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Town of Bourne Conservation Commission  
Bourne Town Hall  
24 Perry Ave – Room 201  
Buzzards Bay, MA 02532

RE: **Supplemental Information for Notice of Intent**  
**176 Scraggy Neck Road, Bourne, MA 02532**

Dear Members of the Commission,

On behalf of the Applicant, The Long Point Trust (Stephen and Marybeth Bisson, Trustees), Rubin and Rudman LLP hereby submits this letter to address several allegations raised in a September 1, 2022 letter from Hill Law and an August 31, 2022 letter from Scott Horsley concerning a Notice of Intent filed by LEC Environmental Consultants (“LEC”) and supplemented by various submittals by Bracken Engineering, Inc. (“BEI”) and Environmental Consulting & Restoration, LLC (“ECR”) for a proposed residential construction project (“Project”) at 176 Scraggy Neck Road (“Site”). Rubin and Rudman LLP submits the following in conjunction with those supplemental filings made on behalf of the Applicants from LEC, ECR and BEI.

**I. Proposed Revised Project Description.**

The revised Project seeks to demolish the existing dwelling and construct a new dwelling with associated appurtenances, including driveway updates, attached garage, decks, patio, upgraded septic system, utilities, regrading, stormwater management, lawn/landscaping, and restoration/mitigation plantings on the above-referenced subject parcel. Proposed new construction occurs within Land Subject to Coastal Storm Flowage (LSCSF) and the 100-foot Buffer Zone to Salt Marsh and Coastal Bank. Proposed restoration occurs within the 100-foot Buffer Zone, LSCSF, and on Coastal Bank.

The Project has been further revised to address feedback received by the Commission during the September 1, 2022 Public Hearing.

Project updates are depicted on the site plans (*Existing Conditions Plan*, *Proposed Conditions Plan*, and *Septic Details*) prepared by Bracken Engineering, Inc., last revised on September 26, 2022. Specifically:

1. The proposed dwelling footprint has been further reduced in size. Cumulatively, the dwelling has been reduced by 399± square feet in comparison to the originally submitted site plans, dated May 16, 2022.
2. The proposed dwelling footprint has been rotated/shifted to further reduce the structural area within the 50-foot Buffer Zone and increase the separation of the proposed garage (on slab) to 20 feet in comparison to 7 feet on the original site plans.
3. The proposed Limit of Work has been reduced south of the driveway and garage to preserve more trees within the Buffer Zone to the Coastal Bank. An 18" boulder wall is now proposed immediately south of the driveway.
4. Proposed fill has been reduced to 172 cubic yards from the 326± cubic yards associated with the prior submittal.

The *Proposed Site Exhibit*, prepared by Bracken Engineering, Inc., dated September 26, 2022, depicts the trees proposed to be removed within the Limit of Work. A total of nineteen (19) trees are proposed to be removed, fifteen (15) oaks (6-19" d.b.h.) and five (5) pines (6-9" d.b.h.). Only five trees are at 12" d.b.h. or greater.

The revised *Restoration/Revegetation Plan*, prepared by LEC, dated September 28, 2022, details the restoration/revegetation planting area totaling 5,825± square feet, including existing lawn/driveway areas north of the proposed dwelling within LSCSF and partially on the Coastal Bank and existing house footprint (4,675 ± square feet of restoration).

The 1,150± square feet of regraded area south of the dwelling will also be revegetated. The restoration/mitigation planting area consist of a diverse mix of trees, shrubs, and groundcover to enhance species diversity, vegetative cover, and wildlife habitat. Proposed species include eastern red cedar, black oak, eastern white pine, tupelo, highbush blueberry, bayberry, beach plum, and arrowwood.

A total of nineteen (19) trees are proposed and one hundred twenty-four (124) shrubs. The southerly restoration/revegetation planting area includes eastern white pine saplings to additionally function for vegetative screening purposes to the southerly abutter. A New England Conservation/Wildlife Mix and Coastal Salt Tolerant Mix are proposed throughout. All planting areas will be monitored for three years to ensure successful establishment. Annual monitoring reports will be submitted to the Commission documenting vegetative health and any recommendations.

The proposed plantings will enhance, stabilize, and restore conditions within the 100-foot Buffer Zone, LSCSF, and on the Coastal Bank (266± square feet). The revegetation measures will serve

to create a continuous and expanded vegetated buffer upgradient of the westerly, primary Coastal Bank (#1) and downgradient Salt Marsh system. The vegetated buffer will serve to attenuate runoff on slopes within the Limit of Work that are less than 10:1. The proposed erosion and sedimentation controls installed along the Limit of Work will protect the downgradient Coastal Bank and Salt Marsh during construction. Post-construction, runoff from the dwelling will be directed to drywells and subsurface infiltration system installed within well-drained soils and will not be directed downgradient towards the Coastal Bank.

**I. Applicants Have Provided the Commission with Sufficient Information to Describe the Site, the Work and the Effect of the Work on the Interests Identified in the Wetlands Protection Act.**

Hill Law and Mr. Horsley allege that the Site Plan omits information concerning applicable buffer zones and setbacks and that the Applicants have failed to provide adequate information about the quantity of trees removed and amount of proposed fills. The *Proposed Site Exhibit*, prepared by Bracken Engineering, Inc., dated September 26, 2022, and LEC's supplemental submittal dated September 29, 2022, provide the requested information. Accordingly, the Commission has sufficient information "to describe the site, the work or the effect of the work on the interests identified in M.G.L. c. 131, §40." 310 CMR 10.05(6)(c).

**II. Section 3.7.4 of the Bourne Wetland Protection Bylaw Does Not Create An Absolute Prohibition of Construction within 50 Feet of Wetland Resource Areas.**

Section 3.7.4 of the Bourne Wetland Protection Bylaw ("Bylaw") defines "Adjoining Land Areas" as:

The land 100' back as measured horizontally from the boundary of any Wetland Resource Area. This area is hereafter referred to as the Buffer Zone. No habitable dwelling or accessories thereto or roadway/driveway shall be allowed any closer than 50' from the boundary of a Wetland Resource Area unless permitted under the bylaw." (emphasis added).

Hill Law alleges that this language creates an absolute prohibition of construction within 50 feet of Coastal Bank at the Site. And that the Project should be denied where parts of the proposed residence, garage, and driveway are within 50 feet from Coastal Bank. However, as the Superior Court ruled in Connolly v. Town of Bourne Conservation Comm'n, 1999 Mass. Super. LEXIS 422 (1999), this language does not create an absolute ban on activity within 50 feet of Coastal Bank. Id. at \*11-12 attached as Exhibit 1. In Connolly, the Bourne Conservation Commission's decision to approve the construction of a parking lot and walkway, entirely within a Coastal Dune, was upheld. Neighbors claimed the Project was prohibited by Section 3.7.4 and by Section 3.7.1 of the Bylaw which stated "no person shall...alter [a] wetland resource area [or within 100 feet of such area] except as permitted by this by-law." In evaluating this issue, the Court considered the

Bylaw's purpose "to protect wetland resource areas by regulating activities 'likely to have an adverse effect upon wetland resource values.'" Id. citing Bylaw, 3.7.1. In light of this, the Court held that Sections 3.7.4 and 3.7.1 provide the Commission with authority to issue, issue with conditions, or deny the Project "[b]ased on [the Project's] estimated adverse effect on these wetland resource values." Id. Accordingly, the Court held that the Bylaw did not create an "absolute ban on activity within a resource area or surrounding area...rather, the Commission must weigh the adverse effects of any proposed activity under the Bylaw." Id. at \*12.

Indeed, the Commission has routinely allowed similar projects within the 50 foot buffer to Resource Areas. For example, in 2020 the Commission approved a NOI for the construction of a new residence, driveway, and septic system within Coastal Bank and associated Buffer Zone at 72 Elgin Road, Bourne, MA. See Approved Site Plan for 72 Elgin Road, Bourne, MA attached hereto as Exhibit 2. Similarly, in 2018 the Commission approved a NOI for the construction of a new residence, driveway, and septic system within Coastal Bank and associated Buffer Zone at 276 Scraggy Neck Road, Bourne, MA. See Approved Site Plan for 276 Scraggy Neck Road, Bourne, MA attached hereto as Exhibit 3.

### **III. The Project Will Not Adversely Affect Protected Wetland Interests.**

As described in greater detail in the Applicants' NOI Application, and associated supplemental submittals<sup>1</sup> and BEI's revised Site Plan dated September 26, 2022, the proposed Project has been designed in compliance with the performance standards outlined in the Massachusetts Wetlands Protection Act ("WPA"), WPA Regulations (310 CMR 10.00), and the Bylaw (Article 3.7) and Bylaw Regulations. As detailed below, and further discussed in the Applicants' various submittals, the Project will not adversely affect Wetland Resource Area Values at the Site.

#### **a. Land Subject to Coastal Storm Flowage**

The WPA Regulations do not have specific performance standards for proposed work within LSCSF. Moreover, the Bylaw and Bylaw Regulations do not stipulate additional performance standards for proposed work within LSCSF. The Project has been designed with state and local building code requirements for construction within the 100-year Flood Zone, including the proposed installation of flood vents within the crawlspace foundation. The proposed front and back decks will be supported by Sonotubes to allow flood waters to pass underneath. The Project has been designed to avoid adverse effects on the land's ability to control flooding and prevent storm damage. The restoration/mitigation plantings will serve to slow, detain, and absorb flood waters. The Project will not cause increased flood damage on adjacent properties.

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<sup>1</sup> These include but are not limited to LEC's August 24, 2022 and September 29, 2022 submittals and ECR's August 12, 2022, August, 19, 2022 and September 29, 2022 submittals



b. Salt Marsh

The Bylaw and Bylaw Regulations do not stipulate additional performance standards for proposed work within the 100-foot Buffer Zone to Salt Marsh. The proposed Project will not destroy any portion of the Salt Marsh and will not have an adverse effect on the productivity of the Salt Marsh. The proposed structure will be located 76± linear feet from the Salt Marsh, in comparison to 27± linear feet under existing conditions with 6± square feet of deck overhanging the top of the Coastal Bank Page 3 of 3 (986± square feet of structure within the 50-foot Coastal Bank Buffer Zone). The new I/A septic system will be located 100 feet from the closest Salt Marsh, in comparison to the existing cesspool located 31± linear feet from the Salt Marsh. The increased structural setbacks and Buffer Zone restoration/mitigation plantings will serve to better protect the downgradient Salt Marsh and represent an improvement over existing conditions.

c. Coastal Bank

The WPA Regulations identify two circumstances where Coastal Bank's may be determined significant to storm damage prevention or flood control, where the Coastal Bank: 1) Supplies Sediment to Coastal Beaches, Coastal Dunes or Barrier Beaches; or 2) Is a Vertical Buffer to Storm Waters. 310 CMR 10.30. Moreover, 310 CMR 10.30(6) states that any project within a Coastal Bank or within 100 feet landward of the top of Coastal Bank "shall have no adverse effects on the stability of the coastal bank."

The Bylaw and Bylaw Regulations do not stipulate additional performance standards for proposed work within the 100-foot Buffer Zone to Coastal Bank. As noted above, the Bylaw does require the Commission to weigh the adverse effects of the Project on areas within 50 feet of Coastal Bank.

A Coastal Bank is located to the east of the Site which borders on Red Brook Harbor (Coastal Bank #1). A second Coastal Bank is located on the west side of the Property which borders on Salt Marsh (Coastal Bank #2). Together, these banks are over 1,000 feet in length, 40-50 feet wide and average 8-10 feet in height. The Coastal Banks are vegetated and very stable. There are no signs or evidence of erosion on the slopes or bottom of these banks due to coastal flooding, stormwater runoff or groundwater breakout.

Both banks function as vertical buffers to stormwaters and are significant to flood control and storm damage prevention, as presumed. However, neither Coastal Bank #1 nor Coastal Bank #2 are significant because they supply sediment to Coastal Beaches, Coastal Dune or Barrier Beaches.

A third Coastal Bank is a fragmented, finger-like projection that is less than 300 feet in length, 15 feet in width and 1-4 feet in height (Coastal Bank #3). Located within the upland of the Property (51,482 sf), it only occupies approximately 10% of the Site. While technically Coastal Bank #3 meets the state definition of Coastal Bank (DEP Policy 92-1, Figure 5), it does not provide the

same functions to the locus as Coastal Bank #1 and Coastal Bank #2 provide so as to justify stringent protection under the WPA, WPA Regulations, and the Bylaw.

Like Coastal Banks #1 and #2, Coastal Bank #3 does not supply sediment to Coastal Beach, Coastal Dune or Barrier Beach and thus does not assist in dissipating storm wave energy, and does not help protect “structures of coastal wetlands landward of [it] from storm damage or flooding.” 310 CMR 10.30(1). But, unlike Coastal Banks #1 and #2, Coastal Bank #3 does not provide a vertical buffer to storm waters so as to protect landward structures from storm damage and flooding. Coastal Bank #3 is not a natural wall, but rather, a minor change in slope on the west side of the access road and does not control flooding. Moreover, there is no work proposed in Coastal Bank #3 and there are no structures, existing or proposed, which Coastal Bank #3 protects. None of the activities proposed within the 50-foot buffer to Coastal Bank #3 will have an adverse effect on the limited functions it provides.

Accordingly, the focus of the evaluation of the impact of adverse impacts on Coastal Bank at the Site should be on Coastal Bank #1 and Coastal Bank #2 because they surround the Project area and have the height and provide the stability that the regulations presume them to have.

The proposed Project has been designed to avoid adverse effects on the stability of the Coastal Banks at the Site. Work involves filling areas below elevation 16 with compatible glacial sediments, compacting the fill in 9” lifts, grading moderate (not substantially steep) slopes, and vegetating the areas with grasses and trees. These are all stabilizing efforts which will mitigate any future development that may be proposed. The fill will not increase runoff rates.

The existing dwelling located immediately along the top of the westerly, Coastal Bank #2 is proposed to be removed and revegetated with native trees, shrubs, and groundcover. The proposed dwelling has been situated further landward to maximize setbacks to Coastal Bank #2 and avoid intrusion into the Coastal Bank #3.

The proposed plantings will enhance, stabilize, and restore conditions within the 100-foot Buffer Zone, LSCSF, and on the Coastal Bank (266± square feet). The revegetation measures will serve to create a continuous and expanded vegetated buffer upgradient of the westerly Coastal Bank #2 and downgradient Salt Marsh system. The vegetated buffer will serve to attenuate runoff on slopes within the Limit of Work that are less than 10:1. The proposed erosion and sedimentation controls installed along the Limit of Work will protect the downgradient Coastal Bank #2. Post-construction, runoff from the dwelling will be directed to drywells and subsurface infiltration system installed within well-drained soils and will not be directed downgradient towards Coastal Bank #2.

Additionally, the new I/A septic system will be located greater than 50 feet from the top of a Coastal Bank in comparison to the existing cesspool located at the top of the Coastal Bank.

These are previously developed areas and the redevelopment activities will be an improvement of the existing conditions. The proposed project will not have any adverse effects on the stability of the coastal bank.

For these reasons, the Project will not adversely affect any Coastal Bank's ability to provide storm damage prevention and flood control functions.

**IV. The Applicants Have Sought the Necessary Variances for the Septic System from the Bourne Board of Health.**

As detailed in Site Plans (*Existing Conditions Plan, Proposed Conditions Plan, and Septic Details*) prepared by Bracken Engineering, Inc., last revised on September 26, 2022, the new I/A septic system will be located greater than 50 feet from the top of a Coastal Bank and 100 feet from the closest Salt Marsh, in comparison to the existing cesspool located at the top of the Coastal Bank and 31± linear feet from the Salt Marsh, respectively.

As discussed in Bracken Engineering, Inc.'s June 14, 2022 and August 22, 2022 submittals to the Bourne Board of Health ("BOH"), the Applicants have submitted applications for all necessary variances for the proposed septic system at the Site to the BOH. See Applicants' Revised Application for Septic Variance Request Package dated August 22, 2022 attached hereto as Exhibit 4.

The BOH Regulation states that "a 150 foot setback will be required for all leaching facilities from the edge of a wetland resource or watercourse, as defined by 10 CMR 15.01 Title V." This Regulation was last amended on June 1, 1988. At that time, the prior iteration of Title V was in effect. Notably, Section 15.01 of the operative Title V Regulation, explicitly adopted by the BOH Regulation, does not define "wetland resources" but does define "watercourse." The definition of "watercourse" is:

Watercourse. Any natural or man-made stream, pond, lake, wetland, coastal wetland, swamp or other body of water and should include wet meadows, marshes, swamps, bogs and areas where ground water, flowing or standing surface water or ice provide a significant part of the supporting substrate for a plant community for at least five months of the year. See 310 CMR 15.00 (effective 12/31/86) attached hereto as Exhibit 5.

Accordingly, the only applicable Resource Area that a variance is required under the BOH Regulations for this Site is the Salt Marsh which is a coastal wetland and watercourse per the Title V Regulation definition above. This is because under the definition of "watercourse", a regulated coastal wetland must be considered a "body of water" - which Coastal Bank is not. This conclusion is supported by the operative Title V Regulation, 310 CMR 15.03(7) at FN (2) concerning the location and distances of setbacks which states, "All distances shall be measured from the average of the mean annual flood elevation in inland areas and from Mean High Water in coastal areas."

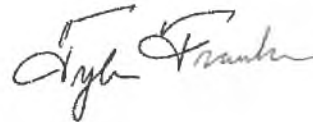
The intent of this regulation was clearly to protect water resource areas that intersect with the water table. Coastal Banks in this location are not impacted by the proposed septic system. Nevertheless, the Applicants have revised their variance application to include setbacks for Coastal Banks at the Site. A Hydrogeologic Study is not required because the septic system is more than 100' from the watercourse. Notably, the Coastal Banks on-site are unrelated to groundwater flow, quality or potential impacts from the septic system such that a Hydrogeologic Study is unnecessary.

Moreover, a Title 5 variance is not required for the septic system when it is more than 50' from the landward edge of the top of all Coastal Banks on Site. There is no setback requirement in Title V to the toe of a Coastal Bank.

Finally, as detailed in BEI's submittals to the BOH, nitrogen loading for the proposed 4-bedroom system (reduced from the initial 5 bedroom proposal per BOH agent request) is only 2.2 parts per million ("PPM") well below the typical standard of 5 PPM.

For all of these reasons, the Applicants have satisfied the standards necessary for the proposed Project to be approved by the Commission consistent with the WPA, WPA Regulations, Bylaw, and Bylaw Regulations.

Very truly yours,

A handwritten signature in black ink, appearing to read "Tyler M. Franklin". The signature is written in a cursive, flowing style.

Tyler M. Franklin



# **EXHIBIT 1**



**User Name:** Tyler Franklin

**Date and Time:** Wednesday, September 21, 2022 11:35:00 AM EDT

**Job Number:** 179968659

## Document (1)

1. [Connolly v. Town of Bourne Conservation Comm'n, 1999 Mass. Super. LEXIS 422](#)

**Client/Matter:** 99100-003

**Search Terms:** "unless permitted under this by-law"

**Search Type:** Natural Language

**Narrowed by:**

**Content Type**  
Cases

**Narrowed by**  
-None-

## Connolly v. Town of Bourne Conservation Comm'n

Superior Court of Massachusetts, At Barnstable

September 16, 1999, Decided

98-359

### Reporter

1999 Mass. Super. LEXIS 422 \*; 1999 WL 1073942

Joseph J. Connolly et al. <sup>1</sup> v. Town of Bourne  
Conservation Commission

**Disposition:** [\*1] Defendant's motion for judgment on the pleadings ALLOWED, judgment shall entered for the defendants, and the decision of the defendant Town of Bourne Conservation Commission allowed an order of conditions in regards to the Parcel upheld.

### Core Terms

Bylaw, dune, Wetlands, parking lot, resource area, feet, adverse effect, conditions, coastal, beach, Protection Act

### Case Summary

#### Procedural Posture

Plaintiffs appealed a decision granted by defendant, which permitted the construction of a parking lot on a parcel and claimed that the decision violated [Mass. Gen. Laws ch. 249, § 4](#) and [Mass. Gen. Laws ch. 131, § 40](#), the Wetlands Protection Act.

#### Overview

Plaintiffs initiated an action against defendant commissioner because the board approved a project permitting the construction of a parking lot on a parcel of land in a protected area. Plaintiffs argued that a similar, past proposal, in which a party sought to construct a home on the parcel, was rejected by defendant on the basis that it would be harmful to the area. Defendant alleged that the parcel would remain protected. Plaintiffs further alleged that the allowance of the construction of the parking lot was a violation of the Wetlands Protection Act, [Mass. Gen. Laws ch. 131, § 40](#) and of

the town bylaws. Plaintiff appealed to the Department of Environmental Protection, which issued an order permitting the project but did not issue an opinion regarding the town bylaw issue. The court granted defendant's judgment on the pleadings and upheld defendant's decision. The court reasoned defendant's decision was well supported and reasonable and, therefore, was not arbitrary or capricious in nature.

#### Outcome

The court permitted defendant's motion for judgment on the pleadings and granted judgment in favor of defendant because the decision to permit the construction of a parking lot was well supported and reasonable and was not arbitrarily or capriciously granted.

### LexisNexis® Headnotes

Administrative Law > Judicial  
Review > Reviewability > Factual Determinations

#### [HN1](#) [📄] **Reviewability, Factual Determinations**

In reviewing a decision, the court must determine whether the decision was based upon reasoning relevant to the evidence presented before it, and whether the conclusions are supported by substantial evidence in the record.

Administrative Law > Judicial Review > Standards  
of Review > General Overview

#### [HN2](#) [📄] **Judicial Review, Standards of Review**

Where the allowance or denial of an order of conditions is supported by substantial evidence, however, plaintiffs

<sup>1</sup> Olivia O'Neill.

are only entitled to relief upon a finding that the decision was "arbitrary and capricious" or that the agency committed a substantial error of law that resulted in manifest injustice to plaintiffs. A decision is not arbitrary and capricious unless there is no ground which reasonable persons might deem proper to support it.

**Judges:** Gerald F. O'Neill, Jr. Justice of the Superior Court.

**Opinion by:** GERALD F. O'NEILL, JR.

## Opinion

### Memorandum Of Decision And Order On Defendant's Motion For Judgment On The Pleadings

This action consists of an appeal by aggrieved parties filed pursuant to G.L.c. 249, 4 of a decision of the defendant Town of Bourne Conservation Commission ("Commission") to grant an order of conditions allowing the Town to construct a parking lot at 169 Phillips Road in Bourne (the "Parcel"). Plaintiffs argue that the decision of the Commission was either arbitrary and capricious, or not in accordance with applicable law, and therefore the decision should be reversed. The matter is currently before this court on defendant's motion for judgment on the pleadings. See [Superior Court Standing Order 1-96](#).

#### BACKGROUND

There is a somewhat long history of litigation regarding the Parcel, of which one of the plaintiffs is a direct abutter and the other is a neighbor. On May 3, 1995, Bobby [\*2] and Joan Buchanan, prior owners of the property, submitted a notice of intent to the Commission, seeking permission to construct a single family residence on the Parcel. After a series of hearings, the Commission denied the request and refused to issue an order of conditions under G.L.c. 131, 40 (the Wetlands Protection Act) and the Town of Bourne Wetlands Bylaw. This action was premised on, *inter alia*, the following findings: 1) the Buchanan project would result in 2240 square feet of permanent devegetation; 2) the project would change the form and volume of the dune which encompasses the entire lot; and 3) the proposed house and septic system, being entirely within a coastal dune/barrier beach, would have an adverse impact on the resource area. In referring to the Town Bylaw, the Commission noted:

3.7.4 [The Town Wetlands Bylaw] emphatically states that no habitable dwelling or accessories thereto or roadway/driveway shall be allowed any closer than 50 feet from the boundary of a Wetland Resource Area unless permitted under this bylaw. The commission has concluded that the construction of a dwelling, garage, driveway and the installation of a septic system entirely [\*3] within a coastal dune/barrier beach is totally in violation of the intent of this bylaw.

The Buchanans petitioned this court for review of the Commission's decision under the Bylaw. <sup>2</sup> [\*4] By decision issued March 6, 1997, this court (Connon, J.) granted summary judgment in favor of the Buchanans on Count I of their complaint, holding that the decision of the Commission under the Town Bylaw was arbitrary and capricious, and therefore vacating the decision. This court's reversal was premised on the fact that the Commission negotiated with Buchanan in bad faith, that the impartiality of the Chairman of the Commission was questionable, and that the Chairman's predisposition against the project deprived the plaintiff of a fair hearing, and therefore procedural due process. <sup>3</sup> Soon after this reversal, however, the Town purchased the Parcel from the Buchanans, so the Buchanan project never went forward.

To offset some of the cost of the purchase, the Town applied for and received a "Self-Help" grant from the Commonwealth in the amount of \$ 73,640. By the terms of the grant, the Town was required to transfer title in the property from the Selectmen to the Commission, was required to use the Parcel in some sort of conservation effort, and could not charge any fees or require Town stickers for use of the lot. While not required by the grant, the Town proposed a parking lot, a bicycle rack, and elevated walkway to provide public access to the beach.

<sup>2</sup> The Buchanans also appealed the Commission's decision to the Department of Environmental Protection, which issued a superceding order allowing the project under the Wetlands Protection Act, G.L.c. 131, 40 however properly declining to address the project's conformance with the Town Bylaw.

<sup>3</sup> The plaintiffs cite this court's Buchanan decision as holding that the Town Bylaw's 50-foot setback requirement is an absolute mandate. This is not a proper reading of the decision. Rather, this court noted the Chairman of the Commission had sworn by affidavit the setback was a mandate, and that being the Commission's position on the Bylaw, it was bad faith to thereafter negotiate with Buchanan knowing that they would never allow the project.



On March 9, 1998, the Town filed a Notice of Intent with the Commission detailing the parking lot [\*5] proposal which is the subject of the instant litigation. This plan includes a 24 by 25-foot paved apron from the road to an approximately 60 by 73-foot crushed stone 14-car parking lot and bike rack area, a 135-foot elevated wood walkway from the parking lot to the beach, and 310 feet of beach dune fencing.<sup>4</sup> The Commission held three hearings on the project, at which the Town submitted the following evidence in favor of the project: While the parking lot project would permanently devegetate approximately 5000 square feet of the coastal dune, double the area of the Buchanan project, the parking lot would extend only 75 feet into the dune from the road (excluding the raised walkway) while the Buchanan project would have been set approximately 100 feet into the dune. Unlike the Buchanan project, both the Massachusetts Coastal Zone Management Office (MCZM) and the Department of Environmental Protection expressed their approval of the parking lot project, in that both determined that the project meets the performance standards for coastal dunes. See 310 CMR 10.28, 10.29. The Massachusetts Audubon Society and the Buzzards Bay Project also approved of the parking lot plan, [\*6] and representatives of each were present at one or more hearings to provide evidence that the project, respectively, meets performance standards for coastal dune and barrier beach resource areas, and would not be detrimental to any endangered species habitat.<sup>5</sup>

The proposed lot is entirely in what is known as "secondary" dune, and is 50 feet from the primary dune.<sup>6</sup> While entirely within an A3 flood zone, MCZM noted that the project would not affect the dune's ability to accept rises in the water table due to the pervious material used in the lot construction (gravel rather than pavement). Therefore, the project would negligibly affect the value of the dune in flood control. Further, the Town produced evidence that the project would not permanently destabilize the dune, as the gravel would help [\*7] restabilize any temporary disturbance, or impede dune movement, as the area of construction is 50 feet removed from moving dune and the recent dune movement seaward. A representative of the Cape Cod

Commission noted that underground water flow direction was away from any existing water source, and opined that the pervious material used in the parking lot would act to dissipate and filter any harmful or polluting runoff.<sup>7</sup> The walkway, opined the Town's experts, would actually be preferable to no development, as it would remove any disturbing and erosive foot traffic across the dune. Experts from Audubon and Natural Heritage also noted that no adverse impact would be visited upon the possible endangered species habitat. Finally, each expert noted that the project was preferable to the Buchanan project in terms of the interests of the Wetlands Protection Act and Bylaw, because of the public nature of the Town's project.

[\*8] The plaintiffs and others presented opposition to the project in the form of letters and testimony at the hearing. Essentially, they argued that the project is barred by the Wetlands Protection Act and Bylaw, in that the project would have an adverse effect on the resource area in which it is proposed, or alternatively that the project is banned altogether by the Bylaw's 50-foot setback requirement. Opposition centered on devegetation and alteration of the form of the dune.<sup>8</sup> Opponents posited that the project was no better, or worse than that of the Buchanans, and refuted the evidence of no adverse impact forwarded by the town and its various experts.

In light of all the above, the Commission determined that the interests of the Bylaw and Wetlands Protection Act could be protected and that the project would not have an unduly adverse effect on [\*9] those interests, and therefore issued an order of conditions allowing the project on May 7, 1998. Plaintiffs subsequently appealed to DEP and petitioned this court for review. DEP issued a superceding order of conditions on November 19, 1998 allowing the project under the Wetlands Protection Act but properly making no decision regarding the project's status under the Town Bylaw. This decision of the DEP is currently before an Administrative Law Judge on the defendant's motion to dismiss plaintiffs' appeal.

## DISCUSSION

<sup>4</sup> Originally, an 18-car lot was proposed, however this plan was scaled back to 14 spaces.

<sup>5</sup> A Wetland Specialist from the Buzzards Bay Project opined the project met the performance standards under 310 CMR.

<sup>6</sup> DEP determined that the limit of the primary dune is at elevation 12 feet on the parce

<sup>7</sup> She felt the parking lot material was "appropriate to accomplish on-site recharge."

<sup>8</sup> Opponents also raised the issue of increased parking along Phillips Street, however this issue is inappropriate to a discussion under the Wetlands Bylaw.



Pursuant to G.L.c. 249, 4, this court has jurisdiction to review, in the nature of certiorari, decisions of a local conservation commission made under a wetlands by-law.<sup>9</sup> *Lovequist v. Conservation Commission of Dennis*, 379 Mass. 7, 16, 393 N.E.2d 858 (1979). The standard of review on certiorari depends upon the nature of the action sought to be reviewed. *Forsyth Sch. for Dental Hygienists v. Board of Registration in Dentistry*, 404 Mass. 211, 217, 534 N.E.2d 773 (1989). **HN1**<sup>↑</sup> In reviewing a decision of a local conservation commission, this court must determine whether the Commission's decision was based upon reasoning relevant to the **[\*10]** evidence presented before it, and whether the Commissions' conclusions are supported by substantial evidence in the record. *Boston Edison Co. v. Boston Redevelopment Auth.*, 374 Mass. 37, 48, 371 N.E.2d 728 (1977). **HN2**<sup>↑</sup> Where the allowance or denial of an order of conditions is supported by substantial evidence, however, the plaintiffs are only entitled to relief upon a finding that the Commission's decision was "arbitrary and capricious" or that the Commission committed a substantial error of law that resulted in manifest injustice to the plaintiffs. *T.D.J. Development Corp. v. Conservation Commission of North Andover*, 36 Mass. App. Ct. 124, 128, 629 N.E.2d 328 (1994). "A decision is not arbitrary and capricious unless there is no ground which reasonable persons might deem proper to support it." *FIC Homes of Blackstone, Inc. v. Conservation Commission of Blackstone*, 41 Mass. App. Ct. 681, 684-5, 673 N.E.2d 61 (1996) (citations omitted).

**[\*11]** Under this standard, the court concludes that there was substantial evidence to support the decision of the Commission. The Bylaw mandates that "no habitable dwelling or accessories thereto or roadway/driveway shall be allowed any closer than 50' from the boundary of a Wetland Resource area unless permitted under this by-law." Town Bylaw, 3.7.4. Further, "no person shall . . . alter [a] wetland resource area [or within 100 feet or such area] except as permitted by this by-law." *Id.* at 3.7.1. The Bylaw's purpose is to protect wetland resource areas by regulating activities "likely to have an adverse effect

upon wetland resource values."<sup>10</sup> **[\*12]** *Id.* Based on a proposal's estimated adverse effect on these wetland resource values, the Commission may issue, issue with conditions, or deny a permit to conduct the proposed activity in the protected areas as listed above. See *Id.* at 3.7.2. There is no absolute ban on activity within a resource area or surrounding area, as plaintiff argues, rather, the Commission must weigh the adverse effects of any proposed activity under the Bylaw."<sup>11</sup>

There is no doubt that the proposed parking lot is entirely within a wetland resource area protected by the Bylaw. It was therefore incumbent upon the Commission to weigh the adverse effects of the project in terms of the "wetland resource values" sought to be protected by the Bylaw. Over the course of three hearings, the Commission had before it no fewer than four experts from various environmental protection agencies opining that the project had no or minimal adverse effect on the Bylaws listed wetland resource values. The effect on each value was discussed by one or more **[\*13]** experts in the field.<sup>12</sup> In fact, there was evidence presented that the project would enhance one listed value, NAMELY public recreational uses. The opposition did produce valid arguments against the project, however in light of the substantial evidence in favor, it was not unreasonable for the Commission to approve of the project.

#### ORDER

For the foregoing reasons, it is hereby *ORDERED* that the defendant's motion for judgment on the pleadings be

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<sup>10</sup> These values include private and public water supplies, groundwater supplies, flood control, storm damage prevention, pollution prevention, fisheries, and shellfisheries, wild life habitat, erosion and sedimentary control, and recreational uses. Town Bylaw, 3.7.1.

<sup>11</sup> Neither can the plaintiff argue the statement by affidavit of the Commission Chairman, an absolute ban within 50' of a resource area exists, or the Commission's decision in Buchanan, binds the Commission. As by-laws are enacted and enforced for the benefit of the public, no estoppel can apply in this regard against the Town or Commission. See *Building Inspector of Lancaster v. Sanderson*, 372 Mass. 157, 162, 360 N.E.2d 1051 (1977); *Seekonk v. Anthony*, 339 Mass. 49, 55, 157 N.E.2d 651 (1959).

<sup>12</sup> Evidence was presented that there would be no impact on public and private water supplies, and fisheries and shellfisheries, and a minimal impact on groundwater supplies, flood control, storm damage, prevention, pollution prevention, wild life habitat, and erosion and sedimentation control.

---

<sup>9</sup> Conversely, aggrieved parties may only appeal decisions of a conservation commission made pursuant to G.L.c. 131, 40 (Wetlands Protection Act) to the Massachusetts Department of Environmental Protection. See G.L.c. 30A, 14. In the case at bar, where the Commission's decision was made pursuant to both the Act and the By-law, this court may review such decisions as it relates to the By-law.

*ALLOWED*, that judgment shall forthwith enter for the defendants, and that the decision of the defendant Town of Bourne Conservation Commission to allow an order of conditions in regards to the Parcel be upheld.

Gerald F. O'Neill, Jr.

Justice of the Superior Court

DATED: [\*14] September 16, 1999

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End of Document

# **EXHIBIT 2**

LOT 32  
(SERVICED BY  
TOWN WATER)

D

POSED TREES (TYP.)  
EASTERN RED CEDARS

LOT 23  
(SERVICED BY  
TOWN WATER)

THE ELEVATION  
= 11.37

THE LIMIT OF WORK WILL CONSIST OF A ROW OF STAKED SEDIMENT STOP OR COMPOST ROLL WITH SILTATION FENCE BACKING. THE LIMIT OF WORK WILL BE INSTALLED PRIOR TO ANY WORK, EXCAVATION, CONSTRUCTION OR CLEARING OF VEGETATION, IN ORDER TO PREVENT DAMAGE TO THE INTERESTS OF THE ACT AND BYLAW. THE SEDIMENT STOP ROLL WILL BE REPLACED AS NECESSARY TO BE MAINTAINED IN GOOD CONDITION THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. NO FILL WILL BE ALLOWED TO BE PLACED AGAINST THE LIMIT OF WORK AT ANY TIME. UPON COMPLETION OF ALL CONSTRUCTION AND STABILIZATION OF THE SITE, SEDIMENT STOP ROLL WILL BE REMOVED AND PROPERLY DISPOSED OF.

PRIOR TO ANY WORK COMMENCING, ADVANCE WRITTEN NOTIFICATION WILL BE PROVIDED TO THE LOCAL CONSERVATION COMMISSION.

NO DEBRIS, EQUIPMENT OR MATERIALS WILL BE STORED, EVEN TEMPORARILY, OUTSIDE THE DESIGNATED LIMIT OF WORK AREA WITH THE EXCEPTION OF EQUIPMENT AND MATERIALS RELATED TO PLANTINGS.

THE CONSTRUCTION SITE WILL BE CLEANED DAILY TO REMOVE ANY LOOSE DEBRIS.

ALL DISTURBED AREAS WITHIN THE LIMIT OF WORK REQUIRING RESTORATION WILL STABILIZED TO PREVENT EROSION. STABILIZATION WILL BE DONE IMMEDIATELY FOLLOWING COMPLETION OF CONSTRUCTION.

A ROW OF EASTERN RED CEDARS (*Juniperus Virginiana*) SHALL BE PLANTED ALONG THE EASTERN PROPERTY LINE.

### GENERAL NOTES

LOCATIONS ARE BASED ON AN "ON THE GROUND" INSTRUMENT SURVEY AND ELEVATIONS BASED ON THE NAVD 1988 DATUM COORDINATE SYSTEM USED IS THE MA-MAINLAND COORDINATE SYSTEM, DATUM: NAD 83, UNITS: U.S. SURVEY FEET.

ZONING DISTRICT: R-40, FLOODPLAIN OVERLAY DISTRICT

PROPERTY IS LOCATED WITHIN AN AREA HAVING A ZONE DESIGNATION OF AE (ELEV. 15) AND NON-HAZARD X BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 25001C0511J, WITH A MAP EFFECTIVE DATE OF JULY 16, 2014.

THIS LOT IS NOT LOCATED WITHIN A DEP APPROVED ZONE II WELLHEAD PROTECTION AREA.

THIS LOT IS NOT MAPPED WITHIN A MESA NATURAL HERITAGE AND ENDANGERED SPECIES AREA.

WIND EXPOSURE CATEGORY: ZONE C

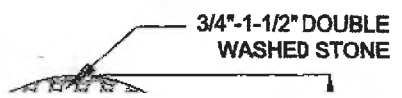
LOT COVERAGE:  
LOT AREA = 18,848 S.F

PROPOSED LOT COVERAGE BY STRUCTURES = 3,838 S.F. (20%)

DEED REFERENCE: BOOK 12941 PAGE 195  
PLAN REFERENCE: BOOK 202 PAGE 11 F2

OWNER: JANET BLACK, TRUSTEE,  
THE BLACK FAMILY NOMINEE TRUST  
71 ELGIN ROAD, POCASSET, MA 02559

NDS PRO FLOW-WELL®



ROOF LEADER



# **EXHIBIT 3**



OF PRIMARY COASTAL BANK

CB FND

EXISTING EDGE OF CLEARING (TYP.)

INSTALL AS NECE ZONE. M/ ACCESS

PROPOSED EROSION CONTROL (TYP.) (SEE DETAIL)

MAP 50 PARCEL 159 34,860± SF (TO M.H.W.)

ACCESS EASEM/ SEE LICENSE AC Bk: 12646 Pg:

100' BUFFER ZONE FROM TOP OF PRIMARY COASTAL BANK

AREA TO BE STABILIZED & REPLANTED

N 77°57'42" W 15.00'

150' BUFFER ZONE FROM TOP OF PRIMARY COASTAL BANK

BENCHMARK: TOP OF CONCRETE BOUND ELEV. = 12.42 (NAVD88)

FLOOD ZONE VE (EL 17) FLOOD ZONE AE (EL 15)

PREVIOUSLY APPROVED GR SEE OOC: SE7-2041 RECO

PROPOSED LANDSCAPE STEPS (TYP.)

PROPOSED FLOOD ZONE ELEVATION 15 & TOP OF COASTAL BANK

#280 SCRAGGY NECK ROAD MAP 50 PARCEL 158

ACTUAL FEMA FLOOD ZONE ELEVATION (AE EL. 15)

ACTUAL FEMA FLOOD ZONE ELEVATION (AE EL. 15)

PROPOSED RETAINING WALL (TYP.) (DESIGN BY OTHERS)

PROPOSED ROOF RUNOFF INFILTRATION (TYP.) -FINAL PLACEMENT TO BE FIELD COORDINATED (SEE DETAIL)

PREVIOUSLY APPROVED HOUSE FOOTPT/ SEE OOC: SE7-2041 RECORDED IN BK

50' BUFFER FROM TOP OF PROPOSED COASTAL BANK

MicroFAST VENT and BLOWER UNIT IN VAULT (SEE NOTE 20)

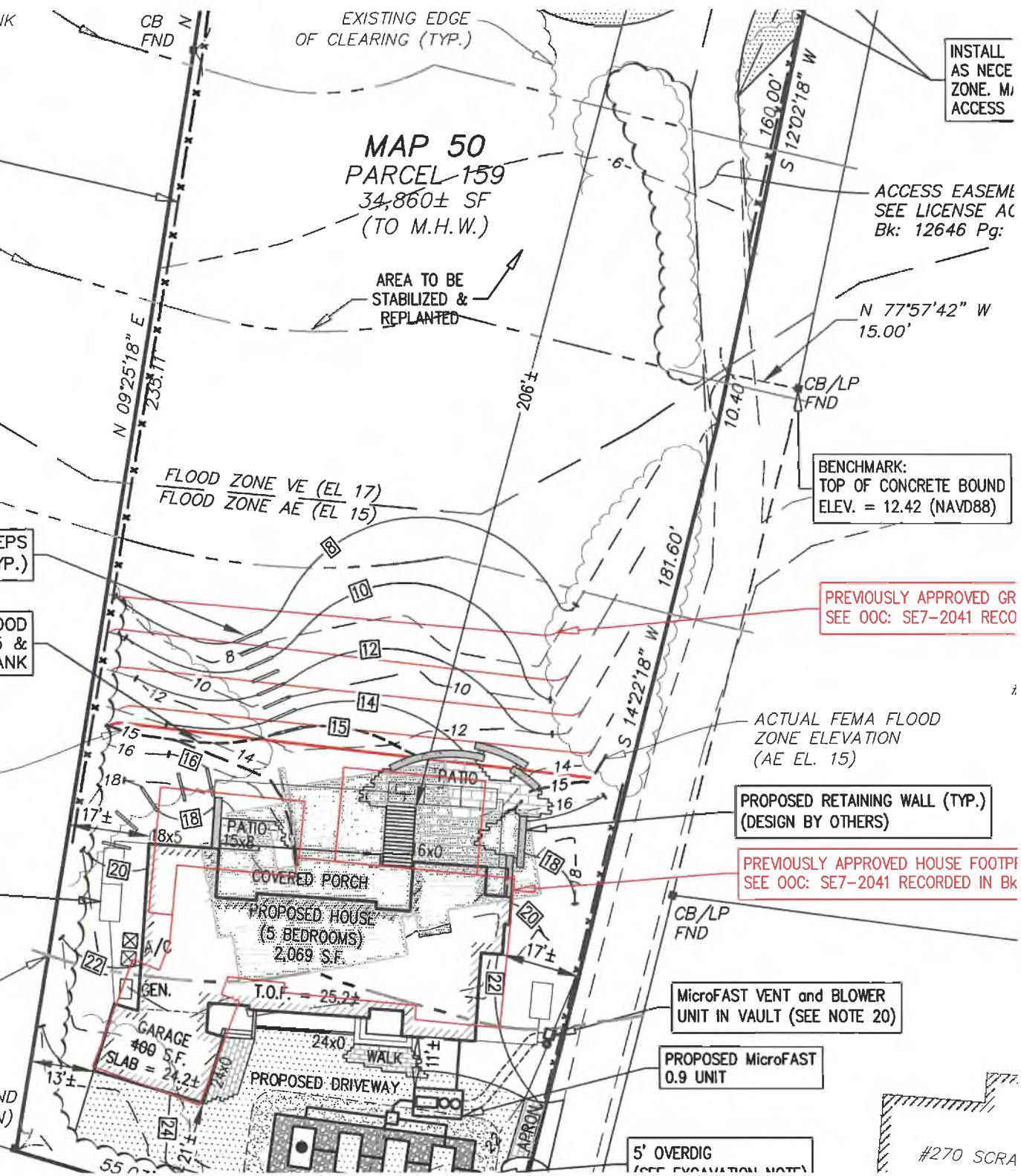
PROPOSED MicroFAST 0.9 UNIT

100' BUFFER FROM TOP OF PROPOSED COASTAL BANK

CB FND (BRKN)

5' OVERDIG (SEE EXCAVATION NOTE)

#270 SCRA



## MicroFAST 0.9 UNIT (INTERNAL MOUNT)



### MicroFAST Notes:

1. Blower piping to FAST® may not exceed 100FT [30.5m] total length and use a maximum of 4 elbows. For distances greater than 100FT [30.5m] – consult factory. Blower must be located above flood/standing water levels on a concrete base 24" X 18" X 2"[61X45.7X5cm] minimum.
2. Vent to be located above finish grade or higher to avoid infiltration. Cap with vent grate w/at least 7.1 sq in. [45.8 sq. cm] open surface area. Secure with stainless steel screws or Run vent to desired location and cover opening with vent grate w/at least 7.1sq in. [45.8 sq. cm] of open surface area. Secure with stainless steel screws. Vent piping must not allow excess moisture build up or back pressure.
3. All appurtenances to FAST® (e.g. tank pump outs, etc.) must conform to all country, state, province, and local plumbing and electrical codes. The blower control system is provided by Bio-Microbics, Inc.
4. Either the influent pipe tee shall be fitted with a pipe cap or the baffle separating the two zones shall be extended to the top of the tank. If choosing to use the pipe cap, then the baffle shall be at least 3"[8cm] higher than the water level as shown on the drawing.
5. All inspection, viewing and pump out ports must be secured to prevent accidental or unauthorized access.
6. Tank, anchors, piping, conduit, blower housing pad and vents are provided by others.
7. All piping and ancillary equipment installed after FAST® must not impede or restrict free flow of effluent.
8. No more than 4 FT [1.2 m] of fill may be placed over unit lid. Unit may stand inside tank MicroFAST® 0.50 with feet. Refer to installation manual for more details.

# **EXHIBIT 4**

# Letter of Transmittal



49 Herring Pond Road  
Buzzards Bay, MA 02532  
Tel: (508) 833-0070  
Fax: (508) 833-2282

19 Old South Road  
Nantucket, MA 02554  
Tel: (508) 325-0044

To:  
Town of Bourne  
Board of Health  
24 Perry Avenue  
Buzzards Bay, MA 02532

**HAND DELIVERY & Electronically**

From:  
Donald F. Bracken, Jr., PE  
[don@brackeneng.com](mailto:don@brackeneng.com)  
Bracken Engineering, Inc.

**Re:** 176 Scraggy Neck Road (Map 71, Parcel 1, Lot 2)

**Enclosed: 7 total copies**

Revised Application for Septic Variance Request – dated 8/22/2022

- BEI Cover Letter
- Revised Variance Request Letter from BEI
- Revised Nitrogen Loading Calculations – Existing & Proposed
- Horsley response letter from BEI dated 8/22/22
- Horsley Response letter from ECR dated 8-19-22
- Architectural Plans dated 7/21/22

*Site and Sewage Disposal Plan Set in Bourne, MA, prepared by Bracken Engineering, Inc., dated May 16, 2022, revised 6/14/2022, revised 8/22/22*

Cc: Client  
File

*Signed: Tina Yule*

*Date: August 23, 2022*

**MAIN OFFICE:**  
49 Herring Pond Road  
Buzzards Bay, MA 02532  
TEL: (508) 833-0070  
FAX: (508) 833-2282



**NANTUCKET OFFICE:**  
19 Old South Road  
Nantucket, MA 02554  
TEL: (508) 325-0044  
[www.brackeneng.com](http://www.brackeneng.com)

August 22, 2022

Bourne Board of Health  
Terri Guarino, RS, CHO  
24 Perry Avenue  
Bourne, MA 02532

**RE: Revised Variance Request Cover Letter  
176 Scraggy Neck Road (Map 51.0, Parcel 1)**

Dear Members of the Board:

Pursuant to the last meeting for the above referenced project held on July 13, 2022 and a site meeting with Terri Guarino and Stephanie Fitch, we are submitting the following information to modify and supplement the pending variance application:

- Revise plans which reduce the number of bedrooms from 5 to 4.
- Revised Nitrogen Loading Calculations which reduce the proposed loading from 2.5 to 2.2 ppm
- Revised house plans to show 4 bedrooms
- Letter from this firm in response to the Horsley July 11, 2022 letter
- Letter from Environmental Consulting & Restoration, LLC in response to the Horsley July 11, 2022 letter

Thank you for your time and consideration on this matter. We look forward to reviewing this project with the Board of Health at the next scheduled Public Hearing. Should you have any questions regarding this project or require any further information please contact the undersigned at either 508-833-0070 [don@brackeneng.com](mailto:don@brackeneng.com).

Sincerely,

**BRACKEN ENGINEERING, INC.**

A handwritten signature in black ink, appearing to read 'Donald F. Bracken, Jr.', is written over a horizontal line.

Donald F. Bracken, Jr., P.E.  
President

cc: Marybeth & Steven Bisson  
Glenn Wood Esq.



MAIN OFFICE:  
49 Herring Pond Road  
Buzzards Bay, MA 02532  
TEL: (508) 833-0070  
FAX: (508) 833-2282



NANTUCKET OFFICE:  
19 Old South Road  
Nantucket, MA 02554  
TEL: (508) 325-0044  
[www.brackeneng.com](http://www.brackeneng.com)

June 14, 2022

Revised August 22, 2022

Bourne Board of Health  
Terri Guarino, RS, CHO  
24 Perry Avenue  
Bourne, MA 02532

**RE: Variance Request  
176 Scraggy Neck Road (Map 51.0, Parcel 1)**

Dear Members of the Board:

On behalf of the homeowner, The Long Point Trust c/o Marybeth and Steven Bisson, Bracken Engineering, Inc. (BEI), is requesting a variance to the Town of Bourne Board of Health Regulations to replace an existing cottage with a new single-family dwelling at the above referenced location. Attached with this request are revised plans by this firm dated 8/22/22 and revised Architectural plans dated 7/21/22 to address some of the concerns raised by staff at a site meeting on July 19, 2022.

A Variance is Requested to the following Local Regulation:

150 FOOT SETBACK REG  
TOWN OF BOURNE  
BOARD OF HEALTH

*"A 150 foot setback will be required for all leaching facilities from the edge of a wetland resource or watercourse, as defined in 310 CMR 15.01 Title V. Setback distance shall be measured during periods of highest ground or surface water conditions."*

This Regulation was last amended on June 1, 1988. 310 CMR 15.01 refers to the "old" Title V in effect when the Board of Health adopted this Regulation. Section 15.01 does not have a definition for "wetland resource" but there is a definition for "watercourse" which includes "wetland". The definition reads as follows:

*"Watercourse. Any natural or man-made stream, pond, lake, wetland, coastal wetland, swamp or other body of water and should include wet meadows, marshes, swamps, bogs and areas where ground water, flowing or standing surface water or ice provide a significant part of the supporting substrate for a plant community for at least five months of the year."*

The only applicable resource area that a variance is required for this property is the Salt Marsh which is a coastal wetland and watercourse per the definition above. Based on the above definition, a coastal wetland must be considered as a "body of water". This is also confirmed in the old Title V 310 CMR 15.03 Location (7) Distances. (1)(2) for setbacks to Watercourses, footnote [2] ".All distances shall be



*measured from the average of the mean annual flood elevation in inland areas and from the Mean High Water in coastal areas."*

Although in our opinion, variances are not required for setbacks to coastal banks, we request the following variances from the 150-foot setback to the proposed Soil Absorption System (SAS) and Reserve Area (RA) to be consistent with past practices of the Board:

- SAS to the Salt Marsh southwest from 150' to 136' (14' variance)
- SAS to the Salt Marsh northeast from 150' to 101' (49' variance)
- SAS to Coastal Bank southwest from 150' to 65' (85' variance)
- SAS to Coastal Bank northeast from 150' to 57' (93' variance)
- RA to the Salt Marsh to the south from 150' to 134' (16' variance)
- RA to the Salt Marsh to the northeast from 150' to 119' (31' variance)
- RA to Coastal Bank southwest from 150' to 53' (97' variance)
- RA to Coastal Bank northwest from 150' to 69' (81' variance)

The coastal banks existing on-site consist mainly of well vegetated wooded areas (forested upland) subject to protection under M.G.L. c. 131, § 40 or Resource Areas protected under WPA Regulations at 310 CMR 10.00. These banks function exclusively as vertical buffers for storm waters. Please refer to the attached letter from Stan Humphries, Coastal Geologist with Environmental Consulting & Restoration, LLC (ECR) submitted with this request in response to the Horsley letter submitted to the Board dated July 11, 2022. This letter states that the proposed septic system will in no way adversely impact the coastal bank through erosion/destabilization.

The Regulation was based on the transport rates in glacial outwash soils to protect water bodies and resource areas that could be impacted by septic system contaminants based on actual groundwater flow. Since coastal banks are not associated with groundwater flow, they should not technically be applicable to the setback requirement.

Also, there are no Title V variances required with this application. The proposed system is located greater than 50' from a BVW, Salt Marsh and the top of any coastal bank. Note: the coastal bank setback is measured from the "most landward edge" of the "top" of coastal bank per 310 CMR 15.211: Minimum Setback Distances footnote (3).

In accordance with the Regulation, a Hydrogeologic study is not required because the SAS and RA are greater than 100 feet from a wetland or watercourse per the applicable definition. As required, this application includes the following documentation prepared by a Professional Engineer:

- Proposed site plan (3 Sheets) which includes: existing conditions information, proposed design information, septic system design and details, wetland resource areas and setbacks to septic system components;
- Soil Evaluation Form including groundwater monitoring information over a tidal cycle;
- Existing and proposed Nitrogen Loading Calculations.



Based on the submitted information, the variances should be granted because of the following:

- The new system will replace an existing cesspool located only 31' from the salt marsh and on the coastal bank. This cesspool provides no treatment, the bottom is only a few feet above the water table and is a direct contaminant source to the salt marsh;
- Nitrogen loading for the proposed 4-bedroom system is only 2.2 parts per million (PPM) well below the typical standard of 5 PPM. Please note that the proposed number of bedrooms has been reduced from 5 to 4 bedrooms as suggested by the Board's Agent;
- The system has been designed to include MicroFast denitrification system;
- The system includes the design of a Presby soil absorption system that is equivalent to a pressure distribution system;
- The system location is located at the highest portion of the lot and maintains a 7.7' separation to groundwater, where a minimum of 5' is required;
- A deed restriction shall be placed on the property limiting it to four bedrooms;

In summary, the upgraded system with the increased flow provides better protection of public health and safety and the environment than the existing system with no increase in flow. Given the size of the property and the facts and circumstances of this particular case, it would be manifestly unjust to apply strict adherence to this Regulation. Furthermore, not granting the variance would deprive the owner of reasonable use of the property when specifically evaluating this property with surrounding properties and previous approvals by the Board.

Thank you for your time and consideration on this matter. We look forward to reviewing this project with the Board of Health at the next scheduled Public Hearing. Should you have any questions regarding this project or require any further information please contact the undersigned at either 508-833-0070 [don@brackeneng.com](mailto:don@brackeneng.com).

Sincerely,

**BRACKEN ENGINEERING, INC.**

A handwritten signature in black ink, appearing to read 'Donald F. Bracken, Jr.', is written over a horizontal line.

Donald F. Bracken, Jr., P.E.  
Presidentglenn

cc: Marybeth & Steven Bisson  
Glenn Wood Esq.



MAIN OFFICE:  
49 Herring Pond Road  
Buzzards Bay, MA 02532  
TEL: (508) 833-0070  
FAX: (508) 833-2282



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[www.brackeneng.com](http://www.brackeneng.com)

August 22, 2022

Bourne Board of Health  
Terri Guarino, RS, CHO  
24 Perry Avenue  
Bourne, MA 02532

**RE: 176 Scraggy Neck Road (Map 51.0, Parcel 1) Response to Horsley letter July 11, 2022**

Dear Members of the Board:

This letter is written in response to letter submitted to the Board dated July 11, 2022, by Scott W. Horsley who represents a group of abutters for the above referenced project.

The following are Mr. Horsley's comments in italics and my responses in red:

*General Comments: The project site is highly constrained by wetland resources areas. In fact, the entire project site is within protected wetland resources areas including salt marsh, coastal bank, and land subject to flooding (100-year floodplain). The proposed project will significantly increase the wastewater design flow by a factor of five (from 110 gallons/day to 550 gallons/day).*

This statement is not accurate and is misleading. The entire site is not within the protected resource areas listed. The site is within the jurisdictional buffer zones of the resource areas. Although there will be an increase in wastewater flow, the system has been designed to be significantly below the Board's standard of 5 parts per million (PPM) Nitrogen Loading rate. The proposed project is designed to have four bedrooms with a density of 21,752 sf of upland per bedroom, much greater than abutting properties in the area.

*The proposed septic system does not comply with the minimum setback distances in the Bourne Health Regulations or in the Title 5 state regulations. My specific comments are as follows.*

*1. The project does not comply with Bourne Health Regulations: The regulations require a 150-foot setback from both wetlands or watercourses. They state, "a 150 foot setback will be required for all leaching facilities from the edge of a wetland resource or watercourse, as defined in 10 CMR 15.01 Title I". The regulations also require a hydrogeologic study for a variance of less than 100 feet.*

*The Applicant is seeking 4 variances to allow reduced setbacks to Salt Marsh, for reduction from 12 to 49 feet. However, the Applicant has not applied for variances to reduce the setbacks from the two Coastal Bank Wetland Resource Areas associated with this site.*

*The Bourne Board of Health Regulations stipulate that minimum setbacks are from "a wetland resource" or "watercourse". These are two separate terms, and the required setbacks apply to either. No matter how "watercourse" was defined in a previous version of Title 5, "wetlands" are defined in the Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40) and the Regulations promulgated thereunder at 310 CMR 10.00. "Coastal Banks" have always been considered wetlands*



*under these state laws, and certainly were upon the passage of the Bourne Health Regulations in 1988. Furthermore, the current version of Title 5 clearly identifies Coastal Banks as wetlands where septic system setbacks are required (310 CMR 15.211). Accordingly, the project cannot proceed without obtaining additional variances to reduce setbacks to the two Coastal Banks on this site. The Applicant also has not quantified impacts to the Coastal Bank in this application.*

This statement is incorrect. The Regulation only refers to a wetland resource and watercourse per the old Title V which does include the word “wetland” in the definition of “watercourse.” As stated in the variance request, for setback requirements to a watercourse there is a footnote that specifies all distances shall be from the Mean High Water (MHW) in coastal areas. The intent of the regulation was to protect water resource areas that intersect with the water table. Coastal banks in this location are not impacted by the proposed septic system, see the attached report prepared by Stanley Humphries, Coastal Geologist. Nevertheless, the variance application will be revised to include the setbacks to the coastal banks shown on the plan. The Board has routinely granted this variance to coastal banks for repairs and new construction.

A Hydrogeologic Study is not required because we are over 100’ from the watercourse. There would be no purpose having a Hydrogeologic Study for being less than 100’ to a coastal bank to evaluate impacts on groundwater. The coastal banks in this situation are unrelated to groundwater flow, quality or potential impacts from the septic system.

*2. The project does not comply with Title 5: Title 5 requires a minimum 50-foot setback from coastal banks (310 CMR 15.211). The applicant has shown a 50-foot setback from one coastal bank but not from the second coastal bank on the property. In fact, the proposed septic system is located between two coastal banks and well within the 50-foot setback of the second coastal bank (see figure 1 below).*

This statement is also incorrect. Again, as stated in the variance request letter, the setback from the coastal bank is measured from the landward edge of the top of the coastal bank. There is no setback requirement in Title V to the toe of a coastal bank.

*Variance Criteria are not met: The applicant is requesting a variance from the local health regulations but has not requested one from the Title 5 requirements. The criteria for issuing variances is two-fold and both must be met: 1) manifest injustice, and 2) same degree of environmental protection (see excerpt from Title 5 below).*

As stated in the paragraph above, State Title V variances are not required.

*I do not believe that either of these criteria are met with the current proposal. The Title 5 reference to manifest injustice below refers to preventing “substantially all beneficial use of the subject property”. The property currently has a one-bedroom cottage on the property. A smaller redevelopment project that would relocate a similar-sized structure with similar wastewater discharge that achieves some improved setbacks from wetlands and watercourses would be reasonable. Further, there is no manifest injustice “considering all of the relevant facts and circumstances of the individual case.” where the*





*subject property is held in common ownership with adjoining land at 178 Scraggy Neck Road and 180 Scraggy Neck Road, each of which already contains a single-family home.*

Although a Title V variance is not technically required, the project would meet the criteria above. Beneficial use of the property is subjective and should be relative to the size, location, and value of the property. The property directly south of the locus (170 Scraggy Neck Road) has 6 bedrooms on 1.5 acres and the property to the east (168 Scraggy neck) has 4 bedrooms on 1 acre. This is typical for this area. The proposed development on this 7-acre lot is far less dense than abutting properties in the area. To suggest that the property should be limited to the existing one-bedroom flow is unreasonable when one considers the facts in this case which include replacing an old cesspool close to the marsh with a septic treatment system that produces a nitrogen load well below the Board's standard. Most importantly, this resource is a coastal bank with an elevation above the soil absorption system (SAS). There is no possible way that the SAS could impact this resource area.

The fact this property is in the same ownership as the abutting property has absolutely no relevance.

*The proposed project includes a five-fold expansion of the septic system (from 110 gallons/day to 550 gallons/day). The applicant is suggesting that the use of an innovative and alternative (I&A) septic technology compensates for this increase in wastewater discharge. However, this is not true.*

We disagree. If one compares the impact of the existing cesspool close to the marsh and the fact that the effluent will be treated and have a longer travel time to the marsh, there is a substantial benefit. This should not be a matter of comparing existing flows and nitrogen loading rates or volumes, the fact is the design complies with the town's nitrogen loading standards and this project would be approvable even if it was a vacant lot based on experience with this Board.

*The proposed I&A septic technology has an estimated 19 mg N/liter effluent compared to a standard Title 5 system estimated at 26.25 mg N/liter (Massachusetts Estuary Project). To determine if the proposed project will provide "the same degree of environmental protection" I have prepared the following comparative nitrogen loading calculations (see Table 1 below). My analysis indicates that nitrogen loading will increase from 10,929 mg/day to 38,553 mg/day or by 262 percent. Therefore, the proposed project (including the I&A system) does not meet the criterion of "same degree of environmental protection".*

The nitrogen loading rate used in Bourne per the Town's calculation sheet is 35 ppm not the 26.25 ppm used by Mr. Horsley in his calculation from another reference. This is an obvious attempt to make the numbers appear worse than they are, and these calculations should be disregarded. If we are going to compare the nitrogen loading of the existing system with the proposed system, then all factors for a comparison need to be considered. The existing cesspool is only 31' from the marsh with the bottom only a few feet above the water table. The bottom effluent loading rate based on 110 gallons per day (GPD) is about 2.2 GPD per square foot of untreated sewage. The proposed system at 440 GPD has a significantly lower loading of about 0.9 GPD per square foot of treated effluent. The cesspool results in a more direct flow path into the groundwater and to the marsh. There are minimal dilution factors between the cesspool and marsh. The flow from the proposed system which is over 100' from the marsh shall be well mixed over a much larger area between the SAS and the marsh. When the cesspool is removed and the new



system is installed, although there will be an increase in flow, there will be a significant reduction in the concentration of pollutants entering the marsh.

Again, this cannot be viewed as just a comparison of nitrogen loading as Mr. Horsley has done. Furthermore, the density of this project is one bedroom per 21,752 square feet of upland area which is much higher than most properties in this area including the properties that Mr. Horsley represents.

*The proposed project would also compromise the horizontal setback and groundwater travel time to the regulated "watercourses" by one third (101 feet versus 150 feet). The Bourne Regulation states that the basis for this minimum setback is related to "contaminant transport rates".*

It is understood that the longer the travel time the better the dilution for lowering the nitrogen concentration. The proposed system will allow better treatment and more protection to the groundwater than a system that is 150' from a watercourse.

*In addition to the nitrogen, there are two additional contaminants of concern associated with wastewater discharges near coastal water and shellfishing areas - pathogens and contaminants of emerging concern (CECs). No additional treatment is proposed for these pollutants despite the fact that the project will result a five-fold increase in mass loading of these pollutants. Therefore, the proposed project does not meet the criterion of "same degree of environmental protection".*

This is also an inaccurate statement. The Board does require additional treatment in the form of pressure dosing. We are proposing a Presby system which functionally is equivalent to pressure dosing. This proposed design is consistent with the variances approved in the past.

#### 4. Summary:

A. *The proposed project does not meet the minimum setback requirements required by the Bourne Health Regulations or Title 5.*

An obvious statement considering we are asking for a variance to the local regulations.

B. *The applicant has applied for variances from the local health regulations but has not applied for a variance from Title 5.*

Not required based on my explanation above.

C. *The two-fold test for variances include: 1) manifest injustice, and 2) same degree of environmental protection. Neither of these criteria are satisfied.*

Not required due to the fact we do not need a state variance. However, as I responded above the project would meet this criterion.



*D. The proposed project will increase nitrogen loading by 262% and will compromise the minimum horizontal setbacks required to maintain safe contaminant transport by 33%.*

*This is irrelevant because the project meets the Board's standard and is an improvement over existing condition. The actual loading increase is from the nitrogen loading 1.5 ppm to 2.5 ppm which is 67%,*

Thank you for your time and consideration on this matter. We look forward to reviewing this project with the Board of Health at the next scheduled Public Hearing. Should you have any questions regarding this project or require any further information please contact the undersigned at 508-833-0070 [don@brackeneng.com](mailto:don@brackeneng.com).

Sincerely,

**BRACKEN ENGINEERING, INC.**

A handwritten signature in black ink, appearing to read 'Donald F. Bracken, Jr.', written in a cursive style.

---

Donald F. Bracken, Jr., P.E.  
President

cc: Marybeth & Steven Bisson  
Glenn Wood Esq.



# Town of Bourne

## Conservation Commission

### Nitrogen Loading Calculation Sheet for Residential Housing

The following calculation sheet is based upon Technical Bulletin 91-001 issued by the Cape Cod Commission and deals with nitrate nitrogen (NO<sub>3</sub>-N) Use the information from your PLAN OF RECORD to provide the following:

#### 176 Scraggy Neck Road (Existing Conditions)

Number of Bedrooms (Title 5 Definition)	=	1	Bedrooms
Lot Size (in square feet of upland areas)	=	87,006	sq.ft. Upland
Impervious Surfaces;**roof area	=	985	sq.ft.
**Paved Area	=	-	sq.ft.
Natural Area = lot area minus all impervious surfaces	=	86,021	sq.ft.
Lawn Area in sq. ft.	=	8,917	sq.ft.

TITLE 5 FLOW = 110 GAL./ DAY PER BEDROOM

#### WASTEWATER FLOWS (NITROGEN LOAD & WATER LOAD)

Nitrogen from Title 5 design = 14,572 mg NO<sub>3</sub>-N / day / bedroom: or 7911 mg NO<sub>3</sub>-N / day/ bedroom with IA Treatment

Water from Title 5 design = 416.3 H<sub>2</sub>O / day / bedroom

1a) Number of bedrooms = 1 x 14572 = 14572.00 mg. NO<sub>3</sub>-N / day

1b) Number of bedrooms = 1 x 416 = 416.00 L H<sub>2</sub>O / day

Actual Nitrogen load = 6071.5 mg NO<sub>3</sub>-N / day/ bedroom: 3296 mg NO<sub>3</sub>-N / day/ bedroom with IA Treatment

Actual Water load = 173.5 L H<sub>2</sub>O / day / bedroom

\*Note: This assumes 2.5 people / unit average occupancy within the Town

2a) Number of bedrooms = 1 x 6071.5 = 6071.50 mg. NO<sub>3</sub>-N / day

2b) Number of bedrooms = 1 x 173.5 = 173.50 L H<sub>2</sub>O / day

#### IMPERVIOUS SURFACES (NITROGEN LOAD & WATER LOAD)

NO<sub>3</sub>-N load number sq. ft. of roof surface X 0.19395 mg NO<sub>3</sub>-N / sq. ft.

H<sub>2</sub>O load number sq. ft. of roof surface X 0.2586 L / sq. ft.

3a) Roof surface = 985 sq. ft. X 0.19395 = 191.04 mg NO<sub>3</sub>-N

3b) Roof surface = 985 sq. ft. X 0.2586 = 254.72 L H<sub>2</sub>O / day

NO<sub>3</sub>-N load number sq. ft. of paved surface X 0.388 mg / sq. ft.

H<sub>2</sub>O load number sq. ft. of paved surface X 0.2586 L / sq. ft.

4a) NO<sub>3</sub>-N = 0 sq. ft. paved surface X 0.388 mg / sq. ft. = 0.00 mg NO<sub>3</sub>-N

4b) H<sub>2</sub>O = 0 sq. ft. paved surface X 0.2586 L / sq. ft. = 0.00 L H<sub>2</sub>O

LAWN NITROGEN LOADING = 0.933 mg / sq. ft. lawn surface

$$5) \text{ sq. ft. of lawn} = 8917 \times 0.933 = 8319.56 \text{ mg}$$

NATURAL AREA WATER LOADING

$$\text{Natural area} = \text{lot size} - \text{impervious surfaces} = 86021 \text{ sq. ft.}$$

$$6) \text{ Natural area} = 86021 \times \text{water recharge factor} = 11681.65 \text{ L}$$

(0.1358 L / sq. ft. for Bourne)

### SUMMARY OF NITROGEN LOADING

#### Estimated Title 5 Nitrogen & Water Loading

7a) ADD the above NO<sub>3</sub>N load

1a	(+)	3a	(+)	4a	(+)	5	
14572		191.04		0.00		8319.56	23082.60 mg NO <sub>3</sub> -N / day

7b)

1b	(+)	3b	(+)	4b	(+)	6	
416		254.72		0.00		11681.65	12352.37 L H <sub>2</sub> O / day

$$7c) \text{ DIVIDE 7a by 7b} = \underline{1.9} \text{ ppm NO}_3\text{-N}^{*****}$$

#### Actual Nitrogen & Water Loading

8a) ADD the above NO<sub>3</sub>N load:

2a	(+)	3a	(+)	4a	(+)	5	
6071.5		191.04		0.00		8319.56	<u>14582.10</u> mg NO <sub>3</sub> -N / day

8b) ADD the above water (H<sub>2</sub>O) load:

2b	(+)	3b	(+)	4b	(+)	6	
173.5		254.72		0.00		11681.7	<u>12109.87</u> L H <sub>2</sub> O / day

$$8c) \text{ DIVIDE 8a by 8b} = \underline{1.2} \text{ ppm NO}_3\text{-N}^{*****}$$

$$\text{FINAL CALCULATION ADD 7c \& 8c (ppm)} = \underline{3.1} \text{ divide by 2} = \underline{1.5} \text{ ppm NO}_3\text{-N}$$

This is the actual nitrate nitrogen load for the project as designed. The target for coastal areas is 5 ppm nitrate nitrogen. Certain critical embayments may require a LOWER figure to prevent degradation.

\*\*\*\*\*If your nitrate nitrogen load exceeds the target limit USE A SECOND CALCULATION SHEET TO SHOW ALTERNATIVES IN TRYING TO ACHIEVE THE 5 PPM NITRATE NITROGEN LEVEL \*\*\*

# Town of Bourne

## Nitrogen Loading Calculation Sheet for Residential Housing

The following calculation sheet is based upon Technical Bulletin 91-001 issued by the Cape Cod Commission and deals with nitrate nitrogen (NO<sub>3</sub>-N) Use the information from your PLAN OF RECORD to provide the following:

### 176 Scraggy Neck Road - Proposed Conditions

Number of Bedrooms (Title 5 Definition)	=	4	Bedrooms
Lot Size (in square feet of upland areas)	=	87,006	sq.ft.
Impervious Surfaces;**roof area= 4,786 sq.ft.	=	-	sq.ft.
Natural Area = lot area minus all impervious surfaces	=	82,220	sq.ft.
Lawn Area in sq. ft.	=	7,410	sq.ft.

TITLE 5 FLOW = 110 GAL./ DAY PER BEDROOM

WASTEWATER FLOWS (NITROGEN LOAD & WATER LOAD)

Nitrogen from Title 5 design = 14,572 mg NO<sub>3</sub>-N / day / bedroom: or 7911 mg NO<sub>3</sub>-N / day/ bedroom with IA Treatment

Water from Title 5 design = 416.3 H<sub>2</sub>O / day / bedroom

1a) Number of bedrooms = 4 x 7911 = 31644.00 mg. NO<sub>3</sub>-N / day

1b) Number of bedrooms = 4 x 416 = 1664.00 L H<sub>2</sub>O / day

Actual Nitrogen load = 6071.5 mg NO<sub>3</sub>-N / day/ bedroom: 3296 mg NO<sub>3</sub>-N / day/ bedroom with IA Treatment

Actual Water load = 173.5 L H<sub>2</sub>O / day / bedroom

\*Note: This assumes 2.5 people / unit average occupancy within the Town

2a) Number of bedrooms = 4 x 3296 = 13184.00 mg. NO<sub>3</sub>-N / day

2b) Number of bedrooms = 4 x 173.5 = 694.00 L H<sub>2</sub>O / day

IMPERVIOUS SURFACES (NITROGEN LOAD & WATER LOAD)

NO<sub>3</sub>-N load number sq. ft. of roof surface X 0.19395 mg NO<sub>3</sub>-N / sq. ft.

H<sub>2</sub>O load number sq. ft. of roof surface X 0.2586 L / sq. ft.

3a) Roof surface = 4786 sq. ft. X 0.19395 = 928.24 mg NO<sub>3</sub>-N

3b) Roof surface = 4786 sq. ft. X 0.2586 = 1237.66 L H<sub>2</sub>O / day

NO<sub>3</sub>-N load number sq. ft. of paved surface X 0.388 mg / sq. ft.

H<sub>2</sub>O load number sq. ft. of paved surface X 0.2586 L / sq. ft.

4a) NO<sub>3</sub>-N = - sq. ft. paved surface X 0.388 mg / sq. ft. 0.00 mg NO<sub>3</sub>-N

4b) H<sub>2</sub>O = - sq. ft. paved surface X 0.2586 L / sq. ft. 0.00 L H<sub>2</sub>O



LAWN NITROGEN LOADING = 0.933 mg / sq. ft. lawn surface

$$5) \text{ sq. ft. of lawn} = 7410 \times 0.933 = 6913.53 \text{ mg}$$

NATURAL AREA WATER LOADING

$$\text{Natural area} = \text{lot size} - \text{impervious surfaces} = 82220 \text{ sq. ft.}$$

$$6) \text{ Natural area} = 82220 \times \text{water recharge factor} = 11165.48 \text{ L}$$

(0.1358 L / sq. ft. for Bourne)

### SUMMARY OF NITROGEN LOADING

#### Estimated Title 5 Nitrogen & Water Loading

7a) ADD the above NO<sub>3</sub>N load

1a	(+)	3a	(+)	4a	(+)	5	
31644		928.24		0.00		6913.53	39485.77 mg NO <sub>3</sub> -N / day

7b)

1b	(+)	3b	(+)	4b	(+)	6	
1664		1237.66		0.00		11165.48	14067.14 L H <sub>2</sub> O / day

$$7c) \text{ DIVIDE 7a by 7b} = \underline{2.8} \text{ ppm NO}_3\text{-N}^{*****}$$

#### Actual Nitrogen & Water Loading

8a) ADD the above NO<sub>3</sub>N load:

2a	(+)	3a	(+)	4a	(+)	5	
13184		928.24		0.00		6913.53	<u>21025.77</u> mg NO <sub>3</sub> -N / day

8b) ADD the above water (H<sub>2</sub>O) load:

2b	(+)	3b	(+)	4b	(+)	6	
694		1237.66		0.00		11165.5	<u>13097.14</u> L H <sub>2</sub> O / day

$$8c) \text{ DIVIDE 8a by 8b} = \underline{1.6} \text{ ppm NO}_3\text{-N}^{*****}$$

$$\text{FINAL CALCULATION ADD 7c \& 8c (ppm)} = \underline{4.4} \text{ divide by 2} = \underline{2.2} \text{ ppm NO}_3\text{-N}$$

This is the actual nitrate nitrogen load for the project as designed. The target for coastal areas is 5 ppm nitrate nitrogen. Certain critical embayments may require a LOWER figure to prevent degradation.

\*\*\*\*\*If your nitrate nitrogen load exceeds the target limit USE A SECOND CALCULATION SHEET TO SHOW ALTERNATIVES IN TRYING TO ACHIEVE THE 5 PPM NITRATE NITROGEN LEVEL\*\*\*



Environmental Consulting & Restoration, LLC



August 19, 2022

Bourne Board of Health  
Terri Guarino, RS, CHO  
24 Perry Avenue  
Bourne, MA 02532

**RE: Response to Horsley letter July 11, 2022  
176 Scraggy Neck Road (Map 51.0, Parcel 1)**

Dear Members of the Board:

Please accept this letter as a review of plan revisions to the May 16, 2022 *Proposed Conditions Plan* and a response to the July 11, 2022 letter submitted by Scott W. Horsley.

Environmental Consulting and Restoration, LLC. (ECR) was retained by Bracken Engineering, Inc. to review updated modifications to the NOI application from LEC, recent plan revisions and opposition comments. This project review is based on my training and experience over the past 45+ years in coastal geomorphology and floodplain management.

The site generally consists of an upland promontory surrounded by a combination of Salt Marsh, Coastal Bank(s), and Land Subject to Coastal Storm Flowage. The upland comprises very stable glacial deposits, Carver coarse sand, 8 to 15 percent slopes and a variety of vegetation. The floodplain has been mapped by FEMA as a Zone AE (el. 15). The Coastal Banks have been properly delineated and characterized on the plan using the DEP Wetlands Policy 92-1 and the local wetlands bylaw regulation, section BRW 1.02(g). The function of these banks is exclusively limited to a vertical buffer for storm waters. Supplying sediment to any adjacent coastal beaches, dunes or barrier beaches is not a function of these banks. There are no signs or evidence of erosion on the slopes or bottom of these banks due to coastal flooding, stormwater runoff or groundwater breakout. The Coastal Banks are vegetated and very stable.

But for maintenance of an existing gravel driveway and restoration/mitigation plantings in a secondary Coastal Bank, no work is proposed directly in a resource area that is regulated by state and local wetland performance standards. All components of the proposed septic system will be located over 100 feet from Mean High Water (MHW), over 100 feet from the Salt Marsh, and over 50 feet from the two primary Coastal Banks, located east and west of the proposed system. The tops of these banks are located at elevations 3-5 feet above the soil absorption system (SAS) and the bottoms of the banks are located 2.5-3 feet above groundwater at the Salt Marsh/Coastal Bank boundary. Therefore, construction and performance of the septic system will not have an adverse impact on the delineated resource areas.

Mr. Horsley submitted a copy of the shoreline change map produced by MA Coastal Zone Management Office to bring attention to the receding shorelines. Mapping of MHW location along transects in sandy, unvegetated shorelines is the purpose of these maps. The map does not show any transect data landward of the Salt Marsh which abuts the bottom of the primary Coastal Bank flanking the west side of the property nor the embayment flanking the east side of the property. Mapping of historical shorelines within a Salt Marsh is highly suspect because of the dense vegetation and any future impacts of the redevelopment project (e.g., sewage disposal) that may be implied or otherwise are without merit.

In my professional opinion, the function of these Coastal Banks will be no less important than they currently are and, even with sea level rise, the septic system will be located well below any erosion impacts that may occur at the marsh/bank boundary or on the face of the banks. More importantly, the septic system install and future use will in no way adversely impact the CB through erosion/destabilization.

Upon review of this supplemental information, please contact me at (617) 543-1654 or [stan@ecrwetlands.com](mailto:stan@ecrwetlands.com) with any questions or requests for additional information.

Sincerely,  
**Environmental Consulting & Restoration, LLC**

*Stan Humphries*

Stan Humphries  
Coastal Geologist

# **EXHIBIT 5**

# The Commonwealth of Massachusetts

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING



310 CMR 11.00 - 17.00

Office of the Secretary of State  
Michael Joseph Conolly, Secretary

\$2.25

PLU #17

91887





The Commonwealth of Massachusetts  
SECRETARY OF STATE

# REGULATION FILING AND PUBLICATION

1. REGULATION CHAPTER NUMBER AND HEADING:

310 CMR 11.00 - 17.00

2. NAME OF AGENCY:

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

3. THIS DOCUMENT IS REPRINTED FROM THE CODE OF MASSACHUSETTS REGULATIONS AND CONTAINS THE FOLLOWING:

310 CMR 11.00 ENVIRONMENTAL CODE TITLE I: GENERAL APPLICATION AND ADMINISTRATION  
12.00 - 14.00 RESERVED  
15.00 THE STATE ENVIRONMENTAL CODE TITLE V: MINIMUM REQUIREMENTS FOR  
THE SUBSURFACE DISPOSAL OF SANITARY SEWAGE  
16.00 - 17.00 RESERVED

UNDER THE PROVISIONS OF MASSACHUSETTS GENERAL LAWS, CHAPTER 30A, SECTION 6 AND CHAPTER 233, SECTION 75 THIS DOCUMENT MAY BE USED AS EVIDENCE OF THE ORIGINAL DOCUMENTS ON FILE WITH THE STATE SECRETARY.

COMPILED AS IN FULL FORCE AND EFFECT 12/31/86

A TRUE COPY, ATTEST:

*Michael Joseph Connolly*  
MICHAEL JOSEPH CONNOLLY,

SECRETARY OF STATE

310 CMR: DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

310 CMR 11.00: GENERAL APPLICATION AND ADMINISTRATION ENVIRONMENTAL  
CODE, TITLE 1

Section

- 11.01: Scope of Application; Effective Date
- 11.02: Local Rules and Regulations
- 11.03: Inspection -- Interference
- 11.04: Methods of Enforcement by Local Boards of Health
- 11.05: Emergency
- 11.06: Enforcement by the Department of Environmental Quality Engineering of  
Commonwealth
- 11.07: Service of Orders
- 11.08: Hearing
- 11.09: Appeal
- 11.10: Penalties
- 11.11: Variance
- 11.12: Variance, Grant of Special Permission: Expiration, Modification, Suspension of
- 11.13: Partial Invalidity

11.01: Scope of Application; Effective Date

(1) Application. The State Environmental Code shall apply throughout the Commonwealth unless and to the extent that the provisions of any title are expressly limited.

(2) Effective Date. This title shall be effective and have the force of law upon filing with the Secretary of State. Every other title shall be effective and have the force of law in accordance with the provisions of each. If a title fails to state a date from when it is to be effective, it shall become effective from the day following the date it is filed with the Secretary of State.

11.02: Local Rules and Regulations

Unless otherwise expressly provided in any other title, the legally designated health authority of any city, town, county or other legally constituted governmental unit within the Commonwealth having the usual powers and duties of the board of health may, as it considers necessary to promote and protect the health and well being of the particular locality under its jurisdiction, adopt under its own legal power as exists in the General Laws any rules or regulations containing requirements stricter than those contained in this code. Nor should the existence of this code limit or otherwise affect the power of any health authority with respect to any matter for which this code makes no provision.

11.03: Inspection -- Interference

(1) Inspection. In order properly to carry out their respective responsibilities under this code and properly to protect the health, environment and well-being of the people of the Commonwealth, the board of health and the Department of Environmental Quality Engineering or the authorized agent or representative of either are authorized to enter, examine, or survey at any reasonable time such places as they consider necessary, and otherwise to conduct such examination or survey as is expressly provided in any other title.

(2) Interference. If any owner, occupant, or other person refuses, impedes, inhibits, interferes with, restricts, or obstructs entry and free access to every part of the structure, operation or premise where inspection authorized by this code is sought, the board of health or the Commissioner of the Department of Environmental Quality Engineering or the authorized agency or representative of either may:

- (a) seek in a court of competent jurisdiction a search warrant so as to apprise the owner, occupant or other person concerning the nature of the inspection and justification for it and may seek the assistance of police authorities in presenting said warrant and/or

11.03: continued

(b) revoke or suspend any license, permit or other permission regulated under this code where inspection of the structure, operation or premises is sought to determine compliance with this code.

11.04: Methods of Enforcement by Local Boards of Health

Unless otherwise expressly provided in any title of this code, each board of health may enforce this code by fine in accordance with 310 CMR 11.10, or otherwise at law or in equity in the same manner that local rules and regulations are enforced.

11.05: Emergency

(1) General. Whenever an emergency exists in which the interest of protecting the public health or the environment requires that ordinary procedures be dispensed with, the board of health or its authorized agent, acting in accordance with the provisions of Section 30 of Chapter 111 of the General Laws, may, without notice or hearing, issue an order reciting the existence of the emergency and requiring that such action be taken as the board of health deems necessary to meet the emergency. Notwithstanding any other provision of this code, any person to whom such order is directed shall comply therewith within the time specified in the order. Each day's failure to comply with the order shall constitute a separate offense. Upon compliance with the order and within seven days after the day the order has been served, he may file a written petition in the office of the board of health requesting a hearing. He shall be granted a hearing as soon as possible. The procedures for such hearing shall otherwise conform with the hearing requirements which would have existed had the order been issued under non-emergency circumstances.

(2) Emergency Powers of the Department. No provision of this regulation shall be construed as a limitation on the emergency powers of the Department of Environmental Quality Engineering of the Commonwealth.

11.06: Enforcement by Department of Environmental Quality Engineering of the Commonwealth

(1) General. If as a result of any study, inspection, or survey made under 310 CMR 11.03 or under the provisions of any other title of this code the Commissioner of Environmental Quality Engineering or his authorized representative determines that compliance with this code has not been effected, he shall, in writing, notify the appropriate board of health of such determination, allotting a reasonable time in which compliance shall be effected, and requesting that the board of health, in writing, notify the Commissioner of Environmental Quality Engineering of what action it has taken, and what other action has been taken to effect compliance with this code. If the Commissioner is not so notified, or if after notification he determines that action sufficient to effect compliance with the provisions of this code has not been taken, the local board of health shall be deemed to have failed to effect compliance with this code.

(2) Failure to Enforce Code by Board of Health. Whenever any local board of health has failed after a reasonable length of time to enforce this code, the Commissioner of Environmental Quality Engineering of the Commonwealth or his designated representative may act for the Commonwealth in any way that the local board of health is authorized to act to effect compliance.

11.07: Service of Orders

Unless otherwise stated in any title of this code, orders issued under the provisions of this code shall be served on all persons responsible for the violation of regulations. These orders shall be served in the following manner:

- (a) personally, by any person authorized to serve civil process, or
- (b) by any person authorized to serve civil process by leaving a copy of the order at his last and usual place of abode, or

11.07: continued

- (c) by sending him a copy of the order by registered or certified mail, return receipt requested, if he is within the Commonwealth, or
- (d) if his last and usual place of abode is unknown or outside the Commonwealth, by posting a copy of the order in a conspicuous place on or about the premises and by advertising it for at least three out of five consecutive days in one or more newspapers of general circulation within the municipality wherein the building or premises affected is situated.

11.08: Hearing

- (1) Procedure for Requesting and Holding Hearing. Unless otherwise specified in this code, the person or persons to whom any order has been served pursuant to any regulation of this code may request a hearing before the board of health by filing with the board of health within 7 days after the day the order was served, a written petition requesting a hearing on the matter. Upon receipt of such petition, the board of health shall set a time and place for such hearing and shall inform the petitioner thereof in writing. The hearing shall be commenced not later than 30 days after the day on which the order was served. The board of health, upon application of the petitioner, may postpone the date of hearing for a reasonable time beyond such 30-day period if in the judgment of the board of health the petitioner has submitted a good and sufficient reason for such postponement.
- (2) Hearing of Petitioner. At the hearing the petitioner shall be given an opportunity to be heard and to show why the order should be modified or withdrawn.
- (3) Procedure by the Board After Hearing. After the hearing the board of health shall sustain, modify, or withdraw the order and shall inform the petitioner in writing of its decision. If the board of health sustains or modifies the order, it shall be carried out within the time period allotted in the original order or in the modification.
- (4) Public Record. Every notice, order, or other record prepared by the board of health in connection with the hearing shall be entered as a matter of public record in the office of the clerk of the city or town, or in the office of the board of health.
- (5) Hearing Petition Not Submitted, or Sustaining of Order. If a written petition for a hearing is not filed with the board of health within 7 days after the day an order has been served or if after a hearing the order has been sustained in any part, each day's failure to comply with the order as issued or modified shall constitute an additional offense.

11.09: Appeal

Any person aggrieved by the final decision of the board of health with respect to the denial of plan approval, the denial of revocation or failure to renew a license, or with respect to any order issued under the provisions of this code may seek relief therefrom in any court of competent jurisdiction, as provided by the laws of this Commonwealth.

11.10: Penalties

- (1) Interference After Search Warrant Presented. Any owner, occupant, or other person who refuses, impedes, inhibits, interferes with, restricts or obstructs entry and free access to every part of the structure, operation or premises where inspection authorized by this code is sought after a search warrant has been obtained and presented in accordance with 310 CMR 11.03(2) shall be fined not less than ten nor more than five hundred dollars.
- (2) Failure to Comply With an Order. Any person who shall fail to comply with any order issued pursuant to the provisions of this code shall upon conviction be fined not less than ten nor more than five hundred dollars. Each day's failure to comply with an order shall constitute a separate violation.

310 CMR: DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

11.10: continued

(3) Penalties Not Otherwise Provided. Any person who shall violate any provision of this code for which penalty is not otherwise provided in any of the General Laws or in any other provision of this code shall upon conviction be fined not less than ten nor more than five hundred dollars.

11.11: Variance

The board of health may vary the application of any provision of this article with respect to any particular case when, in its opinion, the enforcement thereof would do manifest injustice; provided, that the decision of the board of health shall not conflict with the spirit of these minimum standards. Any variance granted by the board of health shall be in writing. A copy of any such variance shall, while it is in effect, be available to the public at all reasonable hours in the office of the clerk of the city or town, or in the office of the board of health, and notice of the grant of variance shall be filed with the Commissioner of Environmental Quality Engineering of the Commonwealth.

11.12: Variance, Grant of Special Permission: Expiration, Modification, Suspension of

Any variance or other modification authorized to be made by this Title may be subject to such qualification, revocation, suspension, or expiration as the board of health or Commissioner of Environmental Quality Engineering expresses in its grant. A variance or other modification authorized to be made by this Title may otherwise be revoked, modified, or suspended, in whole or in part, only after the holder thereof has been notified in writing and has been given an opportunity to be heard, in conformity with the requirements for an order and hearing of 310 CMR 11.07 and 11.08.

11.13: Partial Invalidity

If any Title, regulation, paragraph, sentence, clause, phrase, or word of this code shall be declared invalid for any reason whatsoever, that decision shall not affect any other portion of this code, which shall remain in full force and effect; and to this end the provisions of this code are hereby declared severable.

REGULATORY AUTHORITY

310 CMR 11.00: M. G. L. c. 21A, s. 13.



(310 CMR 12.00 THROUGH 14.00: Reserved)

NON-TEXT PAGE

310 CMR: DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

310 CMR 15.00: MINIMUM REQUIREMENTS FOR THE SUBSURFACE DISPOSAL OF  
SANITARY SEWAGE STATE ENVIRONMENTAL CODE, TITLE 5

Section

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310 CMR 15.00, Title 5 of the Massachusetts State Environmental Code has been promulgated to provide minimum standards for the protection of public health and the environment when circumstances require the use of individual systems for the disposal of sanitary sewage in areas where municipal sewage systems are not accessible. The following rules, regulations, and standards are deemed by the Department of Environmental Quality Engineering to be generally adequate to protect the public health and the environment in the interests of present and future citizens of the Commonwealth.

Specific, identifiable local conditions may require more stringent regulations to protect these interests. However, in the absence of such specific conditions, the following Code when properly enforced, should afford adequate protection. In general, enforcement, proper care and maintenance, rather than more stringent regulation, are the best means to assure that such systems will serve the purpose intended and prevent danger to public health and the environment.

PART I: SUBSTANTIVE PROVISIONS

15.01: Definitions

The words, terms, or phrases listed below for the purpose of this Title shall be defined and interpreted as follows:

Approving Authority. The legally constituted body having the rightful power to permit, certify, or approve works for the disposal of sewage or for the treatment of sewage or industrial wastes.

15.01: continued

Building Sewer. The pipe which begins 10 feet outside the inner face of the building wall and extends to a public sewer, septic tank, or other place of sewage disposal.

Cellar Wall. The inside of the cellar wall above the footings and below the ground surface.

Cesspool. A covered pit with open-jointed lining in its bottom portions into which raw sewage is discharged, the liquid portion of the sewage being disposed of by seeping or leaching in the surrounding porous soil, and the solids or sludge being retained in the pit to undergo partial decomposition before occasional or intermittent removal.

Coastal Wetland, shall mean any bank, marsh, swamp, flat or other lowland subject to tidal action.

Cover Material. The earth materials placed on top of leaching facilities to bring the area to finish grade.

Designer. The person authorized by law to prepare plans for subsurface sewage disposal facilities for submittal to public agencies.

Deep Observation Hole. An open pit dug to permit the examination of the soil and to determine the ground water elevation.

Disposal Works Installer. Any person, firm, corporation, or contractor who installs, alters, constructs, or repairs individual sewage disposal systems.

Distribution Box. A watertight structure which receives settled sewage and distributes it in substantially equal portions to two or more lines leading to a leaching area.

Distribution Line. The pipe used for dispersion of sewage into leaching trenches or leaching fields.

Dosing Tank. A watertight structure placed between a septic tank and distribution box, and equipped with a siphon or a pump designed to discharge settled sewage intermittently to a leaching facility and to provide a rest period between such discharges.

Fill. The earth materials placed beneath and around a leaching facility.

Grease Trap. A watertight structure in which grease is separate from sewage.

Grey Water. Sanitary sewage, excluding the waste discharges from water closets, i.e., any water-carried putrescible waste resulting from the discharge of laundry tubs, washing machines, sinks, showers, dishwashers, or any other source.

Ground Water Elevation. That elevation at which water is observed weeping or flowing from the walls of or standing in a deep observation hole.

H-20 Loading. Standard H-20 truck loading as specified by the American Association of State Highway Officials.

Humus Toilet. A self-contained toilet from which no liquid or solid waste materials are regularly discharged and from which a humus-like end product is produced.

Impervious Material. Material having a percolation rate greater than 30 minutes per inch, including, but not limited to bedrock, peat, loam and organic matter.

Individual Sewage Disposal System. A subsurface sewage disposal system owned and operated by a person as defined in this regulation.



15.01: continued

Industrial Waste. Any water carried or liquid waste resulting from any process of industry, manufacture, trade, or business, or from the development or recovery of any natural resource.

Invert. The lowest portion of the internal cross section of a pipe.

Leaching Facility. An approved structure used for the dispersion of sewage effluent into the soil. These include leaching pits, galleries, chambers, trenches, and fields as described in 310 CMR 15.11 through 15.15.

Lot. An area of land in one ownership, with definite boundaries.

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. This level is usually reached during the months of December through April, and allowances should be made therefore at other times of the year.

Mean High Water. The average of the (tidal) high waters over a 19 year period.

Multiple Compartment Tanks. A septic tank containing more than one settling compartment in series.

Open Drain. Any ditch used for the conveyance of water.

Owner. Every person who alone, or jointly, or severally with others (a) has legal title to any dwelling or dwelling unit, or (b) has care, charge, or control of any dwelling or dwelling unit as agent, executor, executrix, administrator, administratrix, trustee, lessee, or guardian of the estate of the holder of legal title. Each such person thus representing the holder of legal title is bound to comply with the provisions of these minimum standards as if he were the owner. Owner also means every person who operates a rooming house.

Percolation Test. A means of determining the suitability of soil for the subsurface disposal of sewage.

Person. Every individual, partnership, corporation, firm, association, or group, including a city, town, county, the Commonwealth, or other governmental unit, owning property or carrying on an activity regulated by this Title.

Privy. A structure used for the disposal of excreta without water transport. It consists of a shelter built above a pit or vault in the ground into which excrement is deposited.

Reserve Area. An additional area of at least equal capacity as the original sewage disposal area, suitable for subsurface sewage disposal, and upon which no permanent structures will be constructed.

Sanitary Sewage. Any water-carried putrescible waste resulting from the discharge of water closets, laundry tubs, washing machines, sinks, showers, dishwashers, or any other source.

Sanitary Sewer. A pipe which carries sewage without storm, surface, or ground waters.

Scum. A mass of solids floating at the surface of a septic tank.

Septage. That material removed from any part of an individual sewage disposal system.

Septic Tank. A watertight receptacle which receives the discharge of sewage from a building sewer, and is designed and constructed so as to permit the retention of scum and sludge, digestion of the organic matter, and discharge of the liquid portion to a leaching facility.

15.01: continued

Sewage. Sewage means sanitary sewage.

Sewage Disposal Area. The area used for subsurface dispersion of the liquid portion of sewage.

Subsurface Drain. Any underground conduit used for the conveyance of water, including curtain drain.

Swamp. shall mean areas where ground water is at or near the surface of the ground for a significant part of the growing season or where runoff water from surface drainage frequently collects above the soil surface.

Watercourse. Any natural or man-made stream, pond, lake, wetland, coastal wetland, swamp or other body of water and shall include wet meadows, marshes, swamps, bogs and areas where ground water, flowing or standing surface water or ice provide a significant part of the supporting substrate for a plant community for at least five months of the year.

15.02: General Requirements\*

(1) Disposal Works Construction Permit. No individual sewage disposal system or other means of sewage disposal shall be located, constructed, altered, repaired, or installed where a common sanitary sewer is accessible adjoining the property and where permission to enter such sewer can be obtained from the authority having jurisdiction over it (310 CMR 15.03(11)) or if a common sanitary sewer is not accessible until a permit for its location, construction, alteration, repair, or installation shall have been issued by the Board of Health. A permit shall not be issued for any system of individual sewage disposal when the total volume of the sewage to be disposed of on any lot is in excess of 15,000 gallons per day, or where sewage treatment facilities are proposed on the lot to be served, until the plans for such system have been approved by the Massachusetts Department of Environmental Quality Engineering in accordance with M.G.L. c. 111, s. 17. Where sewage flows on a lot exceed 15,000 gallons per day, the Department of Environmental Quality Engineering may require additional treatment of the waste prior to its disposal to the ground.

(2) Disposal Works Installer's Permit.\*\* No person or firm shall engage in the construction, alteration, installation, or repair of any individual sewage disposal system without first obtaining a Disposal Works Installer's Permit from the Board of Health. Such permits shall expire at the end of the year in which they are issued unless earlier revoked for cause by the Board of Health.

(3) Septage Handler's Permit. No person or firm shall engage in the pumping or transport of the contents of any part of an individual sewage disposal system without first obtaining a Septage Handler's Permit from the Board of Health, in accordance with M.G.L. c. 111, s. 31A. The application for such permit shall state the site of the disposal, and such site and method of disposal must have been approved by the Department of Environmental Quality Engineering, regardless of the stated volume of material disposed of at that site. Such permits shall be contingent upon compliance with 310 CMR 15.19(1) and shall expire at the end of the year in which they are issued unless earlier revoked for cause. A list of permits issued shall be submitted to the appropriate regional office of the Department of Environmental Quality Engineering at the beginning of each calendar year.

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\*The applicant should be aware of his obligation to comply with the requirements established by the Division of Water Pollution Control pursuant to M.G.L. c. 21 s. 43, and the Wetlands Protection Act, M.G.L. c. 131, s. 40.

\*\*All systems for the purification or disposal of industrial wastes must be approved by the Department of Environmental Quality Engineering for any flow, as required by M.G.L. c. 111, s. 17.

15.02: continued

(4) Application for Disposal Works Construction Permit. An application for a disposal works construction permit shall be submitted to the Board of Health and must be accompanied by a plan of the proposed sewage disposal facilities. Such permit shall be invalidated if conditions different than those set forth in the application are found prior to or during actual construction of the individual sewage disposal system. In any event, a permit so granted shall expire two years from the date of issue unless construction of the system of individual sewage disposal is begun before the expiration date or unless this Title has been revised.

(5) Plan of Sewage Disposal System. The submitted plan must show as a minimum: the lot to be served, location and dimensions of the system (including reserve area), design calculations, existing and proposed contours, location and log of deep observation holes, location and results of percolation tests, location of any streams, surface and subsurface drains and wetlands within 100 feet of the sewage disposal system, known sources of water supply within 200 feet of the sewage disposal system, location of any proposed well to serve the lot, location of water lines on the property, maximum ground water elevation in the area of the sewage disposal system, and a profile of the system. The plan must be prepared by a Professional Engineer or other professional authorized by law to prepare such plans.

(6) Use. The use of an individual sewage disposal system shall be in compliance with the terms of the permit issued therefore and shall not exceed the design capacity of the system. Design capacity shall not be reduced for seasonal use.

(7) Building or Plumbing Permits/Subdivision Plans. No building permit, foundation permit, special building permit, or plumbing permit shall be issued until a Sewer Entrance Permit or Disposal Works Construction Permit has first been obtained, unless the Board of Health determines that the existing sewage disposal system is adequate for a proposed alteration or addition to an existing dwelling.

(8) Certificate of Compliance. A new individual sewage disposal system and alteration or repairs to an existing individual system shall not be placed in service, nor shall new dwellings or buildings or additions thereto, which must rely on new individual sewage disposal systems for sewage disposal, be occupied until the Board of Health has issued a Certificate of Compliance indicating that said disposal system has been located, constructed, altered, or repaired in compliance with the terms of the permit and the requirements of this Title. The Board of Health shall require inspection of all construction by the designer or by an agent of the Board of Health and require him to certify in writing that all work has been completed in accordance with the terms of the permit and the approved plans. Such written certification by the designer is mandatory for all work approved by the Department of Environmental Quality Engineering with the additional provision that a copy of the written certification must be submitted to the Department of Environmental Quality Engineering by the designer.

(9) Fees. A fee for the issuance of a construction permit may be charged by the Board of Health at the time an application is made for the permit.

(10) Inspection. The Board of Health or Department of Environmental Quality Engineering may, within its jurisdiction, inspect the installation of all individual sewage disposal systems and may, at any stage of construction, require necessary modifications if conditions are encountered that were not originally observed. In order to facilitate timely inspections, the installer shall provide a reasonable period of notification when requesting an inspection, and the inspection shall be performed within a reasonable period of time by the Board of Health or its agent.

(11) Discharge to Watercourses. Sanitary sewage, grey water, the effluent from any sewage or waste treatment plant, or other polluting water, shall not be discharged into or allowed to flow by means of pipes, drains, etc., into any

## 15.02: continued

lake, pond, stream, tidal water, watercourse, or open or covered drain tributary thereto, unless approved by the Massachusetts Department of Environmental Quality Engineering.

(12) Connection to Common Sanitary Sewer.\* Individual sewage disposal systems or other means of sewage disposal shall not be approved where a common sanitary sewer is accessible adjoining the property and where permission to enter such a sewer can be obtained from the authority having jurisdiction over it. The Board of Health may require the owner or occupant of an existing building or buildings, wherever a common sanitary sewer is accessible in an abutting way, to cause such building or buildings to be connected with the common sanitary sewer in a manner and within a period of time satisfactory to the Board of Health.

(13) Volume of Sanitary Sewage. Each unit of the disposal system shall be designed to treat adequately the estimated volume of sanitary sewage to be discharged from the premises to be served. The volume of such flow should be based on the estimated maximum contributory population and the resultant maximum expected daily quantities of sewage as determined from the table below. No cooling water, ground water, discharge of roof drains, or other uncontaminated water shall be discharged to the sanitary sewage disposal system.

## SEWAGE FLOW ESTIMATES \*\*

<u>Type of Establishment</u>	<u>Gallons per Person Per Day</u>
Boarding Schools, Colleges _____	65
Nursing Home and Rest Home _____	100
School, without cafeteria, gymnasium or showers _____	10
School, with cafeteria, but not gymnasium or showers _____	15
School, with cafeteria, gymnasium and showers _____	20
Swimming Pool _____	10
Camp, resident washroom and toilets _____	25
Camp, resident mess hall _____	10
Camp, day washroom and toilets _____	10
Camp, day mess hall _____	3
Camp Ground showers and toilets per site _____	75
Gymnasium per spectator _____	3
Gymnasium per participant _____	25
Theater, Auditorium _____	3
Public Park toilet wastes only _____	5
Public Park bathhouse, showers, and flush toilets _____	10
Factory or Industrial Plant, without cafeteria _____	15
Factory or Industrial Plant, with cafeteria _____	20
Work or Construction Camp _____	50

\*The applicant should be aware of his obligation to comply with the requirements established by the Division of Water Pollution Control pursuant to M.G.L. c. 21, s. 43.

\*\*Estimated sewage flows other than those listed should be considered in relation to actual meter readings of established flows from known or similar installations. Generally, estimated sewage flows will be based on 200 percent of average water meter readings in order to assimilate maximum daily flows.

15.02: continued

SEWAGE FLOW ESTIMATES (continued)

	<u>Gallons per day</u>
Single and multiple dwelling units Per Bedroom	
motels, hotels, boarding houses _____	110
Tennis Club per court _____	250
Bowling Alley per alley _____	100
Country Club dining room per seat _____	10
Country Club snack bar or lunch room per seat _____	10
Country Club locker and showers per locker _____	20
Church per seat _____	3
Church vestry/kitchen per person at capacity _____	5
Trailer, dump station per site or per trailer _____	50
Mobile Home Park per site _____	200
Office Building per 1,000 sq. ft _____	75
Dry Goods Stores per 100 sq. ft _____	5
Drive In per stall _____	5
Nonsingle family, Automatic clothes washer per washing machine _____	400
Hospital per bed _____	200
Service station, excluding thruway per island _____	300
Skating Rink 3,000 gallons per day plus 5 gallons per seat	
	<u>Gallons per Seat or Chair per Day</u>
Restaurant, food service establishment, lounge, tavern _____	35
Restaurant, thruway service area _____	150
Restaurant, kitchen flow _____	15
Barber Shop/Beauty Salon _____	100

NOTE: Laundromat wastes are considered industrial wastes and must be approved by the Department of Environmental Quality Engineering.

(14) Type of System. Except as provided in 310 CMR 15.18, an individual sewage disposal system shall consist of a septic tank discharging its effluent to a suitable subsurface sewage disposal area as hereinafter described. Where buildings are served by more than one system, each system shall consist of a septic tank discharging its effluent to a suitable subsurface sewage disposal area. Separate systems for laundry waste disposal are not recommended.

(15) Drainage. An individual disposal system shall be located in an area where no surface water will accumulate. Provision shall be made to minimize the flow of surface water over the area.

(16) Cover Material. Earth materials used to cover subsurface sewage disposal facilities shall be free from large stones, frozen clumps of earth, masonry, stumps, or waste construction material. Machinery which may crush or disturb the alignment of pipe in the disposal system shall not be allowed on any part of the disposal area.

(17) Construction in Fill. Where an individual sewage disposal system is to be constructed wholly or partially in fill, the fill shall be properly placed and compacted to minimize settlement or it shall be allowed to settle for a minimum of 12 months whichever occurs first. The fill material shall be clean coarse washed sand or other clean granular material essentially free from clay, fines, dust, organic matter, large stones, masonry, stumps, frozen clumps of earth, wood, tree branches, and waste construction material, and shall have a percolation rate of less than 2 minutes per inch before and after placement. Before the fill is put in place, all trees, brush, and stumps shall be removed from the area to be filled. Topsoil, peat, and other impervious materials shall be removed from all areas beneath the leaching facility and for a distance of 25 feet in all directions therefrom when the leaching facility is above natural ground elevation; or impervious materials shall be removed for 10 feet in all directions therefrom when the leaching facility is below natural ground elevation. No sewage disposal system shall be constructed in fill placed upon



15.02: continued

impervious material unless the requirements of 310 CMR 15.03(6) have been met.

(18) Multiple Use. The use of a subsurface sewage disposal system by more than one lot is prohibited.

(19) Maintenance. Every owner or agent of premises in which there are any private sewers, individual sewage disposal systems, or other means of sewage disposal shall keep the sewers and disposal systems in proper operational condition and shall have such works cleaned or repaired at such time as ordered by the Board of Health. If the owner or agent of the premises fails to comply with such order, the Board of Health may cause the works to be cleaned or repaired and all expenses incurred to be paid by the owner. Sewage disposal works shall be maintained in a manner that will not create objectionable conditions or cause the works to become a source of pollution to any of the waters of the Commonwealth.

(20) Discharge to Surface of Ground. No sanitary sewage shall be allowed to discharge or spill onto the surface of the ground or to flow into any gutter, street, roadway, or public place; nor shall such material discharge onto any private property.

(21) Flow Measurement. Meters, dosing counters, or other flow measuring devices shall be installed to record accurately the flow of sewage when required by the Board of Health or the Department of Environmental Quality Engineering.

(22) Reserve Area. A reserve area of at least equal capacity, suitable for subsurface sewage disposal and upon which no permanent structures will be constructed, must be provided for all sewage disposal systems.

15.03: Location

(1) General. The location and installation of each individual sewage disposal system, or other means of disposal, shall be such that with responsible maintenance it will function in a satisfactory manner and will not create a nuisance or discharge into any watercourse of the Commonwealth. In determining a suitable location for the system, consideration shall be given to the size and shape of the lot, slope, natural and adjusted drainage, existing and known future water supplies, depth to ground water, presence of impervious material, soil classifications, and reserve area. No Disposal Works Construction Permit as described in 310 CMR 15.02(1) shall be issued until a representative of the Approving Authority has:

- (a) Performed a site examination
- (b) Witnessed deep observation holes
- (c) Witnessed percolation tests

(2) Site Examination. The site examination shall be made to determine if the size of the lot is compatible with the proposed sewage disposal system and should be made with regards to the distances as outlined in 310 CMR 15.03(7) and the requirements of 310 CMR 15.02(5).

(3) Deep Observation Holes. The purpose of the deep observation holes is to determine the character of the soil in the leaching area and specifically to determine the ground water elevation and the presence of bedrock or impervious material.

On any lot, in the area to be used for leaching, except as noted below, there will be at least two deep observation holes plus any additional number which, in the opinion of the Approving Authority, will be necessary to determine the consistency (or lack thereof) of the character of the soil. The observation holes shall be examined to a depth of at least 4 feet below the bottom of the proposed leaching facility, but in no case shallower than 10 feet, unless this depth is unattainable because of bedrock, etc. The ground water elevation should be determined when the ground water is at its maximum elevation.

15.03: continued

**EXCEPTION:** In cases where three or more contiguous single family lots are being examined at the same time by the same engineer the requirement of two deep observation holes per lot is reduced to one deep observation hole per lot, provided that the character of the soils remain consistent in the opinion of the Approving Authority. The deep observation holes shall be conducted in the area to be used for leaching on each lot.

(4) **Percolation Test.** The purpose of the percolation test is to determine the suitability of the soil at the leaching elevation and to a depth of four feet below this elevation. In cases where the soil varies with depth as indicated by the deep observation hole, percolation tests at various elevations may be required by the Approving Authority.

(a) At least one percolation test shall be performed at the site of each disposal area in the soil to be used for leaching. Additional tests will be required where the soil structure varies or where large disposal areas are required. Percolation tests can be performed at any time during the year.

(b) Percolation tests as prescribed in this section shall be performed at no expense to the Approving Authority by a Registered Professional Engineer, Registered Sanitarian, or other person who, in the opinion of the Approving Authority, is qualified to perform such tests. All percolation tests shall be performed in the presence of a representative of the Approving Authority. The cost of labor and equipment necessary to dig observation holes and the provision of water for the performance of percolation tests shall not be at the expense of the Approving Authority.

(c) Percolation tests shall not be made in holes that have remained open to the atmosphere for more than three days, nor shall they be made in frozen soil. Percolation tests may be performed when the elevation of the soil to be tested is below the frozen soil layer.

(d) Percolation tests shall not be made in filled ground unless the requirements of 310 CMR 15.02(17) have been made.

(e) The minimum leaching area to be installed shall be determined from the following table, with the estimated daily sewage flow as determined in accordance with 310 CMR 15.03(13). The slowest percolation rate obtained shall govern leaching area requirements.

LEACHING AREA REQUIREMENTS

Percolation Rate Minutes Per Inch	Sidewall Area (1) (2)		Bottom Area (3)	
	Square Feet Per Gallon	Gallons Per Square Foot	Square Feet Per Gallon	Gallons Per Square Foot
2.0 or less	0.4	2.50	1.0	1.00
4.0	0.5	2.00	1.2	0.83
6.0	0.6	1.66	1.4	0.71
8.0	0.8	1.25	1.6	0.63
10.0	1.0	1.00	1.8	0.55
15.0	1.5	0.66	2.3	0.43
20.0	2.0	0.50	3.0	0.33
25.0	2.5	0.40	No bottom area	
30.0	3.0	0.33	allowed	
over 30.0		UNSUITABLE	over 20 minutes per inch	

[1] No sidewall area is allowed for leaching fields.

[2] Sidewall area is the pervious vertical interface of the excavation for the leaching facility below the invert elevation of the inlet, or the lowest invert elevation of the distribution line.

[3] Bottom area is the pervious horizontal interface of the excavation for the leaching facility.

[4] Systems for more than 2,000 gallons per day shall not be installed where the percolation rate is slower than 20 minutes per inch.

15.03: continued

[5] Soil with a percolation rate of over 30 minutes per inch is considered impervious and, therefore, unsuitable for the subsurface disposal of sewage.

✓ [6] Area requirements will be increased by 50 percent when garbage grinders are installed.

[7] Sewage systems to be constructed in fill must be designed according to the percolation rate of the underlying original soil.

[8] See Illustration A in 310 CMR 15.11, Illustration B in 310 CMR 15.14, and Illustration C in 310 CMR 15.15.

(5) Percolation Test Procedures

(a) Prepare a test hole into the proposed leaching strata within the disposal area of 12 inches in diameter with vertical sides 18 inches deep.

(b) Establish a fixed point at the top of the test hole from which all measurements can be taken.

(c) Scratch the bottom and sides of the test hole to remove any smeared soil surfaces. Either add two inches of coarse sand to protect the bottom from scouring, or insert a board or other impervious object in the hole so that water may be poured down or on it during the filling operation.

(d) Carefully fill the hole with clear water to a minimum depth of 12 inches and maintain the water level by adding water as necessary for purpose of soil saturation, but in no case less than 15 minutes after first filling the hole.

(e) After saturation, if the water level drops to a depth of 9 inches in less than 30 minutes, measure the length of time in minutes for it to drop from a depth of 9 inches to a depth of 6 inches. If the rate is erratic in the opinion of the Approving Authority, the hole shall be refilled and soaked until the drop per increment of time is steady. The time for the level to drop from a depth of 9 inches to a depth of 6 inches divided by 3, will be the percolation rate in minutes per inch.

(f) If the initial 3-inch drop requires more than 30 minutes (rate equal to more than 10 minutes per inch) the soil shall be saturated by filling the hole to the top and maintaining it full for at least 4 hours. The soil should then be permitted to swell overnight so that the soil conditions will approach those which exist during the wettest season of the year. After the overnight swelling period, the test shall be made again by filling the hole to a 12-inch depth and maintaining that level for 15 minutes, letting the level drop to 9 inches, then timing the drop between 9 inches and 6 inches. The time elapsed between 9 inches and 6 inches, divided by 3, shall be the percolation rate.

(g) In certain soils, particularly coarse sands, the soil is so pervious as to make the percolation tests as described above difficult, impractical, and meaningless. Therefore, at the discretion of the Approving Authority, the test as described above may be waived and a rate of two minutes per inch can be assumed provided that at least 24 gallons of water is added to the percolation holes within 15 minutes and it is impossible to obtain a liquid depth of 9 inches or the percolation rate is faster than 30 seconds per inch.

(6) Required Depth of Pervious Material. Subsurface sewage disposal systems shall be located in an area where there is at least a 4 foot depth of naturally occurring pervious soil below the entire area of the leaching facility. The naturally occurring pervious soil shall have a percolation rate less than or equal to 30 minutes per inch or 20 minutes per inch for systems over 2000 gallons per day and the 4 foot stratum must be free of impervious materials, such a layers of clay, silt, subsoil or loam.

(7) Distances.(1)(2) No disposal facility 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,

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15.03: continued

Component	Septic Tank (Feet)	Leaching Facility (Feet)	Building Sewer (Feet)	Privy (Feet)
Well or suction line	50	100(1)	(3)	100(1)
Water supply line (Pressure)	(4)	(4)	(4)	(4)
Property line	10	10	--	30
Cellar wall or inground swimming pool	10	20	--	30
Surface water supplies (reservoirs) or tributaries to reservoirs, including open and subsurface drains	50(2)(5)	100(1)(2)(5)	(5)	100(1)(2)(5)
Watercourses(see definition)	25(2)(5)	50(2)(5)	--	50(2)(5)
Subsurface Drains	25	25	--	25
Leaching catch basin or dry well	--	25	--	--
Downhill slope measured from the top of the leaching facility	150 times the slope (expressed as a fraction) (See Illustration A in 310 CMR 15.11, Illustration B in 310 CMR 15.14, and Illustration C in 310 CMR 15.15)			

[1] 100 feet is a minimum acceptable distance and no variance shall be granted for a lesser distance except with prior written approval of the Department of Environmental Quality Engineering.

[2] All distances shall be measured from the average of the mean annual flood elevation in inland areas and from Mean High Water in coastal areas.

[3] 10 feet if constructed of durable corrosion resistant material with watertight joints, or 50 feet if any other type of pipe is used.

[4] It is suggested that the disposal facilities be installed at least 10 feet from, and 18 inches below water supply lines. Wherever sewer lines must cross water supply lines, both pipes shall be constructed of class 150 pressure pipe and should be pressure tested to assure watertightness.

[5] The applicant should be aware of his obligation to comply with the requirements of the Wetlands Protection Act, M.G.L. c.131, s. 40.

15.04: Building Sewers in Unsewered Areas

(1) Size. The building sewer shall be of such size as required by the Approving Authority to serve the connected fixtures. In no case shall the building sewer be less than 4 inches in diameter.

(2) Material. The building sewer shall be constructed of cast-iron, schedule 40 PVC, vitrified clay, asbestos cement or other material acceptable to the Approving Authority.

(3) Joints. All pipe joints of the building sewer shall be made watertight and protected against damage by roots. Poured-type joints shall be properly wiped on the inside to present no obstruction of flow.

(4) Base. The building sewer shall be laid on a firm base.

15.04: continued

(5) Grade. The building sewer shall be designed to provide a minimum velocity of sewage flow of 2 feet per second when flowing full. This requirement is met when a 4-inch building sewer is laid at a slope of not less than .01 (1/8-inch per foot). A slope of .02 (1/4-inch per foot) is desirable.

(6) Alignment. The building sewer shall be laid on a continuous grade and as nearly as possible in a straight line.

(7) Manholes. Manholes, with metal frames and covers at grade, shall be provided at the junction of two or more sewers, at all sharp changes in direction or grade of sewers, and at intervals no greater than 300 feet except that manholes will not be necessary where building sewers join lateral sewers if a long radius bend is provided. All gravity sewer manholes shall have an open channel depth equal to or greater than the diameter of the inlet sewer and the change of direction in each manhole shall not exceed 90 degrees. (Change of direction is the interior angle between the new direction of flow and the imaginary extension of the original direction of flow.)

(8) Ventilation. The building sewer shall be vented through the vent stack or main vent of the building served by it, and no trap shall be installed in the building sewer or building drain.

15.05: Grease Traps

(1) Installation. Grease traps must be provided at installations such as restaurants, nursing homes, schools, hospitals, or other installations from which large quantities of grease can be expected to be discharged.

(2) Location. Grease traps shall be installed on a separate building sewer serving that part of the plumbing system into which the grease will be discharged. The discharge from the grease trap must flow to a properly designed septic tank or a building sewer prior to the septic tank.

(3) Capacities. Grease traps shall have a minimum depth of 4 feet and a minimum capacity of 1000 gallons, and shall have sufficient capacity to provide at least a 24 hour detention period for the kitchen flow. Kitchen flow shall be calculated in accordance with 310 CMR 15.02(13).

(4) Construction. Grease traps shall be watertight and constructed of sound and durable materials not subject to excessive corrosion, decay, or frost damage, or to cracking or buckling due to settlement or backfilling. Tanks and covers shall be designed and constructed so as to withstand normal structural loadings. A tank installed in ground water shall be weighted to prevent the tank from floating when it is emptied.

(5) Depth of Tees. The inlet tee shall extend to the mid depth of the tank. The outlet tee shall extend to within 12 inches of the bottom of the tank. Tees shall be cast iron or Schedule 40 PVC and properly supported by a hanger, strap or other device.

(6) Baffles. Baffles may be provided as necessary to maximize the separation of grease from the sewage. Baffles may not be considered a substitute for the inlet and outlet tees.

(7) Base. Grease traps shall be installed on a level stable base that will not settle.

(8) Materials. Grease traps may be constructed of poured reinforced concrete, precast reinforced concrete, or prefabricated material acceptable to the Approving Authority.

(9) Access Manholes. Grease traps shall be provided with a minimum 24 inch diameter manhole frame and cover to grade over the inlet and outlet.



15.06: continued

(10) Accessibility. Grease traps shall be located on the lot so as to be accessible for servicing and cleaning.

(11) Invert Elevation. The invert elevation of the inlet of a grease trap shall be at least 2 inches above the invert elevation of the outlet. Inlet and outlet shall be located at the center line of the tank, and at least 12 inches above the maximum ground water elevation.

(12) Backfill. Backfill around the grease trap shall be placed in such a manner as to prevent damage to the tank.

(13) Cleaning. Grease traps shall be inspected monthly and shall be cleaned when the level of grease is 25 percent of the effective depth of the trap or at least every 3 months.

15.06: Septic Tanks

(1) Capacities. A septic tank shall have an effective liquid capacity of not less than 150 percent of the design flow estimated, but in no case less than 1000 gallons.

(2) Garbage Disposal. Garbage grinders are not recommended where they discharge to subsurface disposal facilities. When they are installed, the liquid capacity of the septic tanks shall be at least 200 percent of the estimated design flow, but in no case less than 1500 gallons.

(3) Liquid Depth. The liquid depth of the tank shall be a minimum of 4 feet. The tank may be oval, circular, rectangular, or square in plan, provided the distance between the outlet and inlet of the tank is at least equal to the liquid depth of the tank.

(4) Compartments. Multi-compartment tanks with transverse baffles may be used provided that:

- (a) The number of compartments does not exceed two.
- (b) The total capacity is not less than 2000 gallons.
- (c) The capacity of the first compartment is at least equal to the capacity of the second compartment.

(5) Tanks in Series. Tanks in series may be approved provided that the capacity of the first tank is at least equal to the required capacity pursuant to 310 CMR 15.06(1), and provided that the number of tanks does not exceed two.

(6) Tanks in Parallel. Septic tanks shall not be installed in such a manner that the sewage flow from a single sewer is divided, with one portion being discharged to one tank and the remaining portion being discharged to a second tank.

(7) Construction. Septic tanks shall be watertight and constructed of sound and durable materials not subject to excessive corrosion, decay, or frost damage, or to cracking or buckling due to settlement or backfilling. Tanks and covers shall be designed and constructed so as to withstand anticipated loadings. Any tank installed in a location where there is high ground water shall be weighted to prevent the tank from floating when it is emptied.

(8) Tees. Inlet and outlet tees shall be of cast-iron, Schedule 40 PVC, or cast-in-place concrete, and shall extend a minimum of 6 inches above the flow line of the septic tank and be on the center line of the septic tank located directly under the clean-out manhole. There shall be an air space of at least 3 inches between the tops of the tees and the inside of the tank cover, and the tops of the tees shall be left open to provide ventilation or separate ventilation shall be provided.

(9) Depth of Tees. The inlet tee (baffles are not acceptable) shall extend a minimum of 10 inches below the flow line. The outlet shall be provided with a tee extending below the flow line in accordance with the following table:

## 15.06: continued

<u>Liquid Depth in Septic Tank</u>	<u>Depth of Outlet Tee below Flow Line</u>
4 feet	14 inches
5 feet	19 inches
6 feet	24 inches
7 feet	29 inches
8 feet	34 inches

(10) Base. Septic tanks shall be installed on a level stable base that will not settle.

(11) Materials. Septic tanks may be constructed of poured reinforced concrete, precast reinforced concrete, or prefabricated material acceptable to the Approving Authority.

(12) Access Manholes. At least one 24-inch manhole with a readily removable cover of durable material shall be provided for each compartment. Inlet and outlet tees shall be made accessible for cleaning by providing manholes over the tees. Manhole covers for septic tanks serving single family dwellings shall not be more than 12 inches below finished grade and may, at the discretion of the Approving Authority, be required to be brought to finished grade. Septic tanks serving other establishments with flows under 2000 gallons per day shall be provided with at least one 24-inch diameter manhole located over the inlet tee and a metal frame and cover to finished grade. Septic tanks designed for flows in excess of 2000 gallons per day shall be provided with at least two 24-inch diameter manholes (over inlet and outlet tees) with metal frames and covers at finished grade. Distance between access manholes shall not exceed 18 feet on center.

(13) Accessibility. Septic tanks shall be located on the lot so as to be accessible for servicing and cleaning.

(14) Invert Elevation. The invert elevation of the inlet of a septic tank shall be at least 2 inches above the invert elevation of the outlet.

(15) Backfill. Backfill around the septic tank shall be placed in such a manner as to prevent damage to the tank.

(16) Cleaning. Septic tanks should be inspected and cleaned at least annually.

(17) Ground Water. The invert elevation of the septic tank outlet shall be at least one foot above the maximum ground water elevation.

(18) Pumping to Septic Tank. Pumping of sewage to a septic tank shall not be allowed without the written approval of the Department of Environmental Quality Engineering.

15.07: Dosing Tanks

(1) General. A dosing tank shall be provided for Leaching Chamber and Leaching Field systems where the volume of waste to be disposed of is in excess of 2000 gallons per day.

(2) Alternation. Dosing shall alternate when the total volume of waste to be disposed of exceeds 5000 gallons per day. Alternating siphons and pumps shall discharge to separate disposal areas of equal size.

(3) Capacity. Dosing tanks shall have capacity to discharge a volume adequate to cover the dosed leaching area to a depth of at least 1 inch, in not over 15 minutes.

(4) Construction. Dosing tanks shall be constructed of concrete or other material as approved by the Department of Environmental Quality Engineering and conform with 310 CMR 15.06(7) and shall be cast without joints and watertight if installed below ground water level.

15.07: continued

- (5) Base. Dosing tanks shall be constructed on a level stable base that will not settle.
- (6) Ventilation. Dosing tanks shall be constructed in a manner that will permit venting through the building sewer or other suitable outlet.
- (7) Ground Water. The invert elevation of the inlet shall be at least 1 foot above maximum ground water elevation and the tank shall be waterproof and watertight.
- (8) Manholes. To provide access and to facilitate repair or adjustment of the siphons or pumps, dosing tanks should be provided with manholes at least 24 inches in diameter with metal frames and covers to grade over each pump or siphon.
- (9) Inspections. Annual inspections are recommended to determine if the pumps or siphons are in working order.

15.08: Siphons

- (1) Construction. Siphons shall be constructed of cast-iron or other material approved by the Department of Environmental Quality Engineering and shall be installed in strict conformance with the manufacturers specifications.

15.09: Pumps

- (1) Location. Pumps shall not be installed prior to a septic tank without the approval of the Department of Environmental Quality Engineering.
- (2) Number. At least 2 pumps shall be installed, except in cases where repairs to systems under 1000 gallons per day are being made or for single family residences.
- (3) Installation. All pumps shall be installed in strict conformance with the manufacturer's specifications. Pumps for settled sewage shall be capable of passing at least 1-1/4 inch solids.
- (4) Controls. Pump controls shall be moisture proof and operate in the following sequence:
  - (a) Pumps off
  - (b) Lead pump on
  - (c) Alarm on and Lag pump on
  - (d) Pumps must alternate and, in cases where the flow is in excess of 5000 gallons per day, they must serve separate disposal areas.
- (5) Alarm. All pumps shall be equipped with an alarm powered by a circuit separate from the pump power.
- (6) Standby Power. Standby power shall be provided at apartment houses, condominiums, elderly housing, and all other premises which are not vacated during power failure. An empty emergency overflow tank with 24 hour storage capacity may be substituted where such tank can be placed completely above ground water.

15.10: Distribution Boxes

- (1) Distribution Box. A distribution box shall be installed between a septic tank and a leaching facility to provide equal distribution.
- (2) Inlet. Where the distribution system is dosed or the slope of the inlet pipe is greater than 0.08, the distribution box shall be provided with an inlet tee cut-off one inch above the outlet invert.

15.10: continued

- (3) Outlet Elevation. The invert elevation of all the outlets shall be the same, and shall be at least 2 inches below the inlet. Outlet pipes shall be level for at least 2 feet.
- (4) Sump. The distribution box shall be provided with a sump extending 6 inches below the bottom of the outlet pipe.
- (5) Construction. Distribution boxes shall be constructed of concrete or other durable material. They shall be watertight and designed to accommodate the necessary distribution laterals.
- (6) Number of Outlets. There shall be at least one 4 inch outlet for every pair of 4-inch distribution laterals, and at least one 6-inch outlet for every two pairs of 4-inch distribution laterals.
- (7) Base. Distribution boxes shall be installed on a level stable base that will not settle.
- (8) Ventilation. The distribution box shall be constructed in such a manner as to provide ventilation of the disposal field, either through a special vent or back through the building sewer.
- (9) Manholes. Distribution boxes shall be provided with readily removable covers of durable material. Systems designed for over 2000 gallons per day shall have a minimum 18 inch manhole over each distribution box, with metal frame and cover to finished grade.

15.11: Leaching Pits\*

- (1) Use. Leaching pits are preferred where their installation is possible.
- (2) Leaching Area. The leaching area required shall be determined in accordance with the provisions of 310 CMR 15.03. The leaching area shall be considered as the pervious bottom area of the excavation and the sidewall areas of the excavation below the invert of the inlet. Impervious area of the sidewall below the inlet shall not be considered as available leaching area.
- (3) Ground Water. Leaching pits shall not be constructed in areas where the maximum ground water elevation is less than 4 feet below the bottom of the excavation.
- (4) Spacing. When more than one leaching pit is installed, they shall be designed such that they will function in parallel, and the distance between excavation sidewalls shall be no less than twice the effective width or twice the effective depth of the pit, whichever is greater.
- (5) Manholes. There shall be a minimum of one inspection manhole per pit. For systems designed for over 2000 gallons per day, the manholes shall be at least 18 inches in diameter with metal frames and covers to finished grade.
- (6) Construction. The lining of the pit shall be constructed of brick, perforated concrete, or interlocking concrete blocks laid dry with open joints in a manner to prevent displacement. At least 12 inches and not more than 48 inches of 3/4 to 1-1/2 inch stone shall be placed around the liner. The liner shall be built to allow the liquid to pass easily through openings to the surrounding stone. The cover shall be constructed of reinforced concrete or other approved material.
- (7) Stone. The stone shall consist of washed stone ranging from 3/4 to 1-1/2 inches in size and be free of iron, fines, and dust in place. The stone shall be covered with at least a 2 inch layer of washed stone ranging from 1/8 to 1/2 inch

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\* See Figure 1 in 310 CMR 15.12.

15.11: continued

in size, and be free of iron, fines, and dust in place. All stone must have less than 0.2 percent material finer than a number 200 sieve as determined by the AASHTO Test Methods T-11 and T-27 (latest edition).

(8) Reserve Area. A reserve area sufficient to replace the capacity of the original leaching area must be provided. The area between the leaching pits may be used for part of the reserve area.

(9) Impervious Material. Excavations into or fill upon impervious material shall not be allowed. Excavations through impervious material may be allowed if at least 4 feet of naturally occurring pervious material, as demonstrated by a percolation test, remains beneath the lowest point of excavation. All construction after excavation through impervious material shall be in accordance with 310 CMR 15.02(17).

(10) Surface Drainage. The grade above and adjacent to a leaching pit system shall slope at least 2 percent to prevent the accumulation of surface water.

(11) Cover Material. The minimum depth of cover material over the stone shall be 12 inches. Earth materials used to cover leaching pit systems shall be free of large stones, frozen clumps of earth, masonry, stumps, or waste construction material. Machinery which may crush or disturb the alignment of pipe in the disposal system shall not be allowed on any part of the disposal area.

(12) Sloping Ground. When pits are built at different elevations, construction shall be such as to prevent the sewage from upper pits from flowing into lower pits.

(13) Excavation. Excavation may be made by machinery provided that the soil at the bottom of the disposal system is not compacted. The bottom of each system shall be level.

(14) Location under Area Subject to Vehicular Traffic. When leaching pit systems are constructed under areas subject to vehicular traffic, the pits shall be capable of withstanding H-20 wheel loads.

(15) Frozen Conditions. No pits shall be constructed in frozen soil. Pits may be constructed in cases where the construction elevation is below the depth of the frost line.

15.12: Leaching Galleries \*

(1) Leaching Area. The leaching area required shall be determined in accordance with the provisions of 310 CMR 15.03. The leaching area shall be considered as the pervious bottom area of the excavation and the sidewall areas of the excavation below the invert of the inlet. Impervious area of the sidewall below the inlet shall not be considered as available leaching area.

(2) Ground Water. Leaching galleries shall not be constructed in areas where the maximum ground water elevation is less than 4 feet below the bottom of the excavation.

(3) Distribution. An inlet must be provided at least every 20 feet.

(4) Spacing. When more than one gallery is installed, the distance between excavation sidewalls shall be no less than twice the effective width or twice the effective depth of the gallery, whichever is greater.

(5) Manholes. For systems designed for over 2000 gallons per day, the manholes shall be at least 18 inches in diameter with metal frames and covers to

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\* See Figure 1 in 310 CMR 15.12



15.12: continued

finished grade. For gallery trenches less than 100 feet long, there shall be a minimum of one manhole. For gallery trenches greater than 100 feet long, there shall be a minimum of one manhole per 100 linear feet of each trench.

(6) Construction. The galleries shall be constructed with open joints or perforated walls in a manner to prevent displacement. At least 12 inches and not more than 48 inches of 3/4 to 1-1/2 inch stone shall be placed beyond the liner. The liner shall be built to allow the liquid to pass easily through openings to the surrounding stone. The cover shall be constructed of reinforced concrete or other approved material.

(7) Stone. The stone shall consist of washed stone ranging from 3/4 to 1-1/2 inches in size and be free of iron, fines, and dust in place. The stone shall be covered with at least a 2 inch layer of washed stone ranging from 1/8 to 1/2 inch in size, and be free of iron, fines, and dust in place. All stone must have less than 0.2 percent material finer than a number 200 sieve as determined by the AASHTO Test Methods T-11 and T-27 (latest edition).

(8) Reserve Area. A reserve area sufficient to replace the capacity of the original leaching area must be provided. The area between the galleries may be used for part of the reserve area.

(9) Impervious Material. Excavations into or fill upon impervious material shall not be allowed. Excavations through impervious material may be allowed if at least 4 feet of naturally occurring pervious material, as demonstrated by a percolation test, remains beneath the lowest point of excavation. All construction after excavation through impervious material shall be in accordance with 310 CMR 15.02(17).

(10) Surface Drainage. The grade above and adjacent to a leaching gallery system shall slope at least 2 percent to prevent the accumulation of surface water.

(11) Cover Material. The minimum depth of cover material over the stone shall be 12 inches. Earth materials used to cover leaching gallery systems shall be free of large stones, frozen clumps of earth, masonry, stumps, or waste construction material. Machinery which may crush or disturb the alignment of pipe in the system shall not be allowed on any part of the disposal area.

(12) Sloping Ground. When galleries are built at different elevations, construction shall be such as to prevent the sewage from upper galleries from flowing into the lower galleries.

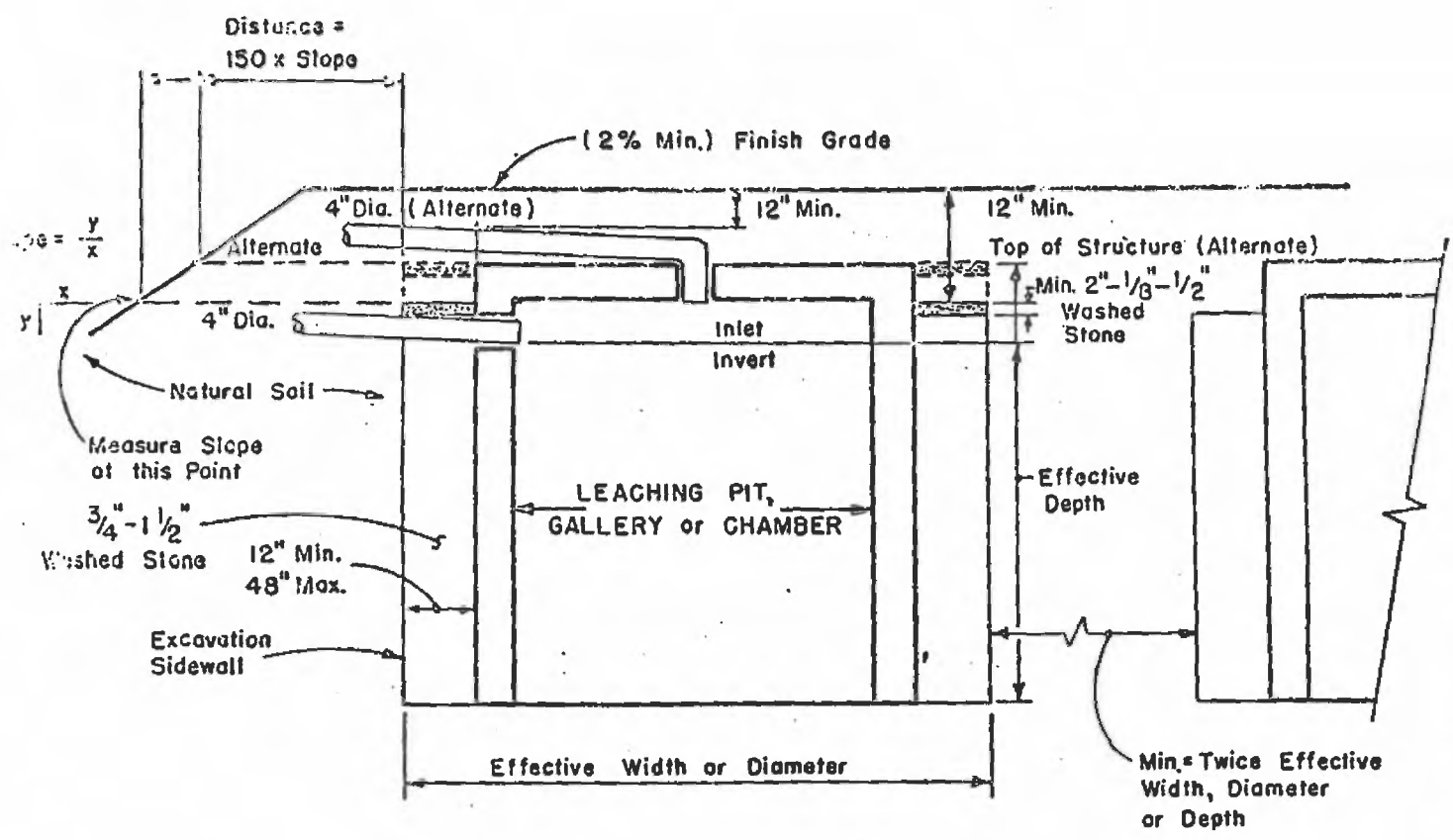
(13) Excavation. Excavation may be made by machinery provided that the soil at the bottom of the gallery excavation is not compacted. The bottom of each gallery system shall be level.

(14) Location under Area Subject to Vehicular Traffic. When gallery systems are constructed under areas subject to vehicular traffic, the galleries shall be capable of withstanding H-20 wheel loads.

(15) Frozen Conditions. No galleries shall be constructed in frozen soil. Galleries may be installed in cases where the construction elevation is below the depth of the frost line.

(16) Joints. Horizontal joints shall be covered with a material suitable to prevent infiltration of overburden.

15.12: continued



LEACHING PITS, GALLERIES CHAMBERS (ILLUSTRATION A)

FIGURE 1.

**LEACHING PITS, GALLERIES, CHAMBERS**

No Scale

Illustration A

12/31/86

310 CMR - 305

15.13: Leaching Chambers\*

- (1) Leaching Area. The leaching area required shall be determined in accordance with the provisions of 310 CMR 15.03. The leaching area shall be considered as the pervious bottom area of the excavation and the sidewall areas of the excavation below the invert of the inlet. Impervious area of the sidewall below the inlet shall not be considered as available leaching area.
- (2) Ground Water. Leaching chambers shall not be constructed in areas where the maximum ground water elevation is less than 4 feet below the bottom of the excavation.
- (3) Distribution. Effluent shall be applied to the leaching area in a uniform manner, either by integral or separate piping. Suitable splash pads of washed stone, concrete or similar material or velocity reducing pits shall be installed to prevent scouring of the leaching surface. If the leaching chambers are to be installed in a trench formation, the effluent shall be applied every 20 feet. If a bed formation is utilized, the maximum leaching area per distribution line shall not exceed 60 feet by 60 feet.
- (4) Spacing. The minimum distance between the excavation sidewalls of adjacent leaching chamber fields shall be 4 feet. The minimum distance between leaching chamber trench walls shall be twice the effective width or twice the effective depth of the trench, whichever is greater.
- (5) Manholes. There shall be a minimum of 1 inspection manhole for each 2000 feet of leaching area. Manholes shall be located so as to provide access to distribution inlets and the leaching area. For systems designed for over 2000 gallons per day, the manholes shall be at least 18 inches in diameter with metal frames and covers to finished grade.
- (6) Construction. The chambers shall be constructed with open joints or perforated walls in a manner to prevent displacement. At least 12 inches and not more than 48 inches of 3/4 to 1-1/2 inch stone shall be placed around the periphery of the chambers. The chambers shall be built to allow the liquid to pass easily through openings to the surrounding stone. The cover shall be constructed of reinforced concrete or other approved material.
- (7) Stone. The stone shall consist of washed stone ranging from 3/4 to 1-1/2 inches in size and be free of iron, fines, and dust in place. The stone shall be covered with at least a 2 inch layer of washed stone ranging from 1/8 to 1/2 inch in size, and be free of iron, fines, and dust in place. All stone must have less than 0.2 percent material finer than a number 200 sieve as determined by the AASHTO Test Methods T-11 and T-27 (latest edition).
- (8) Reserve Area. A reserve area sufficient to replace the capacity of the original leaching area must be provided.
- (9) Impervious Material. Excavations into or fill upon impervious material shall not be allowed. Excavations through impervious material may be allowed if at least 4 feet of naturally occurring pervious material, as demonstrated by a percolation test, remains beneath the lowest point of excavation. All construction after excavation through impervious material shall be in accordance with 310 CMR 15.02(17).
- (10) Surface Drainage. The grade above and adjacent to a leaching chamber system shall slope at least 2 percent to prevent the accumulation of surface water.
- (11) Cover Material. Earth materials used to cover chamber systems shall be free of large stones, frozen clumps of earth, masonry, stumps, or waste construction material. Machinery which may crush or disturb alignment of pipe in the system shall not be allowed on any part of the disposal area.

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\*See Figure 1 in 310 CMR 15.12.

15.13: continued

(12) Sloping Ground. When chambers are built at different elevations, construction shall be such as to prevent the sewage from upper chambers from flowing into lower chambers.

(13) Excavation. Excavation may be made by machinery provided that the soil at the bottom of the disposal system is not compacted. The bottom of each chamber unit shall be level.

(14) Location under Area Subject to Vehicular Traffic. When chamber systems are constructed under areas subject to vehicular traffic, the chamber shall be capable of withstanding H-20 wheel loads.

(15) Frozen Conditions. No chambers shall be constructed in frozen soil. Chambers may be installed in cases where the construction elevation is below the depth of the frost line.

(16) Joints. Horizontal joints shall be covered with a material suitable to prevent infiltration of overburden.

(17) Ventilation. Leaching chamber systems designed to be dosed must be vented at the downstream end of the system.

15.14: Leaching Trenches\*

(1) Leaching Area. The leaching area required shall be determined in accordance with the provisions of 310 CMR 15.03. The leaching area shall be considered as the pervious bottom area of the excavation and the sidewall areas of the excavation below the invert of the inlet. Impervious area of the sidewall below the inlet shall not be considered as available leaching area.

(2) Ground Water. Leaching trenches shall not be constructed in areas where the maximum ground water elevation is less than 4 feet below the bottom of the trench.

(3) Spacing. When more than one leaching trench is installed, the distance between excavation sidewalls shall be no less than twice the effective width or twice the effective depth of the trench, whichever is greater. In no case, shall the distance between excavation sidewalls be less than 6 feet if the area between the trenches is to be used for reserve area or 4 feet if the area between the trenches is not to be used for reserve area.

(4) Width. The minimum width of the leaching trench bottom shall be 12 inches.

(5) Length. The maximum length of each leaching trench shall be 100 feet.

(6) Construction. Distribution lines shall have a minimum diameter of 4 inches and shall be laid true to line and grade. The distribution pipe may consist of perforated tile, perforated bituminized fiber, perforated plastic, or vitrified clay pipe laid with an adequate number of open joints. All distribution pipes from the distribution box to the leaching trench shall be unperforated and shall be laid with tight joints. The depth to the crown of the pipe forming the distribution lines shall be not less than 12 inches from finished grade. The distribution pipe shall have a minimum slope of 0.005.

(7) Stone. The stone shall consist of washed stone ranging from 3/4 to 1-1/2 inches in size and be free of iron, fines, and dust in place. It shall extend the full width of the trench, shall be not less than 6 inches deep beneath the bottom of the distribution pipes and shall extend at least to the top of the distribution pipes. The stone shall be covered with at least a 2 inch layer of washed stone ranging from 1/8 to 1/2 inch in size, and be free of iron, fines, and dust in place.

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\* See Figure 1 in 310 CMR 15.14

15.14: continued

All stone must have less than 0.2 percent material finer than a number 200 sieve as determined by the AASHTO Test Methods T-11 and T-27 (latest edition).

(8) Reserve Area. A reserve area sufficient to replace the capacity of the original leaching area must be provided. The area between leaching trenches may be used for part of the reserve area.

(9) Impervious Material. Excavations into or fill upon impervious material shall not be allowed. Excavations through impervious material may be allowed if at least 4 feet of naturally occurring pervious material, as demonstrated by a percolation test, remains beneath the lowest point of excavation. All construction after excavation through impervious material shall be in accordance with 310 CMR 15.02(17).

(10) Surface Drainage. The grade above and adjacent to a leaching trench shall slope at least 2 percent to prevent the accumulation of surface water.

(11) Cover Material. The minimum depth of cover material shall be 12 inches. Earth materials used to cover leaching trench systems shall be free of large stones, frozen clumps of earth, masonry, stumps or waste construction material. Machinery which may crush or disturb the alignment of pipe in the disposal system shall not be allowed on any part of the disposal area.

(12) Sloping Ground. When trenches are built at different elevations, construction shall be such as to prevent the sewage from upper trenches from flowing into lower trenches.

(13) Excavation. Excavation may be made by machinery provided that the soil at the bottom of the disposal trench is not compacted. The bottom of each trench shall be level.

(14) Location Under Area Subject to Vehicular Traffic. When leaching trench systems are constructed under areas subject to vehicular traffic, the trenches shall be capable of withstanding H-20 wheel loads.

(15) Frozen Conditions. No trench shall be constructed in frozen soil. Trenches may be installed in cases where the construction elevation is below the depth of the frost line.

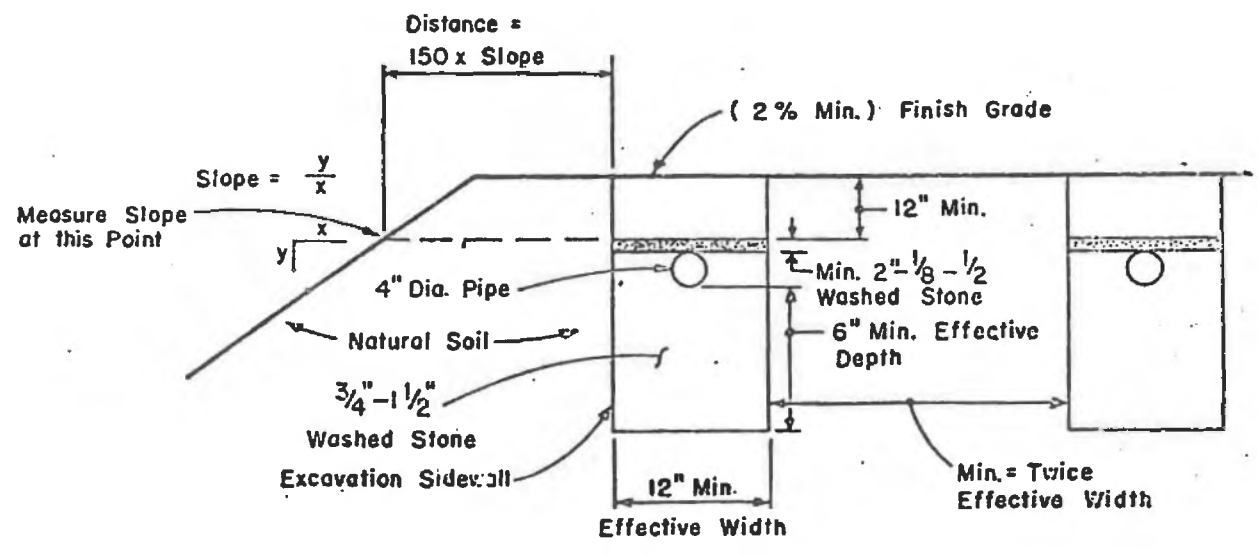
(16) Ventilation. Leaching trench systems designed to be dosed must be vented at the downstream end of the system.



15.14: continued

LEACHING TRENCH (ILLUSTRATION B)

FIGURE 1.



LEACHING TRENCH

No Scale

Illustration B

15.15: Leaching Fields\*

- (1) Use. Leaching fields are not permitted in locations where the percolation rate is slower than 20 minutes per inch.
- (2) Leaching Area. The leaching area required shall be determined in accordance with provisions of 310 CMR 15.03. The leaching area shall be considered at the pervious bottom area of the excavation.
- (3) Ground Water. Leaching fields shall not be constructed in areas where the maximum ground water elevation is less than 4 feet below the bottom of the field.
- (4) Construction. Distribution lines shall have a minimum diameter of 4 inches and shall be laid true to line and grade. The distribution pipe may consist of perforated tile, perforated bituminized fiber, perforated plastic or open-jointed VC. All distribution pipes from the distribution box to the leaching field shall be unperforated and shall be laid with tight joints. The depth to the crown of the pipe forming the distribution lines shall be not less than 12 inches from finished grade.

Leaching fields shall be constructed in accordance with the following table:

Minimum lines per field	2
Maximum length per line	100 feet
Slope of distribution lines	0.005
Maximum distance between distribution lines	6 feet
Minimum distance between walls of adjacent fields	4 feet

- (5) Stone. The stone shall consist of washed stone ranging from 3/4 to 1-1/2 inches in size and be free of iron, fines, and dust in place. It shall extend the full width of the field, shall be not less than 6 inches deep beneath the bottom of the distribution pipes and shall extend at least to the top of the distribution pipes. The stone shall be covered with at least a 2 inch layer of washed stone ranging from 1/8 to 1/2 inch in size, and be free of iron, fines, and dust in place. All stone must have less than 0.2 percent material finer than a number 200 sieve as determined by the AASHO Test Methods T-11 and T-27 (latest edition).
- (6) Reserve Area. A reserve area sufficient to replace the capacity of the original leaching area must be provided.
- (7) Impervious Material. Excavations into or fill upon impervious material shall not be allowed. Excavations through impervious material may be allowed if at least 4 feet of naturally occurring pervious material, as demonstrated by a percolation test, remains beneath the lowest point of excavation. All construction after excavation through impervious material shall be in accordance with 310 CMR 15.02(17).
- (8) Surface Drainage. The grade above and adjacent to a leaching field system shall slope at least 2 percent to prevent the accumulation of surface water.
- (9) Cover Material. The minimum depth of cover material shall be 12 inches. Earth materials used to cover leaching fields shall be free of large stones, frozen clumps of earth, masonry, stumps, or waste construction material. Machinery which may crush or disturb the alignment of pipe in the disposal system shall not be allowed on any part of the disposal area.
- (10) Sloping Ground. When fields are built at different elevations, construction shall be such as to prevent the sewage from upper fields from flowing into lower fields.

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\*See Figure 1 in 310 CMR 15.15.

15.15: continued

(11) Excavation. Excavation may be made by machinery provided that the soil at the bottom of the leaching field is not compacted. The bottom of each leaching field shall be level.

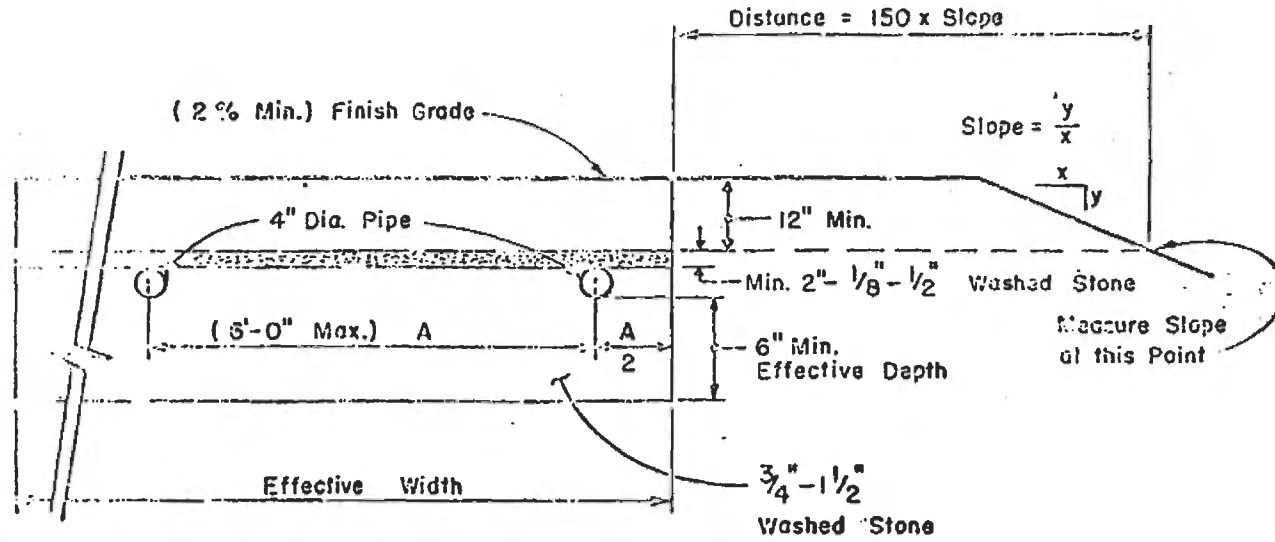
(12) Location Under Area Subject to Vehicular Traffic. When leaching field systems are constructed under areas subject to vehicular traffic, the fields shall be capable of withstanding H-20 wheel loads.

(13) Frozen Conditions. No field shall be constructed in frozen soil. Fields may be installed in cases where the construction elevation is below the depth of the frost line.

(14) Ventilation. Leaching field systems designed to be dosed must be vented at the downstream end of the system.

15.15: continued

FIGURE 1.  
LEACHING FIELD ILLUSTRATION C



LEACHING FIELDS

No Scale

Illustration C

15.16: Privies and Chemical Toilets

- (1) Use. A privy or chemical toilet shall not be constructed or continued in use unless the Board of Health has approved in writing, its construction or continued use based upon a determination by the Board of Health that the privy or chemical toilet will not (a) endanger the health of any person or, (b) cause a nuisance.
- (2) Location. Privies shall be located in accordance with the requirements of 310 CMR 15.03. No variance from any of the percolation rate requirements or leaching area loading rates outlined in this Title shall be allowed for the disposal of grey water from a lot to be served by a privy or chemical toilet, but a reduction not to exceed 40% of the design flow for subsurface sewage disposal may be allowed for the reduced water usage.
- (3) Construction. Privies shall be constructed with self-closing seat covers and fly-tight vaults, and with a screened vent from the vault to the atmosphere.
- (4) Maintenance. When a privy vault becomes filled to within 2 feet of the surface of the ground, it shall either be cleaned and the contents disposed of in a sanitary manner approved by the Board of Health, or it shall be covered with a minimum of 2 feet of clean compacted earth.

15.17: Humus Toilets

- (1) Use. A humus toilet shall not be constructed or continued in use unless the Board of Health has approved, in writing, its construction or continued use based upon determination by the Board of Health that the humus toilet will not endanger the health of any person or cause a nuisance and that the end product will be disposed of in a sanitary manner.
- (2) Location. Humus toilets shall only be located where a full-sized properly functioning subsurface sewage disposal system is available or can be constructed on the lot to be served in compliance with this Title; or where a common sanitary sewer is accessible in an abutting way and where permission to enter such a sewer can be obtained from the authority having jurisdiction over it. No variance from any of the percolation rate requirements or leaching area loading rates outlined in this Title shall be allowed for the disposal of grey water from a lot to be served by a humus toilet, but a reduction not to exceed 40% of the design flow for subsurface sewage disposal may be allowed for the reduced water usage.
- (3) Maintenance. The end product from a humus toilet must be disposed of by burial in a manner and location approved by the Board of Health, and it shall be covered with a minimum of 2 feet of clean compacted earth.

15.18: Miscellaneous Disposal

- (1) Use. The use of any disposal facility other than those described herein is prohibited unless approved in writing by the Department of Environmental Quality Engineering. It is the intent of this Title that the Department shall approve innovative disposal systems if it can be demonstrated that their impact on the environment and hazard to public health is not greater than that of other approved systems. No variances to this regulation shall be granted.
- (2) Drains. No rain water leader, cooling water drain, cellar drain, or other drain other than one for sanitary sewage shall discharge into or be connected with any sewage disposal system.
- (3) Leaching catch basins. No leaching catch basins or dry wells designed for the collection of surface drainage shall be allowed within 25 feet of any leaching facility of a subsurface sewage disposal system.



15.19: Transportation and Disposal of Privy, Cesspool, and Septic Tank Contents

(1) Permits. No person shall engage in the pumping or transportation of the contents of privies, cesspools, septic tanks, or other offensive substances without first obtaining a permit from the Board of Health in accordance with M.G.L. c. 111, s. 31A and 310 CMR 15.02(3).

(2) Equipment. No person shall use equipment to remove or transport the contents of privies, cesspools, or septic tanks or other offensive substances unless such equipment has first been inspected and approved by the Board of Health.

(a) Mobile Tank. Mobile tanks shall be securely mounted on trucks. They shall be watertight and provided with a leak-proof cover and tight discharge valves.

(b) Venting of Mobile Tanks. Mobile tanks shall be provided with a vent constructed in a manner that will permit the escape of gas, but not the liquid contents of the tank.

(c) Hose. Suction or pressure hose shall be in good repair.

(d) Pumps. Pumps shall be maintained in a condition that will prevent the leakage of sewage.

(3) Disposal. Disposal of the substances listed in 310 CMR 15.19(1) shall be by discharge to a sanitary sewer or to works designed for the purpose. If disposal is by discharge into a sanitary sewer, it shall be in a manner and at such times as may be acceptable to the authority having jurisdiction over the sewer. If disposal is by works designed for the purpose, the area shall be in a location approved in writing by the Board of Health. The location and method of disposal must be approved in writing by the Department of Environmental Quality Engineering.

(4) Transportation. The contents of privies, cesspools, and septic tanks shall be transported in a manner that will not create a nuisance or a health hazard.

(5) Intercommunity Disposal. The contents of privies, chemical toilets, septic tanks, holding tanks, or other sewage or waste receptacles originating in any city or town may be disposed of in a sanitary manner in any other city or town subject to the written approval of the Boards of Health of the Municipalities in which the wastes originate and the disposal works are located, and the written approval of the Authority having control of the receiving sewer or disposal site. If disposal is into sewers tributary to the Metropolitan District Commission Sewerage System, written approval of the Commission shall also be obtained.

(6) Fees. A fee for the issuance of a permit for the pumping or transportation of the contents of privies, cesspools, septic tanks, or other offensive substances may be charged by the Board of Health at the time an application is made for the permit.

PART II ENFORCEMENT

15.20: Variance

Variations may be granted only as follows: The Board of Health may vary the application of any provisions of this Title (except where expressly forbidden elsewhere in this Title) with respect to any particular case when, in its opinion (1) the enforcement thereof would do manifest injustice; and (2) the applicant has proved that the same degree of environmental protection required under this Title can be achieved without strict application of the particular provision.

Every request for a variance shall be made in writing and shall state the specific variance sought and the reasons therefore. No variance shall be granted for a new sewage disposal system, nor for an enlargement to an existing system which increases capacity to accommodate additional flows, except after the applicant has notified all abutters by certified mail at his own expense at least 10 days before the Board of Health meeting at which the variance request will be on the agenda. The notification shall state the specific variance sought and the reasons therefore. A variance may be issued for the repair of an

15.20: continued

existing sewage disposal system without the requirement of notification of all abutters by the applicant.

Any variance granted by the Board of Health shall be in writing. Any denial of a variance shall also be in writing and shall contain a brief statement of the reasons for the denial. A copy of each variance shall be conspicuously posted for thirty days following its issuance; and shall be available to the public at all reasonable hours in the office of the city or town clerk or the office of the Board of Health while it is in effect. Notice of the grant of each variance shall be filed with the Department of Environmental Quality Engineering, which shall approve, disapprove, or modify the variance within thirty days from receipt thereof. If the Department fails to comment within thirty days, its approval will be presumed. No work shall be done under any variance until the Department approves it or thirty days elapse without its comment, unless the Board of Health or the Department certifies in writing that an emergency exists.

15.21: Variance, Grant of Special Permission: Expiration, Modification, Suspension of

Any variance or other modification authorized to be made by this Title may be subject to such qualification, revocation, suspension, or expiration as the Board of Health or Department of Environmental Quality Engineering expresses in its grant. A variance or other modification authorized to be made by this Title may otherwise be revoked, modified, or suspended, in whole or in part, only after the holder thereof has been notified in writing and has been given an opportunity to be heard, in conformity with the requirements of Title 1 (310 CMR 11.00) for orders and hearings.

15.22: General Enforcement

The provisions of Title 1 of this Environmental Code (310 CMR 11.00) shall govern the enforcement of this Title as supplemented by the following Regulations.

15.23: Orders: Service and Content

- (1) If an examination as provided for in Title 1 (310 CMR 11.00) reveals failure to comply with the provisions of this Title, the Board of Health or Department of Environmental Quality Engineering shall order the persons responsible to comply with the violated provision.
- (2) Every Order authorized by this Title shall be in writing. Orders issued under the provisions of 310 CMR 15.23(1) shall be served on all persons responsible for the violated regulations. All Orders shall be served on the designated person:
  - (a) Personally, by any person authorized to serve civil process, or
  - (b) By leaving a copy of the Order at his last and usual place of abode, or
  - (c) By sending him a copy of the Order by registered or certified mail, return receipt requested, if he is within the Commonwealth, or
  - (d) If his last and usual place of abode is unknown or outside the Commonwealth, by posting a copy of the Order in a conspicuous place on or about the affected premises.
- (3) Subject to the emergency provision of Title 1, any Order issued under the provision of this Title shall:
  - (a) Include a statement of the violation or defect, and may suggest action which, if taken, will effect compliance with this Title, and
  - (b) Allot a reasonable time for any action it requires, and
  - (c) Inform the person to whom it is directed of his right to a hearing and of his responsibility to request the hearing, and to whom the request shall be made.

15.24: Hearing

- (1) Procedure for Requesting and Holding Hearing. Unless otherwise specified in this Title, the person or persons to whom any order has been served pursuant

15.24: continued

to any Regulation of this Title may request a hearing before the Agency that issued the order by filing with said Agency within 7 days after the day the order was served a written petition requesting a hearing on the matter. Upon receipt of such petition, the Agency shall set a time and place for such hearing and shall inform the petitioner thereof in writing. The hearing shall be commenced not later than 45 days after the day on which the Order was served. The Agency, upon application of the petitioner, may postpone the date of hearing for a reasonable time beyond such 45 day period if in the judgement of the Agency the petitioner has submitted a good and sufficient reason for such postponement.

(2) Hearing of Petitioner. At the hearing, the petitioner shall be given an opportunity to be heard and to show cause why the Order should be modified or withdrawn.

(3) Procedure by the Agency after Hearing. After the hearing, the Board of Health or Department of Environmental Quality Engineering shall sustain, modify, or withdraw the Order and shall inform the petitioner in writing of its decision. If the Board of Health or Department of Environmental Quality Engineering sustains or modifies the Order, it shall be carried out within the time period allotted in the original Order or in the modification.

(4) Public Record. Every notice, Order, or other record prepared by the Board of Health or Department of Environmental Quality Engineering in connection with the hearing shall be entered as a matter of public record in the office of the clerk of the city or town, or in the office of the Board of Health or Department of Environmental Quality Engineering.

(5) Hearing Petition Not Submitted, or Sustaining of Order. If a written petition for a hearing is not filed with the Board of Health or Department of Environmental Quality Engineering within 7 days after the day an Order has been served or if after a hearing the Order has been sustained in any part, each day's failure to comply with the Order as issued or modified shall constitute an additional offense.

15.25: Appeal

Any person aggrieved by the decision of the Board of Health or Department of Environmental Quality Engineering may seek relief therefrom within 30 days in any court of competent jurisdiction, as provided by the laws of this Commonwealth.

15.26: Penalties

(1) Any person who shall violate any provision of this Title for which penalty is not otherwise provided in any of the General Laws or in any other provision of this Title or Title 1 of this Environmental Code (310 CMR 11.00) shall upon conviction be fined not less than 10 nor more than 500 dollars.

(2) Any person who shall fail to comply with any Order issued pursuant to the provisions of this Title shall, upon conviction, be fined not less than 10 nor more than 500 dollars. Each day's failure to comply with an Order shall constitute a separate violation.

15.27: Severability

Each Regulation in Part I and Part II of this Title shall be construed as separate to the end that if any regulation or sentence, clause, or phase thereof shall be held invalid for any reason, the remainder of that regulation and all other regulations shall continue in full force.

310 CMR 15.28 through 15.98: RESERVED

15.99: Forms

The following forms apply to all of 310 CMR 15.00.

15.99: Forms

..... SUGGESTED FORM .....

BOARD OF HEALTH

\_\_\_\_\_ MASSACHUSETTS

CERTIFICATE OF COMPLIANCE

THIS IS TO CERTIFY, That the Individual Sewage Disposal System installed ( )  
or repaired ( ) by \_\_\_\_\_ at \_\_\_\_\_

installer

\_\_\_\_\_ has been constructed in accordance with the provisions  
of Title 5 of The State Environmental Code as described in the application for  
Disposal Works Construction Permit No. \_\_\_\_\_ dated \_\_\_\_\_

The issuance of this certificate shall not be construed as a guarantee that  
the system will function satisfactory.

DATE \_\_\_\_\_ Inspector \_\_\_\_\_

BOARD OF HEALTH

\_\_\_\_\_ MASSACHUSETTS

DISPOSAL WORKS CONSTRUCTION PERMIT

No. \_\_\_\_\_

Permission is hereby granted \_\_\_\_\_ to construct ( ) or  
repair ( ) an Individual Sewage System at No. \_\_\_\_\_ as shown on the  
application for Disposal Works Construction Permit No. \_\_\_\_\_

Dated \_\_\_\_\_

DATE \_\_\_\_\_ Board of Health \_\_\_\_\_

310 CMR: DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

15.99: Forms continued

No. \_\_\_\_\_ SUGGESTED FORM \_\_\_\_\_ Fee \_\_\_\_\_

BOARD OF HEALTH

\_\_\_\_\_ MASSACHUSETTS

APPLICATION FOR DISPOSAL WORKS CONSTRUCTION PERMIT

Application is hereby made for a permit to Construct ( ) or Repair ( ) an Individual Sewage Disposal System at:

Location-Address \_\_\_\_\_ or Lot No. \_\_\_\_\_

Owner \_\_\_\_\_ Address \_\_\_\_\_

Contractor \_\_\_\_\_ Address \_\_\_\_\_

Type of Building \_\_\_\_\_ Size Lot \_\_\_\_\_ Sq. feet \_\_\_\_\_

Dwelling-No. of Bedrooms \_\_\_\_\_ Expansion Attic ( ) Garbage Grinder ( )

Other-Type of Building \_\_\_\_\_ No. of person \_\_\_\_\_ Showers ( )

Cafeteria ( ) Other fixtures \_\_\_\_\_

Design Flow \_\_\_\_\_ gallons per person per day. Total daily flow \_\_\_\_\_ gallons

Septic Tank-Liquid Capacity \_\_\_\_\_ gallons Length \_\_\_\_\_ Width \_\_\_\_\_

Diameter \_\_\_\_\_ feet Depth \_\_\_\_\_ feet

Disposal Trench-No. \_\_\_\_\_ Width \_\_\_\_\_ Total Length \_\_\_\_\_ Total leaching area \_\_\_\_\_ sq.ft.

Disposal Bed No. \_\_\_\_\_ Diameter \_\_\_\_\_ Depth below inlet \_\_\_\_\_  
Total leaching area \_\_\_\_\_ sq.ft.

Other Distribution box ( ) Dosing tank ( )

Percolation Test Results Performed by \_\_\_\_\_ Date \_\_\_\_\_

Test Pit No. 1 \_\_\_\_\_ minutes per inch Depth of Test Pit \_\_\_\_\_

Test Pit No. 2 \_\_\_\_\_ minutes per inch Depth of Test Pit \_\_\_\_\_

Depth to Ground \_\_\_\_\_

Description of Soil \_\_\_\_\_

Nature of Repairs or Alterations-Answer when applicable \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



310 CMR: DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

15.99: Forms continued

Agreement:

The undersigned agrees to construct the aforescribed individual sewage disposal system in accordance with the provisions of Title 5 of the Environmental Code. The undersigned further agrees not to place the system in operation until a Certificate of Compliance has been issued by this Board of Health.

\_\_\_\_\_

Owner

\_\_\_\_\_

date

Application Approved by \_\_\_\_\_

\_\_\_\_\_

date

Application Disapproved for the following reasons: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Permit No. \_\_\_\_\_

Issued \_\_\_\_\_

\_\_\_\_\_

date

REGULATORY AUTHORITY

310 CMR 15.00: M. G. L. c. 21A, s. 13.

NON-TEXT PAGE

310 CMR: DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

(310 CMR 16.00 and 17.00: RESERVED)

310 CMR: DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

(PAGES 322 THROUGH 324 ARE RESERVED FOR FUTURE USE)