



State of Vermont

AGENCY OF NATURAL RESOURCES

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation

Wastewater Management Division
103 South Main Street - The Sewing Building
Waterbury VT 05671-0405
Phone: 802-241-3822
Fax: 802-241-2596

November 14, 2006

Mr. Bob Myers
SeptiTech, Inc.
70 Commercial Street, Suite 3
Lewiston, ME 04240

Re: SeptiTech Wastewater Treatment System, Design Flows for Models M400 and M550

Dear Mr. Myers:

Based on the information contained in the enclosed letter from Scott Samuelson, we are in agreement that a maximum design flow of 490 gallons per day may be used for SeptiTech Model M400, and a maximum design flow of 630 gallons per day may be used for SeptiTech Model M550.

Please call me at 802-241-3686 if you have any questions.

Sincerely,

A handwritten signature in black ink that reads 'Frank R. O'Brien'.

Frank R. O'Brien, P.E.
Innovative Systems Engineer

Cc (Electronic): Technical Advisory Committee
Roger Thompson, Jr., Regional Office Program Director
Regional Engineers

Enclosure

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November 10, 2006

Frank R. O'Brien, P.E.
 Innovative Systems Engineer
 Wastewater Management Division
 103 South Main Street - Sewing Building
 Waterbury, VT 05671-0405

Dear Frank:

This letter is being sent in response to your e-mail request on November 9, 2006 asking for additional support data to back up our request for upgraded flow designations for SeptiTech residential treatment models M400 and M550 so that you can approve the M400 to accommodate flows from up to 4 Vermont bedrooms and the M550 to accommodate up to 6 Vermont bedrooms.

Between the months of February and April, 2006, SeptiTech carried out a stress test on its standard M550 residential treatment unit. Testing was carried out in the SeptiTech testing facility located in New Gloucester, Maine where flows for testing are diverted from the wastewater stream of a manufactured home development. Primary septic tank strength from this source includes BOD measures of 230 to 290 mg/l and TSS measures in the 150 mg/l range.

Daily flows to the SeptiTech M550 processor were increased incrementally on a monthly basis from around 400-gpd up to nearly 950-gpd. Samples were drawn on an approximate semi-monthly schedule and tested by the Maine Environmental Laboratory (One Main Street, Yarmouth, ME 04096, 207-846-6569). The testing procedure was managed and overseen by Dan Ostrye, Director of R&D for SeptiTech, Inc. A chart showing the flows and effluent measures are presented below in Table 1.

Table 1

Date	Flow gpd	Effluent	
		TSS mg/l	cBOD mg/l
15-Feb-06	408	< 4	< 2
14-Mar-06	572	< 4	7
28-Mar-06	770	< 4	2
11-Apr-06	870	13	8
19-Apr-06	943	6	12

We have specified that our M550 model will treat up to 6-bedrooms in Vermont. This equates to a design flow of 630-gpd. Based on this testing, it is clear that if a model M550 is stressed to 943-gpd, or 150% of Vermont design flow for a 6-bedroom residential house, the unit will still perform well within the 30BOD/30TSS rating that the State of Vermont requires for pretreatment approval.

Presented below are critical treatment parameter specifications for SeptiTech Models M400, M550.

Model	Nominal Capacity gpd (Vermont)	Recycle Rate Through Media	Media Hydraulic Loading (gpd/100 ft²)	Hydraulic Retention Time (hours)
M400	490	39	78	24
M550	630	39	87	21
% Differential from M400 to M550	77%	0%	89%	114%

Observations:

- Equivalent recycle rate through the media
- Media loading (and therefore organic loading) for the M400 is 89% that of the M550

Conclusion:

Based on both hydraulic and organic loading rates, the SeptiTech model M550 is more than capable of treating flows of 630-gpd and by extrapolation, the SeptiTech M400 is more than capable of treating flows of 490-gpd to levels well under the 30 BOD/30 TSS levels designated by the State of Vermont.

Frank, I hope this information is sufficient for you to approve the SeptiTech Models M400 to treat up to 4 bedrooms and M550 to treat up to 6-bedrooms in the state of Vermont.

Thank you for your time.

Sincerely,

Scott Samuelson