Priorities in the United States Domestic Water Policy

Water is the fundamental resource that sustains life and supports technological innovation. In the United States, water resources face significant threats due to insufficient data and poor management (Christian-Smith et al., 2012). National strategies would provide an effective pathway to mitigate key issues related to water resources. This memo recommends that the Federal Government prioritize contaminant regulation, affordability, and uniform standards in the Clean Water Act when considering US domestic water policy. A comprehensive approach to these critical priorities is essential in securing lasting water security.

Priority I: Contaminant Regulation

Contaminant regulation is necessary to address national concerns about public health and water quality related to contaminants such as toxins and chemicals. Exposure to elements such as lead (Pb), arsenic (As), and copper (Cu) in drinking water may result in severe neurological effects in children, cancer, and organ damage. Risks of these elements are often the result of weathered plumbing materials and runoff (Bradham et al., 2022). The United States Environmental Protection Agency (EPA) has regulatory authority under the US Safe Drinking Water Act (SDWA) to establish standards requiring Public Water Systems (PWSs) to monitor these contaminant elements. Approximately 94% of the U.S. population depends on Public Water Systems (PWSs) for at least a portion of their water supply. In 2016, EPA data showed that 7.9% of all PWSs had at least one health standard violation, and 3% had multiple ongoing violations. However, the Government Accountability Office estimated that 26% of health standard violations go unreported due to PWSs submitting incomplete data to the states, which is then forwarded to the EPA. (Bradham et al., 2022) (Patel et al., 2020).

In addition, man-made chemicals, such as per- and polyfluoroalkyl substances (PFAs), are known to expose people to water pathways (Crone et al., 2019). PFAs are bioaccumulative chemicals that are used regularly in amenities such as nonstick cookware, clothing, cleaning products, and food packaging. These contaminants are resistant to environmental and human degradation and are associated with adverse health effects, some of which include cancer, thyroid problems, decreased responses to vaccines, hormonal and reproductive disruption, and abnormal fetal development (Crone et al., 2019) (Ginty, 2024). Notably, the EPA has issued provisional health advisories (HAs) establishing HA levels for two specific types of PFAS: PFOA and PFOS. However, numerous other types of PFAS have also been detected in U.S. drinking water. For instance, PWS data analyzed by the Third Unregulated Contaminant Monitoring Rule (UCMR3) showed that 72% of PFAS detections occurred in groundwater with approximately 50% of samples containing multiple PFAS detections. This data indicates both varying PFAS sources and the use of multiple PFAS in products (Crone et al., 2019).

Given, this information it is recommended that the EPA use its authority through the SDWA and Clean Water Act to improve reporting systems and ensure more accurate and complete data is recorded by PWSs. This initiative could be successful by developing a dedicated task force to monitor corrective actions from PWSs and assess emerging contaminants over time. Through these actions, the federal government should continuously review and update water quality standards under the SDWA based on the latest data. In addition, these efforts must achieve an established drinking water standard for all PFAS substances. To achieve this, the EPA should work with Congress to pass legislation that specifically includes PFAS contaminants, in turn, making them a priority under federal regulations. An appropriate timeline to strengthen the regulatory frameworks would be an approval and implementation period of 3-5 years with ongoing reviews every 3-4 years. The success of these recommendations would result in a reliable understanding of contaminants based on the established data on their prevalence in water sources. This would provide a pathway to develop better metrics for Maximum Contaminant Levels.

Priority 2: Affordability

The EPA's 2024 Water Affordability Needs Assessment indicates that an estimated 12.1 to 19.2 million American households lack access to affordable water services, representing approximately 9.2% to 14.6% of all U.S. households. In addition, the EPA estimated that the nationwide cost of unaffordable water service bills is estimated to range from $5.1 billion to $8.8 billion ("Water affordability needs assessment: Report to Congress," 2024). The federal interest in water service affordability is rooted in safeguarding the health and well-being of American households, with a particular focus on low-income communities. Households experiencing water disparities may choose to use less water than needed to sustain a healthy and hygienic lifestyle. Alternatively, low-income households may choose to pay for minimum water services by omitting other vital goods and services (Pierce et al., 2021).

To address the priority of affordability, Congressional spending authority must support a federal grant program for water services access. The Office of Community Planning & Development (CPD) offers grants for community development and promotes safe housing, healthy living environments, and increased economic opportunities (Christian-Smith et al., 2012). The EPA and the CPD could collaborate to create a federal grant program designed to improve access to affordable water services, which aligns with their shared goals of advancing public health and ensuring community safety. The creation of a "Water Affordability and Access Grant Program" would be funded based on the EPA's annual budget allocations and administered by the CPD. The grant program would prioritize communities with high water costs compared to income, and areas where health risks are greater as a result of water contamination or infrastructural deficiencies.

Two grant types should be considered:

- ❖ Infrastructure Grants: Designated for homeowners in need of financial support to upgrade their water systems to more efficient technologies or better welfare alternatives.
- ❖ Utility Support Grants: Support low-income households through payment assistance.

To track the success of a "Water Affordability and Access Grant Program," data monitoring would be used to spot performance indicators such as reductions in water shutoffs and infrastructural improvements. Furthermore, federal audits could be conducted to determine whether funds are being used as intended.

The planning and coordination of the grant program would take 1-2 years to establish teams within the EPA and CPD to develop strategies and identify target communities. Following this, the legislative process would require an additional 1-2 years to secure political support. If passed, collaboration with local governments could take another 2-3 years, with a projected launch timeline of 4 to 7 years.

Priority 3: Establish Consistent Standards for the Clean Water Act

There are inconsistencies in the enforcement of the Clean Water Act (CWA), which regulates surface water quality and pollutant discharges into *navigable* waters (Christian-Smith et al., 2012) ("Summary of the Clean Water Act", 2024). The Army and EPA are responsible for enforcing the CWA; however, the effectiveness of the CWA is determined by budget allocations and the scope of federal jurisdiction. If less funding is allocated to the EPA, the agency faces challenges in maintaining regulatory standards. Additionally, Congress has not provided a clear definition of navigable waters, also referred to as waters of the United States (WOTUS), resulting in uncertainties in judicial interpretation about which waters have a "significant nexus" and fall under CWA jurisdiction (Christian-Smith et al., 2012).

These budgetary and jurisdictional inconsistencies have led to the elimination and jeopardization of CWA protections in many areas across the U.S. This has resulted in gaps in water resource data and overall mismanagement of domestic water sources. It is recommended that the EPA and Congress seek a reformed definition of WOTUS and develop a budget for CWA based on updated definition standards.

Establishing a formal definition of WOTUS would ensure that all water resources under the jurisdiction of CWA receive consistent, uniform environmental protection across the U.S. To achieve this, the EPA and Army would have the primary responsibility of developing a new federal definition of WOTUS. Moreover, input from other relevant federal agencies, such as the Department of Agriculture, the Department of Interior, and the U.S. Fish and Wildlife Service,

could assist with data collection and expertise. A federal advisory panel would ensure that multi-agency perspectives are considered when reviewing existing and new data, court precedents, and definition construction.

An updated federal definition of WOTUS is essential for determining CWA's budget allocation. The federal government would have a clear understanding of what constitutes WOTUS and which waters are eligible for protection under the CWA. Agencies, such as the EPA, could develop multi-year budget projections based on comprehensive regional assessments over time. It is recommended that federal funding be allocated based on the estimated costs of maintaining water quality nationwide.

Achieving a new federal definition for WOTUS and the budget for CWA could take 4-7 years. The first 2-3 years should be spent defining WOTUS and establishing funding priorities. The remaining 2-4 years should focus on legislative implementation of the updated definition and finalizing budgetary allocations. Successful implementation would be measured based on data availability and improvements in water quality, demand, and availability.

Concluding Remarks

Securing water resources in the United States requires the federal government to address critical challenges associated with inadequate management and data gaps. By prioritizing contaminant regulation, affordability, and uniform standards for the Clean Water Act, the federal government will benefit from stronger foundations in its domestic water policies. These recommendations are essential to ensure the security of water resources and American well-being.

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