

DESIGN, OPERATION AND MAINTENANCE **OF SMALL WASTEWATER TREATMENT** **FACILITIES**

AUTHORITY: The Board of Health of the Town of Harwich, Commonwealth of Massachusetts, acting under the authority of Chapter 111, Section 31 of the Massachusetts General Laws and any amendments additional thereto, and by any other power thereto enabling, and acting there-under and in accordance therewith, have, in the interest of an for the preservation of the public health, duly made and adopted the following Regulations effective upon publication.

PURPOSE: To protect the groundwater and surface waters (fresh and saline) of the Town from contamination by effluents originating from privately owned small wastewater treatment plant (SWWTP's).

These Regulations herein do not and are not intended to cover all aspects of engineering design, operation, and maintenance of SWWTP's. Rather, they outline the specific Board of Health interests and policies that may not be adequately reflected in other existing Regulations, policies and manuals. Where local Regulations or specifications herein are more strict, they shall prevail. Where Regulations or specifications or guidelines of other political subdivisions or agencies of jurisdiction or as included herein are more strict, they shall prevail.

APPLICABILITY: To all small wastewater treatment plants proposed for the town and all interim or temporary wastewater disposal systems that may be used at facilities that will eventually use small wastewater treatment plants.

1.00 PERMIT REQUIREMENTS

1.10 DISPOSAL WORKS CONSTRUCTION PERMIT

No system or facility to be used for treating, neutralizing, stabilizing, or disposing of wastewater from homes, public buildings, commercial or industrial buildings, or any types of establishments, shall be located, constructed, installed, operated, altered, or repaired until a DISPOSAL WORKS CONSTRUCTION PERMIT for such shall have been issued by the Board of Health. No construction of any building or facility which relies upon such wastewater systems or facility shall be allowed until a DISPOSAL WORKS CONSTRUCTION PERMIT shall have been issued by the Board of Health to the responsible party. Responsible party shall mean the developer, project proponent, condominium association, or any other party approved by the Board of Health.

Such system or facility as regulated herein shall include, but not be restricted to SEWERS serving such facility, WASTEWATER PUMPING STATIONS,

WASTEWATER TREATMENT WORKS, ALL WASTEWATER TREATMENT OPERATIONS, SLUDGE TREATMENT AND MANAGEMENT, DISINFECTION, ADVANCED WASTE TREATMENT, SUBSURFACE DISPOSAL AND LAND TREATMENT, WASTEWATER RECYCLING AND RE-USE.

Such system or facility as regulated herein shall be referenced as SMALL WASTEWATER TREATMENT PLANT (SWWTP).

1.20 CERTIFICATE OF COMPLIANCE AND OPERATIONS PERMIT

No SWWTP as permitted herein shall be placed in service, nor shall new buildings or facilities or additions to existing buildings or facilities which rely upon such SWWTP be occupied or used until the Board of Health has issued a CERTIFICATE OF COMPLIANCE AND AN ANNUAL OPERATIONS PERMIT. (The definition of operations permit are the conditions set forth in this Regulation and any other conditions that may be set forth by the Board of Health.)

1.30 SERVICE AREA AND LIMITATIONS

The SWWTP shall not serve a volume of sewage flow from any subject project in excess of the aggregate volume that would be generated by each lot, which could have constructed upon it, a septic system installed and operated in full compliance with Title 5, the state environmental code and the Regulations of the Board of Health.

2.00 SUBMITTALS

2.10 APPLICATIONS, REPORTS, PLANS, DATA, DOCUMENTS

A copy of all applications, reports, plans, specifications, data, and supporting documents required by these Regulations and by the Regulations of any other agency in connection with the approval or operation and maintenance of the subject facility shall be submitted to the Board of Health. In the case of requests for a Board of Health action, such materials shall be submitted a minimum of 90 days prior to the date upon which an action by the Board of Health is desired. In the case of submittals to other agencies, all material shall be submitted to the Board of Health at the time of submittal to that agency. A Board of Health Disposal Works Construction Permit will not be issued prior to approval by the Massachusetts Department of Environmental Quality Engineering. Other submittals shall be made in accordance with schedules as specifically designated by the Board of Health.

SIX copies of all reports/information shall be given to the Board of Health.

2.20 DISPOSAL WORKS PERMIT FEE AND PROFESSIONAL REVIEW FEE

Prior to the issuance of a disposal works construction permit by the Board of Health for the installation of a SWWTP or any other sewage disposal system not covered by Title 5 of the Massachusetts State Environmental Code, an independent registered civil/sanitary engineer will be retained by the Board of Health to conduct a review of the planned sewage disposal system. To offset the cost of this review to the town, the applicant will be assessed a fee in addition to the disposal works construction permit fee, commensurate with the complexity of the planned disposal system and the time required to adequately review the plans and specifications, and the expected impacts to groundwater and surface waters. (Two percent of the design and construction costs of the plant or \$3,000, whichever is greater). The applicant will pay the fee at the time of application. Any unused portion shall be refunded after the successful review of the first annual operations report by the Board of Health. (Suggestion: this fee could be placed in an escrow account within the town for easy accounting.)

3.00 GENERAL PROJECT PLANNING REQUIREMENTS

Certain basic principles shall be considered early in the planning and design process in order to ensure that the SWWTP development process will meet all requirements.

3.10 ENVIRONMENTAL COMPATIBILITY

The plans for the proposed system or facility shall take into account all aspects of public health and environmental quality protection. Efforts shall be taken to preserve public and private water supplies and their zones of contributions, watershed or recharge areas to surface water bodies, potential water supplies, private property, wetlands, wildlife habitat, recreational sites, historic sites, and natural beauty.

The design shall be prepared so as to have the least possible adverse impact on the public health and the environment.

The project proposal shall include evidence that the wastewater system or facility will result in the least adverse impact on the public health or the environment as compared with other possible wastewater management alternatives for the project.

3.20 GENERAL DISCHARGE AND TREATMENT REQUIREMENTS

No discharge from a SWWTP shall result in degradation of ground or surface waters in a manner inconsistent with their proposed use. The existing characteristics of the immediate and final receiving waters must be considered to ensure against degradation in excess of all applicable federal, state, and

local water quality standards. There shall be no discharge into any wetland, stagnant waters, lakes or streams.

3.30 HYDROGEOLOGICAL INVESTIGATION

The applicant shall submit a hydrogeological survey report, prepared by a qualified geotechnical engineer or hydrogeologist to show the impact of the subsurface discharge of the SWWTP on groundwater. The report shall include a determination of the flow direction, contaminant levels, nutrient loading to public water supplies as well as surface water bodies, extent of wastewater discharge plume, ground and surface waters affected, and the location of public and private water supplies as well as all expected effects on the supplies. This analysis shall be performed for the SWWTP design plan and also for any other wastewater or disposal strategy for the project to be served.

3.40 WETLANDS AND FLOOD PLAINS

No portion of the SWWTP shall be located within 100 feet of wetlands or the “100-year Flood Plain” as defined by the state and local authorities.

No portion of the subsurface disposal works for a SWWTP shall be located less than 100 feet from a wetland or the “100-year Flood Plain”. No component of the treatment plant, except for underground piping, shall be constructed less than four (4) feet above the estimated highest groundwater level as calculated by the USGS methodology. Such distances are considered “minimum” and may be increased by the Board of Health if specific site conditions warrant.

3.50 GENERAL SITING AND DESIGN REQUIREMENTS

SWWTP design shall include attenuation of odor or noise problems to protect both the operator and the public.

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3.51 DISTANCES

No portion of the SWWTP shall be located less than the following distances stated to the components listed as follows:

| MINIMUM ACCEPTABLE SEPARATION DISTANCES IN FEET | | |
|---|---|------------------|
| Component | Subsurface Tank Sewer, or Force Main | Leaching Area |
| Water Supply Lines | 25 | 25 |
| Subsurface Drain | 25 | 100 |
| Surface Water * | 100 | 100 |
| Wetland * | 100 | 100 |
| Catch Basin | 25 | 25 |
| Public Well | 400 | 400 |
| Private Well | 100 | 400* |

*These distances may be required to be greater if the hydrogeological evaluation indicates that contamination will occur at the stated distance.

3.60 ULTIMATE DISPOSAL OF SLUDGE AND SOLIDS

Provision for final or ultimate disposal of sludge and solids shall be in a manner approved by the Board of Health, prior to the issuance of any Board of Health permit. The estimated quantity must be stated. If sludge and solids are to be disposed of off-site, the final destination must be established prior to issuance of any permit. The applicant must demonstrate to the satisfaction of the Board of Health, that the destination for the sludge and solids is in compliance with all applicable, federal, state and local Regulations and also that it will reliably be available for such purpose for the length of time that its use is required by the SWWTP.

3.70 TREATMENT PLANT RELIABILITY

The SWWTP shall be planned and designed so as to provide for maximum reliability at all times. The facility shall be capable of operating satisfactorily during power failures, reduced power periods, peak loads, flooding, equipment failure, and maintenance shutdowns.

The Board of Health shall receive a written certification from the engineer and/or equipment supplier that the SWWTP is capable of meeting all effluent limits.

Following completion of the SWWTP the manufacturer should review and certify in writing to the Board of Health that the equipment installed is capable of providing the treatment level required.

Multiple units or dual compartments with unit drains may be required for all processes, including disinfection facilities, so that draining, cleaning, repairing, or replacing and other maintenance can be provided without omitting any treatment processes, in zones of contributions, recharge of watershed areas, or other sensitive areas as determined by the Board of Health.

3.80 DISINFECTION

The SWWTP must be designed and constructed to allow for disinfection of the SWWTP effluent by ultraviolet radiation or ozonation. The use of disinfection equipment shall be determined by the Board of Health.

3.90 ODOR CONTROL

The SWWTP must be designed and constructed to allow for odor control by activated carbon filtration. The use of this odor control equipment shall be determined by the Board of Health.

4.00 SUBSURFACE DISPOSAL FACILITIES

4.10 GROUNDWATER

The bottom interface of any subsurface disposal or leaching facilities shall be located a minimum of four (4) feet above the maximum elevation of the groundwater or saturated soil zone as determined by the USGS methodology, where appropriate. However, this vertical separation distance between the bottom of the leaching facility and top of the maximum groundwater level must be maximized to the extent possible. This elevation shall include consideration of the mounding effect of the groundwater caused by the discharge of the SWWTP effluent. Such analysis shall be calculated using generally acceptable analytical or numerical methods. When geologic conditions permit, the "Hantush" formula and procedure may be used. When the assumption of that procedure can not be met to derive a reliable result, it shall be required to utilize such method as finite differential equations for groundwater flow and elevation.

4.20 DISTANCE TO IMPERVIOUS LAYER

The bottom interface of any subsurface disposal or leaching facilities shall be located a minimum of ten (10) feet above the elevation of an impervious soil layer. Impervious soil shall be defined as having a percolation rate of greater than 20 minutes per inch.

4.30 THICKNESS OF PERMEABLE SOIL

A depth of at least four (4) feet of naturally occurring permeable soil shall be maintained below the bottom of the leaching area. To be considered permeable, the soil shall have a percolation rate of 20 minutes per inch or less.

5.00 GROUNDWATER MONITORING

5.10 INSTALLATION

The permittee shall install, at a minimum, groundwater monitoring wells in accordance with the following:

One up-gradient cluster of three monitoring wells;

Two down-gradient clusters of three monitoring wells each;

One monitoring well for groundwater level only near the center of the leaching works;

Screen depths for the cluster wells shall be set at elevations such that at least two screen depths will yield samples at times of seasonal low groundwater (e.g. September sampling period);

Such locations shall be as approved by the Board of Health and as indicated appropriate from the results of the hydrogeological investigation. Monitor wells shall be installed and in place prior to issuance of the CERTIFICATE OF COMPLIANCE AND ANNUAL OPERATIONS PERMIT. Additional monitoring wells or requirements may be required at the discretion of the Board of Health.

Monitoring shall begin one year before the start up of the SWWTP to give background information on the groundwater quality. All parameters in Section 6.12 shall be analyzed once during that year and those parameters listed as daily, weekly, or monthly in Section 6.12 shall be analyzed quarterly for that year.

5.20 GROUNDWATER ELEVATION

The permittee shall determine and provide the Board of Health, in continuous graph form, with elevations of the water table to the nearest one-hundredth of a foot in all monitor wells on a monthly basis, along with the current separation distance between the bottom of the leaching facility and the water table.

6.00 EFFLUENT LIMITS AND TESTING REQUIREMENTS

Effluent limitations shall be as required by DEQE Regulations for Class I groundwaters. All groundwaters are considered to be in this classification unless proved to be otherwise following procedures set forth by DEQE.

6.10 WASTEWATER

6.11 TREATMENT PLANT INFLUENT

The influent to the treatment plant shall be sampled and tested weekly for 5-Day-Biochemical Oxygen Demand (B.O.D.) and Total Suspended Solids. This should be performed by a DEQE certified laboratory.

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6.12 TREATMENT PLANT EFFLUENT

| <u>TEST FREQUENCY</u> | <u>PARAMETERS</u> |
|---|---|
| DAILY | Flow – continuous Specific Conductance pH |
| WEEKLY (composite sample) | 5-day Biochemical Oxygen Demand (B.O.D.) Total Suspended Solids (T.S.S.) Coliform Bacteria Fecal Coliform Bacteria |
| MONTHLY | Total Kjeldahl Nitrogen Ammonia Nitrogen Nitrate Nitrogen Total Dissolved Solids Sodium Phosphorous |
| SEMI-ANNUALLY | Oil and Grease Volatile Organic Compounds (USEPA Procedure #624) |
| ANNUALLY | Arsenic Copper Barium Zinc Cadmium Mercury Chromium Silver Potassium Fluoride Selenium Lead Total Trihalomethane |
| 5 YEARS | Pesticides Radioactivity |
| Daily, Weekly, and Monthly Samples | to be composite samples and all others will be grab samples. |
| All sampling and analyses, except for the daily and weekly frequency tests which will commence at time of plant startup, shall be performed initially at 60 days after plant startup and at the stated frequency thereafter. The analyses must be performed by a DEQE certified laboratory. | |

6.20 GROUNDWATER MONITOR WELLS

Monitor well testing in the up-gradient and down gradient wells shall be performed semi-annually in the months of April and September for all parameters designated above as semi-annually, monthly, weekly, or daily. Testing for other parameters shall occur during the month of April at the stated frequency. On an annual basis or upon written request from the permittees, the Board of Health may review the sampling frequency and the tested parameters and may modify either or both if it deems it necessary.

7.00 OPERATION

7.10 OPERATOR

A certified waste water treatment plant operator having the grade appropriate for the plant shall be retained by the permittee. Such operator shall spend a minimum of three (3) hours per day at the plant. When conditions warrant as may be determined by the Board of Health, additional hours shall be required. Such operator shall be designated the chief operator and shall be responsible for the operation of the SWWTP. The Board of Health shall receive a copy of the responsible party's contract with the operator.

7.20 BACK-UP OPERATOR

A second certified waste water treatment plant operator, having the same grade as the chief operator shall be available in the absence of the chief operator. The Board of Health shall receive a copy of the responsible party's contract with the back-up operator.

7.30 OPERATIONAL GUARANTEE

Prior to issuance of the CERTIFICATE OF COMPLIANCE AND ANNUAL OPERATIONS PERMIT, the permittee shall provide security in an amount specified by the Board of Health to guarantee the operation of the SWWTP for a period of at least one year. The security shall provide the salaries, operational costs, and cost for immediate replacement, if necessary, of any major unit operation of the plant, or in the event of plant failure to operate, an amount sufficient to cover the costs of hauling 100 percent of the waste water to another facility for disposal for a one year period. Security may be in the form of a cash guarantee or a performance bond to cover listed costs.

8.00 REPORTING

A registered sanitary engineer shall be hired by the responsible party to oversee the plant operations and make quarterly site inspections, as well as prepare a quarterly and an annual written report. The report shall summarize operating results, plant status, problems experienced, and any plant modifications necessary. The engineer shall also appear before the Board of Health on an annual basis to discuss the facility's performance and other pertinent issues. Five copies of all reports and laboratory data shall be sent to the Board of Health. In addition, all groundwater monitoring reports required through the DEQE permit conditions shall also be sent to the town and summarized in the engineering report. All data should be in continuous graph form where appropriate.

9.00 ENFORCEMENT

The Board of Health shall review annually, or as necessary, the operations permit and may suspend, modify, revoke, or add additional conditions prior to the issuance of the annual operating permits.

10.00 VIOLATIONS

Violations of this Regulation are subject to penalties of Massachusetts General Laws Chapter 111, Section 31, after a Board of Health hearing. Each violation shall constitute a separate penalty, and each day shall constitute a separate violation.

11.00 VARIANCES

While it is recognized that certain modifications or exceptions may be necessary where justified in unusual situations, any such modifications or exceptions may only be provided by application for variance to the Board of Health. Any variances of these Regulations issued by the Board of Health shall comply with the provisions outlined in the state environmental code, Title 5.

12.00 SEVERABILITY

If any part or portions of these Regulations to be adjudicated as invalid, the adjudication shall apply only to the material so adjudged, and the remaining rules and Regulations shall be deemed valid and of full force and effect.

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HARWICH BOARD OF HEALTH

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