



# Innovative and Alternative Wastewater Treatment Design

## Mashpee, Massachusetts

Main Street Village is a mixed-use development consisting of single-family homes, multi-family units and retail stores. SM Realty Trust retained the Horsley Witten Group, Inc. (HW) to develop a wastewater solution for this challenging project, as the project is located both within the boundaries delineated to protect the Town’s drinking water supplies and in a nitrogen sensitive coastal watershed. To receive credit for nitrogen reduction, HW requested that the Massachusetts DEP permit a Nitrex system under the state’s piloting approval provisions. The Nitrex filter is a tank packed with a proprietary wood product media that has been shown to remove nitrate-nitrogen from domestic wastewater to concentrations below 5 mg/L without the use of additional carbon-source chemicals such as methanol or sucrose. Flow through the filter is by gravity; no pumps are required.



The basis for the firm’s request was that the HW’s proposed shared system offers significant benefits over the project’s conceptual layout that complied with Title 5. First, there are simplified operation and maintenance requirements with one wastewater system instead of eleven separate alternative septic systems. The performance of the system should be greater as the flows are steadier in volume and effluent strength. In addition, the system is operated by one entity, the SM Realty Trust, and any problems or maintenance issues will be handled by the Trust instead of eleven individual property owners. Finally, the use of the Nitrex system was proposed in part because of the potential to provide significant nitrogen reduction prior to effluent discharge. This provides the opportunity to significantly reduce nitrogen impacts to downgradient drinking water wells and sensitive coastal embayments, beyond what is needed to comply with Title 5.

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