



STATE OF MAINE
DEPARTMENT OF HUMAN SERVICES
DIVISION OF HEALTH ENGINEERING
10 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0010

ANGUS S. KING, JR.
GOVERNOR

KEVIN W. CONCANNON
COMMISSIONER

June 29, 2000

Sweet Associates
Attn.: Richard A. Sweet
155 Gray Road
Falmouth, Maine 04105

Subject: Product Registration, Aeration Systems, OXYMAX 2000

Dear Mr. Sweet:

Thank you for your letter dated May 2, 2000 regarding your company's product. Under provisions of Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (copy enclosed), any manufacturer or distributor submitting a new product for code registration needs to demonstrate that:

1. The product is designed to protect public health, prevent the creation of any nuisance, and prevent environmental pollution to the same extent as comparable products presently authorized by Department for use in this code, and
2. The product is based on sound engineering principles and can be expected to provide the same level of protection to public health and the environment as offered by the authorized products presently authorized by the Department for use in this code.

It is our understanding that four prototype units are in operation; the data enclosed with your letter are for only one property. According to the information you provided, the **OXYMAX 2000** activated sludge wastewater treatment systems achieve BOD⁵ effluent levels of 24 mg/l and total suspended solids effluent levels of 42 mg/l (Nee residence, Falmouth). On that basis, the Division has determined **OXYMAX 2000** is acceptable for use in the State of Maine, provided that it is installed, operated, and maintained in conformance with the manufacturer's directions.

You have asked for a reduction in disposal area sizing of 75% and First Time Variance point allocations based upon these levels. Using the data from the Nee residence, the system has a combined BOD⁵ and TSS of 66 mg/l. Pursuant to Table 603.1 of the Subsurface Wastewater Disposal Rules this would allow a 0.7 modifier to the design, i.e., a 30% reduction, rather than a 75% reduction. The system's combined BOD⁵ and TSS accrues 10 points toward a first time variance, pursuant to Table 1900.11 of the Rules.

Therefore, the Division grants approval for use of the **OXYMAX 2000**, pursuant to Chapter 18 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules, Section 1801.0. This approval is subject to the following conditions:

1. The **OXYMAX 2000** is allowed a 30% reduction to the disposal area sizing and 10 points toward a First Time Variance;
2. An installation and operation manual must be submitted to the Division for review and approval, by not later than September 1, 2000; and
3. Provided that such records are available, laboratory analyses of BOD⁵ and TSS reductions for the four prototypes must be submitted to the Division on at least a quarterly basis, comprising at least one calendar year's worth of data for each system.



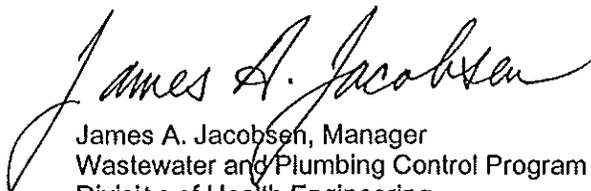
RECYCLED PAPER

Page 2;
Aeration Systems, OXYMAX 2000

Because installation and owner maintenance has a significant effect on the working order of on-site sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of Aeration Systems, **OXYMAX 2000**. Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

A handwritten signature in cursive script that reads "James A. Jacobsen". The signature is written in black ink and is positioned above the typed name and contact information.

James A. Jacobsen, Manager
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

xc: Product File

Sweet Associates

HYDROGEOLOGY

SITE EVALUATIONS

155 GRAY ROAD

FALMOUTH, MAINE 04105

(207) 797-2110

FAX (207) 878-2364

May 2, 2000



Jim Jacobsen
Department of Human Services
Division of Health Engineering
State House Station 10
Augusta, ME 04333

RE: Application for Approval of an Aerobic Pre-treatment System and Reduction of Disposal Field Size

Dear Jim:

As you know we have been developing an aerobic pre-treatment system for treating sewage effluent. The system has been modified a number of times and we have prototypes operating at four different properties. We are presenting results of wastewater strength from the last and most advanced system to be installed.

The system is an activated sludge package unit. It consists of a standard septic tank for primary clarification, an aerobic tank and a secondary clarifier. Clarified effluent flows to the disposal field.

Dissolved oxygen is introduced to wastewater in the aeration tank via a venturi tube connected to an effluent pump. The air supply line is vented above ground. Discharge of aerated water is via jets which facilitate mixing. The pump is operated by a timer with hourly run time settings sufficient to adequately oxygenate the wastewater. A pressure sensitive device connected to the air line activates a sound/light alarm in response to a mechanical malfunction.

Water from the aeration tank drains by gravity to a secondary clarifying tank where aerobic flocs settle. Supernatant effluent drains by gravity to the disposal field or, if necessary, a lift station.

Activated sludge is returned from the clarifying tank to the aerobic tank by tubing connected to the venturi. Therefore, when the pump and venturi are operating, activated sludge is simultaneously being vacuumed from the floor of the clarifier and returned to the aeration tank. This is the Return Activated Sludge (RAS) mechanism.

Jim Jacobsen
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Sludge is also wasted to the septic tank by means of a submersible magnetic drive pump with a dedicated timer. This pump vacuums activated sludge from the floor of the secondary clarifier and wastes it to the septic tank. This is the Waste Activated Sludge (WAS) mechanism.

This treatment system will be sold by our new company, Aeration Systems, as the OXYMAX 2000. As the following table shows, BOD and TSS reductions are consistently greater than 50 percent once the biological portion of the system matures. We are presently working on modifications to lower the BOD and TSS further, but we are applying for approval for 75 percent disposal field reduction and New System Variance points for "Additional Treatment" using the OXYMAX 2000 at its current stage.

Please let me know if you wish to have copies of the laboratory certificates of analysis. We can also arrange to show you the unit in operation.

Sincerely,

A handwritten signature in cursive script, reading "Richard A. Sweet", is written over a horizontal line.

Richard A. Sweet

Enclosure

RAS/smh

LABORATORY RESULTS
Nee Residence, Falmouth
Three-Bedroom Home with Four Occupants
START-UP - March 6, 2000

Date	BOD			TSS		
	Septic Tank	Outlet Aeration System	% Reduction	Septic Tank	Outlet Aeration System	% Reduction
3-13-00	120	82	32	79	62	22
3-20-00	78	47	40	33	102	+312
3-27-00	220	120	45	110	27	75
4-3-00	160	66	59	390	42	89
4-10-00	260	66	75	710	70	90
4-17-00	160	55	65	150	64	57
4-24-00	220	24	89	54	42	22

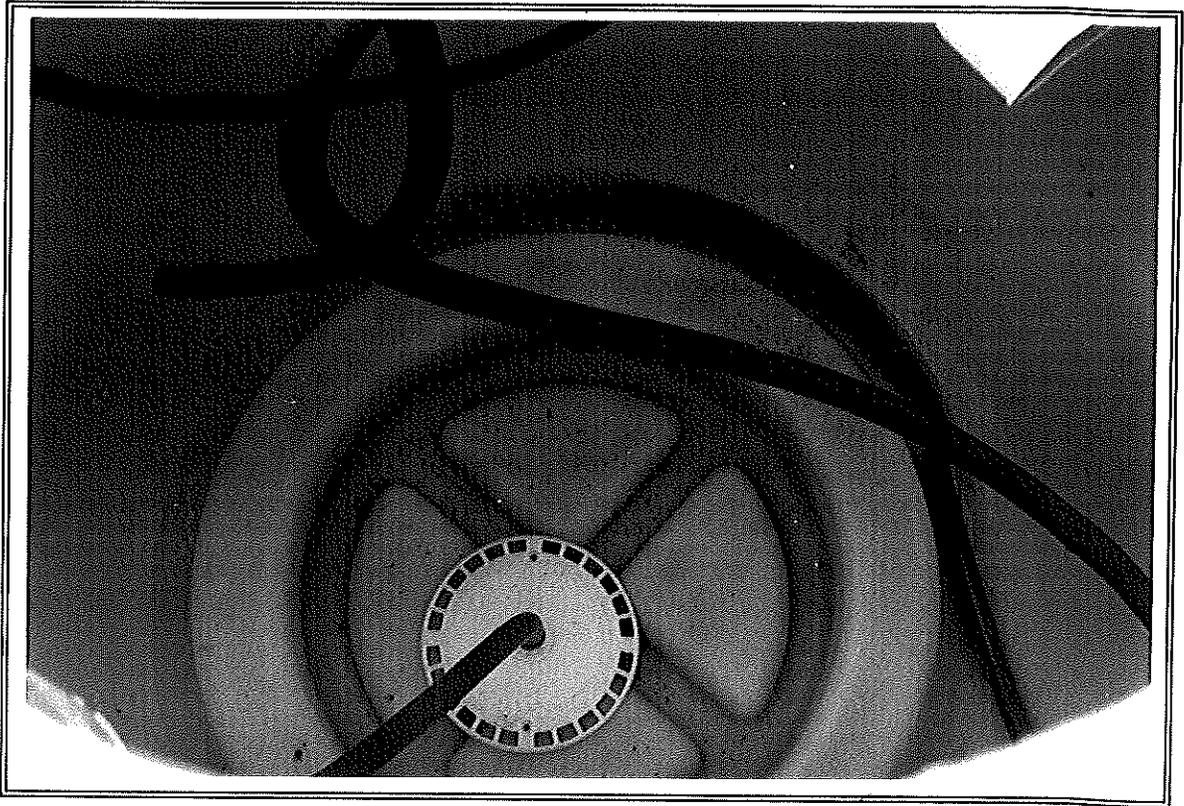
Since biological maturity in these systems take four to six weeks, the month of April readings represent the OXYMAX 2000 at maturity. The average BOD reduction for April is 72 percent and the average percent TSS reduction for April is 65.



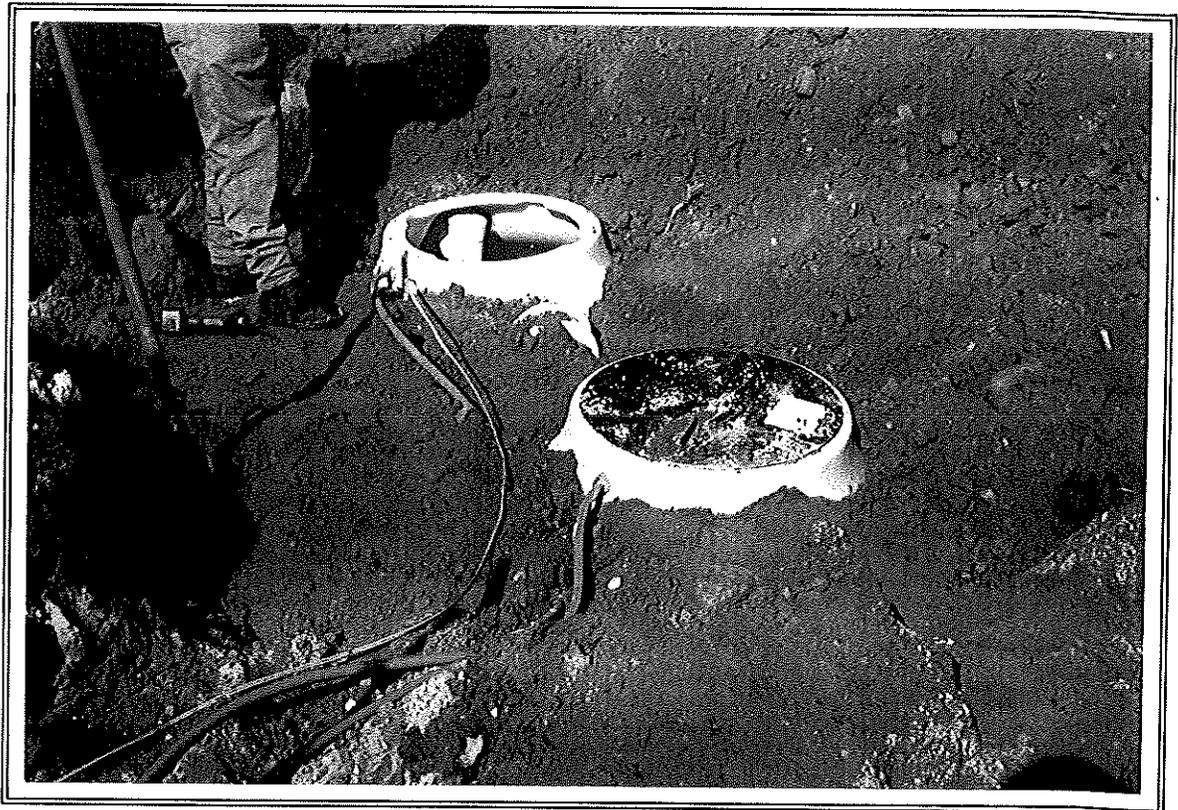
OXYMAX 2000 being installed in a 300 gallon aeration tank.
Attached is a 300 gallon clarifying tank.



Return activated sludge and air lines with a control valve.



Return activated sludge suction diffuser in the clarifying tank.



Air and electric lines to house.