

Living Filter™

To:

State of Connecticut Department of Public Health, Subsurface
Engineering,

410 Capitol Avenue, PO Box 340308, MS #11FDP

Hartford, CT 06134-0308

RE:

Comments to proposed Connecticut Public Health Code Revisions for
1/1/2022

To whom it may concern,

This letter is in response to a request for comments regarding the proposed
January 1, 2022 code changes.

The Living Filter has been installed in Connecticut for approximately three
decades and to my knowledge there have been NO failures attributable to
the design and function of the Living Filter.

The Living Filter was designed based on my experience with Plastic
Chambers at Burke Mountain in East Burke, Vermont in 1969 (which
incidentally failed after 2 seasons of intermittent use) and further work at
the athletic facilities at Mount Holyoke College in 1983 with further
development and testing in Connecticut in the late 1980's. Extensive
testing, supervised by a Connecticut Registered Professional Engineer
(P.E.) was performed to establish Long Term Acceptance Rates (LTAR)
under various head pressures and environmental conditions. LTAR's were
established for various interfaces. It was at this point established that the
stone/biodegradable form/native soil interface showed unstable
breakthroughs and permeability several times greater than the
stone/form/fabric/native soil interface. This totally disproves the DPH
contention that the biodegradable form material justifies a lower flow rating.

Special attention should be paid to protecting the bacterial matrix (biomat),
which builds at the wetted perimeter (at the anaerobic/aerobic interface), to

improve function and to reduce downstream migration of bacteria, virus and chemicals.

The CT DPH rating system has very serious flaws, it is not based on sound engineering practice or technical merit and should be changed to reflect actual performance of various devices in use in Connecticut.

The interface factors (IF) are incorrect as they downrate predictable well-functioning interfaces such as that of the Living Filter with an IF of 0.75, while assigning an IF of 2.0 to open bottom devices. This translates to open bottom devices having a rating, for the open bottom interface approximately 2.6 times greater than the Living Filter. In view of failure rates of various devices this is obviously incorrect and needs to be addressed expeditiously.

The “stone masking” theory which was developed in the eighties and is part of the CT DPH formula for establishing Effective Leaching Area (ELA), claims that the stone masks the stone to soil interface and justifies, approximately, a 40% reduction in flow rates. This has proven to be incorrect, according to several studies performed in the last three decades, that I assume you are aware of.

Another serious flaw in the rating system is that the hydraulic pressure, by gravity, is not considered in the rating system. A minimum 12 inches of head pressure is required for satisfactory flow through a fully developed bacterial matrix. The affinity for low profile systems leads to many prematurely failed systems and at great expense to home and business owners, and in addition, increases the risk of backups, overflows and pollution hazards. Gravity serial, distribution of effluent is the preferred method for the Living Filter, and has proven to function satisfactorily for over 30 years.

The current requirement for backfilling leaching devices with washed concrete sand and special septic sand is not justified in the case of the Living Filter as it always comprises a filter fabric separating the backfill material from the interior stone aggregate, precluding fine materials from entering the interstices of the interior aggregate, therefore, native, suitable soil, should be used rather than costly imported material. The sizing of systems, in general, is based on the percolation rate which automatically adjusts the system size to local soil conditions.

In this time of immense pressure on natural resources it is very timely for the CT DPH to consider costs to the consumer as well as minimizing fuel

use and the release of carbon, and other emissions, from unnecessary excavation and trucking.

Therefore, in view of the facts presented in this letter, and earlier correspondence, I am formally asking the corresponding authorities of the CT DPH to change their rating system to more closely reflect the actual performance of the Living Filter.

Thank you for your consideration in this matter.

September 26, 2021

Sincerely,

Kjell E Berg, Living Filter Inventor, Designer/Developer

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