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TESTIMONY

Statement of

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"The Clean Water Act at Fifty: Highlights and Lessons Learned from a Half Century of Transformative Legislation"

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Chairwoman Napolitano, Ranking Member Rouzer, and Members of the subcommittee, good morning. My name is Laura Gatz, and I am an analyst in Environmental Policy for the Congressional Research Service (CRS). On behalf of CRS, I want to thank you for inviting me to testify today. I have been asked by the Subcommittee to discuss the history of the Clean Water Act, including the goals of the act, selected trends in its implementation identified by the subcommittee, and challenges that remain.

In serving the U.S. Congress on a nonpartisan and objective basis, CRS does not take positions on legislation and makes no recommendations to policymakers. My testimony draws on my own area of specialization at CRS—the Clean Water Act and water quality. I work with a team of analysts with relevant expertise, including policy, economics, toxicology, chemistry, engineering, and law to address related issues for Congress. My CRS colleagues and I remain available to assist the subcommittee in its development and consideration of water quality issues and other legislation.

History of the Clean Water Act

The origins of the modern-day Clean Water Act date back to the 1899 Rivers and Harbors Act (RHA), which was the first use of a federal statute to control water pollution.[1] Under Section 13 of the RHA, sometimes referred to as the "Refuse Act," it was unlawful to discharge "any refuse matter of any kind or description whatever other than that flowing from streets and sewers and passing therefrom in a liquid state into any navigable water of the United States, or into any tributary of any navigable water."[2] Although the statute focused on preventing obstacles to navigation, it became a tool for controlling water pollution.[3]

The Federal Water Pollution Control Act of 1948 (FWPCA) was the first major law enacted by Congress specifically to address water pollution in the United States.[4] Growing concern about untreated domestic sewage and industrial waste polluting waterways, and the impacts on public health and welfare, prompted its enactment.[5] The FWPCA was designed to control water pollution primarily through state efforts, with a limited federal role. It did not include federally required goals, objectives, limits, or guidelines. Rather, the federal role consisted mainly of support for research and limited loans to state and local governments to assist in the construction of wastewater treatment facilities. Federal involvement in enforcement was limited to matters involving interstate waters and only with the consent of the state in which the pollution originated.

During the latter half of the 1950s and well into the 1960s, several amendments to the FWPCA shaped water pollution control programs.[6] The amendments dealt largely with federal assistance to municipal dischargers and with federal enforcement programs for all dischargers. During this period, the federal role and federal jurisdiction were gradually extended to include navigable intrastate waters, as well as interstate waters. Water quality standards became a feature of the law in 1965, requiring states to set standards for interstate waters that would be used to determine actual pollution levels and pollution control requirements.[7] By the late 1960s, a widespread perception by a range of stakeholders existed that

[1] 33 U.S.C. §401 et seq.

[2] 33 U.S.C. §407.

[3] Joel M. Gross and Lynn Dodge, "History of the Clean Water Act," in *Clean Water Act* (American Bar Association, 2005), p. 5.

[4] P.L. 80-845.

[5] See, for example, U.S. Congress, House Committee on Public Works, *Water Pollution Control, Bills to Provide for Water-Pollution-Control Activities in the United States Public Health Service, and for Other Purposes*, 80th Cong., 1st sess., June 1947.

[6] P.L. 84-660, P.L. 87-88, P.L. 89-234, and P.L. 89-753.

[7] P.L. 89-234.

the enforcement procedures were too time-consuming, and that the water quality standards approach was flawed because of difficulties in linking a particular discharger to violations of stream quality standards.[8] Additionally, frustration among stakeholders mounted over the slow pace of pollution cleanup efforts, and the concern that control technologies were being developed but not applied to the problems.[9] These perceptions and frustrations, along with increased public interest in environmental protection, set the stage for the 1972 amendments.

In congressional hearings and reports in the early 1970s, some Members of Congress contended that the existing water pollution control legislation was inadequate, and that many of the nation's waters continued to be polluted, with those waters near urban and industrial areas "unfit for most purposes."[10]

On October 18, 1972, Congress passed sweeping amendments to the FWPCA, which gave the act its current shape.[11] As amended in 1972, the law became commonly known as the Clean Water Act (CWA). The 1972 amendments significantly reorganized and expanded the FWPCA, establishing a new framework to control water pollution. Among the revisions, the amendments set ambitious goals for water quality; established the basic structure for regulating pollutant discharges into waters of the United States; strengthened and streamlined enforcement; and increased federal assistance for municipal treatment facility construction. The amendments expanded the federal role, giving the recently established U.S. Environmental Protection Agency (EPA) authority to implement the act's programs while retaining the states' role of day-to-day implementation of the law.[12]

The CWA's objective, as stated in the 1972 amendments, is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[13] The CWA also established two goals: to eliminate the discharge of pollutants into navigable waters by 1985; and as an interim goal, wherever attainable, to achieve water quality that is "fishable" and "swimmable" by July 1, 1983.[14] Although much progress has been made, those goals have not been met fully in many places. While those dates have long passed, the goals remain, and efforts to attain them continue.

Over the years, a number of laws have amended portions of the CWA. While a comprehensive discussion of the amendments is beyond the scope of this testimony, some of these amendments are discussed below in the context of trends in CWA implementation.

Selected Trends in Clean Water Act Implementation

The CWA consists of six titles and a range of provisions, which collectively aim to achieve the act's objectives. The following discussion of trends focuses on selected elements of the statute, identified by the subcommittee:

- federal financial assistance for wastewater infrastructure;
- permitting programs to reduce discharges of pollutants into waters of the United States;

[8] Joan M. Kovalic, *The Clean Water Act with Amendments* (Washington, D.C.: The Water Pollution Control Federation, 1982), p. 7.

[9] Ibid.

[10] Congressional Research Service (CRS), *A Legislative History of the Water Pollution Control Act Amendments of 1972*, Serial No. 93-1, January 1973, pp. 1412, 1420-1425.

[11] P.L. 92-500.

[12] Ibid.

[13] CWA §101(a); 33 U.S.C. §1251.

[14] Ibid. *Fishable* and *swimmable* are the terms commonly used to reflect the goal that waters provide for the protection and propagation of fish, shellfish, and wildlife, as well as for recreation in and on the water.

- efforts to manage more diffuse nonpoint source pollution; and
- place-based restoration programs, such as the National Estuary Program and CWA Geographic Programs.

Wastewater Infrastructure Funding[15]

Prior to the 1972 amendments to the CWA, the federal government administered a comparatively small program of aid for constructing municipal wastewater treatment plants.[16]

Title II of the 1972 CWA authorized grants to states for wastewater treatment plant construction under a program administered by the EPA. Federal funds were provided through annual appropriations under a state-by-state allocation formula contained in the act. States used their annual allotments to make grants to local governments to build or upgrade categories of wastewater treatment projects, including treatment plants and related sewer infrastructure. Between FY1973 and FY1990, Congress appropriated nearly $52 billion under the CWA Title II program, representing the largest nonmilitary public works program since the Interstate Highway System.[17]

The Water Quality Act of 1987 (P.L. 100-4) amended the CWA to establish the Clean Water State Revolving Fund (CWSRF) program. The CWSRF program is the main federal funding program for wastewater infrastructure projects throughout the country.[18] After a two-year transition period, this program effectively replaced the CWA Title II grants program. Since the first appropriations for the CWSRF program in FY1989, Congress has provided more than $49 billion in grants to states and Puerto Rico to capitalize their CWSRFs.[19] According to EPA's national CWSRF funding data report, federal funds—together with state matching contributions, repaid loans, and other funds—have provided $153 billion in SRF assistance to support more than 44,000 SRF loans and debt refinance agreements.[20] **Figure 1** illustrates the history of EPA wastewater infrastructure appropriations from FY1973 to FY2026 in both nominal dollars and inflation-adjusted (2018) dollars.[21]

[15] Jonathan Ramseur, CRS Specialist in Environmental Policy, authored this section.

[16] The FWPCA of 1948 (P.L. 80-845) first started the federal aid to municipal wastewater treatment authorities.

[17] This figure is nominal (not adjusted for inflation).

[18] 33 U.S.C. §§1381-1387. For more details regarding the history of the CWSRF and its predecessor grant program in CWA Title II, see CRS Report 96-647, *Water Infrastructure Financing: History of EPA Appropriations*, by Jonathan L. Ramseur and Mary Tiemann.

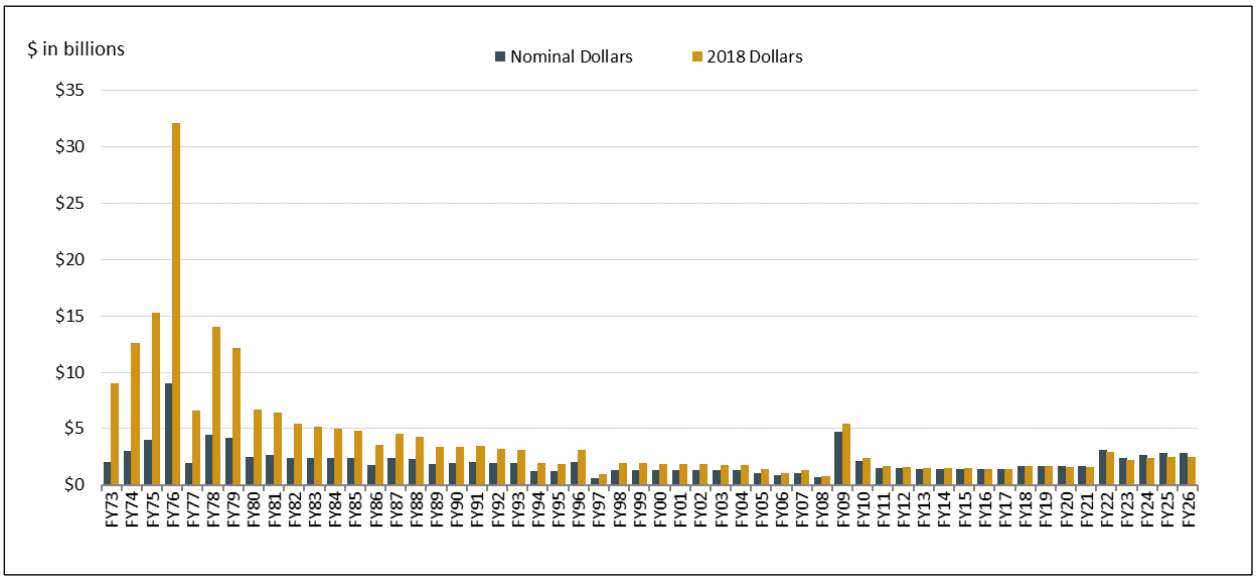
[19] U.S. territories, Indian tribes, and the District of Columbia receive grants from EPA under separate CWA authorities. This figure is nominal (not adjusted for inflation).

[20] EPA, Clean Water SRF Program Information, National Summary, February 2022, https://www.epa.gov/cwsrf/clean-water-state-revolving-fund-cwsrf-national-information-management-system-reports. This figure is nominal (not adjusted for inflation).

[21] The increase in FY2009 was due to $4.0 billion in emergency supplemental appropriations from the American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5). For more information, see CRS Report R46464, *EPA Water Infrastructure Funding in the American Recovery and Reinvestment Act of 2009*, by Jonathan L. Ramseur and Elena H. Humphreys. The appropriations for FY2022 through FY2026 include emergency supplemental appropriations provided in the Infrastructure Investment and Jobs Act (IIJA; P.L. 117-58). The FY2022 CWSRF appropriations include both supplemental appropriations from IIJA of $1.902 billion and regular appropriations (P.L. 117-103), a portion of which did not go directly to the CWSRF program. The regular appropriations for FY2022 in P.L. 117-103 include "community project funding/congressionally directed spending" (CPF/CDS) items, which some have referred to as "earmarks." The act sets aside 27% ($443.6 million) of the FY2022 CWSRF appropriations ($1.639 billion) to CPF/CDS. Such funds are to be distributed directly to recipients, instead of to states' SRF programs. Thus, the reservation of funds effectively decreases the total amount available for allotment as state capitalization grants to $1.195 billion. The combined FY2022 appropriations illustrated in the figure for the CWSRF program are $3.097 billion.

Figure 1. EPA Wastewater Infrastructure Annual Appropriations

(adjusted [$2018] and not adjusted for inflation [nominal])



Source: Prepared by CRS using information from annual appropriations acts, committee reports, and explanatory statements presented in the *Congressional Record*. Amounts reflect applicable rescissions and supplemental appropriations, including $4 billion in the American Recovery and Reinvestment Act of 2009 (P.L. 111-5). Constant dollars calculated from Office of Management of Budget, Table 10.1, "Gross Domestic Product and Deflators Used in the Historical Tables: 1940–2026," https://www.whitehouse.gov/omb/historical-tables/. The deflator values used for FY2021 through FY2026 are estimates.

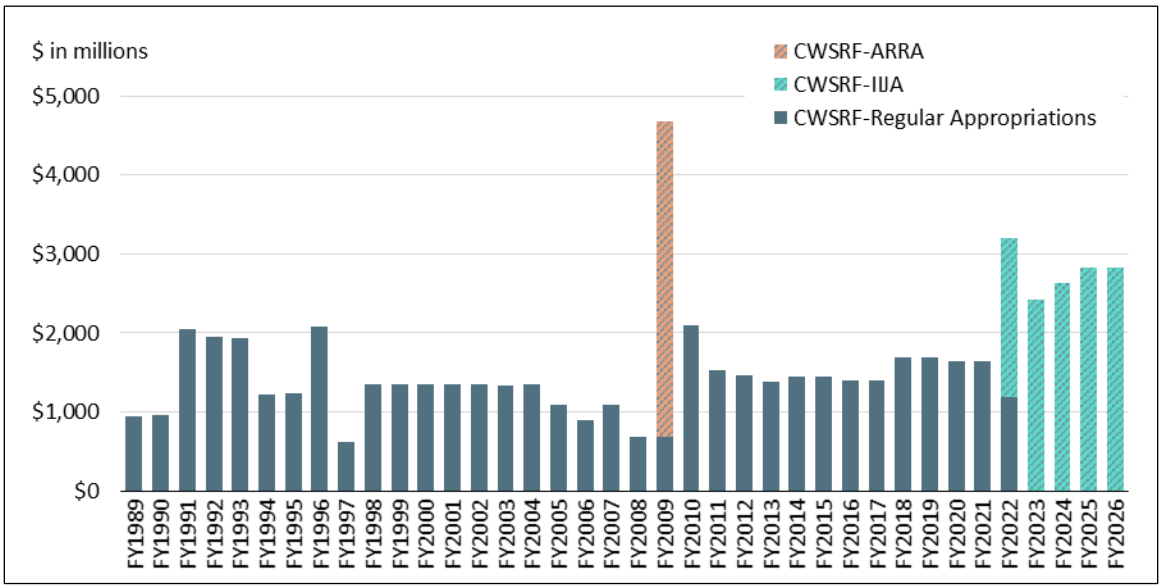
Notes: The funding levels for FY2023 through FY2026 are likely to change reflecting funding for the CWSRF through annual appropriations. The Consolidated Appropriations Act, 2022 provides $1.639 billion for the CWSRF program in FY2022. Of this amount, $443 million would be provided as "Community Project Funding Items/Congressionally Directed Spending," and is not included in the figure. In addition, the figure does not include funding for special purpose projects (often referred to as "earmarks") that occurred between FY1989 and FY2011. For more historical details, see CRS Report 96-647, *Water Infrastructure Financing: History of EPA Appropriations*, by Jonathan L. Ramseur and Mary Tiemann.

Figure 2 illustrates the enacted appropriations for the CWSRF program. The figure depicts regular appropriations between FY1989 and FY2022. As the figure indicates, regular appropriation levels have remained relatively consistent in recent years. The figure also illustrates (1) the supplemental appropriations from the American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), which provided $4 billion in FY2009, and (2) supplemental appropriations from the Infrastructure Investment and Jobs Act (IIJA; P.L. 117-58), which provides supplemental appropriations for FY2022 through FY2026.[22]

[22] For more information, see CRS Report R46892, *Infrastructure Investment and Jobs Act (IIJA): Drinking Water and Wastewater Infrastructure*, by Elena H. Humphreys and Jonathan L. Ramseur.

Figure 2. CWSRF Appropriations: FY1989-FY2026

(not adjusted for inflation)



Source: Prepared by CRS using information from annual appropriations acts, ARRA, IIJA, committee reports, and explanatory statements presented in the *Congressional Record*.

Notes: ARRA = American Recovery and Reinvestment Act of 2009 (P.L. 111-5); IIJA = Infrastructure Investment and Jobs Act (P.L. 117-58), signed by President Biden on November 8, 2021. IIJA provided supplemental appropriations for the CWSRF for FY2022 through FY2026. The funding levels for FY2023 through FY2026 are likely to change reflecting funding for the CWSRF through annual appropriations. The Consolidated Appropriations Act, 2022 provides $1.639 billion for the CWSRF program in FY2022. Of this amount, $443 million would be provided as "Community Project Funding Items/Congressionally Directed Spending," and is not included in the figure. In addition, the figure does not include funding for special purpose projects (often referred to as "earmarks") that occurred between FY1989 and FY2011. For more historical details, see CRS Report 96-647, Water Infrastructure Financing: History of EPA Appropriations, by Jonathan L. Ramseur and Mary Tiemann.

Over time, Congress has amended the list of projects and activities eligible for CWSRF assistance. Prior to 2014, states were authorized to provide CWSRF financial assistance for a range of projects and activities that was more narrow than the list of eligible projects and activities available today. This earlier list generally included the construction or repair of publicly owned municipal wastewater treatment plants, related equipment and piping, and stormwater systems. Prior to 2014, additional eligible uses included implementation of approved state nonpoint source management programs, and development and implementation of Comprehensive Conservation and Management Plans developed under the National Estuary Program.[23]

In 2014, the Water Resources Reform and Development Act of 2014 (WRRDA; P.L. 113-121) amended the CWA, adding several projects and activities, including measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water; replacement of decentralized treatment systems (e.g., septic tanks); energy-efficiency improvements at treatment works; reuse and recycling of wastewater or stormwater; and security improvements at treatment works.

In 2018, the America's Water Infrastructure Act of 2018 (AWIA; P.L. 115-270) amended the list of eligible activities to allow qualified nonprofits to provide assistance to certain individuals for the repair or

[23] 33 U.S.C. §1383(c).

replacement of existing decentralized wastewater treatment systems, or for the connection of an individual household to a centralized publicly owned treatment works.

Although the CWSRF program is generally a loan program, the CWSRF program authorizes states to provide SRF recipients with additional subsidization (e.g., "forgiveness of principal" and "negative interest loans") under certain conditions. The conditions for awarding this support include either (1) affordability criteria (as determined by the state) for the entity receiving the subsidization; or (2) project eligibility, which include projects that (i) address water-efficiency goals; (ii) address energy-efficiency goals; (iii) mitigate stormwater runoff; or (iv) encourage sustainable project planning, design, and construction. IIJA amended the CWSRF statutory provisions to direct states to use at least 10% of their capitalization grants for additional subsidization under certain conditions. This "floor" for additional subsidization would apply to grants provided through the regular appropriations process in the future. In addition, appropriations acts from recent years have required states to use minimum percentages of their federal grant amounts to provide additional subsidization. This trend began with the ARRA in 2009 (P.L. 111-5), which required states to use at least 50% of their funds to "provide additional subsidization to eligible recipients in the form of forgiveness of principal, negative interest loans or grants or any combination of these." Subsequent appropriation acts have included similar conditions, with varying percentages of subsidization. The FY2022 appropriations act (P.L. 117-103) contains a provision that requires states to use 10% of their capitalization grant for additional subsidization. In an EPA memorandum on May 12, 2022, EPA interprets this provision as "additive" to the 10% floor in the CWA.

In addition to the CWSRF program, Congress has established other funding and financing programs in recent years that support wastewater infrastructure projects.[24] These programs include the following:

- **Water Infrastructure Finance and Innovation Act (WIFIA) Program.** Congress established the WIFIA program in the Water Resources Reform and Development Act of 2014 (P.L. 113-121; 33 U.S.C. §§3901-3914). WIFIA authorizes EPA and the U.S. Army Corps of Engineers (USACE) to provide credit assistance—secured or direct loans—for a range of water infrastructure projects.[25] Under WIFIA, EPA provides credit assistance directly to an eligible recipient. To be eligible for WIFIA assistance, projects must generally cost $20 million or more. The WIFIA program can provide a large amount of credit assistance relative to its budget authority. Annual WIFIA appropriations primarily cover long-term credit subsidy costs, which are calculated to cover the risk that the loan will not be repaid. As such, relative to its budget authority (e.g., $63.5 million in FY2022 to cover subsidy costs), appropriations provide a larger amount of total credit assistance. For example, Congress capped the FY2022 WIFIA credit assistance authority at $12.5 billion.
- **Sewer Overflow and Stormwater Grant Program.** In 2000, the Consolidated Appropriations Act, 2001 (P.L. 106-554) amended the CWA by adding Section 221, which authorized EPA to establish a grant program to address overflows from municipal combined sewer systems and from municipal separate sanitary sewers. In 2018, AWIA modified the program to include stormwater infrastructure. P.L. 117-103 provides $43.0 million for FY2022.

[24] For more information, see CRS Report R46471, *Federally Supported Projects and Programs for Wastewater, Drinking Water, and Water Supply Infrastructure*, coordinated by Jonathan L. Ramseur.

[25] For information on USACE implementation, see CRS Insight IN11577, *U.S. Army Corps of Engineers Civil Works Infrastructure Financing Program (CWIFP): Status and Issues*.

- **Infrastructure Investment and Jobs Act (IIJA) Programs.**[26] IIJA established several new grant programs that address specific objectives, such as efficiency, resiliency, and support for infrastructure in low-income communities or communities with smaller populations. The act authorized appropriations for these new programs, but to date, these programs have not received appropriations.

Permitting Programs

Another key aspect of the CWA is the statute's permit requirements. The CWA prohibits the discharge of pollutants from any point source (i.e., a discrete conveyance such as a pipe or outfall) to waters of the United States without a permit.[27] One such permit, issued by states and EPA under the act's National Pollutant Discharge Elimination System (NPDES) program, applies to industrial and municipal dischargers.[28] These permits incorporate both technology-based and water-quality-based requirements. A separate type of permit, issued primarily by the USACE under Section 404 of the act, is required to discharge dredged or fill material into waters of the United States.[29] Both of these permitting programs were established in the 1972 CWA.

For many years following the enactment of the CWA, EPA and states used their NPDES permitting authorities to reduce discharges from municipal wastewater treatment facilities and industrial facilities. As these more discrete sources of pollution became better controlled, attention turned to the remaining sources that continued to prevent attainment of water quality standards. In the 1987 CWA amendments, Congress directed EPA to implement permitting requirements for stormwater discharges from municipal separate storm sewer systems, construction activities, and industrial activities.[30]

In the decades following the promulgation of stormwater permitting requirements, municipalities, in particular, have faced challenges in complying with these permitting requirements, and in funding efforts to achieve compliance, particularly in areas with more stringent permit limits.[31] Some of these challenges have been exacerbated in more recent years by increased rainfall and flooding events.[32] Population growth and development have also, in some areas, led to increases in impervious surfaces (e.g., roads, parking lots) that block rainfall from infiltrating into the subsurface. These changes may increase both the volume and pollutant concentrations in the stormwater runoff.

Congress has responded to the concerns of municipalities through efforts such as modifying eligible uses for CWSRF funds and by amending the eligibility provisions for the CWA Section 221 grant program (discussed above) to include stormwater infrastructure. Congress and EPA have also taken action to

[26] For more information, see CRS Report R46892, *Infrastructure Investment and Jobs Act (IIJA): Drinking Water and Wastewater Infrastructure*, by Elena H. Humphreys and Jonathan L. Ramseur.

[27] 33 U.S.C. §1311.

[28] 33 U.S.C. §1342. Under CWA Section 402, the authority to issue NPDES permits to regulated sources and enforce permits is delegated to states that meet the statutory criteria for delegation (e.g., adequate laws and procedures). EPA has authorized 47 states and 1 territory to administer the NPDES permit program. EPA administers NPDES permits in Massachusetts, New Hampshire, New Mexico, the District of Columbia, and certain territories and Indian lands. Per CWA Section 502(3) (33 U.S.C. §1362(3)), *state* is defined to include a state, the District of Columbia, or any of the U.S. territories. Per CWA Section 518 (33 U.S.C. §1377), EPA is authorized to treat an Indian tribe as a state for certain sections of the CWA, including the sections pertaining to CWA permitting.

[29] 33 U.S.C. §1344.

[30] P.L. 100-4.

[31] Environmental Financial Advisory Board, *Evaluating Stormwater Infrastructure Funding and Financing*, March 2020, https://www.epa.gov/sites/default/files/2020-04/documents/efab-evaluating_stormwater_infrastructure_funding_and_financing.pdf.

[32] Ibid.

support the use of green infrastructure—measures that use plant or soil systems, permeable pavement, or other similar surfaces to help reduce stormwater runoff.[33] Some studies have shown that green infrastructure may be more cost-effective than traditional gray infrastructure, particularly when co-benefits are considered.[34]

Efforts to Manage Nonpoint Source Pollution

Prior to the 1987 CWA amendments, CWA programs were primarily directed at point source pollution. Except for general planning activities, little attention had been given to nonpoint source pollution (runoff from agricultural lands, forests, and urban areas), despite estimates that it might represent a significant source of the nation's remaining surface water pollution issues.[35] Amendments to the CWA in 1987 established measures intended to address such pollution by directing states to develop and implement nonpoint source management programs.[36] Further, the 1987 amendments authorized EPA to provide funds to implement nonpoint source management programs. Under Section 319, EPA awards grants to states, territories, and tribes to support a variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific nonpoint source implementation projects.[37] **Figure 3** illustrates the history of Section 319 grant funds provided by EPA, in millions, from 1990 through 2022.

Over the past several decades, concern about nonpoint source pollution, and its significance to remaining water quality issues, has persisted. Notably, EPA recognizes that nutrient pollution—including nitrogen and phosphorus—is one of the nation's most serious, pervasive, costly, and challenging water quality problems.[38] Nutrient pollution contributes to toxic harmful algal blooms and anoxic zones, contamination of drinking water sources, and costly impacts on recreation, tourism, and fisheries. While both point and nonpoint sources contribute nutrients to waterways, it is widely recognized that nonpoint sources play a substantial role in nutrient pollution in many watersheds.[39] The CWA does not authorize EPA to regulate nonpoint sources. EPA's authority to address nonpoint sources involves the use of grants and funding—such as Section 319—and related grants and technical assistance. Some argue that the voluntary nature of controlling nonpoint sources is a key challenge in achieving the act's water quality objectives. Some also argue that EPA's current role emphasizes the importance of funds that support nonpoint source pollution reduction efforts.

[33] The American Recovery and Reinvestment Act of 2009 (ARRA: P.L. 111-5) required states to use not less than 20% of ARRA grants "for projects to address green infrastructure, water or energy efficiency improvements or other environmentally innovative activities." Additionally, the Water Infrastructure Improvement Act (P.L. 115-436), which was enacted in January 2019, amended the CWA to add a definition for the term *green infrastructure* (at 33 U.S.C. §1362(27) and a new section directing the EPA Administrator to "promote the use of green infrastructure in, and coordinate the integration of green infrastructure into, permitting and enforcement under this Act, planning efforts, research, technical assistance, and funding guidance of the Environmental Protection Agency."

[34] EPA, "Green Infrastructure Cost-Benefit Resources," https://www.epa.gov/green-infrastructure/green-infrastructure-cost-benefit-resources.

[35] See, for example, "Senate consideration and passage of 100 H.R. 1," *Congressional Record*, vol. 133 (January 21, 1987), pp. 1578, 1581, 1583.

[36] P.L. 100-4.

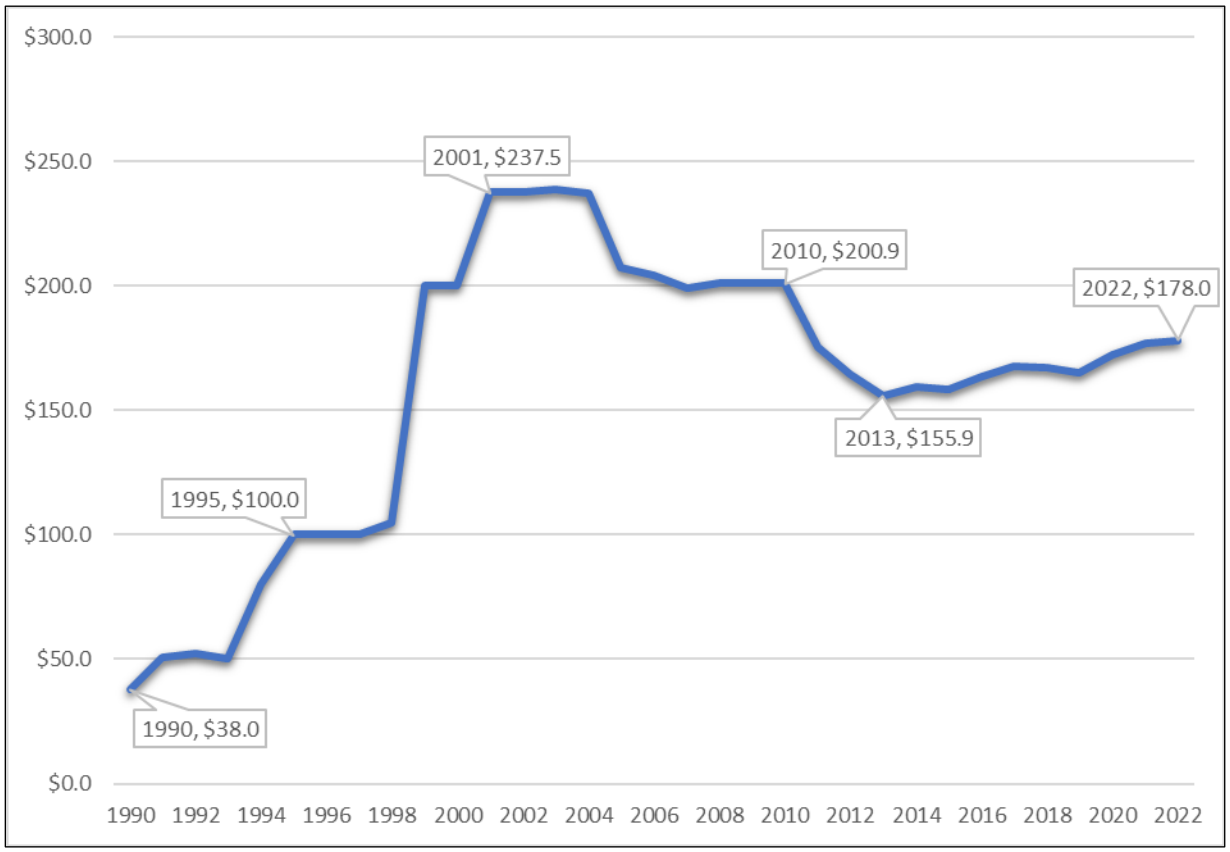
[37] EPA, "319 Grant Program for States and Territories," https://www.epa.gov/nps/319-grant-program-states-and-territories.

[38] EPA, "Nutrient Pollution," https://www.epa.gov/nutrientpollution/issue. See also Joel Beauvais, Deputy Assistant Administrator, EPA, memorandum to State Environmental Commissioners, State Water Directors, "Renewed Call to Action to Reduce Nutrient Pollution and Support for Incremental Actions to Protect Water Quality and Public Health," September 22, 2016, https://www.epa.gov/nutrient-policy-data/renewed-call-action-reduce-nutrient-pollution-and-support-incremental-actions.

[39] Ibid.

Figure 3. CWA Section 319 Grant Funds: 1990-2022

(as reported by EPA, in millions; not adjusted for inflation)



Source: EPA, 319 Grant Program for States and Territories, https://www.epa.gov/nps/319-grant-program-states-and-territories.

Place-Based Restoration Programs

Although not initially included in the 1972 CWA, place-based restoration programs, another key element of the CWA, have been established through amendments to the act. Place-based restoration programs include the National Estuary Program (NEP) and CWA Geographic Programs.

National Estuary Program (NEP)

Congress established the NEP through amendments to the CWA in 1987.[40] This program, administered by the EPA, identifies "estuaries of national significance"[41] that are threatened by pollution, development, or overuse. Under this program EPA awards grants intended to support the development and implementation

[40] P.L. 100-4.

[41] The CWA does not define "estuary of national significance." However, to facilitate its review of estuary nominations, EPA developed guidance on the nomination process. Regarding national significance, governors were to provide information on why the estuary is important to the nation, the geographic scope of the estuary, and how lessons learned from the estuary could apply to other areas, among other things. EPA, *The National Estuary Program: Final Guidance on the Contents of a Governor's Nomination*, January 1990.

of Comprehensive Conservation and Management Plans (CCMPs) to restore and protect them.[42] CCMPs are long-term plans that contain actions to address a range of environmental issues, including water quality, habitat, land use, fish and wildlife, and invasive species in the estuary. Through the NEP, EPA works with federal agencies, state and local governments, nonprofit organizations, industry, and citizens to address the environmental challenges in each estuary. The NEP includes 28 estuaries located along the Atlantic, Gulf, and Pacific Coasts, and in Puerto Rico.[43] Congress has reauthorized the NEP program several times; changes have included establishing new competitive grant awards to address urgent and challenging issues that threaten the ecological and economic well-being of coastal areas, or that relate to the coastal resiliency of NEP estuaries.[44]

CWA Geographic Programs

The CWA Geographic Programs, administered by EPA, also reflect broader collaborative efforts to improve some of the nation's aquatic resources that Congress, EPA, and states have identified as economically and ecologically valuable. Some of the Geographic Programs have specific statutory authority under individual provisions of the CWA (e.g., Chesapeake Bay, Great Lakes, Long Island Sound, Lake Champlain, Lake Pontchartrain Basin, and Columbia River Basin). The 1987 amendments to the CWA added the Chesapeake Bay and Great Lakes provisions to the statute.[45] Congress later added provisions for Long Island Sound and Lake Champlain in 1990,[46] for Lake Pontchartrain in 2000,[47] and for the Columbia River Basin in 2016.[48]

Several other geographic programs are not individually authorized in the CWA, but Congress has provided funding for each program in EPA appropriations (e.g., Gulf of Mexico, Puget Sound, South Florida, San Francisco Bay, and Southern New England estuaries). Within its congressional budget justifications, EPA cites broad CWA authority for the administration of these other programs. Some of the geographic programs receive funds through both the CWA Geographic Programs appropriations and through NEP appropriations (e.g., Long Island Sound, Puget Sound, and San Francisco Bay).

Under the CWA Geographic Programs, activities include efforts to address water quality impairments, clean up beaches, decrease coastal erosion, protect and improve aquatic habitat, support fisheries, and protect public water supplies. Appropriations provided for the CWA Geographic Programs leverage additional resources including funding and technical assistance made available from other federal and state programs, local stakeholder groups, individuals, and others.

[42] P.L. 100-4.

[43] EPA, "Overview of the National Estuary Program," https://www.epa.gov/nep/overview-national-estuary-program. Accessed August 12, 2021.

[44] P.L. 114-162 and P.L. 116-337. CWA §320(g)(4)(C) lists seven specific issues, such as extensive seagrass habitat losses that result in significant impacts on fisheries and water quality, recurring harmful algal blooms, and unusual marine mammal mortalities, that are included as "urgent and challenging issues."

[45] P.L. 100-4. Chesapeake Bay (33 U.S.C. §1267), Great Lakes (33 U.S.C. §1268).

[46] P.L. 101-596. Long Island Sound (33 U.S.C. §1269), Lake Champlain (33 U.S.C. §1270).

[47] P.L. 106-457. 33 U.S.C. §1273.

[48] P.L. 114-322. 33 U.S.C. §1275. In 2016, Congress authorized the Columbia River Basin program in the Water Infrastructure Improvements for the Nation Act (P.L. 114-322), but did not provide an authorization of appropriations for the program. In 2018, Congress amended the CWA to add an authorization of appropriations for the program in America's Water Infrastructure Act (P.L. 115-270).

Successes and Challenges

The past 50 years of CWA implementation have yielded improvements in water quality in certain aspects. CWA funding programs and CWA permitting programs have done much to reduce direct discharges of untreated domestic sewage and industrial waste to the nation's waterways. States continue to make progress in their efforts to reduce stormwater discharges and to address nonpoint sources of pollution through best management practices and other activities. Implementation of place-based programs, such as the National Estuary Program and CWA Geographic Programs, have also bolstered coordination among a range of stakeholders, leveraged resources, and led to comprehensive plans to achieve water quality and restoration goals.

However, challenges remain as population growth and development and climate-related changes (e.g., increased frequency and intensity of storms) limit the progress made in addressing remaining water quality issues, including those caused by nonpoint sources of pollution. In addition, although Congress has provided and continues to provide funds for wastewater and stormwater infrastructure, funding needs persist as states and localities address aging systems and needs for increased capacity and resilience to address population growth and climate-related impacts.[49] These and other aspects of CWA implementation will continue to present Congress, EPA, states, and other stakeholders with hurdles in their efforts to achieve the ambitious goals of the 1972 act.

This concludes my prepared remarks. Thank you for the opportunity to testify, and I look forward to answering any questions you may have. If additional research and analysis related to this issue would be helpful, my CRS colleagues and I stand ready to assist the subcommittee.

[49] For example, EPA published its most recent needs survey in 2016, documenting infrastructure needs from 2012. In this survey, EPA estimated that the capital cost of wastewater infrastructure needed to meet statutory water quality and public health requirements and objectives exceeds $270 billion over a 20-year period. EPA, *Clean Watersheds Needs Survey (CWNS) Report to Congress—2012*, 2016, https://www.epa.gov/cwns.