Westport Board of Health

Septic System Water Resource Protection Regulation:

Frequently Asked Questions

NITROGEN POLLUTION

What is nitrogen pollution and why is it harmful?

Nitrogen pollution fuels the growth of algae: tiny plants that can bloom rapidly and turn the water brown. Clumps can form at the surface and in the shallows and wash up along the shoreline. Sometimes, algae can even stink like decay, but the effects of nitrogen pollution aren't just ugly. When algae blooms form, they block out sunlight from reaching eelgrass at the bottom. Young fish, crabs, and bay scallops rely on eelgrass as a nursery and without enough sunlight, eelgrass dies. And those species that depend on eelgrass begin to vanish, too. Algae growth also leads to less oxygen in the water. All aquatic species – from big fish to tiny clams – need oxygen to survive.

High levels of nitrogen in groundwater can lead to drinking water contamination. Levels above 10 mg/L are considered unsafe by the state, especially for the very young and elderly.

Is the Westport River polluted with excess nitrogen?

Yes. Both branches of the Westport River fail to meet state water quality standards and are listed on the federal EPA's "Dirty waters" list as being polluted with too much nitrogen. New sources of nitrogen added to these waterways only adds to this problem.

Where does nitrogen pollution come from?

The two largest locally controllable sources of nitrogen pollution to Westport's surface waters and groundwater are wastewater from individual septic systems and agricultural runoff. The amount coming from agriculture has declined while the growth in new construction means that the overall load coming from septic systems has increased. Significantly smaller sources are from stormwater and non-agricultural fertilizer. A substantial contributor outside our control is nitrates in the air from cars and power plants.

How do we know that individual septic systems are a major source of nitrogen in the Westport River?

Both the 2013 Massachusetts Estuary Project Report prepared by the University of Massachusetts and the 2019 Targeted Integrated Water Management Plan prepared by the Town's consultants have analyzed and documented that septic wastewater is second largest source of nitrogen entering the Westport River, nearly 120,000 lbs. per year.

Is there anything I can do to reduce nitrogen in my wastewater?

Not really. The majority of the nitrogen comes from urine.

How long does it take nitrogen released below ground from a private septic system to reach a branch of the Westport River?

There is not a single time of travel for the groundwater moving beneath a septic system to reach a main branch of the River. Several factors influence the rate of travel including, how porous the soils are (conductivity) and pressure of the flow (gradient) towards surface water. The travel time will be significantly shortened where the groundwater flow intersects with wetlands or streams. The Massachusetts Estuary Project (MEP) report on the Westport River estimated the time of travel to be between 3-10 years.

Why, if Westport has seen an increase in residential development, does the data show that levels of nitrogen in the last five years are the lowest in decades?

While nitrogen from septic systems has increased 17% over the last ten years, the larger nitrogen load from agriculture has decreased 24%. It has also been shown that across New England, the nitrogen compounds that causes smog and acid rain have significantly declined due to the Clean Air Act rules, which means they don't end up in our waterways. It is also important to note that nitrogen from a new septic system doesn't reach the river right away, so we haven't seen the full impact of all that development yet. In any case, the Westport River is still above the state-mandated nitrogen budget (TMDL levels) for a healthy river, so the Town is still obligated to make progress towards the TMDL limit.

Shouldn't we pass a regulation to ban fertilizers?

Fertilizers make up a very small percentage of the amount of nitrogen polluting our waterways, and state law does not allow local communities to regulate fertilizer. The Department of Agriculture regulates fertilizers, including for farms, lawns and golf courses.

The Town's Targeted Water Management Plan recommends the creation of agricultural buffer zones along waterways to reduce the nitrogen load from farming activities. Fertilizing yards should be avoided or at least should be minimized, particularly within 100 yards of the water. Effective organic fertilizers are available as a more environmentally friendly alternative, but still contain nitrogen.

NITROGEN REDUCING (DENITRIFYING) SEPTIC SYSTEMS

What does a nitrogen reducing septic system cost to purchase and install?

The system design and the specific features of your property significantly affect the overall cost. As a result, costs may vary significantly between sites. In some cases, a

nitrogen reducing system may even be less expensive. It also depends on whether you are retrofitting an existing Title 5 system or building a new system. On average, the hardware cost of the nitrogen reduction component is $4,700 to $9,000. There are additional costs to install, including excavation needed for the extra hardware and running an electrical conduit. However, because those costs are very site specific the install cost ranges widely. However, it is reasonable to say that incorporating denitrification typically adds between $8,000 and $15,000 to the cost of the septic system.

What are the Operation & Maintenance requirements for denitrifying systems?

The Department of Environmental Protection's approval generally requires the homeowner to enter into an O&M agreement with an approved contractor. The contractor is responsible for conducting the O&M as well as any required sampling and will report that to the Board of Health or its designated agent.

How often do nitrogen reducing systems have to be sampled and what does it cost?

The frequency of sampling will depend on the system selected, anywhere from 1-4 times a year. The average total annual cost for operation, monitoring and sampling is approximately $650.

Will the Board of Health charge a fee for maintaining the Operations & Maintenance records for denitrifying systems?

No. The BOH is proposing to join the Barnstable County online tracking system and is seeking a grant to cover the user fee for up to three years. In the future, when a fee is assessed by Barnstable County it will be charged to the operation and maintenance contractor.

How fast is the technology changing?

The good news is the technology is improving but not so fast as to make the systems available today obsolete. Many of the systems have been around for more than twenty years.

Do nitrogen reducing septic systems work on a seasonal basis?

Yes. After the first season of operation, it only takes 1 – 4 weeks for a system to begin reducing nitrogen after a home is reoccupied for the summer.

Since denitrifying septic systems release nitrogen gas into the air, instead of nitrogen into the ground, aren't we just trading one problem for another? The gas (N_2) that is released into the atmosphere by denitrifying septic systems is inert so it actually helps keep our sky blue. This is unlike the nitrates (NO_3) from tailpipe or factory smokestacks and traditional septic systems, which are a reactive form of nitrogen that causes pollution.

Where can I go learn more about nitrogen reducing septic systems?

The Massachusetts Alternative Septic System Test Center is an amazing resource and monitors more than 2,500 nitrogen reducing systems throughout southeastern Massachusetts and Cape Cod. Information and performance data collected from these systems is available online at https://www.barnstablecountyhealth.org/programs-and-services/massachusetts-alternative-septic-system-test-center .

Septic System Water Resource Protection Regulation

What is included in this new regulation?

The regulation applies to new construction and cesspools. It **does not** apply to existing Title 5 septic systems.

The regulation requires that state approved septic systems designed to significantly reduce the amount of nitrogen discharged into the groundwater be installed for new construction. It establishes system performance standards and operations & maintenance requirements and also provides for owners to participate in the Barnstable County online tracking system. The regulation also sets out the rules for when cesspools must be replaced with conventional Title 5 septic systems, including a 5 year deadline for the replacement of all cesspools.

How is new construction defined?

New construction includes a new building that requires an occupancy permit or construction that increases the actual or design flow of wastewater to the existing system. For residential properties that means adding one or more bedrooms. Adding other types additions such as bathrooms, playroom, or decks are not considered new construction. The rules for commercial or institutional facilities depend on the type of activity being conducted. New construction also includes the purposeful demolition and replacement of an existing building. Reconstructing a building damaged or destroyed due to fire, flood or other natural disaster would not be considered new construction (unless there is an increase in the wastewater design flow).

Why are nitrogen reducing septic systems being required for new construction at this time?

Today, the Westport River is polluted with too much nitrogen and fails to meet state water quality standards. Each time a new conventional Title 5 septic system is installed, more nitrogen pollution is added each year over its 30-year lifetime. The Town's Integrated Wastewater Management Plan estimates that 83,000 lbs. per year of septic nitrogen will be added annually to the River from the potential buildout of currently undeveloped lots. Not attempting to reduce this additional excessive nitrogen load will

make the future wastewater management challenges facing the town even greater and more costly.

Nitrogen reducing systems are required to achieve at least a 50% reduction in wastewater nitrogen, but many systems achieve higher reductions. Conventional Title 5 septic systems remove a maximum of 25%. Municipal sewers can achieve a 93% nitrogen reduction. However, extending sewers much beyond the residential areas near Rte. 6 is currently considered cost-prohibitive.

Where in town are nitrogen reducing septic systems required?

Nitrogen reducing septic system are required for all town properties located within the boundaries of the Westport River Watershed. That includes most of the Town, except areas in the north outside that portion of the watershed boundary that abuts Fall River and Dartmouth. These areas have been exempted because groundwater carrying nitrogen from septic systems located outside of the watershed will not discharge into the Westport River. Drinking water wells are adequately protected from nitrogen contamination under the Title 5 siting rules for new construction. A link to the map of the watershed will be available on the Board of Health webpage.

Why are nitrogen reducing systems being required for lots far from the River?

Distance from the main branches of the River is not the only factor that determine the time it will take nitrogen compounds (nitrates) to travel through groundwater. The porosity of the soil (conductivity) and water pressure (gradient) have substantial influences. If groundwater intercepts a stream or wetlands, the travel time from a distant property can be as little as three years or shorter, depending on the distance from the River or its tributaries, a fraction of 30+ years of a septic systems useful life.

The aim of the new construction requirement is to prevent additional nitrogen contamination from the build out of currently undeveloped lots. An analysis of the location and development potential of such lots was conducted as part of the Town's Integrated Water Management Plan. It showed that the vast majority of undeveloped lots were 4000' feet or more from the River. Excess nitrogen contaminates not only the River, but also the streams throughout the Town. Including only those parcels close to the River's main branches would defeat the regulation's purpose to protect our waterways against further water quality degradation.

Why phase out cesspools?

Cesspools do not treat wastewater and are often situated in the water table releasing pathogens and nitrogen directly into groundwater that flows into drinking water wells and the River system. Consequently, they are far more likely to harm the environment and public health, particularly when drinking water wells are nearby.

What circumstances require a cesspool to be replaced?

There are three circumstances that can trigger the requirement to replace a cesspool. They are the earlier of the following:

1. The cesspool fails to protect public health or the environment. This can be determined by an inspection conducted by a licensed inspector or a determination by the Board of Health based on the site-specific conditions. Title 5 sets outs the failure criteria.
2. When a sewer line hook-up or cluster denitrifying system becomes available for the property.
3. Five years from the effective date of the regulation.

How much time will I have to replace the cesspool if is determined to have failed?

In accordance with Title 5, the deadline to complete installation of a replacement for a failed septic system is two years from the date the failure is discovered, but the Board may shorten or extend the timeline based on site specific factors.

Why was a final deadline of 5 years established to replace cesspools?

Cesspools have around for many decades even though they are recognized to present a threat to public health and the environment. Title 5 requires cesspools to be inspected for failure at the time of title transfer, but it also allowed for exceptions through which transferred properties have avoided inspection over many years. The 5-year deadline effectively closes those loopholes while allowing property owners to plan for the transition to a modern septic system. Based on the annual number of applications filed to replace cesspools related to property transfers and system failures, the Board also anticipates that hundreds of cesspools will be replaced in the normal course during those five years.

Does the cesspool upgrade require a nitrogen reducing systems be installed?

As a general rule, a nitrogen reducing system is not required. There are, however, site-specific conditions where Title 5 and Board of Health policy may require a nitrogen reducing system in order to protect the property owner's or abutters' drinking water well from nitrogen contamination.

What financial help can homeowners to replace older cesspools (or failed Title 5) systems?

The Board of Health offers a low interest septic betterment program, which allows repayment of the costs over a 5, 10, 15 or 20- year period. Details are available on the Board of Health website.

MassHousing offers low or no interest financing to help eligible homeowners address failing or non-compliant septic systems. Local lenders include BankFive and First Citizen Federal Credit Union: https://www.masshousing.com/home-ownership/homeowners.

Massachusetts homeowners may also be eligible for up to a $6000 tax credit for replacing a failed system: https://www.mass.gov/service-details/view-residential-property-tax-credits

Have similar regulations been passed in other towns?

Yes. Most recently Marion (2020), along with the towns of Wareham (2013) and Tisbury (2016) have passed similar regulations. Some go even further and require upgrade of failed Title 5 septic systems to denitrifying systems. Other towns have regulations or policies that specifically focus on cesspool replacement.

Are there any exceptions allowed to the regulation's requirements?

Yes. There is a variance section that gives the Board discretion to allow site specific exceptions for any requirement if imposition of the regulation would be manifestly unjust. That is the same standard Title 5 to variance petitions. The section sets out the criteria the Board may consider including, for example, compliance with Title 5, equivalent environmental protection, proximity to water resources, and cost considerations.

What happens if a septic construction application is filed prior to the regulation's effective date?

The regulation will apply only to applications filed after its effective date, February 1, 2021.

WESTPORT'S TARGETED WATER MANAGEMENT PLAN

What are the Plan's major recommendations and what is the town doing to clean up our waters?

The Town approved funding at the May 2018 Town Meeting for a comprehensive water management plan for the East Branch of the River. The Planning Board issued an RFP and the engineering firm, Kleinfelder, was hired to update and analyze the sources contributing nitrogen to the River, solicit public input and propose alternatives to reduce the nitrogen load. The completed report was issued in January 2020.

This plan provides a long-term road map for management of the Town's wastewater including, for example, identifying and prioritizing parts of Town for sewer, recommending requirements for zoning, septic regulatory changes and more. Already, the town has received funding to develop design plans for the first phase of sewer and is partnering with the Buzzards Bay Coalition to study the feasibility of cluster denitrifying septic systems in targeted areas. The Board of Health is acting to implement the septic regulation and join the Barnstable County online database for tracking denitrifying septic systems in town.