

**Title: Function and performance of Nitrogen Removing Biofilters (NRBs) for onsite wastewater treatment**

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Nitrogen Removing Biofilters (NRBs) are potentially a cost-effective replacement for the antiquated individual onsite wastewater treatment systems (i.e. cesspools, leaching pools) that are a leading cause of water quality degradation throughout Suffolk county, resulting in contamination of drinking water supplies, harmful algal blooms, loss of protective wetlands, and the devastation of shell and finfish populations. Comprised of sand and lignocellulose, NRBs are a form of non-proprietary innovative alternative onsite treatment that has demonstrated in the pilot phase an ability to consistently achieve high percentages of total nitrogen removal, as well as highly efficient attenuation of pathogens, pharmaceuticals and other personal care products. As a form of passive treatment, the systems are simply designed and operated largely by gravity, making them low energy, low-maintenance, and thus, low-cost. Further, the shallow profile of these systems (less than four feet) makes them a suitable option in regions impacted by sea level rise. This presentation will provide an overview of the form and function of NRBs and a few ongoing projects emphasizing recent efforts by the Center for Clean Water Technology (CCWT) to further develop these technologies. The presentation will focus on new results elucidating the microbial ecology of NRBs and the diversity of microbial function. The presentation will also discuss the performance of these systems in terms of both traditional water quality parameters and contaminants of emerging concern.