

RETHINKING WATER WITHDRAWALS

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WHY IT MATTERS

Freshwater is Virginia's most vital natural resource. The Commonwealth's rivers, lakes, and streams sustain drinking water supplies, agriculture, recreation, and aquatic ecosystems. Yet, this resource faces growing pressure from **surface water withdrawals** that divert water for drinking, industrial, and agricultural uses. Climate change and drought intensify this pressure. Communities that depend on Virginia's waters face real economic consequences when these resources are depleted. Maintaining water in our rivers and streams is an ecological imperative that safeguards future generations.

Water withdrawals also impact wildlife, particularly sensitive species like migratory fish. Today, many of these species are at historic lows: striped bass are at their lowest since the 1980s,¹ Atlantic sturgeon are federally endangered,² American shad have not been recorded in the James River since 2020,³ and river herring remain under a moratorium.⁴ These fish are vital to Virginia's cultural, economic, and ecological heritage, supporting river economies, fishing traditions, and Tribal Nations. Their declines stem from multiple stressors, including unprotective withdrawals, which disproportionately impact early life stages. For example, a 2021 model for Chesterfield Power Station estimated that over 1.6 billion finfish and 106 million shellfish annually could be killed through **entrainment**, primarily early life stage herring and shad.⁵

Water extraction also strains Virginia's water supply. River, stream, and reservoir health is directly tied to supply reliability for millions of residents, with surface water withdrawals accounting for approximately 88% of the Commonwealth's total withdrawal volume, excluding power generation.⁶ This strain is expected to intensify, especially as droughts worsen and projected demands for water increase by 21% between 2020 and 2040.⁷ Meeting this demand will require significant investments in water infrastructure, the costs of which could fall to ratepayers (see *Safeguarding Water Supplies*, page 5).

CURRENT LANDSCAPE

The Virginia Department of Environmental Quality (DEQ) regulates surface water withdrawals primarily through the **Virginia Water Protection (VWP) Permit Program**, for those exceeding 10,000 gallons per day from nontidal waters.⁸ However, DEQ does not have a process for evaluating the cumulative impacts of multiple withdrawals on wildlife, across a watershed; instead reviewing applications in isolation without accounting for the collective stress on aquatic systems.

Additionally, once a VWP permit is issued, there is no mechanism to update permit conditions as new science emerges or hydrological conditions change. In 2025, the General Assembly funded a three-year study of the cumulative impacts of surface water intakes on aquatic life and water quality in tidal waters, which could inform future VWP permitting decisions.⁹

Surface water intakes existing before July 1, 1989—known as legacy or “grandfathered” intakes—are not required to obtain VWP permits, meaning they are not subject to modern environmental review or protective intake standards.¹⁰ These legacy withdrawals account for over 81% of surface water withdrawals statewide, and many have increased their withdrawal volume by 100%.^{11,12} Unlike permitted facilities, these intakes are not required to follow best-practice designs to minimize harm to aquatic ecosystems. DEQ modeling suggests that if these users withdrew as much as they could, Virginia “would exceed the available water budget in many of [its] streams and rivers.”¹³

Industrial and power plant cooling water withdrawals are subject to federal regulations that are generally less protective than guidance developed by the **Virginia Department of Wildlife Resources**, which is tailored to the specific needs of Virginia's wildlife.¹⁴ This difference has created tension between federal standards and state ecological priorities.¹⁵

OPPORTUNITIES

There is a clear opportunity to modernize Virginia's surface water withdrawal framework to better reflect changing environmental conditions and evolving scientific understanding by improving consistency, strengthening ecological protections, and enhancing long-term adaptability within the VWP program.

One of the most impactful ways to strengthen the VWP permitting program in the face of mounting water demand would be to formally incorporate a **cumulative impact analysis** into the VWP surface water withdrawal permit review process.

Equally important is the opportunity to update **permit reopener provisions** within the VWP framework to reflect the best available science not just at the time of issuance, but over the full life of the permit. A reopener clause that requires DEQ to modify a permit's conditions when there is a material change in the scientific evidence underpinning the original permitting decision, including but not limited to changes to wildlife conservation statuses and protections, documented changes in flow volume,

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ecosystem changes occurring faster than predicted, substantial declines in aquatic species within an affected watershed, or reductions in community drinking water supplies, would ensure VWP permits reflect reality.

A final area is addressing the legacy status of surface water intakes to better protect aquatic ecosystems and safeguard long-term water supply. This could include removing the exemption and requiring all withdrawals to obtain VWP permits, or updating regulations to clarify how this status applies under pre-July 1, 1989 provisions. Greater regulatory clarity will help ensure that increases in withdrawal volumes are appropriately evaluated under modern environmental standards, reducing unaccounted for pressure on instream flows, improving protection for fish and other aquatic life, and supporting a more reliable water supply.

TOP TAKEAWAYS

Increasing reliance on surface water withdrawals pressures Virginia's rivers and streams, threatening aquatic ecosystems, migratory fish populations, and long-term water supply reliability as demand rises and drought intensifies.

Virginia's current permitting framework leaves over 81% of withdrawals outside of regulatory oversight.

Modernizing the VWP program by requiring cumulative impacts analysis and updating the permit reopener provision would better align water management with current science, protect instream flows, and support resilient communities.

ENDNOTES

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