



PECONIC GREEN GROWTH

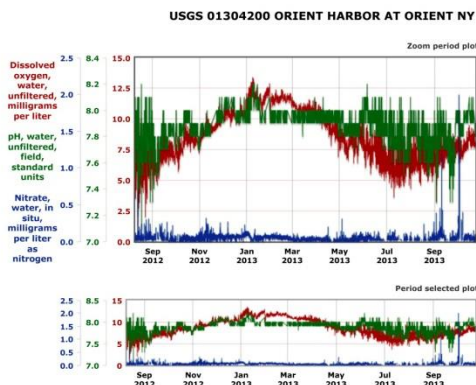
ORIENT Fact Sheet

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.



Orient Monitor



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.

ORIENT WATER QUALITY

- Orient groundwater has high levels of N compounds.
- Dissolved Oxygen in Orient Harbor reaches chronic levels (4.8 mg/L) in the summer and early fall.
- Waters in Orient Harbor are becoming more acidic over time.
- N levels in Orient Harbor are rising. (PEP)
- All eel grass has disappeared from Orient Harbor, but some beds are found on the LI Sound coast.
- Orient Harbor is a site of significant shellfish restoration efforts and commercial operations.
- LI Sound has a recommended N reduction goal of 19%.
- A 90 % N reduction is needed to address source loading in the EM/Orient subwatershed of the Peconic Estuary.

SOURCES OF EXCESS NITROGEN

Peconic Estuary: Orient contributes 2.8% of all the nitrogen loading to the Peconic Estuary (43 subwatersheds)



Courtesy TNC and Prof. Christopher Gobler

	Orient Bay	Hallocks Bay
septic/cesspool systems	48%	6%
agriculture	32%	77%
atmospheric deposition	14%	16%
fertilizer from lawns	6%	1%



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Is this a Cesspool or Part of a Septic System? Answer: Could be either

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CESSPOOLS VS. SEPTIC SYSTEMS

CESSPOOLS, which are often found on properties developed before 1973, (roughly 59% of properties in Orient) 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 resemble cesspools) or field. In the tank, fats rise and solids settle to the bottom, where microbes treat the solids. Clarified effluent is dispensed, with roughly 10% of the nitrogen mitigated. New, enhanced systems can lower nitrogen levels by 50 – 90%.

DEPTH TO GROUNDWATER

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 Orient 313 buildings (57%) in the PE have depths to groundwater of less than 13 feet.

SMALL LOT SIZES

In Orient **44%** (150) of the developed lots in the PE and **18%** (55) in the LI Sound watershed 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. 9% (51) of developed parcels in Orient are less than ¼ acre. This means that contaminant concentrations discharged from these systems are even higher.

CLIMATE CHANGE

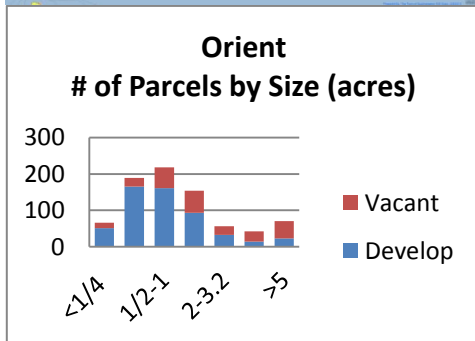
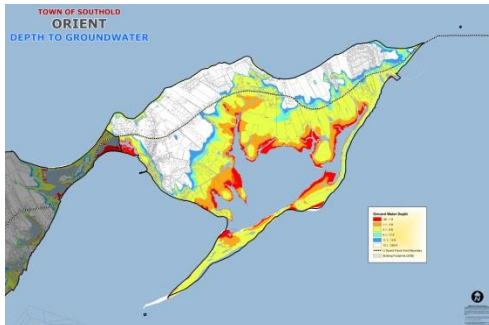
By 2080 an estimated 179 buildings in Orient will most likely have their wastewater treatment systems compromised due to inadequate horizontal distances to surface waters. In the Peconic Estuary, Orient ranks third out of all 32 hamlets for the percentage of its buildings in the 100-year and VE flood zones.

INFLUENCE ZONES

Time it Takes Groundwater to Reach Surface Waters

266 or **49%** of the buildings in the Peconic Estuary and 158 or **53%** of the buildings in the LI Sound Watershed are in the 0-2 year influence zone.

It makes sense to prioritize improvements in the “pink” zone, as the beneficial impacts will be felt more quickly.



By 2080 we estimate that 88 buildings in Orient will be inundated

