

**COMMONWEALTH OF
MASSACHUSETTS
BOARD OF HEALTH
TOWN OF MARSHFIELD
RULES AND REGULATIONS
FOR THE DISPOSAL OF SANITARY
SEWAGE**



In accordance with the provisions of Article 1, Regulation 2 of the State Sanitary Code and under the authority of Chapter 111, Section 131 of the General Laws and any other powers thereto enabling, the Board of Health of Marshfield hereby adopts the following regulations relative to the disposal of Sanitary Sewage in Unsewered Areas as Supplements to Title 5 of the State Environmental Code to be effective as of April 21 2006.

All section numbers are derived from the sections of Title 5 to which they apply.

Section 1 DEFINITIONS

1.1 The following abbreviations are used herein:

SEC - Refers to the STATE ENVIRONMENTAL CODE.

1.2 The following definitions are in place of those shown in SEC Title 5, Regulation 1:

ABOVE GROUND SEPTIC SYSTEM

A system where any part of the leaching facility (including pits, fields, chambers, pipes stone or peastone) is installed above the natural grade of the land on the lot. Access manholes by themselves do not cause a septic system to be considered an above ground septic system.

APPLICANT

Applicant means the person named on the Disposal Works Construction Permit

Application as the owner of the property which is the site of the proposed septic system.

BOARD

Board of Health in the Town of Marshfield, Massachusetts or its agent

DEWATERED PERCOLATION TEST

A percolation test done in accordance with the procedures outlined in Title 5, Section 15.03 (5) except that some or all of the four (4) feet of naturally occurring pervious soil is saturated by ground water and some temporary dewatering of the soil is necessary so the water can drain away from the soil and a standard percolation test can be performed.

GROUND WATER MONITORING WELL

Piping placed in the ground for the purpose of obtaining ground water elevations or samples for testing.

MAXIMUM GROUND WATER ELEVATION

Maximum ground water elevation means the height of the ground water table when it is at its maximum level or elevation. (See Regulation SEC Title 5, Reg. 3.3 of these local rules)

POTABLE WATER SUPPLY

A water supply of sufficient quantity and pressure to meet the needs of the occupants of the dwelling, lot or building, connected with a public water system or with any other source that the Board of Health or agent has determined, by requiring the water to be tested, does not endanger the health of any potential user and is fit for human consumption.

A source shall be deemed potable, which meets, at a minimum, all the current primary drinking water standards. Other tests may be required, by the Board or agent, if it is deemed necessary.

PRIVATE DRINKING WATER WELL

Any privately owned well supplying water for human consumption to any individual dwelling or building. Any well, pit, pipe, excavation, shaft, spring casing, hole or other source of water to be used as a potable private drinking water supply

SUBSTANTIAL IMPROVEMENT

Substantial improvement means any reconstruction, rehabilitation, addition, repair or improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "Substantial damage", regardless of the actual repair work performed. Substantial improvement does not, however, include either:

1. any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety codes which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or
2. any alteration of a "Historic structure" provided that the alteration will not preclude the structure's continued designation as a "historic structure".

Note 1: The following items can be excluded from the cost of improvement or repair: plans, specifications, survey, permits, and other items which are separate from or incidental to the repair of the damaged or improved building, i.e. debris removal/cartage.

Note 2: The latest Assessor's structure value may be used, provided that the Assessors certify that said value is based on 100% valuation, less depreciation.

WATER TABLE MAP

A map showing piezometric elevations of the water table compiled from known water table elevations in wells, borings, ponds, streams and wetlands. It shows general ground water flow direction from high to low elevations.

SECTION 2 GENERAL REQUIREMENTS

2.4 APPLICATION FOR DISPOSAL WORKS CONSTRUCTION PERMIT (Supplements SEC Title 5, Reg. 2.4)

An application for a construction permit shall be submitted on a form supplied by the Board of Health and shall be obtained at the office of the Board of Health

Application requirements for (1) all new construction, (2) Repairs to all systems (3) in all cases where fill is to be used:

1. A plan of the lot must be submitted by a registered professional engineer or registered sanitarian, signed, dated and stamped with the seal of the person responsible for the design. The plan must be drawn to scale not less than 1"= 40' and contain the following information:

- lot dimensions
- location of street, house, garage, outbuildings, driveway
- location of sewage system and expansion area
- dimensions of sewage system
- location of water lines, gas lines
- locations of observation pits and percolation tests
- sources of water supply within 300 feet of the sewage system. In all cases where there are existing dwellings or structures on abutting properties, applicants for a Disposal Works Construction Permit shall make inquiry of those abutters to the property or properties to ascertain the presence or absence of a private well on such properties. The applicant shall supply this documentation to the Board and the Department of Public Works when applying for a Disposal Works Construction Permit.
- pertinent elevations, including elevation of road, cellar floor, top of foundations, garage floor, and elevation schedule for sewage disposal system, including invert elevations at house foundation, entrance to septic tank, entrance to distribution box, beginning of each leaching line, end of each leaching line, and bottom of leaching pit, trench or bed. Accompanying this schedule, the proposed final ground elevation at each of the called-for-points along the disposal system shall be shown.
- sufficient additional elevations must be shown, including final grades at each or the four corners of the building, to indicate clearly how the surface drainage on the property is to be handled. Plan must be designed to drain the property satisfactorily to prevent adverse drainage to adjoining property.
- all present elevations must be shown at true spot elevations. All proposed changes in elevation must be shown in the form of two foot contour lines, clearly showing the proposed change in topography,
- a benchmark must be established and maintained until after the final inspection by the design engineer. Its location must be shown in the plan.
- watercourses, streams, brooks, ponds, lakes and the 12-foot tide line within 200 feet. Requirement by Engineering Department - the benchmark shall be on mean sea level or an elevation obtained from the Engineering Department.
- a detail and sketch of any proposed retaining wall. All proposed retaining walls 4' feet in height or greater must be designed and certified by a Structural Engineer.
- a statement as to whether the lot is located in the Marshfield Water Resource Protection District or any Interim Wellhead Protection District for a Zone II.
- any other pertinent information which the Board of Health may require.

2. Application shall be made before percolation tests, ground water determination, and other on site inspections are witnessed or performed by the Board of Health. All data from observation pits, percolation tests, ground water determinations, shall be entered directly on the application form at the time such tests and observations are witnessed by the Board of Health. The representative of the Board of Health shall date and sign the results of the tests, which he witnesses.

- d. Any permit granted will not be valid if conditions set forth in the application have changed prior to or during actual construction of the sewage disposal system.

No permit will be issued until an adequate supply of water is assured. If a municipal well is the source, all applicants for a Disposal Works Construction Permit may be required to submit a written statement to the Board of Health, from the Department of Public Works, as to the availability of an adequate supply of water in sufficient quantity to provide adequate pressure to the occupants of the proposed building or dwelling. The applicant may also be required to provide a statement from the Fire Department that adequate fire flow will be provided to the dwelling or building. If a private well is the source, the well must be dug and the water tested before a permit will be issued.

f. Sewage system must be installed under the direct supervision of the designing engineer. At the time of final inspection he must submit a letter stating that this system has been installed according to his plan and provide measurements of "tie-ins" or an "as-built" plan of the system.

The 'As built' must include final contours for any plans in which the original contours over and around the septic system leaching area and/or any components of the system have been changed, or were designed to be changed.

The 'As built' must include distances from the septic system and/or any component of the system to the property line, in all cases where the distance from the septic system or component is less than twenty-five (25) feet from the property line.

'As built's must be submitted to the Board of Health office no later than thirty days after the Design Engineer completes the final inspection of the septic system.

Special conditions for variances – All Title 5 variances, local upgrades, or local variances that are granted by the Board of Health with conditions that limit or prohibit increases in design flow, or otherwise limit or prohibit alterations or repairs to the structure shall be subject to the following requirement prior to issuance of a Certificate of Compliance: The variance or upgrade form, with special conditions specified, must be recorded at the Registry of Deeds. Proof of recording must be presented to the Board of Health.

2.4 h DISPOSAL SYSTEMS WITH DESIGN FLOW IN EXCESS OF 5000 GALLONS PER DAY

Purpose: To protect the ground water used for drinking water purposes from contamination which may result from concentrated sewage disposal.

Applicability: all proposed subsurface disposal systems with design sewage flows of 5000 gallons per day or greater per lot.

Procedure: The applicant(s) must demonstrate, by written report, to the satisfaction of the Board of Health that current drinking water standards will be met at the downgradient property limit and that current surface water quality standards will not be violated at downgradient lakes, ponds and streams due to the effluent from the system.

The written report shall be based upon the following scope of work:

- a. Geologic borings
- b. Water Table Map (one foot interval contours) showing ground water flow direction,
- c. Projections of downgradient concentrations of nitrate-nitrogen (or other chemicals as requested by the Board of Health).

Projections of downgradient water quality will be determined utilizing two-dimensional solute transport models and input variables approved by the Board of Health.

Currently approved models include:

1. USGS Konikow and Bredegoeft (1978)
2. Random Walk, Prickett and Lonquist (1981)

Other models may be approved by the Board upon request

Currently approved input variables include:

1. Transmissivity to be determined by on-site pump test (minimum of 4 hours)
2. Aquifer thickness to be determined by on-site boring locations of confining layers and estimated plume thickness.
3. Dispersivity - determined by site specific testing
4. Hydraulic gradient as determined by site specific water table map
5. No retardation factor
6. Sewage flows as determined by Title 5 design flows

Applicants who receive permits under this section shall install a minimum of three downgradient and one upgradient ground water monitoring wells. Ground water flow direction will be determined from the USGS (1987) water table map and from site specific observation wells where necessary. Wells will be constructed of two-inch threader flush joint PVC pipes with locking caps. Ground water samples will be obtained on an annual basis utilizing a bailer following standard well evaluation procedures (three well volumes will be removed prior to sampling).

Evacuation is most easily accomplished using a gasoline pump centrifugal. Water samples will be tested by a state certified laboratory on an annual basis for nitrate-nitrogen, ammonia-nitrogen, Kjeldahl nitrogen, total phosphorus, chloride, specific conductance and volatile organic compounds (see separate current listing). Results are to be reported to the Marshfield Board of Health and shall meet Massachusetts Class I ground water standards and appropriate advisory levels for organic chemicals at the downgradient property boundary. Baseline samples of all applicable testing parameters will be required. In the event that water quality standards are violated, the following action will be undertaken by the septic system owner:

- a. Report test results to the Marshfield Board of Health within 48 hours by certified mail
- b. Resample and retest monitoring wells for the parameters which were above the water

quality standards within 5 days.

- c. Notify the down gradient property owners who have a Private Drinking Water Well within 48 hours of the 2nd testing round, if the results are above the current advisory levels, by certified mail.
- d. Decrease wastewater flows or increase the level of treatment within 45 days. Notify the Board of Health of these remedial measures.
- e. Initiate any remedial actions deemed necessary by the Board of Health.
- f. All costs of complying with this section will be borne by the applicant.

SECTION 2.4 i PERIMETER, CURTAIN, SUBSURFACE OF FRENCH DRAINS

The effectiveness of a perimeter drain system must be demonstrated prior to the issuance of the Disposal Works Construction Permit. The effect of attempting to lower the ground or perched water table shall be monitored by installation of at least one upgradient and one downgradient ground water monitoring well. The effectiveness of the underdrains shall be demonstrated by taking ground monitoring well readings one time during the month of March and one time during the month of April, for a period of two high water seasons. All ground water monitoring well readings must be observed by the Board's agent in order to be considered valid ground water readings. A separate fee will be charged for each site visit (see separate current fee schedule for site work by agent beyond inspection of septic system charged per inspection).

A perimeter, french, subsurface or curtain drain shall not serve more than one lot and shall not be allowed on more than 3 sides of a lot. They shall not cause accumulated water to drain onto any abutting properties or public or private road. All work shall be performed at the applicant's own expense and at their own risk. This monitoring does not guarantee issuance of the Disposal Works Construction Permit, either at the time of monitoring or at completion since the Board does not give conditional pre-approval in matters relative to sewage disposal.

In order to propose a perimeter, french, curtain, or subsurface drain system the ground water table in question must be perched in a relatively impermeable soil layer, have no vertical upward flux component and be moving in a well defined direction. If the drain meets these criteria then the drain must be placed upgradient of the proposed sewage system location, be of sufficient length and geometry to intercept all ground water affecting the location, be keyed into the impeding layer upon which the ground water is perched, and have a positive discharge to the surface or to soil from the location in question.

2.5.3 GENERAL POLICY

Any reconstruction, alteration or repair of a building to an extent of fifty (50) percent or more of the assessed value of the building shall be treated by this Board as new construction, to which all Title 5 and Marshfield Board of Health Rules and Regulations for the Disposal of Sanitary Sewage apply.

2.7.1 REPEALED JANUARY 24,1991

2.9 FEES (Supplements SEC Title 5, Reg. 2.9)

See separate current fee schedule.

2.23 All sewage disposal systems must be located in their entirety on one lot or parcel of land, it being the same lot or parcel on which the facility producing the sewage is located.

SECTION 3 LOCATION

3.3 SUBSOIL AND GROUND WATER DETERMINATION (adds to SEC Title 5, Reg. 3.3)

The Board of Health shall require that one or more observation pits be dug to a depth of four feet below the bottom of the proposed leaching facility to determine the maximum ground water elevation and the elevation of any impervious material. The Board may also require additional test holes in the area reserved for expansion of the disposal field.

3.4 E LEACHING REQUIREMENTS:

—For new construction, if any percolation test in the primary or reserve area is equal to or exceeds 20 minutes per inch, a minimum of four percolation tests and four observation holes shall be performed .

3.5 L PERCOLATION TESTS

In the event the board's agent encounters soil conditions other than coarse sand additional percolation tests may be requested by the Board or its agent to determine the consistency and naturally pervious soil beneath the entire proposed leaching and reserve areas.

The Board reserves the right to request additional percolation tests at any time prior to the issuance of the Disposal Works Construction Permit. The reasons for additional testing shall be provided to the applicant in writing upon request.

3.5 M DEWATERED PERCOLATION TEST

The practice of conducting dewatered percolation tests will only be allowed by a majority vote of the board.

The Board may require consultant review, in accordance with section 15.28 of these regulations, to assess the engineering aspects of the dewatered percolation test to include but not be limited to the following: site specific soil conditions, ground water information, the destination of any discharged ground water and safety factors.

3.5 N PERCOLATION TESTS

Percolation Tests

The validity of a percolation test will not be limited to any specific number of years, by the Board of Health. A percolation test will not be required to be repeated to determine its validity unless any of the following is applicable:

1. The soil has been altered in any way.
2. Title 5 or the Marshfield Rules and Regulations are amended to change any aspect pertaining to percolation tests.

3.7.1 DISTANCES

No disposal facilities shall be closer than the distances stated to the components listed in the following table. The distance shall be increased where required by conditions peculiar to a location.

Component	Septic Tank	Reserve Area	Leaching Facility	Building Sewer	Privy
Drinking water					
Well or suction line	50	----	200	(3)	200
Water supply line (pressure)		(b)	----	(b)	(b)
Property line	10	----	10	----	50
Dwelling	10	----	20	----	50
Surface water supplies of tributaries to reservoirs including open and subsurface drains	200	----	200	200	200

watercourse,
(see Title 5 75* 100 100 75* 100
definition)

Leaching catch
basin ---- 25 ----
or dry well

* 100 feet from sewage disposal systems of a multiple dwelling.

**** DOWN HILL SLOPE**

The applicant must be able to meet the slope requirements on the lot for which the permit is applied for, not including any adjacent property unless a valid slope easement is obtained. This must be reviewed by the Town's legal counsel prior to issuance of the Disposal Works Construction Permit.

(3) 10 feet if constructed of durable corrosion resistant material with watertight joints laid in class B bedding, or 50 feet if any other type of pipe is used.

(b) Disposal facilities must be installed at least 10 feet from and 18 inches below water supply lines. Whenever sewer lines must cross water supply lines, both pipes shall be constructed of mechanical joint cast iron pipe and shall be pressure tested to assure water tightness.

3.7. (6) The lowest point of the leaching facility of any sewage disposal system located in a Flood Hazard Zone (as defined on the Federal Flood Insurance Rate Maps) (as defined on the Federal Flood Insurance Rate Maps) shall not be located below the flood elevation of the applicable zone.

Section 4 BUILDING SEWER IN UNSEWERED AREAS

4.2.1

All piping for the entire septic system shall be of schedule 40 grade or greater.

4.5 GRADE (replaces second sentence of SEC Title 5, Reg. 4.5)

A grade of 1/4 inch per foot is required.

REGULATION 15 MINIMUM CONSTRUCTION REQUIREMENTS FOR DISPOSAL FIELDS

15.02 (19) MAINTENANCE

Septic tank, leaching field and cesspool cleaners shall be prohibited from being used by the homeowner or the sanitary pumper unless the product is contained on the Massachusetts Dept. of Environmental Protection's list of allowed additives entitled "Septic System Additives Allowed for Use under Title 5". Any pumper found using the above chemicals to treat any portion of a septic system shall be subject to license revocation or suspension, by the Board of Health.

The Board of Health recommends pumping the septic tank every 2-3 years.

15.05 (10) SEPTIC TANKS

A septic tank shall be located no further than 75 feet from the building it is intended to serve. The length of pipe between the septic tank and the leaching facility shall not exceed 75 feet unless all the following criteria are met:

1. Class "C" bedding
2. SDR 35 PVC piping
3. Installation shall be under the direct supervision and inspection of the engineering firm and the Board's agent.
4. An inspection fee will be assessed to the applicant (see current fee schedule for site work by agent beyond inspection of septic system charged per inspection).

15.05 (11) SEPTIC TANK FILTERS AND VENTS

All septic tanks shall be equipped with a D.E.P. approved effluent filter, such as the Zabel, Polylok or other equivalent equal.

All septic systems equipped with vents shall utilize a vent filter to mask odors, if any occupied building is located within 100' of the septic system.

15.05 (12) TIGHT TANKS

All Tight Tanks approved by the Board of Health and D.E.P. shall be subject to a Twenty-four- (24) hour test for determining that the Tank is watertight. An agent of the Board shall make inspections as required to insure that the Tank is watertight.

15.6.1 Expansion area (Adds to SEC Title 5, Reg. 15.6)

An additional area shall be reserved for future expansion or replacement of the disposal fields. The Board of Health shall require observation pits and percolation tests to be taken in this expansion area.

15.27 SEVERABILITY

If any provision of this regulation is declared unlawful by a valid judgment of decree or any court of competent jurisdiction, such invalidity shall not affect any of the remaining provisions of this regulation.

This regulation shall take effect upon publication in a newspaper in the town and shall be filed with DEQE in Lakeville and Boston.

15.28 CONSULTANT REVIEW

If the Board in the exercise of its discretion reasonably deems it necessary to hire an independent expert consultant for any issue relative to the installation, of any portion of the subsurface sewage disposal system, to include but not be limited to: plan review, performance of the percolation tests (dewatered or standard), interpretation of soil logs, engineering information and ground water data, the entire fee for the consultant will be paid by the applicant. The applicant will pay the Board of Health, who in turn will pay the consultant. Such fee shall not be more than the prevailing rate for such review in the Boston metropolitan area.

REGULATION 20 VARIANCE FROM LOCAL RULES AND REGULATIONS

The following requirements apply to all variances from these Rules and Regulations:

1. Must be requested in writing
2. Must be granted, in writing, by a majority vote of the Board
3. A copy must be maintained in the permanent files, at the Board of Health office, and available to the public during normal business hours.
4. A separate fee shall be charged per application (See current fee schedule).
5. If a variance is requested from any portion of these regulations the applicant must demonstrate to the Board by clear and convincing evidence, supplied by an expert consultant that there will be no adverse effect on the environment or the public health and safety if the variance is given. The consultant shall be mutually agreed upon by the Board and the applicant. All consulting costs shall be borne by the applicant.
6. A variance filing fee will be charged (see current fee schedule).
7. Any variance so granted may be revoked, modified or suspended only in accordance with SEC Title 5, Regulation 21.

REGULATION 21 TITLE 5 INSPECTIONS

The Board of Health reserves the right to request a Soil Evaluation as part of any Title 5 Inspection to assist in determining the Seasonal High Ground Water Determination.
Upgrading of Substandard onsite sewage disposal systems

Septic systems consisting of one cesspool shall be upgraded to conform to 310 CMR15.00, the State Environmental Code, Title V, Minimum Requirements for the Subsurface disposal of Sanitary Sewage and the Town of Marshfield requirements.

Cesspools with an overflow system or leaching pit(s) may continue but will require further evaluation by the Board of Health as specified by the following procedure: A cesspool with a leaching pit/system will require that a soil evaluation be conducted by a licensed soil evaluator to determine the seasonal high water determination. Systems with any part of the soil absorption area below the seasonal high groundwater shall constitute a failure.

This regulation shall apply to any septic system inspection conducted in accordance with 310 CMR 15.301 of the State Environmental Code, Title V. This regulation shall also be strictly enforced during the building permit application process.

Revisions

1. Revised 9/73
 2. Revised 3/81
 3. Revised 11/81
 4. Revised 4/88
 5. Revised 4/89 ----- Christine M. Ryan
Gerald J. Maher
Douglas A. Little
 6. Deletions made 3/31/95
 7. Deletion made 10/23/95, Pg. 21, 15.5, STONE
 8. Deletion made 2/20/96, Pg. 17, 3.5 par. 2, WATER LEVEL DETERMINATION
 9. Deletion made 2/20/96, pg. 21, 15.2.1, MINIMUM AREA
- Deletions made 4/14/97 pg. 6-9 2g, SPECIFIC SECTIONS
- Deletions/Changes made 9/25/00 Section 2.4a, b(2); 2.4.1
- Revisions made 9/25/00 -----Gerald J. Maher
- Effective 11/1/00 John J. Mahoney
Joseph J. Lambert
12. Additions/Deletions made 6/15/09, Effective 7/15/09