Virginia Regulatory Town Hall

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Proposed Regulation
Agency Background Document

Agency name	Virginia Department of Health
Virginia Administrative Code (VAC) citation	12 VAC5-613
Regulation title	Regulations for Alternative Onsite Sewage Systems
Action title	This regulatory action will create new regulations for the design, operation, inspection and reporting for alternative onsite sewage systems (AOSS) in the Commonwealth of Virginia. The regulation will also establish performance requirements and horizontal separations necessary to protect public health for designs submitted in accordance with Title 32.1-163.6 of the Code of Virginia.
Date this document prepared	July 30, 2010

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Orders 14 (2010) and 58 (1999), and the *Virginia Register Form, Style, and Procedure Manual.*

Brief summary

In a short paragraph, please summarize all substantive provisions of new regulations or changes to existing regulations that are being proposed in this regulatory action.

The regulations create an inspection, sampling, and reporting frequency for all alternative onsite sewage systems (AOSS). The regulations establish the performance requirements for AOSS, as well as horizontal setbacks for those designed in accordance with Title 32.1-163.6 of the *Code of Virginia*. The regulations require owners to have a relationship with a licensed operator for the purpose of providing operation and maintenance to the AOSS. The regulations establish nitrogen limitations for all large AOSS and require all small AOSS to reduce nutrient loads within the Chesapeake Bay Watershed. The regulations establish treatment levels for performance and provide a methodology for evaluating treatment unit efficacy. The new regulations are supplemental to the existing Sewage Handling and Disposal Regulations (12VAC5-610-20 et seq., "SHDR") which contain permitting and enforcement procedures and other requirements for onsite sewage systems, including AOSS.

Acronyms and Definitions

Please define all acronyms used in the Agency Background Document. Also, please define any technical terms that are used in the document that are not also defined in the "Definition" section of the regulations.

"AOSS" means alternative onsite sewage system(s).
"Board" means the Board of Health.
"BOD" means biochemical oxygen demand.
"BMP" means best management practice.
"DO" means dissolved oxygen.
"FOG" means fats, oils, and grease.
"GPD" means gallon per day.
"Ksat" means saturated hydraulic conductivity.
"lb" means pounds.
"MPI" means minutes per inch.
"SF" means square feet.
"SHDR" means the Sewage Handling and Disposal Regulations, 12 VAC5-610-20 et seq.
"STE" means septic tank effluent.
"TAC" means technical advisory committee.
"TL-2" means Treatment Level 2.
"TL-3" means Treatment Level 3.
"TN" means total nitrogen.
"TRC" means total residual chlorine.
"TSS" means total suspended solids.
"VDH" means the Virginia Department of Health.

Legal basis

Please identify the state and/or federal legal authority to promulgate this proposed regulation, including (1) the most relevant law and/or regulation, including Code of Virginia citation and General Assembly chapter number(s), if applicable, and (2) promulgating entity, i.e., the agency, board or person. Describe the legal authority and the extent to which the authority is mandatory or discretionary.

The Board is authorized, pursuant to *Code* § 32.1-12, to promulgate and enforce regulations. Under § 32.1-164, the Board is authorized to promulgate regulations governing onsite sewage systems to protect public health and is required to exercise due diligence to protect the quality of both surface water and ground water. §§ 32.164.H and I require the Board to establish a program for operation and maintenance of alternative onsite sewage systems and to promulgate regulations for AOSSs. Legislation approved in 2009 (Chapter 220 of the 2009 Acts of Assembly) required the Board to adopt emergency regulations for operation and maintenance of alternative onsite sewage systems. The legislation also required that the emergency regulations set forth performance requirements for alternative onsite sewage systems and horizontal setback requirements necessary to protect public health and the environment. The emergency regulations became effective on April 7, 2010. The emergency regulations remain effective for 12 months; thus, they are set to expire on April 6, 2011. This current regulatory action is intended to replace the emergency regulations.

Purpose

Please explain the need for the new or amended regulation by (1) detailing the specific reasons why this regulatory action is essential to protect the health, safety, or welfare of citizens, and (2) discussing the goals of the proposal, the environmental benefits, and the problems the proposal is intended to solve.

The new regulation is necessary in order to carry out the agency's mandates regarding AOSSs with respect to:

1) Performance requirements;
2) Operation and maintenance requirements; and,
3) Horizontal setbacks for AOSSs designed pursuant to § 32.1-163.6.

The needs and goals for this regulation fall into three conceptual areas:

1) The current performance requirements contained in the SHDR are inadequate for AOSSs.
2) Statutory changes in 2008 (§ 32.1-163.6) allow licensed professional engineers to design AOSSs that are not required to comply with the SHDR. Instead, these designs must be compliant with performance requirements established by the Board. Since current performance requirements are inadequate, these regulations seek to establish measurable performance requirements appropriate for all AOSSs, including the engineered designs under § 32.1-163.6.
3) Proper operation and maintenance are essential to ensure that AOSSs function as designed to protect public and environmental health.

Substance

Please briefly identify and explain new substantive provisions (for new regulations), substantive changes to existing sections or both where appropriate. (More detail about all provisions or changes is requested in the "Detail of changes" section.)

The proposed regulation contains the following new provisions:

1) New definitions, the most relevant being: standard engineering practice, best management practice, general approval, pollution, renewable operating permit, state waters, treatment levels 2 and 3, relationship with an operator, Chesapeake Bay Watershed, groundwater, direct dispersal of effluent to groundwater, and wetlands.

2) It is deemed a violation of these regulations if any AOSS fails to achieve one or more performance requirements, to accomplish any mandated visit by an operator, or any operation, maintenance, monitoring, sampling, reporting, repair or inspection requirement. Also, a violation of an Operation and Maintenance manual is a violation of the regulations if it results in a violation of one or more performance requirements.

3) Before the Department will issue an operation permit for an AOSS, the owner must establish a relationship with a licensed operator. The owner must maintain a relationship with an operator during any period that the AOSS is operational.

4) Before VDH will issue an operation permit for an AOSS serving a residential structure, the property owner must record an instrument which complies with § 15.2-2157.E in the land records of the appropriate circuit court.

5) These regulations contain a requirement that all plans and specifications for AOSSs are either sealed by a professional engineer or they must contain a certification statement claiming an appropriate exemption from the practice of engineering.

6) These regulations contain a requirement that applications submitted under § 32.1-163.6 include a site characterization report.

7) The regulation sets the framework for an evaluation and testing protocol for generally approved treatment units to be developed by the Division through a guidance document at a later date. In addition, these regulations contain a five-year sunset provision for treatment units that have been conferred general approval on or before the effective date of this chapter. After the five-year period has elapsed, these treatment units must follow the evaluation and testing protocol in effect at the time of re-application in order to obtain general approval.

8) The regulations establish a number of performance requirements for AOSSs which include:

A. A prohibition against the presence of raw or partially treated sewage on the ground surface;
B. A prohibition against the backup of sewage into plumbing fixtures;
C. Maximum trench bottom hydraulic loading rates based on two different effluent qualities (TL-2, and TL-3);
D. A requirement that STE may only be discharged to a soil treatment area when the vertical separation to a limiting feature consists of at least 18 inches of naturally-occurring, in-situ soil;
E. A requirement that AOSSs designed to disperse STE have at least 12 inches of soil cover over the soil treatment area;
F. A requirement that dosing of a treatment unit shall accommodate the design's peak flow;
G. Whenever a site has groundwater at less than six inches from the surface or there is less than 18 inches of vertical separation from the point of effluent application to the bottom of a trench or other excavation, then the designer must demonstrate that water mounding will not adversely affect the functioning of the soil treatment area. The designer must provide additional studies demonstrating that the site is not flooded during the wet season and that there is sufficient hydraulic gradient to move effluent off the site without ponding;
H. When standard disinfection is required, the fecal coliform effluent quality prior to dispersal to the soil treatment area must not exceed 200 cfu/100 ml;
I. These regulations contain the following performance requirements related to site conditions (vertical separation to limiting features) and effluent quality:
    a) Sites with less than 18 inches of vertical separation, but at least 12 inches of vertical separation and six inches of naturally occurring, undisturbed soils, require a minimum of TL-2 effluent.
    b) Sites with less than 12 inches vertical separation must apply a minimum of TL-3 effluent with disinfection. However, if the site has less than six inches of vertical separation from a perched or seasonal water table, then it must also comply with additional groundwater protection standards enumerated in section 90.
J. Organic loading rates cannot exceed 0.00021 BOD lb/day/sf on a trench bottom basis.
K. Large AOSSs that are not situated in the Chesapeake Bay Watershed must comply with a total nitrogen limit of five mg/l at the project area boundary. As a precondition to the issuance of an operation permit, the designer is required to provide calculations and modeling to demonstrate that the proposed AOSS will meet this nitrogen requirement.
L. AOSSs must be designed and constructed so as to be structurally sound, resist infiltration and inflow, minimize odor or other nuisances, and maintain forward flow.
M. When sand, soil, or soil-like material is used to increase the vertical separation, the designer shall specify methods and materials that will achieve the performance requirements of this chapter.
N. Septic tank effluent is prohibited for large AOSSs.
O. AOSSs with soil dispersal systems installed with less than six inches of vertical separation to groundwater must meet the following requirements:
    1. If the concentration of any constituent in ground water is less than the limits set forth in 9VAC 25-280-10 et seq., then the natural quality for the constituent must be maintained; natural quality must also be maintained for all constituents not set forth in 9VAC 25-280-10 et seq. If the concentration of any constituent in ground

water exceeds the limit set forth in the regulatory standard for that constituent, then no addition of that constituent to the naturally occurring concentration can occur;

2. Groundwater monitoring to confirm compliance with groundwater quality standards must be undertaken for large AOSSs;
3. Additional effluent monitoring is required for small AOSSs;
4. A renewable operating permit must be obtained and maintained in accordance with this chapter;
5. The designer must provide analyses demonstrating that the system will function as designed for the life of the structure without degrading the soil treatment area; and,
6. The systems must comply with the enumerated effluent quality standards for BOD, TSS, total nitrogen, fecal coliform and total phosphorous. In addition, high level disinfection is required and the systems must incorporate filtration capable of demonstrating compliance with the enumerated turbidity standard.

P. AOSSs in the Chesapeake Bay Watershed must provide a 50 percent reduction of Total Nitrogen (TN) as compared to conventional systems which must be demonstrated either through compliance with the Division's BMPs or through sufficient calculations. In addition, large AOSSs in the Chesapeake Bay Watershed must demonstrate less than 3 mg/L TN at the project boundary and the Division may require groundwater monitoring for large AOSSs.
Q. Laboratory sampling is required for all AOSSs except those designed to disperse septic tank effluent.
R. A small AOSS using a treatment unit with general approval is required to be sampled once during the first 180 days of operation and then once every five years thereafter.
S. A small AOSS using a treatment unit that does not have general approval is required to be sampled once during the first 180 days of operation, with four additional samples to follow within the first two years of operation, and an annual sample thereafter. However, if four or more consecutive samples demonstrate compliance with applicable performance requirements, then the owner may petition VDH to have the sampling frequency reduced to once every five years.
T. Samples for small AOSSs must be analyzed for BOD_5 and, if disinfection is required, fecal coliform organisms. Small AOSSs using chlorine as a disinfectant may sample for total residual chlorine instead of fecal coliform organisms.
U. Small AOSSs that disperse directly to groundwater require quarterly samples and continuous monitoring of critical treatment units. Large AOSSs that disperse directly to groundwater require monthly samples and 24-hour staffing or telemetry in order to continuously monitor critical treatment units.
V. Sampling and monitoring requirements for large AOSSs are enumerated in Table 4 of these regulations.
W. Recommended Field Measurements, Sampling, and Observations for all AOSSs up to 0.04 MGD are enumerated in Table 5 of these regulations.

9) Operator responsibilities that include:

A) Filing a report with VDH for each required visit or when there is a reportable incident.
B) Accomplishing the various responsibilities and assessments required by the regulations using visual and other observations, laboratory and field tests deemed appropriate and as required by the regulations.
C) Keeping a log for each AOSS for which he is responsible.
D) Notifying VDH when his relationship with an owner terminates.

10) These regulations include a requirement that any person who pumps or otherwise removes sludge or solids from any septic tank or treatment unit of an AOSS must file a report with VDH.

11) These regulations establish owner responsibilities that include:

A) Maintaining a relationship with an operator.
B) Having the AOSS operated and maintained by an operator.
C) Having the AOSS visited by an operator at the frequencies and times required by these regulations.
D) Having an operator collect all required samples.
E) Keeping a copy of the log provided by the operator and the Operation and Maintenance Manual (O&M Manual) and making a reasonable effort to transfer both to a new property owner.
F) Complying with the onsite sewage system requirements contained in local ordinances adopted pursuant to the Chesapeake Bay Preservation Act (§10.1-2100 et. seq.) and the Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 10-20-10 et. seq.) when an AOSS is located within a Chesapeake Bay Preservation Area.

12) AOSS with flows less than or equal to 1,000 gpd require one operator visit within the first six months after the operation permit is issued, and an annual visit thereafter. AOSS with flows that exceed 1,000 gpd require more frequent operator visits and staffing.

13) Each AOSS must have an O&M manual prepared by the designer and submitted to the local health department for approval.

14) Minimum expectations for operator visits include:

A) Inspecting all components of the AOSS, conducting field measurements, sampling and other observations as required by the regulations or the O&M Manual, or as deemed necessary by the operator to assess the performance of the AOSS and its components.
B) Performing routine maintenance, making adjustments, and replacing worn or dysfunctional components with in-kind parts such that the system can reasonably be expected to return to normal operation.
C) If the AOSS is not functioning as designed or in accordance with the performance requirements of the regulations and, in the operator's professional judgment it cannot be reasonably expected to return to normal function through routine operation and maintenance, then the operator must immediately report to the owner the remediation efforts necessary to return the AOSS to normal operation.

15) The regulations establish the minimum reporting requirements whenever an operator is required to file a report, which include:

A) The name and license number of the operator, the date and time of the report, and the purpose of the visit.
B) A summary statement describing whether the AOSS is functioning as designed, whether the operator believes that routine maintenance performed will return the AOSS to normal operation, or whether additional actions are required to return the AOSS to normal operation.
C) A report of maintenance performed, field measurements, observations and sampling, and the name of the laboratory that will analyze samples.
D) A copy of the report provided to VDH and the owner.

16) These regulations contain horizontal setbacks for AOSS designs under § 32.1-163.6, which are necessary to protect public health and the environment and which cannot be reduced by the engineer designing an AOSS under § 32.1-163.6.

The following is a change from the existing regulations (SHDR):

Current section	Proposed new section	Current requirement	Proposed change and rationale

number	number, if applicable		
12VAC5-950-Table 5.4	12VAC5-613-40	Table 5.4 contains prescriptive sizing criteria for soil absorption areas	This change applies only to AOSSs designed to disperse TL-2 or TL-3 effluent. These systems will be sized in accordance with performance requirements established in these regulations. Alternative systems that disperse septic tank effluent will continue to be sized in accordance with Table 5.4 of the SHDR. Because of the reduced organic loading rates and other benefits, AOSSs that treat wastewater to a higher degree than septic tank effluent before dispersal to a soil treatment area can utilize higher hydraulic loading rates than systems utilizing septic tank effluent.

Issues

Please identify the issues associated with the proposed regulatory action, including:
1) the primary advantages and disadvantages to the public, such as individual private citizens or businesses, of implementing the new or amended provisions;
2) the primary advantages and disadvantages to the agency or the Commonwealth; and
3) other pertinent matters of interest to the regulated community, government officials, and the public.

If the regulatory action poses no disadvantages to the public or the Commonwealth, please indicate.

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1. The primary advantage to the public is providing access to adequate performance requirements, horizontal setbacks that protect public health, and operation and maintenance requirements for AOSSs. The proposed regulations also include nitrogen reduction requirements for all large AOSSs regardless of locality and small AOSSs located in the Chesapeake Bay Watershed. The public would enjoy more environmental protection with greater regulatory oversight. Less pollution and pathogens will better protect Virginia's natural resources, including the Chesapeake Bay.

Legislation approved in 2009 (Acts of Assembly, 2009, Ch. 0220) required the Board to promulgate emergency regulations to establish performance requirements and horizontal setbacks for AOSSs necessary to protect public health and the environment and to establish operation and maintenance requirements consistent with the requirements for AOSSs contained in § 32.1-164. The emergency regulations expire April 6, 2011. To the extent the emergency regulations fostered protection of public health and the environment, such protection would be lost if these replacement regulations are not adopted.

The primary disadvantage could be considered the costs that AOSS owners would incur to achieve compliance with the regulations. See the economic impact analysis for more information about the costs owners of AOSS would incur as a result of these regulations.

2. The primary advantage to VDH is having cogent, enforceable regulations. Without these regulations, VDH will not have enforceable requirements to protect public health and the environment with an adequate margin of safety. The SHDR provide inadequate performance, operation and maintenance requirements for the protection of public health and the environment against the potentially injurious effects of malfunctioning or failing AOSS treatment systems. Additionally, the regulation implements requirements in § 32.1-164.A and I and the legislative mandate contained in Chapter 220 of the 2009 Acts of Assembly.

3. N/A.

Requirements more restrictive than federal

Please identify and describe any requirements of the proposal, which are more restrictive than applicable federal requirements. Include a rationale for the more restrictive requirements. If there are no applicable federal requirements or no requirements that exceed applicable federal requirements, include a statement to that effect.

The proposed regulation is not more restrictive than any applicable federal requirement.

Localities particularly affected

Please identify any locality particularly affected by the proposed regulation. Locality particularly affected means any locality which bears any identified disproportionate material impact which would not be experienced by other localities.

Treatment works located in the Chesapeake Bay Watershed must satisfy additional nitrogen reduction requirements under this chapter. In terms of small AOSS, these regulations only impose nitrogen limitations for those systems that are constructed in the Chesapeake Bay Watershed. In terms of large AOSS, these regulations impose nitrogen limitations for systems constructed in the Chesapeake Bay Watershed that are more restrictive than the nitrogen limitations imposed on systems constructed in other localities.

Public participation

Please include a statement that in addition to any other comments on the proposal, the agency is seeking comments on the costs and benefits of the proposal and the impacts of the regulated community.

The Board of Health commissioned the Weldon Cooper Center for Public Service, Center for Survey Research at the University of Virginia to learn about the experiences of owners of AOSS treatment systems. Weldon Cooper compared the experiences of AOSS owners to owners with conventional systems to determine what differences and understandings existed. The Weldon Cooper report and findings can be reviewed at this link:
http://www.vdh.virginia.gov/EnvironmentalHealth/Onsite/newsofinterest/index.htm#Emergency_Regulations

VDH held three technical advisory committee meetings, which included the Sewage Handling and Disposal Advisory committee. Details and minutes from those meetings can be reviewed at this link:

http://www.vdh.virginia.gov/EnvironmentalHealth/ONSITE/newsofinterest/resourcesfortechnicaladvisorycommittee.htm

In addition to any other comments, the agency/board is seeking comments on the costs and benefits of the proposal and the potential impacts of this regulatory proposal. Also, the agency/board is seeking information on impacts on small businesses as defined in § 2.2-4007.1. Information may include 1)

projected reporting, recordkeeping and other administrative costs; 2) probable effect of the regulation on affected small businesses; and, 3) description of less intrusive or costly alternative methods of achieving the purpose of the regulation.

Anyone wishing to submit written comments for the public comment file may do so by mail, email or fax to Allen L. Knapp, Virginia Department of Health, 109 Governor Street, Fifth Floor, Richmond, Virginia, 23219, (804) 864-7458 (phone), (804) 864-7476 (fax), or allen.knapp@vdh.virginia.gov. Written comments must include the name and address of the commenter. In order to be considered, comments must be received by the last day of the public comment period.

A public hearing will be held and notice of the public hearing will appear on the Virginia Regulatory Town Hall website (www.townhall.virginia.gov) and the Commonwealth Calendar. Both oral and written comments may be submitted at that time.

Economic impact

Please identify the anticipated economic impact of the proposed new regulations or amendments to the existing regulation. When describing a particular economic impact, please specify which new requirement or change in requirements create the anticipated economic impact.

Projected cost to the state to implement and enforce the proposed regulation, including (a) fund source, and (b) a delineation of one-time versus on-going expenditures.	The costs to implement and enforce the proposed regulation can be met with existing staff and funding (sunk resource utilization). The program is funded by the following revenue source codes: 02237, 02238, 02239, 02240, 00241, 02242, 02243, 02244, and 02245. Costs will be ongoing.
Projected cost of the *new regulations or changes to existing regulations* on localities.	No projected cost to localities, except those that own or operate AOSSs.
Description of the individuals, businesses or other entities likely to be affected by the *new regulations or changes to existing regulations*.	Persons, businesses, and local governments that own AOSSs because they do not have access to public sewer and have a need for sewage treatment, dispersal, and disposal.
Agency's best estimate of the number of such entities that will be affected. Please include an estimate of the number of small businesses affected. Small business means a business entity, including its affiliates, that (i) is independently owned and operated and (ii) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million.	VDH issues 15,000 to 18,000 construction permits per year of which about 10 to 15 percent are AOSS (1,500 to 2,700). VDH estimates 60,000 AOSSs are currently in use. A percentage of small businesses may depend on AOSSs; however VDH does not have data to establish the number of small businesses that utilize AOSSs.
All projected costs of the *new regulations or changes to existing regulations* for affected individuals, businesses, or other entities. Please be specific and include all costs. Be sure to include the projected reporting, recordkeeping, and other administrative costs required for compliance by small businesses. Specify any costs related to the development of real estate for	All AOSS owners must have a relationship with an operator and have the operator inspect their AOSSs once per year Depending on whether the AOSS has general approval will impact sampling frequencies and costs. The projected cost to acquire a relationship with an operator and to inspect a small generally approved AOSS is approximately $300 to $600 per year. The projected cost to have a relationship with an operator for a non-generally approved small AOSS will range from $450 to $800 because of the increased sampling frequency. VDH estimates that 1,500 to 2,700

commercial or residential purposes that are a consequence of the proposed regulatory changes or new regulations.	AOSS owners per year will incur this cost each year, which represents the range of AOSSs permitted and installed each calendar year in the Commonwealth. Section 90.D requires all small AOSSs in the Chesapeake Bay Watershed to reduce total nitrogen (TN) by 50 percent. To reduce TN by 50 percent, AOSS designs will have an incremental, one-time increase in cost beyond that presently required. The cost to implement nitrogen limits for small AOSSs is anticipated to be $2.00 to $10.00 per gallon depending on the site conditions. For the average three bedroom home designed at 450 gallons per day, the expected one-time incremental increase for installation and new equipment will be $900 to $4,500. Costs will depend upon the technology chosen by the designer and the site and soil conditions. VDH estimates that 1,000 to 2,000 small AOSSs are installed into the Chesapeake Bay Watershed each year. For large AOSSs, Section 90.D requires designers and operators to reduce nitrogen concentrations from 5 mg/l (as currently implemented) to 3 mg/l. The incremental, one-time cost increase is expected to be 10 cents per gallon to 75 cents per gallon depending on the technology used and the site and soil conditions. For a system designed to discharge 10,000 GPD, the expected additional one time cost would be $1,000 to $7,500. VDH estimates that this requirement will affect less than 20 AOSSs per year. Section 90.C contains additional design and monitoring requirements for AOSSs that disperse effluent directly into the groundwater. The cost to comply with the new performance requirements for direct dispersal of effluent to groundwater for small AOSSs is expected to be $5,000 to $10,000 for initial costs and $800 to $2,500 per year for operation, maintenance, and sampling. Costs will vary based on the number of bedrooms, the technology used, and the site and soil conditions. VDH anticipates these costs will impact 25 to 300 small AOSS owners per year. Section 90.C requires additional monitoring and treatment, including enhanced disinfection and nutrient reduction for large AOSSs. The additional cost to comply with the regulations is estimated to be $2.00 to $10.00 per gallon for direct dispersal systems. VDH expects less than 10 large AOSS owners will be impacted by these additional costs per year. The costs for proper operation and maintenance will likely be partially offset by the long-term cost savings achieved through proper operation and maintenance. VDH expects that proper operation and maintenance will allow AOSSs to operate indefinitely. Without proper operation and maintenance, AOSSs can be expected to function properly for one to 10 years. Additionally, the costs to repair AOSSs will likely be less over time because operators will identify

	and correct operational and equipment deficiencies sooner, which will likely lessen the impact of malfunction costs and reduce the chance of total system failure and need for complete system replacement. Another important economic consideration is that owners would not likely be able to develop or improve their property unless these regulations are implemented. Reducing nitrogen loads to the Chesapeake Bay from AOSSs will likely reduce future compliance costs that could be mandated by the Environmental Protection Agency.
Beneficial impact the regulation is designed to produce.	Less nutrient and viral pollution to the Chesapeake Bay will occur. The risk to public health from non-functioning or failing AOSSs will be significantly reduced. Better surveillance of the impacts of AOSSs on ground and surface water will occur. Improved operation and maintenance will reduce the number of problems owners of AOSS will incur.

Alternatives

Please describe any viable alternatives to the proposal considered and the rationale used by the agency to select the least burdensome or intrusive alternative that meets the essential purpose of the action. Also, include discussion of less intrusive or less costly alternatives for small businesses, as defined in §2.2-4007.1 of the Code of Virginia, of achieving the purpose of the regulation.

The public health and environmental conditions that resulted in the legislative directive to promulgate emergency regulations have not abated. The existing regulations (SHDR) contain performance requirements for AOSSs that were inadequate for the protection of public health and the environment. Replacement regulations are necessary to address the ongoing conditions.

Regulatory flexibility analysis

Please describe the agency's analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) the establishment of less stringent compliance or reporting requirements; 2) the establishment of less stringent schedules or deadlines for compliance or reporting requirements; 3) the consolidation or simplification of compliance or reporting requirements; 4) the establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5) the exemption of small businesses from all or any part of the requirements contained in the proposed regulation.

In developing the emergency regulations, VDH sought stakeholder input through an ad hoc advisory group. Many of the provisions of the emergency regulations were based on recommendations of the group. The final report of the ad hoc committee's work can be reviewed at this link:

http://www.vdh.virginia.gov/EnvironmentalHealth/Onsite/newsofinterest/index.htm

The emergency regulations as well as an accompanying Notice of Intended Regulatory Action (NOIRA) to replace the emergency regulations were published in the Virginia Register of Regulations on April 26,

2010. A public comment period ran from April 26, 2010, through May 26, 2010. VDH received nine comments. In addition, VDH convened three technical advisory committee (TAC) meetings to solicit input from stakeholders and technical experts as to how the replacement regulations should incorporate or modify the content of the emergency regulations. Many of the provisions of the proposed regulations are based on the public comments as well as the recommendations and discussion of the TAC. Where VDH has deviated from recommendations of the ad hoc committee and TAC, the deviations were necessary to accomplish the purpose of this action as set forth in the enactment legislation and related statutes. The agency believes the proposed regulations represent the minimum requirements necessary to comply with its legislative mandates.

Public comment

Please summarize all comments received during the public comment period following the publication of the NOIRA, and provide the agency response.

Comment	Agency response
One person commented that the Emergency Regulations do not require an owner to repair the alternative onsite sewage system when repairs are necessary. This person thought VDH could only require repairs of failing onsite sewage systems. The person suggested VDH develop categories for different problems; this tactic has been successful in Loudoun County.	VDH vetted this comment and reviewed the categories used in Loudoun County during its technical advisory committee (TAC) meetings held on July 9, 14, and 16, 2010. The TAC did not recommend VDH follow the Loudoun County model. The performance requirements were deemed adequate to address the commenter's concerns. The operator could report any condition where the system was not meeting the performance requirements or not operating as designed.
One person commented that the civil penalty regulations must be implemented to support compliance issues. Certain corrective measures do not require criminal prosecution.	VDH agrees with the commenter. The civil penalty regulations are currently under executive branch review. The commenter did not suggest any regulatory change.
One person wrote that the Emergency Regulations are straying from section 32.1-164.H of the Code of Virginia. This person thought that VDH's proposed management system would be cumbersome and did not meet all of the requirements of the Code. A second person thought VDH's information system (VENIS) did not allow pre-notification to operators and owners as required by the Code of Virginia. This person suggested the replacement regulations should allow operators to use proprietary technology and software to integrate their database information to VDH's VENIS. This person noted his database has over 1,500 records in a specific proprietary software system and duplicating data entry would add a significant cost to doing business.	VDH's database system is capable of implementing the requirements of the Code of Virginia.
One person wrote that performance based regulations should be separate from the operation and maintenance regulations.	VDH re-organized the regulations to address this comment.
One person wrote that the requirement for treatment level 2 (TL-2) should not be based on flows. For example, large AOSSs, or those with flows greater than 1,000 gallons per day, require treatment level 2 (TL-2) or better.	The proposed regulation addressed this comment by eliminating the TL-2 requirement for large AOSSs.

One person thought that VDH should not charge operators to submit electronic reports.	The Code of Virginia establishes the fee and the Board of Health cannot deviate from the $1.00 fee being charged.
One person thought Section 70.9 of the Emergency Regulations conflicted with Table 2.	The proposed regulations addressed this comment by adding clarity to the table and its accompanying text.
Two people thought TL-3 and disinfection for repairing sewage systems was cost prohibitive. One person noted that the Alternative Discharging Regulations for Single Family Residences allowed TL-2 and disinfection. The other person thought that homeowners would seek more waivers. One person felt that owners discharging septic tank effluent should be allowed to discharge TL-2 without disinfection.	Owners are entitled to receive a waiver from the TL-3 and disinfection requirements in accordance with Title 32.1-164.1:1 of the Code of Virginia.
One person thought that the Emergency Regulations should not supersede the Sewage Handling and Disposal Regulations and existing agency policies.	The Emergency Regulations are supplemental to the Sewage Handling and Disposal Regulations.
One person thought small AOSSs should be visited more frequently than once per year. This person reported that there were a multitude of issues that could arise during a 12-month period that could drastically affect the system's operation.	VDH evaluated the financial impact and the experiences of AOSS owners via the Weldon Cooper Center for Public Policy at the University of Virginia. Based on Weldon Cooper's findings and the costs to increase monitoring more than once per year, VDH believes the current proposal is satisfactory. Additionally, the system designer is free to prescribe more frequent operator visits in the Operation and Maintenance manual. If a more frequent visit schedule required by the manual is not adhered and as a result the system fails to meet one or more performance requirements prescribed by the regulations, then this failure to follow the manual's schedule could be deemed a violation of these regulations.
VDH received one comment asking that the definition of "maintenance" exclude replacement of pumps and motors. This commenter noted that replacement of pumps and motors without an inspection has resulted in drip irrigation and low pressure distribution systems being operated in violation of their permits.	VDH considered this comment and determined that a change to the definition of maintenance was not warranted as VDH did not want to deviate from the statutory definition contained in Va. Code § 32.1-163.
Two people thought that requiring mounding calculations for small AOSSs was not appropriate. One person thought the requirement was unnecessary and too burdensome. A second person thought calculations had too many variables and could be manipulated such that results were meaningless. A third person thought that water mounding calculations could be considered the practice of engineering and would handicap alternative onsite sewage system professionals. This person thought there was insufficient information to substantiate the need for calculations.	VDH does not determine whether a specific activity is the practice of engineering. The Department of Professional and Occupational Regulation (DPOR) licenses designers of AOSSs. VDH believes the calculations are necessary to assure that pathogens and other pollutants from AOSS do not adversely impact groundwater and to assure that effluent is adequately dispersed so as to preclude surfacing.
One person commented that the regulations allowed treated sewage to be discharged directly into the watertable with inadequate monitoring based on the commenter's experience working with alternative discharging systems. This person expressed concern that pathogens could travel significant distances when treated sewage was discharged directly into the watertable. This person also felt that	Increased performance, monitoring, treatment quality and nutrient reduction requirements were established for these kinds of proposals.

builders, owners, designers, installers, regulators, and operators would not be able to quickly resolve problems with alternative systems since blame and finger-pointing would likely occur. This person stated that he did not support the regulations because the regulations only enforced an "end-of-pipe" treatment standard and virtually ignored performance of the dispersal field.	
For alternative systems installed prior to July 1, 2009, one person commented that owners should be required to have their system initially inspected or certified by a licensed operator. Thereafter, these owners could certify or attest in writing that their systems are operating with the design and permit annually without hiring a licensed operator. This commenter also thought that alternative systems installed prior to July 1, 2009 should be required to have their system inspected and certified by a licensed operator upon sale of the property and to completely follow all applicable regulations (i.e., maintain a relationship with an operator and sampling).	The board at DPOR determines who may obtain the operator license. VDH does not have authority to address this comment. Requiring inspections at the point of sale could cause numerous and unnecessary inspections of AOSS that would impose unjustified economic burdens on the parties to a real estate transaction.
One person commented that Section 70.B of the regulations was confusing and needed clarification.	The regulation was re-organized to address this comment.
One person commented that Section 30.H of the regulations was unlawful and added burdens on professional engineers that were not required by Title 32.1-163.6 of the Code of Virginia. This person commented that standard engineering practice was not defined and further use of the phrase was meaningless because it was not defined. The commenter wrote that standard engineering practice could not be adequately addressed; as such, the regulation was a prescriptive manual for non-engineers. This person wrote that standard engineering practice was based on sound science and that the regulations have not always been consistent with current science. This person thought professional engineers were being judged by a moving target because designs had to comply with the regulations and standard engineering practice, which was more strict than non-engineer design evaluations. The commenter thought Section 70.A.7.b pushed non-engineers into designing systems that they were not authorized to design. This person thought Part II, A.7, Table 1 was a prescriptive loading rate schedule that improperly prohibited engineers from using different loading rates based on standard engineering practice or the manufacturer's design guidance. This person suggested that professional engineers should be allowed to use loading rates prescribed in North Carolina that allowed for soil permeability measurements with a prescribed safety factor. The commenter thought Section 70.A.9 should be changed to allow use of non-naturally occurring fill material. The	The Office of Attorney General determined that the Board of Health has authority to promulgate the regulation and that the regulation conforms to the requirements of the Code of Virginia. These regulations contain a definition for standard engineering practice. The Board of Health does not have the legal authority to regulate the professionals who design and operate AOSSs. The Board of Health considered the comments and offered regulations that properly balance environmental and public health protection against the costs of implementation.

person wrote that non-naturally occurring fill material could provide adequate treatment of sewage if found to be standard engineering practice or scientific consensus accepted its use. The commenter wrote that soil used for earthen dams, landfills, and fill material used for Wisconsin sand mounds had known permeability and structural properties. The commenter further noted that the EPA Onsite Wastewater Treatment Systems Manual described systems that used fill material. The commenter thought VDH should provide a nationally accepted scientific basis for requiring naturally occurring soil and explain why appropriately characterized fill could not provide adequate treatment. The commenter wrote that Section 70.A.11 was the only new performance requirement that an engineer should be required to meet. He felt the remainder of the regulation was a prescriptive cookbook for non-engineered designs. The commenter believed the regulation and VDH policy #147 favored a select number of manufacturers, limited free market processes, and inhibited technology growth. The commenter wrote that Section 70.A.10 and Section 70.C were an inappropriate limit and instruction to professional engineers. The commenter wrote that non-engineers could not submit calculations for any design that was less than 18-inches to a soil limiting feature. The commenter wrote that Section 80 and its reference to 40 CFR Part 136 was too vague to be of use. The person felt that the regulation should specify who should collect samples. The commenter thought persons who collected samples should not have a conflict of interest in the system's performance. The commenter wrote that Section 80.D did not comply with the requirements to collect and report samples as referenced by 40 CFR Part 136. The commenter thought that the regulation could allow 15 to 45 days for a sample to sit in an unspecified location. The commenter suggested that section 90 of the regulation should require measurement of BOD, TSS, and fecal coliforms to adequately protect public health and the environment.	
Staff from the Department of Environmental Quality (DEQ) commented that the regulation might create a jurisdictional conflict between DEQ and VDH for certain alternative systems. Specifically, Table 2 in 12VAC5-613-70.A.12 of the emergency regulation allows a vertical separation of ≤12" from the point of effluent discharge to limiting features for effluent meeting essentially tertiary treatment (TL-3) with disinfection. This provision may result in a discharge of effluent directly to the water table, which could be a potential discharge to state waters.	VDH worked with DEQ to determine the appropriate jurisdictional issues. Modifications were made to the regulations to address wetlands and direct dispersal to groundwater.

Staff from DEQ recommended the regulations require a minimum separation distance between the effluent discharge and the watertable that would not result in a discharge to state waters. In those cases where effluent was discharged into the watertable, the VDH regulations should refer the owner of the system to DEQ to determine what, if any, additional permits might be necessary. Staff from DEQ wrote that Section 70.A.10 required the designer of certain alternative systems to demonstrate through calculations "that water mounding will not adversely affect the functioning of the soil treatment area, that hydraulic failure will not occur, and that adequate vertical separation will be maintained to ensure the performance requirements of this chapter are met." Staff wrote that Section 70.A.10 do not require the designer to address impacts to ground water quality that may result from water mounding. Staff were concerned that the regulations do not acknowledge potential ground water impacts that may result from these systems and their capability to comply with the Ground Water Standards (9VAC25-280) of the State Water Control Board. Staff recommended that Section 70.A.10 be revised to require demonstration of an AOSS' ability to comply with the Ground Water Standards (9VAC25-280) in addition to the other demonstration requirements contained in this provision, and with the assistance of DEQ, determine the appropriate ground water standards to apply to domestic AOSS discharges.	
One commenter wrote that the hydraulic area loading rates in the Sewage Handling and Disposal Regulations increased by a factor of 3.58 for TL-2 and by a factor of 4.48 for TL-3. This person commented that all good engineering was based on science, studies, and research. The commenter asked for the supporting documentation for the loading rates.	The loading rates are in line with standard engineering practice, the technical competence and experiences of agency personnel and guidance from the Environmental Protection Agency.

Family impact

Please assess the impact of the proposed regulatory action on the institution of the family and family stability including to what extent the regulatory action will: 1) strengthen or erode the authority and rights of parents in the education, nurturing, and supervision of their children; 2) encourage or discourage economic self-sufficiency, self-pride, and the assumption of responsibility for oneself, one's spouse, and one's children and/or elderly parents; 3) strengthen or erode the marital commitment; and 4) increase or decrease disposable family income.

The regulation will not have any impact on the institution of the family and family stability. VDH received a number of comments during the comment period for the emergency regulations that the operator and sampling requirements for small AOSS would be burdensome on families and homeowners. Specifically,

VDH received comments that owners should be able to operate their own AOSSs if they choose to do so. The operator licensing requirements are contained in Title 54.1 of the *Code*, and VDH does not have discretion to change them. See the economic impact section of the Town Hall Agency Background Document for the emergency regulations more information about the economic impact.

Detail of changes

Please list all changes that are being proposed and the consequences of the proposed changes. If the proposed regulation is a new chapter, describe the intent of the language and the expected impact if implemented in each section. Please describe the difference between the requirements of the new provisions and the current practice or if applicable, the requirements of other existing regulations in place.

If the proposed regulation is intended to replace an emergency regulation, please list separately (1) all provisions of the new regulation or changes to existing regulations between the pre-emergency regulation and the proposed regulation, and (2) only changes made since the publication of the emergency regulation.

Section number	Proposed requirements	Other regulations and law that apply	Intent and likely impact of proposed requirements
12VAC5-613-10	This section enumerates definitions of terms used in this chapter.	Va. Code § 32.1-163 et seq.; 12VAC5-610-20 et seq; 9VAC25-280-10 et seq.; Va. Code § 54.1-2300 et seq.; 9VAC25-260-5 et seq.	The section defines terminology used throughout the chapter. The intent is to provide clarity to the chapter and to aid stakeholders, regulants, and staff in the interpretation and enforcement of the chapter.
12-VAC5-613-20	This section enumerates the purpose and authority of this chapter.	Va. Code § 2.2-4011 et seq.; Va. Code § 32.1-12; Va. Code § 32.1-164 et seq.	This section explains where the Board of Health derived the statutory authority to promulgate the regulations and also outlines the basic public health and environmental objectives that this regulation is intended to accomplish.
12-VAC5-613-30	This section enumerates the applicability and scope of this chapter.	Va. Code § 32.1-163.6; 12VAC5-610-20 et seq.	This section establishes what performance, sampling, operation and maintenance requirements that apply to AOSS. Requirements vary depending on when the application was filed. The section effectively establishes different sampling and performance requirements for systems with applications filed on or after the effective date of the chapter; those requirements do not retroactively apply to existing AOSSs. Operation and maintenance requirements apply equally to all AOSSs regardless of when the application was filed. This section also excludes wetlands and spray irrigation systems from this chapter as these systems fall within the jurisdictional purview of the Department of Environmental Quality. Additionally, this section contains a 5-year sunset provision for treatment units that have been conferred general approval on or before the effective date of this chapter.
12-VAC5-613-40	This section enumerates this	Va. Code § 32.1-163.6; Va. Code §	The intent of this section is to ensure compliance with laws regulating the practice of engineering.

	chapter's relationship to other regulations and codes. This section also establishes that all plans and specifications bear a professional engineer seal or else be prepared pursuant to an engineering exemption. This section also requires that applications filed under Va. Code § 32.1-163.6 include a site characterization report.	54.1-4000 et seq.; 12VAC5-610-20 et seq.	Further, the requirement of a site characterization report enables VDH staff to confirm whether a system designed under Va. Code § 32.1-163.6 is protective of public health and the environment given the particular conditions of the site. The section also establishes that this chapter is supplemental to 12VAC5-610-20 et seq. and that provisions related to administrative processes are contained in that chapter.
12-VAC5-613-50	This section enumerates what constitutes a violation of this chapter and enumerates the Board, Commissioner and Department's authority to enforce this chapter.	12VAC5-610-20 et seq.; Va. Code § 32.1-25; Va. Code § 2.2-4000 et seq.	This section establishes what constitutes a violation of this chapter and reinforces the Board's authority to enforce its regulations.
12-VAC5-613-60	This section sets requirements for owners to establish a relationship with an operator and a recordation requirement for operating permits.	Va. Code § 32.1-163.6; Va. Code § 15.2-2157.E; 12VAC5-610-20 et seq.	The owner-operator relationship requirement is intended to ensure that each AOSS is serviced, operated and maintained by a duly licensed operator. The recordation requirement is intended to put prospective property buyers or transferees on notice that an AOSS is serving the property.
12-VAC5-613-70	This section sets the framework for a general approval protocol.		The intent of this section is to enumerate some fundamental elements of an evaluation protocol for generally approved treatment units, which the Division will develop through a guidance document. Generally approved treatment units are subject to relaxed sampling requirements under this chapter.
12-VAC5-613-80	This section establishes a comprehensive set of general performance requirements for AOSSs. Requirements include effluent quality requirements depending on vertical separation distances; maximum loading rates based on percolation rates and effluent quality; prohibitions on sewage exposure to the ground surface, water, animals and humans; and requirements for	Va. Code § 32.1-163.6; 12VAC5-610-20 et seq.	This section is intended to ensure that systems that deviate from the prescriptive design requirements of the Board of Health regulations still perform in a manner that does not jeopardize public health and the environment. Performance requirements vary depending on the system's vertical separation to limiting features, the design flow of the system, whether the system uses disinfection and whether the system uses gravity or pressure dosing.

	designer calculations and studies under circumstances articulated in the section.		
12-VAC5-613-90	This section establishes performance requirements when there is direct dispersal to groundwater systems; these requirements include compliance with an anti-degradation standard, fecal coliform limits, nutrient limits, a requirement for groundwater monitoring for large AOSSs and increased effluent monitoring. Special nitrogen limitations are imposed on large AOSSs and small AOSSs that are designed in the Chesapeake Bay Watershed.	12VAC5-610-20 et seq.; 9VAC25-280-10 et seq.	The intent of this section is to recognize the unique environmental sensitivity of sites saturated by ground water and the risks that AOSSs could pose to ground water pollution in these sensitive sites. This section adopts restrictive performance standards intended to protect public health and preclude the degradation of ground water when AOSSs are proposed to disperse directly into the ground water. This section also ensures that AOSSs do not pose a greater risk to groundwater pollution than conventional sewage systems that satisfy the prescriptive criteria of the Board of Health's regulations. The more restrictive nitrogen limitations on AOSS installed in the Chesapeake Bay Watershed represents an effort to preserve the water quality of the Bay and to comply with a federal Total Maximum Daily Load (TMDL) mandate.
12-VAC5-613-100	This section establishes laboratory sampling and monitoring requirements for AOSS systems.	40 CFR Part 136; 12-VAC5-613-90	The intent of this section is to establish the frequency and methodology for laboratory sampling in an effort to evaluate whether or not AOSSs are performing adequately and satisfying the treatment expectations of this chapter. The frequency of required laboratory sampling and monitoring varies depending on the design flow of the system, whether the treatment unit has received general approval from VDH, whether the system is directly disperses to groundwater and whether the AOSS is designed to discharge septic tank effluent.
12-VAC5-613-110	This section establishes field measurement, sampling, observation, and reporting requirements for operators.	40 CFR Part 136	The intent of this section is to ensure that AOSSs are operating in accordance with this chapter and are being adequately maintained. The required field measurement and sampling parameters vary depending on the design flow of the system.
12-VAC5-613-120	This section enumerates operator responsibilities. This section establishes what operators are required to perform at AOSS site visits and establishes the operator recording requirements	12VAC5-613-190	The intent of this section is to ensure that AOSS systems are operating in accordance with this chapter and are being adequately maintained. In addition, this section is intended to ensure that VDH is provided with sufficient documentation to gauge whether each AOSS is being properly operated and maintained to preclude system failure and to protect public health.

	for documenting site visits.		
12-VAC5-613-130	This section establishes reporting requirements for sludge and solids removal.	12-VAC5-613-190	The intent of this section is to ensure the VDH is provided with sufficient documentation to monitor public health risks and to ensure sludge or solids removal is reported.
12-VAC5-613-140	This section establishes AOSS owner responsibilities, including requirements to maintain a relationship with an operator. The section imposes a duty on the owner to ensure that the operator operates and maintains the AOSS, performs site visits and takes samples in accordance with the chapter.	9VAC10-20; Va. Code §10.1-2100 et seq.	The intent of this section is to place the onus on the AOSS owner to ensure that his system is operating properly and is being properly maintained by a duly licensed operator so as to preclude system failure. It reinforces the notion that the owner's diligence with regards to his own system is a significant element in public health and environmental protection. This section is also intended to ensure that the owner complies with local ordinances preserving the water quality of the Chesapeake Bay.
12-VAC5-613-150	This section establishes the minimum requirements for frequency of visits by operators for AOSSs with flows up to 0.04 MGD.		The intent is to put the onus on the owner to ensure that an operator visits his AOSS at a given frequency in order to the perform operation and maintenance necessary to prevent failure and to protect public health and the environment. Visit frequency varies depending on design flow of the system.
12-VAC5-613-160	This section establishes requirements of operators for AOSSs with flows greater than 0.04 MGD.	9VAC25-790	The intent of this section is to impose more stringent staffing and attendance requirements for large AOSS because of the voluminous amounts of sewage that they generate and the drastic impact that they can have on public health and the environment should they malfunction.
12-VAC5-613-170	This section establishes a requirement for the AOSS designer to furnish the system owner and the local health department with an Operation and Maintenance manual. It also establishes minimum elements that must be contained in each manual.	9VAC25-790-970	The intent of this section is to keep AOSS owners informed of how the system is to be operated and maintained so as to prevent failure and to keep owners informed of any design limitations that the system might possess.
12-VAC5-613-180	This section establishes what an operator is required to accomplish when making a visit to an AOSS as mandated by this chapter.		The intent is to protect public health and the environment by ensuring that operators conduct the inspections, sampling, maintenance and repairs necessary for the AOSS to properly function. This section also intends to protect public health and the environment by ensuring that operators inform the owner of the remediation efforts necessary to return an AOSS to normal function when the AOSS is malfunctioning and cannot be restored through

			routine maintenance efforts.
12-VAC5-613-190	This section establishes what the required content, timing and fees are for reports filed by operators.	Va. Code §32.1-164.H	The intent of this section is to ensure VDH is provided with sufficient documentation at routine intervals to gauge whether each AOSS is being properly operated and maintained to preclude system failure. The required fee reflects the requirement of the Code of Virginia.
12-VAC5-613-200	This section establishes horizontal setback requirements for AOSS systems designed pursuant to Va. Code § 32.1-163.6. Additionally, horizontal setbacks from groundwater are required for systems that don't meet the requirements of section 90; these setbacks vary depending on treatment level.	Va. Code §32.1-163.6; 12VAC5-610-20 et seq; 12-VAC5-613-90	The intent of this section is to protect public health and the environment by requiring that AOSS be constructed and installed with sufficient horizontal setbacks to public and private drinking water sources, shellfish waters, sink holes, drainage and excavation trenches adjacent to groundwater and wetlands.