Office of Regulatory Management

Economic Review Form

Agency name	Department of Environmental Quality
Virginia Administrative Code (VAC) Chapter citation(s)	9 VAC 25-720 and 9 VAC 25-820
VAC Chapter title(s)	Water Quality Management Planning Regulation and General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia
Action title	Amend Existing WQMP Regulation – nutrient allocations
Date this document prepared	October 7, 2022

Cost Benefit Analysis

Table 1a must be completed for all actions. Tables 1b and 1c must be completed for actions (or portions thereof) where the agency is exercising discretion, including those where some of the changes are mandated by state or federal law or regulation. Tables 1b and 1c are not needed if **all** changes are mandated, and the agency is not exercising any discretion. In that case, enter a statement to that effect.

(1) Direct Costs & Benefits: Identify all specific, direct economic impacts (costs and/or benefits), anticipated to result from the regulatory change. (A direct impact is one that affects entities regulated by the agency and which directly results from the regulatory change itself, without any intervening steps or effects. For example, the direct impact of a regulatory fee change is the change in costs for these regulated entities.) When describing a particular economic impact, specify which new requirement or change in requirement creates the anticipated economic impact. Keep in mind that this is the proposed change versus the status quo. One bullet has been provided, add additional bullets as needed.

(2) Quantitative Factors:
  (a) Enter estimated dollar value of total (overall) direct costs described above.
  (b) Enter estimated dollar value of total (overall) direct benefits described above.
  (c) Enter the present value of the direct costs based on the worksheet.
  (d) Enter the present value of the direct benefits based on the worksheet.

(3) Benefits-Costs Ratio: Calculate d divided by c OR enter it from the worksheet.

(4) Net Benefit: Calculate d minus c OR enter it from the worksheet.

(5) Indirect Costs & Benefits: Identify all specific, indirect economic impacts (costs and/or benefits), anticipated to result from the regulatory change. (An indirect impact is one that results from responses to the regulatory change, but which are not directly required by the regulation. Indirect impacts of a regulatory fee change on regulated entities could include a change in the prices they charge, changes in their operating procedures or employment levels, or decisions to enter or exit the regulated profession or market. Indirect impacts

also include responses by other entities that have close economic ties to the regulated entities, such as suppliers or partners.) If there are no indirect costs or benefits, include a specific statement to that effect.

(6) Information Sources: Describe the sources of information used to determine the benefits and costs, including the source of the Quantitative Factors. If dollar amounts are not available, indicate why they are not.

(7) Optional: Use this space to add any further information regarding the data provided in this table, including calculations, qualitative assessments, etc.

The regulatory amendment to reallocate unneeded significant industrial wasteload allocations is being made in accordance with § 62.1-44.19:14 D of the Code of Virginia. The regulatory amendments to establish total phosphorus wasteload allocations necessary to meet water quality criteria for chlorophyll-a and to incorporate the allocations in the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia are being made in accordance with Appendix X to the 2010 Chesapeake Bay TMDL. The amendments to incorporate the Enhanced Removal Certainty Program wasteload allocations into the general permit is required by § 62.1-44.19:14 G of the Code of Virginia.

Table 1a: Costs and Benefits of the Proposed Changes (Primary Option)

(1) Direct Costs & Benefits	This rulemaking incorporates modifications to the Water Quality Management Regulation to (1) establish total phosphorus wasteload allocations necessary to meet water quality criteria for chlorophyll-a in the tidal James River and (2) reallocate any unneeded significant industrial wasteload allocations (due to facility closures, etc) to the Nutrient Offset Fund as required by § 62.1-44.19:14 D, (3). Secondary to the Water Quality Management Planning Regulation amendments are amendments to the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia to incorporate the total phosphorus wasteload allocations in (1) above and Enhanced Nutrient Removal Certainty Program wasteload allocations as required by § 62.1-44.19:14 C. Capital upgrades totaling $109,470,185 at three publicly owned treatment plants and yearly O&M costs of $28,708,485 at five of the seven facilities receiving reduced wasteload allocations to meet chlorophyll-a criteria. Costs at individual facilities may be reduced through the water quality trading program. There are no direct costs associated with the reallocation of unneeded industrial wasteload allocations Direct benefits of the chlorophyll-a based phosphorus wasteload allocations include restoration of a balanced algal assemblage in the James River, prevention of harmful algal blooms, improved water clarity and additional phosphorus reductions under the Chesapeake Bay TMDL.

	These benefits have not been quantified economically and a value equal to the costs has been assigned for the sake of this analysis. The reallocation of unneeded industrial wasteload allocations to the Nutrient Offset Fund provides a direct benefit of preserving allocations to accommodate future economic development and growth. This benefit has not been quantified economically.

(2) Quantitative Factors	Estimated Dollar Amount	Present Value	
Direct Costs	(a) $53,266,450	(c) $109,470,185	
Direct Benefits	(b) $53,226,450	(d) $109,470,185	
(3) Benefits-Costs Ratio	1.0	(4) Net Benefit	1.0

(5) Indirect Costs & Benefits	Indirect impacts include increased charges for residential, commercial and industrial wastewater treatment services to pay for capital improvements and increased O&M costs. Indirect benefits include increased business for engineering and construction firms and chemical suppliers as well as increased recreational and commercial opportunities due to improved water quality.
(6) Information Sources	Direct costs for capital upgrades calculated from November 2002 Chesapeake Bay Program Report *Nutrient Reduction Technology cost Estimations for Point Sources in the Chesapeake Bay Watershed*. Direct O&M costs of $28,708,485/year (2022 dollars) are expected but were not included in (2)(a) and (2)(c) above. Dollar amounts were not available to quantify the economic benefit of improved water quality and compliance with water quality criteria.
(7) Optional	

Table 1b: Costs and Benefits under the Status Quo (No change to the regulation)
This table addresses current requirements and the implications of not making any changes. In other words, describe the costs and benefits of maintaining the current regulatory requirements as is.
The regulatory amendment to reallocate unneeded significant industrial wasteload allocations is being made in accordance with § 62.1-44.19:14 D of the Code of Virginia. The regulatory amendments to establish total phosphorus wasteload allocations necessary to meet water quality criteria for chlorophyll-a and to incorporate the allocations in the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia

are being made in accordance with Appendix X to the 2010 Chesapeake Bay TMDL. The amendments to incorporate the Enhanced Removal Certainty Program wasteload allocations into the general permit is required by § 62.1-44.19:14 G of the Code of Virginia.

(1) Direct Costs & Benefits	N/A – Wasteload allocations are necessary to protect water quality criteria in the Chesapeake Bay and its tidal tributaries are established in the Water Quality Management Planning Regulation. § 62.1-44.19:14 requires that the Board issue the watershed general permit in lieu of alternative permitting approaches to restore the Chesapeake Bay and its tidal tributaries. The cost of a no action alternative would be $0 but the Commonwealth would fail to establish requirements necessary for the restoration of Chesapeake Bay and its tidal tributaries and would be inconsistent with the requirements of state law. Direct Costs: Describe the direct cost of maintaining the current requirement – N/A Direct Benefits: Describe the direct benefits of maintaining the current requirement – N/A		
(2) Quantitative Factors	Estimated Dollar Amount	Present Value	
Direct Costs	(a)	(c)	
Direct Benefits	(b)	(d)	
(3) Benefits-Costs Ratio		(4) Net Benefit	
(5) Indirect Costs & Benefits			
(6) Information Sources			
(7) Optional			

Table 1c: Costs and Benefits under an Alternative Approach
This table addresses an alternative approach to accomplishing the objectives with different requirements. These alternative approaches may include the use of reasonably available

alternatives in lieu of regulation, or information disclosure requirements or performance standards instead of regulatory mandates.

(1) Direct Costs & Benefits	N/A – Wasteload allocations are necessary to protect water quality criteria in the Chesapeake Bay and its tidal tributaries are established in the Water Quality Management Planning Regulation. § 62.1-44.19:14 requires that the Board issue the watershed general permit in lieu of alternative permitting approaches to restore the Chesapeake Bay and its tidal tributaries.		
(2) Quantitative Factors	Estimated Dollar Amount	Present Value	
Direct Costs	(a)	(c)	
Direct Benefits	(b)	(d)	
(3) Benefits-Costs Ratio		(4) Net Benefit	
(5) Indirect Costs & Benefits			
(6) Information Sources			
(7) Optional			

Impact on Local Partners

(1) Describe the direct costs and benefits (as defined on page 1) for local partners in terms of real monetary costs and FTEs. Local partners include local or tribal governments, school divisions, or other local or regional authorities, boards, or commissions. If local partners are not affected, include a specific statement to that effect and a brief explanation of the rationale.

(2) Quantitative Factors:
   (a) Enter estimated dollar value of total (overall) direct costs described above.
   (b) Enter estimated dollar value of total (overall) direct benefits described above.

(3) Indirect Costs & Benefits: Describe any indirect benefits and costs (as defined on page 1) for local partners that are associated with all significant changes. If there are no indirect costs or benefits, include a specific statement to that effect.

(4) Information Sources: describe the sources of information used to determine the benefits and costs, including the source of the Quantitative Factors. If dollar amounts are not available, indicate why they are not.
(5) Assistance: Identify the amount and source of assistance provided for compliance in both funding and training or other technical implementation assistance.
(6) Optional: Use this space to add any further information regarding the data provided in this table, including calculations, qualitative assessments, etc.

Note: If any of the above information was included in Table 1, use the same information here.

Table 2: Impact on Local Partners

(1) Direct Costs & Benefits	This rulemaking incorporates modifications to the Water Quality Management Regulation to (1) establish total phosphorus wasteload allocations necessary to meet water quality criteria for chlorophyll-a in the tidal James River and (2) reallocate any unneeded significant industrial wasteload allocations (due to facility closures, etc) to the Nutrient Offset Fund as required by § 62.1-44.19:14 D, (3). Secondary to the Water Quality Management Planning Regulation amendments are amendments to the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia to incorporate the total phosphorus wasteload allocations in (1) above and Enhanced Nutrient Removal Certainty Program wasteload allocations as required by § 62.1-44.19:14 C. Direct Costs: Describe the direct costs of this proposed change here. Capital upgrades totaling $109,470,185 at three publicly owned treatment plants and yearly O&M costs of $28,708,485 at five of the seven facilities receiving reduced wasteload allocations to meet chlorophyll-a criteria. Costs at individual facilities may be reduced through the water quality trading program. There are no direct costs associated with the reallocation of unneeded industrial wasteload allocations Direct Benefits: Describe the direct benefits of this proposed change here. Direct benefits of the chlorophyll-a based phosphorus wasteload allocations include restoration of a balanced algal assemblage in the James River, prevention of harmful algal blooms, improved water clarity and additional phosphorus reductions under the Chesapeake Bay TMDL. These benefits have not been quantified economically and a value equal to the costs has been assigned for the sake of this analysis. The reallocation of unneeded industrial wasteload allocations to the Nutrient Offset Fund provides a direct benefit of preserving allocations to

	accommodate future economic development and growth. This benefit has not been quantified economically.
(2) Quantitative Factors	Estimated Dollar Amount
Direct Costs	(a)
Direct Benefits	(b)
(3) Indirect Costs & Benefits	
(4) Information Sources	
(5) Assistance	
(6) Optional	

Economic Impacts on Families

(1) Describe the direct costs and benefits (as defined on page 1) to a typical family of three (average family size in Virginia according to the U. S. Census) arising from any proposed regulatory changes that would affect the costs of food, energy, housing, transportation, healthcare, and education. If families are not affected, include a specific statement to that effect and a brief explanation of the rationale.
(2) Quantitative Factors:
  (a) Enter estimated dollar value of direct costs.
  (b) Enter estimated dollar value of direct benefits.
(3) Indirect Costs & Benefits: Describe any indirect costs and benefits (as defined on page 1) to a typical family of three that are most likely to result from the proposed changes.
(4) Information Sources: describe the sources of information used to determine the benefits and costs, including the source of the Quantitative Factors. If dollar amounts are not available, indicate why not.
(5) Optional: Use this space to add any further information regarding the data provided in this table, including calculations, qualitative assessments, etc.

Note: If any of the above information was included in Table 1, use the same information here.

Table 3: Impact on Families

(1) Direct Costs & Benefits	The only anticipated impact to families is a possible minor increase in sewerage bills (unquantified) to reflect additional operational costs for nutrient removal.
(2) Quantitative Factors	Estimated Dollar Amount
Direct Costs	(a) unquantified
Direct Benefits	(b) unquantified
(3) Indirect Costs & Benefits	
(4) Information Sources	
(5) Optional	

Impacts on Small Businesses

(1) Describe the direct costs and benefits (as defined on page 1) for small businesses. For purposes of this analysis, "small business" means the same as that term is defined in § 2.2-4007.1. If small businesses are not affected, include a specific statement to that effect and a brief explanation of the rationale.
(2) Quantitative Factors:
  (a) Enter estimated dollar value of direct costs.
  (b) Enter estimated dollar value of direct benefits.
(3) Indirect Costs & Benefits: Describe the indirect benefits and costs (as defined on page 1) for small businesses that are most likely to result from the proposed changes.
(4) Alternatives: Add a qualitative discussion of any equally effective alternatives that would make the regulatory burden on small business more equitable compared to other affected business sectors, and how those alternatives were identified.
(5) Information Sources: describe the sources of information used to determine the benefits and costs, including the source of the Quantitative Factors. If dollar amounts are not available, indicate why not.
(6) Optional: Use this space to add any further information regarding the data provided in this table, including calculations, qualitative assessments, etc.

Note: If any of the above information was included in Table 1, use the same information here.

Table 4: Impact on Small Businesses

(1) Direct Costs & Benefits	The only anticipated impact to small businesses is a possible very minor (unquantified) increase in sewer bills to reflect additional operational costs for nutrient removal
(2) Quantitative Factors	Estimated Dollar Amount
Direct Costs	(a) unquantified
Direct Benefits	(b) unquantified
(3) Indirect Costs & Benefits	
(4) Alternatives	
(5) Information Sources	
(6) Optional	

Changes to Number of Regulatory Requirements

For each individual VAC Chapter amended, repealed, or promulgated by this regulatory action, list (a) the initial requirement count, (b) the count of requirements that this regulatory package is adding, (c) the count of requirements that this regulatory package is reducing, (d) the net change in the number of requirements. This count should be based upon the text as written when this stage was presented for executive branch review. Five rows have been provided, add or delete rows as needed.

Table 5: Total Number of Requirements

	Number of Requirements			
Chapter number	**Initial Count**	**Additions**	**Subtractions**	**Net Change**
9VAC25-720	0	0	0	0
9VAC25-820-40 Compliance plans	1	1	0	+1

9VAC25-820-40 General permit		Compliance schedule for new WLAs		