

Office of Regulatory Management
Economic Review Form

Agency name	Department of Environmental Quality
Virginia Administrative Code (VAC) Chapter citation(s)	9VAC25-210 9VAC25-610
VAC Chapter title(s)	“Virginia Water Protection Permit Program Regulation” “Groundwater Withdrawal Regulations”
Action title	Amendments establishing criteria for (i) water auditing plans and (ii) leak detection and repair plans, and requiring any water withdrawal permit application to include (i) a water auditing plan and (ii) a leak detection and repair plan.
Date this document prepared	October 18, 2022 - revised October 2, 2023

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.

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

Agency Note: The Groundwater Withdrawal Regulations (9VAC25-610) and the Virginia Water Protection Permit Program Regulation (9VAC25-210), which applies to permitted surface water withdrawals, both currently contain permit application requirements that address water conservation measures. As required by Chapter 100 of the 2021 Special Session I Acts of Assembly, the proposed amendments bolster existing requirements with enforceable specifications to implement water audit plans and leak detection and repair plans that strengthen existing water conservation requirements for all permitted users who withdraw groundwater and surface water.

<p>(1) Direct Costs & Benefits</p>	<ul style="list-style-type: none"> • As mandated by Chapter 100 of the 2021 Special Session I Acts of Assembly, the proposed regulation requires every permit application for a surface water withdrawal, and most applications for a groundwater withdrawal, to include a water auditing plan and a leak detection and repair plan. <p>Direct Costs: The direct costs of this regulatory change vary greatly. Out of approximately 370 active Groundwater Withdrawal permits, there are 165 municipal, 72 agricultural, 68 commercial, 24 industrial, 33 irrigation, 3 manufacturing, 1 nuclear power, and 4 fossil fuel plant permittees. Out of approximately 114 active Virginia Water Protection surface water withdrawal permits, there are 55 municipal, 2 agricultural, 26 commercial, 9 fossil fuel power, 8 hydropower, 4 irrigation, 1 manufacturing, 7 mining, and 2 nuclear power plant permittees. Some permittees likely already track the flow of water through their facilities and conduct leak detection and repair in which case this change may not impose any new direct cost. Other permittees may have staff who will develop and implement water audit plans and leak detection and repair plans, while still others may need to hire a consultant to assist them. DEQ estimates costs to conduct a water loss audit every three years and submit a report of the results of the audits is about \$5,000 (every three years) for agricultural use permits, about \$75,000 for municipal permits (total over a 15-year permit term), and potentially as much as \$200,000 for a nuclear power plant (total over a 15-year permit term). These costs include the initial development of the</p>
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	<p>plan, data collection, installing meters if needed, periodic plan updates, and reporting of the results. Moreover, if a municipality hires an outside entity such as a consultant, the cost estimate is about \$20,000/year in such cases.</p> <p>DEQ’s rough estimate for the leak detection and repair plan of \$5,000 (every three years) for agricultural use permits, about \$40,000-\$50,000 (total over a 15-year permit term) for municipal permits, and potentially as much as \$300,000 for a nuclear power provider (total over a 15-year permit term).</p> <p>More detailed information is available in the Economic Impact Analysis conducted on the proposed regulation by the Department of Planning and Budget.</p> <p>Direct Benefits: This proposal meets the legal mandate of the new state law. The purpose for this statutorily mandated change is to provide for the efficient use of surface water and groundwater and to conserve the resources for future use. There are significant water losses by permitted water withdrawal users that lack adequate water auditing and leak detection and repair plans. Requiring enforceable water auditing and leak detection and repair plans achieves greater long-term conservation and sustainability of finite water resources. This makes more water resources available for population growth and economic development. As noted in the Department of Planning and Budget’s Economic Impact Analysis, benefits to permittees and their customers include: reduced waste (avoiding costs of treatment and pumping costs for water that does not reach the end user); improved operational efficiency; lowered water system operational costs; reduced potential for contamination; extended life of facilities; reduced potential property damage and water system liability; and reduced water outage events.</p> <p>Indirect Benefits: As noted in the Department of Planning and Budget’s Economic Impact analysis, indirect benefits include increased knowledge about the distribution system which can be used to respond more quickly to emergencies; increased firefighting capability; more efficient use of existing capacity and delayed capacity expansion; long-term conservation and sustainability of finite water resources; helping identify needs for infrastructure upgrades before catastrophic leaks occur; and enhancing local and regional water supply planning efforts.</p>
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(2) Quantitative Factors	Estimated Dollar Amount	Present Value
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Direct Costs	(a) See ranges of costs listed above which are dependent upon facility type	(c) No dollar amount available.	
Direct Benefits	(b) While indeterminate, as noted above there are a range of benefits from this regulatory action.	(d) No dollar amount available.	
(3) Benefits-Costs Ratio	No ratio available.	(4) Net Benefit	No estimate of net benefit
(5) Indirect Costs & Benefits	See the range of costs and benefits noted above.		
(6) Information Sources	Discussions with members of the regulated communities. Economic Impact Analysis conducted on the proposed regulation by the Department of Planning and Budget		
(7) Optional	State law requires every permit application for a surface water withdrawal, and most applications for a groundwater withdrawal, to include a leak detection and repair plan. State agencies that currently have water withdrawal permits include the Department of Conservation and Recreation, the Department of Corrections, the Department of Veterans Services, and the Virginia Institute of Marine Science.		

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.

(1) Direct Costs & Benefits	<ul style="list-style-type: none"> The proposed amendments are mandated by state law. <p>Direct Costs: If the regulations are not amended, they will not meet the directive of the General Assembly for the State Water Control Board to adopt regulations to establish requirements for water auditing plans and leak detection and repair plans.</p> <p>Direct Benefits: No direct benefits to maintaining the status quo.</p>	
(2) Quantitative Factors	Estimated Dollar Amount	Present Value
Direct Costs	(a) None	(c) None
Direct Benefits	(b) None	(d) None

(3) Benefits-Costs Ratio	No change	(4) Net Benefit	No change
(5) Indirect Costs & Benefits	None		
(6) Information Sources	Discussions with members of the regulated communities.		
(7) Optional			

Table 1c: Costs and Benefits under an Alternative Approach

Not required: Amendments are mandated by changes in statute. No alternative approaches are applicable.

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

The Groundwater Withdrawal Regulations (9VAC25-610) and the Virginia Water Protection Permit Program Regulation (9VAC25-210), which applies to permitted surface water withdrawals, both currently contain permit application requirements that address water

conservation measures. As required by Chapter 100 of the 2021 Special Session I Acts of Assembly, the proposed amendments bolster existing requirements with enforceable specifications to implement water audit plans and leak detection and repair plans that strengthen existing water conservation requirements for all permitted users who withdraw groundwater and surface water.

(1) Direct Costs & Benefits	<ul style="list-style-type: none"> • As mandated by Chapter 100 of the 2021 Special Session I Acts of Assembly, the proposed regulation requires every permit application for a surface water withdrawal, and most applications for a groundwater withdrawal, to include a water auditing plan and a leak detection and repair plan. <p>Direct Costs: The direct costs of this regulatory change vary greatly. Out of approximately 370 active Groundwater Withdrawal permits, there are 165 municipal permittees. Out of approximately 114 active Virginia Water Protection surface water withdrawal permits, there are 55 municipal permittees. Some permittees likely already track the flow of water through their facilities and conduct leak detection and repair in which case this change may not impose any new direct cost. Other permittees may have staff who will develop and implement water audit plans and leak detection and repair plans, while still others may need to hire a consultant to assist them.</p> <p>Direct Benefits: Meet the legal mandate of state law. The purpose for the statutorily mandated change is to provide for the efficient use of surface water and groundwater and conserve the resources for future use. There are significant water losses by permitted water withdrawal users that lack adequate water auditing and leak detection and repair plans. Requiring enforceable water auditing and leak detection and repair plans achieves greater long-term conservation and sustainability of finite water resources. This makes more water resources available for population growth and economic development.</p>
(2) Quantitative Factors	Estimated Dollar Amount
Direct Costs	(a) None
Direct Benefits	(b) None
(3) Indirect Costs & Benefits	The regulated community could incur indirect costs due to the potential need to hire additional staff to implement the regulatory changes.

(4) Information Sources	Discussions with members of the regulated communities. Numbers are not available due to the variability in system sizes, water withdrawal amounts, and beneficial uses.
(5) Assistance	None
(6) Optional	State law requires every permit application for a surface water withdrawal, and most applications for a groundwater withdrawal, to include a leak detection and repair plan. State agencies that currently have water withdrawal permits include the Department of Conservation and Recreation, the Department of Corrections, the Department of Veterans Services, and the Virginia Institute of Marine Science.

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

Agency Note: The Groundwater Withdrawal Regulations (9VAC25-610) and the Virginia Water Protection Permit Regulation (9VAC25-210), which applies to permitted surface water withdrawals, both currently contain permit application requirements that address water conservation measures. As required by Chapter 100 of the 2021 Special Session I Acts of Assembly, the proposed amendments bolster existing requirements with enforceable specifications to implement water audit plans and leak detection and repair plans that strengthen existing water conservation requirements for all permitted users who withdraw groundwater and surface water.

DEQ anticipates that implementation of the requirement to include water audit plans and leak detection and repair plans in applications for water withdrawal permits will have a minimal economic impact on individual families. Individual private wells, such as groundwater wells for a family home, are not required to obtain a water withdrawal permit from DEQ and therefore are not affected by this proposed regulation. The regulatory change seeks to ensure availability of water sources for future uses which ensure that adequate water supply is available for Virginia families over the long term.

(1) Direct Costs & Benefits	<p>Direct Costs: There are no direct costs to families associated with this regulatory change. Individual private wells, such as groundwater wells for a family home, are not required to obtain a water withdrawal permit from DEQ and therefore are not affected by this proposed regulation.</p> <p>Direct Benefits: These regulatory amendments are necessary to conform to changes in state law that are currently in effect by establishing regulatory criteria for permitted water withdrawers to follow. The regulatory change seeks to ensure availability of water sources for future uses which ensure that adequate water supply is available for Virginia families over the long term.</p>
(2) Quantitative Factors	Estimated Dollar Amount
Direct Costs	(a) None
Direct Benefits	(b) None
(3) Indirect Costs & Benefits	No indirect costs or benefits expected for families.
(4) Information Sources	None
(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

Agency Note: The Groundwater Withdrawal Regulations (9VAC25-610) and the Virginia Water Protection Permit Regulation (9VAC25-210), which applies to permitted surface water withdrawals, both currently contain permit application requirements that address water conservation measures. As required by Chapter 100 of the 2021 Special Session I Acts of Assembly, the proposed amendments bolster existing requirements with enforceable specifications to implement water audit plans and leak detection and repair plans that strengthen existing water conservation requirements for all permitted users who withdraw groundwater and surface water.

DEQ anticipates that implementation of the requirement to include water audit plans and leak detection and repair plans in applications for water withdrawal permits will have a minimal economic impact on individual small businesses. Out of approximately 370 active Groundwater Withdrawal permits, there are 165 municipal, 72 agricultural, 68 commercial, 24 industrial, 33 irrigation, 3 manufacturing, 1 nuclear power, and 4 fossil fuel plant permittees. Out of approximately 114 active Virginia Water Protection surface water withdrawal permits, there are 55 municipal, 2 agricultural, 26 commercial, 9 fossil fuel power, 8 hydropower, 4 irrigation, 1 manufacturing, 7 mining, and 2 nuclear power plant permittees. The majority of these non-municipal permittees likely are not small businesses as defined in in § 2.2-4007.1.

(1) Direct Costs & Benefits	<ul style="list-style-type: none"> • As mandated by Chapter 100 of the 2021 Special Session I Acts of Assembly, the proposed regulation requires every permit application for a surface water withdrawal, and most applications for a groundwater withdrawal, to include a water auditing plan and a leak detection and repair plan.
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	<p>Direct Costs: The direct costs of this regulatory change vary greatly. Some small businesses with water withdrawal permits may already track the flow of water through their facilities and conduct leak detection and repair in which case this change may not impose any new direct cost. Other small businesses may have staff who will develop and implement water audit plans and leak detection and repair plans, while still others may need to hire a consultant to assist them.</p> <p>Direct Benefits: Meet the legal mandate of state law. The purpose for the statutorily mandated change is to provide for the efficient use of surface water and groundwater and conserve the resources for future use. There are significant water losses by permitted water withdrawal users that lack adequate water auditing and leak detection and repair plans. Requiring enforceable water auditing and leak detection and repair plans achieves greater long-term conservation and sustainability of finite water resources. This makes more water resources available for population growth and economic development.</p>
(2) Quantitative Factors	Estimated Dollar Amount
Direct Costs	(a) None
Direct Benefits	(b) None
(3) Indirect Costs & Benefits	No indirect costs or benefits expected for small businesses.
(4) Alternatives	None, this change is required by state law.
(5) Information Sources	None
(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

Agency Note:

The Virginia Water Protection Permit Program Regulation (9VAC25-210), which applies to permitted surface water withdrawals, currently contains 4 requirements for the regulated community to provide information in applications relating to existing water conservation measures and projected demand with and without conservation measures. As mandated by Chapter 100 of 2021 Special Session I Acts of Assembly, the regulatory change to Chapter 210 provides specific enforceable requirements to include a water loss audit plan and a leak detection and repair plan which is a strengthening of the current requirements related to water conservation.

The Groundwater Withdrawal Regulations (9VAC25-610) currently contains 37 requirements for the regulated community to include a water conservation and management plan, including a water loss reduction program in permit applications. As mandated by Chapter 100 of 2021 Special Session I Acts of Assembly, the regulatory change to Chapter 610 provides specific enforceable requirements to include a water loss audit plan and a leak detection and repair plan which is a strengthening of the current requirement to include a water loss reduction program in the required water conservation and management plan.

Change in Regulatory Requirements

VAC Section(s) Involved	Authority of Change	Initial Count	Additions	Subtractions	Net Change
9VAC25-210-300	Statutory:	1	0	0	0
	Discretionary:	0	0	0	0
9VAC25-210-340	Statutory:	29	2	0	+2
	Discretionary:	0	5	0	+5
9VAC25-610-10	Statutory:	0	0	0	0
	Discretionary:	0	0	0	0
9VAC25-610-100	Statutory:	37	+3	-12	-9
	Discretionary:	0	+5	0	+5
	Discretionary:	0	0	0	0
				Total Net Change of Statutory Requirements:	-7

Total Net Change of Discretionary Requirements:	+10*
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*Discretionary requirements are not applicable to all permit holders and are dependent on whether the user is withdrawing surface water or groundwater, and is also dependent upon the end use of the water- public water supply, commercial or industrial user, or agricultural user.

Cost Reductions or Increases (if applicable)

VAC Section(s) Involved	Description of Regulatory Requirement	Initial Cost	New Cost	Overall Cost Savings/Increases

Other Decreases or Increases in Regulatory Stringency (if applicable)

VAC Section(s) Involved	Description of Regulatory Change	Overview of How It Reduces or Increases Regulatory Burden

Length of Guidance Documents (only applicable if guidance document is being revised)

Title of Guidance Document	Original Length	New Length	Net Change in Length

*If the agency is modifying a guidance document that has regulatory requirements, it should report any change in requirements in the appropriate chart(s).