CAPE & ISLANDS ENGINEERING

RECEIVED
By Bourne Health Department at 11:48 am, Aug 16, 2023

August 16, 2023

Chairman William Doherty
Bourne Board of Health
24 Perry Avenue – Room 201
Buzzards Bay, MA 02532-3441

RE: 90 Circuit Avenue, Bourne (Pocasset), MA
Supplemental Information for Septic System Local Upgrade Application

Dear Chairman,

On behalf of the applicant and homeowner, Robert and Linda Morse, please accept this letter as supplemental information to further support the proposed septic system upgrade and local upgrade application. The project was presented before the Board of Health during the public hearing on August 9th, 2023 and several comments were raised that this letter, and enclosed information, aim to address.

First, the original Board of Health application for this project did not include a floor plan of the existing dwelling. The facility is a two-bedroom single family dwelling and it is restricted as a two-bedroom through a Title 5 Bedroom Count Deed Restriction endorsed in August 2017 and recorded at the registry of deeds under Book 30669 Page 290, and made part of the original application filing. Furthermore, the applicant found a floor plan of the dwelling and provided a photograph of such enclosed at the end of this letter.

Second, a comment was made to the effect that setback information shall not be depicted as approximation measurements but rather as whole numbers. The enclosed revised septic upgrade plan corrected this information to replace the approximated setback measurements (+/-) to whole number measurements.

Third, a direct neighbor, 96 Circuit Avenue, provided testimony in opposition to the proposed project. The basis of the abutter's opposition was based on how the project, if approved as submitted, will be inconvenient for the use of his driveway, and will also affect the views from his property. The abutter also presented the board with an alternative septic upgrade design that he, the abutter, will be willing to accept. These opposing arguments are rebutted below.

The abutter presented the board with photographs depicting how he currently uses his driveway. He further explained how the proposed small retaining wall will prevent him from properly opening his vehicle doors to enter or exit his vehicles. I would like to point several facts that are relevant and probably omitted from this scenario. The abutters driveway is close to 14-feet wide of pavement. I personally measured a width of 13'-8" of paved driveway across the angle point of the proposed wall during the site meeting with a board member on August 14th. The board was not informed that the edge of the abutter's paved driveway is approximately one-foot off the property line. The portion of the proposed wall projecting forward from the existing deck is located 1-foot to 2-feet into the applicant's property. In my opinion, the abutter complaint is based on how the proposed wall will prevent him from encroaching over the applicant's property for his own convenience and with no apparent reason since there seems to be ample space within the paved driveway, on the abutter's own property, for proper entry and exit from vehicles parked on his driveway. This scenario is no different that having a fence installed along the property line, or in this case located 1 to 2 feet into the property and a neighbor complaining that the fence prevents him from using his property. This is a matter of trespassing or use encroachment that, in my opinion, the Board of Health should not entertain.

The argument regarding the interruptions of views from the abutter's property is a topic that should not be entertained by the Board of Health. There is no recorded vista easement over the applicant property benefitting the abutter, and the matter of preserving vistas is not a Title 5 or Board of Health Septic System Regulation matter. Furthermore, the abutter currently has a raised septic system located in the front yard, built within the confines of a concrete retaining wall. This is the same scenario that the applicant is proposing, and other properties in the neighborhood. The abutter's objection of looking at the applicant's proposed wall is bias since his own septic system is built behind a concrete wall on his own property and likely with a higher wall than proposed for this application.

Another document that was provided to the board by the abutter was a conceptual redesign of a septic system upgrade that he, the abutter, would be willing to accept as an alternative for the applicant. The conceptual alternative design presented to the board consisted of an AdvanTex Treatment System AX20 by Orenco Systems, Inc followed by a Bottomless Sand Filter. We acknowledge that the presented system upgrade has approvals though DEP for remedial and general use applications and are system designs that better protect the environment compared to a standard Title 5 system. But there are several disadvantages and possible applicability conflicts with that type of design as noted herein:

- The AX20 system is approved for a nitrogen loading of 19 mg/L where as the proposed NitROE system is targeting 11 mg/L through DEP. The AX20 system is a great option, but the applicant is set up to have a system that targets a better nitrogen reducing rate and should be a preferred option.
- The Bottomless Sand Filter (BSF) has specific requirements through the DEP permit for remedial use. The DEP permit (enclosed) specifically states "*The BSF is an alternative component of a soil absorption system (SAS) for residential onsite sewage disposal systems where soil or site conditions make conventional soil absorption systems more costly to construct or infeasible.*" And in section II.3. of the permit there is a specific order to follow when identifying "*the best feasible option*" prior to choosing a BSF as the septic leaching system.

We believe this property contains enough land that with the use of retaining walls and a Local Upgrade Approval for setback waivers, can accommodate a leaching septic system that closely compares with the minimum Title 5 septic leaching system requirements. The BSF at a size of only 160 square feet, as preferred by the abutter, seeks for a reduction of 46% in leaching area from the typical 297 square feet area required for a Title 5 leaching system. However, a BSF is not an available option based on the DEP permit sections II.3.b. & section II.3.c. since a septic system upgrade at this property can be achieved through other system designs and the Local Upgrade Approval process (see clipped image of section II.3. enclosed).

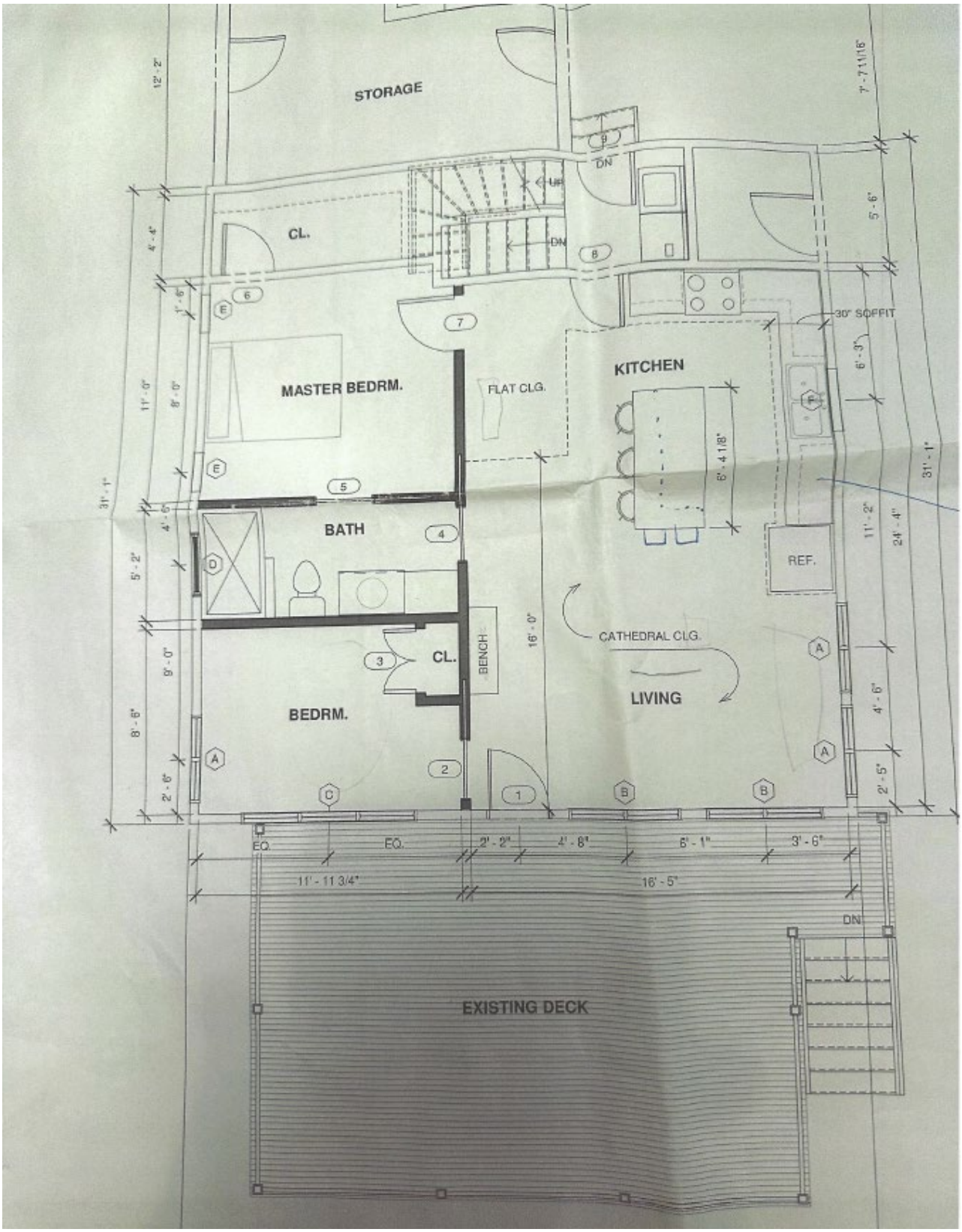
We respectfully ask the Board of Health to review this information and revised septic design plans and issue an approval for the applicant to upgrade the failed septic system as designed.

If you have any questions or concerns, please feel free to contact me.

Sincerely,

Raúl Lizardi-Rivera, P.E.

enclosures



Photograph of House Floor Plan, provided by homeowner

Photograph of Abutters Paved Driveway & limit of work and wall wooden bean posts

3. When identifying the best feasible upgrade without the use of a BSF, the Designer shall consider these options in the following order:
   a) a conventional system designed in accordance with the standards of 310 CMR 15.100 through 15.255 that can be built feasibly, with the exception of providing a reserve area (15.248);
   b) a conventional system that can only be built feasibly under a Local Upgrade Approval (LUA);
   c) where a conventional system cannot be built feasibly under a LUA, a different Alternative System with Approval for Remedial Use that can be feasibly built;
   d) where a System can only be built feasibly with variances, a System that has been demonstrated to vary the design requirements of 310 CMR 15.000 to the least degree necessary and have the least effect on public health, safety, welfare and the environment (the System may be an Alternative System with variances); or
   e) a tight tank.

Bottomless Sand Filter, DEP approval Section II. Design and Installation 3.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

Approval for Remedial Use
Bottomless Sand Filter
Residential Design Flows 880 gallons per day (gpd) or less

Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental Protection (hereinafter "the Department") hereby issues this Approval for Remedial Use, approving Bottomless Sand Filters (hereinafter "BSF's") for use in the Commonwealth of Massachusetts subject to the conditions herein. Design and use of BSF's are subject to compliance by the Designer, the Installer, the Service Contractor, and the System Owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Approval constitutes a violation of 310 CMR 15.000.

David Ferris, Director
Wastewater Management Program
Bureau of Resource Protection

July 17, 2015
Date of Reissuance
(Originally issued August 5, 2010)
(Revised March 3, 2011, June 26, 2012)

General Description of the Technology

The BSF is an alternative component of a soil absorption system (SAS) for residential on-site sewage disposal systems where soil or site conditions make conventional soil absorption systems more costly to construct or infeasible. A conventional SAS may be more costly to construct or infeasible where there is a shallow water table and/or limited area for the siting of a conventional system. As compared to a conventional system, in certain instances, the BSF provides for higher loading rates and requires significantly less filling of land, less land area, and less disturbance of the site.

The System consists of a BSF preceded by a treatment unit. The treatment unit prior to the BSF must be a unit that is capable of providing secondary treatment and must already be approved by the Department. A specific volume or dose of the treatment unit effluent is periodically pumped at set time intervals to the BSF. The effluent from the treatment unit is pumped onto and evenly distributed over the surface of the BSF. The BSF consists of at least 2 feet of sand media meeting stringent specifications through which the wastewater percolates and is filtered. The bottom of the BSF rests on existing permeable soils or rests on approved fill above existing permeable soils into which the final effluent is discharged for disposal.

The use of a BSF in accordance with this Approval for Remedial Use requires, among other things:

- Design, installation, and operation of the System generally in accordance with the Rhode Island DEM guidelines upon which the Massachusetts DEP has largely based the Approval and acceptance of this technology in the Commonwealth of Massachusetts;
- A Designer, Soil Evaluator, and Installer, who have received appropriate training for the design, installation, and use of BSF's;
- A MassDEP approved treatment unit prior to the BSF;
- A Disclosure Notice in the Deed to the property (310 CMR 15.287(10));
- Certifications by the Designer and the Installer (310 CMR 15.021(3));
- A Massachusetts certified operator under contract for periodic inspection and maintenance (310 CMR 15.287(10));
- Periodic sampling, recordkeeping, and reporting, in accordance with this Approval;
- Notification within 24 hours by the System Owner to the local approving authority of any System failure;
- 24-hour wastewater storage capacity above the elevation of the high level alarm or back-up power capability in the event power failure; and
- System Owner Acknowledgement of Responsibilities, in accordance with this Approval.

Definitions and References

The term "System" refers to the BSF in combination with the other components of an on-site treatment and disposal system that may be required to serve a facility in accordance with 310 CMR 15.000.

The term "Approval" refers to this Approval including all Conditions, the General Conditions of 310 CMR 15.287, any Attachments, and the RI DEM referenced documents.

A Deed Notice template is available from the Department.

Relevant RI DEM documents include:

a) RI DEM Soil Evaluation Guidance
http://www.dem.ri.gov/programs/benviron/water/permits/isds/pdfs/seg0108.pdf

b) Rhode Island DEM
Guidelines for the Design, Use, and Maintenance of Pressurized Drainfields
http://www.dem.ri.gov/programs/benviron/water/permits/isds/pdfs/pdflds.pdf

I. Purpose

1. The purpose of this Approval for Remedial Use is to provide conditions under which the local approving authority and Department may approve the use of bottomless sand filters for the upgrade of an existing failed or nonconforming system without an increase in design flow. The facility must meet the specific siting conditions for Remedial Use of an Alternative System (310 CMR 15. 284(2)) and the facility must meet the siting requirements of this Approval.

2. The Approval provides for an allowable reduction in the effective leaching area for residential systems with design flows less than or equal to 880 gpd that employ a BSF designed and approved in accordance with the conditions of this Approval. The effective leaching area reduction is allowable whether or not the BSF is installed in conjunction with an approved Enhanced Nitrogen Removal technology to comply with the Nitrogen Loading Limitation provisions of 310 CMR 15.214.

3. Remedial Use of a Bottomless Sand Filter in Massachusetts may be approved when the design, installation, and operation of the System is in accordance with RI DEM guidelines and complies with the following conditions. To the extent any the following conditions diverge from the RI DEM BSF Guidelines, the conditions of this Approval supplant the RI DEM guidelines.

4. Provided that the local approving authority approves the System in conformance with the Department's Approval for Remedial Use for the System and the applicant complies with all the conditions of this approval, including submitting all the documentation and certifications as specified herein, Department review and approval of the site-specific System design and installation is not required unless the Department determines on a case-by-case basis, pursuant to its authority at 310 CMR 15.003(2)(e), that the proposed System requires Department review and approval.

5. With the other applicable permits or approvals that may be required by Title 5, the Approval authorizes the installation and use of the Alternative System in Massachusetts. All the provisions of Title 5, including the General Conditions for all Alternative Systems (310 CMR 15.287), apply to the sale, design, installation, and use of the System, except those provisions that specifically have been varied by the Approval.

II. Design and Installation

1. BSF's shall only be proposed to serve existing facilities for which there is no increase in the actual or proposed design flow and the facilities are served by a failed, failing or nonconforming existing system and where it has been adequately demonstrated to the local approving authority that a connection to a sewer system is infeasible.

   When a sanitary sewer connection becomes feasible after a System has been installed, the System Owner shall connect the facility served by the System to the sewer within 60 days of such feasibility and the System shall be abandoned in compliance with current Code requirements, unless a later time is allowed in writing by the Department or the local Approving Authority.

2. The proposed use of a BSF shall be subject to the following:

   a) The approved record drawings, on file with the local approving authority, shall clearly indicate an area for the best feasible upgrade without the use of a BSF in the event that the installed BSF System fails or it is determined that it is not capable of providing equivalent environmental protection;

   b) the installation of the BSF System, including all components, shall not disturb the site in any manner that would preclude the future installation of the best feasible upgrade without the use of a BSF. Components of the installed BSF System may be sited in an area for the future installation of the best feasible upgrade without the use of a BSF, provided that it does not render it unusable for an upgrade; and

   a) the System Owner shall not construct any permanent buildings or structures in the area for the best feasible upgrade without the use of a BSF or disturb the site in any manner that would preclude the future installation of the best feasible upgrade without the use of a BSF.

3. When identifying the best feasible upgrade without the use of a BSF, the Designer shall consider these options in the following order:

   a) a conventional system designed in accordance with the standards of 310 CMR 15.100 through 15.255 that can be built feasibly, with the exception of providing a reserve area (15.248);

   b) a conventional system that can only be built feasibly under a Local Upgrade Approval (LUA);

   c) where a conventional system cannot be built feasibly under a LUA, a different Alternative System with Approval for Remedial Use that can be feasibly built;

   d) where a System can only be built feasibly with variances, a System that has been demonstrated to vary the design requirements of 310 CMR 15.000 to the least degree necessary and have the least effect on public health, safety, welfare and the environment (the System may be an Alternative System with variances); or

   e) a tight tank.

4. Supervision of the installation shall be by the Designer who designed the System and who is a Massachusetts Registered Professional Engineer or Massachusetts Registered Sanitarian

and can demonstrate that (s)he has satisfactorily completed 20 hours of appropriate training for the design and installation of BSF's through the University of Rhode Island (URI) Onsite Wastewater Training Program. Courses OWT 105, OWT 125, and OWT 150 together meet this requirement.

5. A soil suitability assessment shall be performed by a Massachusetts Approved Soil Evaluator in accordance with requirements of Title 5 and RI DEM Soil Evaluation Guidance, except percolation testing is only necessary when required by the local approving authority. The soil suitability assessment shall be recorded on the form approved by the Department and shall include any additional soils information necessary for selection of the allowable loading rate for the BSF.

   Additionally, to confirm the field test results for the textural class assigned to the soils, a Particle Size Analysis must be performed. The Particle Size Analysis shall be performed in accordance with MassDEP "Title 5 Alternative to Percolation Testing Guidance for System Upgrades". (A Particle Size Analysis to confirm the dominant size of the sand fraction may also be performed, if desired.)

6. The allowable loading rate for the design of a BSF shall be based on RI DEM BSF Design Guidelines and RI DEM Soil Evaluation Guidance. Category 1 Systems Loading Rates may only be used for a System utilizing a time dosed treatment unit prior to the BSF and the treatment unit must be classified by RI DEM as having met the standards for Category 1. The treatment unit preceding the BSF must also have Remedial Use Approval granted by MassDEP.

   No increase in the BSF loading rates is allowed under LUA.

7. Design flows shall be established in accordance with Title 5 and the System shall only be approved for residential use with a minimum design flow of 330 gpd and a maximum design flow of 880 gpd. The minimum flow may be reduced accordingly if a deed restriction limiting use to 2 bedrooms and 220 gpd is granted to the local Approving Authority or a deed restriction limiting use to 1 bedroom and 110 gpd is granted to the local Approving Authority, as a condition of a variance.

8. In additions to the requirements of this Approval, the Designer, the Installer, the Service Contractor, and System Owner shall be responsible for compliance with the requirements of the Department's secondary treatment unit Approval.

9. A septic tank meeting the requirements for new construction must precede the secondary treatment unit unless the treatment unit approval does not require it.

10. Except as provided in Paragraph II.11, the BSF must be sited above 4 feet of naturally occurring pervious material.

11. In an area with at least two feet of naturally occurring pervious material, the approving authority may allow a reduction in the required four feet of naturally occurring pervious material layer, only when:

    a) it has been demonstrated that the four-foot requirement for naturally occurring pervious material cannot be met anywhere on the site; and

b) no reduction is allowed under LUA for setbacks from public or private wells, bordering vegetated wetlands, surface waters, salt marshes, coastal banks, certified vernal pools, water supply lines, surface water supplies or tributaries to surface water supplies, or drains which discharge to surface water supplies or their tributaries.

12. The local approving authority may grant Local Upgrade Approvals in accordance with the procedures of 310 CMR 15.405, except for the limitations to LUA imposed in Paragraphs II.11 and II.14.

13. To prevent potential sewage breakout, the setback distance from any naturally occurring side slope shall be a minimum of 10 feet measured horizontally in any direction from the bottom of the BSF, provided that the BSF enclosure meets the impervious barrier requirements of 310 CMR 15.255(2) and the Department "Guidelines for the Design and Installation of Impervious Barriers'.

14. The top of the sand of the BSF must be a minimum of 4 feet above seasonal high groundwater, as determined in accordance with Title 5, except in soils with a percolation rate faster than 2 min./inch, where the top of the sand of the BSF must be at least 5 feet above seasonal high groundwater. The approving authority may not allow under LUA a reduction in the required separation between the top of the sand of the BSF and the high groundwater elevation.

15. The depth of sand in the BSF may be increased above the required 2 feet for the purposes of achieving an increased depth to groundwater, provided that the retaining wall supporting the filter sand shall be of suitable structural material and designed by and the construction is supervised by a Massachusetts Registered Professional Engineer.

16. If the bottom of a BSF is above existing grade, the BSF shall be placed on fill meeting the requirements of 310 CMR 15.255(3). Fill may be placed beneath the BSF provided that the horizontal distance of the fill to side slopes shall be 15 feet unless a suitable impervious barrier is installed in the fill, in accordance with the provisions of 310 CMR 15.255(2) and the Department "Guidelines for the Design and Installation of Impervious Barriers', to prevent potential sewage breakout.

17. Except for septic tank covers which are not required to be at grade, the frames and covers of the access manholes of all System treatment units shall be watertight, made of durable material, and shall be installed and maintained at grade, to allow for necessary operation, sampling and maintenance access. Manholes brought to final grade shall be secured to prevent unauthorized access. No structures which could interfere with performance, access, inspection, pumping, or repair shall be located directly upon or above the access locations.

18. Any treatment unit or other System structures with exterior piping connections located within 12 inches or below the Estimated Seasonal High Groundwater elevation shall have the connections made watertight with neoprene seals or equivalent.

19. The System shall be equipped with sensors and high-level alarms to protect against high water due to pump failure, pump control failure, loss of power, or system freeze up. The control panel including alarms and controls shall be mounted in a location always accessible

to the operator (or service contractor). Emergency storage capacity for wastewater above the high level alarm shall be provided equal to the daily design flow of the System and the storage capacity shall include an additional allowance for the volume of all drainage which may flow back into the System when pumping has ceased.

Instead of providing emergency 24-hour storage, an independent standby power source may be provided for operation during an interruption in power. With any interruption of the power supply the source must be capable of automatically activating in addition to manual start up capability. The standby power must be sufficient to handle peak flows for at least 24 hours and sufficient to meet all power needs of the System including, but not limited to, pumping, ventilation, and controls. Standby power installations must be inspected and exercised at least annually and all automatic and manual start up controls must be tested. Standby power installations must comply with all applicable state and local code requirements. Provided that a standby power installation complies with these requirements, no variance is required to the provisions of 310 CMR 15.231(2).

20. System unit malfunction alarms and high water alarms shall be connected to circuits separate from the circuits to the operating equipment and pumps.

21. All System control units, valve boxes, distribution piping, conveyance lines and other System appurtenances shall be designed and installed to prevent freezing.

22. The Designer shall provide the Approval, an Owner's Manual and an Operation and Maintenance Manual to the System Owner. The Owner's Manual and the Operation and Maintenance Manual shall include this Approval and the RI BSF Guideline.

23. The System Owner and the Designer shall not submit to the local Approving Authority a Disposal System Construction Permit (DSCP) application for the use of a Technology under this Approval if the Approval has been revised, reissued, suspended, or revoked by the Department prior to the date of application. The Approval continues in effect until the Department revises, reissues, suspends, or revokes the Approval.

24. Upon submission of an application for a DSCP, the Designer shall provide to the local approving authority:

    a) a certification, signed by the owner of record for the property to be served by the unit, stating that the property owner:

        i) has been provided a copy of the Remedial Use Approval for the BSF, the Department's approval for the treatment unit that precedes the BSF, the Owner's Manual, the Operation and Maintenance Manual, and all attachments and the Owner agrees to comply with all terms and conditions;

        ii) has been informed of all the owner's costs associated with the operation including power consumption, maintenance, sampling, recordkeeping, reporting, and equipment replacement;

        iii) has been informed of feasible alternatives to the BSF and has been provided estimates of the installation and operating costs of the feasible alternatives;

        iv) understands the requirement for a service contract with a certified operator;

v) agrees to fulfill his responsibilities to provide a Deed Notice as required by 310 CMR 15.287(10) and the Approval; and

vi) agrees to fulfill his responsibilities to provide written notification of the Approval conditions to any new owner, as required by 310 CMR 15.287(5);

vii) if the design does not provide for the use of garbage grinders, the restriction is understood and accepted; and

viii) whether or not covered by a warranty, the System Owner understands the requirement to repair, replace, modify or take any other action as required by the Department or the local Approving Authority, if the Department or the local Approving Authority determines the System to be failing to protect public health and safety and the environment, as defined in 310 CMR 15.303.

b) proof that the Designer has satisfactorily completed 20 hours of appropriate training for the design and installation of BSF's through the University of Rhode Island Onsite Wastewater Training Program. Courses OWT 105, OWT 125, and OWT 150 together meet this requirement; and

c) certification by the Designer that the design conforms to Title 5, this Approval, and the RI DEM BSF Guidelines.

25. Prior to commencement of construction of the System, the System Owner shall provide to the local approving authority a copy of a signed contract for a minimum period of one year with a Service Contractor meeting the qualifications specified in Paragraph III.1.

26. Prior to the commencement of construction, the System Installer must certify in writing to the Designer, the Approving Authority, and the System Owner that (s)he is a locally approved installer and has received appropriate training for the installation of a BSF by a vendor, professional organization, or institution recognized by RI DEM.

27. The System Owner shall not authorize or allow the installation of the System other than by a locally approved installer who has received appropriate training for the installation of a BSF by a vendor, professional organization, or institution recognized by RI DEM.

28. Prior to the issuance of the Certificate of Compliance, the local approving authority shall receive a copy of the certified soil analysis conducted on the media in accordance with ASTM D0136 and ASTM C-117 or equivalent. The System shall meet the requirements of ASTM- C33 sand with an effective size of 0.3 mm (D_{10}) and a uniformity coefficient of 3.0 to 4.0 (D_{60}/D_{10}). The maximum allowable percentage of fines passing a Number 200 sieve shall be 1%. [RI DEM BSF Guideline p. 13]

29. The Installer shall maintain on-site, at all times during construction, a copy of the approved plans, the Owner's manual, the O&M manual, and a copy of the Approval including the RI DEM BSF Guidelines. The System Owner and the System Operator shall maintain copies after construction is completed.

30. No changes shall be made to the approved plan or the System without the prior written approval of the local approving authority. Prior to use of the System, the System Owner shall comply with the Certificate of Compliance provisions of Title 5, 310 CMR 15.021.

31. Prior to the issuance of a Certificate of Compliance by the local approving authority, the following documentation shall be submitted to the local approving authority:

    a) In accordance with 310 CMR 15.021(3), the System Installer and Designer must certify in writing that the System has been constructed in compliance with 310 CMR 15.000, the approved design plans, and all local requirements, including any local approving authority site-specific requirements;

    b) In accordance with 310 CMR 15.021(3), the Designer must certify in writing that any changes to the design plans have been reflected on as-built plans which have been submitted to the Approving Authority by the Designer;

    c) As a condition of this Approval, the System Installer and Designer must certify in writing that the System has been constructed in compliance with the terms of this Approval; and

    d) After recording and/or registering the Deed Notices required by 310 CMR15.287(10) for the secondary treatment unit Approval and this BSF Approval, the System Owner shall provide to the Approving Authority: (i) a certified Registry copy of the Deed Notice bearing the book and page/or document number; and (ii) if the property is unregistered land, a Registry copy of the System Owner's deed to the property, bearing a marginal reference on the System Owner's deed to the property. The Notice to be recorded shall be in the form of the Notice provided by the Department.

32. Upon receipt of a Certificate of Compliance, the Designer and the System Owner shall be responsible for providing to the Department a copy of the approving authority Certificate of Compliance, the Designer certification of the installation, and the Installer certification of the installation.

III. Operation and Maintenance, Monitoring, and Inspection

1. Inspection, operation and maintenance (O & M), sampling, and field testing of the System required by this Approval shall be performed by a Service Contractor who has been certified at Grade Level II (two) by the Board of Registration of Operators of Wastewater Treatment Facilities, in accordance with Massachusetts regulations 257 CMR 2.00. The name of the Operator shall be included in the agreement.

2. To ensure proper operation and maintenance (O&M) of the System, the System Owner shall enter into an O&M Agreement with a qualified Service Contractor. Prior to the issuance of a Certificate of Compliance by the local approving authority, the System Owner shall submit to the local approving authority a copy of a signed O&M Agreement with a qualified Service Contractor. The Agreement shall be at least for one year and include the following provisions:

    a) The Service Contractor must have the qualifications specified in Paragraph III.1.

    b) The Service Contractor must inspect the System in accordance with the Approval and anytime there is an equipment failure, System failure, or other alarm event;

c) The Service Contractor shall be responsible for obtaining sample analyses results from a qualified laboratory and submitting the results to the System Owner in accordance with Paragraph III.13 and to the local approving authority in accordance with Paragraph III.17.

d) In the case of a System failure, an equipment failure, alarm event, components not functioning as designed, or violations of the Approval, procedures and responsibilities of the Service Contractor and System Owner shall be clearly defined for corrective measures to be taken immediately. The Service Contractor shall agree to provide written notification within five days describing corrective measures taken to the System Owner and the local board of health; and

e) Procedures and responsibilities for recording monthly wastewater flows must be defined.

The System Owner and the Service Contractor shall maintain an O&M Agreement at all times.

3. The System Owner shall provide access to the site for the Service Contractor to perform inspections, maintenance, repairs, field testing, collect samples, and to respond to alarm events, as may be required by the Approval.

4. For seasonal use, the Service Contractor shall be on-site and responsible for the proper start-up and shut down of the Alternative System.

5. Unless directed by the local Approving Authority to take other action, the System Owner shall immediately cease discharges or have wastewater hauled off-site, if at any time during the operation of the Alternative System the system is in failure as described in 310 CMR 15.303(1)(a)1 or 2, backing up into facilities or breaking out to the surface.

6. The Service Contractor shall inspect the System:

   a) at least annually, including any inspections required by the treatment unit that precedes the BSF;

   b) in accordance with the Designer's approved O&M manual and the requirements of the local approving authority; and

   c) anytime there is an alarm event, equipment failure, or System failure.

7. The System shall comply with the monitoring requirements and effluent limits for the treatment unit that precedes the BSF. In addition to the monitoring requirements for the treatment unit that precedes the BSF, each time the System is inspected, the BSF shall be inspected for signs of ponding on top of the filter sand and at the bottom of the filter sand. An inspection well down to the bottom of the filter sand shall be installed for this purpose in accordance with the RI DEM Guidance. The O&M Agreement, as required by Paragraph III.2, shall include the inspection and monitoring schedule, which may be modified in accordance with Paragraph III.8 & 9.

8. Whenever ponding is observed above the surface of the BSF sand, up to the crown of the distribution laterals, or whenever an inspection well measurement indicates ponding up to 50% of the total depth of sand in the BSF, the System Owner shall be responsible for submitting to the local Approving Authority, within 30 days, a written evaluation with

recommendations for changes in the design, operation, and/or maintenance of the System. The written evaluation with recommendations shall be prepared by the Service Contractor or a Designer qualified under this Approval. The submission shall include all monitoring data, inspection reports, and laboratory analyses for the previous year.

Recommendations shall be implemented, as approved by the local Approving Authority, in accordance with an approved schedule, provided that all corrective measures are implemented consistent with the limitations described in Paragraph III.16.

9. Whenever there are objectionable odors or field testing indicates a pH outside the specified range, an exceedance of the turbidity limit, or D.O. below the desired minimum, the Service Contractor shall make adjustments and/or repairs to the System, as deemed necessary during the inspection and shall collect an effluent sample from the treatment unit for laboratory analysis for BOD_5, TSS, and FOG.

10. Whenever two consecutive monitoring rounds, as required by Paragraph III.9, include at least one exceedance of any of the limits for BOD_5, TSS, or a FOG limit of 5 mg/l, the Service Contractor or a Designer qualified under this Approval shall conduct an evaluation and provide recommendations, within 90 days of the second exceedance, for changes in the design, operation, and/or maintenance of the treatment system that precedes the BSF. The evaluation and recommendations shall be provided to the System Owner and local approving authority and shall include all monitoring data, inspection reports, and laboratory analyses since the last annual report. Recommendations shall be implemented, as approved by the local approving authority, in accordance with an approved schedule.

11. The System Owner and the Service Contractor shall properly operate and maintain the System in accordance with this Approval, the Designer's operation and maintenance requirements, the RI DEM BSF Guidelines, and the requirements of the local approving authority. The Service Contractor and the System Owner shall be responsible for compliance with all sampling, monitoring, and inspection requirements.

12. Each time the System is visited by a Service Contractor the following shall be recorded and included in O&M reports, at a minimum:
    a) date, time, air temperature, and weather conditions;
    b) observations for objectionable odors;
    c) observations for signs of breakout of sanitary sewage in the vicinity of the Alternative System, which indicate a failure of the Alternative System;
    d) identification of any apparent violations of the Approval;
    e) estimated or actual wastewater volume treated, based on metered water usage or estimated water usage (The Service Contractor shall provide the method of estimating, such as pump run times, event counters, occupancy rates, adjustments for seasonal outdoor water use, etc.);
    f) since the last inspection, whether the System had been pumped with date(s) and volume(s) pumped;
    g) sludge depth and scum layer thickness, if measured;

h) when responding to alarm events, the cause of the alarm and any steps taken to address the alarm and to prevent or reduce the likelihood of future similar alarm events;

i) field testing results, if any;

j) a list of samples taken for laboratory analysis, if any;

k) any cleaning and lubrication performed;

l) any adjustments of control settings, as recommended or deemed necessary;

m) any testing of pumps, switches, alarms, as recommended or deemed necessary;

n) identification of any equipment failure or components not functioning as designed;

o) parts replacements and reason for replacement, whether routine or for repair; and

p) further corrective actions recommended, if any.

13. The Service Contractor shall perform any required field testing, collect samples when required by the Approval, and obtain analysis results from an approved laboratory. The Service Contractor shall submit field testing and lab results to the System Owner with the O&M report and inspection checklist within 60 days of the site visit. The O&M report and inspection checklist shall include, at a minimum, any required wastewater analyses, any required flow data, and all the information required to be recorded for a maintenance inspection of an Alternative System.

14. Upon determining that the System is in violation of the Approval or there is breakout of effluent onto the surface of the ground or the System is failing in some other manner to protect public health and the environment, as defined in 310 CMR 15.303, the Service Contractor shall notify the System Owner immediately.

15. Upon determining there is breakout of effluent onto the surface of the ground or that the System is failing in some other manner the protect public health and the environment, as defined in 310 CMR 15.303, the System Owner and the Service Contractor shall be responsible for the notification of the local approving authority within 24 hours of such determination.

16. In the case of a System that has been determined to be failing to protect public health and safety and the environment, an equipment failure, alarm event, components not functioning as designed, or any violations of the Approval, the System Owner and the Service Contractor shall be responsible for the written notification of the local approving authority within five days describing corrective measures and may only propose or take corrective measures provided that:

    a) all emergency repairs, including pumping, shall be in accordance with the limitations and permitting requirements of 310 CMR 15.353;

    b) the design of any repairs or upgrades are consistent with the System Approval;

    c) the design of any repairs or upgrades requiring a DSCP shall be performed by a Designer meeting the qualifications of this Approval;

    d) the installation shall be done by an Installer with a currently valid Disposal System Installers Permit and the Installer meets the qualifications of this Approval.

17. By September 30th of each year, the System Owner and the Service Contractor shall be responsible for submitting to the local approving authority all O&M reports and inspection checklists completed by the Service Contractor during the previous 12 months.

18. The System Owner and the Service Contractor shall maintain copies of Service Contractor O&M reports, field testing results, sample analyses data, inspection checklists, and all reports and notifications to the local approving authority for a minimum of three years.

19. The System Owner and the Service Contractor shall notify the local approving authority in writing within seven days of any cancellation, expiration or other change in the terms and/or conditions of the O&M Agreement required by this Approval.

20. The Service Contractor shall notify the System Owner of any changes to the terms and conditions of the Approval within 30 days of any changes.

21. Within one year of any changes to the terms and conditions of the Approval, the System Owner shall amend, as necessary, the O&M Agreement required by this Approval to reflect the changes to the terms and conditions of the Approval.

22. The System Owner and the Service Contractor shall maintain on-site, at all times, a copy of the approved plans, the Owner's Manual, the O&M Manual, a copy of the Approval, and a copy of the O&M Agreement.

IV. Additional System Owner Requirements

1. Prior to signing any agreement to transfer any or all interest in the property served by the System, or any portion of the property, including any possessory interest, the System Owner shall provide written notice of all conditions contained in the Approval to the transferee(s). Any and all instruments of transfer and any leases or rental agreements shall include as an exhibit attached thereto and made a part of thereof a copy of the Approval for the System. The System Owner shall send a copy of such written notification(s) to the Local Approving Authority within 10 days of giving such notice to the transferee(s).

2. This Approval shall be binding on the System Owner and on its agents, contractors, successors, and assigns, including but not limited to the Designer, Installer, and Service Contractor. Violation of the terms and conditions of this Approval by any of the foregoing persons or entities, respectively, shall constitute violation of this Approval by the System Owner unless the Department determines otherwise.

3. The System Owner shall obtain all necessary permits and approvals required by 310 CMR 15.000 prior to the installation and use of the System in Massachusetts.

4. The System is approved for the treatment and disposal of residential sanitary sewage only. The System Owner shall not introduce any wastes that are not sanitary sewage into the System. The System Owner shall dispose of wastes generated or used at the facility that are not sanitary sewage by other lawful means.

5. The System Owner shall at all times have the installed System properly operated and maintained in accordance with the most recent O&M provisions of this Approval for the alternative technology and in accordance with any additional requirements of the Approving Authority. Any updates of the O&M provisions of this Approval for the alternative technology are available from the Department.

6. The System Owner shall not install, modify, upgrade, or replace the System except in accordance with a valid DSCP issued by the local Approving Authority which covers the proposed work.

7. To determine whether cause exists for modifying, revoking, or suspending the Approval or to determine whether the conditions of the Approval have been met, the System Owner shall furnish the Department any information that the Department requests regarding the System, within 21 days of the date of receipt of that request.

V. General Requirements

1. Any System for which a complete DSCP Application is submitted while the Approval is in effect, may be permitted, installed, and used in accordance with the Approval, unless and until:
   a) the Department issues modifications or amendments to the Approval which specifically affect the installation or use of a System installed under the Approval for the System; or
   b) the Department, the local approval authority, or a court requires the System to be modified or removed or requires discharges to the System to cease.

2. All notices and documents required to be submitted to the Department by the Approval shall be submitted to:

   Director
   Wastewater Management Program
   Department of Environmental Protection
   One Winter Street - 5th floor
   Boston, Massachusetts 02108

3. The Department may suspend, modify or revoke the Approval for cause, including, but not limited to, noncompliance with the terms of the Approval, non-payment of any annual compliance assurance fee, for obtaining the Approval by misrepresentation or failure to disclose fully all relevant facts or any change in or discovery of conditions that would constitute grounds for discontinuance of the Approval, or as necessary for the protection of public health, safety, welfare, or the environment, and as authorized by applicable law. The Department reserves its rights to take any enforcement action authorized by law with respect to the Approval and/or a System utilizing the Technology against a Designer, a System Owner, an Installer, and/or Service Contractor.