

8.0 IMPLEMENTATION PLAN

One of the critical factors in the successful development and implementation of TMDLs is the identification of potential management alternatives, such as best management practices (BMPs) and load reduction from point sources, and screening and selection of final alternatives in collaboration with the involved stakeholders. Extensive care must be exercised to identify any naturally-occurring pathogen loads not associated with or exacerbated by human activities, and if they are significant in comparison to the controllable point and nonpoint sources of pollution, the option of prohibiting shellfish harvesting through administrative closures may be explored.

All the ongoing watershed protection efforts, e.g., watershed characterization, restoration, and volunteer monitoring, must be identified to take advantage of them in the TMDL development and implementation process. Coordination of this process with state agencies, federal agencies, local governments, and stakeholders such as the general public, environmental interest groups, and representatives from the point and nonpoint pollution sources will ensure that the proposed management alternatives are technically and financially feasible.

As an example, the Suffolk County conducted the Brown-Tide Comprehensive Assessment and Management Program (BTCAMP) in the Peconic Estuary between 1988 and 1992. This program's final report was used as a primary source for the Peconic Estuary Program (PEP) Nomination Report (the PEP commenced in 1993) and acts as the initial Brown Tide characterization for the PEP. The ambient water quality conditions in Flanders Bay, located at the mouth of the Estuary, have been monitored extensively by the County to support the development of a comprehensive hydrodynamic/water quality model for assessment of nutrient fate and transport. Total and fecal coliforms are among the parameters monitored by the County. In addition, EPA Region 2 has funded microbial source tracking studies in the Estuary conducted by Cornell Cooperative Extension of Suffolk County. Findings from these studies may assist in the assessment of sources and potentially, the allocation of loads, i.e., development of targeted pollution reductions for all the point and nonpoint sources that contribute pathogen loads to the Estuary.

The receiving waters of the Peconic Estuary study areas are affected by several major generators of nonpoint source pollution:

- Direct contributions from waterfowl and wildlife to surface waters
- Domestic pets, livestock, and wildlife wastes on the landscape
- The potential for localized effects associated with failing septic systems (presently undocumented).
- Marinas and boating

Storm water runoff is an important transmission vehicle for those pathogen wastes deposited on the landscape, including flows from lawns, driveways, and roads. Appropriate management practices to mitigate these environmental impacts range from management, to housekeeping measures, to structural approaches. The implementation plan is discussed in the following sections with the specific management plans for the respective sources of pollution.

8.1 Nonpoint Source Reduction

The most effective mechanism for reducing nonpoint source pathogen loads to the Peconic Estuary will focus on both reducing pathogen wastes itself and reducing stormwater volumes that reach surface waters. Recommendations from the Peconic Estuary Program follow. They are applicable to all lands including

those owned or managed as private residences, businesses, non-profit institutions, and governmental entities. They are also applicable to year-round and seasonal residents, employees, and visitors.

- Protect or establish a buffer (100 meters wide, if possible) around all creeks, ponds, and bays.
- Minimize impervious surfaces on properties. Remove unused portions of driveway and outdoor concrete and replace them with shrubs and trees.
- Disconnect impervious surface conduits. For example, a downspout from a roof leading to a driveway sends stormwater directly to the road and a storm drain. Move downspouts a few inches to lawns or a rain garden and allow stormwater to infiltrate naturally.
- Create a rain garden. Rain gardens are designed to collect and infiltrate stormwater with moisture tolerant native plantings.
- Pick up pet waste, and dispose of it in the trash.
- Don't feed waterfowl or create unnatural conditions where they congregate (e.g., lawns that extend to the water's edge). Non-migratory Canada geese are especially a problem.
- Keep curbsides clean and free of leaves, grass clippings, sand, and litter that will wind up in catch basins or surface waters.

Livestock may be an emerging issue in the Peconic watershed and owners should comply with all local requirements and best management practices and take steps to insure that livestock wastes are managed properly and do not impact surface or groundwaters. Habitat restoration projects may also be an effective means of reducing pathogen loads and direct stormwater contributions to surface waters, particularly in near shore areas. A particular focus for habitat restoration projects may be in areas where wetlands have been extensively grid ditched for mosquito control purposes, potentially leading to the "short-circuiting" of stormwaters to coastal waters without the benefit of the filtering capacity of these wetland systems. This phenomenon has been discussed by the Peconic Estuary Program but the extent of the impact has not been documented.

8.2 Urban Storm Water

In order to reduce or eliminate the loading of coliform bacteria to surface waters through storm water, the runoff can be treated with a variety of structural BMPs that can remove bacteria at different levels of effectiveness. Most management strategies designed to treat storm water runoff structurally will artificially introduce environments or chemicals that encourage bacteria decay. Other management strategies will not necessarily kill bacteria, but can seclude them from sensitive areas such as shellfish harvesting beds. Selection of individual BMPs or combinations of BMPs will depend upon continued evaluation of the subwatershed characteristics, the priorities of the Peconic Estuary Program and other stakeholders, and the available funding for implementing the remedial projects. In general, strategies for bacteria removal will operate in three possible ways:

- Detention of storm water
- Infiltration of storm water
- Filtration with wetland vegetation

The use of any of these three strategies can produce favorable results depending on the characteristics of a contributing watershed. Further enhanced treatment can also be achieved by using more than one technique at a single site. The management strategies chosen for a site will depend on several factors including:

- size of the drainage area;
- amount of space available for treating runoff;

- complexity and costs associated with permitting;
- potential for harmful environmental effects from installing a particular treatment structure
- desired removal rate for bacteria and other pollutants;
- cost of construction;
- resources necessary for proper maintenance; and
- expected longevity of the structure.

Storm water mitigation structures may be feasible with minimal disruption to the existing landscape, although they are without utility unless properly maintained. The implementation of such a program must include at least twice-yearly inspections of the facilities, preferably before and after the wettest season, and preparations for annual maintenance. Such work is likely to include cleaning, some replanting, and general refurbishment. If such a program is in place, the annual work load should remain rather light, and the BMP's effectiveness will be at a maximum.

In addition to the above maintenance program, a monitoring program should be included to determine the level of impact and reduction of pathogen inflow from the various tributaries that discharge to the study areas. A single station located downstream of each implemented BMP would be sufficient. Samples taken weekly, plus additional samples after storm events will be ideal. These data will supplement other sampling programs taken in the water bodies included in the study area. The monitoring program should begin before construction of the discharge BMPs so that the impact/improvement can be correctly gauged. Examples of urban BMPs are listed here for consideration:

Enhanced Extended Detention Basins – these are dry basins where storm water is temporarily collected and retained during significant wet weather events. The main components of these basins are a sediment forebay for trapping suspended solids and a micropool connected by a riprap channel to aid bacterial decay.

Wet Retention Ponds - these ponds utilize a permanent pool of water as the primary catchment for storm water runoff. A shallow marsh or sediment forebay may be used in conjunction with the wet retention pond to slow runoff velocity and enhance the overall settlement of sediments. If the turbidity can be managed, high levels of bacteria decay could be expected from exposure to sunlight.

Constructed Wetlands - these are artificially designed wetland systems that facilitate the settling of sediments from runoff, the retention of potentially large amounts of runoff, and the uptake of pollutants by wetland vegetation. These wetlands may be used in conjunction with other storm water BMPs for enhanced mitigation. Different types of constructed wetlands such as shallow marsh systems, pond systems, and pocket wetlands offer distinct advantages, and the watershed managers can determine which is best suited to the local conditions.

Water Quality Swales - these BMPs differ from drainage channels in that they provide pollution attenuation in addition to safe runoff conveyance. These are generally categorized into three types: dry swales, wet swales and grassed or biofilter swales.

Horsley and Witten (2003) conducted a regional storm water assessment report for PEP that can be used as the starting point for urban storm water management to achieve the desired reductions in bacteria loads in the study area's water bodies.

8.3 Waterfowl

The deposits of fecal matter by resident and migrating waterfowl has an exacerbated impact on some of the water bodies in the study area, particularly those embayments with reduced flushing and open space for congregating birds. A particular problem of some local significance is migratory waterfowl that have become resident (Canada geese) and invasive species (mute swans). The Peconic Estuary Program has received funding for studying the waterfowl population in and around Peconic Bay. This study will provide site-specific information on numbers, species, and range of waterfowl that may contribute to bacteria levels within the study area. Although the project has not yet begun, several general waterfowl management measures can still be considered within the study area. These include:

- Elimination of open lawns along the water's edge that are inviting to roosting waterfowl;
- Placement of noise generators at roosting or nesting sites to discourage birds from landing;
- The firing of blank cartridges over a period of time to make a roosting or nesting site inhospitable;
- Destruction of nesting areas;
- Public education efforts to discourage people from feeding wild waterfowl; and
- The shooting of birds.

Bird mitigation programs must be tailored to specific regions, and will have varying levels of success. In addition, some species of waterfowl may be protected by law from harassment and/or hunting and these legal determinations should be examined carefully on a site-by-site basis. Many options are available short of hunting local fowl, which may be objectionable in settled areas.

8.4 Septic Systems

As discussed in Section 5, the BTCAMP study conducted by Suffolk County Department of Health Services (SCDHS, 1992) has documented the potential coliform loadings from the areas within the Towns of Riverhead and Southampton. These areas are served by septic systems which can fail during wet periods or when the ground water levels are high, resulting in an influx of organically contaminated water to the local soil that may interact with tidal waters. A complete sewerage of the areas, and direction via force-main to the STPs is one means of eliminating the impacts from densely settled areas served by septic systems. Short of new drainage infrastructure, the potential for exfiltration from waste system to the Flanders Bay or Reeves Bay or the tributaries that drain to these bays could be intercepted by a modified French Drain system. This would comprise porous conduits (perforated pipe, or gravel filled trench) placed along the perimeter of the settled areas to intercept groundwater flow between the settled areas and the receiving waters. The drains would discharge into excavated basins, enclosed or open, which could be periodically cleaned or pumped out. A small constructed wetland would be an appropriate means of clarifying the discharge from the collecting trench. This sort of measure should be coupled with an intensive inspection program to ensure that these practices would eventually achieve the desired reductions in pollutant loads.

The actual occurrence of failing septic systems in the Peconic watershed is however, thought to be small, and the need to pursue new or extensions of sewerage may not be necessary. New development and extensive redevelopment requires onsite disposal systems to comply with stringent siting and operational requirements overseen by Suffolk County

8.5 Marinas/Transient Boats

In June 2002, the Peconic Estuary was officially approved as a designated Vessel Waste No Discharge Zone (NDZ) by the EPA (67 FR 39720). An ongoing public education plan was designed to inform boaters that discharging raw or treated sewage within the NDZ is illegal and that all sewage must be held

onboard the vessel until a pumpout facility or specialized boat can empty the holding tank. For violations of the NDZ law, section 33-e of New York State's Navigation Law provides for fines of up to \$500 for a first discharge offense and \$1,000 for further violations. Vessel-derived human waste is, therefore, not likely to be a major source of coliform bacteria in the Estuary's waters. However, some boaters may be unaware of or refuse to comply with the NDZ designation. Pollution originating from these vessels as well as from marinas can be further reduced by adopting appropriate mitigation techniques including:

- more extensive public awareness campaigns on illicit dumping of wastewater;
- introduction of local ordinances to penalize wastewater dumping;
- the inclusion of NDZ areas on nautical charts;
- enhancement of public toilet facilities near the shore so that boat owners would minimize the use of their onboard toilet; and
- expansion of current pump-out programs including mobile and on-shore pump-out facilities.

8.6 Zoning Enhancements

In addition to the measures described above, the adoption and implementation of enhanced local zoning requirements may successfully address some of the problems associated with pathogens and excess stormwater. An in-place example already exists in the Town of East Hampton, which has established a Harbor Protection Overlay District. The requirements imposed in this overlay district are in the CODE OF THE TOWN OF EAST HAMPTON, NEW YORK, v22 Updated 01-20-2006, PART II GENERAL LEGISLATION, Chapter 255, ZONING, ARTICLE III, Overlay Districts, § 255-3-70. Harbor Protection Overlay District. [Added 10-6-1995 by L.L. No. 12-1995 and also at <http://www.town.east-hampton.ny.us/> As stated in this Town Code, among other provision, the Harbor Protection Overlay District will help prevent the entry of stormwater runoff into the Town's waters; gradually require the upgrading of out-moded or inoperable septic systems; and preserve important indigenous vegetation. This overlay district includes all properties that are immediately adjacent to surface waters. The other municipalities in the Peconic Estuary watershed should be encouraged to adopt similar local legislation.

The most applicable sections of this regulation are included here.

§ 255-3-75. Regulations. [Added 10-6-1995 by L.L. No. 12-1995]

In addition to any other provisions of this chapter which may apply to them, lots, lands, buildings, structures, uses and activities within the Harbor Protection Overlay District shall be subject to the following restrictions and regulations:

A. Control of stormwater runoff. The following regulations shall apply to structures or activities which produce or contribute to stormwater pollution of the Town's surface waters:

(1) No parking lot or private driveway shall hereafter be constructed unless it has either an unimproved surface (e.g., dirt, crushed shells) or an improved surface consisting of one or more of the following materials: poured concrete, hot plant mix asphalt, rapid-curing cut-back asphalt or quartz gravel.

(2) No road, private driveway or parking lot with an improved surface shall hereafter be constructed unless all stormwater generated by said structure is directed into one or more catchment basins. Said catchment basin or basins shall have a combined volume (in cubic feet) equal to the surface area of the road, driveway and/or parking area (in square feet), divided by six.

(3) Any road, private driveway or parking lot which is hereafter constructed with an improved surface shall be maintained so that all stormwater generated by said structure is actually directed into the catchment basin or basins required by the preceding subsection. Any catchment basin required by the preceding subsection shall be kept clean and maintained so that it recharges stormwater into the ground without overflowing.

- (4) No pipe, culvert, drain or similar conduit may hereafter be constructed or installed which discharges stormwater into wetlands (including surface waters).
- (5) Every principal building or addition to a principal building which is hereafter constructed or erected shall be furnished with gutters and leaders to direct stormwater from roofs into one or more catchment basins. Said catchment basin or basins shall have a combined volume (in cubic feet) equal to the surface area of the roof (in square feet), divided by six.
- (6) During construction work the disturbance of natural vegetation and land contours shall be minimized to the maximum extent practicable. Project-limiting fencing, siltation mesh, strawbales or similar devices for limiting land disturbance and retarding erosion and siltation shall be used during construction work and during any land clearing or grading in preparation for or associated with construction work.

B. New sanitary septic systems. The following regulations shall govern the installation of all septic systems after this date, except for septic systems, which are installed to replace legally preexisting septic systems:

- (1) No such septic system shall be installed or constructed unless it is set back a minimum of 200 feet from the surface waters of Acabonac Creek, Fort Pond (including the arm of Fort Pond north of Industrial Road), Georgica Pond, Great Pond (Lake Montauk), Hog Creek, Napeague Harbor, Northwest Creek, Northwest Harbor, Steppingstones Pond, Three Mile Harbor, Tuthill Pond and/or Wainscott Pond and from the upland boundary of any wetlands contiguous to the foregoing bodies of water. To the extent that any provision of Article IV imposes a lesser wetland setback for septic systems, the requirements of this subsection shall be controlling with respect to lands within the Harbor Protection Overlay District.
- (2) No septic system leaching pool shall hereafter be installed unless the bottom of the leaching pool is situated a minimum of four feet above the groundwater table.

C. Existing sanitary septic systems. Any septic system which legally exists on a residential property on January 1, 1996, shall be replaced or upgraded in the following circumstances and to the following extent:

- (1) Every septic system regulated by this subsection shall be replaced or upgraded if:
 - (a) A natural resources special permit is required for work to be performed on the lot or parcel containing the septic system;
 - (b) The work to be performed will increase the habitable floor area of a principal building on the lot or will increase the number of bathrooms within a building on the lot; and
 - (c) The septic system in question does not meet the minimum requirements of the Suffolk County Department of Health Services for vertical separation to groundwater, for setback to surface waters or for septic system capacity, or in that it lacks a septic tank.
- (2) Where this subsection requires that an existing septic system be replaced or upgraded, the new or upgraded septic system shall meet the following requirements:
 - (a) It shall comply with the requirements of the Suffolk County Department of Health Services for new septic systems and shall be installed under the supervision of the Sanitation Inspector; and
 - (b) It shall be set back a minimum of 150 feet from the upland boundary of all tidal wetlands (including tidal surface waters) or, if that is not feasible, it shall be set back the maximum practicable distance from the surface waters of Accabonac Creek, Fort Pond (including the arm of Fort Pond north of Industrial Road) Georgica Pond, Great Pond (Lake Montauk), Hog Creek, Napeague Harbor, Northwest Creek, Northwest Harbor, Steppingstones Pond, Three Mile Harbor, Tuthill Pond and/or Wainscott Pond and from the upland boundary of any wetlands contiguous to the foregoing bodies of water, taking into consideration such factors as the physical constraints of the site and the location of nearby water supply wells.

D. Limited clearing of lots or parcels of land within the Harbor Protection Overlay District shall be further restricted as set forth herein. [Amended 11-6-1998 by L.L. No. 36-1998; 6-8-2004 by L.L. No. 15-2004]

(1) The total area of a lot which may be cleared of indigenous natural vegetation shall not exceed the following amounts for any lot located wholly or partly within the overlay district:

<u>Lot Area</u> (square feet)	<u>Maximum Clearing Permitted</u> (square feet)
Residence Districts:	
Up to and including 39,999	10,000 or 35% of lot area, whichever is greater
From 40,000 to and including 280,000	10,000 + (lot area * 12.5%)
Greater than 280,000	45,000
Commercial Districts:	
All lots	10,000 or 50% of lot area, whichever is greater

In calculating the amount of clearing permitted by this subsection on a flag lot or a lot which is burdened by a common driveway easement or access easement, the area of any flag strip or any common driveway easement or access easement shall be excluded from lot area. Likewise, any clearing for driveway purposes within the flag strip or within the common driveway easement or access easement shall not be counted into the permissible amount of clearing.

(2) Clearing in excess of 45,000 square feet on any lot in a residence district is prohibited unless the following requirements are met:

- (a) The area of the lot, excluding the area of any flag strip but otherwise determined as set forth in § 255-1-20 hereof, exceeds 300,000 square feet; and
- (b) Site plan approval and a special permit have been first obtained from the Planning Board.

9.0 REASONABLE ASSURANCE FOR IMPLEMENTATION

This TMDL is for 20 waterbodies located in the Peconic Estuary Watershed – Dering Harbor, Budds Pond, Sterling Creek and Basin, Town/Jockey Creeks and tidal tributaries, Goose Creek, Hashamomuck Pond, Richmond Creek and tidal tributaries, Deep Hole Creek, James Creek, Flanders Bay – east/center and tributaries, Reeves Bay and tidal tributaries, Sebonac Creek/Bullhead Bay and tributaries, North Sea Harbor and tributaries, Wooley Pond, Noyac Creek and tributaries, Sag Harbor and Sag Harbor Cove, Northwest Creek and tributaries, Acabonac Harbor, Montauk Lake and Little Sebonac Creek. The percentage distributions of pathogen loadings from various sources for these water bodies are indicated in the following table:

Pathogens Source	All Embayments
MS4 Contribution	35.2 %
Non-MS4 Contribution	57.9%
Forest Runoff	3.6%
Waterfowl	2.2%
Rural Land	0.6%
Point Sources (STPs)	0.5%

The major sources currently identified are the point sources of urban storm water and domestic pets, making up 93% of pathogen loadings to Peconic estuary embayments. The remaining 7% of loadings are not being targeted for reductions under the individual areas, but best management practices should be used to reduce discharges to the maximum extent feasible as further described below.

The Riverhead STP, Sag Harbor STP, and the Shelter Island Heights STP are covered by NYSDEC's existing SPDES permits. These permits are reviewed and re-issued at regular intervals. These STPs should be maintained and operated in conformance with their State Pollutant Discharge Elimination System (SPDES) permits and minimize the amount of pathogens discharged to the maximum extent feasible.

As indicated in Section 5.2, Suffolk County has abundant livestock but no site-specific data was available. It is also indicated that the County has 651 farms which house cattle and calves, hogs and pigs, poultry (pullets, turkeys, etc.), horses and ponies, sheep and lambs, and other livestock.

All farms and even individual horse owners should be educated regarding manure best management practices. Horses produce large amounts of manure that can threaten local water quality, especially when receiving waters are shallow and poorly flushed. Good housekeeping practices for horses are similar to those applied successfully to small dairy farm operations, and involve the close control of manure, limiting the use of spreading, careful construction of composting areas, preventing horse traffic or grazing over small streams, and similar measures. The practices need not impose any large cost on the affected parties, and often involve more careful use of existing facilities or adjustment of common practices. In addition, levels of coliform bacteria may be reduced through waterfowl mitigation programs and through storm water management mitigation strategies. If these types of areas are located within municipalities, they should be addressed through their implementation of the Phase II stormwater program.

9.1 Follow-Up Monitoring

The NYSDEC will continue the shellfish monitoring program to ascertain the suitability of New York State waters for shellfishing. The beach data frequently monitored by Suffolk County will continue to be used in conjunction with the NYSDEC data to evaluate reductions in pathogen loads and the effectiveness of the TMDL in attaining and maintaining the water quality standards for shellfish harvesting. The above data, along with any other data provided to NYSDEC will be used in NYSDEC's assessment of the water quality for these waterbodies during the development of the NYSDEC 303(d) list of impaired waters. The review of these data for the 303(d) report will be the tracking mechanism to determine if the TMDL is moving water quality in the direction necessary to open the waters to shellfishing. (NOTE: As of February 2003, NYSDEC began examining its water samples for shellfish harvest area classification with A-1 medium which only gives fecal coliform results)

The NYSDEC will establish compliance of the TMDL(s) and applicable water quality criteria through monitoring prior to opening shellfish areas consistent with the National Shellfish Sanitation Program's (NSSP) guidelines, and the NYS regulations and criteria.

9.2 No Discharge Zone

The Peconic Estuary has been designated by both EPA and by NYSDEC as a No-Discharge Zone. The pollution from marinas and boat mooring areas in Peconic Estuary should be further reduced using appropriate mitigation techniques such as:

- Public awareness campaigns on illicit dumping of wastewater,
- Enhancement of onshore public toilet facilities minimizing the use of on-boat facilities, and
- Expansion of current pumpout programs including the mobile and on-shore pumpout facilities.

9.3 Implementation of Phase II Stormwater Regulations

NYSDEC has expanded its permitting program to include a new federally mandated program to control stormwater runoff and protect waterways.

According to the federal law, commonly known as Stormwater Phase II, permits will be required for stormwater discharges from Municipal Separate Storm Sewer Systems (MS4s) in urbanized areas and for construction activities disturbing one or more acres. To implement the law, the NYSDEC has developed two general SPDES permits, one for MS4s in urbanized areas and one for construction activities. Operators of regulated small MS4s seeking authorization to discharge stormwater in compliance with the federal Clean Water Act are required to apply for and secure coverage under the SPDES General Permit for Municipal Separate Storm Sewer Systems. Operators of regulated MS4s and construction activities must obtain either a SPDES or a general permit no later than March 10, 2003 or prior to the commencement of construction.

The MS4 municipalities are required to develop, implement and enforce a stormwater management program (SWMP). The SWMP must describe the Best Management Practices (BMPs) for each of the minimum control measures:

1. Public education and outreach program to inform the public about the impacts of the stormwater on the receiving water quality.

2. Public involvement and participation.
3. Illicit discharge detection and elimination.
4. Construction site stormwater runoff control program for sites disturbing one or more acres.
5. Post-construction runoff control program for new development and redevelopment sites disturbing one or more acres.
6. Pollution prevention and good housekeeping operation and maintenance program.

Operators must have developed the initial SWMP prior to March 10, 2003 and have provided adequate resources to fully implement the SWMP no later than five years from the issuance date of the MS4 permit. Each of the regulated MS4s in this TMDL (see table below) has developed an initial SWMP and has coverage under the general permit (GP-02-02). An MS4 may modify its SWMP at any time, although any changes to a SWMP shall be reported to the NYSDEC in the MS4's annual report. MS4s are required to make steady progress toward full implementation.

Permittee	SPDES #	Date NOI Submitted
Town of Riverhead	NYR20A020	03/04/2003
Town of Southampton	NYR20A454	03/04/2003
Village of Sag Harbor	NYR20A095	02/27/2003
Village of North Haven	NYR20A500	12/15/2003
Suffolk County	NYR20A180	3/25/2003
NYSDOT	NYR20A288	3/10/2003

NOI: Notice of Intent

A SWMP is designed to reduce the discharge of pollutants to the maximum extent practicable (MEP) to protect water quality and to satisfy the appropriate water quality requirements of the Environmental Conservation Law and the Clean Water Act. MEP is a technology-based standard established by Congress in the Clean Water Act. Since no precise definition of MEP exists, it allows for maximum flexibility on the part of MS4 operators as they develop their programs. If stormwater is being discharged to a 303(d)-listed segment of a water body, the SWMP must ensure there is no resulting increase in the pollutant of concern to the, receiving waters. Where required to meet water quality standards NYSDEC enforces additional requirements based on WLAs determined through a TMDL. The MS4 must review the applicable TMDL to see if it includes requirements for control of stormwater discharges. If an MS4 is not meeting the TMDL stormwater allocations, it must, within six (6) months of the TMDL's approval, modify its SWMP to ensure that reduction of the pollutant of concern specified in the TMDL is achieved. Modifications must be considered for each of the six minimum measures. The revised management program must include an updated schedule for implementation.

The MS4s that discharge to Flanders Bay (east/center and tributaries), North Sea Harbor, Noyac Creek and tidal tributaries, Reeves Bay and tidal tributaries, Sag Harbor and Sag Harbor Cove, Sebonac Creek/Bullhead Bay and tidal tributaries and Wooley Pond are owned and operated by the municipalities located around this waterbodies. Accordingly, all municipalities identified in the TMDL have submitted an application to gain coverage under New York's SPDES General Permit for Municipal Separate Storm Sewer Systems:

NYSDEC will continue to work with these municipalities to identify funding sources and to evaluate locations and designs for stormwater control BMPs throughout the watershed. Under the State's

Environmental Protection Fund (EPF), \$10.8 million were made available last year (2005) through an application process to assist communities in implementing the Stormwater Phase II regulations and for non-agricultural nonpoint source abatement and control projects.

Currently, East Hampton, Southold and Town of Shelter Island are not part of an MS4 area, although these municipalities or local governments could be made part of the MS4 area after the approval of this TMDL by EPA. The waterbodies covered under this TMDL that are located in these towns are as follows:

- A. East Hampton:
 - 1. Outer Northwest Creek
 - 2. Acabonac Harbor
 - 3. Montauk Harbor

- B. Southold:
 - 1. Town/Jockey Creek
 - 2. Hashamomuck Pond

- C. Town of Shelter Island
 - 1. Dering Harbor

This TMDL does not invoke additional requirements set forth in the SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-02-01, applicable to facilities satisfying Condition A of Part III.A.1.b.(1) for construction sites discharging to these waterbodies.

9.3.1 Additional Requirements Based on This TMDL

Under the SPDES General Permit for Stormwater Discharges from MS4s, Permit No. GP-02-02, Part III.B.2, the MS4 dischargers must provide controls beyond the six minimum measures, such that economically feasible programs are developed and implemented to reduce known pathogen sources to a level which will meet the pathogen standards necessary to open the waters to shellfishing based on NSSP standards.

Once sampling is obtained which meets the NSSP standards for this area, and if the sampling indicates that the shellfish waters continue to violate shellfish standards, additional measures will be required such that pathogens are reduced to the extent necessary to meet the allocation set forth in this TMDL. As an alternative to additional measures, if shellfishing waters continue to violate shellfish standards after economically feasible programs have been put in place, the towns may perform a Use Attainability Analysis to determine if the area's designated use can be changed to eliminate shellfishing.

10.0 PUBLIC PARTICIPATION

NYSDEC and U.S. EPA Region 2 have worked together to prepare this total maximum daily load (TMDL) document to meet the requirements of Section 303(d) of the Clean Water Act. NYSDEC will make this document available to the public, local agencies, and stakeholders for their review and feedback. The stakeholders will include, but are not limited to, the following municipal, government, and non-government organizations: the Towns of Riverhead, Southampton, East Hampton, Southold, and Shelter Island; Brookhaven National Laboratory, Riverhead, Sag Harbor, and NWIRP Calverton STPs; local Audubon Societies; marina operators and boaters associations; and the Suffolk County Departments of Health and Public Works; and the New York State Department of Transportation.

NYSDEC published notice in the Environmental Notice Bulletin on July 19, 2006 concerning the availability of this TMDL document and specified where the interested parties can obtain a copy of the document either in electronic or in printed form. The public was given 30 days to submit comments to NYSDEC. No public comments were received.

11.0 REFERENCES

- Caraco, D. 2001. Watershed Treatment Model, Version 3.1 User's Manual. Center for Watershed Protection.
- Dugan, J.E., D.M. Hubbard, M.D. McCrary, and M.O. Pierson. 2003. The response of macrofauna communities and shorebirds to macrophyte wrack subsidies on sandy beaches of southern California. *Estuarine, Coastal and Shelf Science* 58S:133-148.
- Hasbrouck, E. 2004. Identification of E. coli Sources for the Peconic Estuary Watershed for Effective Mitigation of Nonpoint Source Pollution
- Horsley & Witten, Inc. 2003. Peconic Estuary Stormwater Assessment and Planning Tool: Final Report. October 2003. 29 pp.
- Hydroqual. 2003. Final Pathogen TMDL Development for Oyster Bay Harbor and Mill Neck Creek, Long Island, New York. U.S. EPA, Region 2.
- Long Island Power Authority (LIPA). 2004. 2004 Long Island Population Survey. Uniondale, New York.
- Long Island Regional Planning Board (LIRPB). 1978. The Long Island Comprehensive Waste Treatment Management Plan (LI 208 Study), Volume II.
- LIRPB. 1982. The Long Island Segment of the Nationwide Urban Runoff Program (NURP), December 1982.
- Metcalf and Eddy, Inc. 1991. *Wastewater Engineering*. McGraw-Hill, New York.
- National Shellfish Sanitation Program (NSSP). 1986. Manual of Operations, Part 1, U.S. Department of Health and Human Services, Public Health Service, Food and Drug Administration, 1986 revision.
- NSSP. 2003. Guide for the Control of Molluscan Shellfish. U.S. Department of Health and Human Services, Public Health Service, Food and Drug Administration. 2003 revision.
- New York State Department of Environmental Conservation (NYSDEC). 2003. Final Pathogen Total Maximum Daily Loads for Shellfish Waters in Oyster Bay Harbor and Mill Neck Creek, Nassau County, New York. September 2003.
- NYSDEC. 2004. New York State 2004 303(d) List. NYSDEC, Division of Water, Albany, NY.
- NURP. 1982. Results of the Nationwide Urban Runoff Program, U.S. EPA, December 1983.
- Ott, W. 1995. *Environmental Statistics and Data Analysis*, Lewis Publishers, New York, NY.
- Peconic Estuary Program (PEP). 1998. Point and Nonpoint Source Nitrogen Loading Overview. Suffolk County Department of Planning. January 1998. Hauppauge, NY.

- Peconic Estuary Program (PEP). 2001. Final Comprehensive Conservation and Management Plan. February 2001.
- Peconic Estuary Program (PEP). 2004. Peconic Estuary Program Critical Lands Protection Plan. Suffolk County Department of Planning, March 2004. Hauppauge, NY.
- Schubert, C.E. 1999. Ground-water Flow Paths and Travel Time to Three Small Embayments Within the Peconic Estuary, Eastern Suffolk County, New York. Water Resources Investigation Report 98-4181. 41 pp.
- Suffolk County Department of Health Services. 1983. North Fork Water Supply Plan.
- Suffolk County Department of Health Services. 1992. Brown Tide Comprehensive Assessment and Management Program (BTCAMP), Volume II.
- Suffolk County Department of Planning. 2000. 1999 Existing Land Use Inventory (*Eastern Suffolk County*).
- Suffolk County Department of Planning. 2003. Survey Plan for Shellfish Cultivation Leasing in Peconic and Gardiners Bays. Suffolk County Department of Health Services and Suffolk County Department of Public Works. April 2003. 33 pp +appendices
- Suffolk County Department of Planning. 2004. 2001 Existing Land Use Inventory. Long Island Sound Study, Suffolk County North Shore Watershed Management Program. April 2004. 16 pp.
- Tetra Tech, Inc. 2000. Three-Dimensional Hydrodynamic and Water Quality Model of Peconic Estuary. Suffolk County Department of Health Services. 522 pp.+ appendices
- U.S. Census Bureau. 2004. Statistical Abstract of the United States, 2004-2005 (124th Edition). Washington D.C.
- U.S. Department of Agriculture (USDA). 2002. 2002 Census. National Agriculture Statistics Service.
- United States Environmental Protection Agency (USEPA). 1991. Guidance for Water Quality-based Decisions: The TMDL Process. U.S. Environmental Protection Agency, Office of Water, Washington, DC.
- USEPA. 1997. Compendium of Tools for Watershed Assessment and TMDL Development, EPA 841-B-97-006. U.S. Environmental Protection Agency, Washington, DC.
- USEPA. 1999. Guidance for Water Quality-Based Decisions: The TMDL Process. U.S. Environmental Protection Agency, Office of Water, Washington, DC.
- USEPA. 2001. Protocol for Developing Pathogen TMDLs. EPA 841-R-00-002.
- USEPA. Office of Water, Washington, DC. USEPA, 2002. Better Assessment Science Integrating Point and Non-point Sources (BASINS), U.S. Environmental Protection Agency, Office of Science and Technology, Washington, DC.

- Weiskel, P.K., B.L. Howes, and G.R. Heufelder. 1996. Coliform contamination of a coastal embayment: Sources and transport pathways. *Environmental Science & Technology*, 30:1872-81.
- Valiela, I., M. Alber, and M. LaMontagne. 1991. Fecal coliform loadings and stocks in Buttermilk Bay, Massachusetts, USA, and management implications. *Environmental Management*. 15(5):659-674.

Attachment 1

Water Quality Data Analysis Summary

Attachment 2

Marina and Pumpout Facility Data

Table 1. Land-based and Mobile Pumpout Facilities in the Peconic Estuary

Municipality and Water body	Marina/Dock/Boat Name	Pumpout Capacity
Village of Greenport—Stirling Basin	Brewers Yacht Yard	Unlimited (septic system)
Village of Greenport—Greenport Harbor	Claudio’s Marina	Unlimited (town sewer)
Town of Southold—Sage Cove	Brick Cove Marina	40 gallon holding tank
Town of Southold—Budds Pond/Mill Creek	Goldsmith’s Boat Shop	250 gallon holding tank
Town of Southold—Budds Pond/Mill Creek	Port of Egypt	500 gallon holding tank
Town of Southold—Budds Pond/Mill Creek	Albertson’s Marine	250 gallons (septic system)
Town of Southold—Wickham Creek	Cutchogue Harbor Marina	200 gallon holding tank
Town of Southold—Cutchogue Harbor	New Suffolk Shipyard	275 gallon holding tank
Town of Southold—James Creek	Strong’s Marina	Unlimited (septic system)
Town of Riverhead—South Jamesport	Town Dock (municipal)	1000 gallon holding tank
Town of Riverhead—Great Peconic Bay/Flanders Bay	Great Peconic Bay Marina	Unlimited (septic system)
Town of Riverhead—Meetinghouse Creek/Flanders Bay	Larry’s Lighthouse Marina	500 gallon holding tank
Town of Riverhead—Peconic River	Downtown Riverhead	1000 gallon holding tank
Town of Riverhead—Peconic River	Treasure Cove Marina	500 gallon holding tank
Town of Southampton—Shinnecock Canal	Shinnecock Canal County Marina	1000 gallon holding tank
Town of Southampton—Westhampton Beach	Town Pumpout Boat #1 (municipal)	250 gallon boat
Town of Southampton—Shinnecock Canal west to Riverhead/Great Peconic Bay	Town Pumpout Boat #2 (Hamptons Harbor Marina) (municipal)	250 gallon boat
Town of Southampton—Red Creek Pond to Cold Spring Pond/Great Peconic Bay	Town Pumpout Boat #4 (Mariners Cove Marina) (municipal)	250 gallon boat
Town of Southampton—Cold Spring Pond to Jessup Neck	Town Pumpout Boat #3 (Wooley Pond Bulkhead) (municipal)	250 gallon boat
Village of Sag Harbor—Noyak to West Neck Bay to Sag Harbor	Town Pumpout Boat #5 (Village Marina) (municipal)	250 gallon boat
Village of Sag Harbor—Sag Harbor	Marine Park Docks	1500 gallon holding tank
Town of East Hampton—Three Mile Harbor	Town Pumpout Boat (Gann Road) (municipal)	300 gallon boat
Town of East Hampton—Three Mile Harbor	Darenberg Marine Pumpout Boat	300 gallon boat

Table 1. Land-based and Mobile Pumpout Facilities in the Peconic Estuary, continued

Municipality and Water body	Marina/Dock/Boat Name	Pumpout Capacity
Town of East Hampton—Three Mile Harbor	Shagwong Marina	60 gallon unit emptied into 1000 gallon septic system
Town of East Hampton—Three Mile Harbor	East Hampton Point Marina	50 gallon unit emptied into 1000 gallon septic system
Town of East Hampton—Three Mile Harbor	Maidstone Harbor Marina	Vaccuflush unit emptied into 900 gallon septic system
Town of East Hampton—Three Mile Harbor	Town Dock, Gann Road (municipal)	2,376 gallon and 725 gallon holding tanks
Town of East Hampton—Three Mile Harbor	Harbor Marina	30 gallon portable unit
Town of East Hampton—Montauk Harbor	Montauk Sportsman's Dock	60-80 gallon unit emptied into 1000 gallon septic system
Town of East Hampton—Montauk Harbor	Town Dock, Star Island (municipal)	2,376 gallon holding tank
Town of East Hampton—Montauk Harbor	Gone Fishing Marina	60 gallon unit emptied into 1000 gallon septic system
Town of Shelter Island—Dering Harbor	Picozzi's Dering Harbor Marina	250 gallon holding tank
Town of Shelter Island—Coecles Harbor	Coecles Harbor Marina	Unlimited (septic system)

Source: New York Sea Grant

Table 2. Number of Docks, Moorings, and Slips Available in the Peconic Estuary Area

Water body	Private Docks	Moorings	Marina Slips	Total Recreational Vessels
Orient Harbor	7	65	209	281
Greenport Harbor	175	69	782	1026
Southold Bay	238	106	975	1319
Hog Neck Bay	103	76	72	251
Cutchogue Harbor Complex	253	110	336	699
Southold	127	65	257	449
Flanders Bay Complex	9	13	550	572
Red Creek Pond	53	134	0	187
Cold Spring Pond	19	0	322	341
Bullhead Bay/Sebonac Complex	16	0	60	76
North Sea Harbor	0	35	218	253
Noyak Bay	21	134	145	300
Sag Harbor Complex	184	896	787	1867
Three Mile Harbor	64	153	1045	1262
Acabonac Harbor	0	56	0	56
Napeague Harbor	0	20	0	20
Fort Pond Bay	0	0	0	0
Montauk Lake	68	20	1186	1274
Dering Harbor	0	285	96	381
Coecles Harbor	0	237	50	287
West Neck Harbor	0	249	97	346
Total				11247

Source: New York Sea Grant

Table 3. Mobile Pumpout Facilities Data for Peconic Bay

Operator of Pumpout Boat	Area Covered	Gallons Pumped							
		1995	1996	1997	1998	1999	2000	2001	2002
Southampton Town Pumpout Boat #1	Westhampton Beach	1,340	3,365	3,866	5,204	6261	8686	7,660	7,906
Southampton Town Pumpout Boat #2	Shinnecock Canal west to Riverhead	2,187	4,642	5,437	4,417	3,100	Inactive	NA	NA
Southampton Town Pumpout Boat #3	Cold Spring Pond to Jessup Neck	Inactive	3,119	8,977	14,544	7,905	440	4,885	1,694
Southampton Town Pumpout Boat #4	Red Creek Pond to Cold Spring Pond	447	1,535	2,873	3,110	3,472	4,203	4,184	NA
Southampton Town Pumpout Boat #5	Noyak to West Neck Bay to Sag Harbor	4,277	19,953	15,104	20,773	35,780	44,143	38,172	46,989
East Hampton (owned by town)	Three Mile Harbor	NA	NA	NA	NA	NA	16,979	NA	NA
East Hampton (Darenberg Marine)	Three Mile Harbor and Montauk Lake	NA	NA	NA	NA	30,000	43,000	NA	NA

NA=not available

Source: Peconic Bay Estuary Program.