



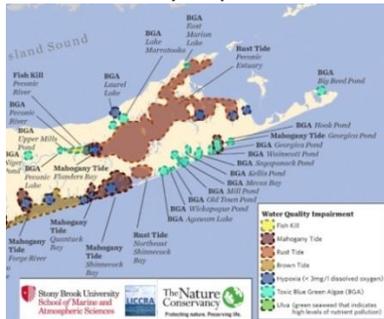
PECONIC GREEN GROWTH

SHELTER ISLAND (hamlet)

Water sustains life and symbolizes purity. But water quality is degrading. Our ground and surface waters need protection. The aquifers are not only sources of drinking water, but flow horizontally to surface waters, impacting the marine health of our bays. Excess nitrogen compounds are a critical cause of algal blooms, which lower oxygen levels, create toxins, and ultimately cause fish kills. Contaminants of emerging concern, such as pharmaceuticals and personal care products, need to be treated before being released to ground and surface waters. Poor water quality will ultimately impact community character and vitality, which are especially relevant for our coastal and tourist economies.

The following is a snapshot of local issues that impact excess nitrogen loading. More detailed maps are available at <http://peconicgreengrowth.org/community-maps-2014/> where you can find the areas needing priority action, as well as identify conditions relevant to your home. Visit our website to learn about options for upgrading your wastewater system to help protect your environment.

LI Water Quality Impairments 2016



EXCESS NITROGEN (N) LOADING

- Excess nitrogen compounds can be harmful to human health.
- Our surface waters are 20 times more susceptible to N loads than maximum contaminant levels for drinking water.
- Excess N feeds algal blooms, which in turn create toxins. These impact fish and shellfish formation and survival rates.
- Excess nitrogen contributes to declines in eel grass and wetland grass beds. Their loss impacts marine habitats and reduces their usefulness as property buffers in storms.
- The algal blooms are becoming more numerous and potent.

Nitrogen Sources



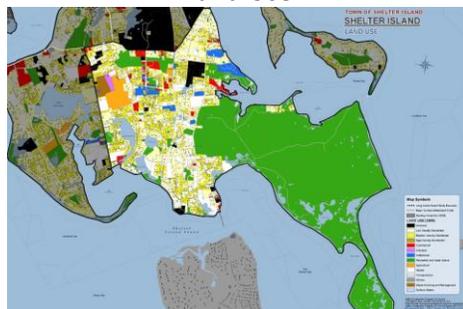
Courtesy TNC and Prof. Christopher Gobler

SOURCES OF EXCESS NITROGEN

Shelter Island encompasses multiple subwatersheds. It shares SI-2 with Shelter Island Heights. Subwatersheds SI 3, 4, and 5 contribute 2% of the total Peconic Estuary loading. Sources of the three subwatersheds are estimated as coming from:

- 49% septic/cesspool systems
- 43% atmospheric deposition
- 7% fertilizer from lawns
- 1% fertilizer from golf courses

Land Use



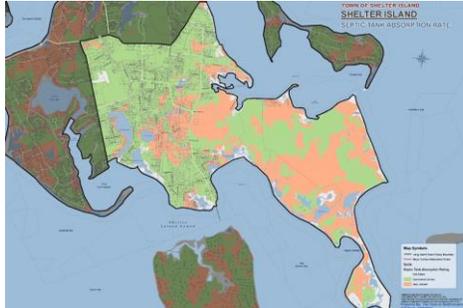
SHELTER ISLAND WATER QUALITY

- Rust Tide (algae) was evident on the southwestern shores of Shelter Island in 2016.

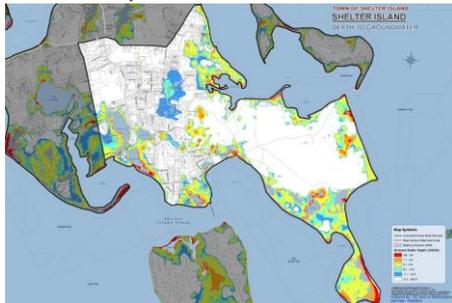


PECONIC GREEN GROWTH

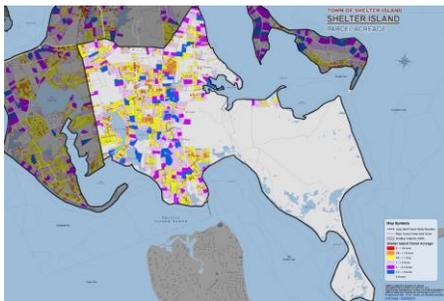
Soil Characteristics



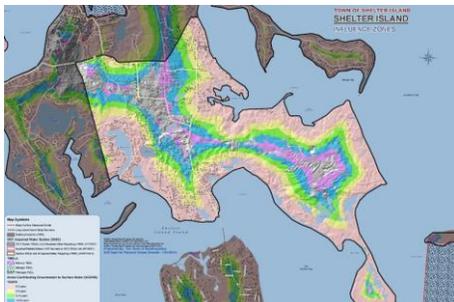
Depth to Groundwater



Lot Sizes in Shelter Island



By 2080 we estimate that 10 buildings in Shelter Island will be inundated.



SHELTER ISLAND (hamlet)

CESSPOOLS VS. SEPTIC SYSTEMS

CESSPOOLS, which are often found on properties developed before 1973, dispense all wastewater with no treatment directly to the ground. Dissolved solids, contaminants and pathogens can percolate to groundwater. The current code requires SEPTIC SYSTEMS, which places an enclosed tank before the leaching pits (which resembles a cesspool) or field. In the tank, fats rise and solids settle to the bottom, where microbes treat the solids. Clarified effluent is dispensed, with 10% of nitrogen mitigated. New, enhanced systems can lower nitrogen levels by 50 – 90%. 699 buildings (36%) in Shelter Island (hamlet) are on soils considered very limited for onsite septic treatment.

DEPTH TO GROUNDWATER and FLOOD/SLOSH ZONES

The Suffolk County Sanitation Code (SCSC) requires a 3-foot separation distance from the bottom of wastewater systems to groundwater to allow for natural treatment and filtering of effluent. When groundwater is less than 7 feet below grade, there can be difficulties siting the system. Where depths to groundwater are less than 13 feet, systems are likely to become noncompliant as groundwater elevations rise due to climate change. In Shelter Island 379 buildings (26%) have depths to groundwater of less than 13 feet. 22% are in SLOSH zones.

SMALL LOT SIZES

In Shelter Island **13%** (133) of the developed lots are **nonconforming** to the 20,000 SF (nominal half-acre) minimum lot sizes SCDHS requires to dilute wastewater to acceptable contamination levels for drinking water. If a community relies on individual wells, this minimum lot size is even larger – a nominal one acre. The contaminant concentrations discharged from these systems are higher than code.

CLIMATE CHANGE

By 2080 an estimated 212 buildings in Shelter Island will most likely have their wastewater treatment systems compromised due to inadequate horizontal distances to surface waters.

INFLUENCE ZONES

Denoting the Time it Takes Groundwater to Reach Surface Waters

493 or **34%** of the buildings in Shelter Island are in the “Pink Zone,” where it only takes 0-2 years for groundwater and contaminants to reach surface waters. It makes sense to prioritize improvements in the “pink” zone, as the beneficial impacts will be felt more quickly.