

November 17, 1995

GMP #78

To: District Directors
District Environmental Health Managers
Office of Environmental Health Services

From: Randolph L. Gordon, M.D., M.P.H.
State Health Commissioner

SUBJECT: Variances to Sewage Handling and Disposal Regulations: Use of High-Rate Sand Filters For Pretreatment In Subsurface Absorption Systems
Onsite - Variances - High-Rate Sand Filters

Background: Section 2.7.B states that a variance may be granted if a thorough investigation reveals that the hardship imposed (which may be economic) by the regulations outweighs the benefits that may be received by the public, and if granting the variance does not subject the public to unreasonable health risks.

Variances to § 4.30.C.1 (minimum trench depth) have been routinely granted, regardless of the degree of hardship imposed, upon a finding that little or no additional health risks result from granting them. A sand filter is required for these installations and in 1993 a policy was implemented to expedite processing these variances (GMP #20).

This policy is similar to GMP #20 and is intended to allow the use of "high-rate" sand filters for pretreatment where variances are granted to § 4.30.C.1 (minimum trench depth). A high rate sand filter is essentially a conventional recirculating sand filter with a loading rate greater than 5 gallons/square foot/day.

This policy uses the same site and soil criteria as GMP #20, and it establishes new monitoring and sampling requirements for high rate filters. It is hoped that this policy will provide a more economical sand filter option, thereby encouraging the use of sand filter/shallow drainfield systems on sites that historically have been used for mound systems with some unsatisfactory results.

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The high rate sand filter has been shown in some research to require additional maintenance, mainly due to clogging of the filter surface. The Department, however, will allow these designs to be utilized and tested in the interest of identifying cost-effective strategies for dealing with site and soil limitations.

This policy may only be used to issue construction permits and may not be used to certify sites under certification letters.

There are substantive differences between this policy and GMP #20. This policy:

- allows use of high-rate recirculating sand filters;
- requires an owner to sign a conditional permit letter; and
- requires monitoring and sampling.

The following procedure has been developed to facilitate the processing of these variances:

The authority to review requests for variances and to complete the documentation necessary for granting variances under this procedure is applicable exclusively to sites/soils meeting the conditions specified in this policy. All other site and soil criteria must fully comply with the Sewage Handling and Disposal Regulations without exception. In all cases where the minimum requirements established in this procedure cannot be met, the request for a variance will be reviewed by the District and sent to the Commissioner with a recommendation for action in the usual manner.

Action: Processing requests for variances to § 4.30.C.1 of the Sewage Handling and Disposal Regulations (minimum trench depth), where owners wish to utilize high rate sand filters in lieu of the sand filter designs specified in GMP #20, to serve structures (excluding restaurants) with flows not to exceed 750 GPD.

Purpose: Where a sand filter is required as a condition of a variance, this policy is intended to provide a more economical sand filter design alternative to those owners requesting such; to allow observation of the operational and functional attributes of these systems in actual operation; and to establish appropriate site conditions for the use of high-rate sand filters and the procedure for permitting them.

Goal: To provide a competent and timely response to requests for variances where site factors and appropriate use of technology have routinely indicated that little or no additional health risks will result from granting the variances.

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Procedure: The Environmental Health Specialist will identify sites that meet the specific criteria for a variance during routine site and soil evaluations. Letters of denial, consistent with the Department's current policy, are still required for all sites that do not meet the minimum requirements of the Regulations.

The Environmental Health Specialist will notify the applicant that a variance may be granted, and make appropriate documentation of that notification. If the applicant desires to request a variance, a written request signed by the property owner must be submitted. Owners may designate an agent to act on their behalf by providing a written statement to the local health department. Requests for variances from lawyers who are representing owners should be handled the same as requests from owners.

The Environmental Health Specialist will prepare a brief statement (suggested form letter is included with this memorandum) explaining the nature of the variance and confirming that there are no other conditions associated with the site, other than the specific one for which the variance is being granted, that do not meet the minimum requirements of the Regulations. A copy of the appropriate pre-signed variance, as attached to this memorandum, must be included with the permit.

A copy of the signed permit and attached variance must be sent to the Enforcement Chief, Division of Onsite Sewage and Water Services, within 5 working days following review by the responsible party. Issue Summaries are **not** required.

When an application for a variance cannot be granted under this procedure, the Environmental Health Specialist will notify the owner or agent in writing that the request cannot be granted under the procedure, and that the request is being sent to the Commissioner for action.

In addition to the procedures outlined above, the following additional requirements or provisions will apply to the use of high-rate sand filters:

- 1) The minimum trench bottom depth is 12 inches.
- 2) A minimum 6 inches of additional topsoil must be placed and mounded over the drainfield to promote surface runoff.
- 3) A letter shall be written (conditional letter) to document the conditions imposed by the variance. The letter must contain a statement that the owner has read the conditions, understands the conditions, and agrees to abide by the conditions.

- 4) Monitoring and sampling shall be required for a period of 3 years after the system is placed into operation.
- 5) The owner's request for a variance must state that he/she desires to use the high-rate sand filter and understands that it may require more frequent maintenance than a filter with a lower loading rate, and that they will be required to provide monitoring for the system.

Generic plans for high-rate sand filters are provided with this policy and may be used by a Professional Engineer to design the filter. A sample conditional permit letter is also provided with this policy.

Time Frame: Concurrent with regular processing of the application for a construction permit.

Enforcement and Monitoring: When initiating the use of a new technology, it is important to develop an appropriate enforcement strategy to deal with problems as they arise. It is likely that a new solution may be quite popular and result in numerous applications for its use. This requires some planning to ensure that the new technology, if unchecked, will not create its own set of problems.

The enforcement program should include:

- 1) A separate list of systems permitted.
- 2) A separate list of systems installed.
- 3) A routine monitoring program to confirm the operational competence of the systems. Initially, the system should be inspected every 3 months by the local health department, then yearly until confidence in the operational ability of the system is established.

High rate sand filter systems should produce an effluent in the range of 30 mg/l suspended solids and BOD₅. However, no enforcement action should be taken against owners of these systems for failure to meet these limits, unless the owner is not operating the system at all or unless operation of the system results in an actual or potential public health or environmental threat. Sampling is the responsibility of the owner as established in the variance conditions.

The Department will analyze the performance of several full scale systems to determine whether it will continue to allow the use of high rate filters and to determine whether the Regulations should be amended to include design criteria for these systems.

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Level of Review: All variances granted under this procedure must be reviewed and counter-signed by the District Health Director (unless delegated) prior to the issuance of any construction permit. At their discretion, District Directors may delegate this responsibility to the Environmental Health Manager assigned to the onsite sewage and water programs. Two signed copies of the variance are attached, one for use when the District Director is reviewing, the other when the review is delegated to the Environmental Health Manager.

Attachments:

- Generic plans
- Conditional letter
- Sample EHS letter
- Variance letters (2)

Section 4.30.C.1 requires a minimum absorption trench installation depth of 18 inches. This variance is granted to allow installation of drainfield trenches at depths less than 18 inches, but at least 12 inches deep. This system is for use where the sewage flow does not exceed 750 gallons per day and there is no commercial food service. All other minimum requirements of the Regulations must be met, including separation distance to rock and impervious strata, and slope factors that require increasing the depth of installation.

The site and soil evaluations conducted by the Department indicate that a shallow-placed sewage treatment and disposal system installed on the proposed site will treat and dispose of sewage effluent properly. Attention to design details, protection of the site before and during construction, and proper construction techniques are absolutely necessary to maximize the potential for this system to function properly.

This variance is granted with the following conditions:

1. The drainfield trenches must be installed at a depth of at least 12 inches. The design percolation rate may be increased to provide a larger drainfield area if heavier soil textures occur in the strata up to 12 inches below the trench. This increase will affect only the square footage of the drainfield and shall not be applied to the determination of separation distance to seasonal water table, reserve area, or any other percolation-rate dependent variables. A minimum of 6 inches of additional topsoil shall be placed and mounded over the drainfield to promote runoff.
2. A recirculating sand filter must be installed between the septic tank and the drainfield to provide additional treatment of the effluent. This sand filter should be designed to be accessible and must be lined to prevent infiltration of ground water. The filter may utilize a design loading rate up to 10 gallons per day per square foot. The sand filter design shall not be reduced because of a reduction in the proposed sewage flow as a result of water saving plumbing fixtures. The sand filter should be designed using accepted engineering practice and should be capable of producing an effluent meeting the limits of 30 mg/l BOD₅ and suspended solids.

3. The construction permit for this system shall be a conditional permit pursuant to § 2.13.J of the Regulations. The construction permit, this variance letter, and the conditional permit letter are to be recorded and indexed in the grantor index under the holder's name in the land records of the clerk of the circuit court having jurisdiction over the site of the septic system. Prior to issuance of any permit the owner must sign the conditional permit letter indicating acceptance and understanding of the conditions imposed as well as the responsibility for properly testing and maintaining the system. Permanent water saving fixtures shall be specified as a condition of the construction permit, however, there shall be no corresponding reduction in the absorption area required.
4. The sewage treatment and disposal system shall be considered a Type III system. Formal plans and specifications prepared by a licensed professional engineer shall be required.
5. The applicant shall develop an Operation and Maintenance Manual to assist the homeowner. This manual shall become part of the permit and shall impose operational conditions upon the owner or future owners of the system. The manual should assist the owner in performing any maintenance that is appropriate, and should provide advise regarding when to seek professional service for the system.
6. If this is a wooded site, all clearing must be done by hand. Other than the minimum activities required to install the system, no traffic or equipment is allowed on the site at any time.
7. The owner shall provide the following sampling, monitoring and reporting beginning whenever the system is placed in operation:

During the first year of operation:

- A. Monthly visual inspections of the sand filter and appurtenances for basic operational criteria such as ponding, clogging, and proper pump operation, are required.
- B. A laboratory analysis of the treated wastewater for BOD₅, suspended solids, total and fecal coliform bacteria, nitrate, and ammonia after approximately six months of filter operation is required.
- C. Pump performance summary to including pump-event counter and run-time meter readings is required.
- D. Semi-annual reports containing the results of the wastewater testing, visual inspections, and pump performance summary must be submitted to the

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local health department by the 10th of the month following the end of the reporting period.

During the second and third years of operation:

- A. Visual inspections may be decreased at the discretion of the local health department;
- B. Laboratory analysis of the treated wastewater for BOD₅, suspended solids, total and fecal coliform bacteria, nitrate, and ammonia is required yearly;
- C. Semi-annual (or less frequent if reduced by the local health department) reports containing results of wastewater testing, visual inspections, and pump performance summary must be submitted to the local health department by the 10th of the month following the end of the reporting period.

This variance is granted to the holder of the permit to which it is attached for the sewage disposal system covered by the construction permit. This variance is not transferrable to another sewage disposal system or property. This variance shall expire with the permit to which it is attached, and shall be revoked when the permit to which it is attached is revoked. This variance shall be permanent as long as an operation permit for the system has been properly issued and remains in effect.

The effective date of this variance shall be 15 calendar days from the date of issuance of the construction permit to which it is attached. If the owner wishes to challenge the terms of this variance, a written request must be received in the office of the State Health Commissioner within 30 days of the effective date.

District Health Director

Randolph L. Gordon, M.D., M.P.H.
State Health Commissioner

VARIANCE

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This is a variance to S 4.30.C.1 of the Sewage Handling and Disposal Regulations (Regulations) issued pursuant to § 2.7 of the Regulations and § 32.1-12 of the Code of Virginia. Section 4.30.C.1 requires a minimum absorption trench installation depth of 18 inches. This variance is granted to allow installation of drainfield trenches at depths less than 18 inches, but at least 12 inches deep. This system is for use where the sewage flow does not exceed 750 gallons per day and there is no commercial food service. All other minimum requirements of the Regulations must be met, including separation distance to rock and impervious strata, and slope factors that require increasing the depth of installation.

The site and soil evaluations conducted by the Department indicate that a shallow-placed sewage treatment and disposal system installed on the proposed site will treat and dispose of sewage effluent properly. Attention to design details, protection of the site before and during construction, and proper construction techniques are absolutely necessary to maximize the potential for this system to function properly.

This variance is granted with the following conditions:

1. The drainfield trenches must be installed at a depth of at least 12 inches. The design percolation rate may be increased to provide a larger drainfield area if heavier soil textures occur in the strata up to 12 inches below the trench. This increase will affect only the square footage of the drainfield and shall not be applied to the determination of separation distance to seasonal water table, reserve area, or any other percolation-rate dependent variables. A minimum of 6 inches of additional topsoil shall be placed and mounded over the drainfield to promote runoff.
2. A recirculating sand filter must be installed between the septic tank and the drainfield to provide additional treatment of the effluent. This sand filter should be designed to be accessible, and must be lined to prevent infiltration of ground water. The filter may utilize a design loading rate up to 10 gallons per day per square foot. The sand filter design shall not be reduced because of a reduction in the proposed sewage flow as a result of water saving plumbing fixtures. The sand filter should be designed using accepted engineering practice and should be capable of producing an effluent meeting the limits of 30 mg/l BOD₅ and suspended solids.

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3. The construction permit for this system shall be a conditional permit pursuant to

§ 2.13.J of the Regulations. The construction permit, this variance letter, and the conditional permit letter are to be recorded and indexed in the grantor index under the holder's name in the land records of the clerk of the circuit court having jurisdiction over the site of the septic system. Prior to issuance of any permit the owner must sign the conditional permit letter indicating acceptance and understanding of the conditions imposed and the responsibility to properly test and maintain the system. Permanent water saving fixtures shall be specified as a condition of the construction permit, however, there shall be no corresponding reduction in the absorption area required.

4. The sewage treatment and disposal system shall be considered a Type III system. Formal plans and specifications prepared by a licensed professional engineer shall be required.
5. The applicant shall develop an Operation and Maintenance Manual to assist the homeowner. This manual shall become part of the permit and shall impose operational conditions upon the owner or future owners of the system. The manual should assist the owner in performing any maintenance that is appropriate, and should advise when to seek professional service for the system.
6. If this is a wooded site, all clearing must be done by hand. Other than the minimum activities required to install the system, no traffic or equipment is allowed on the site at any time.
7. The owner shall provide the following sampling, monitoring and reporting beginning whenever the system is placed in operation:

During the first year of operation:

- A. Monthly visual inspections for ponding, clogging, proper pump operation, etc.;
- B. A laboratory analysis of the treated wastewater for BOD₅, suspended solids, total and fecal coliform bacteria, nitrate, and ammonia after approximately six months of filter operation;
- C. Pump performance summary to include pump-event counter and run-time meter readings; and
- D. Semi-annual reports containing the results of the wastewater testing, visual inspections, and pump performance summary must be submitted to the

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local health department by the 10th of the month following the end of the reporting period.

During the second and third years of operation:

- A. Visual inspections may be decreased at the discretion of the local health department;
- B. Laboratory analysis of the treated wastewater for BOD₅, suspended solids, total and fecal coliform bacteria, nitrate, and ammonia is required yearly;
- C. Semi-annual (or less frequent if reduced by the local health department) reports containing results of wastewater testing, visual inspections, and pump performance summary must be submitted to the local health department by the 10th of the month following the end of the reporting period.

This variance is granted to the holder of the permit to which it is attached for the sewage disposal system covered by the construction permit. This variance is not transferrable to another sewage disposal system or property. This variance shall expire with the permit to which it is attached, and shall be revoked when the permit to which it is attached is revoked. This variance shall be permanent as long as an operation permit for the system has been properly issued and remains in effect.

The effective date of this variance shall be 15 calendar days from the date of issuance of the construction permit to which it is attached. If the owner wishes to challenge the terms of this variance, a written request must be received in the office of the State Health Commissioner within 30 days of the effective date.

Environmental Health Manager

Randolph L. Gordon, M.D., M.P.H.
State Health Commissioner

SAMPLE LETTER

_____, 199

MEMORANDUM

TO: FILE

FROM: Environmental Health Specialist Senior

SUBJECT: Variance to § 4.30.C.1, Sewage Handling and Disposal Regulations

In accordance with GMP #78, of November 17, 1995, this is to confirm that I have evaluated the site and soil conditions on the property located at _____, Tax Map Number _____, _____ County. Based on my site and soil evaluations, a variance to § 4.30.C.1 of the Sewage Handling and Disposal Regulations may be granted as outlined in the above referenced Guidance Memorandum.

I further certify, to the best of my knowledge, that the site and soil conditions on the proposed site comply with the minimum requirements of the Sewage Handling and Disposal Regulations with the exception of the specific requirement for which a variance is being granted.

Environmental Health Specialist Senior

SAMPLE CONDITIONAL PERMIT LETTER

 Date

John Doe
P.O. Box 0
Anywhere, Virginia 00000

Dear Mr. Doe:

Re: Conditional Permit, Tax Map # 1A Blk 2, Lot 3,
Subdivision, _____ County

Your application for a Sewage Disposal System Construction Permit with conditions (“Conditional Permit”), filed on _____, 199_, with the _____ County Health Department, has been evaluated in accordance with the requirements contained in §§ 32.1-164 and 32.1-164.1 of the Code of Virginia, the Sewage Handling and Disposal Regulations (the “Regulations”), and current agency policies and procedures for processing applications for Conditional Permits.

Based on the information filed with your application, and the site and soil evaluations conducted by the Department’s representatives, this is to inform you that your application for a Conditional Permit is hereby granted pursuant to § 2.13.J of the Regulations. The items listed below are part of the permit and constitute the conditions that have been applied to the granting of this permit, and to the use and installation of the sewage disposal system:

- A. This letter shall be a part of the Conditional Permit.
- B. This Conditional Permit is issued pursuant to a variance from § 4.30.C.1 of the Sewage Handling and Disposal Regulations granted by the State Health Commissioner. The Commissioner imposed conditions upon the variance which are also imposed upon the Conditional Permit. These are fully set forth in the Commissioner’s variance letter which is a part of the Conditional Permit.
- C. The conditions of the variance include a requirement to install a recirculating sand filter for additional treatment of sewage. By requesting this variance, the owner has asked for permission to use a “high rate” recirculating sand filter. This type of filter is smaller than a conventional sand filter and may require maintenance beyond that normally associated with a conventional sand filter.
- D. The conditions of the variance include a requirement to sample the treated wastewater from the sand filter for laboratory analysis. Sampling, laboratory analysis, and reporting of the results to the Department, are the owner’s responsibility unless these are rescinded in writing by the _____ County Health Department. The sampling requirements are fully set forth in the Commissioner’s variance letter.

- E. This Conditional Permit, in its entirety, must be recorded in the land records of the Clerk of the Circuit Court of _____ County.
- F. The owner or his agent shall furnish to the _____ County Health Department a certification by the Clerk of the Circuit Court of the deed book number and page number upon which the permit and all conditions have been recorded. Such certification shall be placed upon all copies of the Conditional Permit prior to giving validation to the building official for issuance of a building permit.
- G. Occupancy of the dwelling/structure shall be limited to ___ persons (based on absorption area design).
- H. Permanent low water use fixtures are to be used throughout the dwelling/structure.
- I. The sewage system must be installed in accordance with the Conditional Permit and the plans and specifications approved by the Department. Any deviation from the permit and approved plans must be approved in advance by the Department.

Pursuant to § 32.1-164.1 of the Code of Virginia, the holder of this permit and any subsequent holders of the permit through land purchase or transfer shall be bound by the conditions stated in the permit unless the holder or subsequent holder obtains an additional permit for modification or alteration of the septic system to meet any new use conditions.

In accordance with the Regulations you have the right to a hearing to request modification or elimination of the conditions established in this Conditional Permit.

If you desire to pursue this right, in which you may at your discretion be represented by counsel, the first step in the appeal process is to submit your written request for an informal fact-finding conference to the Director, _____ Health District, (Address), Virginia, 00000. Your request should state the basis for the appeal and should outline all the facts and such other data or other information which would support your appeal of the decisions establishing the conditions outlined above.

Issued by:

Environmental Health Specialist Senior

Reviewed by:

Environmental Health Manager

Reviewed by:

District Health Director

CERTIFICATION BY OWNER

I have read the conditions outlined in the above conditional letter and in the Commissioner's variance letter. I certify that I understand all the conditions and hereby agree to comply with those conditions.

Owner's name

County of _____
State of Virginia at Large, to wit:

The aforesaid subscribed and sworn to before me this
day of _____, 199 by _____.

_____ My Commission expires: _____ Notary Public

CERTIFICATION BY HEALTH DEPARTMENT

I certify the information provided herein is true and accurate to the best of my knowledge and belief.

Environmental Health Specialist Senior

County of _____
State of Virginia at Large, to wit:

The aforesaid subscribed and sworn to before me this
day of _____, 199 by _____.

_____ My Commission expires: _____ Notary Public

pc: