Informal Workgroup to Discuss the Virginia Water Protection Permit Program Regulation Exclusions Under 9VAc25-210-310 A 1

Meeting NO. 5 Agenda

June 25, 2026 (10:00 AM)

Physical Location Meeting Only

DEQ Piedmont Regional Office

Training Room

4949-A Cox Road, Glen Allen, VA 23060

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1. Welcome & Introductions
2. Review & Approval of the 06/25/2026 Agenda
3. Review of the Surface Water Withdrawal Informal Workgroup Summary Report
4. New Business – Discussion from Workgroup Members
5. Public Comment Forum
6. Wrap Up

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Director

Surface Water Withdrawal Informal Workgroup Summary Report

May 2026

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1. Executive Summary

The Department of Environmental Quality (DEQ) convened the Informal Workgroup to Discuss the Virginia Water Protection (VWP) Permit Program Regulation Exclusion Under 9VAC25-210-310 A 1 (Workgroup) in August 2024. The Workgroup met to discuss the Virginia Water Protection (VWP) Program Regulation exclusion under 9VAC25-210-310 A 1, commonly referred to as grandfathered surface water withdrawals. When the General Assembly adopted the VWP permit requirement, water withdrawals in existence on July 1, 1989, were "grandfathered," or exempt from the VWP permit requirement. However, the statute does not specify whether the grandfathered withdrawal is the amount of water taken prior to July 1, 1989, the capacity of the withdrawal structures at that time, or some other quantification. DEQ interpretation of this definition has been inconsistent over the years.

Some grandfathered facilities have increased withdrawals by 100% or more since 1989. This trend could have implications for existing and new permitted users as well as greater environmental impacts to the larger watershed. Municipal water systems and others with grandfathered withdrawals have invested funds and planned growth based on their understandings of the exclusion and may be adversely affected depending on how the definition is resolved.

The Workgroup has thoroughly discussed the grandfathered facilities VWP exemption and subsequent strategies for moving forward towards a resolution, although no specific recommendations have been made. The information provided in this report is intended to facilitate further stakeholder engagement and decision-making on this issue without recommending a resolution.

2. Statutory Background of Exclusion

Virginia Code § 62.1-44.15:22 states:

> *Notwithstanding any other provision, no Virginia Water Protection Permit shall be required for any water withdrawal in existence on July 1, 1989; however, a permit shall be required if a new § 401 certification is required to increase a withdrawal. No Virginia Water Protection Permit shall be required for any water withdrawal not in existence on July 1, 1989, if the person proposing to make the withdrawal received a § 401 certification before January 1, 1989, with respect to installation of any necessary withdrawal structures to make such withdrawal; however, a permit shall be required before any such withdrawal is increased beyond the amount authorized by the certification.*

9VAC25-210-310 A 1 states:

> *A. The following surface water withdrawals are excluded from VWP permit requirements. . .*

1. *Any surface water withdrawal in existence on July 1, 1989; however, a permit shall be required if a new § 401 certification is required to increase a withdrawal. To qualify for this exclusion, the surface water withdrawal shall be deemed to be in existence on July 1, 1989, if there was an actual withdrawal on or before that date and the withdrawal has not been abandoned.*

Based on Virginia Code and Regulation, an entity who has reported surface water withdrawals prior to July 1, 1989, is entitled to an exclusion from obtaining a VWP permit for a surface water withdrawal; any facility with this exemption is commonly referred to as a grandfathered facility.

However, there are certain instances in which a grandfathered facility may be required to obtain a VWP permit. For example, should a facility seek to increase a withdrawal, and thereby also necessitate a new federal Clean Water Act § 401 certification (required for a federal license or permit for activities that may result in a discharge into waters of the United States, including but not limited to the discharge of dredged or fill material; a new certification is mandated whenever there is alteration to intake structures located in U.S. waters or federally regulated wetlands), the same facility would then be required to also obtain a VWP permit.

The requirements to obtain a VWP permit for grandfathered facilities excluded under this provision, as written in the Code and Regulation, have not been consistently or clearly interpreted. This creates ill-defined criteria concerning what will trigger a grandfathered facility to need a permit and how to appropriately incorporate withdrawals from these facilities when producing a Cumulative Impact Analysis (CIA; i.e., a surface water model) for any issuance or reissuance of a VWP permit.

3. Summary of Meetings

In order to develop a consensus view of the grandfathered exclusion to VWP permitting, DEQ convened an Informal Workgroup, beginning in August 2024 and ending in May 2025. Through four in-person meetings, the Workgroup discussed the possible limitations of the VWP grandfathered exemption, covering topics ranging from modeling and planning considerations to the complexities of Surface Water Management Areas (SWMAs) as a mechanism to address water withdrawals during droughts. The meetings were held in the Richmond area at DEQ offices. Workgroup members consisted of various stakeholders from public and private sectors primarily representing grandfathered water users, as seen in Table 1:

Table 1. *Informal Workgroup Members*.

Stakeholder Group	Representative(s)
AquaLaw / Virginia Municipal Drinking Water Association	Chris Pomeroy
BVU Authority	Donald L. Bowman
City Of Chesapeake Public Works	David Jurgens
City Of Danville Water & Wastewater Treatment	Alan Johnson
Dominion Energy	Jennifer Rogers Lauren Zuranski (Alt.)
Fairfax Water	Gregory J. Pelewicz (Alt.) Jamie Bain Hedges
Greene County Water & Sewer Department	Dave Hundelt Thomas Hutka (Alt.)
Hampton Roads Planning District Commission	Whitney Katchmark
Hanover County Public Works	Matt Longshore Matt Ellinghaus (Alt.)
Newport News Waterworks	Ron Harris
Richmond Department of Public Utilities	Scott Morris Eric Whitehurst (Alt.) Lee Crowell (Alt.) Jeff McBride (Alt.)
Rivanna Water & Sewer Authority	Bill Mawyer Victoria Fort (Alt.) Bethany Hutchens (Alt.)
Strasburg Department of Water Treatment	Philip E. Gimple
Sussex Service Authority	Michael Kearns
Troutman Pepper Locke / Mission H20	Andrea Wortzel Shannon Varner (Alt.)
Virginia Rural Water Association	Pam Baughman
Virginia Tech, Department of Biological Systems Engineering	Julie Shortridge

The following report details the discussions and observations of the Workgroup. Any DEQ presentations and technical information can be found in the Appendix of this report.

3.1 First Meeting – August 27th, 2024

The first meeting of the Workgroup was held at DEQ's Central Office in Richmond City at 10:00am. To begin the first meeting of the Workgroup, DEQ staff presented a historical overview of the VWP exclusion for grandfathered facilities, including much of the information found in Section 2 of this report. Additionally, DEQ staff noted the lack of reported withdrawal information from grandfathered facilities, and the subsequent challenges relating to modeling

surface water supply and use as a result. Due to inconsistencies in exclusion interpretation, DEQ proposed to the Workgroup three possible interpretations of the volume grandfathered users are allowed to withdraw without obtaining a VWP permit: (1) facility intake capacity, (2) limiting capacity of the treatment and distribution system (via pump, transmission line, water treatment plant), or (3) maximum volume of water withdrawn from the facility prior to July 1, 1989 ("pre-89"). The third category could be expressed as the maximum daily or average daily withdrawal during a period preceding July 1, 1989.

Resulting discussion from Workgroup members ensued, with questions and concerns regarding various interpretations being raised. Primarily, the Workgroup sought to consider the legislative intent of the exclusion; specifically, did the exclusion intend to provide grandfathered users unlimited withdrawals for perpetuity, or did the exclusion intend to rely on the federal Clean Water Act § 401 recertification process (which triggers a corresponding VWP permit requirement as described in Section 2) to gradually regulate exempted users?

Further discussion by the Workgroup included grandfathered facilities' effects on statewide resource planning efforts and other challenges involving VWP exemptions. In a straw poll of the Workgroup, DEQ staff noted that none of the Workgroup members present were in favor of using actual withdrawals on July 1, 1989 as the upper limit on withdrawal volumes excluded from the VWP permit requirement. Instead, the majority of Workgroup members present favored the maximum capacity of intake facilities as of July 1, 1989 (i.e., the 'pre-89' value) as the ceiling of the grandfathered exemption. Workgroup members also noted that a legislative solution may be required to ultimately determine any limitations to the VWP exclusion. Following these discussions, the first meeting was adjourned.

3.2 Second Meeting – September 25th, 2024

The second meeting of the Workgroup was held at DEQ's Piedmont Regional Office in Henrico County at 10:00am. Following the direction of the last meeting, DEQ staff began the meeting by presenting background information relating to surface water modeling (see Section A3 of the Appendix) and permitting processes. These presentations prompted Workgroup discussions on how grandfathered users should be incorporated into surface water use models. Options identified included 1) planning for the total excluded amount, 2) using a rolling five-year average of recent withdrawals or 3) using the most recent actual use from those that provide annual reporting. DEQ staff also identified gaps and uncertainties in information on grandfathered withdrawals. Workgroup members concluded that DEQ staff should identify what information was needed and inform the Workgroup at the next meeting.

Other topics of discussion included examining the then-current supply of surface water and its capacity to service competing demands. Workgroup members remarked on the difference between types of demand, noting the vastly different use cases of agriculture and industry. Concerns were noted by some Workgroup members that grandfathered users may be preventing

some localities from being able to provide or meet current, regulated demands for surface water use.

Lastly, a Workgroup member brought up the notion that Surface Water Management Areas (SWMAs; subject background found in Section A2 of the Appendix) could be used as a means to resolve surface water supply concerns. Further discussion on the topic occurred during the next meeting (see Section 3.3). The meeting was then adjourned.

3.3 Third Meeting – October 24th, 2024

The third meeting of the Workgroup was held at DEQ's Piedmont Regional Office in Henrico County at 10:00am. DEQ staff opened the meeting by presenting a draft letter which requests the submission of surface water use information from grandfathered facilities to Workgroup members. The letter stipulated a receipt of acknowledgement from grandfathered facilities and an explanation should the facility not be able to provide the requested information within 90 days; Workgroup members approved the letter and requested DEQ staff provide an updated modeling presentation, with the information to be collected, at the next meeting.

DEQ staff also gave a comprehensive presentation on SWMAs (found in Section A2 of the Appendix), with specific attention to the status of VWP exemptions under a SWMA. Should a SWMA be declared, grandfathered users are exempt from obtaining a surface water withdrawal permit under SWMA so long as the withdrawal remains below the maximum daily withdrawal made before July 1, 1989. Should use exceed the maximum daily withdrawal made before July 1, 1989, the grandfathered facility can either enter into a voluntary agreement to temporarily limit use or obtain a surface water withdrawal permit under SWMA.

Discussion following the presentation posed questions such as what DEQ's legal authority is in different SWMA scenarios, possible benefits from Workgroup expansion to include agricultural and industrial perspectives, and next steps for the Workgroup. In reference to the latter, DEQ staff proposed a tabletop exercise to explore the use of SWMAs in the context of grandfathered users during the next meeting, to which the Workgroup agreed and subsequently adjourned the meeting.

3.4 Fourth Meeting – May 8th, 2025

The fourth meeting of the Workgroup was held at DEQ's Piedmont Regional Office in Henrico County at 10:00am. As requested by the Workgroup, DEQ staff presented on the findings of the request for information from grandfathered facilities and how their findings impacted surface water use modeling scenarios (see Section A3.2 of the Appendix).

Following the presentation, DEQ staff then began to administer the Workgroup's SWMA tabletop exercise. The exercise began by establishing the parameters and current water withdrawals in a theorical SWMA. Resulting topics of discussion included:

- Timely availability of data and the importance of data integrity when operating a SWMA;

- Environmental conditions which would trigger a SWMA;
- Potential effects on surface water supply should a larger grandfathered facility agreed to forgo grandfathered status as an VWP-exempted withdrawer;
- Benefits associated with using a flow-based approach when modeling;
- Restrictions posed by the regulatory structure of the SWMA when attempting to declare an SWMA under acute environmental conditions and if SWMA are intended for proactive use;
- Need for considering new permittees, data centers, and preexisting agreements or contracts when modeling surface water use, especially as they might complicate the operation of a SWMA;
- SWMAs' intended duration is limited and temporary; and
- SWMA incur significant expenses, priority utilization of DEQ staff, require citizen engagement, and may necessitate legislative solutions.

Following the end of the SWMA desktop exercise, the meeting was adjourned.

Appendix: Information and Presentations Provided by DEQ Staff

A1. Historical Instances of VWP Requirements for Grandfathered Facilities

Throughout the last two decades, there have been specific instances where DEQ has found certain grandfathered facilities do require a VWP permit or established a withdrawal amount triggering a need for a permit.

For instance, in a DEQ letter dated October 25, 2006, it was stated that Fairfax County Water Authority will be excluded from VWP permitting requirements for withdrawals up to 400 million gallons per day (MGD), or the capacity of the intake structure.

In another letter dated February 27, 2013, from DEQ to the City of Emporia, it is stated that the maximum historic use as of July 1, 1989, is excluded from the need for a new permit and the intake capacity provided by the facility shall not constitute a limit on the exempted withdrawal.

Despite possible variations in potential interpretations of when a permit is required for a grandfathered facility, DEQ has consistently determined that a VWP permit for surface water withdrawals would be necessary if work is performed on an intake structure resulting in an increase of intake capacity beyond the maximum historic use (as of July 1, 1989).

A2. Overview of Surface Water Management Areas (SWMA)

Virginia Code § 62.1-242 defines a SWMA as a "a geographically defined surface water area in which the [State Water Control] Board has deemed the levels or supply of surface water to be potentially adverse to public welfare, health and safety." Currently, there are no designated SWMAs. In order to establish a SWMA, the State Water Control Board must preliminarily define the boundaries and the flow required to initiate permit conditions. A notice of intended regulatory action (NOIRA), advisory committee(s) or studies, and public process (including state agency review) are part of the SWMA designation process. Permits are required within the SWMA unless excluded or exempted. Reasons for exclusion include nonconsumptive use, withdrawals less than 300,000 gallons per month, withdrawals from farm ponds non situated on a perennial stream, withdrawals outside the boundary of the SWMA, or any withdrawal from a wastewater treatment system permitted by DEQ or the Virginia Department of Energy (DOE). Exemptions include any withdrawal existing before July 1, 1989, and below the max daily withdrawal prior to July 1, 1989; any holder of a § 401 certification from the State Water Control Board and not increased beyond authorized amount; and withdrawals in existence before July 1, 1989, from an impoundment for public water supply (release requirements may be included). Exempt users will be required to obtain a surface water withdrawal certificate containing details of a department approved water conservation or management plan. Voluntary agreements can be accepted among entities withdrawing surface water in the proposed area when they are consistent with the purpose and intent of the SWMA statute, the Board is a party to the agreement, and the agreement is given public notice. Permits and certificates associated with a SWMA have a 10-year term. A permit can include flow-by requirements to protect instream and off-stream

beneficial uses. These certificates and permits would be effective during times of low flow defined as part of the SWMA establishment.

If a SWMA were to be established there would be a potential significant increase in workload for permitting staff. SWMA petitions have been initiated in the past but never implemented due to lack of consensus of parties involved or due to mutual agreements to avoid the need for the SWMA. Establishment of SWMAs would be an unlikely solution to address concerns of water usage by Grandfathered facilities due to the above and the time required to potentially establish a SWMA and issue permits or certificates.

A3. Overview of Surface Water Modeling

Surface water modeling is critical to water supply and resource management. Models can inform localities and regions as to the overall water availability, and potential unmet demands for off-stream water uses. Models can also identify influences of withdrawals on instream beneficial uses and assess risks that may lead to aquatic degradation. Finally, advanced techniques, such as CIA, can assist in quantifying the ability of drought restrictions to alleviate unmet demands and/or resource conflicts and show potential changes to low-flows that could reduce waste assimilative capacity.

DEQ's Office of Water Supply's Water Supply Planning and Analysis Program (WSPA) employs several types of surface water models to complete technical evaluations and planning goals. The least complex of these is the use of the United States Geological Survey's (USGS) Gage Based Modeling where established stream gage historic data is utilized to assess available flows for new demands. In this analysis, accurate stage or discharge data, sometimes dating back 100 years or more, permits a high degree of model flexibility. Conversely, limitations are often realized due to spatially varying or sparse coverage of flow gages and intermittent records due to gaps in service. Where sufficient historic withdrawals and discharges exist, model accuracy can approach +/-10% for gages rated "excellent" but often are > 20% for any given time and location.

The models most often utilized are Rainfall-Runoff Models, such as HSPF/hsp2, HEC, SWAT, and SWMM. The advantages to these types of models are that they can provide estimates in virtually any stream, large or small, and can simulate the impacts of varying meteorological inputs. Rainfall-Runoff models can be precisely calibrated over a distinct period with known withdrawal and discharges. While more flexible than the USGS model, Rainfall-Runoff Model quality is dependent on accurate and complete meteorological data over the desired period; any inherent error during drought (majority ~20% or less) can lead to requiring a margin of safety or corrective calculations to ensure output precision.

Regardless of type, all models have assumptions and limitations that influence results and require interpretation. Static monthly or annual proportional water use patterns can be a limitation in some cases, however, most models can be updated to use alternative patterns of monthly demand

where apparent. A limit affecting all models is the assumption that future meteorology will remain similar to historic observations, although projected climate events and anticipated changes are often increasingly uncertain. In some instances, Rainfall-Runoff models do use projected climate variations to ask straight-forward questions such as "what if summer rainfall decreases 10% during critical periods?" The resulting output can inform as to how resilient a locality or region is to potential change. If climate is shown to vary widely from historic values, adjustments will be necessary. Likewise, modeled baseflow or sub-surface flow present during droughts, can respond accurately to various low flow scenarios. While Rainfall-Runoff models aptly predict over a one-to-three-month period, they can lose accuracy over prolonged drought periods.

Virginia Withdrawal Permit Surface Water Technical Evaluations are performed prior to the issuance of a withdrawal permit with a CIA conducted to determine the allowable withdrawal from a proposed intake. The CIA factors in withdrawals and discharges within a non-tidal system during low flow scenarios and take into account existing municipal and industrial water users and effects on aquatic resources. A set of conservative assumptions are applied such as accounting for all permitted users operating at the annual maximum permitted demand. Exempt users can have very large potential intake capacities and are included where withdrawal data is known. Current modeling of grandfathered withdrawals use a previous five-year rolling withdrawal average. To date, there are approximately 313 exempt nonpermitted intakes (pre-1989) with data recorded in the agency's Comprehensive Environmental Data System (CEDS), accounting for a total withdrawal volume (excluding power facilities) of approximately 163 MGD.

The CIA is a realistic simulation that models net consumptive use for a watershed over a series of frequency, duration, and magnitude flow regime changes, which factors heavily into the overall Surface Water Technical Evaluation. Other components of this technical evaluation include items such as project location, river model description, facility and intake descriptions, and current or proposed permit conditions. Additionally, historical intake, drought flow indicators, scenario results, and conclusions or recommendations are included. Often, the models are conducted in iterative runs to maximize and optimize required permit conditions.

Technical Evaluation results are summarized in a table showing impacts to flows, aquatic life, and off-stream demand for the project. The table includes river segment model statistics, facility model statistics, and considers current permitted conditions versus alternative scenarios. If the Technical Evaluation results demonstrate no net impact on existing beneficial uses, then the project is able to be permitted at the withdrawal rate determined by the analysis.

Surface water modeling is also employed for water supply planning evaluations, informing users, localities, and regions with estimated demand at known system (i.e., facility) locations. Like permit evaluations, the assumption that current monthly demand variation patterns are static is made. Projected demands are estimated by localities using population-based factors; however,

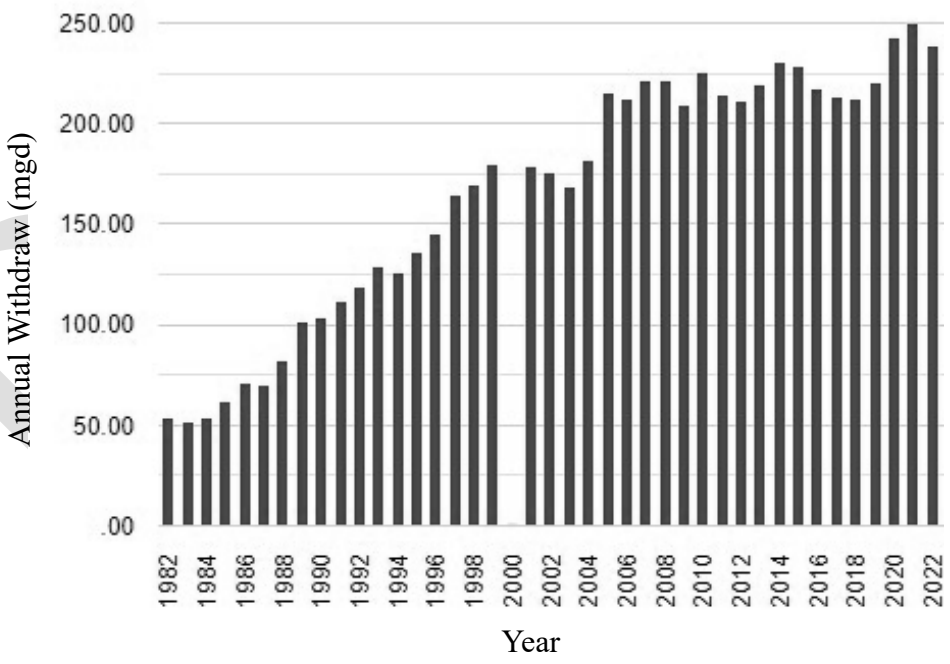
these per-capita use rates can change over time. Municipal, commercial, and industrial uses are accounted for as well as approximations of projected demand for entities that may not yet exist.

Work continues in improving model outputs by research focused on some of the inherent limitations. Recently, the WSPA program has worked with Virginia Tech's Biological Systems Engineering Program on the identification and integration of best available precipitation datasets. Through the Hydrologic Assessment Resources Program, progress is currently being made to improve base-flow simulation and reduce error in historic drought simulation, allowing forecasts of potential minimum stream flows out to 18 months. Other efforts include improved integration with the Virginia Institute of Marine Science's (VIMS) tidal-freshwater model runs and the reconciliation of grandfathered rights with long-term modeling.

A3.1 Complexities of Modeling Grandfathered Facilities

As previously stated, CIA modeling currently uses a previous five year rolling average withdrawal for grandfathered facilities. However, using a five-year rolling average could result in a changing or increasing modeled withdrawal. For instance, Figure 1 shows this variation over 40 years of data for a Grandfathered facility on the Rapidan River.

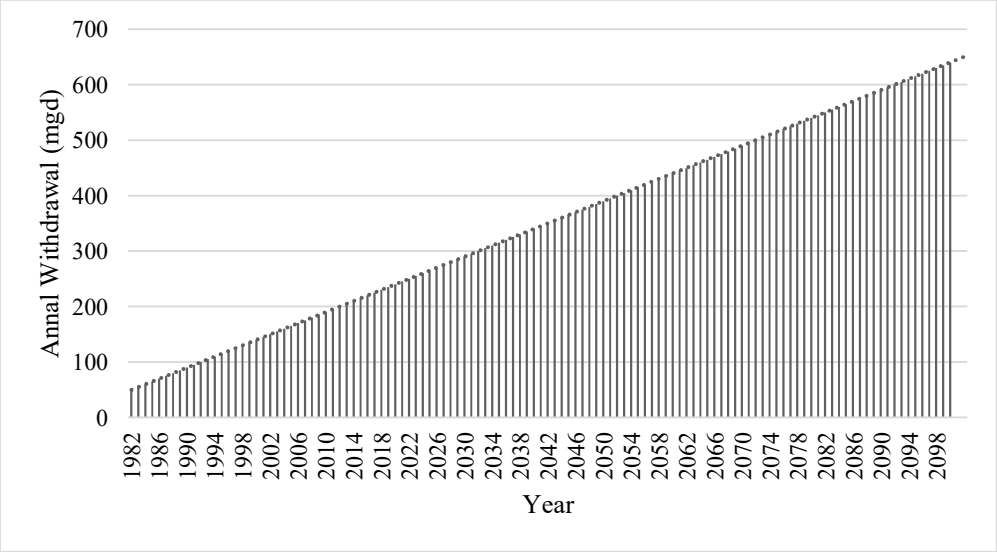
Figure 1. *Annual Withdrawals of a Grandfathered Facility on the Rapidan River in Greene County, 1982 to 2022*



From 1982 to 2022, annual withdrawals at the Greene County facility have been steadily increasing by approximately five million gallons per year (MGY). If a VWP permit is not required for the grandfathered facility until the intake capacity needs to be upgraded, the facility would not be subject to a permit until withdrawal demand reached 1.75 MGD (i.e., the intake

capacity of the facility). Assuming the annual withdrawal increase trend of five MGY, the Greene County facility would continue to increase until the year 2100 before reaching 1.75 MGD, as depicted in Figure 2.

Figure 2. *Current Increase Trend of Grandfathered Facilities.*



Additionally, the Greene County facility is not unique. DEQ has observed similar trends among other grandfathered facilities. Therefore, potential future permit applicants as well as reissued permits may be further restricted to accommodate increased use by grandfathered facilities.

A3.2 Modeling Scenarios

Given the uncertainties described regarding current modeling of grandfathered facilities, three proxy values have been considered to include in modeling scenarios: (1) facility intake capacity, (2) limiting capacity of the facility (via pump, transmission line, water treatment plant), or (3) maximum volume of water withdrawn from the facility prior to July 1, 1989 (pre-89).

First Scenario

In the first scenario, DEQ reviewed three watersheds upstream of specific stream gages. This included the North Fork of the Shenandoah River upstream of Strasburg, the James River upstream of Bent Creek, and the Nottoway River upstream of Rawlings. For each of these watershed segments, information was compiled on intake capacities, pre-89 maximum withdrawal values, permitted maximum withdrawal values, and limiting capacities for all facilities that report surface water withdrawals. Three scenarios in each watershed segment were evaluated to compare the potential withdrawal amounts if grandfathered withdrawals were limited to either their intake capacity, pre-89 maximum withdrawal volume, or lowest known limiting capacity. Withdrawal volumes from any permitted facility were assumed to be the maximum allowed in each permit and were considered static throughout all three scenarios.

As seen in Figure 3 and Figure 4 below, the greatest water withdrawal volume is consistently observed when calculating withdrawal based on aggregated facility intake capacity. Secondly, the scenarios demonstrate the aggregation of limiting capacity to be the second largest volume metric, with aggregation of the pre-89 volume to be the smallest.

Figure 3. *Grandfathered Facilities on the North Fork Shenandoah River (upstream from Strasburg) & Nottoway River (upstream from Rawlings) Surface Water Modeling Scenarios.*

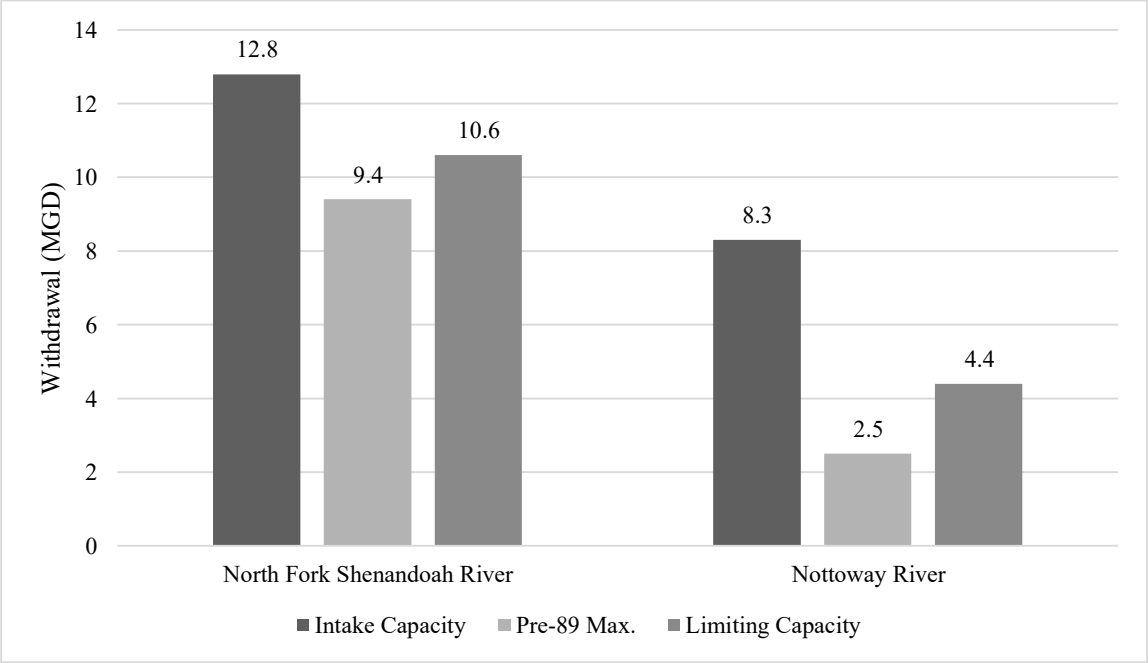
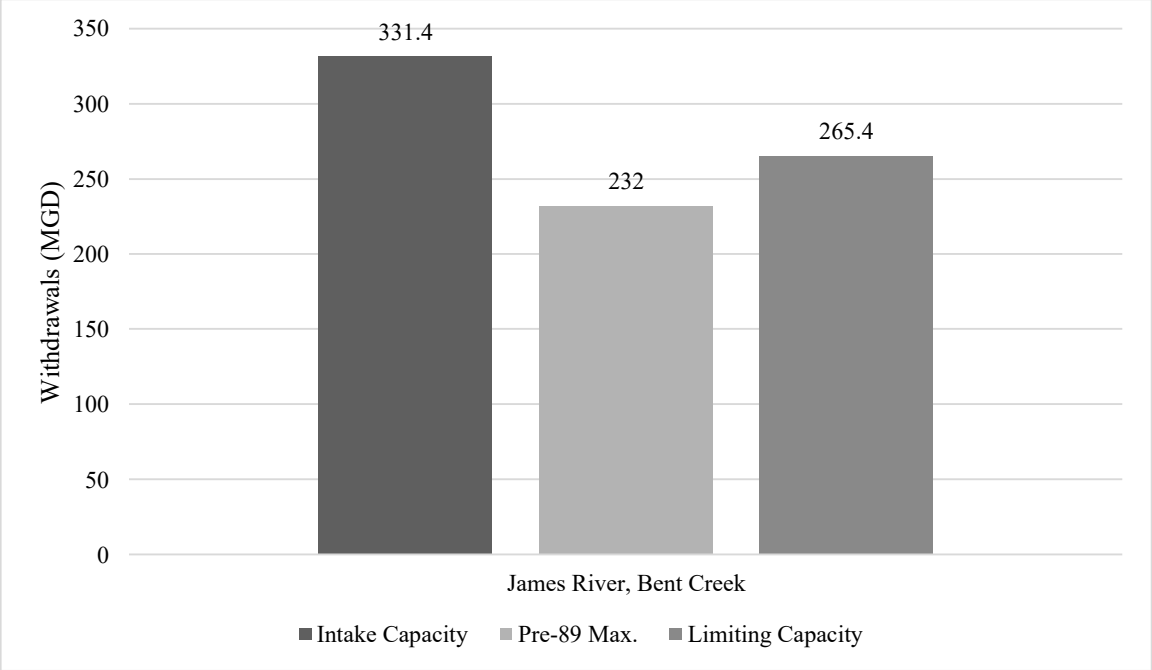


Figure 4. *Grandfathered Facility on the James River (upstream from Bent Creek) Surface Water Modeling Scenario.*



Importantly, these volumes for each scenario were compared to one day, three-day, seven-day, 30-day, and 90-day minimum stream flows during 1999, 2002, and 2023; these years experienced significant drought. The total withdrawal volumes for the intake capacity scenario had the greatest percentage of flow withdrawn during the historical periods in addition to the most instances where the entire flow of the system would be withdrawn.

Second Scenario

A second scenario is based on a CIA run for a recent permit that withdrawals water from the North Fork of the Shenandoah River. To illustrate a comparison of modeling, flows were modeled based on previous five-year average use versus intake capacity for grandfathered users.

Table 1 (below), assuming monthly non-exceedance, illustrates flow alteration in the North Fork Shenandoah River at Mount Jackson prior to accounting for the Rouge River Farms proposed withdrawal (a new VWP permittee). Upstream permitted users were modeled at their VWP annual limit, but all non-permitted and exempt users were modeled based on their average use over the last 5 years. Each row in the table shows a monthly modelled flow and the percent change from the model "baseline" scenario that has no withdrawals or discharges. The flow values themselves are expressed in cubic feet per second and represent a flow that occurs in that month only *x*% or less, based on the column header (e.g., the table indicates that the flow in January is greater than 119.8 cfs 95% of the time). These results indicate that there is a large amount of consumptive use in the North Fork Shenandoah Rivers. Drought flows have been reduced by more than 10%. DEQ typically assesses monthly flows below the fifth percentile as

"drought emergency" flows. These flows have been diminished by up to 30% from upstream users. Internal DEQ studies have indicated that flow reductions of more than 10% may reduce species richness and impact downstream use.

Table 2. Modeled monthly consumptive use statistics in the North Fork Shenandoah River at Mount Jackson in cubic feet per second (cfs). Columns show the modeled non-exceedance flow percentiles and the net percent flow change due to cumulative demands for existing use prior to considering the Proposed Permit VWP 25-1039 with exempt users withdrawing at their five-year average. Simulated demands include all upstream demands, demands at North Fork Shenandoah River Intake, and all upstream point-source flows.

Month	Min.	5%	10%	25%	30%	50%	Mean
Jan. (Jan. %)	62 (-5%)	119.8 (-2%)	183.7 (-2%)	273.4 (-1%)	301.4 (-1%)	398.6 (-1%)	600.2 (-1%)
Feb. (Feb. %)	34 (-8%)	147.3 (-2%)	206 (-1%)	331.7 (-1%)	359.1 (-1%)	446 (-1%)	641.8 (+0%)
March (March %)	29.7 (-9%)	189.6 (-2%)	235.8 (-1%)	352.5 (-1%)	383.3 (-1%)	526.7 (-1%)	808 (+0%)
April (April %)	80.5 (-4%)	159 (-2%)	197.1 (-2%)	301.6 (-1%)	325.6 (-1%)	435.6 (-1%)	679 (+0%)
May (May %)	77.3 (4%)	131.9 (-2%)	162.3 (-2%)	232 (-1%)	258.2 (-1%)	385.5 (-1%)	561.1 (-1%)
June (June %)	27.8 (-10%)	58.4 (-5%)	83.7 (-4%)	127.3 (-2%)	142.7 (-2%)	220.2 (-1%)	368.4 (-1%)
July (July %)	13.1 (-19%)	37.3 (-8%)	48.4 (-6%)	77.2 (-4%)	86.3 (-4%)	135.5 (-2%)	220 (-1%)
Aug. (Aug. %)	7.6 (-29%)	27.5 (11%)	37.3 (-9%)	62.4 (-5%)	73.5 (-4%)	114.6 (-3%)	198.4 (-2%)
Sep. (Sep. %)	8.7 (-25%)	21 (-12%)	27.1 (-10%)	50.9 (-6%)	57.8 (-5%)	105.4 (-3%)	400.8 (-1%)
Oct. (Oct. %)	11 (-20%)	20.5 (-12%)	32.8 (-8%)	64 (-4%)	75.6 (-3%)	153.3 (-2%)	311.4 (-1%)
Nov. (Nov. %)	7.4 (-27%)	21.6 (-11%)	54.9 (-5%)	119.5 (-2%)	149.1 (-2%)	232.6 (-1%)	451.4 (-1%)
Dec. (Dec. %)	10.4 (-21%)	100.5 (-3%)	124.1 (-2%)	237.1 (-1%)	272.1 (-1%)	403.1 (-1%)	578.1 (-1%)

The same analysis conducted for Table 1 was repeated for Table 2, with a model that now assumed all upstream exempt users were withdrawing water per their intake capacity; typically, these intake capacities are much larger than average use. Table 2 demonstrates that this increase in consumption by exempt users creates significant more alteration in the watershed. If exempt users were to consistently withdraw water at their intake capacity, even moderate low flows would be reduced below the 10% consumptive use threshold often used in VWP cumulative impact analyses.

Table 3. Modeled monthly consumptive use statistics in the North Fork Shenandoah River at Mount Jackson in cubic feet per second (cfs). Columns show the modeled non-exceedance flow percentiles and the net percent flow change due to cumulative demands for existing use prior to considering the Proposed Permit VWP 25-1039 with exempt users withdrawing at their intake capacities. Simulated demands include all upstream demands, demands at North Fork Shenandoah River Intake, and all upstream point-source flows.

Month	Min.	5%	10%	25%	30%	50%	Mean
Jan. (Jan. %)	58.8 (-10%)	116.5 (-5%)	180.3 (-3%)	269.9 (-2%)	297.7 (-2%)	395 (-2%)	596.6 (-1%)
Feb. (Feb. %)	30.9 (-16%)	143.9 (-4%)	202.6 (-3%)	328.1 (-2%)	355.6 (-2%)	442.3 (-2%)	638.2 (-1%)
March (March %)	26.8 (-18%)	186.1 (-3%)	232.4 (-3%)	348.8 (-2%)	379.7 (-2%)	523 (-1%)	804.4 (-1%)
April (April %)	77.2 (-8%)	155.7 (-4%)	193.8 (-3%)	298.1 (-2%)	322.2 (-2%)	431.9 (-2%)	675.4 (-1%)
May (May %)	74.1 (-8%)	128.6 (-5%)	159 (-4%)	228.6 (-3%)	254.9 (-2%)	381.8 (-2%)	557.6 (-1%)
June (June %)	24.8 (-20%)	55 (-11%)	80.2 (-8%)	123.8 (-5%)	139.2 (-5%)	216.5 (-3%)	364.8 (-2%)
July (July %)	11.8 (-27%)	33.5 (-18%)	44.2 (-14%)	73.2 (-9%)	82.2 (-8%)	131.1 (-5%)	215.7 (-3%)
Aug. (Aug. %)	7 (-34%)	24.4 (-21%)	34.1 (-17%)	58.6 (-11%)	69.9 (-9%)	110.4 (-6%)	194.5 (-4%)
Sep. (Sep. %)	8 (-31%)	18.8 (-22%)	24 (-20%)	47.3 (-12%)	54.4 (-11%)	101.8 (-6%)	397.1 (-2%)
Oct. (Oct. %)	10.1 (-26%)	18.4 (-21%)	29.8 (-16%)	60.8 (-9%)	72.3 (-8%)	150.1 (-4%)	308.2 (-2%)

Nov. (Nov. %)	6.9 (-33%)	19.3 (-21%)	51.4 (-11%)	116.2 (-5%)	145.8 (-4%)	228.8 (-3%)	447.9 (-1%)
Dec. (Dec. %)	9.4 (-29%)	97.2 (-6%)	120.6 (-5%)	233.6 (-%)	268.6 (-2%)	399.4 (-2%)	574.5 (-1%)

Scenario Implications

Using the grandfathered facility intake capacity for modeling in certain watersheds would simulate withdrawal of the entire flow of the water body during times of low flow. This would potentially prevent new facilities from being able to obtain a VWP surface water withdrawal permit and could also possibly cause some existing permitted withdrawals to be unable to meet current need when reissuance of the permit necessitated. Furthermore, among certain stream systems, there may be a significant percentage of flow taken during low flow conditions, well above the typical Virginia Department of Wildlife Resources (DWR) recommended 10-20%. This could be detrimental to all beneficial uses downstream, including public water supplies.

Correspondingly, the implications of relying on limiting capacity as the proxy for reported real use would likely be similar to intake capacity, albeit to a lesser extent. However, in either case, collecting the necessary information regarding grandfathered capacity information would be another challenge in adopting new approaches to modeling, as previous efforts have not been successful.

In late 2024 through early 2025, DEQ issued letters to all the known grandfathered facilities to request they voluntarily provide capacity information on intakes, transmission lines, water treatment plants (if applicable), and pumps. Out of over 300 requests, responses from 242 facilities were received. Unfortunately, many of these responses did not include all information requested and some facilities reported capacity statistics differing from prior DEQ records. DEQ is continuing efforts to collect and analyze capacity information.

Apart from using intake or limiting capacity as proxies when modeling, the grandfathered facility withdrawals could be incorporated by simulating them at their pre-89 maximum withdrawal volume. This would assume that if the facility is already reporting withdrawals over the pre-89 amount, the facility would need to obtain a permit to ensure an accurate presumed value for modeling. However, adopting this approach would incur a significant amount of new permit cases, thereby necessitating an increase in DEQ staff and support.

A4. DEQ Staff Presentations

The following presentations, given by DEQ staff throughout the Workgroup meetings, can be found accompanying this report:

SW_WG_Meeting_1.pdf

SW_WG_Meeting_2.pdf

SW_WG_Meeting_3.pdf

SW_WG_Meeting_4.pdf

SW_WG_SWMA_Exercise.pdf