brook and Millstone Lane — Bioretention and dry swale system

## Site Description

The intersection of Millstone Brook Road and Millstone Lane is located in the center of the subwatershed, and just northeast of SC-R5. Millstone Lane is an unimproved gravel roadway. The existing stormwater management system includes a paved berm all along the roadway directing runoff to leaching catchbasins.

## Proposed Concepts

The proposed retrofit concept would modify the existing catchbasins to divert flow into bioretention areas and dry swales with overflow inlets to leaching chambers within the roadway. The proposed stormwater retrofit would result in improved water quality and recharge within the drainage area.

## Practice Sizing/Design Considerations

The bioretention area and dry swales should be sized for treating the water quality volume. This equates to approximately 6,000 SF of required treatment area. There is sufficient available surface area at this location to provide the full 6,000 SF. Ponding depth should be no more than 6 inches for the bioretention area and no more than 9 inches for the dry swales. Possible conflicts for the design include mature trees and adjacent wetlands along the roadway. An underdrain should be used if underlying native soils are not conducive to infiltration (HSG C/D) and/or if there is a high groundwater table at the site.

## Pollutant Removal

Bioretention areas and dry swales are expected to remove 90% TSS; 30% TP; 55% TN; and 70% bacteria (RI Manual, 2010).

## Project costs

The construction of Site SC-R12 is expected to cost approximately $185,000. An additional $55,500 should be added for an estimated 10% fee for final engineering design and permitting and a 20% contingency. Long-term operation and maintenance costs are likely to be about 5% of the construction costs, or $1,250, annually. Long-term operation and maintenance costs are likely to be about 5% of the construction costs, or roughly $9,250, annually.

## Next steps

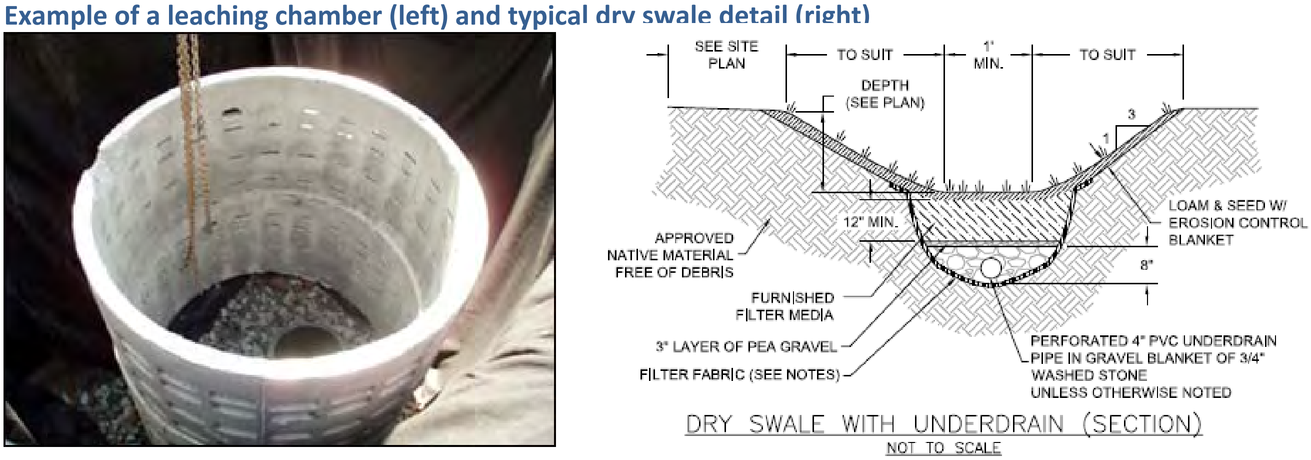
- Confirm soil and groundwater conditions;
- Complete a topographic survey;
- Map existing utilities;
- Map limits of right-of-way; and
- Map existing resource area boundaries and buffers.

| Site ID | Drainage Area (ac) | % Impervious | Design Treatment Volume (cf)* | Practice Area Required (sf)* | Practice Area Available (sf)* |
|---|---|---|---|---|---|
| SC-R12 | 6.8 | 20 | 6,900 | 6,000 | 6,000 |

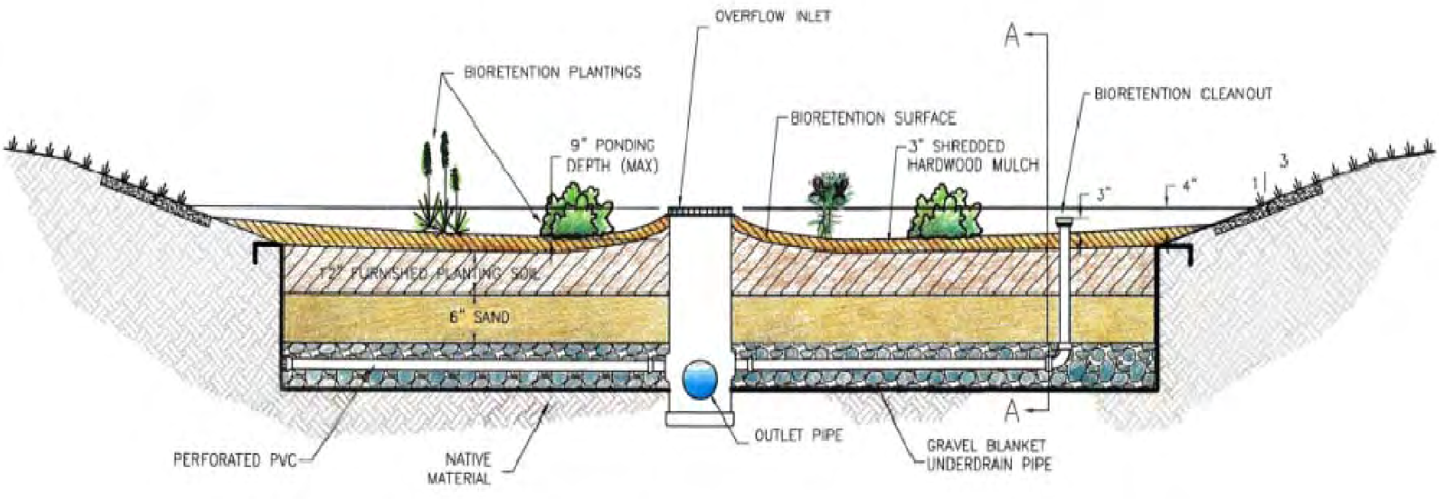
*Design Water Quality Volume: WQv (cf) = (1.2”)(Rv)(A)/12;  where Rv = 0.05+0.009(I), A = drainage area (sf), I = percent impervious cover (per NY State Stormwater Design Manual, 2010).
*Practice Area Required is calculated based on practice-specific design assumptions (per NY State Stormwater Design Manual, 2010).
*Practice Area Available is estimated from available mapping with limited field verification. Actual practice area may be adjusted as needed during pre-construction.

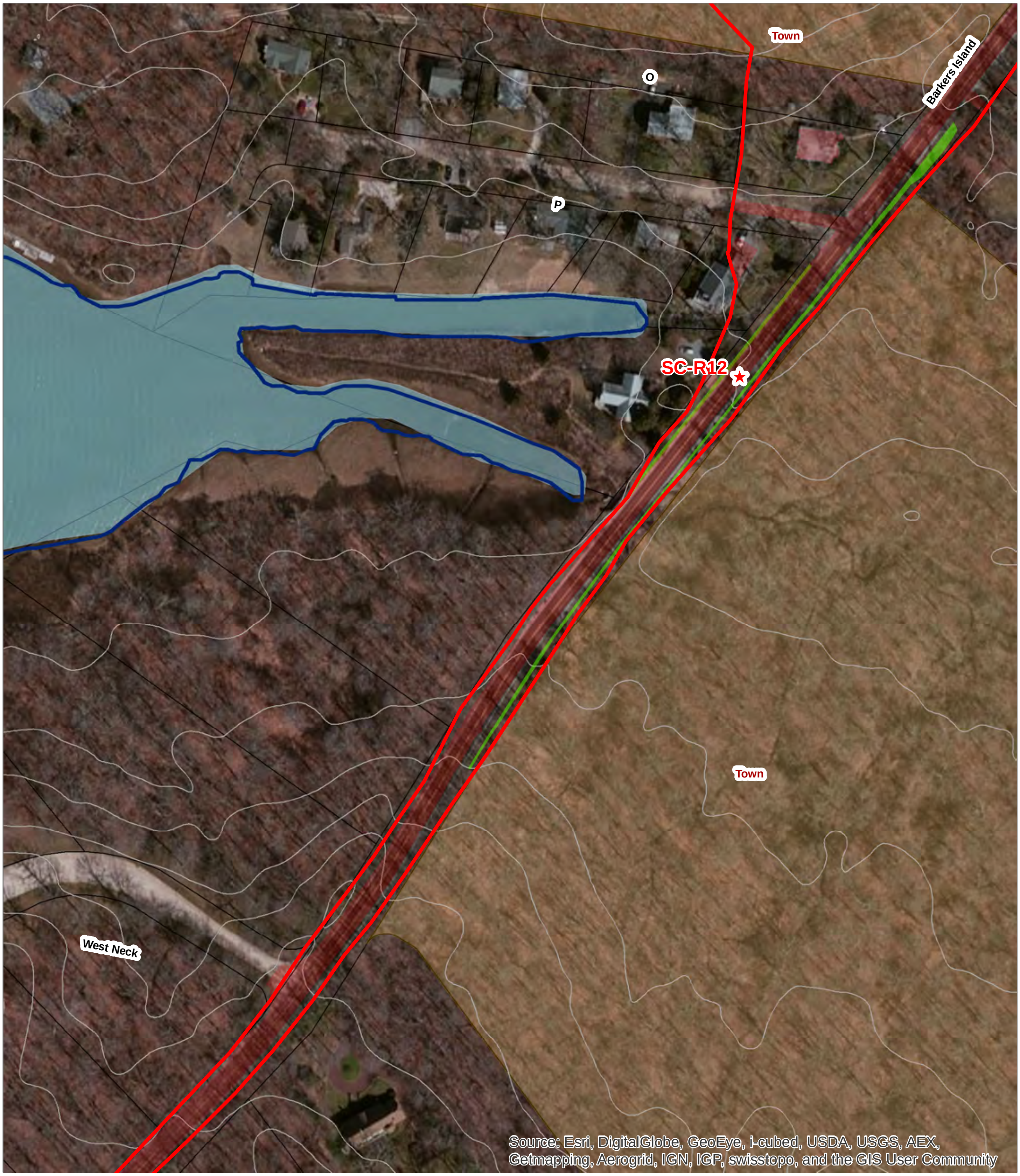
### Proposed Concept Sketch


### Example of a leaching chamber (left) and typical dry swale detail (right)



**Typical bioretention facility detail, showing filter media, plantings, underdrain if needed, and overflow structure.**






**Legend**

- Sebonac Creek Watershed
- Retrofit Sites
- Retrofit Footprint
- Retrofit Drainage Area
- Retrofit Impervious
- Hot Spots
- Neighborhoods
- Catchbasins (HW)
- 5ft. Contours
- Hydrography
- Hydrography
- Parcels
- Public Properties

N

150 Feet

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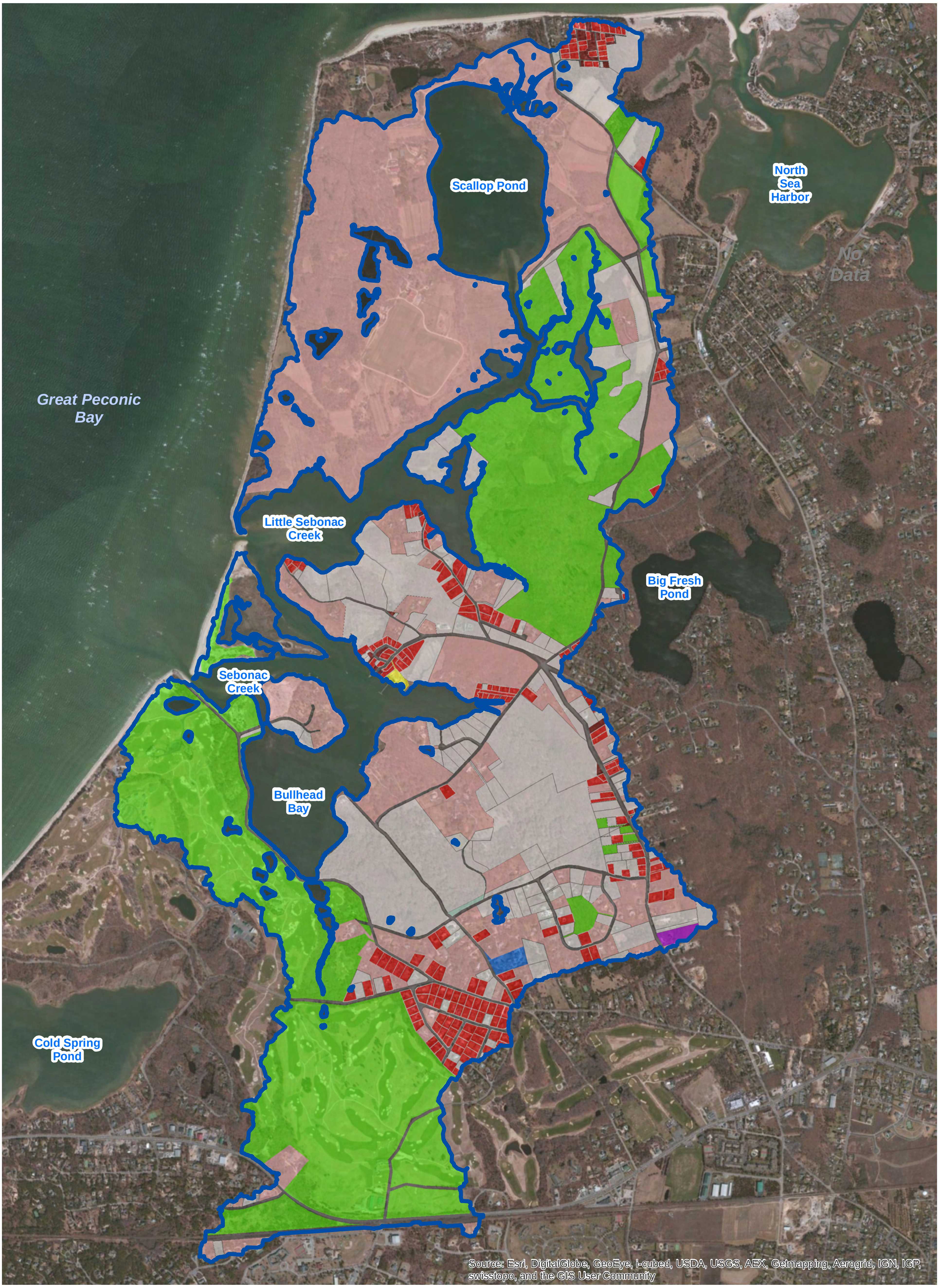
Retrofit 12
Sebonac Creek Subwatershed
Southampton, NY

Date: 7/5/2013

Path: H:\Projects\2009\9072 Peconic-Sub WS Mgt Plans\GIS\Maps\FieldMaps\Sebonac_blowups_portrait.mxd

# APPENDIX A:

## SUBWATERSHED BASELINE MAPS




**_Legend_**

Sebonac Creek Subwatershed

***Land Use***

- Transportation
- Low Density Res.
- Med Density Res.
- High Density Res
- Commercial
- Industrial
- Institutional
- Open Space
- Agricultural
- Vacant
- Utilities
- Waste Handling & Mant.

N

Feet

1,600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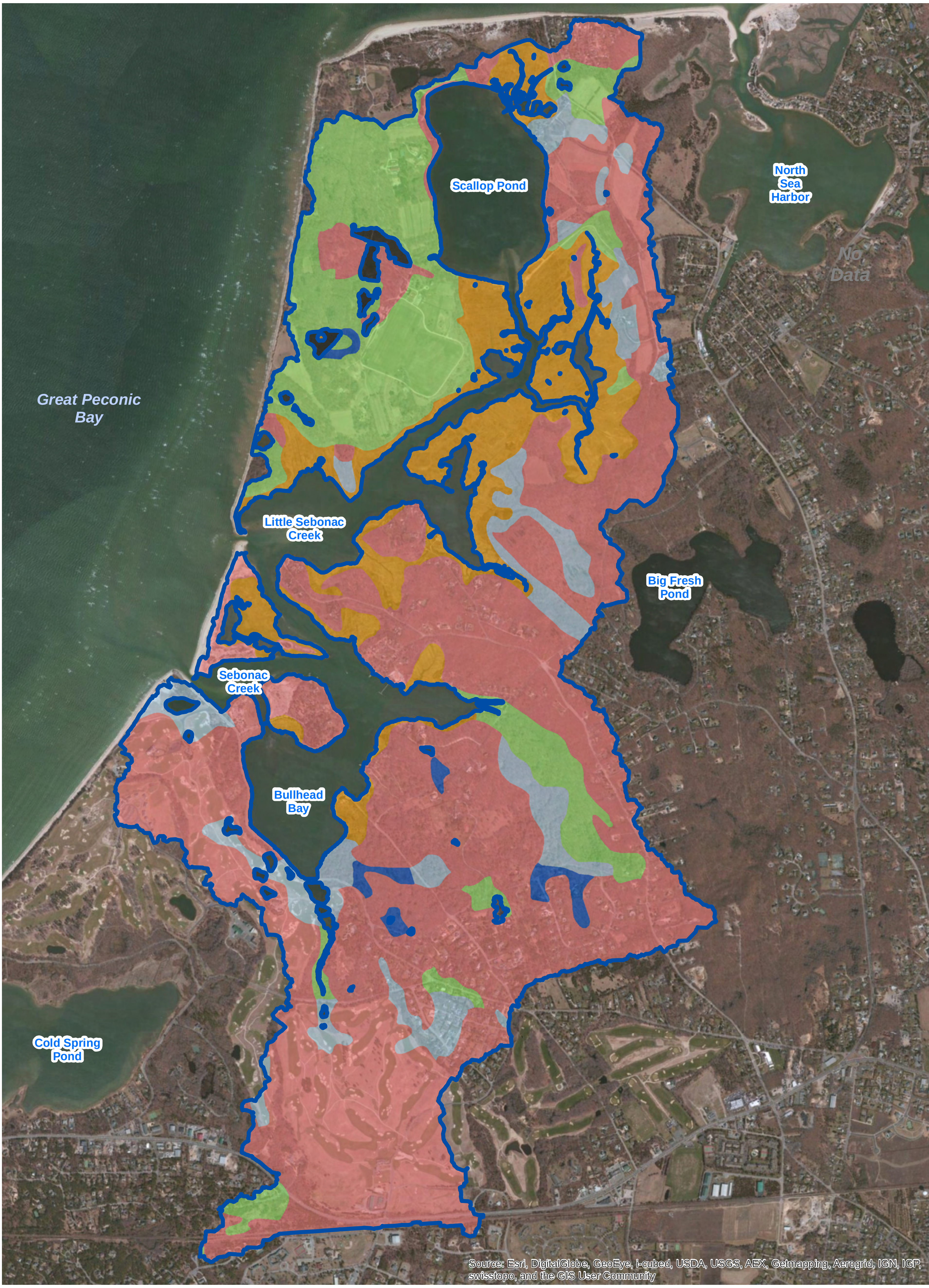
*90 Route 6A • Sandwich, MA • 02563*
*Tel: 508-833-6600 • Fax: 508-833-3150 • www.horsleywitten.com*


Land Use
Sebonac Creek Subwatersheds
Southampton, NY

Date: 6/30/2013

*Path: H:\Projects\2009\9072 Peconic-Sub WS Mgt Plans\GIS\Maps\Land_Use\130628_SC_LandUse_9072.*




**Legend**

Sebonac Creek Subwatershed

Parcels

**Hydro Group**

A
B/D
C/D
U
B
C
D

N
Feet
1,600

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90 Route 6A • Sandwich, MA • 02563
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Soils
Sebonac Creek Subwatersheds
Southampton, NY

Date: 6/30/2013

Path: H:\Projects\2009\9072 Peconic-Sub WS Mgt Plans\GIS\Maps\Soils\130628_SC_Soils_9072.mxd

# APPENDIX B:

## FIELD FORMS AND SKETCHES

# FIELD FORMS - RETROFITS

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R1 **Subwatershed:** Sebonic

**Date:** 5/16/11 **Assessed by:** RAC/AWB

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:** North Sea Beach Colony Association

**Land Use:** ☐ Public ☒ Private ☐ Unknown:

☒ Single Family Residential ☐ Multi-Fam. Residential ☐ School ☐ Golf Course ☐ Park ☐ Agricultural ☐ Road ☐ Commercial/Industrial ☐ Resort ☐ Marina ☐ Other: ________

**Is the site a hotspot?** ☐ Yes ☒ No ☐ Unknown:
**Sources/pollutants observed?** ☐ No ☒ Sediment ☐ Nutrients/organics ☐ Oil/grease ☒ Trash/Floatables (minimal)

**Existing Stormwater BMP on site?** ☒ Yes ☒ No ☐ Unknown: just existing CBs (failed leaching CBs)

**Soils:** ☐ Unknown ☐ poor infiltration ☒ good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**
* Drainage area modified (see lg. map (North)
existing paired CBs failing

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** ☐ existing BMP upgrade ☒ new BMP

☐ bio/rain garden ☒ swale ☐ planter ☐ tree pits ☐ infiltration ☐ permeable paver ☐ sand filter ☐ pond ☐ constructed wetland ☐ proprietary practice ☐ soil amendments ☐ reforestation ☐ impervious cover removal ☐ rainwater harvesting ☐ disconnection ☐ Other (describe): "bleed off"; paired swales 1 to each pond

| **Area Draining to Retrofit** | | |
|---|---|---|
| ☐ Hotspot | ☒ Individual rooftop | **Drainage Area to retrofit** ≈ ______ acres/sq ft |
| ☐ Parking Lot | ☐ other small impervious area | **Imperviousness** ≈ _____% |
| ☒ Street | ☐ Pervious area | |
| ☐ Other (describe): | | **Impervious Area** ≈ _____ acres/sq ft |

**Benefits of Retrofit (primary & secondary):** ☐ Storage ☐ Water Quality ☒ Recharge ☐ Demonstration / Education ☐ Repair ☐ Other: ________

**Possible Conflicts due to:** ☐ Soils ☐ Access ☐ Adjacent Land Use ☒ Existing Utilities UG ☐ Contamination ☐ High water table ☒ Wetlands ☐ Other:

**Describe conflicts:** separation to GW minimal / Salt Marsh

## NEXT STEPS

3 2 1 UN

**Candidate for pilot project** ☐ yep, love it ☐ OK ☒ undecided ☐ no, but keep listed ☐ no way

**Follow-up needed to Complete Field Concept**
☒ Confirm property ownership
☐ Confirm drainage area/impervious cover
☐ Confirm volume computations
☐ Complete concept sketch
☐ ~~Obtain existing as-builts/site plans~~
☐ Obtain detailed topography
☐ Confirm storm drain invert elevations
☐ Other:
☐ Obtain utility mapping
☐ Perform test pits

→ M. Collins to confirm ownership of ponds (orange signage) along E side of road leading to entrance to neighborhood

☒ SITE AERIAL INCLUDED

**PROPOSED RETROFIT CONCEPT (CONT.)**

**Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures):

Dry swale @ corner lot along Scott Rd. → leaching system
maybe use existing leaching CB
or opposite side - "bleed offs" → existing wetland
Maybe - sm. raingarden/bio but not enough real estate; mailboxes would need to be relocated

**Sketch and/or Sizing Calcs:**

**Existing Head Available/Where Measured:**

**Initial Feasibility and Construction Considerations/ Design or Delivery Notes:**

**Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** 22 **Subwatershed:** Sbenic

**Date:** 5/16/11 **Assessed by:** RAC | AMB

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:**

**Land Use:** ☐ Public ☐ Private ☐ Unknown:

☒ Single Family Residential ☐ Multi-Fam. Residential ☐ School ☐ Golf Course ☐ Park ☐ Agricultural ☒ Road ☐ Commercial/Industrial ☐ Resort ☐ Marina ☐ Other: ________

**Is the site a hotspot?** ☐ Yes ☒ No ☐ Unknown:
**Sources/pollutants observed?** ☐ No ☒ Sediment ☐ Nutrients/organics ☐ Oil/grease ☐ Trash/Floatables

**Existing Stormwater BMP on site?** ☐ Yes ☒ No ☐ Unknown:

**Soils:** ☐ Unknown ☒ poor infiltration ☐ good infiltration immediately adj. to SM

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**

roadway runoff / front yards/driveways – small drainage area – confirmed on map

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** ☐ existing BMP upgrade ☒ new BMP

☒ bio/rain garden ☐ swale ☐ planter ☐ tree pits ☐ infiltration ☐ permeable paver ☐ sand filter ☐ pond ☐ constructed wetland ☐ proprietary practice ☐ soil amendments ☐ reforestation ☐ impervious cover removal ☐ rainwater harvesting ☐ disconnection ☐ Other (describe):

**Area Draining to Retrofit**
☐ Hotspot ☒ Individual rooftop
☐ Parking Lot ☒ other small impervious area
☒ Street ☐ Pervious area
☐ Other (describe):

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** _____ %

**Impervious Area ≈** _____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** ☐ Storage ☒ Water Quality ☐ Recharge ☐ Demonstration / Education ☐ Repair ☐ Other: ________

**Possible Conflicts due to:** ☒ Soils ☐ Access ☐ Adjacent Land Use ☒ Existing Utilities ☐ Contamination ☒ High water table ☒ Wetlands ☐ Other:

**Describe conflicts:** D soils ; wetlands – SM ~~high~~ OH utilities right of way

## NEXT STEPS

**Candidate for pilot project** ☐ yep, love it ☒ OK ☐ undecided ☐ no, but keep listed ☐ no way

**Follow-up needed to Complete Field Concept**
☐ Confirm property ownership
☒ Confirm drainage area/impervious cover ✓
☐ Confirm volume computations
☐ Complete concept sketch
☐ Obtain existing as-builts/site plans
☐ Obtain detailed topography
☐ Confirm storm drain invert elevations
☐ Other:
☐ Obtain utility mapping
☐ Perform test pits

**Site ID** ________________

☐ SITE AERIAL INCLUDED

| PROPOSED RETROFIT CONCEPT (CONT.) |
|---|
| **Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures): |
| **Sketch and/or Sizing Calcs:** |
| **Existing Head Available/Where Measured:** |
| **Initial Feasibility and Construction Considerations/ Design or Delivery Notes:** |
| **Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High |

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R3 **Subwatershed:** Sebonic

**Date:** 5/16/11 **Assessed by:** AMB/RAC

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:**
may need to confirm ~~xxx~~ property owner

**Land Use:** ☒ Public ☒ Private ☐ Unknown:

☒ Single Family Residential ☐ Multi-Fam. Residential ☐ School ☐ Golf Course ☐ Park ☐ Agricultural ☒ Road ☐ Commercial/Industrial ☐ Resort ☐ Marina ☐ Other: ________

**Is the site a hotspot?** ☐ Yes ☒ No ☐ Unknown: bacteria ? – pet waste
**Sources/pollutants observed?** ☐ No ☒ Sediment ☒ Nutrients/organics ☐ Oil/grease ☐ Trash/Floatables

**Existing Stormwater BMP on site?** ☐ Yes ☒ No ☐ Unknown:

**Soils:** ☐ Unknown ☐ poor infiltration ☐ good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**
existing failed leaching CBs; shallow vacant lot – draining => preserved wetlands

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** ☐ existing BMP upgrade ☒ new BMP

☐ bio/rain garden ☐ swale ☐ planter ☐ tree pits ☐ infiltration ☐ permeable paver ☐ sand filter ☐ pond ☒ constructed wetland ☐ proprietary practice ☐ soil amendments ☐ reforestation ☐ impervious cover removal ☐ rainwater harvesting ☐ disconnection ☐ Other (describe):

**Area Draining to Retrofit**
☐ Hotspot ☐ Individual rooftop
☐ Parking Lot ☐ other small impervious area
☒ Street ☐ Pervious area
☒ Other (describe): yards

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** _____%

**Impervious Area ≈** _____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** ☐ Storage ☒ Water Quality ☒ Recharge ☐ Demonstration / Education ☐ Repair ☐ Other: ________

**Possible Conflicts due to:** ☐ Soils ☐ Access ☐ Adjacent Land Use ☒ Existing Utilities ☐ Contamination ☒ High water table ☒ Wetlands ☐ Other:
→ private wells

**Describe conflicts:**
property owner may be willing to sell – unbuildable (?) – check w/ conservation

## NEXT STEPS

**Candidate for pilot project** ☒ yep, love it ☐ OK ☐ undecided ☐ no, but keep listed ☐ no way

**Follow-up needed to Complete Field Concept**
☒ Confirm property ownership
☒ Confirm drainage area/impervious cover
☐ Confirm volume computations
☐ Complete concept sketch
☐ Obtain existing as-builts/site plans
☐ Obtain detailed topography
☐ Confirm storm drain invert elevations
☐ Other:
☒ Obtain utility mapping
☐ Perform test pits

**Site ID** R3

☒ SITE AERIAL INCLUDED

| PROPOSED RETROFIT CONCEPT (CONT.) |
| --- |
| **Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures): |
| **Sketch and/or Sizing Calcs:** |
| **Existing Head Available/Where Measured:** |
| **Initial Feasibility and Construction Considerations/ Design or Delivery Notes:** |
| **Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High |

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R4 **Subwatershed:** Sebonic

**Date:** 5/14/11 **Assessed by:** AMB/RAC

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:**

**Land Use:** ☐ Public ☐ Private ☐ Unknown:

☐ Single Family Residential ☐ Multi-Fam. Residential ☐ School ☐ Golf Course ☐ Park ☐ Agricultural ☐ Road
☐ Commercial/Industrial ☐ Resort ☐ Marina ☐ Other: ________

**Is the site a hotspot?** ☐ Yes ☐ No ☐ Unknown:
**Sources/pollutants observed?** ☐ No ☐ Sediment ☐ Nutrients/organics ☐ Oil/grease ☐ Trash/Floatables

**Existing Stormwater BMP on site?** ☐ Yes ☐ No ☐ Unknown:

**Soils:** ☐ Unknown ☐ poor infiltration ☐ good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** ☐ existing BMP upgrade ☐ new BMP

☐ bio/rain garden ☐ swale ☐ planter ☐ tree pits ☐ infiltration ☐ permeable paver ☐ sand filter ☐ pond
☐ constructed wetland ☐ proprietary practice ☐ soil amendments ☐ reforestation ☐ impervious cover removal
☐ rainwater harvesting ☐ disconnection ☐ Other (describe):

**Area Draining to Retrofit**
☐ Hotspot ☐ Individual rooftop
☐ Parking Lot ☐ other small impervious area
☐ Street ☐ Pervious area
☐ Other (describe):

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** _____%

**Impervious Area ≈** _____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** ☐ Storage ☐ Water Quality ☐ Recharge
☐ Demonstration / Education ☐ Repair ☐ Other: ________

**Possible Conflicts due to:** ☐ Soils ☐ Access
☐ Adjacent Land Use ☐ Existing Utilities
☐ Contamination ☐ High water table
☐ Wetlands ☐ Other:

**Describe conflicts:**

## NEXT STEPS

**Candidate for pilot project** ☐ yep, love it ☐ OK ☐ undecided ☐ no, but keep listed ☒ no way

**Follow-up needed to Complete Field Concept**
☐ Confirm property ownership
☐ Confirm drainage area/impervious cover
☐ Confirm volume computations
☐ Complete concept sketch
☐ Obtain existing as-builts/site plans
☐ Obtain detailed topography
☐ Confirm storm drain invert elevations
☐ Other:
☐ Obtain utility mapping
☐ Perform test pits

☐ SITE AERIAL INCLUDED

**PROPOSED RETROFIT CONCEPT (CONT.)**

**Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures):

**Sketch and/or Sizing Calcs:**

**Existing Head Available/Where Measured:**

**Initial Feasibility and Construction Considerations/ Design or Delivery Notes:**

**Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R5 **Subwatershed:** Sebonac

**Date:** 5/16/11 **Assessed by:** AWB/RAC

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:** see photo – Robert Liebman – posted no trespassing

**Land Use:** [x] Public [x] Private [ ] Unknown:

[ ] Single Family Residential [ ] Multi-Fam. Residential [ ] School [ ] Golf Course [ ] Park [ ] Agricultural [x] Road
[ ] Commercial/Industrial [ ] Resort [ ] Marina [ ] Other: ________

**Is the site a hotspot?** [ ] Yes [x] No [ ] Unknown:
**Sources/pollutants observed?** [ ] No [x] Sediment [x] Nutrients/organics [ ] Oil/grease [ ] Trash/Floatables

**Existing Stormwater BMP on site?** [ ] Yes [x] No [ ] Unknown:

**Soils:** [ ] Unknown [ ] poor infiltration [ ] good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**
series of culverts – clogged/eroded – wetlands on both sides of roadway (SYFO)

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** [ ] existing BMP upgrade [x] new BMP

[ ] bio/rain garden [x] swale [ ] planter [ ] tree pits [ ] infiltration [ ] permeable paver [ ] sand filter [ ] pond
[ ] constructed wetland [ ] proprietary practice [ ] soil amendments [ ] reforestation [ ] impervious cover removal
[ ] rainwater harvesting [ ] disconnection [ ] Other (describe): w/check dams – see sketch

**Area Draining to Retrofit**
[ ] Hotspot [ ] Individual rooftop
[ ] Parking Lot [ ] other small impervious area
[x] Street [ ] Pervious area
[ ] Other (describe):

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** _____ %

**Impervious Area ≈** _____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** [ ] Storage [ ] Water Quality [ ] Recharge
[ ] Demonstration / Education [ ] Repair [ ] Other: ________

**Possible Conflicts due to:** [ ] Soils [ ] Access
[ ] Adjacent Land Use [ ] Existing Utilities
[ ] Contamination [ ] High water table
[ ] Wetlands [ ] Other:

**Describe conflicts:**

## NEXT STEPS

**Candidate for pilot project** [ ] yep, love it [ ] OK [ ] undecided [ ] no, but keep listed [ ] no way

**Follow-up needed to Complete Field Concept**
[ ] Confirm property ownership
[ ] Confirm drainage area/impervious cover
[ ] Confirm volume computations
[ ] Complete concept sketch
[ ] Obtain existing as-builts/site plans
[ ] Obtain detailed topography
[ ] Confirm storm drain invert elevations
[ ] Other:
[ ] Obtain utility mapping
[ ] Perform test pits

☒ SITE AERIAL INCLUDED

| PROPOSED RETROFIT CONCEPT (CONT.) |
| --- |
| **Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures): |
| **Sketch and/or Sizing Calcs:** |
| **Existing Head Available/Where Measured:** |
| **Initial Feasibility and Construction Considerations/ Design or Delivery Notes:** |
| **Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High |

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R6

**Subwatershed:** Sebonic

**Date:** 5/14/11

**Assessed by:** RAC/AMB

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:**

**Land Use:** ☒ Public ☐ Private ☐ Unknown:

☐ Single Family Residential ☐ Multi-Fam. Residential ☐ School ☐ Golf Course ☐ Park ☐ Agricultural ☒ Road ☐ Commercial/Industrial ☐ Resort ☐ Marina ☐ Other: ________

**Is the site a hotspot?** ☐ Yes ☒ No ☐ Unknown:
**Sources/pollutants observed?** ☐ No ☐ Sediment ☐ Nutrients/organics ☐ Oil/grease ☐ Trash/Floatables

**Existing Stormwater BMP on site?** ☐ Yes ☐ No ☐ Unknown:

**Soils:** ☐ Unknown ☐ poor infiltration ☐ good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**

prior drainage improvement project in need of maintenance / repair
bad compaction; failing drainage structures
(photos taken)

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** ☒ existing BMP ~~upgrade~~ ☐ new BMP maintenance needed

☐ bio/rain garden ☐ swale ☐ planter ☐ tree pits ☐ infiltration ☐ permeable paver ☐ sand filter ☐ pond ☐ constructed wetland ☐ proprietary practice ☐ soil amendments ☐ reforestation ☐ impervious cover removal ☐ rainwater harvesting ☐ disconnection ☐ Other (describe):

**Area Draining to Retrofit**
☐ Hotspot ☐ Individual rooftop
☐ Parking Lot ☐ other small impervious area
☐ Street ☐ Pervious area
☐ Other (describe):

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** _____%

**Impervious Area ≈** _____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** ☐ Storage ☐ Water Quality ☐ Recharge ☐ Demonstration / Education ☐ Repair ☐ Other: ____________

**Possible Conflicts due to:** ☐ Soils ☐ Access ☐ Adjacent Land Use ☐ Existing Utilities ☐ Contamination ☐ High water table ☐ Wetlands ☐ Other:

**Describe conflicts:**

## NEXT STEPS

**Candidate for pilot project** ☐ yep, love it ☐ OK ☐ undecided ☐ no, but keep listed ☒ no way

**Follow-up needed to Complete Field Concept**
☐ Confirm property ownership
☐ Confirm drainage area/impervious cover
☐ Confirm volume computations
☐ Complete concept sketch
☐ Obtain existing as-builts/site plans
☐ Obtain detailed topography
☐ Confirm storm drain invert elevations
☐ Other:
☐ Obtain utility mapping
☐ Perform test pits

☒ SITE AERIAL INCLUDED

| PROPOSED RETROFIT CONCEPT (CONT.) |
| --- |
| **Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures): |
| **Sketch and/or Sizing Calcs:** |
| **Existing Head Available/Where Measured:** |
| **Initial Feasibility and Construction Considerations/ Design or Delivery Notes:** |
| **Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High |

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R7

**Date:** 5/14/11

**Subwatershed:** Sebonic

**Assessed by:** RAC / AWB

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:**

**Land Use:** ☐ Public ☐ Private ☐ Unknown:

☐ Single Family Residential ☐ Multi-Fam. Residential ☐ School ☐ Golf Course ☐ Park ☐ Agricultural ☐ Road
☐ Commercial/Industrial ☐ Resort ☐ Marina ☐ Other: ________

**Is the site a hotspot?** ☐ Yes ☐ No ☐ Unknown:
**Sources/pollutants observed?** ☐ No ☐ Sediment ☐ Nutrients/organics ☐ Oil/grease ☐ Trash/Floatables

**Existing Stormwater BMP on site?** ☐ Yes ☐ No ☐ Unknown:

**Soils:** ☐ Unknown ☐ poor infiltration ☐ good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** ☐ existing BMP upgrade ☐ new BMP

☐ bio/rain garden ☐ swale ☐ planter ☐ tree pits ☐ infiltration ☐ permeable paver ☐ sand filter ☐ pond
☐ constructed wetland ☐ proprietary practice ☐ soil amendments ☐ reforestation ☐ impervious cover removal
☐ rainwater harvesting ☐ disconnection ☐ Other (describe):

**Area Draining to Retrofit**
☐ Hotspot ☐ Individual rooftop
☐ Parking Lot ☐ other small impervious area
☐ Street ☐ Pervious area
☐ Other (describe):

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** _____ %

**Impervious Area ≈** _____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** ☐ Storage ☐ Water Quality ☐ Recharge
☐ Demonstration / Education ☐ Repair ☐ Other: ________

**Possible Conflicts due to:** ☐ Soils ☐ Access
☐ Adjacent Land Use ☐ Existing Utilities
☐ Contamination ☐ High water table
☐ Wetlands ☐ Other:

**Describe conflicts:** coastal issues | erosion potential

## NEXT STEPS

**Candidate for pilot project** ☐ yep, love it ☐ OK ☐ undecided ☐ no, but keep listed ☒ no way

**Follow-up needed to Complete Field Concept**
☐ Confirm property ownership
☐ Confirm drainage area/impervious cover
☐ Confirm volume computations
☐ Complete concept sketch
☐ Obtain existing as-builts/site plans
☐ Obtain detailed topography
☐ Confirm storm drain invert elevations
☐ Other:
☐ Obtain utility mapping
☐ Perform test pits

☐ SITE AERIAL INCLUDED

| PROPOSED RETROFIT CONCEPT (CONT.) |
| --- |
| **Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures): |
| **Sketch and/or Sizing Calcs:** |
| **Existing Head Available/Where Measured:** |
| **Initial Feasibility and Construction Considerations/ Design or Delivery Notes:** |
| **Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High |

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R8 + R10 (combined) **Subwatershed:** Sebonac

**Date:** 5/12/11 **Assessed by:** RAC / AMB

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:**

**Land Use:** ☐ Public ☐ Private ☐ Unknown:

☐ Single Family Residential ☐ Multi-Fam. Residential ☐ School ☐ Golf Course ☐ Park ☐ Agricultural ☐ Road ☐ Commercial/Industrial ☐ Resort ☐ Marina ☐ Other: ________

**Is the site a hotspot?** ☐ Yes ☐ No ☐ Unknown:
**Sources/pollutants observed?** ☐ No ☐ Sediment ☐ Nutrients/organics ☐ Oil/grease ☐ Trash/Floatables

**Existing Stormwater BMP on site?** ☐ Yes ☐ No ☐ Unknown:

**Soils:** ☐ Unknown ☐ poor infiltration ☐ good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** ☐ existing BMP upgrade ☐ new BMP

☐ bio/rain garden ☐ swale ☐ planter ☐ tree pits ☐ infiltration ☐ permeable paver ☐ sand filter ☐ pond ☐ constructed wetland ☐ proprietary practice ☐ soil amendments ☐ reforestation ☐ impervious cover removal ☐ rainwater harvesting ☐ disconnection ☐ Other (describe):

**Area Draining to Retrofit**
☐ Hotspot ☐ Individual rooftop
☐ Parking Lot ☐ other small impervious area
☐ Street ☐ Pervious area
☐ Other (describe):

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** _____%

**Impervious Area ≈** _____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** ☐ Storage ☐ Water Quality ☐ Recharge ☐ Demonstration / Education ☐ Repair ☐ Other: ________

**Possible Conflicts due to:** ☐ Soils ☐ Access ☐ Adjacent Land Use ☐ Existing Utilities ☐ Contamination ☐ High water table ☐ Wetlands ☐ Other:

**Describe conflicts:**
coastal erosion potential

## NEXT STEPS

**Candidate for pilot project** ☐ yep, love it ☐ OK ☐ undecided ☐ no, but keep listed ☒ no way XXX

**Follow-up needed to Complete Field Concept**
☐ Confirm property ownership
☐ Confirm drainage area/impervious cover
☐ Confirm volume computations
☐ Complete concept sketch
☐ Obtain existing as-builts/site plans
☐ Obtain detailed topography
☐ Confirm storm drain invert elevations
☐ Other:
☐ Obtain utility mapping
☐ Perform test pits

☐ SITE AERIAL INCLUDED

## PROPOSED RETROFIT CONCEPT (CONT.)

**Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures):

**Sketch and/or Sizing Calcs:**

note Trustees (see R1) responsible also for cordoning off Plover nests & beaches, bulkheading - big mandate per Engineer

**Existing Head Available/Where Measured:**

**Initial Feasibility and Construction Considerations/ Design or Delivery Notes:**

**Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R9 (modified location) **Subwatershed:** Sebonic

**Date:** 5/16/11 **Assessed by:** KAC/AMR

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:** intersection of Sebonic Inlet & New North Hwy center island; awk. intersection

**Land Use:** [x] Public [ ] Private [ ] Unknown:

[ ] Single Family Residential [ ] Multi-Fam. Residential [ ] School [ ] Golf Course [ ] Park [ ] Agricultural [x] Road
[ ] Commercial/Industrial [ ] Resort [ ] Marina [ ] Other: ________

**Is the site a hotspot?** [ ] Yes [x] No [ ] Unknown:
**Sources/pollutants observed?** [ ] No [x] Sediment [x] Nutrients/organics [ ] Oil/grease [ ] Trash/Floatables

**Existing Stormwater BMP on site?** [ ] Yes [x] No [ ] Unknown: fail

**Soils:** [x] Unknown [ ] poor infiltration [ ] good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**

failed / clogged leaching CBs
confined drainage area on site

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** [ ] existing BMP upgrade [x] new BMP

[x] bio/rain garden [ ] swale [ ] planter [ ] tree pits [ ] infiltration [ ] permeable paver [ ] sand filter [ ] pond
[ ] constructed wetland [ ] proprietary practice [ ] soil amendments [ ] reforestation [ ] impervious cover removal
[ ] rainwater harvesting [ ] disconnection [ ] Other (describe):

**Area Draining to Retrofit**
[ ] Hotspot
[ ] Parking Lot
[x] Street
[ ] Other (describe):
[ ] Individual rooftop
[x] other small impervious area driveways
[x] Pervious area

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** ____%

**Impervious Area ≈** _____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** [ ] Storage [x] Water Quality [x] Recharge
[ ] Demonstration / Education [ ] Repair [ ] Other: ____________

**Possible Conflicts due to:** [ ] Soils [ ] Access
[ ] Adjacent Land Use [x] Existing Utilities
[ ] Contamination [ ] High water table
[ ] Wetlands [ ] Other:

**Describe conflicts:** public $H_2O$ OH wires Ø sewer Ø gas

## NEXT STEPS

**Candidate for pilot project** [ ] yep, love it [x] OK [ ] undecided [ ] no, but keep listed [ ] no way

**Follow-up needed to Complete Field Concept**
[ ] Confirm property ownership
[ ] Confirm drainage area/impervious cover
[ ] Confirm volume computations
[ ] Complete concept sketch
[ ] Obtain existing as-builts/site plans
[ ] Obtain detailed topography
[ ] Confirm storm drain invert elevations
[ ] Other:
[x] Obtain utility mapping
[ ] Perform test pits

**Site ID** R9 (modified)

☒ SITE AERIAL INCLUDED

| PROPOSED RETROFIT CONCEPT (CONT.) |
| --- |
| **Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures):<br>bio in center island connect to network of drainage inlets |
| **Sketch and/or Sizing Calcs:**<br>see large map (full watershed) |
| **Existing Head Available/Where Measured:** |
| **Initial Feasibility and Construction Considerations/ Design or Delivery Notes:** |
| **Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High |

**Site ID** R9 (modified)

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R11

**Date:** 5/16/11

**Subwatershed:** Sebonic

**Assessed by:** RAC/AMB

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:** Intersection of Scallop Pond Rd (Note - corrected on map) Hunting present - see photo North Sea Sportsman Association.

**Land Use:** ☐ Public ☒ Private ☐ Unknown:

☐ Single Family Residential ☐ Multi-Fam. Residential ☐ School ☐ Golf Course ☐ Park ☐ Agricultural ☒ Road
☐ Commercial/Industrial ☐ Resort ☐ Marina ☐ Other: ________

**Is the site a hotspot?** ☐ Yes ☒ No ☐ Unknown:

**Sources/pollutants observed?** ☒ No ☐ Sediment ☐ Nutrients/organics ☐ Oil/grease ☐ Trash/Floatables

**Existing Stormwater BMP on site?** ☐ Yes ☒ No ☐ Unknown:

**Soils:** ☐ Unknown ☐ poor infiltration ☐ good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**

Existing CBs (some clogged) but no obvious signs of pollutants (no lawns, no ag runoff)

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** ☐ existing BMP upgrade ☐ new BMP

☐ bio/rain garden ☐ swale ☐ planter ☐ tree pits ☐ infiltration ☐ permeable paver ☐ sand filter ☐ pond
☐ constructed wetland ☐ proprietary practice ☐ soil amendments ☐ reforestation ☐ impervious cover removal
☐ rainwater harvesting ☐ disconnection ☐ Other (describe):

**Area Draining to Retrofit**
☐ Hotspot ☐ Individual rooftop
☐ Parking Lot ☐ other small impervious area
☐ Street ☐ Pervious area
☐ Other (describe):

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** ____%

**Impervious Area ≈** ____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** ☐ Storage ☐ Water Quality ☐ Recharge
☐ Demonstration / Education ☐ Repair ☐ Other: ________

**Possible Conflicts due to:** ☐ Soils ☐ Access
☐ Adjacent Land Use ☐ Existing Utilities
☐ Contamination ☐ High water table
☐ Wetlands ☐ Other:

**Describe conflicts:**

## NEXT STEPS

**Candidate for pilot project** ☐ yep, love it ☐ OK ☐ undecided ☐ no, but keep listed ☒ no way

**Follow-up needed to Complete Field Concept**
☐ Confirm property ownership
☐ Confirm drainage area/impervious cover
☐ Confirm volume computations
☐ Complete concept sketch
☐ Obtain existing as-builts/site plans
☐ Obtain detailed topography
☐ Confirm storm drain invert elevations
☐ Other:
☐ Obtain utility mapping
☐ Perform test pits

**Site ID** ________

☐ SITE AERIAL INCLUDED

| PROPOSED RETROFIT CONCEPT (CONT.) |
|---|
| **Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures): |
| **Sketch and/or Sizing Calcs:** |
| **Existing Head Available/Where Measured:** |
| **Initial Feasibility and Construction Considerations/ Design or Delivery Notes:** |
| **Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High |

**PECONIC WATERSHEDS** **RETROFITS**

**Site Name/ID:** R12 NEW **Subwatershed:** Sebonic

**Date:** 5/16/11 **Assessed by:** RAC/AWB

## EXISTING SITE/STORMWATER MANAGEMENT

**Site Contact Info:**
± intersection of Millstone Brook Rd and Millstone Ln (gravel road) - just

**Land Use:** [x] Public [ ] Private [ ] Unknown:

[x] Single Family Residential [ ] Multi-Fam. Residential [ ] School [ ] Golf Course [ ] Park [ ] Agricultural [ ] Road
[ ] Commercial/Industrial [ ] Resort [ ] Marina [x] Other: Street Runoff

**Is the site a hotspot?** [ ] Yes [x] No [ ] Unknown:
**Sources/pollutants observed?** [ ] No [x] Sediment [x] Nutrients/organics [ ] Oil/grease [ ] Trash/Floatables

**Existing Stormwater BMP on site?** [ ] Yes [x] No [ ] Unknown:

**Soils:** [ ] Unknown [ ] poor infiltration [ ] good infiltration

**Describe Existing Stormwater Conditions, Including Existing Site Drainage and Conveyance:**

- Exist CBS
- Bermed Const.

## PROPOSED RETROFIT CONCEPT *(CONT. ON BACK)*

**Proposed Retrofit Practice(s):** [ ] existing BMP upgrade [x] new BMP

[x] bio/rain garden [x] swale [ ] planter [ ] tree pits [ ] infiltration [ ] permeable paver [ ] sand filter [ ] pond
[ ] constructed wetland [ ] proprietary practice [ ] soil amendments [ ] reforestation [ ] impervious cover removal
[ ] rainwater harvesting [ ] disconnection [ ] Other (describe):

**Area Draining to Retrofit**
[ ] Hotspot [ ] Individual rooftop
[ ] Parking Lot [ ] other small impervious area
[x] Street [ ] Pervious area
[x] Other (describe):

**Drainage Area to retrofit ≈** ______ acres/sq ft

**Imperviousness ≈** _____ %

**Impervious Area ≈** _____ acres/sq ft

**Benefits of Retrofit (primary & secondary):** [ ] Storage [x] Water Quality [x] Recharge
[ ] Demonstration / Education [ ] Repair [ ] Other:

**Possible Conflicts due to:** [x] Soils [ ] Access
[ ] Adjacent Land Use [ ] Existing Utilities
[ ] Contamination [ ] High water table
[x] Wetlands [x] Other: Mature Trees.

**Describe conflicts:**
- Trees along roadway
- Small area

## NEXT STEPS

**Candidate for pilot project** [ ] yep, love it [ ] OK [x] undecided [ ] no, but keep listed [ ] no way

**Follow-up needed to Complete Field Concept**
[x] Confirm property ownership
[x] Confirm drainage area/impervious cover
[x] Confirm volume computations
[x] Complete concept sketch
[ ] Obtain existing as-builts/site plans
[ ] Obtain detailed topography
[ ] Confirm storm drain invert elevations
[ ] Other:
[ ] Obtain utility mapping
[ ] Perform test pits

☐ SITE AERIAL INCLUDED

| PROPOSED RETROFIT CONCEPT (CONT.) |
|---|
| **Narrative Description** (Including key elements, approx. surface area/ depth of treatment, conveyance structures): |
| **Sketch and/or Sizing Calcs:** |
| **Existing Head Available/Where Measured:** |
| **Initial Feasibility and Construction Considerations/ Design or Delivery Notes:** |
| **Thoughts on Maintenance Burden:** ☐ Low ☐ Medium ☐ High |

Site ID R12 (NEW)

# FIELD FORMS – NEIGHBORHOOD AND STREETS SOURCE ASSESSMENTS

**PECONIC WATERSHEDS**

**NEIGHBORHOOD AND STREETS SOURCE ASSESSMENT**

**Site Name/ID:** N1

**Subwatershed:** Scbonic

**Date:** 5/16/11

**Assessed by:** RAC / AMB

## NEIGHBORHOOD CHARACTERIZATION

Neighborhood / Subdivision Name: ______ Approx. Area (acres): ______

Main Road Names: ______ Homeowners Association? [X] Y [ ] N [ ] Unknown

If yes, name and contact information: North Sea Beach Colony Association

Residential (*circle average single family lot size*):

[ ] Single Family Attached (Duplexes, Row Homes) <1/8 1/8 (1/4) 1/3 >1/3 acre

[X] Single Family Detached <1/4 1/4 1/2 1 >1 acre

[ ] Multifamily (Apts, Townhomes, Condos) [ ] Mobile Home Park

| | | |
|---|---|---|
| Estimated Age of Neighborhood: 70-100 years 1915 | Percentage of Homes with Garages: ______ % | |
| Sewer Service? [ ] Y [X] N Septic | Amount of Infill, Redevelopment, and Remodeling: [ ] No Evidence [ ] <5% of units [ ] 5-10% [ ] >10% | |
| **Yard and Lawn Conditions (Typical Lot)** | | Comments/Notes |
| % of lot with impervious cover | 50 % | |
| % of lot with grass cover | 35 % | |
| % of lot with landscaping (e.g. mulched bed areas) | 15 % | |
| % of lot with bare soil | – % | |
| *Note: The % above must total 100%* | | |
| % of lot with forest canopy | <5 % | mature trees on lots |
| Evidence of permanent irrigation or "non-target" irrigation | 10 % | |
| Proportion of *total neighborhood* turf lawns with following management status: | High: % | 20 |
| | Med: % | 60 |
| | Low: % | 30 |
| Outdoor swimming pools? [ ] Y [X] N [ ] Can't Tell Est.#___ | % | |
| Junk or trash in yards? [ ] Y [X] N [ ] Can't Tell | % | |
| **Driveways and Sidewalks** (typical lot) | | Comments/Notes |
| % of driveways that are impervious [ ] N/A | 50 % | sur. gravel, occ. dirt |
| Driveway condition: [X] Clean [ ] Stained [ ] Dirty [X] Breaking up | | |
| Are sidewalks present? [ ] Y [X] N If yes, are they on [ ] one side of street or [ ] along both sides<br>[ ] Spotless [ ] Covered with lawn clippings/leaves [ ] Receiving "non-target" irrigation<br>Distance between sidewalk and street? ______ ft Is there pet waste in this area? [ ] Y [ ] N [ ] N/A | | |

Site ID ______

☐ SITE AERIAL INCLUDED

| Rooftops (Typical Lot) | | Comments/Notes |
|---|---|---|
| Downspouts directly connected to storm drains or sanitary sewer | — % | mostly disconnected |
| Downspouts are directed to impervious surface | 10 % | |
| Downspouts discharge to pervious area | 90 % | |
| Downspouts discharge to a cistern, rain barrel, etc. | 0 % | |
| *Note: The % above must total 100%* | | |
| Lawn area present downgradient of leader for rain garden? ☒Y ☐N | % | |

**Streets**

Condition of pavement: ☐New ☐Good ☒Cracked ☒Broken some good

Is on street parking permitted? ☐Y ☒N If yes, approximate number of cars per block: ________

Are large cul-de-sacs present? ☐Y ☒N | Storm drain inlets? ☐Y ☒N Are they stenciled? ☐Y ☐N

Is trash present in curb and gutter? If so, use the index to the below to rate condition:

| | Clean | | | | Filthy |
|---|---|---|---|---|---|
| Sediment | ☒1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Organic matter | ☒1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Litter | ☒1 | ☐2 | ☐3 | ☐4 | ☐5 |

**Common Areas**

Stormwater pond? ☐Y ☒N Is it a ☐ wet pond ☐dry pond? Is it overgrown? ☐ Y ☐ N
What is the estimated pond area? ☐ <1 acre ☐ about 1 acre ☐ > 1 acre

Open space? ☐Y ☒N If yes, is pet waste present? ☐ Y ☐ N Dumping? ☐ Y ☐ N
Buffers/floodplain present: ☐ Y ☐ N If yes, encroachment evident? ☐ Y ☐ N

**Pollutant Reduction Strategies** ☐Municipal ☒Private homeowners assoc.

Degree of pollutant accumulation in the system: ☐High ☐Medium ☒Low ☐None

Rate the feasibility of the following pollution prevention strategies:

| | | | |
|---|---|---|---|
| Street Sweeping | ☐ High | ☐ Moderate | ☒ Low |
| Storm Drain Stenciling | ☐ High | ☐ Moderate | ☒ Low |
| Catchbasin Clean-outs | ☐ High | ☐ Moderate | ☒ Low |
| Repair / Maintenance | ☐ High | ☒ Moderate | ☐ Low |

**INITIAL NEIGHBORHOOD ASSESSMENT AND RECOMMENDATIONS**

Based on field observations, this neighborhood has significant indicators for the following: (*check all that apply*)
☐Nutrients ☐Oil and Grease ☐Trash / Litter ☐Bacteria ☒Sediment ☐Other ________

**Recommended Actions:**

☒Onsite retrofit potential (small) see R1
☐ Existing BMP retrofit
☐Better maint. of common spaces (e.g., roads, BMPs)
☐Address lawn care issues
☐ Buffer management
☐Address pet waste issues
☐Downspout disconnection
☐ Parking lot retrofit
☐Reforestation/lawn conversion
☐Address septic issues unkn
☐Other action(s) ________

**PECONIC WATERSHEDS**

**NEIGHBORHOOD AND STREETS SOURCE ASSESSMENT**

**Site Name/ID:** N2 Island Acct

**Subwatershed:** Sebonic

**Date:** 5/16/11

**Assessed by:** RAC / AMB

## NEIGHBORHOOD CHARACTERIZATION

Neighborhood / Subdivision Name: See below Approx. Area (acres): N/

Main Road Names: ______ Homeowners Association? ☐ Y ☐ N ☒ Unknown

If yes, name and contact information: ______

Residential (*circle average single family lot size*):

☐ Single Family Attached (Duplexes, Row Homes) $<{}^1/_8$ ${}^1/_8$ ¼ ${}^1/_3$ $>{}^1/_3$ acre

☒ Single Family Detached $<{}^1/_4$ ${}^1/_4$ ½ 1 >1 acre variable!

☐ Multifamily (Apts, Townhomes, Condos) ☐ Mobile Home Park

| | | |
|---|---|---|
| Estimated Age of Neighborhood: ______ years | Percentage of Homes with Garages: ______ % | |
| Sewer Service? ☐ Y ☐ N | Amount of Infill, Redevelopment, and Remodeling: ☐ No Evidence ☐ <5% of units ☐ 5-10% ☐ >10% | |
| **Yard and Lawn Conditions (Typical Lot)** | | Comments/Notes |
| % of lot with impervious cover | % | |
| % of lot with grass cover | % | |
| % of lot with landscaping (e.g. mulched bed areas) | % | |
| % of lot with bare soil | % | |
| *Note: The % above must total 100%* | | |
| % of lot with forest canopy | % | |
| Evidence of permanent irrigation or "non-target" irrigation | % | not a "typical" |
| Proportion of *total neighborhood* turf lawns with following management status: | High: % | neighborhood |
| | Med: % | |
| | Low: % | |
| Outdoor swimming pools? ☐ Y ☒ N ☐ Can't Tell Est.#___ | % | |
| Junk or trash in yards? ☐ Y ☒ N ☐ Can't Tell | % | |
| **Driveways and Sidewalks** | | Comments/Notes |
| % of driveways that are impervious ☐ N/A | % | |
| Driveway condition: ☐ Clean ☐ Stained ☐ Dirty ☐ Breaking up | | |
| Are sidewalks present? ☐ Y ☐ N If yes, are they on ☐ one side of street or ☐ along both sides<br>☐ Spotless ☐ Covered with lawn clippings/leaves ☐ Receiving "non-target" irrigation<br>Distance between sidewalk and street? ______ ft Is there pet waste in this area? ☐ Y ☐ N ☐ N/A | | |

* variable neighborhood - old houses, new houses big lots forested (horse stables @ one lot)

☐ SITE AERIAL INCLUDED

| Rooftops (Typical Lot) | | Comments/Notes |
|---|---|---|
| Downspouts directly connected to storm drains or sanitary sewer | % | |
| Downspouts are directed to impervious surface | % | |
| Downspouts discharge to pervious area | % | |
| Downspouts discharge to a cistern, rain barrel, etc. | % | |
| *Note: The % above must total 100%* | | |
| Lawn area present downgradient of leader for rain garden? ☐Y ☐N | % | |

**Streets**

Condition of pavement: ☐New ☐Good ☐Cracked ☐Broken

Is on street parking permitted? ☐Y ☐N If yes, approximate number of cars per block: ____________

Are large cul-de-sacs present? ☐Y ☐N | Storm drain inlets? ☐Y ☐N Are they stenciled? ☐Y ☐N

Is trash present in curb and gutter? If so, use the index to the below to rate condition:

| | Clean | | | | Filthy |
|---|---|---|---|---|---|
| Sediment | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Organic matter | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Litter | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |

**Common Areas**

Stormwater pond? ☐Y ☐N Is it a ☐ wet pond ☐dry pond? Is it overgrown? ☐ Y ☐ N
What is the estimated pond area? ☐ <1 acre ☐ about 1 acre ☐ > 1 acre

Open space? ☐Y ☐ N If yes, is pet waste present? ☐ Y ☐ N Dumping? ☐ Y ☐ N
Buffers/floodplain present: ☐ Y ☐ N If yes, encroachment evident? ☐ Y ☐ N

**Pollutant Reduction Strategies** ☐Municipal ☐Private

Degree of pollutant accumulation in the system: ☐High ☐Medium ☐Low ☐None

Rate the feasibility of the following pollution prevention strategies:

| | | | |
|---|---|---|---|
| Street Sweeping | ☐ High | ☐ Moderate | ☐ Low |
| Storm Drain Stenciling | ☐ High | ☐ Moderate | ☐ Low |
| Catchbasin Clean-outs | ☐ High | ☐ Moderate | ☐ Low |
| Repair / Maintenance | ☐ High | ☐ Moderate | ☐ Low |

**INITIAL NEIGHBORHOOD ASSESSMENT AND RECOMMENDATIONS**

Based on field observations, this neighborhood has significant indicators for the following: (*check all that apply*)
☐Nutrients ☐Oil and Grease ☐Trash / Litter ☐Bacteria ☐Sediment ☐Other ____________

**Recommended Actions:**

☐Onsite retrofit potential (small)
☐ Existing BMP retrofit
☐Better maint. of common spaces (e.g., roads, BMPs)
☐Address lawn care issues
☐ Buffer management
☐Address pet waste issues
☐Downspout disconnection
☐ Parking lot retrofit
☐Reforestation/lawn conversion
☐Address septic issues
☐Other action(s) ____________

Site ID N12

**PECONIC WATERSHEDS**

**NEIGHBORHOOD AND STREETS SOURCE ASSESSMENT**

**Site Name/ID:** N3

**Date:** 5/16/11

**Subwatershed:** Sebonic

**Assessed by:** RAC / AWB

## NEIGHBORHOOD CHARACTERIZATION

Neighborhood / Subdivision Name: ____________ Approx. Area (acres): ________

Main Road Names: Country Club Knollwood Homeowners Association? ☐ Y ☐ N ☒ Unknown

If yes, name and contact information: ____________

Residential (*circle average single family lot size*):

☐ Single Family Attached (Duplexes, Row Homes) $<^1/_8$ $^1/_8$ ¼ $^1/_3$ $>^1/_3$ acre

☒ Single Family Detached $<^1/_4$ $^1/_4$ ½ 1 >1 acre 1/2 - 3/4 ac

☐ Multifamily (Apts, Townhomes, Condos) ☐ Mobile Home Park

| | |
|---|---|
| Estimated Age of Neighborhood: 1960's / 70's years ±40 | Percentage of Homes with Garages: 50 % |
| Sewer Service? ☐ Y ☒ N | Amount of Infill, Redevelopment, and Remodeling: ☒ No Evidence ☐ <5% of units ☐ 5-10% ☐ >10% |

| **Yard and Lawn Conditions (Typical Lot)** | | Comments/Notes |
|---|---|---|
| % of lot with impervious cover | 35 % | |
| % of lot with grass cover | 60 % | |
| % of lot with landscaping (e.g. mulched bed areas) | 5 % | |
| % of lot with bare soil | Ø % | |
| *Note: The % above must total 100%* | | |
| % of lot with forest canopy | Ø % | |
| Evidence of permanent irrigation or "non-target" irrigation | 10 % | |
| Proportion of *total neighborhood* turf lawns with following management status: | High: % | 10 |
| | Med: % | 90 |
| | Low: % | |
| Outdoor swimming pools? ☐ Y ☒ N ☐ Can't Tell Est.#___ | % | V. few; tennis courts |
| Junk or trash in yards? ☐ Y ☐ N ☐ Can't Tell | % | just one observed |
| **Driveways and Sidewalks** (typical lot) | | Comments/Notes |
| % of driveways that are impervious ☐ N/A | 95 % | 5% gravel |
| Driveway condition: ☒ Clean ☐ Stained ☐ Dirty ☐ Breaking up | | most look like resurfaced |

Are sidewalks present? ☐ Y ☒ N If yes, are they on ☐ one side of street or ☐ along both sides

☐ Spotless ☐ Covered with lawn clippings/leaves ☐ Receiving "non-target" irrigation

Distance between sidewalk and street? ________ ft Is there pet waste in this area? ☐ Y ☐ N ☐ N/A

☐ SITE AERIAL INCLUDED

| **Rooftops (Typical Lot)** | | Comments/Notes |
|---|---|---|
| Downspouts directly connected to storm drains or sanitary sewer | Ø % | Septic systems |
| Downspouts are directed to impervious surface | 10 % | |
| Downspouts discharge to pervious area | 90 % | |
| Downspouts discharge to a cistern, rain barrel, etc. | Ø % | |
| *Note: The % above must total 100%* | | |
| Lawn area present downgradient of leader for rain garden? ☒Y ☐N | 75 % | |

| | | | | | |
|---|---|---|---|---|---|
| **Streets** 18' wide roadways = typical ; no curbing | | | | | |
| Condition of pavement: ☐New ☒Good ☐Cracked ☐Broken | | | | | |
| Is on street parking permitted? ☒Y ☐N If yes, approximate number of cars per block: ____________ | | | | | |
| Are large cul-de-sacs present? ☐Y ☒N | Storm drain inlets? ☐Y ☒N Are they stenciled? ☐Y ☐N | | | | |
| Is trash present in curb and gutter? If so, use the index to the below to rate condition: N/A | Clean | | | | Filthy |
| Sediment | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Organic matter | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Litter | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |

**Common Areas**

Stormwater pond? ☐Y ☒N Is it a ☐ wet pond ☐dry pond? Is it overgrown? ☐ Y ☐ N
What is the estimated pond area? ☐ <1 acre ☐ about 1 acre ☐ > 1 acre

Open space? ☐Y ☒N If yes, is pet waste present? ☐ Y ☐ N Dumping? ☐ Y ☐ N
Buffers/floodplain present: ☐ Y ☒N If yes, encroachment evident? ☐ Y ☐ N

**Pollutant Reduction Strategies** ☐Municipal ☐Private

Degree of pollutant accumulation in the system: ☐High ☐Medium ☐Low ☐None

Rate the feasibility of the following pollution prevention strategies:

| | | | |
|---|---|---|---|
| Street Sweeping | ☐ High | ☐ Moderate | ☐ Low |
| Storm Drain Stenciling | ☐ High | ☐ Moderate | ☐ Low |
| Catchbasin Clean-outs | ☐ High | ☐ Moderate | ☐ Low |
| Repair / Maintenance | ☐ High | ☐ Moderate | ☐ Low |

**INITIAL NEIGHBORHOOD ASSESSMENT AND RECOMMENDATIONS**

Based on field observations, this neighborhood has significant indicators for the following: (*check all that apply*)
☐Nutrients ☐Oil and Grease ☐Trash / Litter ☐Bacteria ☐Sediment ☐Other ____________________

**Recommended Actions:**

☒Onsite retrofit potential (small)
☐ Existing BMP retrofit
☐Better maint. of common spaces (e.g., roads, BMPs)
☐Address lawn care issues
☐ Buffer management
☐Address pet waste issues
☐Downspout disconnection
☐ Parking lot retrofit
☐Reforestation/lawn conversion
☐Address septic issues
☐Other action(s) ____________

raingarden retrofit anywhere

**PECONIC WATERSHEDS**

**NEIGHBORHOOD AND STREETS SOURCE ASSESSMENT**

**Site Name/ID:** N4 (no neighborhood)

**Date:** 5/11/11

**Subwatershed:** Sebonic

**Assessed by:** AWB/RAC

## NEIGHBORHOOD CHARACTERIZATION

Neighborhood / Subdivision Name: West End Circle Approx. Area (acres): ____

Main Road Names: ____ Homeowners Association? ☐ Y ☒ N ☒ Unknown

If yes, name and contact information: ____

Residential (*circle average single family lot size*):

☐ Single Family Attached (Duplexes, Row Homes) $<^1/_8$ $^1/_8$ ¼ $^1/_3$ $>^1/_3$ acre

☒ Single Family Detached $<^1/_4$ ¼ ½ 1 >1 acre

☐ Multifamily (Apts, Townhomes, Condos) ☐ Mobile Home Park

| | |
|---|---|
| Estimated Age of Neighborhood: 1930s/40's years 1980s | Percentage of Homes with Garages: 20 % |
| Sewer Service? ☐ Y ☒ N | Amount of Infill, Redevelopment, and Remodeling: ☐ No Evidence ☐ <5% of units ☒ 5-10% ☐ >10% |

| **Yard and Lawn Conditions (Typical Lot)** | | Comments/Notes |
|---|---|---|
| % of lot with impervious cover | 40 % | somewhat variable |
| % of lot with grass cover | 40 % | |
| % of lot with landscaping (e.g. mulched bed areas) | 20 % | variable |
| % of lot with bare soil | 0 % | |
| *Note: The % above must total 100%* | | |
| % of lot with forest canopy | 0 % | lg random trees - older neighborhood |
| Evidence of permanent irrigation or "non-target" irrigation | 0 % | |
| Proportion of *total neighborhood* turf lawns with following management status: | High: % | |
| | Med: ~~NA~~ % | 10 |
| | Low: ~~NA~~ % | 90 |
| Outdoor swimming pools? ☐ Y ☒ N ☐ Can't Tell Est.#___ | % | |
| Junk or trash in yards? ☐ Y ☒ N ☐ Can't Tell | % | |
| **Driveways and Sidewalks** | | Comments/Notes |
| % of driveways that are impervious ☐ N/A | ~~NA~~ % | 50 |

Driveway condition: ☒ Clean ☐ Stained ☐ Dirty ☒ Breaking up

Are sidewalks present? ☐ Y ☒ N If yes, are they on ☐ one side of street or ☐ along both sides

☐ Spotless ☐ Covered with lawn clippings/leaves ☐ Receiving "non-target" irrigation

Distance between sidewalk and street? ______ ft Is there pet waste in this area? ☐ Y ☐ N ☐ N/A

26' wide roadway

☐ SITE AERIAL INCLUDED

| **Rooftops (Typical Lot)** | | Comments/Notes |
|---|---|---|
| Downspouts directly connected to storm drains or sanitary sewer | 0 % | |
| Downspouts are directed to impervious surface | 10 % | |
| Downspouts discharge to pervious area | 90 % | |
| Downspouts discharge to a cistern, rain barrel, etc. | 0 % | |
| *Note: The % above must total 100%* | | |
| Lawn area present downgradient of leader for rain garden? ☒ Y ☐ N | 75 % | |

**Streets**

Condition of pavement: ☐ New ☒ Good ☐ Cracked ☐ Broken

Is on street parking permitted? ☒ Y ☐ N If yes, approximate number of cars per block: ____________

Are large cul-de-sacs present? ☐ Y ☒ N | Storm drain inlets? ☒ Y ☐ N Are they stenciled? ☐ Y ☒ N

leaching CBs failed

Is trash present in curb and gutter? If so, use the index to the below to rate condition:

sediment no trash

| | Clean | | | | Filthy |
|---|---|---|---|---|---|
| Sediment | ☐ 1 | ☒ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Organic matter | ☐ 1 | ☒ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Litter | ☒ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |

**Common Areas**

Stormwater pond? ☐ Y ☒ N Is it a ☐ wet pond ☐ dry pond? Is it overgrown? ☐ Y ☐ N
What is the estimated pond area? ☐ <1 acre ☐ about 1 acre ☐ > 1 acre

Open space? ☐ Y ☒ N If yes, is pet waste present? ☐ Y ☐ N Dumping? ☒ Y ☐ N – but apparently on private land?
Buffers/floodplain present: ☐ Y ☐ N If yes, encroachment evident? ☐ Y ☐ N

**Pollutant Reduction Strategies** ☐ Municipal ☒ Private See sketch for R3

Degree of pollutant accumulation in the system: ☐ High ☐ Medium ☐ Low ☒ None

Rate the feasibility of the following pollution prevention strategies:

| | | | |
|---|---|---|---|
| Street Sweeping | ☐ High | ☒ Moderate | ☐ Low |
| Storm Drain Stenciling | ☒ High | ☐ Moderate | ☐ Low |
| Catchbasin Clean-outs | ☐ High | ☒ Moderate | ☐ Low |
| Repair / Maintenance | ☐ High | ☒ Moderate | ☐ Low |

**INITIAL NEIGHBORHOOD ASSESSMENT AND RECOMMENDATIONS**

Based on field observations, this neighborhood has significant indicators for the following: (*check all that apply*)
☒ Nutrients ☐ Oil and Grease ☐ Trash / Litter ☒ Bacteria ☒ Sediment ☐ Other ____________

**Recommended Actions:**

☒ Onsite retrofit potential (small) see R3
☐ Existing BMP retrofit
☐ Better maint. of common spaces (e.g., roads, BMPs)
☐ Address lawn care issues
☒ Buffer management maybe
☐ Address pet waste issues
☐ Downspout disconnection
☐ Parking lot retrofit
☐ Reforestation/lawn conversion
☐ Address septic issues maybe
☐ Other action(s) ____________

# FIELD FORMS – HOTSPOT/POLLUTION PREVENTION

**PECONIC WATERSHEDS** **HOTSPOT/POLLUTION PREVENTION**

**Site Name/ID:** H1 Bullhead Yacht Club **Subwatershed:** Sebonic

**Date:** 5/16/11 **Assessed by:** RAC/AWB

| **EXISTING CONDITIONS** |
|---|
| **Contact Information/location:** |
| **Land Use:** ☐ Commercial ☐ Industrial ☐ Institutional ☐ Municipal ☐ Golf Course ☐ Transport-Related ☒ Marina ☐ Animal Facility ☐ Other:<br>Basic Description of Operation: |
| **Existing stormwater management on-site?** ☐ Unknown ☒ No ☐ Yes, describe:<br>**Condition of drain inlets on-site:** ☐ None ☐ Good ☐ Need maintenance N/A |
| **Evidence of riparian/wetland buffer encroachment:** ☐ Unknown ☐ No ☒ Yes, describe:<br>right up to the edge of SM |

| **Potential pollutants associated with:** | **Pollutant of concern?** |
|---|---|
| ☐ Vehicular operations (fueling, storage, maintenance) | ☐Limited ☐Likely ☐Observed for **sediment loading** |
| ☐ Waste management (dumping) | ☐Limited ☐Likely ☐Observed for **oil/grease** |
| ☐ Outdoor material storage (uncovered, leaking, no secondary containment) | ☐Limited ☐Likely ☐Observed for **trash** |
| ☐ Landscaping (over fertilizing, irrigation) | ☐Limited ☐Likely ☐Observed for **nutrient loading** |
| ☐ Building/parking lot maintenance (washdowns) | ☐Limited ☐Likely ☐Observed for **bacteria** |
| ☐ Other: metals from paint | ☒Limited ☐Likely ☐Observed for **other:** |

**Severity of Problem:** ☐Low ☐Medium ☐High

*Describe Conditions:*

possible oil/grease engine repair
per one of the boat owners, facility more for storage - owners perform own maintenance

**PROPOSED RESTORATION ACTIVITIES**

∅ no action

**NEXT STEPS**

∅

☐ SITE AERIAL INCLUDED

| SKETCH |
| --- |
| |

Site ID #1

**PECONIC WATERSHEDS** **HOTSPOT/POLLUTION PREVENTION**

**Site Name/ID:** #2 National Links GC **Subwatershed:** Sebonic

**Date:** 5/16/11 **Assessed by:** RAC / AWB

## EXISTING CONDITIONS

**Contact Information/location:**

**Land Use:** ☐ Commercial ☐ Industrial ☐ Institutional ☐ Municipal ☐ Golf Course ☐ Transport-Related ☐ Marina ☐ Animal Facility ☐ Other:

Basic Description of Operation:

**Existing stormwater management on-site?** ☒ Unknown ☐ No ☐ Yes, describe:

**Condition of drain inlets on-site:** ☐ None ☐ Good ☐ Need maintenance

**Evidence of riparian/wetland buffer encroachment:** ☐ Unknown ☐ No ☐ Yes, describe:

**Potential pollutants associated with:**

☐ Vehicular operations (fueling, storage, maintenance)
☐ Waste management (dumping)
☐ Outdoor material storage (uncovered, leaking, no secondary containment)
☐ Landscaping (over fertilizing, irrigation)
☐ Building/parking lot maintenance (washdowns)
☐ Other:

**Pollutant of concern?**

☐Limited ☐Likely ☐Observed for **sediment loading**
☐Limited ☐Likely ☐Observed for **oil/grease**
☐Limited ☐Likely ☐Observed for **trash**
☐Limited ☐Likely ☐Observed for **nutrient loading**
☐Limited ☐Likely ☐Observed for **bacteria**
☐Limited ☐Likely ☐Observed for **other:**

**Severity of Problem:** ☐Low ☐Medium ☐High

*Describe Conditions:*

## PROPOSED RESTORATION ACTIVITIES

ø maintenance building not in watershed
clubhouse parking lot small – possible retrofit (bios)

## NEXT STEPS

☐ SITE AERIAL INCLUDED

| SKETCH |
| --- |
| |

Site ID____________________

**PECONIC WATERSHEDS** | **HOTSPOT/POLLUTION PREVENTION**

**Site Name/ID:** #3 Shinnecock GC **Subwatershed:** Sebonic

**Date:** 5/14/11 **Assessed by:** RAC / AMB

## EXISTING CONDITIONS

**Contact Information/location:** Mark Michaud – have bus card
GC Super

**Land Use:** ☐ Commercial ☐ Industrial ☐ Institutional ☐ Municipal ☒ Golf Course ☐ Transport-Related ☐ Marina ☐ Animal Facility ☐ Other:

Basic Description of Operation:
GC maintenance yard – impressive; responsible!

**Existing stormwater management on-site?** ☐ Unknown ☐ No ☐ Yes, describe:
**Condition of drain inlets on-site:** ☐ None ☐ Good ☐ Need maintenance

**Evidence of riparian/wetland buffer encroachment:** ☐ Unknown ☐ No ☐ Yes, describe:

**Potential pollutants associated with:**
- ☐ Vehicular operations (fueling, storage, maintenance)
- ☐ Waste management (dumping)
- ☐ Outdoor material storage (uncovered, leaking, no secondary containment)
- ☐ Landscaping (over fertilizing, irrigation)
- ☐ Building/parking lot maintenance (washdowns)
- ☐ Other:

**Pollutant of concern?**
- ☐Limited ☐Likely ☐Observed for **sediment loading**
- ☐Limited ☐Likely ☐Observed for **oil/grease**
- ☐Limited ☐Likely ☐Observed for **trash**
- ☐Limited ☐Likely ☐Observed for **nutrient loading**
- ☐Limited ☐Likely ☐Observed for **bacteria**
- ☐Limited ☐Likely ☐Observed for **other:**

**Severity of Problem:** ☐Low ☐Medium ☐High
*Describe Conditions:*

## PROPOSED RESTORATION ACTIVITIES

∅ no action

## NEXT STEPS

☐ SITE AERIAL INCLUDED

**SKETCH**

# APPENDIX C:

## RETROFIT RANKING METHODOLOGY AND RESULTS

# APPENDIX C – Retrofit Ranking Methodology

The recommended stormwater retrofits sites identified within this plan will likely not be implemented simultaneously; therefore, each of the evaluated retrofit sites were subject to a ranking procedure in order to help prioritize locations for further evaluation. Not all recommendations are equal when it comes to implementation. Some proposed projects may require additional planning and permitting, both of which will require additional time, while others may require a large amount of upfront construction costs. Prioritizing candidate sites allows retrofit sites to be compared to find the most cost-effective and feasible sites within the study area. The ranking system used a 100-point scoring system, where the relative merit of each proposed retrofit BMP was evaluated by assigning points based on the following site BMP ranking criteria:

- Pollutant Removal Potential (40 points)
- Estimated Construction Cost (25 points)
- Ease of Implementation (20 points) including:
  - Wetland impact/permitting
  - Site accessibility
  - Ownership
  - Maintenance burden
- Additional Benefits (25 points) including:
  - Public education/demonstrations
  - Additional stormwater benefits
  - Available partners

1) **Pollutant Removal Potential (40 points)--**This category was allotted the highest number of possible points based on the main goal of addressing the two pollutants of concern under the Peconic Estuary 2006 Total Maximum Daily Load (TMDL) for pathogens and the 2007 TMDL for nitrogen. We analyzed this category based on water quality volume treated (with a goal of 1.2 inch per impervious acre), as well as the most currently accepted removal efficiencies for the proposed practices as documented in the 2010 Rhode Island Stormwater Design Manual (see Table 1). Note, the 2010 RI Manual was used because it reflects the latest research results on pollutant removal capabilities within the northeastern region of the country.
   - Water Quality Volume Treated - The site with the maximum volume treated received 20 points, while the minimum received 10 points, and the remaining sites were ranked accordingly.

   - Pollutant Reduction – The practices were ranked based on their removal efficiency for both bacteria and nitrogen, for a maximum of 20 points possible (10 points each pollutant).

**Table 1. Pollutant Removal Efficiencies (Source: 2010 Rhode Island Stormwater Design Manual)**

| Practice | % Bacteria Removal | %TN Removal |
|---|---|---|
| Constructed Wetland | 60 | 30 |
| Bioretention | 70 | 55 |
| Dry Swale | 70 | 55 |
| Wet Swale | 60 | 30 |
| Infiltration Basin | 95 | 65 |
| Infiltration Trench | 95 | 65 |

| Practice | % Bacteria Removal | %TN Removal |
|---|---|---|
| Permeable Paving | 95 | 40 |
| Rain Garden | 70 | 55 |
| Stormwater Planters | 70 | 55 |
| Gravel Wetland | 85 | 55 |
| Subsurface Chambers | 40 | 90 |
| Sand Filter | 70 | 32 |
| Dry Well | 40 | 90 |
| O/G Separator | 0 | 0 |
| Wet ED Basin | 70 | 31 |
| Deep Sump Catch Basin | *0* | *0* |
| Sediment Forebay | 12 | 3 |
| Grass Channel | 0 | 40 |

2) **Estimated Construction Cost (25 points)—** Preliminary construction costs were roughly estimated on a unit cost per volume or area of the practice based on literature and HW's recent experience with implementation of local projects (see Table 2). Total estimated project cost was then divided by the water quality volume treated by each retrofit. Next, relative scores were assigned to each project, where the lowest cost per WQv unit was assigned 25 points and the highest cost was assigned 5 points.

**Table 2. Construction Costs per Unit Treated**

| Practice | $/Unit |
|---|---|
| Constructed Wetland | $ 9.45 per cu ft |
| Bioretention | $27.00 per cu ft |
| Dry Swale | $16.90 per cu ft |
| Wet Swale | $16.90 per cu ft |
| Infiltration Basin | $10.80 per cu ft |
| Infiltration Trench | $21.60 per cu ft |
| Permeable Paving | $40.50 per cu ft |
| Rain Garden | $13.50 per cu ft |
| Stormwater Planters | $35. per cu ft |
| Pavement Removal | $0.5 per sq ft |
| Repaving | $3 per sq ft |
| Sand Filter | $125 per sq ft |
| O/G Separator | $3 per gallon |

3) **Ease of Implementation (20 points)--**This category compared the concepts based on the following implementation factors:

- Potential required permitting
  - Minimal to no permitting required = 5 points;
  - Some permitting likely = 2.5 points; and
  - Complicated permitting likely = 0 points.

- Access issues
  - Site easily accessed = 5 points;
  - Some difficulty getting equipment to the site = 2.5 points; and
  - Site is difficult to access = 0 points.

- Ownership issues
  - Publically-owned = 5 points;
  - Ownership potentially an issue = 2.5 points; and
  - Privately-owned = 0 points.

- Maintenance burden
  - Low = 5 points;
  - Medium = 2.5 points; and
  - High = 0 points.

4) **Additional benefits/factors (15 points).** This category helps compare the proposed concepts based on additional factors of interest to this project, as listed below:

- Public Education/Demonstration
  - Site is located in a high visibility area and provides an excellent opportunity for reaching the public = 5 points:
  - Site provides moderate visibility and located where some portion of the public could benefit = 2.5 points; and
  - Site provides low visibility and is located in an area few people will visit = 0 points.

- Additional Stormwater Benefits
  - Concept provides additional flood abatement, runoff reduction, habitat benefits = 5 points;
  - Site provides moderate additional benefits = 2.5 points; and
  - Site provides little other benefits than water quality = 0 points.

- Available partners
  - Good opportunity for, or there are existing partners/funding/volunteers available for implementation = 5 points:
  - Some opportunity for implementation assistance = 2.5 points
  - Little to no opportunity for implementation assistance = 0 points

The eight or fewer retrofits with the highest total score were preliminarily classified as “high priority” for each subwatershed. Remaining retrofits were assigned “medium” or “low” priority ratings based on natural breaks in the total scores. Ranking categories are listed in the plan in the retrofit summary tables. Point thresholds defining categories vary between each subwatershed.

## APPENDIX C - Retrofit Ranking Spreadsheet

### Preliminary Sizing Calculations for Stormwater Retrofits:

*Note: Water Quality Volume Required is based upon 1.2 inch of runoff times the contributing impervious area per 2010 NY Manual (Fig. 4.1)*

**Water Quality Volume (WQv)**

| Site # | Project | % Imp. | Drainage Area | | Imp. Area | | WQv Required | WQv provided | WQv provided | Bacteria removed | TN removed | Total Planning Level Cost $ | Wetlands/ Permitting | Access Issues | Ownership | Maintenance Burden | Public ed | other benefits flooding/runoff reduction | Other Partners |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | % | ac | sf | ac | sf | cf | % | cf | % | % | | | | | | | | |
| SC-R1A | North Sea Road and South Street - Dry Swale | 28.21 | 4.16 | 181,210 | 1.17 | 51,121 | 5,507 | 26.5 | 1462 | 70 | 55 | $ 24,706.11 | L | L | H | M | L | L | L |
| SC-R1B | North Sea Road - leakoffs | 16.40 | 3.50 | 152,460 | 0.57 | 25,000 | 3,049 | 0.0 | 0 | 30 | 15 | $ 10,000.00 | H | L | L | L | L | L | L |
| SC-R2 | End of Island Creek Road - Bioretention | 16.95 | 1.30 | 56,628 | 0.22 | 9,600 | 1,147 | 51.9 | 596 | 70 | 55 | $ 16,087.50 | M | L | L | M | M | L | L |
| SC-R3 | End of West Neck Road - Pocket Wetland and Wet Swale | 22.15 | 3.68 | 160,301 | 0.81 | 35,500 | 3,997 | 66.1 | 2643 | 60 | 30 | $ 24,973.66 | M | L | M | H | L | L | M |
| SC-R5 | Drainage Culvert crossing Millstone Brook Road - Dry Swale | 65.72 | 0.62 | 27,007 | 0.41 | 17,750 | 1,733 | 73.0 | 1265 | 70 | 55 | $ 21,378.50 | M | L | L | M | L | L | L |
| SC-R9 | Intersection of Sebonac Inlet and New North Highway - Bioretenton / Dryswales | 36.18 | 5.60 | 243,936 | 2.03 | 88,250 | 9,162 | 65.5 | 6002 | 70 | 55 | $ 162,045.00 | L | L | L | M | M | L | L |
| SC-R12 | Intersection of Millstone Brook and Millstone Lane - Bioretention | 20.37 | 6.75 | 294,030 | 1.38 | 59,900 | 6,861 | 100.0 | 6861 | 70 | 55 | $ 185,251.05 | L | L | L | M | L | L | L |

### Ranking Results:

| Site # | Project Description | 1. Pollutant Removal Potential (possible 40 pts) | | | 2. Cost (25 points) | | 3. Ease of Implementation (20 points) | | | | | 4. Additional Benefits/Factors (15 points) | | | | TOTAL SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total WQv treated **(20)** | Pollutant Reduction **(20)** | **#1 Score** | Total Cost/WQv | **#2 Score*** | Wetlands/ Permitting **(5)** | Accessibility **(5)** | Ownership **(5)** | Maintenance Burden **(5)** | **#3 Score** | Public Education/ Demonstration **(5)** | Addl SW Benefits (flood reduction, runoff reduction) **(5)** | Other Partner Involvement **(5)** | **#4 Score** | |
| SC-R1A | North Sea Road and South Street - Dry Swale | 12.13 | 12.5 | **24.6** | $ 16.9 | **16.5** | 5 | 5 | 0 | 2.5 | **12.5** | 0 | 0 | 0 | **0** | **53.6** |
| SC-R1B | North Sea Road - leakoffs | 10.00 | 4.5 | **14.5** | - | **0.0** | 0 | 5 | 5 | 5 | **15** | 0 | 0 | 0 | **0** | **29.5** |
| SC-R2 | End of Island Creek Road - Bioretention | 10.87 | 12.5 | **23.4** | $ 27.0 | **5.0** | 2.5 | 5 | 5 | 2.5 | **15** | 2.5 | 0 | 0 | **2.5** | **45.9** |
| SC-R3 | End of West Neck Road - Pocket Wetland and Wet Swale | 13.85 | 9.0 | **22.9** | $ 9.5 | **25.0** | 2.5 | 5 | 2.5 | 0 | **10** | 0 | 0 | 2.5 | **2.5** | **60.4** |
| SC-R5 | Drainage Culvert crossing Millstone Brook Road - Dry Swale | 11.84 | 12.5 | **24.3** | $ 16.9 | **16.5** | 2.5 | 5 | 5 | 2.5 | **15** | 0 | 0 | 0 | **0** | **55.9** |
| SC-R9 | Intersection of Sebonac Inlet and New North Highway - Bioretenton / Dryswales | 18.75 | 12.5 | **31.2** | $ 27.0 | **5.0** | 5 | 5 | 5 | 2.5 | **17.5** | 2.5 | 0 | 0 | **2.5** | **56.2** |
| SC-R12 | Intersection of Millstone Brook and Millstone Lane - Bioretentior | 20.00 | 12.5 | **32.5** | $ 27.0 | **5.0** | 5 | 5 | 5 | 2.5 | **17.5** | 0 | 0 | 0 | **0** | **55.0** |

| | | |
|---|---|---|
| Min | $ 9.45 | 25 |
| Max | $ 27.00 | 5 |

**Site Priority In Descending Order**

| Site # | Score |
|---|---|
| SC-R3 | **60.4** |
| SC-R9 | **56.2** |
| SC-R5 | **55.9** |
| SC-R12 | **55.0** |
| SC-R1A | **53.6** |
| SC-R2 | **45.9** |
| SC-R1B | **29.5** |

*This score is weighted with the lowest cost/acre receiving the highest score (30) and the highest cost/acre receiving the lowest score (1).
The other sites receive scores based on cost/acre relative to the maximum and minimum.

# APPENDIX D:

## HOMEOWNERS GUIDE TO IMPROVING WATER QUALITY IN THE PECONIC ESTUARY