



ELK RIVER CHAIN OF LAKES SEPTIC SUBCOMMITTEE: Recommendation for Statewide Sanitary Code minimum requirements

August 28, 2017

In the Antrim County Elk River Chain of Lakes, Tip of the Mitt Watershed Council is working with a subcommittee including The Watershed Center Grand Traverse Bay, local lake associations, and other interest group representatives to address septic system oversight. Our committee has crafted two important technical points that we would like to see included in any new statewide sanitary code. This information is below; please let us know if you have questions. Contact information is included at the end of this document.

Recommendation #1

What: Michigan septic codes should establish a quantifiable definition for uniform effluent application to drain fields and stipulate that all new and replacement systems achieve this criteria.

Background: The single physical function intended to be performed by a typical residential septic system is to apply effluent over a specified area of suitable soil below the natural ground surface, referred to as an absorption trench or bed. The area of the trench or bed as stipulated in septic codes is a function of waste water volume and is based on an allowable soil loading rate for various soil types and structures. The allowable soil loading rate can only be achieved when the application of effluent is uniform over that prescribed area. Most septic codes do not establish a quantified definition for uniform application or require it to be achieved by system design.

Why this is important: Reduction of bacterial toxicity and nutrient levels in residential effluent is not a physical function performed by the installed septic system. Instead, it is achieved by biological, chemical, and physical processes that occur within the natural soil present at an approved site. The installed septic system applies the effluent to the soil, based on an allowable soil loading rate, to assure that the required level of reduction occurs. When effluent application is not uniform, a portion of the absorption area receives more than the design soil loading rate and proper reduction cannot be assured.

Feasibility: One possible method to achieve uniform effluent application is a pressurized distribution system, designed to a maximum allowable flow rate deviation between orifices of the distribution laterals. The maximum flow rate deviation becomes the quantitative definition of uniform effluent application. If the maximum flow rate deviation is exceeded at any point during the system service life, total pressure head will increase, resulting in longer pump run times. Simple electronic alarm circuitry that monitors pump run time can be used to protect pump motors and assure effluent is being applied uniformly.

Recommendation #2

What: Michigan septic codes should require systems to be constructed with features that enable effective inspection for proper function of components and for determination of an adequate soil absorption rate at any time during the system service life.

Background: Possible functional failures of the installed septic system are effluent leaving the system at any point prior to the orifices of the distribution laterals, main holding tank conditions that allow heavier sediments or floating particulate to travel to the distribution laterals, and any condition that results in non-uniform effluent application to the absorption bed. Even in cases where there is no functional failure of the installed system, it is still possible that over time a clogging layer may form at the interface between the installed system and the natural soil at the site.

Why this is important: The formation of a clogging layer is the result of complex biological and chemical actions and cannot be predicted. This layer significantly slows the effluent absorption process, disrupts the desired reduction in biological toxicity and nutrient levels, and can lead to local saturation of absorption areas, potential human contact with septic effluent, and runoff.

Feasibility: Risers and lids for tank openings make frequent visual inspection for indications of component structural failure, improper effluent levels, sludge levels, and the results of dynamic testing, practical. Observation ports located strategically in absorption areas, particularly on systems that are required to apply effluent uniformly, enable the determination of proper absorption rates and can provide indications of periodic saturation. Riser lids must be weighted for safety.

Submitted by:
Grenetta Thomassey, PhD
Tip of the Mitt Watershed Council
Watershed Policy Director
231-347-1181 ext. 118
grenetta@watershedcouncil.org