Virginia Regulatory Town Hall

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Proposed Regulation
Agency Background Document

Agency name	State Water Control Board
Virginia Administrative Code (VAC) citation	9 VAC 25-720
Regulation title	Water Quality Management Planning Regulation
Action title	Amend Nutrient Waste Load Allocations in Section 720-50.C. (Potomac, Shenandoah River Basin) for two facilities: 1. Frederick-Winchester S.A.-Opequon WRF (VPDES #VA0065552) 2. Merck WWTP (VPDES #VA0002178)
Date this document prepared	December 17, 2007

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Orders 36 (2006) and 58 (1999), and the *Virginia Register Form, Style, and Procedure Manual.*

Brief summary

In a short paragraph, please summarize all substantive changes that are being proposed in this regulatory action.

Amend Nutrient Waste Load Allocations in the Water Quality Management Planning Regulation, 9 VAC 25-720-50.C. (Potomac, Shenandoah River Basin), to provide increases for total nitrogen (TN) and total phosphorus (TP) for two facilities:

1. Frederick-Winchester S.A.-Opequon WRF (VPDES #VA0065552).
2. Merck WWTP (VPDES #VA0002178).

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.

State mandate in § 62.1-44.15(10) of the Code of Virginia is the source of legal authority identified to promulgate these amendments. The promulgating entity is the State Water Control Board.

The scope and purpose of the State Water Control Law is to protect and to restore the quality of state waters, to safeguard the clean waters from pollution, to prevent and to reduce pollution and to promote water conservation. The State Water Control Law (Code of Virginia) at § 62.1-44.15(10) mandates the Board to adopt such regulations as it deems necessary to enforce the general water quality management program of the Board in all or part of the Commonwealth. In addition, § 62.1-44.15(14) requires the Board to establish requirements for the treatment of sewage, industrial wastes and other wastes that are consistent with the purposes of this chapter. Setting the specific effluent limits needed to meet the water quality goals is within the discretion of the Board.

The correlation between the proposed regulatory action and the legal authority identified above is that the amendments being considered are modifications of the current requirements for the treatment of wastewater that will contribute to the protection of Virginia's water quality. State Water Control Law (Code of Virginia) web site: http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.15.

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 purpose of the regulatory action is to amend TN and TP waste load allocations (WLAs) in 9 VAC 25-720, for facilities owned by Frederick-Winchester Service Authority and Merck, for the following reasons:

- The FWSA-Opequon Water Reclamation Facility's current nutrient allocations are based on a permitted design flow of 8.4 MGD. FWSA's October 2006 petition claimed the existing infrastructure for biological treatment is more appropriately classified as 12.6 MGD, meriting higher allocations. The VPDES permit reissued on 7/7/06 stated the design flow of the existing facility is 8.4 MGD. At a 2/9/07 meeting with DEQ, FWSA proposed a revision to their original request. They believe that certainty, now, not later, is so critical that FWSA is willing to compromise on an amendment using a lower TN concentration of 3.0 mg/L, rather than the standard 4.0 mg/L for municipal treatment plants in the Shenandoah Basin, to calculate the revised TN allocation as follows:
    - Current TN WLA (based on 8.4 MGD; concentration of 4.0 mg/L) = 102,281 lbs/yr
    - Requested Amendment (based on 12.6 MGD; concentration of 3.0 mg/L) = 115,067 lbs/yr (a 12,786 lb/yr increase)

  Since the current TP allocation is already based on state-of-the-art treatment (0.30 mg/L annual average), FWSA requests a revised TP allocation as follows:
    - Current TP WLA (based on 8.4 MGD) = 7,675 lbs/yr
    - Requested Amendment (based on 12.6 MGD) = 11,512 lbs/yr (a 3,837 lb/yr increase)

  To implement this approach, FWSA also proposed including footnoted language in 9 VAC 25-720, similar to footnotes for several other facilities, to make the higher allocation contingent upon receiving a Certificate to Operate for the expanded plant by 12/31/10.

- Merck asserts that the current WLAs are not technically feasible to achieve. A January 2007 petition asked for increased WLAs based on discharge levels that Merck claims are technically feasible to achieve with Biological Nutrient Removal technology. Based on a design flow of 1.2 million gallons per day (MGD) for internal outfall 101 (process wastewater only), the facility's current nutrient allocations are 14,619 lbs/yr TN (based on an annual average concentration of 4.0 mg/L) and 1,096 lbs/yr TP (based on an annual average concentration of 0.30 mg/L). Merck requested the WLAs be revised to

43,835 lb/yr (29,216 lb/yr increase; based on an annual average concentration of 12.0 mg/L) and 4,384 lb/year (3,288 lb/yr increase; based on an annual average concentration of 1.20 mg/L).

Substance

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

Amend Nutrient Waste Load Allocations in the Water Quality Management Planning Regulation, 9 VAC 25-720-50.C. (Potomac, Shenandoah River Basin), for total nitrogen (TN) and total phosphorus (TP) for two facilities:

1. Frederick-Winchester S.A.-Opequon WRF (VPDES #VA0065552):
    a. Increase the TN waste load allocation from 102,331 to 115,122 pounds per year, and the TP waste load allocation from 7,675 to 11,506 pounds per year.
    b. Add a footnote to WLA table: "(10) Opequon WRF – waste load allocations (WLAs) based on a design flow of 12.6 MGD. If plant is not certified to operate at 12.6 MGD design flow by 12/31/10, the WLAs will decrease to TN = 102,331 lbs/yr; TP = 7,675 lbs/yr, based on a design flow of 8.4 MGD."

2. Merck WWTP (VPDES #VA0002178):
    a. Increase the TN waste load allocation from 14,619 to 43,835 pounds per year, and the TP waste load allocation from 1,096 to 4,384 pounds per year.
    b. Add a footnote to WLA table: "(11) Merck-Stonewall – waste load allocations will be reviewed and possibly modified based on "full-scale" results showing the treatment capability of the 4-stage Bardenpho technology at this facility."

3. Increase the Potomac-Shenandoah total basin TN waste load allocation from 5,156,164 to 5,198,171 lbs/yr, and the total basin TP waste load allocation from 246,634 to 253,753 lbs/yr.

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 so indicate.

The public will benefit, as the net effect of these amendments (part of the overall point source nutrient control effort) is reduced amounts of discharged nitrogen and phosphorus in the Chesapeake Bay watershed, compared to current nutrient loads reaching tidal waters. This, in turn, will aid in water quality restoration in the Bay and its tributary rivers, and assist in meeting the water quality standards necessary for protection of the living resources that inhabit the Bay. Merck will benefit, being able to achieve compliance with technically feasible nutrient discharge limitations. The Frederick-Winchester Service Authority will benefit, being able to fully utilize the investment made in nutrient removal capability under a prior upgrade project, and making the basis for the facility's nutrient waste load allocations consistent with the expanded design flow of the facility, expected to be certified for operation by 12/31/10. There is no

disadvantage to the agency or the Commonwealth that will result from the adoption of these amendments.

A pertinent issue of interest to the public, particularly local citizen conservation groups, is that the total delivered nitrogen load (from point and nonpoint sources) under the Shenandoah-Potomac's Tributary Strategy is already estimated to exceed the State's allocation commitment by about 300,000 pounds per year, and any further increase to individual facility allocations will add to this surplus unless an offset is identified. The Bay-wide Total Maximum Daily Load (TMDL) process beginning next year will use an updated, enhanced modeling framework to test standards compliance under the expected nutrient loadings, with the point source loads being the approved WLAs. Nutrient allocations to be established in the Bay-wide TMDL (scheduled for development and EPA approval by 2011) must achieve water quality standards, and include loadings for both point and non-point sources.

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 need 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.

Notification was sent 2/18/05 to the appropriate General Assembly Committees (in accordance with Virginia Code § 62.1-44.15(10)), describing provisions of the final regulations, adopted by the Board in late 2005, which may be more restrictive than applicable federal requirements along with the reason why those provisions were needed. Because EPA has no specific regulation that establishes nutrient effluent limits in permits, some might view the proposals as more stringent than federal requirements and for this reason the General Assembly was notified during the original rulemaking to ensure the intent of the Code was met. The proposed amendments have the effect of increasing the nutrient waste load allocations for the Merck and FWSA-Opequon facilities.

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.

Frederick County and the City of Winchester are the only localities particularly affected by the proposed amendments. The Frederick-Winchester Service Authority owns and operates the Opequon facility, serving sewer customers in the County and City. Merck is a privately owned industrial facility.

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, the impacts on the regulated community and the impacts of the regulation on farm or forest land preservation.

In addition to any other comments, the Board is seeking comments on the costs and benefits of the proposal, the potential impacts of this regulatory proposal and any impacts of the regulation on farm and forest land preservation. Also, the Board is seeking information on impacts on small businesses as defined in § 2.2-4007.1 of the Code of Virginia. 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 may do so at the public hearing or by mail, email or fax to John Kennedy, DEQ Chesapeake Bay Program, P.O. Box 1105, Richmond VA 23218; phone: 804-698-4312; fax: 804-698-4116; email: jmkennedy@deq.virginia.gov. Comments may also be submitted through the Public Forum feature of the Virginia Regulatory Town Hall website at: www.townhall.virginia.gov. Written comments must include the name and address of the commenter. In order to be considered comments must be received by 5:00 p.m. on 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 can be found in the Calendar of Events section of the Virginia Register of Regulations. Both oral and written comments may be submitted at that time.

Economic impact

Please identify the anticipated economic impact of the proposed regulation.

Projected cost to the state to implement and enforce the proposed regulation, including (a) fund source / fund detail, and (b) a delineation of one-time versus on-going expenditures	No additional cost to the State, above currently budgeted amounts for implementation of nutrient discharge control regulations, to implement these amendments.
Projected cost of the regulation on localities	FWSA plans to upgrade and expand their Opequon facility to meet the amended nutrient WLAs. The construction project has been bid, with an apparent low bid of about $50.7 million. State cost-share from the Water Quality Improvement Fund will be provided, estimated to be $11.4 million, making the local share of the project $39.3 million, to be shared by the localities served – Frederick County and the City of Winchester.
Description of the individuals, businesses or other entities likely to be affected by the regulation	The only business affected by the amendments is Merck, a large pharmaceutical producer and industrial discharger. Merck plans to spend about $18 million to install a nutrient reduction system capable of achieving the technically feasible effluent levels requested in the amendments.
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.	There are no small businesses directly affected by these amendments.
All projected costs of the regulation for affected individuals, businesses, or other entities. Please be specific. Be sure to include the projected reporting, recordkeeping, and other administrative costs required for compliance by small businesses.	In addition to the above capital construction costs, Merck estimates that annual operation and maintenance (O&M) costs for their wastewater treatment facility will increase by about $1 million due to installation of nutrient reduction technology. No estimate is available of the added O&M cost to

	FWSA.

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 following alternatives were considered during the "Notice of Intended Regulatory Action" stage of this rulemaking:

- Deny the petitions and leave the nutrient waste load allocations as currently listed in 9 VAC 25-720. The plant owners would have to rely on other options to meet their allocations, such as use of the Nutrient Credit Exchange Program (authorized under VA Code § 62.1-44.19:12 through 19:19) or installation of more stringent nutrient removal technology.
- Approve revised allocations as requested in the petitions.
- Approve revised allocations using values different than the petitioners' for the underlying calculation factors, especially the assumed annual average total nitrogen or total phosphorus discharge concentrations.

DEQ staff consulted with a Technical Advisory Committee (TAC) before recommending to the Board that the proposed amendments in the preceding "Substance" section should be published for public review and comment. During a TAC meeting in November 2007, it became apparent that the Frederick-Winchester S.A. had provided reasonable assurance that their expansion project could be completed by December 31, 2010, and the TAC was receptive to the request for WLA increases. Merck made a reasonable case that the concentration bases for their current WLAs were not technologically feasible and merited consideration for increases, although the TAC could not reach consensus on the amounts. Although Merck had made progress on a pilot study to test nutrient removal capabilities, the study period was too short and did not consider all the possible variables to make a firm decision on what the feasible nutrient effluent levels should be. For these reasons, a footnote was included with the proposed amendment stating that Merck's WLAs will be reviewed and possibly modified based on "full-scale" results showing the treatment capability of the nutrient removal system being installed at this facility. The 3-phase installation project is scheduled to be completed by the third quarter of 2010.

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.

A Regulatory Flexibility Analysis was presented in November 2005, when nutrient waste load allocations were added to 9 VAC 25-720 as a Final Regulation. The findings and conclusions presented in that document are unchanged by these proposed amendments, and no additional analysis is warranted.

Public comment

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

Commenter	Comment	Agency response
Mike Gerel, VA Staff Scientist, Chesapeake Bay Foundation	Re. Merck: 1. Object to use of unpromulgated, unpublished, case-by-case "comparable level-of-effort" approach for equating nutrient reduction efforts at industrial and municipal facilities. Approach is flawed because POTWs and for-profit companies have completely different economic models, abilities to recover costs, and capabilities to control influent constituents. 2. DEQ should work with wastewater engineers and economists to develop and seek Board approval of standardized protocol to determine an environmentally-protective and equitable level of treatment to be provided by industrial facilities. 3. If an appropriate protocol is developed, Merck may in the future be entitled to amended WLAs based on installation of best practicable technology, in this case, Bardenpho treatment. Re. FWSA-Opequon: 1. When revising 9 VAC 25-720 in 2005, WLAs for municipal facilities were set based on the permitted design flow anticipated by 12/31/10. As of 2005, FWSA-Opequon was certified to operate at 8.4 MGD; no information provided to demonstrate an expansion would be completed prior to 2011. 2. FWSA made this same request for a higher WLA based on 12.6 MGD in comments on the regulation; request was denied because the higher flow resulting from I&I during wet weather months does not constitute a design flow for nutrient treatment. 3. Urge the Board not to take action on this proposal, and maintain the existing waste load allocations for the Merck and Opequon facility.	Re. Merck: 1. Comparable-level-of-effort approach was deemed reasonable & equitable when setting nutrient WLAs for industrial plants in 2005 rulemaking, since technology options and performance expectations are very different between industries and POTWs. Water quality standards compliance and equitable control requirements were the primary goals in setting WLAs, and ability-to-pay was considered only from the standpoint that the regulations should avoid causing an industrial discharger to go out of business. Another basis for setting WLAs was that an owner would be able to meet the allocations if they chose to install available technology at their facility, without reliance on the nutrient credit exchange program to comply, although that is an option. 2. DEQ staff will develop guidance, rather than regulation, to address acceptable documentation, pilot study design and reporting to support WLA increase requests. 3. The proposed amendments condition Merck's increased WLAs on further review and possible modification based on "full-scale" results for the Bardenpho system being installed. Re. FWSA-Opequon: 1. FWSA's request now documents plans to expand the plant by Dec. 2010, and has recently bid the project. 2. FWSA concedes there are hydraulic limitations in the existing plant; the expansion project will bring all plant components to a rating capable of treating a design flow of 12.6 MGD. 3. Recommended proposal is for increases that appear allowable, reasonable and justified.

Leon F. Szeptycki, UVA Law School, on behalf of **Jeff Kelble**, Shenandoah Riverkeeper	1. Shenandoah Riverkeeper opposes any increases to WLAs in 9 VAC § 25-720. 2. The Board can increase individual WLAs only when the Board can ensure the basin-wide tributary caps will be met despite the increase. 3. The Board should not act until it has developed policy or guidance concerning requests for WLA increases. 4. Cost and POTW percent reduction criteria that Merck proposes are inappropriate and violate the Guiding Principles of VA's Tributary Strategy. 5. The standard for considering increases must be consistent with 9 VAC 25-720-40(D), the overall regulatory scheme, and the Guiding Principles. 6. The Board should weigh heavily the existing impairment of the South Fork Shenandoah River, the upcoming TMDL, and the implications of allowing Merck to install treatment representing less than the state-of-the-art. 7. The Board should give effect to 9 VAC 25-720-40(D) and act consistently with the Guiding Principles and the overall regulatory scheme for the Chesapeake Bay by establishing Merck's WLA at the highest level of treatment.	1. No response needed. 2. Bay-wide TMDL process beginning next year will use an updated, enhanced modeling framework to test standards compliance under the expected nutrient loadings, with the point source loads being the approved WLAs. TMDL nutrient allocations (scheduled for development and EPA approval by 2011) must achieve water quality standards, and include loadings for both point and non-point sources. 3. DEQ staff will develop guidance, rather than regulation, to address acceptable documentation, pilot study design and reporting to support WLA increase requests. 4. See response to CBF comment #1. 5. 9 VAC 25-720-40(D) is applicable to concentration-based limitations, not annual waste load allocations. 6. In comments made at their 12/4/07 meeting, the Board said that due to concerns about increasing WLAs in the Shenandoah-Potomac basin and complying with water quality standards, it will look closely at the public comments received and recommendations when this matter comes before them for final approval. 7. Mandating state-of-the-art technology at just one facility in the Shenandoah portion of the Potomac is not reasonable or equitable compared to requirements set for all other significant dischargers in the region.
Gary Collins, private citizen	When Forbes rated VA as the best state for business environment in July 2007, it evidently didn't consider small business in its evaluation. Many small businesses in the Shenandoah Valley are already impacted by poor water quality and proposed nutrient WLA increases may lead to worsening fish kills and impairments. Other pollutants are poultry litter and bacteria.	Water quality impacts in the Shenandoah are of great concern to the Board and DEQ. Extensive studies are ongoing to try and determine the cause(s) of recent fish kills and the sources of water quality impairments. DEQ is drafting freshwater nutrient criteria (expected in 2010) which may require more stringent discharge controls than needed for tidal water quality protection.

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 direct impact resulting from limitations on the discharge of total nitrogen and total phosphorus from wastewater treatment plants is for the protection of public health and safety. The adoption of these amended nutrient limitations will increase the cost of wastewater treatment at publicly owned treatment works, thereby increasing the user charges paid by residential and commercial customers, potentially decreasing the disposable family income.

Detail of changes

Please detail all changes that are being proposed and the consequences of the proposed changes.
Detail all new provisions and/or all changes to existing sections.
If the proposed regulation is intended to replace an emergency regulation, please list separately (1) all changes between the pre-emergency regulation and the proposed regulation, and (2) only changes made since the publication of the emergency regulation.

For changes to existing regulations, use this chart:

Current section number	Proposed new section number, if applicable	Current requirement	Proposed change and rationale
9VAC25-720-50.C.		Potomac, Shenandoah River Basin: Nitrogen and phosphorus waste load allocations to restore the Chesapeake Bay and its tidal rivers.	1) For **FWSA-Opequon WRF** (VA0065552): • Add footnote reference "(10)" after Facility Name. • Delete the TN waste load allocation figure of "102,331", and replace with "115,122". • Delete the TP waste load allocation figure of "7,675", and replace with "11,506". • Add Footnote (10): "Opequon WRF – waste load allocations (WLAs) based on a design flow of 12.6 MGD. If plant is not certified to operate at 12.6 MGD design flow by 12/31/10, the WLAs will decrease to TN = 102,331 lbs/yr; TP = 7,675 lbs/yr, based on a design flow of 8.4 MGD." 2) For **Merck** (VA0002178): • Add footnote reference "(11)" after Facility Name. • Delete the TN waste load allocation figure of "14,619", and replace with "43,835". • Delete the TP waste load allocation figure of "1,096", and replace with "4,384". • Add Footnote (11): "Merck-Stonewall – waste load allocations will be reviewed and possibly modified based on "full-scale" results showing the treatment capability of the 4-stage Bardenpho technology at this facility." 3) For the Potomac-Shenandoah Totals: • Delete the TN waste load allocation figure of "5,156,164", and replace with "5,198,171". • Delete the TP waste load allocation figure of "246,634", and replace with "253,753".