

The Evolution between 1935 and 1965 of Federal
Legislation to Control Water Pollution and Its
Relationship to Water Quality Regulation
in the Lower Columbia River

by

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This study traces the evolution of federal legislation to control water pollution in the period between 1935 and 1965. In this legislative history, the function of interest groups, the actions of congressmen and congressional committees, and the role of the President and the Executive Branch are reviewed. The water pollution control program as developed under this law provided financial and technical aid to state and interstate agencies for the development of state programs and financial aid to municipalities for the construction of sewage treatment facilities. The federal government also sponsored research on improved methods of waste treatment, and cooperated with state agencies in the collection of basic data on water quality.

The most controversial elements of the federal program in the period between 1948 and 1965 were the attempts to control pollution

through: 1) holding enforcement conferences between the particular states involved and the federal administering agency; and 2) setting water quality standards to reduce the amount of wastes discharged into interstate waters. The administering agencies played an important part in this program. The criticisms of these agencies and the numerous administrative reorganizations are emphasized. The overall effect of the federal water pollution control law is evaluated as having mixed results.

The impact of the federal water pollution control legislation from 1948 through 1965 on water quality of the Lower Columbia River is examined. This impact took the following forms:

- 1) Financial aid was given to municipalities for the construction of waste treatment facilities which reduced the load of bacterial pollution and some of the organic pollution.

- 2) Grants were made to the state water pollution control agencies of Oregon and Washington which enabled these agencies to improve their programs.

- 3) An enforcement conference was initiated by the states of Oregon and Washington with the Public Health Service regarding the municipal and industrial pollution interfering with legitimate uses of the Lower Columbia River. Little was accomplished by this conference to affect the discharge of wastes from the pulp and paper mills, but other industries and most municipalities did meet the

requirements of an Action Program devised by the conferees. In addition, the conference was at least partially responsible for making the city of Portland increase its treatment capacity and install chlorination facilities to rid the river downstream of serious levels of coliform bacteria.

4) The setting of water quality standards had a positive impact on the approach to water pollution control by requiring the states to catalog the waste sources and develop treatment requirements and time schedules for their abatement. Standards also gave state agencies one more weapon against recalcitrant polluters. In summary, the Water Pollution Control Act provided stimuli for the states of Oregon and Washington to improve the water quality of the Lower Columbia River.

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PART A

INTRODUCTION

THE EVOLUTION BETWEEN 1935 AND 1965 OF FEDERAL LEGISLATION TO CONTROL WATER POLLUTION AND ITS RELATIONSHIP TO WATER QUALITY REGULATION IN THE LOWER COLUMBIA RIVER

CHAPTER I

BACKGROUND AND STUDY APPROACH

The Problem in Perspective

Maintaining quality water in the rivers, lakes, and coastal waters of the United States is difficult and complicated. Some of this complexity is the result of the many uses of water that are necessary to satisfy the demands of society. In addition, the nation's population has grown rapidly and has become more urbanized, while industry has expanded in both size and complexity, and agriculture has become increasingly dependent on persistent, as well as nuisance-causing, chemicals. All of this growth and change has greatly increased the amount of water used and of wastes produced. A significant part of these wastes are discharged into water bodies resulting in pollution. For the purposes of this study "water is polluted if it is not of sufficiently high quality to be suitable for the highest uses people wish to make of it at present or in the future" (270, p. 70).

Municipal Wastes

The development and growth of cities led to serious sanitation

problems regarding the safe disposal of human wastes. When drains were constructed for the runoff of storm waters, all manner of trash and wastes were thrown into them. Eventually this led to the construction of closed sewers for the removal of both domestic wastes and storm waters from the city. The public was almost always willing to support the cost of sewers because the local benefits were obvious. Little if any thought was given to the effects on downstream water quality. Since 1860, the growth of the population served by sewers has grown more rapidly than the growth of the total population (Table 1). However, this practice simply moved the health hazards from city streets and alleys to downstream areas, lakes, and coastal waters. The sewers became transmitters of water-borne diseases. In response to this hazard, communities built water-treatment plants to assure, if possible, that water supplies be made safe.

In many parts of the country, the distance between the outfalls of upstream municipalities and the water intakes of downstream ones, in terms of purifying capacity, became so small that health officials worried about the ability of water-treatment plants to treat the increasingly polluted waters. In addition, other in-stream uses were seriously affected by the reduced water quality. In response to these problems, some municipalities began to treat their wastes. Most of the methods were aimed at reducing both the bacterial and the organic pollutants. The first step usually involved holding waste

Table 1. Development of sewer systems in the United States: 1860-1968 (population in millions).

Year	Total United States population	Sewerage facility development	
		No. sewerred communities	Population served by sewers
1860	31.4	10	1.0
1870	38.6	100	4.5
1880	50.2	400	9.5
1890	62.9	450	16.1
1900	76.0	950	24.5
1910	92.0	1,600	34.5
1920	105.7	3,000	47.5
1930	122.8	5,100	61.5
1935	132.0	6,800	69.5
1940	132.7	8,518	70.5
1945	139.6	8,917	74.7
1957	171.2	11,131	98.4
1962	185.8	11,420	118.4
1968	196.8	12,911	142.0

Source: (42, 264, 291, 292, 294, 297)

waters in tanks or lagoons so that suspended matter could settle out. Coagulants were added to speed the process. Then the outflow was chlorinated to kill any bacteria. This was termed "primary" treatment; it usually removed 35 percent of oxygen-demanding wastes, called "biochemical oxygen demand." In streams where this degree of treatment was insufficient, "secondary" treatment was required. This treatment used biological processes to remove as much as 85 percent of the biochemical oxygen demand.¹

Municipalities have experience in general, difficulty in getting public support for the construction of sewage treatment facilities. The local publics see no direct benefit to their communities. In addition, there usually are other needs that are competing for limited financial resources. Therefore, many sewage treatment plants were built to satisfy state laws, orders from state administrative agencies, or the courts. These processes for requiring the construction of sewage treatment facilities are lengthy and as there is no practical way to shut down a city, they are not always effective. This was one reason why the federal government initiated a program of grants-in-aid for the construction of such facilities under the authority of the Water Pollution Control Act in 1956.

¹ A very few municipalities have installed "tertiary" treatment plants, which are capable of removing up to 98 percent of the biochemical oxygen demand.

Industrial Wastes

Industrial pollutants are a more difficult problem to control than municipal wastes because they are more varied. They include an incredible range of materials. In 1970, according to the U.S. Council of Environmental Quality (252), the amount of organic industrial wastes was estimated to be from three to four times greater than domestic wastes. However, inorganic industrial wastes were becoming a larger problem because of their toxicity and permanency and their failure to respond to natural reducing agents.

Overall the problem of industrial wastes is immense, because in 1968, only 37 percent of industrial effluent received treatment (256). The industrial groups responsible for most of the pollution are: 1) pulp and paper; 2) food, including fermentation, meat packing, canning and freezing, and beet sugar; 3) textiles; and 4) chemicals and petroleum. In addition, the electric power industry is responsible for the increased rate of thermal pollution.

The federal government has attempted to counteract industrial pollution with a combination of incentives and sanctions: tax incentives for the construction of waste treatment facilities versus threats of closure for failure to meet water quality standards. Nothing in the Water Pollution Control Act was specifically directed at industry, however, until the water quality standards provisions were adopted in 1965.

Scope and Purpose of the Study

Until 1948, the states had the responsibility for almost all of the water pollution control activities in the United States. The Congress then passed the Water Pollution Control Act, which was subsequently amended several times over the next 18 years.² The history of this federal legislation from 1935 through 1965 is revealed in this study. The various laws are analyzed in reference to the interest groups who favored them and who opposed them, the actions of the Congress, and the roles of the various Administrations.

The water pollution control program as developed under the authority of the Water Pollution Control Act by the federal government from 1948 to 1961 was based on a policy to "recognize, preserve, and protect the primary rights and responsibilities of the states in controlling water pollution" (304, p. 755). In furtherance of this policy, the activities of the Public Health Service were restricted to cooperation with state and interstate agencies in studying water pollution problems until 1956.

² The basic act was the Water Pollution Control Act, P. L. 80-845, June 30, 1948. This act was subsequently amended by: the Water Pollution Control Act Extension, P. L. 82-579, July 17, 1952; the Federal Water Pollution Control Act, P. L. 84-660, July 9, 1956; the Federal Water Pollution Control Act Amendments, P. L. 87-88, July 20, 1961; and the Water Quality Act, P. L. 89-234, October 2, 1965. Additional amendments were made in 1966, 1970, and 1972. These amendments, however, are outside the time frame of this study.

The 1956 Act, which made the program permanent, initiated two of the principal program elements: 1) construction grants to municipalities for assistance in the financing of sewage treatment facilities; and 2) enforcement procedures to control pollution originating in one state affecting health and welfare of persons in another state.

Throughout the late 1950's dissatisfaction grew among the supporters of water pollution control regarding the administration of the program by the Surgeon General. Attempts were made, in 1961, to create a new agency to manage this program. However, the 1961 Act only transferred direct responsibility for this management to the Secretary of Health, Education, and Welfare. The Secretary promised the Congress that he would personally oversee improvements in the program.

In addition, the 1961 Act authorized the establishment of seven regional laboratories to conduct research on water pollution control and abatement; the inclusion of low-flow augmentation as a beneficial use of federally-financed reservoirs; and the extension of the construction grants program by increasing the total amount available, by increasing the limit on individual projects, and by encouraging the construction of joint projects to serve municipalities in metropolitan areas.

The 1965 Act resolved the controversy regarding the management of the program by establishing the Federal Water Pollution Control Administration. This agency was to be retained in the Department of Health, Education, and Welfare, but separate from the Public Health Service. However, only six months after its establishment, the agency was transferred to the Department of the Interior.

The 1965 Act also changed the federal policy from one that emphasized the rights and responsibilities of the states to one that emphasized the need for a national policy on clean water. This policy was "to enhance the quality and value of our water resources and to establish a national policy for the prevention, control, and abatement of water pollution" (306, p. 903). In addition, this act further increased the financial commitment to construction grants, and initiated a new grant program for the demonstration of methods to solve the combined sewer problems.

The 1965 Act also required that the states set water quality standards for all interstate waters, or the Secretary of Health, Education, and Welfare would set such standards for the states. The purpose of standards was to establish a systematic way to reduce the discharge of wastes into streams and other water bodies. Water quality standards consisted of three parts: 1) the legitimate uses of each interstate stream to be protected; 2) the criteria necessary to maintain or develop water quality to meet these uses; and 3) an

implementation and enforcement plan by which wastes are reduced to meet the necessary water quality.

The impact of these water pollution control elements on the water quality of the Lower Columbia River³ in the states of Oregon and Washington is examined. Particular emphasis is made of construction grants, water quality standards, and enforcement.

³ The Lower Columbia River is defined as that section of the river that forms the boundary between the states of Oregon and Washington.

CHAPTER II

BACKGROUND: EMERGENCE OF WATER QUALITY AS A CONCERN OF THE FEDERAL GOVERNMENT

The commitment of both state and federal governments in the United States to water pollution control originated through three activities: improving navigation, safeguarding public health, and conserving fish and migratory waterfowl. Throughout most of the nation's history, the federal government regulated navigation, and the states held primacy over public health and conservation.

In the Interest of Navigation

The federal government's authority to control navigation and thus to regulate the use of navigable waters is delegated by the commerce clause⁴ of the Constitution. Early in the history of the United States, Congress adopted laws designed to provide free water-borne transportation and to improve such transportation by the adoption of common rules and the placing of safety aids.⁵

⁴The Congress shall have the power: "to regulate commerce with foreign nations, and among the several states, and with the Indian tribes" (251, Article 1, Section 8).

⁵A review of these laws and other significant developments in the history of navigation in the United States can be found in a report of the President's Water Resources Policy Commission (76, p. 73-125).

A major policy of the Congress in the 19th century was to prevent obstructions to navigation. At first this meant control of bridge-building, dams, and other public works projects, as well as natural obstructions due to sedimentation. However, as population and industrialization increased, emphasis came to be placed on deposits of refuse. Although this concern was wholly in regards to the protection of navigation, it represented the first action by the Congress that dealt with the downgrading of water quality.

The first federal law dealing with keeping refuse out of waterways was enacted as part of the Rivers and Harbors Act of 1886 (81). Section 3 of this Act made it unlawful to allow, in any way, except for the construction of navigational improvements, the discharge into New York Harbor of "ballast, stone, slate, gravel, earth, slack, rubbish, wreck, filth, slabs, edgings, sawdust, slag, or cinders, or other refuse or millwaste of any kind" (81, p. 329).

The 1888 New York Harbor Act (36) extended the provisions of the 1886 Act to the waters adjacent to New York Harbor and the waters of Long Island Sound. Of more significance, however, was the exclusion of liquid effluent from streets and sewers from the list of prohibited discharges. The Rivers and Harbors Acts of 1890 (82) and 1894 (83) extended the provisions of the New York Harbor Act to all navigable waters of the United States.

All four of these laws were codified and/or superseded by the Rivers and Harbors Act of 1899 (86). Section 13 of this Act, commonly referred to as the Refuse Act, substituted the phrase "any refuse of any kind or description whatever" (86, p. 1152) for the long lists of prohibited deposits of the earlier acts.

The Rivers and Harbors Act of 1905 (84) authorized the Secretary of War to develop "regulations to govern the transportation and dumping into any navigable waters, or waters adjacent thereto, of dredgings, earth, garbage, or other refuse material of every kind or description, whenever in his judgment such regulations are required in the interest of navigation" (84, p. 1147).

The Oil Pollution Act of 1924 (65) completed the legislation regarding navigation in which pollution control was an indirect beneficiary. It in essence added oil to the list of illegal discharges of the earlier laws. In addition, this law authorized the Secretary of War to make investigations to determine what polluting substances were being deposited into the navigable waters of the United States, their sources, and methods of discharge. These studies were limited to pollutants that endangered navigation or the fisheries within such waters.

This investigation made by the Corps of Engineers, identified pollution to be the outcome of domestic sewage and industrial wastes whose effects on navigation were limited to temporary shoaling, acid

damage, and fire hazards and nuisance caused by oil. The effects on fisheries, especially those near population centers, were found to be disastrous (93).

In evaluating the applicable federal laws, including the Refuse Act, the Oil Pollution Act, and the New York Harbor Act, the report declared that they were reasonably effective. As for new legislation, the Corps of Engineers said that none was needed because of the progress being made, except that the provisions of the Oil Pollution Act should be extended to include the Great Lakes and to prohibit oil pollution from any source, rather than only from boats. The Corps of Engineers also opposed federal pollution legislation because they thought such would cause local and state authorities to relax their efforts and force the federal government to control the entire problem.

A broadened application of the navigation laws was made possible by a court decision in 1936, in which deposits that did not hinder navigation could still be brought under the enforcement powers of the War Department. The decision of the judge included the following:

Under such literal construction we see no reason for limiting 'refuse matter of any kind or description whatever' to such refuse matter only as would impede or obstruct navigation. The plain intention of Congress was to prohibit the discharge into navigable waters of any material so long as such material was 'refuse matter of any kind or description whatever.' If a material falls within these words of the statute, the discharge of the same into navigable waters is prohibited (299, p. 446).

Nevertheless, enforcement of regulations of the Refuse Act and issuance of required discharge permits by the Justice Department and the Corps of Engineers respectively were conspicuously lacking. When the Refuse Act was resurrected by President Nixon in 1970, it was estimated that 40,000 industrial plants were in violation of the law (37), as only 266 permits were in effect (33).

This failure of the administering agencies to enforce and prosecute the navigation laws, as they related to pollution, as well as the inherent deficiencies in the laws, made them, as far as water pollution control was concerned, a hindrance rather than a benefit.

In the Interest of Public Health

During the last three decades of the 19th century, cities and towns in the United States experienced an extremely large incidence of typhoid fever,⁶ as well as periodic outbreaks of other water-borne diseases. Each municipality controlled its water supply and was responsible for its quality. In large measure, the failure to provide pure water resulted from ignorance of or refusal to believe that there was a direct relationship between human wastes and diseases. A popular view was that anything too small to be seen by the naked eye was too small to be injurious to humans (8).

⁶In 1880, the death rate from typhoid fever was about 31.9 per 100,000 in New York, 57.6 in Philadelphia, 42.4 in Boston, and 59.0 in Baltimore (307).

The first federal action in regards to purity of water supplies was taken under the authority of the Quarantine Act of 1893, when the Secretary of the Treasury promulgated regulations for the quality of drinking and culinary water furnished to the public by interstate carriers (80). In 1901, Congress authorized the construction of the Hygienic Laboratory⁷ in Washington, D. C. (5) and in 1902, the establishment of a Division of Scientific Research in the Public Health Service (78). These two organizations studied contagious diseases including those related to impure water.

Beginning in 1908, the Public Health Service investigated pollution in various interstate waters, including Lake Michigan and Lake Erie, the Potomac, Ohio, Illinois, and Missouri Rivers, and the coastal waters of Maryland, Virginia, New Jersey, Delaware, and New York. The main emphasis of the river studies was to locate the sources of water pollution, especially as related to incidents of typhoid fever, and the stress of the coastal studies was the purity of waters in bathing-beach areas and in shellfish-rearing grounds.

As a result of the Great Lake studies, Congress passed legislation in 1912 to permit the Public Health Service to study "sanitation and sewage and the pollution either directly or indirectly of the navigable streams and lakes of the United States" (79, p. 309). Other

⁷ This laboratory was the predecessor of the National Institutes of Health.

than the extension of this authority in 1944, this was the only authorization for water pollution studies by the Public Health Service until 1948, when the first Water Pollution Control Act was passed. Nevertheless, the Public Health Service was able to accomplish a surprising amount of research and field work in three categories. These were sewage treatment methodology, industrial waste treatment, and natural purification.

Field and laboratory studies were made of all types of sewage treatment devices to determine their efficiency and application to various conditions. The concept of biochemical oxygen demand as a measure of water pollution was developed, and important progress was made in the techniques of bacteriological analysis. Successful demonstration and pilot treatment plants were built for experiments on waste from industries having widespread geographical distribution, such as tanneries, strawboard manufacturers, creameries, textile and dye plants, and canneries. The studies of the Ohio River included many experiments on natural purification. In conjunction with these experiments many analytical methods were perfected. Most of this work was done between 1912 and 1930.

During this same period other public health programs were gaining in public interest, and in the attention given them by the Congress. These included the heavily-financed and competing

research programs at the National Institutes of Health on heart disease, cancer, and mental health.

Funds for water activities were limited, and although the authority under which they worked was limited to studies, the Public Health Service was criticized for concentrating more effort on water purification than on water pollution control. In other words, the health agency of the federal government, in attempting to protect the public health rather than the broader interests of recreation and aquatic life, never received the full support of these other interest groups. When the water pollution control program became a major federal objective, these conservation and associated groups led the way in having the program stripped from the Public Health Service.

In the Interest of Conservation

Very few studies⁸ were made of the relationship between polluted water and other resources in the period before World War II. However, conservation causes were gaining support, especially in the 1930's. The Tennessee Valley Authority was established in 1933, the Soil Conservation Service in 1935, and the Fish and Wildlife Service in 1940. This increasing involvement of the federal government in

⁸In 1934, the Secretaries of Agriculture and Commerce were authorized to study the effects of domestic sewage and industrial wastes on wildlife, but no funds were made available (34).

conservation enabled some consideration of the interrelationships of all natural resources. Soil erosion, declining wildlife populations, disastrous floods, and the Dust Bowl all drew public support and governmental attention to the needs for resource management.

PART B

**THE EVOLUTION OF A FEDERAL WATER
POLLUTION CONTROL PROGRAM**

CHAPTER I

DEBATING THE ISSUES: 1935-1941

Throughout the period from 1935 to early 1941, attempts in the Congress to enact water pollution control legislation⁹ were thwarted by the inability of groups favoring federal legislation to compromise their viewpoints. The debates often entailed distortion of facts, erroneous propaganda, and personal abuse. These conflicting points of view first surfaced nationally during the Dern-Lonergan Conference of 1934 and remained for the most part unchanged until a consensus was reached and a water pollution control bill was passed in 1948.

The Dern-Lonergan Conference

In 1933, Senator Augustine Lonergan, Democrat of Connecticut, was persuaded by conservation groups of the need for a federal law against stream pollution. As a preliminary step, Lonergan obtained suggestions regarding water pollution control from appropriate federal agencies. He then recommended to the President that a board¹⁰ be

⁹ An apparent exception was a bill that was vetoed by President Roosevelt in 1938. However, one of the adversaries was instrumental in that decision (109).

¹⁰ This board would have had representatives from the Public Health Service, the Corps of Engineers, the Departments of Justice and Commerce, the National Recovery Administration, and various interest groups.

formed with authorization to develop a national program and make recommendations for its application "in the interests of public health, navigation, wild life, and industrial development which will add to public works employment" (46, p. 229). This suggestion was approved by the War Department (45), but no action was taken at the White House.

Lonergan then called together a group of professionals in the field to meet with Secretary of War Dern to develop a plan to be presented to the President and the Congress.¹¹ Although the conferees were in general accord that the federal government had a role in pollution control, there was no agreement as to the nature of such involvement. In an attempt to resolve the differences and to prepare a unified plan, a subcommittee¹² was selected to continue work on the problem.

However, neither side would alter their convictions and the subcommittee remained divided just as the conference had been. The

¹¹ This meeting was held on December 6, 1934, and the transcript was printed as Senate Document 16, 1935.

¹² The members appointed were George H. Dern, Secretary of War, who took no part in the group meetings; M. M. Ellis, Bureau of Fisheries; R. E. Tarbett, Public Health Service; Thorndike Saville, National Resources Board; S. H. Wadhams, Connecticut Water Commission; Grover C. Ladner, Chairman, Water Committee, Conservation Council of Pennsylvania, and President, Philadelphia Izaak Walton League; and D'Arcy Magee, Vice President, Izaak Walton League of America.

principal controversy was the enforcement of control laws, but other issues, including the suitable administrative agency, were also unresolved. The majority report, supported by the representatives of federal agencies, emphasized the necessity of including the states in a water pollution control program. The minority report, authored by two members of the Izaak Walton League, maintained that there could be no enforcement, and consequently, no pollution control, unless such powers were conferred on a federal agency. The subcommittee reports were sent to all the conferees for them to vote for the plan they favored. The report presented by the members of the Izaak Walton League received the support of the majority¹³ (54).

Advocates of Water Pollution Control

After the Conference during which the issues had become polarized, the controversy was moved to the Congress. Proposed water pollution control legislation became one of the most conspicuous entries on the Congressional calendar from 1936 to 1940. Unfortunately, Congress was ill-prepared for the task. The proposals presented represented different solutions to a complex and technical

¹³ Lonergan made no mention of the vote, but Donald A. Callahan, Vice President of the American Mining Congress, in complaining that industry had no representation at the Dern-Lonergan Conference, said the vote was 10-7 (94). This would mean that 13 of the conferees did not vote.

problem. It was difficult for the Congress to sort out the recommendations of the various interest groups and the federal agencies in order to develop legislative policies and programs. Congress, by habit, was used to saying yes or no to resource management problems as the process of selecting among several feasible alternatives was foreign to the structure and functioning of the Congress. Some senators and representatives seemed to adopt a proposal more by the attributes of the originator than by the qualities of the legislation.

The Izaak Walton League

The philosophy of the Izaak Walton League seemed to be based on the following declaration: water pollution has "so entrenched itself in America that only by concerted national action can it be prevented and eliminated" (55, p. 509). In 1935, Senator Lonergan described the propositions¹⁴ on which the League's plan was based and on which he would base his legislation, as follows:

First, that pure water, next to air, is the most absolute necessity of life. Stream-pollution abatement is not a mere luxury to be ranked with what might be called comfort improvements, such as new roads, bridges, public buildings, and the like, but it is so absolute a necessity that to temporize longer with the problem is to court national disaster.

Second, the very worst stream pollution is to be found in the great interstate waterways and their tributaries. Therefore,

¹⁴ These statements do much to explain the strategy chosen by the conservationists as well as their reaction to other proposals.

it has ceased to be a mere matter of local interest. It has become a matter of national concern.

Third, that industrial pollution and municipal sewage pollution must be attacked as a single problem and at the same time. Taxpayers will spend no money to clean public streams which industries continue to use as private sewers.

Fourth, that the most effective argument that industrial polluters advance against enforcement of antipollution laws by their States is the plea that they should not be put at a competitive disadvantage with industries located in other States that fail to act. While this argument is more plausible than sound, it is very effective with the public. It causes confusion and hesitation, which weakens the drive for strict enforcement in any State.

Fifth, that both municipalities and industries very generally plead lack of funds (54, p. 118).

In the various legislative proposals by supporters of the Izaak Walton League plan, the essential provisions were: 1) the designation of the Army Corps of Engineers as administrative agency¹⁵ to cooperate with and to encourage state agencies in their abatement activities, to encourage enactment of uniform state laws and interstate compacts, to establish sanitary water districts, and to set standards of purity for the navigable waters of each district; 2) the provision of loans and grants for the construction of waste treatment facilities; and 3) the use of injunctive proceedings to abate pollution not otherwise curtailed¹⁶ (54).

¹⁵ One exception was Lonergan's first bill, in which the National Resources Committee was designated.

¹⁶ Such proceedings could be brought by any United States attorney in any court having jurisdiction to hear or determine equity cases.

The position developed by the Izaak Walton League and supported by such organizations as the Wildlife Management Institute, the National Wildlife Federation, and the Wilderness Society was championed in Congress first by Senator Lonergan¹⁷ and later by Representative Karl Mundt, Republican of South Dakota¹⁸. Other congressmen played lesser roles.

Lonergan started his campaign in a radio speech (54) on December 23, 1935. He discussed, in general, the problems of stream pollution and the two plans that had come out of the Dern-Lonergan Conference. He described the Izaak Walton League plan as a "vigorous program by the Federal Government to supplement State activities" (54, p. 118), which would provide uniform enforcement, financial aid, and pollution control on a watershed rather than on a political basis. To implement this plan, Lonergan introduced two bills on February 7, 1936.

¹⁷ Lonergan's congressional career was composed of a series of victories and defeats. First elected in 1912 to the House, he was defeated in 1914; and then reelected in 1916 and 1918. He was the unsuccessful Democratic candidate for the Senate in 1920 and 1928. In 1930, he again won a seat in the House; and in 1932, was elected to the Senate, where he served one term. He was the candidate in 1938 but was defeated in the general election. He retired to a law practice in Washington, D.C.

¹⁸ Mundt was first elected to Congress in 1938. Formerly, he had been a national vice president in the Izaak Walton League. He served in the House until 1948, then moved to the Senate and served until 1972.

The Commerce Committee of the Senate held hearings on these bills¹⁹ in February, March, and May, 1936. The testimony at these hearings demonstrated the wide divergence of views on pollution and pollution control by the various segments of society. Both of Lonergan's bills were reported (97, 98) out of committee with minor amendments and with recommendations that they be passed. No further action was taken on them. Similar bills were introduced in the next session; no action was taken on these bills either. Lacking political power in Congress, Lonergan took his case to the public in a series of articles in the Washington Times in February and March, 1937. The main point of these articles was to expose the dangers to public health and the destruction of fish and game in polluted waters, and the necessity of federal pollution control to protect human and wild life alike.

It seemed that almost from the beginning, Lonergan's efforts were doomed. Although, certainly not the only senator interested in water pollution control, his position had little, if any, support among the party leaders. He, like so many congressmen who introduced

¹⁹ Bills introduced by Senator Copeland, Democrat of New York and chairman of the Commerce Committee, and Senator Barkley, Democrat of Kentucky, were considered in these hearings. These hearings were held before a three-man subcommittee, a very unusual occurrence as most water pollution control hearings were before the full committee in the 1930's, 1940's, and 1950's. Perhaps this indicated the lack of support for any of these four bills.

legislation on water pollution during this period, was at a disadvantage in not being a member of the committee that controlled that domain.²⁰

In the House, Mundt had introduced his first water pollution control bill in 1939. Having been a national vice president of the Izaak Walton League, Mundt could put their plan forward with a great deal more efficiency than could Lonergan. Mundt was somewhat lacking in political experience, however. The House Rivers and Harbors Committee held hearings on his bill, along with four other pollution control bills, in March 1939, but none were reported. Mundt's main influence was when the House added his amendment to a Barkley bill in 1940, which would have prohibited new sources of pollution. He introduced bills again in 1940 and 1941, but the world situation was turning the attention of the Congress away from such domestic matters.

Stream Pollution Committee of the
Cincinnati Chamber of Commerce

In addition to the Izaak Walton League, other organizations had

²⁰ By not being a member of the Committee on Commerce in the Senate or the Committee on Rivers and Harbors in the House, a congressman was not a part of the inner workings of the Congress--from questioning witnesses at hearings, to preparing the committee report in executive session, to managing the bill on the floor, and finally to acting as manager for a bill in conference between the two houses of the Congress.

proposals for water pollution control legislation. Among these were the professional engineering and associated societies and the health groups. The most active organization, however, was the Stream Pollution Committee of the Cincinnati Chamber of Commerce. The proposals of these various organizations differed in small degrees, but basically they were quite similar. Dr. A.T. McCormack, Health Commissioner of Kentucky, summed up what seemed to have been the philosophy of these organizations:

The question is, what plan can be adopted that is economically possible that will not injure industry, that will not be too expensive so as to be destructive, and that will retain these streams and continue to make them useful as water supply and as supplies for fish and game (95, p. 27).

The increasing pollution of the Ohio River caused by population and industrial growth and the serious added effects of canalization and other navigation improvements had changed the river from free-flowing to a series of stagnant pools during the low-flow season. This created a great deal more interest in pollution abatement in the Ohio Valley than in the nation generally. Congressmen from this area were leaders in the debate on water pollution control--Senator Barkley from Kentucky, and Representatives Vinson and Spence from Kentucky and Hollister and Elston from Ohio. Later Senator Taft of Ohio became involved. The Cincinnati newspapers²¹ actively supported their efforts.

²¹The Cincinnati Enquirer had as one of its expressed goals: "Building of a system of sewage disposal and use of all means to purify the Ohio, the Miamis, and other streams in the area" (88, p. 216).

The Stream Pollution Committee was organized in June 1935, and became one of the most persistent supporters of federal stream pollution legislation. The platform of the Committee was as follows:

That it would promote legislation to control pollution of streams of the Ohio Valley, encourage the construction of disposal plants, conduct a general program of education, and coordinate as far as possible all local efforts to accomplish these ends (94, p. 425).

The Committee was not satisfied with either plan that resulted from the Dern-Lonergan Conference. A subcommittee on legislation was organized to draft potential federal legislation. Three such drafts were introduced in the Congress²² by Senator Barkley and Representative Hollister in 1936. One of these was to grant consent of the Congress to an interstate compact²³ among the states of the Ohio Valley. The intended purpose of this legislation was to allow these states to work together to alleviate the growing pollution of the Ohio River, even if a national plan was not started.

The other two bills were similar except one provided that the Public Health Service would be the federal agency and the other, the Army Corps of Engineers. The Committee did not select one

²² These bills were considered in hearings by the House Committee on Rivers and Harbors on May 20, 1936. None were reported from committee. No action was taken on them in the Senate. The main reason for this was the introduction of a composite bill which included parts of many plans by Barkley and Vinson.

²³ Such consent was given in 1940--P.L. 76-739.

because both were acceptable. The main elements of these bills were:

1) to provide a federal agency with authority to study the pollution of navigable streams and the means to correct it, to cooperate with state agencies, to study specific local pollution problems, and to divide the United States into drainage districts and prepare comprehensive pollution abatement plans for each district; and 2) to make appropriations of a) \$250,000 annually for administrative expenses and for field investigations, and b) \$750,000 annually for 10 years for state and drainage-district authorities (95).

Hudson Biery, chairman of the Committee, testified at all the hearings and provided the Congressional committees with more information than anyone else, including the federal agencies. In the 1937 House hearings on water pollution (100), Biery emphasized that the requirement for a successful program was to have stronger state agencies and federal financial aid. He also asserted that there was no constitutional authority for federal control of water pollution on any other basis than by cooperation with the states. This seemed to mean that the states would hold veto power on any federal activity in this field. By 1939, the Cincinnati forces were strongly behind the Public Health Service as the administrative agency, and in this and other ways had come head to head against the Izaak Walton League.

The Composite Bills. The difference between the Cincinnati Chamber of Commerce bills and the Barkley-Vinson composite bills

of 1936 were minor. For example, the Barkley-Vinson bills eliminated the provision for dividing the country into drainage districts and kept the states as the units for developing comprehensive plans for pollution abatement (99).²⁴

When Senator Barkley²⁵ introduced his composite bill on May 15, 1936, it was reported from committee without amendment and was passed by the Senate without debate on June 6 (99). In spite of his favoring water pollution control legislation, Senator Lonergan moved to have the vote reconsidered, without comment, on June 8. This was so near to adjournment that the bill never came up for another vote.²⁶ The bill introduced by Vinson²⁷ was passed rather easily in the House on June 20.

²⁴ This was probably the result of anti-TVA feeling among the states and the federal agencies.

²⁵ Barkley had been a member of the House from 1913 to 1927. He was elected to the Senate in 1926 and served there until his resignation to run with Truman in 1948. He was majority leader from 1937-1947, and minority leader from 1947-1948. After serving as vice president from 1949-1952, he was reelected to the Senate in 1954 and served until his death in 1956.

²⁶ It became typical of water pollution control legislation that they were being considered near to adjournment.

²⁷ Vinson was a member of the House from 1924-1929 and from 1931-1938. He resigned when appointed by Roosevelt to the Court of Appeals. He then served in various war posts and was Secretary of the Treasury for Truman. In 1946, Truman selected him to be Chief Justice of the Supreme Court, and he served until his death in 1953.

Similar bills were introduced by Barkley and Vinson in 1937. Although the Vinson bill, H.R. 2711, eventually was passed by both the House and the Senate, opposition came from three sources. The strongest opposition in the House came from Representatives Carter, Republican from California, and Cochran, Democrat from Missouri, primarily, on the grounds that the bill specified no limit to expenditures. The second source of opposition was the Executive Branch. The Bureau of the Budget had advised the Treasury Department that H.R. 2711 was not in accord with the financial program of the President.²⁸

²⁸In the House consideration of H.R. 2711, there was a great deal of confusion about the Administration's position. At the House hearings in March, Surgeon-General Parran was unable to give official testimony because the Treasury Department had not submitted its report. The report of the War Department was submitted on March 27. The Bureau of the Budget said there was no objection to its submission to the Congress (103). Then the report of the Treasury Department of April 1, said that the Bureau of the Budget disapproved of H.R. 2711. This report did not get to the Congress until after H.R. 2711 had been reported from committee. Even on April 21, when the House was considering the bill, Vinson did not know of the negative report (102).

It is not known whether Vinson, after hearing of the disapproval of his bill, ever discussed it with the President or with the Bureau of the Budget. However, Vinson did say on the House floor: "I believe that when the President of the United States is presented with this piece of legislation, and has the opportunity to study it, he will realize the good that it will bring to the people of these United States in attempting to remove this danger to life and in many instances to entire sections of the country, he will not hesitate a split second in giving his wholehearted approval to this legislation. . . ." (102, p. 3863).

Perhaps the best evidence of the President's view of this legislation is found in a letter to S.B. Locke, Conservation

The third source of opposition came from the conservationists. This was not significant in the House, but when the bill was under consideration by the Senate Commerce Committee, the bill was substantially amended to include five provisions taken directly from the Lonergan bill²⁹. This compromise was easily approved in the Senate on August 16 (104).

The conference committee was unable to agree after several meetings, so the matter was held over until the next session. Finally, on June 7, almost 10 months after the bill was passed, the conference reached an agreement. This amended version eliminated three of the Lonergan provisions, namely, setting standards of water

Director, Izaak Walton League, of August 25, 1937. Mr. Locke had written on August 18, asking the President to help assure Representative Mansfield that the amended version of H.R. 2711 had the President's approval (91). Roosevelt's reply, via a memo to his secretary was: "Tell him that we already initiated a Federal policy against stream pollution by refusing to approve PWA projects for sewers that dump into rivers and bays. . . ." (59, p. 112). This policy change that the construction agencies fought against hardly was comparable to a comprehensive water pollution control law such as H.R. 2711.

²⁹ These provisions were: 1) granting consent of Congress to states entering into interstate compacts to cooperate in the abatement of water pollution; 2) classifying the navigable waters of the United States into sanitary water districts; 3) setting standards of purity and of waste treatment for these navigable waters; 4) prohibiting the discharge of wastes into navigable waters, if such wastes injure human health, other life forms, or navigation, and abating such pollution by federal enforcement measures; and 5) excluding from the affects of this law the rights of individuals to sue polluters (103).

purity and of waste treatment, federal enforcement, and the statement excluding from the affects of this bill the rights of individuals to sue polluters (105). The conference report was approved by the House without debate. The Senate also approved it, but with some discussion of the strict rules under which the conference operated, which allowed no other changes (106).

Then on June 25, the President vetoed the bill (see page 47). This suggested that a problem of communication existed between the President and the leaders of the Congress. In 1939, this same difficulty was repeated. In an attempt to coordinate the intentions of Senator Barkley and himself with the President, Representative Spence wrote to the President on December 16, 1938 (51), and enclosed a draft of the bill that would be introduced in January. Spence requested that the President inform him of any objections to this amended version of H.R. 2711.³⁰ Spence introduced H.R. 922 on January 3, and a companion bill (S. 685) was introduced by Barkley on January 16. Barkley's bill was passed by the Senate on May 1, 1939. The House did not take up the bill until February 1940.

³⁰ A statement made by Barkley on February 16 (107), clearly showed that he thought the problem of budgetary procedures which had caused the President to veto H.R. 2711 had been corrected in S. 685. Obviously, Spence's request had not been answered, because on June 15, the President wrote to the Secretary of the Treasury and told him that all the objections he had made regarding H.R. 2711 had not been overcome in S. 685 (49).

In that interim the House Committee on Rivers and Harbors had amended the Senate version by deleting grants-in-aid and program grants to the states.³¹ This satisfied the so-called economy block in the House to some extent. When the bill came to the House floor, the conservation forces decided to try for a compromise rather than urging that the bill be recommitted or that the entire Mundt bill be offered as a substitute.³² Mundt submitted an amendment to stop new sources of pollution (111). The purpose of this amendment was to prevent any additional pollution from entering streams while existing pollution was abated.

This amendment was poorly understood by the members of the House because "new pollution" was never clearly defined. Some thought that it meant that no other houses could be connected to existing sewers, or that a farmer with 10 pigs could not later decide to raise 14 pigs. Nevertheless, the amendment was passed 121 to 65 on March 1, 1940 (110).

The conference committee could not agree. The Senate was adamantly opposed to the Mundt amendment. On July 9, Mansfield,

³¹ This had come about as a result of a conference between the President and Barkley, Spence, Mansfield, health officials, and the Reconstruction Finance Corporation (111).

³² Mundt described the situation: "We asked for a loaf and were offered a stone, but now we are compromising with a slice of bread" (111, p. 2182).

Chairman of the House Rivers and Harbors Committee, asked the House whether it wanted to instruct its managers to discontinue their insistence on the Mundt amendment or not, so that the bill could get through. The House refused to change the instructions on a roll-call vote of 155 to 198 (112). The conservation forces decided no bill would be better than one without the Mundt amendment. Therefore, this opportunity to pass a federal water pollution control law was not taken.

Federal Agencies

Although at least 20 federal agencies (267) had some responsibility towards the use and control of water in 1936, only three were actively involved in the efforts to obtain a water pollution control law. These were the National Resources Committee, the Public Health Service, and the Army Corps of Engineers. The Biological Survey and the Bureau of Fisheries were occasionally involved, especially in discussions on the effects of water pollution on aquatic life.

National Resources Committee

The Mississippi Valley Committee and the National Resources Board, predecessors of the National Resources Committee, had developed many of the objectives and policies that the Committee attempted to satisfy.

The Mississippi Valley Committee, an agency under the Public Works Administration, was organized to devise plans for the use and control of the Mississippi Basin. Its report of October 1, 1934, in reference to flood control, instituted policies that were strikingly similar to many of those later applied to water pollution control.

Floods pay no attention to political jurisdictions. Any coordinated system of control will demand the cooperation of neighboring States with each other as well as the cooperation of State with Federal Government. Obviously the Federal Government should bear its share of the costs and the responsibility. Obviously, too, the States should do the same. To make this easily possible we need uniform State flood control laws, a Federal legislation to expedite interstate compacts, and a permanent policy of Federal participation based on accurate estimates of the benefits to be derived. . . (265, p. 3).

By Executive Order, the President established the National Resources Board on June 30, 1934 (271). This agency brought together all previously existing agencies involved with so-called emergency planning for land and water resources. The Mississippi Valley Committee became the Water Planning Committee for the Board. Its functions were to assemble basic data, to develop programs for water resources development, and to investigate water pollution.

The National Resources Committee was established in June 1935 (272). One of its first publications was the Report on Water Pollution, a comprehensive overview of the status of water pollution and water pollution control laws. Its recommendations regarding the

federal government's role were as follows:

1. That no basic changes in existing Federal law with reference to water-pollution control be made until the experimental program presented later herein (see number 4) shall have indicated whether or not such changes are desirable and feasible.
2. That broader authorization for research be granted to those agencies of the Federal government which are already concerned with various phases of the problem, and that adequate funds be provided for properly coordinated water-pollution investigations.
3. That powers and funds be granted to an appropriate Federal agency to institute a cooperative program of investigation with legally constituted State agencies for such special studies as appear desirable and particularly for the development of appropriate standards for water use and control.
4. That in order to stimulate the construction of pollution-abatement works, funds for the purpose be made available by the Federal government to local public and private agencies on a grant-in-aid or loan basis. Lacking any precedent for the designation of appropriate bases for such allocation, the Committee recommends the creation of a demonstration unit on a river system selected for that purpose (the Potomac Basin was recommended) (266, p. 63-64).

The National Resources Committee issued reports in 1937 and in 1939, to update the findings and recommendations of the 1935 report. These recommendations suggested provisions that a federal water pollution control law should have if one were passed. The main elements were basically the same as in 1935: designation of a federal agency to study and report on water pollution and to cooperate with and stimulate state agencies in the development and execution of their water pollution control programs, granting consent to negotiate

interstate compacts, and provision of financial aid to local public and private agencies for construction of pollution abatement works. In order that federal monies would be used to greatest advantage, such aid had to be approved both by a federal public works agency and a water planning agency (268, 269).

Congressional Hearings. The National Resources Committee was represented before the Congress by Abel Wolman³³, Chairman of the Water Resources Committee, and Chief Engineer of the Maryland Department of Health. Based on the National Resources Committee's studies of water pollution problems, Wolman recommended to the Congress what should be done at the federal level. The two most important undertakings were: 1) to set up an agency whose only function was to be involved in stream pollution work, including the stimulation of local agencies and the awakening of public interest, and 2) to provide grants-in-aid to build sewage treatment plants. The justification for grants when the Treasury was already overtaxed was based on the success that the emergency public-works agencies had had. Since 1933, the number of public sewage treatment plants built "represents approximately 30 percent increase in the total built in the 50 years prior to 1933" (94, p. 422).

³³ Mr. Wolman usually represented the American Water Works Association, and on occasion other professional organizations, as well as the Maryland Department of Health and the National Resources Committee. It sometimes was difficult to tell whose viewpoint he was espousing.

The creation of a federal agency³⁴ to investigate water pollution problems and to stimulate local pollution abatement was in lieu of the regulatory measures proposed in the Lonergan bills. The National Resources Committee was opposed to such legislation for many reasons. Most important, they believed that pollution was not readily correctable by law, especially not the blanket type proposed, but that it was a problem to be resolved by technical, financial, administrative, and educational measures.

Wolman agreed with the Izaak Walton League that the states had failed to correct stream pollution. However, he attributed this primarily to a lack of public interest. The lack of money and will could not be overcome by state officials without public backing. The Water Resources Committee had been particularly impressed by the fact that the type of pollution control law a state had made little if any difference in the amount of pollution control activity. States with mandatory laws were not reducing the pollution load any faster than those with weak ones (266). This fact led them to conclude that a mandatory federal law likewise would make little difference except to engender hostility at the local level.

Wolman stated in 1939 that the time for compulsory legislation by the Congress would come when civilization itself was on the brink

³⁴Wolman, speaking as a state official, supported the Public Health Service, "by virtue of history, by virtue of knowledge, by virtue of official familiarity with the problem" (94, p. 424).

of disaster, provided no other "technique consistent with our democratic process" is available (109, p. 54).

Public Health Service

Public Health Service activities in the field of water pollution in the 1930's continued as they had been since 1912, when the authority to investigate streams was granted, with emphasis on scientific studies of natural purification and waste treatment. Starting in 1937 major emphasis was put on the Ohio River Basin. The Rivers and Harbors Act of 1937 authorized the Secretary of War to make a survey of the Ohio River and its tributaries to determine the kind and amount of pollutants entering the river and their sources, and to ascertain the most feasible methods of correcting such pollution (85).

When the President signed this act (89), he remarked that the proposed pollution survey of the Ohio River was obviously within the jurisdiction of the Public Health Service.³⁵ He asked the Secretaries of War and the Treasury to appoint a three-man committee to conduct the survey. The committee was to consist of an army engineer, a representative of the Public Health Service, and a non-government expert.

³⁵ Those who opposed the Army Corps of Engineers as the federal administrative agency for water pollution control delighted in pointing out that they had to ask the Public Health Service to do this work.

Congressional Hearings. Dr. Thomas Parran, Surgeon-General, played a rather low-key role in these various hearings, at least compared to his active participation in later ones. This may have been the result of several factors. He had been in this post for only a little over a month when the first hearings were held. Most likely, however, having served in Roosevelt's administration in New York, Parran knew the President was not eager to have the water pollution control program started when the financial condition of the federal government was so poor.

Parran did bring before the Congressional committees the views of the Conference of State and Territorial Health Officers. This organization had proposed legislation which was later incorporated into the Barkley and Vinson bills of 1936 (S. 4627 and H.R. 12764). The main elements of this proposal were: 1) establishment of a water pollution control division in the Public Health Service with authority to investigate the pollution problems in the states and to engage in cooperative activities with the states; 2) encourage the creation of interstate compacts; and 3) appropriations for a) the Public Health Service to administer this program, b) program grants to the states, and c) grants and loans to states to construct sewage disposal plants (94).

The Army Corps of Engineers

One of the few activities of the Corps of Engineers related directly to water pollution during the 1930's was a survey of sewage pollution caused by federal institutions. This had been requested by the Congress (H. Res. 296 of 1935 which had been initiated by Representative Dingell, Democrat of Michigan). The report (96) was issued in May 1936, and it showed the status regarding the raw sewage discharge of 2,486 institutions in the continental United States. Each institution was categorized according to one of a series of eight recommendations. The Army Corps of Engineers decided that only 103 of the institutions needed to have disposal plants.³⁶ When the President sent this report to the Speaker of the House (48), he said that no Congressional action was necessary, and that the responsible agencies had been advised of their duties.

Congressional Hearings. The Secretary of War had no objection to the Vinson bill, H. R. 2711, in which the Public Health Service was the administrative agency. He did recommend that before any legislation was passed, it would be desirable to have a comprehensive survey, so that an abatement plan could be based on a careful appraisal of water pollution based on detailed information. The War Department's view on the proposed legislation in which the Corps of

³⁶ The other 2,383 could go on dumping raw sewage.

Engineers was the administrative agency consistently negative. In 1936 (94), the Secretary of War doubted both the constitutionality and the practicality of the measures. The Secretary recommended that the Public Health Service was the logical choice to work with the states and to help them develop remedial plans. The federal enforcement measures in the House companion bill to the Lonergan bill of 1937 were called too drastic by the Secretary (100).

It would seem from these statements that the position of the War Department was clear. However, whenever testimony was received from members of the Corps, a nearly opposite stand was taken.³⁷ For example, Colonel John C.H. Lee, Division Engineer for the North Pacific Division, told the Congress in 1939 that federal enforcement was necessary and desirable (109), when the Secretary of War had said that such measures were too drastic. Lee also said that the Corps could do the job efficiently at minimum expense. This was obviously in reference to the bills favoring the Public Health Service as the administrative agency, which would appropriate \$1,000,000 annually for water pollution control work.³⁸

³⁷ This seems to substantiate the statement of Harold Ickes in the foreword to Muddy Waters, by Arthur Maass, that the Corps regards themselves as independent of the War Department and of the President (56).

³⁸ See page 51 for a further discussion of the Corps of Engineers as administrative agency for water pollution control.

The President's Role

Considering the economic and social situation in the United States during President Roosevelt's first and second terms, it is not surprising that he took almost no part in the attempts to initiate water pollution control legislation in the years 1935 through 1937.

The President's attitude toward water pollution control by the federal government was never clearly stated in public, although he sent two messages on the subject to the Congress in 1938 and 1939. Some idea of his attitude can be obtained in his letters. For example, in answer to a letter from a New York friend who was worried about the pollution of the Hudson River, the President sympathized, but said: "The problem is, of course, wholly one for the municipalities and not for the Federal Government" (47, p. 381). The President, being especially sensitive to the unemployment problem, did take an interest in industrial pollution of the York River in Virginia, which had ruined some oyster-growing areas. Many of the oyster-fishermen had moved to northern cities and were on relief (57).

Then on August 21, 1937, the President announced a change in policy in regards to federally-financed public works construction³⁹ (58). In effect, this change prohibited new sewer projects unless

³⁹ See page 55 for a discussion of this public works program that was designed to provide jobs for those on relief.

sewage-treatment plants were also built. The purpose of this policy was to stop construction or extension of sewers that would bring new pollution into streams.

The Veto of H. R. 2711

President Roosevelt vetoed H. R. 2711, the Vinson bill, on June 25, 1938. Although earlier statements from the Administration indicated that H. R. 2711 had not been approved by the President, in some ways, this still was a surprising veto. The bill was supported by congressional Democrats, including the majority leader in the Senate as well as others of the President's men; this water pollution control measure was designed primarily to enhance public health, one of the New Deal objectives; and the bill more nearly followed the recommendations of the National Resources Committee than any of the other types of bills that the Congress had considered.

In his veto message, the President gave his approval of the general purposes of the bill, including the establishment of a water pollution control division in the Public Health Service. Nevertheless, the President disapproved the bill for the stated reason⁴⁰ that the bill

⁴⁰ Although the President never acknowledged any other reasons for the veto, the Izaak Walton League claimed (109) that it had played a role in that decision. In addition to any pressure that the conservationists might have applied, it seemed that the President's main concern was actually the provision of grants to local political units and industries, on which no limits had been placed. Section

failed to provide for appropriations through the usual budgetary process (90).

Responsibility for Water Pollution Control

On February 15, 1939, the President sent a message (62) to the Congress further detailing his position on water pollution control legislation. He pointed out that the responsibility for waste treatment facilities was primarily on municipalities and industries. However, he also said that the federal government must also take some responsibility by providing financial⁴¹ and technical aid. In order to accomplish these goals, the President recommended that the Congress enact legislation that authorized a federal agency to coordinate such activities.

In a letter of December 3, 1941, from the President to Kenneth Reid, Executive Secretary of the Izaak Walton League, the President again placed the major responsibility on the municipalities: "I am sure that you will find the Federal Government willing to cooperate

7 (f) of the bill stated: "There are authorized to be appropriated such sums as may be necessary to carry out the projects . . . as are authorized annually by the Congress . . ." (191, p. 3). Evidence for this concern is found in a statement by Representative Spence (111), that the President did not want a program that would break the budget.

⁴¹ This recommendation included the use of grants and loans. By January 1940, however, he had changed his mind, and wanted no grants, because of their drain on the budget. What changed his mind is not known. It could have been that he saw with increasing likelihood that the war in Europe would take enormous amounts of United States dollars.

with State and local agencies when there is a disposition on the part of the local people to provide proper sewage treatment facilities" (50, p. 542).

Elements of the Controversy

The failure to enact a water pollution control bill in the 1930's was the result of disagreements between two groups that favored federal involvement but that differed as to what such a bill should accomplish. The conservationists wanted a law that would in effect make it a crime to cause water pollution. They were convinced that the only possible solution was through federal prohibition and that any other suggested course of action was, in reality, a vote for pollution. The opposing forces, primarily federal and state agencies, represented the view that the proper procedure was by cooperative activities. The federal government would assist by providing funds and research, and the states would be in control.

Federal versus State Control

The issue was whether a federal water pollution control law should contain mandatory or permissive enforcement powers. Those who favored empowering an agency of the federal government with broad and arbitrary authorities, including injunctive procedures in federal courts, did so because they believed it was the only effective

method of controlling pollution. They attributed the degraded conditions of the streams to the failure of the states to enforce the laws available or to enact adequate laws where none existed. Furthermore, they believed only the "big stick" could make industries cooperate in stream improvement. If control were left with the states, it would mean a great victory for polluters, and the passage of a non-enforcement bill would amount "to a 10-year moratorium on pollution control" (108, p. 148). Thus the conservation position was not to accept any modification in the enforcement provision. As Representative Dingell, Democrat of Michigan, said: "If the Senate insists upon the half-baked-insipid, and ineffective proposal made heretofore, then it appears we will have no bill, and I do not know but what we will be just as well off" (112, p. 9358).

The opponents of federal control stated that water pollution was not a correctable offense by law, but it required money, education, and technical advance. As evidence for their point of view, the opponents referred to the failure of other prohibitory laws.

One of the provisions of all the bills was to encourage the adoption by the states of uniform water pollution control laws. This was badly needed because, in 1935, 14 states had no control legislation and 26 had only partial or ineffective ones (266). This means that

only eight states had adequate control laws.⁴² Regardless of the degree of enforcement permitted, there were many other limitations to effective state action: lack of administrative machinery, exemptions written into the law, and failure of the legislatures to appropriate funds.

Public Health Service or the
Army Corps of Engineers

All the conservationist bills except Lonergan's placed the administration in the Army Corps of Engineers. The main reason was that they found the Public Health Service unsympathetic toward enforcement.⁴³ In other words, the Public Health Service did not agree with their position on federal control.⁴⁴ From this the conservationists decided the health agencies were in complicity with the polluters; some of the attacks made took the following form:

The opportunity to share in the \$700,000 annual 'bureaucratic melon' is one reason why many State health departments (support Senator Barkley's bill) (63, p. 643).

⁴² Those who credited the states with doing a wonderful job were just as far afield as those who claimed the states could not do anything.

⁴³ This attitude of the Public Health Service was not restricted to water pollution. It was a firm and long-standing policy that the best way to accomplish national goals was by cooperative federal-state programs.

⁴⁴ Perhaps by hindsight the conservation forces regretted their tactical error in attacking the federal and state health agencies.

(The) Public Health Service has urged their support and they fear being placed on the blacklist if they fail to give their support (41, p. 750).

We see no reason for an appropriation of \$1,000,000 annually merely to tell us what we already know, and to be used as a subsidy for this proposed division in the Public Health Service, and a hand-out to the State agencies to act almost as a bribe to see that they don't do anything about it.

The Public Health Service. . . is unsympathetic to a recognition of biological values; it has not practiced or shown in the past any recognition of what we might say are the broader phases of economic values. It has concerned itself primarily with experiments which have resulted in an amazing ability to manufacture a bacteriologically safe fluid out of sewage and the waste from industries and municipalities, which never should have been put into the water in the first place (109, p. 31).

In an effort to convince the Congress of the superiority of the Army Corps of Engineers for administering the water pollution control program, the Pennsylvania Division of the Izaak Walton League presented a list of reasons prepared by a reserve member of the Corps. The following is from that list:

The attitude of the polluters and the general public is different toward the engineers than it is toward the Public Health Service. The engineers have always done their job. The question of stream pollution is not a medical one, but an engineering one. . . . The polluter fears the Engineer Corps more than he does the Public Health Service. They seem to think the Engineer Corps means business. . . . The Engineer Corps is probably better equipped by training and experience to recommend remedial measures than the Public Health Service. The Public Health Service might recognize the existence of something evil, without being able to take steps or recommend its removal (109, p. 44).

The health agencies were not the only group to receive the censure of the conservationists. The Cincinnati Stream Pollution Committee, being a part of the Chamber of Commerce, was accused of delaying pollution control by supporting a subterfuge bill, a red herring, and of being a pawn of industry.

. . .our pure-streams program . . . are now being subjected to a vigorous and malicious flank attack by the high-pressure industrial lobbies which have sponsored a number of bills designed to delay action by providing nothing but further study and investigation . . . (108, p. 136).

However, the composition of the Stream Pollution Committee was representative of a very broad segment of society, and certainly its actions did not deserve being called malicious, any more than the Public Health Service deserved being called a blackballer. It is likely that these unseemly attacks were due to the great frustration of the conservationists in not being able to accomplish their goals.

The Public Health Service did not lack supporters. For example, Baity, Sanitary Engineer from the University of North Carolina, expressed a common opinion: "The critics (of the Public Health Service) appear to be so unacquainted with the technical basis of pollution abatement as to fail even to recognize that the scientific problems are difficult, complex, and slow of solution" (6, p. 1303). Even the Secretary of War supported the Public Health Service as the appropriate agency for dealing with water pollution abatement (94). Officials of the Public Health Service had little to say.

One of the noteworthy aspects of this whole controversy was that the conservationists would want the Army Corps of Engineers as the administrative agency. Certainly in the entire history of that organization, conservation matters of any kind never received much attention. In regards to water pollution in particular, the Corps had certainly failed to maximize its positive authority under the Refuse Act and the Oil Pollution Act. In studies that the Corps of Engineers was authorized to undertake (pages 13 and 44), it was not the supporter of water pollution control that one would expect, considering the backing it was receiving.

One possible explanation was the public image of the Corps. Its projects were large and visible with lots of concrete--the perfect example of a progressive force in a growth-oriented society that believed in the technological quick-fix. In contrast, the Public Health Service was working far removed from the public eye on such private concerns as high blood pressure and venereal disease.

Costs of Pollution Abatement

In addition to all the other disagreements and misunderstandings, the two sides held widely differing views as to the ultimate costs of abating water pollution. The conservationists supported the testimony of E.E. Butterfield, a chemist from New York, made during the Senate hearings in 1936. He claimed that the estimates of the

National Resources Committee were wild and unreasonable. According to his calculations, the wastes from the 35,000,000 sewered population without treatment in the United States could be provided sewage treatment at a cost of \$425,000,000 (94).⁴⁵ The degree of treatment proposed would provide 90 percent removal of suspended matter. Butterfield also was convinced that large profits could be made from both municipal and industrial waste treatment.

The National Resources Committee, on the other hand, predicted the costs of waste treatment for acute situations⁴⁶ alone would be approximately \$1,000,000,000 for municipal wastes, \$152,000,000 for mine sealing and controlling oil field brines, and \$900,000,000 for other industrial wastes (269). This total capital investment of \$2,052,000,000 would be augmented by \$250,000,000 annual operation and maintenance costs. The National Resources Committee was also doubtful that waste treatment would provide handsome revenues from by-products.

During the period from 1932 to 1939, the government supported a large public jobs program. Part of the funds were used to construct

⁴⁵ This included \$325,000,000 for plant construction and \$1,000,000 for interceptors. The low cost of interceptors would be made possible by locating the plants in the optimum location in relation to existing outfalls rather than in an isolated area. This was based on per capita costs of \$4 for primary and \$15 for secondary treatment.

⁴⁶ Complete treatment was estimated to be at least \$5 billion.

treatment works and other water-quality-related activities. The two sides viewed the results of this program differently just as they did almost everything else. The conservationists were critical of those communities that dared to build schools, hospitals, water treatment plants, roads, bridges, and parks, and other luxury items, rather than sewage treatment plants. The health agencies thought the program had accomplished a great deal. The rate of treatment plant construction in those seven years was greater than the rate in the 25 years preceding 1932.

The actual results were as follows: 1) 2,000,000 sanitary privies were built; 2) 4,083 coal mine units were sealed; 3) 1,527 sewer systems were constructed (at a cost of \$446,000,000); and 4) 873 sewage treatment facilities were constructed (at a cost of \$325,000,000) (35).

Summary

The attempts to enact federal water pollution control legislation in the period from 1935 to 1941 developed into a series of unfortunate episodes in which inflexible factions blocked what would have been moderate, useful legislation. There were many reasons; different training and backgrounds and markedly different views about the federal-state relationship. In addition, there was a willingness on the part of the conservationists to forego any legislation rather than to

compromise on the issue of federal enforcement. Another reason was the lack of unanimity in the Roosevelt Administration as to the type of water pollution legislation it would support.

It is impossible to predict what the effects on water quality would have been if a federal water pollution control bill had passed in this period. It is likely, however, that if such a law had existed, the law passed after the war would have been a permanent one with enforcement powers. Instead, the 1948 law was temporary with no enforcement powers. A trial and error period was needed to test that law (a permanent law was passed in 1956). The failure to compromise in the 1930's cost a minimum of eight years during which a federal water pollution control law could have been in effect.

CHAPTER II

RESOLVING THE CONTROVERSY--A
TEMPORARY LAW: 1945-1952

Congressmen continued to introduce water pollution control bills during the war years, but no action was taken on them until 1945. In November, the House Committee on Rivers and Harbors held hearings on three bills introduced by Representatives Mundt, Spence, and Smith, Republican of Maine. These bills had similar objectives: 1) to establish a federal agency to coordinate abatement programs, and 2) to provide financial aid for the construction of treatment works. The matter of federal enforcement was still a problem.

The greatest difference between these bills and those introduced in the 1930's were found in the Mundt bill. These changes involved an attempt by Mundt to avoid another stalemate by removing or altering some of the contested provisions. First of all, the administrative functions were no longer placed in the Army Corps of Engineers, but rather in a National Board comprised of the Secretaries of Interior, Agriculture, War, and Navy, the Surgeon General, and the chairmen and ranking minority members of the Senate and the House Committees having jurisdiction. This Board would then appoint a working commission comprised of two Public Health Service Engineers, two Army Engineers, and one representative of the Fish

and Wildlife Service, the Bureau of Mines, the Bureau of Reclamation, the Soil Conservation Service, and the Forest Service. Second, and perhaps more important, the enforcement provision was modified to delay federal action until six months after written notice was given to state and interstate agencies (114).

This attempt to compromise, however, did not mean that Mundt was less eager for effective federal water pollution control laws to be enacted. He still argued for prohibition of new sources of pollution and he told the House on April 23, 1945, "In fact, water pollution is practically the last important uncontrolled, unregulated, and unchecked pagan practice continuing in the United States insofar as our natural resources are concerned" (113, p. 3687).

These concessions by Mundt and the conservation forces in general, together with the results of a conference held in November 1946, at which various organizations⁴⁷ agreed on the basic requirements of a federal pollution control law (117), seemed to have been the factors responsible for the breakthrough that allowed a compromise bill to be passed in 1948. In addition, sponsorship by Senator Robert Taft, Republican of Ohio, made the matter bipartisan, which played a

⁴⁷ This conference was held among representatives of the Conference of State Sanitary Engineers, Interstate Commission on the Delaware River, Ohio Committee on Stream Pollution, Water Works Engineering, New England Water Works Association, Interstate Sanitation Commission, American Public Health Association, Izaak Walton League, Fish and Wildlife Service, and Public Health Service.

vital part in the eventual success of a water pollution control bill after more than 50 years of trying.⁴⁸

Legislative History of the Water
Pollution Control Act of 1948

Senators Barkley, Democrat of Kentucky, and Taft, Republican of Ohio, introduced a bill, S. 418, on January 29, 1947. The main intent of this proposed legislation was "to provide for water pollution control activities in the U.S. Public Health Service" (115, p. 645). Extensive hearings were held in April and May, the general character of which suggested that public opinion would support a federal water pollution control law if not too disregarding of state powers (116). The bill was reported favorably by the Public Works Committee on July 7, and passed unanimously by the Senate on July 16, without significant debate (119).

The Administration's position expressed by the Bureau of the Budget on March 31, 1947, was that in general the provisions of the bill were approved, except that grants and loans "should not be considered in accord with the program of the President" (116, p. 13). In a news conference on April 24, 1947, in answer to a question on S. 418, President Truman said that when he was in the Senate, he had

⁴⁸ Up to that time, with the exception of Mundt, all the outspoken proponents of water pollution control legislation in the Congress were Democrats.

voted for such a bill (274). The only other statement by the President was in his Annual Economic Report, on January 14, 1948, in which he said that "expanding programs are needed to . . . control pollution . . ." (275, p. 78).⁴⁹

Meanwhile the House was holding hearings on three water pollution control bills in June (117). Further action was delayed until April 28, 1948, when the House Public Works Committee decided to report S. 418, with major amendments. The House considered and passed the bill by a division of 138 to 14 on June 14 (120). A conference committee was appointed and reached agreement on June 17, 1948. Both houses agreed to the conference report without debate and President Truman approved the bill on June 30, 1948, without comment (304). The provisions of the Water Pollution Control Act are outlined in Table 2.

Proponents

Almost every organization that presented views on the proposed water pollution control legislation believed that the federal government needed to take the lead to make any national water pollution control program effective. This was especially true in regard to research

⁴⁹In addition, President Truman issued an Executive Order on November 9, 1948 (273), that federal agencies should cooperate with state and local officials in the prevention and control of pollution.

Table 2. Major provisions of the Water Pollution Control Act, P.L. 80-845, June 30, 1948.

-
- A. Policies declared by the Congress:
1. To recognize, preserve, and protect the primary rights and responsibilities of the states in controlling water pollution.
 2. To provide technical research, technical services, and financial aid to assist the states in controlling water pollution.
 3. To subject to abatement pollution in waters which endangers the health or welfare of persons, in a state other than the one in which the pollution originates, and to declare such pollution to be a public nuisance.
- B. Programs:
1. To develop comprehensive programs with other governmental units to eliminate or reduce water pollution.
 2. To engage in cooperative activities with other governmental units for the abatement of water pollution.
 3. To enforce water pollution control laws.
 4. To make investigations and surveys, and to conduct research on specific water pollution problems.
 5. To publish reports on various aspects of water pollution control.
 6. To make loans to states, municipalities, and interstate agencies for the construction of treatment facilities.
- C. Institutions:
1. Establishment of the Water Pollution Control Advisory Board in the Public Health Service.
- D. Authorizations^a for appropriations:
1. \$22,500,000 for loans for planning and construction of treatment facilities.
 2. \$1,000,000 for grants to states for investigations, research, surveys, and studies related to water pollution caused by industrial wastes.
 3. \$800,000 for construction of a research and training center in Cincinnati, Ohio, for the Public Health Service.
 4. \$1,000,000 for grants to states, municipalities, and interstate agencies for expenses preliminary to construction of treatment facilities.
 5. \$2,000,000 for expenses of the Federal Security Agency in carrying out its functions under this Act.
 6. \$500,000 for expenses of the Federal Works Agency in carrying out its functions under this Act.
-

^aThese authorizations were for each of five fiscal years beginning July 1, 1948 and ending June 30, 1953, a total authorization equaling \$139,000,000.

and dissemination of information, so that each state need not duplicate such efforts. Others believed it was essential that the federal government provide financial aid, and a smaller number believed that federal enforcement powers must also be included in the bill.

The authors of the bills being considered in Congress, Senators Barkley and Taft, and Representatives Spence, Mundt,⁵⁰ and Elston, expressed their pleasure that the controversy between the conservationists, public health officials, and sanitary engineers had been for the most part resolved. Kenneth Reid of the Izaak Walton League, who played a major part in the dissension in the 1930's, found only three changes he would like made in S. 418: 1) include a ban on new outlets for pollution, 2) change two-year waiting period for transient industries as it would be ineffective, and 3) for deserving cases, make provision to extend the two-year waiting period (116).

In addition to many community groups and private firms, nearly unqualified support of federal water pollution control legislation came from health or water pollution agencies of Delaware, Michigan, Missouri, Nevada, North Carolina, North Dakota, Oregon, Rhode Island, South Dakota, and Texas; the Interstate Commission of the Potomac, Conference of State Sanitary Engineers, Great Lakes and Upper Mississippi Boards of Public Health Engineers, National

⁵⁰ However, Mundt opposed S. 418 as amended by the House Committee.

Rivers and Harbors Congress, Federation of Sewage Works Associations, National Parks Association, and Izaak Walton League (116).

Opponents

Although many of the people who testified at the hearings on S. 418 and the associated House bills requested amendments to the legislation, outright opposition came only from the American Mining Congress and its associates, the National Coal Association, the Anthracite Institute, and three local mining groups; and the Independent Petroleum Association of America, the Mid-Continent Oil and Gas Association, the National Refinery Association, and the Western Petroleum Refiners Association. Other than these mining and oil interests, opposition was limited to the states of Connecticut and New Jersey, and the Passaic Valley (New Jersey) Sewerage Commission (116).

It seems likely that the main concern of the industrial opponents would be that any federal water pollution control legislation would interfere with the way they operated their businesses. However, they emphasized other issues which fell within four major categories: federal control, costs, local problems, and no need for such laws.

Federal Control. These industrial groups were more concerned than the states that S. 418 was an invasion of state sovereignty. Industry knew it was much easier to be the dominant factor in a state

or community than in the nation as a whole. As far as the provisions of S. 418 itself, they said too much power was placed in the Surgeon General, a political appointee; it was too general--there were no tangible limits; it was too drastic--rigid standards could be required; and the Advisory Board, having only one industrial representative, was a sham. Because of the ability of the federal government to get compliance through the courts, a representative of the oil industry predicted it would be "a death seal. Industry could make no forward-looking plans, its credit would be frozen, it could not expand for fear of this suit and in general its future outlook would be clouded" (116, p. 399).

Costs. The main worry of industry in this regard was increased taxation if a large-scale financial aid program were established. However, the industry people talked about the drain on the Treasury, which had a large deficit after the war; the expansion of the bureaucracy that would be needed to administer such a program; the fact that S. 418 had no time limit during which expenditures could be made; and that local initiative would be destroyed so that no future sewage treatment works would be built without federal funds.

Local Problem. Industry said that if a federal bureau controlled the water pollution control program, it would not appreciate the importance of local differences--it would blanket the whole country with the same rules and regulations. The keynote of the entire

industrial stand was the so-called "balancing of conveniences." This meant that only the local community could properly decide between competing uses of streams, for example. If it came to maintaining employment or conserving a good trout stream, industry was sure which would win out, providing the decision was made by the people whose employment would be effected.

No Need. Industry contended there was no need for federal water pollution laws because the states were doing the job. The states were said to have effective laws and agencies, and great progress was being made. In the case of any injury caused by pollution, there already was sufficient remedy available in local courts, or if one state was being damaged by pollution from another state, there was relief in the Supreme Court.⁵¹ The National Coal Association declared that, "It isn't American to say that our States and cities are incapable of correcting pollution, if it is the serious problem that some say it is" (116, p. 268).

⁵¹ They cite the case of New York vs New Jersey and the Passaic Valley Sewerage Commission. However, the Court stated: "We cannot withhold the suggestion, inspired by the consideration of this case, that the grave problem of sewage disposal presented by the large and growing population living on the shores of New York Bay is one more likely to be wisely solved by cooperative study and by conference and mutual concession on the part of representatives of the states so vitally interested in it than by proceedings in any court however constituted" (64, p. 296).

Connecticut and New Jersey were opposed to S. 418 because they alleged to be doing well in their stream pollution control programs.⁵² They were especially against federal enforcement powers. The Passaic Valley Sewerage Commission was against federal financial aid because it would penalize those who had already built treatment plants by increasing their taxes to pay for other communities to do the same.

Congressional Intent

It could be affirmed that the sole congressional motive for this Act was for the federal government to help the states make more progress against water pollution. The most straight-forward statement of intent in passing the law is found in Senate Report 462, July 8, 1949 (118). The reason for federal involvement, an issue of so much debate in prior years, was the increasing seriousness of water pollution and its "damaging effects on the public health and natural resources . . . as a menace to national welfare" (118, p. 2).

The Senate Public Works Committee concluded that the most effective and useful means of federal assistance were: 1) to provide

⁵² It is odd that two of the most urbanized and industrialized states should be against federal assistance. It also would be difficult to sustain their arguments that water pollution was being controlled. This was especially true in the estuarine waters off Connecticut in Long Island Sound and off New Jersey. In fact, Raritan Bay and Arthur Kill were considered to be among the most polluted waters in the United States.

loans to stimulate construction of treatment plants, and 2) to forewarn and threaten states and local governmental units that failure to abate water pollution on their part "will undoubtedly call for much stronger and more direct Federal enforcement measures at some subsequent session of the Congress" (118, p. 3).

Federal Works Agency

The original version of S. 418 gave authority solely to the Public Health Service and its parent organization the Federal Security Agency. During the hearings by the Senate (116), the Administrator of the Federal Works Agency complained that his agency was specifically created to administer the type of program proposed in this legislation and was handling such a program at that time, and that the Public Health Service had neither the engineering, fiscal, legal, or administrative expertise to do the job.⁵³

The Senate Public Works Committee was thus encouraged to amend the bill to give the Federal Works Agency the role of approving grants for advance planning of sewage treatment plants, and for making loans for such construction. A grant for any project was limited to one-third of the planning costs or \$20,000, whichever was less.

⁵³ After so many years of controversy involving the conservationists and the professional groups, it is ironic that as that controversy was being resolved, another one developed between the Federal Works Agency and the Public Health Service.

Annual appropriations of \$1,000,000 were authorized. The loan provision allowed one-third of the construction costs or \$250,000, whichever was less, and annual appropriations were set at \$22,500,000 (304).

Appropriations

Administrative expenses of \$75,000 for fiscal year 1949 and proposed expenditures of \$150,000 for fiscal year 1950 and the intended uses are shown in Table 3. In fiscal year 1950, the Congress proposed appropriations of \$50,000 instead of the \$150,000 proposed by the Administration. This was justified by the House Committee on Appropriations on the basis that this was a new program that was not yet in full swing. The Senate Appropriations Committee eliminated the appropriation believing postponement would not cause serious consequences (133). The funds were reinstated on the Senate floor by amendment of Senator Taft. These cuts were made despite testimony by the head of the Bureau of Community Facilities of the Public Works Agency who told the Senate Appropriations Committee in hearings (137), that the preliminary steps had progressed to a point where applications for grants and loans could be acted upon.

Appropriations are shown in Tables 4 and 5 for both the administrative expenses of the Federal Works Agency and the grants for

Table 3. Administrative expenses of the Federal Works Agency:
Intended uses, fiscal years 1949 and 1950.

Program	Fiscal 1949 (\$)	Fiscal 1950 (\$)
1. Determining and perfecting methods of program operation for loans and grants, in cooperation with United States Public Health Service, including survey of pertinent state and local laws.	75,000	65,000
2. Administrative liaison with Public Health Service encompassing all aspects of the program.	0	15,000
3. Interpretative discussions and consultations in the field with state and local water pollution control bodies.	0	20,000
4. Review and approval of applications for grants for plan preparation.	0	50,000
Total	75,000	150,000

Source: (137)

Table 4. Administrative expenses of the Federal Works Agency: 1949-1956 (in dollars).

Fiscal year	Authorization	Budget estimate	House recommendation	Senate recommendation	Conference agreement	Actual appropriation
1949	500,000	75,000	No action ^a	75,000	75,000	75,000
1950	500,000	150,000	100,000	50,000 ^b	50,000	52,285
1951 ^c	500,000	100,000	60,000	52,285	52,285	0 ^d
1952 ^e	500,000	0	0	0	0	0
1953	500,000	0	0	0	0	0
1954	500,000	0	0	0	0	0
1955	500,000	0	0	0	0	0
1956	500,000	0	0	0	0	0

^aDeficiency appropriation proposed after the House had considered the bill.

^bThis appropriation was eliminated by the Senate Appropriations Committee, but it was reinserted in Senate floor action by an amendment of Senator Taft, of Ohio (134).

^cProgram was transferred to the General Services Administration by the Federal Property and Administration Services Act of 1949, P.L. 81-152, effective July 1, 1949 (38).

^dCongressional appropriations were placed in reserve by the Bureau of the Budget and later rescinded by law (145).

^eThis function was transferred on May 24, 1950 to the Federal Security Agency by Reorganization Plan 16 of 1950; and, theoretically at least, authorization of \$500,000 for fiscal years 1952 to 1956 was absorbed by the Federal Security Agency. However, none of these funds were appropriated after fiscal 1950 (290).

Source: (9, 10, 11, 121, 122, 123, 127, 129, 133, 134, 138, 139, 140, 145, 304, 305)

Table 5. Grants for plan preparation: 1949-1956 (in dollars).

Fiscal year	Authorization	Budget estimate	House recommendation	Senate recommendation	Conference agreement	Actual appropriation
1949	1,000,000	0	0	0	0	0
1950	1,000,000	500,000	400,000	200,000 ^a	200,000	0 ^b
1951 ^c	1,000,000	1,000,000	900,000	750,000	750,000	0 ^d
1952 ^e	1,000,000	0	0	0	0	0
1953	1,000,000	0	0	0	0	0
1954	1,000,000	0	0	0	0	0
1955	1,000,000	0	0	0	0	0
1956	1,000,000	0	0	0	0	0

^aThis appropriation was eliminated by the Senate Appropriations Committee, but was reinstated by Senator Taft, of Ohio, in Senate floor action (134).

^bThese funds were held in reserve by the Bureau of the Budget in conformity with Administration policy to restrict construction activities (11).

^cProgram transferred to the General Services Administration by the Federal Property and Administrative Services Act of 1949, which also abolished the Federal Works Agency (38).

^dThese funds were impounded as part of a \$55,000,000 reduction in appropriations made by P.L. 82-253, of November 1, 1951 (145).

^eThis function was transferred to the Federal Security Agency by Reorganization Plan 16 of 1950, because this function was considered inappropriate to the activities of the General Services Administration. The effective date of transfer was May 24, 1950 (290).

Source: (9, 10, 127, 129, 133, 134, 138, 139, 140, 145, 154, 304, 305)

advance planning.⁵⁴ As Table 5 depicts, no appropriations were ever made for the grants program. This was caused by the decision of the Bureau of the Budget not to approve the loans for construction of waste treatment works. So there was no reason to approve pre-construction grants. In July 1949, the Federal Works Agency was disestablished and its water pollution programs were transferred to the General Services Administration (38). These programs were then moved to the Federal Security Agency in May 1950 (290), where they had been in the original version of S. 418.⁵⁵ President Truman explained the reasons for consolidating all the functions of the Water Pollution Control Act in the Federal Security Agency, as follows:

It is expected that the elimination of overlapping and the simplification of relationships which will result from the transfer will make it possible to administer grants and loans more expeditiously and at lower costs per project than can be done under the present division of responsibility (276, p. 216).⁵⁶

⁵⁴ Both tables include eight years of authorizations because the provisions of Water Pollution Control Act of 1948 were extended for three years in 1952.

⁵⁵ These were the first of a large number of administrative reorganizations that plagued the water pollution control program until 1970, when it became a part of the Environmental Protection Agency.

⁵⁶ This seems to indicate that the Truman Administration was planning to allow grant and loan funds to be appropriated; but it never did.

The Public Health Service Program

Cooperative Programs for Pollution Abatement

Throughout the period after the Water Pollution Control Act was passed in 1948 until 1955, the main activity of the Division of Water Pollution Control of the Public Health Service was to develop cooperative programs for pollution abatement in the major river basins of the United States. This program was supported by the administrative offices in Washington, D.C. and by the research and technical offices in Cincinnati, but the work was actually done from 10 field offices. To administer this program, the continental United States was divided into 14 drainage basins (Figure 1), and each of these basins was further divided into sub-basins.⁵⁷ The purpose of these divisions was to isolate a region in which natural and human conditions were similar enough so that a unified plan of pollution abatement could be developed.

The actual sequence of activities in the development of a cooperative program was as follows: 1) determine existing sources of pollution; 2) determine, jointly with the state and interstate agencies and other federal agencies, the uses of water; 3) determine the quality of water needed for those uses; and 4) develop a program

⁵⁷ Pollution abatement programs were developed for a total of 260 sub-basins.

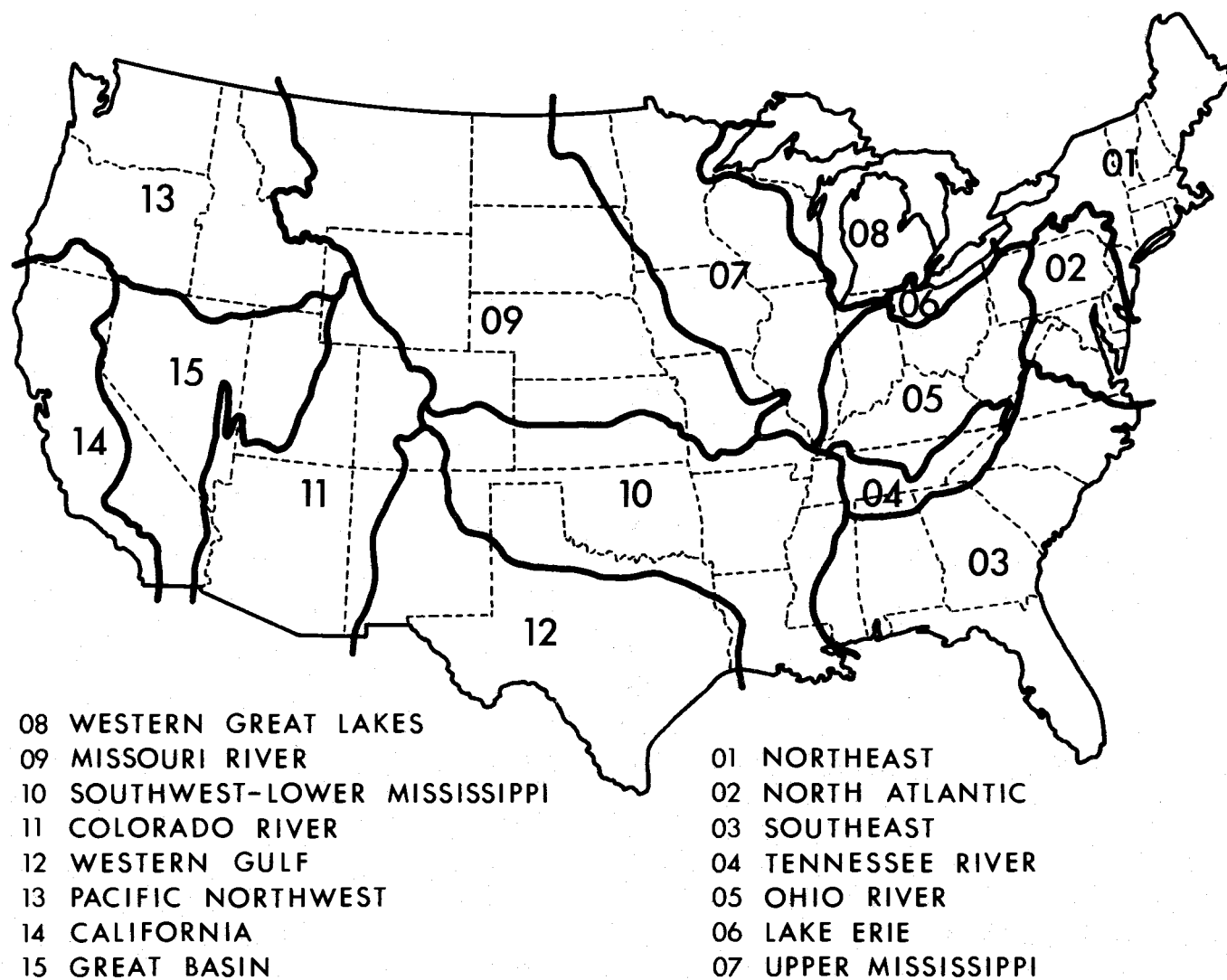


Figure 1. River Basins Used by the Public Health Service in Cooperative Water Pollution Abatement Program. Source: (246)

of waste treatment for each source of pollution so that the needed water quality can be attained (135).

As a result of this program, it was possible for the Public Health Service to publish a summary report in 1951, Water Pollution in the United States, in which the pollution problems of the nation were clearly stated. The needs for construction of municipal and industrial waste treatment plants are shown in Table 6.

As the river basin reports were completed, the results were published and the next phases could begin. These were primarily the responsibilities of the states and local governments. First, the water pollution control agencies launched a campaign to gain public support. The taxpayers would be required to support bond issues or other financial issues worth millions of dollars if the pollution abatement program was to have any success. With the data from the drainage basin reports, it was possible to explain to the public the risks they were taking by not treating their wastes. The second step was to construct treatment facilities. This did not progress as rapidly as was anticipated because the Congress failed to appropriate any funds for grants and loans to stimulate the communities.⁵⁸

⁵⁸ This was not the result of a lack of interest at the local level. The Public Health Service received 361 official requests from municipalities for loans before the end of 1950. In addition, 39 state water pollution control agencies reported that 2,903 municipalities had indicated their interest in such loans (142).

Table 6. Status of municipal and industrial treatment of wastes as of 1951.

Needs for plant construction	Municipal	Industrial
New	4, 209	2, 793
Replacements	722	98
Additions and enlargements	1, 645	591
Undetermined	1, 627	5, 532
Total population or equivalent discharging wastes	91, 762, 000	90, 000, 000 organic only
Cost - for construction to abate gross conditions only (\$)	4, 000, 000, 000	4, 000, 000, 000
Total abatement (\$)	12, 000, 000, 000	

Source: (148, 258)

Other Programs

Therefore, rather than spending its appropriations on approving grants and loans for construction projects, the Division of Water Pollution Control fulfilled other provisions of the Water Pollution Control Act. These included:

- 1) After analyzing all existing state pollution laws, drafted a model state water pollution control law which was endorsed by the Council of State Governments (257).
- 2) Loaned staff to assist the state in developing new laws.
- 3) Investigated 150 special industrial waste problems.
- 4) Worked with the Federal Interagency Basin Committee on pollution problems.
- 5) Developed educational materials for promotional campaigns.
- 6) Set up National Technical Task Committees on 36 major industrial categories to coordinate research activities.
- 7) Conducted research on special pollution problems at Cincinnati.
- 8) Granted funds to state water pollution control agencies for their program development in the industrial waste area.

Appropriations⁵⁹

Although much was accomplished in this period, it was a very

⁵⁹The water pollution control program from 1948-1955 more clearly than most federal activities demonstrated the difference between the

small percentage of the anticipated gains. The main reason for this was the lack of funds (Tables 7 and 8). Although the appropriations for the Public Health Service administrative activities were greater than for any other category, none was provided in fiscal year 1949 causing a slower start than was expected. Because the 1948 water pollution control act was passed too late for its appropriations to be in the regular budget, the appropriation subcommittee handled the budget requests on a deficiency and supplemental basis. This subcommittee was entirely unsympathetic to the cause of water pollution control (126).

From 1950-1953, the appropriations received were considered adequate for some programs, but none were included for enforcement activities.⁶⁰ In 1954 and 1955, the appropriations were cut back

authorizing committees and the appropriations committees. When the House Public Works Committee held hearings in 1952 on the bill to extend the program for three years, the members praised the officials of the Public Health Service and could hardly believe the progress that they had made. On the other hand, the Appropriations Committees, especially certain members in the House, were critical of the Public Health Service. Many of the members of the committees were ignorant of the basic statute under which the Public Health Service was trying to work. In fact, the chairman of the Senate Appropriations subcommittee thought the Corps of Engineers was the administrator of the water pollution control program and could not understand what the health group was doing (136).

⁶⁰ However, the Public Health Service had set aside action on 113 areas on interstate streams in its files that could require some attention when enforcement funds became available.

Table 7. Administrative and program expenses of the Public Health Service^a: 1949-1956 (in dollars).

Fiscal year	Authorization	Budget estimate	House recommendation	Senate recommendation	Conference agreement	Actual appropriation
1949	2,000,000	350,000	0	262,300	0	0
1950	2,000,000	1,380,000	1,000,000	1,200,000	1,200,000	1,200,000
1951	2,000,000	1,766,826	- ^b	- ^b	- ^b	1,491,283
1952	2,000,000	1,387,410	- ^b	- ^b	- ^b	1,350,000
1953	2,000,000	1,340,000	- ^b	- ^b	- ^b	1,300,000
1954	2,000,000	1,297,000 ^c	- ^b	- ^b	- ^b	903,500
1955	2,000,000	903,500	- ^b	- ^b	- ^b	888,397
1956	2,000,000	1,428,500	- ^b	- ^b	- ^b	1,172,095

^aThis appropriation includes salaries and expenses, including research, field investigation, and comprehensive program development.

^bIt is impossible to tell the amounts approved by the Congress as these activities were considered in categories. In this case, water pollution control was under Engineering, Sanitation, and Industrial Hygiene from 1951-1955, and under Sanitary Engineering Activities in 1956.

^cThis is a revised estimate; the original was \$1,360,000 (13).

Source: (9, 12, 14, 15, 16, 124, 125, 126, 128, 130, 131, 132, 141, 151, 153, 154, 304, 305)

Table 8. Grants to states and interstate agencies: 1949-1956 (in dollars).

Fiscal year	Authorization	Budget estimate	House recommendation	Senate recommendation	Conference agreement	Actual appropriation
1949	1,000,000	0	0	0	0	0
1950	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
1951	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
1952	1,000,000	1,000,000	900,000	900,000	900,000	900,000
1953	1,000,000	900,000	0 ^a	0	0	0
1954	1,000,000	900,000 ^b	0	0	0	0
1955	1,000,000	0	0	0	0	0
1956	1,000,000	1,000,000	0	0	0	0

^a \$800,000 was recommended by the Committee, but it was eliminated by floor action, on an amendment of Representative Pickett, Democrat of Texas (147).

^b This estimate was later withdrawn by the Bureau of the Budget (153).

Source: (9, 10, 11, 12, 13, 14, 125, 127, 132, 138, 143, 144, 152, 155, 304, 305)

abruptly and a large number of the specialists were released from the Public Health Service (see page 130). The federal water pollution control seemed to be finished; certainly this was its lowest ebb.

The grant program followed a similar pattern. There were no appropriations in 1949, then full or nearly full appropriations in 1950-1952. But from 1953 on, no funds were made available. One reason for the failure to appropriate grant funds was explained by the House Appropriations Committee: "The Committee is impressed with the need of enforceable legislation in this field, and will be ready to review the program and the need for funds when such legislation is provided" (155, p. 11).

Water Pollution Control Act Extension of 1952

The appropriations authorized by the 1948 Act were limited to five years. In early 1952, Representative Buckley, Democrat of New York, Chairman of the Public Works Committee, introduced a bill, whose only effect was to extend the provisions⁶¹ of the Water Pollution Control Act to June 30, 1956, instead of June 30, 1953. When hearings were held on the bill by the House in April and May, there was no opposition. Testimony was taken primarily from officials of the

⁶¹ All provisions were included except the authorization for the research laboratory in Cincinnati which had received its total authorization of \$4,000,000, and was scheduled for completion within the time period of the 1948 Act.

Public Health Service so that the progress, or lack of it, that had been made since 1948 could be placed in the record.

Other testimony, mostly in written form, revealed that the states of Idaho, Minnesota, Montana, Oregon, Tennessee, and Washington; the Conference of State Sanitary Engineers, the Izaak Walton League, the Outdoor Writers' Association, the Utah Wildlife Federation, the Manufacturing Chemists' Association, and General Motors thought the federal water pollution control program had been of great assistance to the states and the Public Health Service had been an excellent administrator (148).

Both the House and Senate Public Works Committee were satisfied with the Public Health Service report and recommended that the extension bill be passed. The Bureau of the Budget did not object to the extension, but it recommended that as soon as practicable the basic statute be amended "to provide a more effective program at minimum cost" (149, p. 4). Both houses of Congress passed the bill perfunctorily and the President approved it on July 17, 1952 (305).

Summary

The controversial issues regarding federal water pollution control legislation which remained unsettled in the 1930's were resolved early in this period when the conservationists compromised on the administrative agency and on federal enforcement. This led to

the passage of the Water Pollution Control Act in 1948. The only opposition came from mining and oil interests and from two states. This was not enough opposing pressure to overcome the evidence that water pollution was increasing at a high rate and that the federal government needed to become active in its abatement.

The purpose of the Water Pollution Control Act was to provide financial and technical aid to the states and municipalities. However, because Congress authorized far more funds than it appropriated to carry out its stated goals, this Act was grossly underfunded. Of the \$220,000,000 authorized for the fiscal years 1949 through 1956, only \$11,332,560, or 5.2 percent, was appropriated. Two of the financial aid programs, grants for plan preparation and loans for construction on waste treatment plants, were never implemented. In addition, no funds were provided for enforcement actions. The only substantial accomplishment was the development of cooperative pollution abatement programs for the continental United States. Nevertheless, the Water Pollution Control Act of 1948 provided a model from which more useful permanent laws could be derived; it was the indispensable first step.

CHAPTER III

STRENGTHENING THE PROGRAM: 1953-1962

In 1955, the Congress began again to consider water pollution control bills. This was necessary because the provisions of the Water Pollution Control Act of 1948, as amended in 1952, were due to expire on June 30, 1956. In addition, major amendments to the enforcement provisions were required to satisfy the House Committee on Appropriations (page 82); otherwise, it would be almost impossible to get any appropriations for parts of the program. Several bills were introduced. These were nearly equally divided between those that would simply extend the laws and those that would make major modifications in it.

Legislative History of the Federal Water Pollution Control Act of 1956

President Eisenhower recommended that the Water Pollution Control Act be strengthened because of the increasing severity of the nation's water supply problems (277). He also stressed the importance of intensified research, and of providing authority for the Public Health Service to assist the states and to enforce control of interstate pollution. The Department of Health, Education, and Welfare recommended a series of changes to improve the Water Pollution Control

Act based on the views of the President, as follows: 1) broaden research activity; 2) strengthen state programs; 3) establish standards for interstate waters; 4) improve enforcement provisions; and 5) delete construction loans and grants (156).

On February 1, 1955, five senators (Martin and Duff, Republicans of Pennsylvania, Knowland and Kuchel, Republicans of California, and Chavez, Democrat of New Mexico) introduced S. 890, a bill that would satisfy the recommendations of the President. The specific changes proposed were:

- 1) Provide research grants to non-federal institutions.
- 2) Authorize expenditures of \$2,000,000 for both 1956 and 1957 for program grants to assist the state agencies in the broad range of their activities.
- 3) Establish water quality standards for interstate waters.
- 4) Change the enforcement provision: delete the second notice to polluters before issuing a cease-and desist order, and remove the need for state consent before the federal government could bring a suit against a pollutor.
- 5) Delete the authority of the federal government to provide loans and grants for construction of water treatment facilities (156).

The Senate Public Works Committee held hearings on S. 890 in April 1955. A great deal of opposition developed regarding the proposed changes in the enforcement section and the establishment of

water quality standards. When the bill was reported, the Committee had removed the provision for standards-setting and had made some adjustments in the enforcement provisions. The most important change was to include the requirement of state consent in enforcement action. However, it could be either the polluting state or the injured state (157). The Senate passed the bill without significant discussion on June 17, 1955.

The House Public Works Committee held hearings on S. 890 on July 20, 1955. As a result of the amendments made by the Senate Committee, the testimony was overwhelmingly in support of the bill. The House Public Works Committee reported S. 890 on July 26. However, the Committee received much criticism for its one-day hearings. Subsequently, S. 890 was recommitted at the request of Representative John Blatnik, Democrat of Minnesota, chairman of the Subcommittee on Rivers and Harbors, on January 23, 1956. In his Annual Budget Message of January 16, 1956, President Eisenhower again asked the Congress to act to abate water pollution (278).

Blatnik introduced H. R. 9540 on February 27, and extensive hearings were held on it in March. H. R. 9540 was similar to S. 890 with two significant changes. The first was in the enforcement provisions to make them more satisfactory to the state water pollution control administrators, and the second was an entirely new provision that provided grants for construction of sewage treatment plants (158).

This addition was favorably received by the conservation groups and some professional groups, but it was opposed by many states and industrial groups.

The Public Works Committee reported the bill on May 21, 1956. Several of the members were opposed to construction grants. When the House considered H. R. 9540 on June 13, construction grants were the major issue. An amendment to delete the grants was rejected, as was a motion to recommit the bill, and the bill was passed on a roll call vote of 338-31 (160). Then, S. 890, as amended by the House, was passed in lieu of H. R. 9540.

The Conference Committee reported S. 890 with mostly perfecting amendments and both chambers passed the bill without comment. President Eisenhower approved the bill on July 9, 1956. His comments were generally favorable, but he urged "That no community with sufficient resources to construct a needed sewage treatment project without Federal aid, postpone that construction simply because of the prospect of a possible Federal grant" (279, p. 592). The provisions of the Federal Water Pollution Control Act of 1956 are shown in Table 9.

Congressional Intent

In passing these amendments to the Water Pollution Control Act, Congress restated its policy that the primary responsibility for

Table 9. Provisions of the Federal Water Pollution Control Act, July 9, 1956, that modified the basic act.

- A. Policies declared by the Congress:
 - 1. To control pollution from federal installations.
 - 2. To make the federal pollution control program permanent.

 - B. Programs:
 - 1. To provide financial aid to research institutions and individuals for research, training and demonstration projects, and fellowships.
 - 2. To make program grants to states and interstate agencies to assist them in meeting the costs of establishing and maintaining adequate measures for prevention and control of water pollution.
 - 3. To make grants to municipalities for the construction of waste treatment plants.
 - 4. To enforce pollution control laws by means of the following: in cases of interstate pollution not being abated, the federal government may call an informal conference at which all concerned agencies join to discuss the problem and try to agree on an appropriate solution; a formal hearing before a board is called to gather evidence, if in six months time no progress is made in abating the pollution; after the hearing the state agency is given another six months and if suitable progress is not being made, the federal government can take the polluter to court if the state in which the pollution is occurring or in which the pollution is endangering health and welfare consents.

 - C. Appropriations:
 - 1. \$100,000 per fiscal year for research fellowships.
 - 2. \$3,000,000 for fiscal years 1956-1960 for program grants.
 - 3. \$50,000,000 for construction grants up to a total of \$500,000,000.
-

Source: (39)

controlling water pollution rested with the states. As the major Senate amendment related to enforcement, that was the main subject of the Senate Public Works Committee statements. For example, the Committee said:

The bill reaffirms the congressional policy that federal enforcement procedures are to be undertaken only after a reasonable opportunity has been given to states and interstate agencies to secure abatement of interstate pollution. It further provides that initiation of Federal Court action shall be contingent on the consent of the state in which the pollution originates or the request of the state where the pollution produces adverse effects (157, p. 2).

The Committee believes that enforcement provisions of the amended act represent a proper balance between interests of the state in which the pollution originates and the state affected by it and that they provide a reasonable mechanism of abating pollution having an interstate affect (157, p. 4).

The House Committee on Public Works made little mention of the new provisions for enforcement and construction grants, but rather dwelt on the need for effective administration as follows:

The Committee is deeply concerned with the harmful effects of polluted waters upon the public health and welfare and is mindful of the serious responsibility attendant upon administration of this program. The Committee intends to watch carefully the progress and development of the national water-pollution-control program and particularly the supporting role of the Federal Government. The Committee believes that the Department of Health, Education, and Welfare should place a high priority on the objectives of the program authorized by the bill and will diligently carry out its role in this Federal-State cooperative activity by providing a constructive program within an appropriate administrative framework (159, p. 4).

Representative Blatnik justified construction grants because "it was evident that the crux of the national pollution problems is the lag in construction of water treatment works" (160, p. 10240). The opponents to construction grants countered with, "The appropriate role of the Federal Government is adequately provided for in H.R. 9540 without (construction grants)" (159, p. 34).

Public Health Service Activities

Since the enactment of the Water Pollution Control Act in 1948, the Public Health Service had accomplished several of its required tasks under that Act. Among them were: 1) completed the research laboratory at Cincinnati, Ohio; 2) assisted state agencies in strengthening their pollution control programs; 3) developed a model state water pollution control law, which had been used by about half the states in improving their legislation; 4) completed plans for pollution abatement for 15 major river basins; 5) cooperated with industries in working on difficult waste problems, including textiles, citrus, pulp and paper, and metal-plating; and 6) identified more than 100 areas where interstate pollution was of consequence and might need to be subject to federal enforcement (156).

Enforcement

Under the 1956 amendments, one of the main activities of the

Public Health Service was enforcement. This was not an easy job because of the amount of controversy it had caused. It was unlikely that the bill would have passed if the provision for state consent had been deleted as the Administration had requested.

In the Senate hearings, the states were divided between those who valued the prospect of federal money more than the prospect of relinquishing some rights. These included Arizona, Kansas, Missouri, Montana, Nebraska, North Carolina, Oklahoma, Texas, and Wyoming. For example, the Wyoming Department of Health favored it because it would strengthen state programs "by precluding undue pressure on the state agency" (156, p. 114). Opposition to enforcement without state consent was recorded by the states of Alabama, California, Delaware, Kentucky, Michigan, New Hampshire, Pennsylvania, and Virginia, as well as the Interstate Committee on the Delaware, the Ohio River Sanitation Commission, the Interstate Sanitation Commission (NY-NJ-Conn), the New York Joint Legislative Committee on Interstate Cooperation, the Conference of State Sanitary Engineers, the Association of State and Territorial Health Officers, the American Pulp and Paper Association, the National Association of Manufacturers, and the Manufacturers' Chemists Association (156). Some of these groups pointed out that the enforcement provisions of the 1948 Act were never invoked, so they thought it was unfair to change those provisions until they were found unsuitable.

The Assistant Secretary of Health, Education, and Welfare, in reply to some of the critics of federal enforcement, said,

Although substantial progress has been made by the states in the control of pollution, practical authority for federal action against interstate pollution would seem to be highly desirable as a backstop, even though the authority would rarely, if ever be invoked. The very existence of such authority would serve as an incentive to effective pollution control (156, p. 39).

Perhaps the most convincing argument against federal enforcement was made by the New York Joint Legislation Committee on Interstate Cooperation which asked, "What is the advantage of Federal enforcement over State or interstate enforcement?" (156, p. 190). In answering this, the Committee pointed to the failure of federal enforcement of oil pollution, as required by the Oil Pollution Act of 1924 (65). In addition, they complained of the carelessness of federal institutions regarding pollution. They concluded that the chance of federal enforcement being any more effective than state enforcement was marginal.

During the House hearings, most of the same opponents to federal enforcement testified again. One of the many concerns of industry was the deletion of the phrase instructing the courts to consider the practicality and the economic and physical feasibility of pollution abatement in H. R. 9540, as well as the provisions allowing federal enforcement at the request of the downstream state.

The first enforcement actions were taken in 1957. Table 10 lists the date, the river basin, the reason for enforcement, and the results of these early conferences. The Public Health Service had no firm policy for these actions, but gradually one was developed. Usually a representative of the district office of the Public Health Service spoke first and described the reasons for bringing the enforcement action and the facts which were purported to support the claim of interstate pollution endangering the health and welfare of another state. Then representatives of the state water pollution control agencies spoke. They often had municipal and industrial spokesmen appear as well. It is easy to see why these conferences sometimes developed into antagonistic affairs. Even though compliance with the programs developed by the enforcement actions was slow or non-existent in many areas, only one court action⁶² was ever initiated under the provisions of the Water Pollution Control Act. This court action was taken against the city of St. Joseph, Missouri, primarily because the city flouted the authority of the federal government.

The St. Joseph, Missouri Enforcement Action. The Missouri River below St. Joseph, Missouri was one of the most polluted stretches of any stream west of the Appalachians. The informal

⁶² After the Environmental Protection Agency was created, court actions were instituted under several different procedures including the Refuse Act.

Table 10. Federal enforcement actions: 1957-1960.

Date	River basin (states involved)	Reason for enforcement	Results of conferences	Long-term results
January 1957	Corney River (Ark.-La.)	Failure of oil-well operators to take corrective action to reduce the brines entering the stream.	All operators have ceased contributing brine pollution.	Full compliance achieved and surveillance maintained.
May 1957	Big Blue River (Neb.-Kan.)	Municipal and industrial wastes primarily from Beatrice, Neb., were interfering with water uses in Kan.	Program to abate water pollution established.	Construction of sewage treatment facilities and subsequent water quality improvement in area.
June 1957, July 1959	Missouri River- St. Joseph, Mo. (Mo.-Kan.)	Municipal wastes from St. Joseph and meat packing and chemical wastes from local industries interfered with water uses in Kan.	Plan recommended to alleviate pollution problems.	Court orders (1961) required the construction of waste treatment plant at St. Joseph; court orders again in 1967 required interceptors be built.
June 1957, July 1964	Missouri River- Omaha, Neb. (Neb.-Ia.- Kan.-Mo.)	Municipal wastes from Omaha, Council Bluffs, and other cities, plus large amounts of industrial wastes from a wide variety of industries interfered with water uses in Neb. and Mo.	Program established to alleviate pollution problems.	With the exception of portions of Omaha (60,000 persons), all wastes are receiving treatment in accordance with conference objectives.
August 1957, February 1958, April 1969- October 1970	Potomac River- Washington Metro. Area (D.C.-Va.- Md.)	Untreated and inadequately treated municipal wastes from Washington, D.C., and the Va. suburbs interfered with water uses in Md., Va., and D.C.	Recommendations for the highest level of treatment (tertiary).	Partial success - 41 percent reduction in biological oxygen demand, and elimination of nuisance conditions except for periods of low flow.

(Continued on next page)

Table 10. (Continued)

Date	River basin (states involved)	Reasons for enforcement	Results of conference	Long-term results
December 1957, June 1960	Missouri River- Kansas City, Mo. (Kan.-Mo.)	Kansas City metropolitan area discharged untreated municipal and industrial wastes, which cause water pollution that interfered with water uses in Mo.	Program to abate pollution established.	Failure of polluters to comply resulted in a hearing in 1960 after which compliance was adequate.
March 1958	Mississippi River- St. Louis, Mo. (Ill.-Mo.)	Wastes from cities and industries in the metropolitan area interfered with water uses in Mo. and Ill.	Program to abate pollution established.	All sources of waste in conference area in Ill. are in compliance with requirements, and those in Mo. are for the most part.
April 1958, June 1959	Animas River (Colo.-N. Mex.)	Problem of uranium-milling wastes in Colo. putting radio- active materials in N. Mex. water supplies.	Pollution abatement initiated.	Full compliance has been achieved and radioactivity is well below prescribed levels.
July 1958, ^a March 1960	Missouri River- Sioux City, Ia. (S.D.-Ia.-Neb.- Mo.-Kan.)	Untreated municipal and indus- trial wastes from cities along the Missouri River that affect the Omaha water supply.	Program to abate pollution established.	Failure to comply on schedule results in hearing in 1969, after which compliance has been achieved.
September 1958, ^a 1959, and 1965	Lower Columbia River (Ore.-Wash.)	Untreated municipal wastes; and industrial wastes, primarily pulp and paper, that cause slime growths that interfere with fishing.	Study of slime growths and treatment of municipal wastes undertaken.	Satisfactory abatement action taken by all waste dischargers except the pulp and paper industry.
October 1958, July 1960	Bear River (Ida.-Wyo.-Ut.)	Municipal and industrial wastes in Ida. caused deterioration of water quality in Utah.	Partial remedial pro- gram established. Special problems under consideration.	Waste sources in Ida. now in compliance with conference recommendations.

(Continued on next page)

Table 10. (Continued)

Date	River basin (states involved)	Reason for enforcement	Results of conference	Long-term results
January 1960, May 1960, 1961, 1962, and 1963, July 1967	Colorado River (Colo.-Ut.-Ariz.- Nev.-Cal.- N.Mex.-Wyo.)	Pollution caused by radio- active wastes, especially uranium mill tailings; and by municipal and agricul- tural wastes.	Pollution problems for entire area under investigation.	Radioactive pollution is under control; other problems partially solved.
September 1960, June 1962	North Fork Holston River (Va.-Tenn.)	Pollution from the Olin Corporation plant in Saltville, Va. Wastes discharged were chlorides from the manu- facture of soda ash.	Feasibility of pollution control measures for this industry under investigation.	The plant ceased operation in 1972.

^aConferences called at the request of the states, Iowa and Oregon, respectively.

Source: (250)

conference between the Public Health Service and the state pollution control agencies of Missouri and Kansas and the representatives of the city and the local industries was held on June 11, 1957. The conferees agreed that the city and the industries would make the necessary arrangements so that contract awards could be made by January 1, 1959 (254).

A bond-issue referendum for such facilities was held in March 1958, and it was defeated. Nothing further was done. Therefore, the Public Health Service took the next step; and the Secretary of Health, Education, and Welfare ordered a formal hearing to be held. The hearing was held for five days in July 1958. As a result of the hearing, the city and the 18 industries were ordered to abate pollution of the interstate Missouri River by June 1963.

The industries offered to contribute \$1,350,000 toward the construction of a sewage disposal plant. However, the city decided that the amount offered was insufficient. Therefore, the industries separated themselves from the city and constructed their own treatment facilities. St. Joseph held another bond election and this one was defeated by a larger margin than the first. As a result of this failure to heed the cease-and-desist order, the United States brought suit against St. Joseph (250). The court issued compliance orders on May 31, 1961. The city finally agreed to comply after the court threatened to levy a large contempt-of-court fine.

Construction Grants

When Representative Blatnik added the authorization for construction grants to H.R. 9540, six of the 15 Republican members of the Public Works Committee vigorously opposed this proposal. When the bill was being considered by the House, these members tried hard to have that section deleted. Their main reasons were: 1) they thought it would be just the beginning of another gigantic spending program which eventually would be in the billions of dollars each year; 2) the grants were opposed by the Administration; 3) municipalities would postpone action on water pollution until they received federal money, so it would delay pollution abatement; 4) the states and municipalities were in better financial state than the federal government; and 5) it would penalize those municipalities that had gone ahead and built their own treatment plants (160).

On the other hand, the American Municipal Association favored the grants because: 1) water pollution control is a national problem; 2) present construction is progressing very slowly; 3) it would be an important adjunct to enforcement action; and 4) many municipalities had reached their financial limitation as set by state law (158).

The results of the appropriation process for these grants from 1957 to 1965 are shown in Table 11. It can be seen that the Congress came around to support this program almost to the limit of

Table 11. Grants for waste treatment works construction: 1957-1965 (in dollars).

Fiscal year	Authorization	Budget estimate	House recommendation	Senate recommendation	Conference agreement	Actual appropriation
1957	50,000,000	50,000,000	No action	50,000,000	50,000,000	50,000,000
1958	50,000,000	50,000,000	50,000,000	45,000,000	45,000,000	45,000,000
1958-1959 ^a	-	657,000	657,000	657,000	657,000	657,000
1959	50,000,000	45,000,000	45,000,000	45,000,000	45,000,000	45,000,000
1959-1960 ^a	-	1,816,000	1,816,000	1,816,000	1,816,000	1,816,000
1960	50,000,000	20,000,000	45,000,000	45,000,000	45,000,000	45,000,000
1960-1961 ^a	-	1,101,000	1,101,000	1,101,000	1,101,000	1,101,000
1961	50,000,000	20,000,000	45,000,000	45,000,000	45,000,000	45,000,000
1961 ^a	-	5,000,000	No action	5,000,000	645,260	645,260
1962	80,000,000	50,000,000	50,000,000	50,000,000	50,000,000	50,000,000
1962 ^a	-	30,000,000	30,000,000	30,000,000	30,000,000	30,000,000
1963	90,000,000	90,000,000	90,000,000	90,000,000	90,000,000	90,000,000
1964	100,000,000	100,000,000	90,000,000	90,000,000	90,000,000	90,000,000
1965	100,000,000	90,000,000	90,000,000	90,000,000	90,000,000	90,000,000

^aSupplemental appropriations.

Source: (1, 2, 3, 4, 16, 17, 18, 19, 20, 21, 22, 161, 162, 163, 164, 165, 166, 168, 171, 174, 175, 177, 178, 183, 184, 185, 186, 187, 191, 192, 193, 194, 195, 196, 198, 199, 200, 201, 202, 203, 206, 209, 214, 228)

authorizations. The Senate Appropriations Committee, for fiscal years 1958-1961, added the provisions to the Appropriations Acts that changed the basis of state allocations from \$45,000,000 to \$50,000,000. This was done because they did not want the active states to lose any of their allocations. They assumed that not all the states would ever need all their allocations. However, in all these fiscal years more grant monies were needed to fund the approved grants than was appropriated because funds that a state did not use could not be transferred. Therefore, supplemental appropriations were provided for fiscal years 1958 through 1961.

The allocation formula provided that each state and territory would receive funds in accordance to its population and per capita income. In addition, each individual project was limited to \$250,000, or 30 percent of the construction costs, whichever was smaller. Further, at least 50 percent of the funds must be granted to communities of 125,000 population or less (39).

Other Appropriations: 1957-1961

Program grants to state and interstate water pollution control agencies were authorized at \$3,000,000 for fiscal years 1957-1961 (39). Appropriations were made at that level for all these years except 1957 when only \$2,000,000 was made available. The federal share for each state and interstate agency was determined on the basis of per capita income, but that share could range from 33 1/3 to 66 2/3 percent.

The amount of the grant was determined on the basis of population, the extent of the water pollution problem, and financial need (39).

Appropriations for the administration of the water pollution control program by the Public Health Service had no specific authorization. The appropriations for fiscal years 1957-1961 were as follows: \$2,224,100 for 1957; \$3,491,000 for 1958; \$3,771,800 for 1959; \$4,035,300 for 1960; and \$6,943,000 for 1961 (18, 19, 20, 21, 167, 204). These funds were for administration of the construction grants, research, basic data collection, technical assistance, enforcement, and cooperative planning.

The Joint Federal-State Action Committee

From the time that construction grants were made part of the federal water pollution control program in 1956, President Eisenhower wanted to stop them. The Joint Federal-State Action Committee⁶³ was created in August 1957, and the President requested that they make recommendations as to federal programs that could be turned over to the states. One of the recommendations of that committee was to discontinue construction grants (169). As evidence for this view, the Committee could find no reasons why there was a continuing need for federal subsidy (44). The basic belief of the Joint Committee was

⁶³ This Committee was composed of 10 governors and 7 federal representatives.

that local waste treatment facilities are the responsibility of the municipality or industry that produces the waste, and if the municipality has financial problems in handling that waste, it is the responsibility of the state and not the federal government to provide loans or grants.

To carry out this recommendation, the President directed the Bureau of the Budget to gradually reduce the budget requests so that by fiscal year 1960, there will be no funds for construction grants. Budget requests of \$20,000,000 for both fiscal years 1960 and 1961 were sent to the Congress. However, in those years the Congress raised appropriations to the 1958 and 1959 level of \$45,000,000 (Table 11).

If such a plan were implemented, there was concern among health officials and conservationists that the states and municipalities would simply revert back to the status of waste treatment prior to 1956. Then the Administration proposed that the federal government relinquish a part of the telephone excise taxes so that the states could levy a state excise tax. The idea was that the states would use those funds to replace the federal grants.

There were many objections to such a plan. The most logical one was that if it was wrong for all the taxpayers to subsidize treatment plant construction, why was it right for telephone users to do so. Most people also believed that the states would use such funds for

more favored projects than water pollution control, because the federal government could not determine how this money would be spent. Others believed that the federal government was morally obligated to maintain the grants programs for the ten-year period authorized by law (179).

At the same time that the Administration was trying to eliminate construction grants, the Congress was working to increase them. In 1958, Blatnik proposed legislation to increase the appropriations for each fiscal year from \$50,000,000 to \$100,000,000, and to increase the limitation for individual plants from \$250,000 to \$500,000 (172). These were the amounts that Blatnik had requested in 1956, but the Public Works Committee refused to go along with that amount. However, these amounts provided no incentive to large communities, and \$50,000,000 in grants was not supporting the amount of construction required, according to Blatnik. Almost all the states supported this bill, including several who had opposed the construction grants program in 1956 (170). The House took no action on these bills.

Again in 1959, Blatnik presented legislation (H. R. 3610) to increase the funds available for grants. This time both the House and the Senate held hearings and both passed the bill. And again the majority of the states supported its provisions. The Conference Committee compromised the two versions--the results were \$450,000

for individual project limitations, \$90,000,000 for grants for each fiscal year, and \$900,000,000 total grant funds (181).

President Eisenhower's Veto

When H. R. 3610 was sent to the President, he reiterated his position that water pollution was a local problem. He agreed that the federal government could help, but that the expanded program of grants would provide excuses for inaction, not increased local action. Therefore, he vetoed the bill on February 23, 1960⁶⁴ (280). As an alternative the President recommended that the Secretary of Health, Education, and Welfare arrange for a national conference on water pollution, that the Water Pollution Control Act be amended to provide more effective enforcement action, and that the research and program grants be continued. President Eisenhower's final action in this matter came in his Annual Budget Message for fiscal year 1962, when he recognized that \$50,000,000 would stimulate local construction activity (282). A few days earlier, in the State of the Union Message (281), President Eisenhower counted water pollution control among his accomplishments.

⁶⁴The House attempted to override this veto, but failed by a vote of 249 to 157 (182). This was 22 votes short of the needed two-thirds. The vote was partisan as 131 Republicans and 26 Democrats voted to sustain the veto, and only 16 Republicans and 238 Democrats voted to override the veto.

According to an analysis by Jennings (43), Blatnik had purposely tried to get an Eisenhower veto so that water pollution control would appear to be a Democratic issue. This probably seemed necessary to him as the 1948 law had been enacted when the Republicans were in control of Congress and the 1956 law during a Republican presidency.

Legislative History of the Federal Water Pollution
Control Act Amendments of 1961

Early in 1961, Representative Blatnik introduced H.R. 4036 and a group of 11 senators introduced S. 120. These bills were similar to the one that President Eisenhower had vetoed in 1960. However, the Kennedy Administration supported these bills. President Kennedy, in a special message on Natural Resources (283), urged the enactment of more effective pollution control legislation. He specifically requested more financial support both for program grants to states and for construction grants to municipalities, as well as broadened enforcement powers, and increased research. In addition, he proposed that a special administrative unit be established within the Public Health Service to handle both air and water pollution matters.

Representative Blatnik called hearings on his bill in March, rather than waiting for specific Administration proposals. Blatnik introduced H.R. 6441 on April 25, as a substitute for H.R. 4036.

H.R. 6441 was then passed by the House on May 3, by a roll-call vote of 308 to 110 after a motion to recommit had been rejected by a vote of 165 to 256 (190). The Senate held hearings on several bills on May 8 and 9, and passed S. 120 on June 22. Then H.R. 6441 was passed in lieu of S. 120. The Conference Committee resolved the dissimilarities on July 6. When the President signed the bill on July 20, 1961, he said, "I think this affords a more comprehensive and precise definition of the Federal government's role in controlling the pollution of our country's rivers and streams" (284, p. 524). The provisions of the Federal Water Pollution Control Act Amendments of 1961 are shown in Table 12.

New Provisions

Now that the Democrat-controlled Congress had a sympathetic President, the 1961 amendments to the Federal Water Pollution Control Act included almost all the provisions of the bills that the proponents had tried to enact in 1958, 1959, and 1960. Major changes were made in construction grants, enforcement, and administration, and significant increases were made in authorizations for construction grants, program grants, and research.

Construction Grants. The results of the construction grant program initiated in 1957 are shown in Table 13. Even though more than \$138,000,000 had been expended by the federal government from 1957

Table 12. Changes in the Federal Water Pollution Control Act made by the amendments of July 20, 1961.

A. Policies declared by the Congress:

1. To give direct responsibility for the Act to the Secretary of Health, Education, and Welfare rather than the Surgeon General.
2. To consider the enhancement of water quality in the planning of all federally-financed reservoirs through low-flow augmentation.
3. To extend federal enforcement powers to all navigable waters rather than just interstate waters.
4. To reallocate funds from states that do not use all their grants to states that have projects waiting to be funded.

B. Programs:

1. To broaden research activity, including the establishment of seven regional laboratories.
2. To increase the limitations on construction grants from \$250,000 to \$600,000.
3. To authorize grants for projects serving more than one municipality; these grants shall be determined on the same basis as if all the municipalities were receiving separate grants up to \$2,400,000.

C. Authorizations:

1. \$5,000,000 per fiscal year up to a total of \$25,000,000 for broadening the research program.
 2. \$5,000,000 per fiscal year for program grants to states and interstate agencies for fiscal years 1962 through 1968.
 3. \$80,000,000 for fiscal year 1962, \$90,000,000 for fiscal year 1963, and \$100,000,000 for fiscal years 1964 through 1967 for construction grants.
-

Source: (40)

Table 13. Results of the Construction Grants Program: 1957-1965.

Fiscal year	Federal appropriations (\$)	Actual expenditures (\$)	No. grants offered	No. projects completed	Total contract awards for sewage treatment plants (\$)
1957	50,000,000	844,000	446	4	351,000,000
1958	45,000,000	16,884,000	592	145	389,000,000
1959	45,657,000	36,429,000	545	446	349,000,000
1960	46,816,000	40,295,000	573	436	359,000,000
1961	46,746,260	44,085,000	590	549	449,000,000
1962	80,000,000	42,103,000	754	498	545,000,000
1963	90,000,000	51,738,000	906	573	679,100,000
1964	90,000,000	66,432,000	729	749	513,400,000
1965	90,000,000	69,755,000	611	772	522,400,000

Source: (1, 2, 3, 4, 17, 18, 19, 20, 21, 255, 260, 295, 296)

through 1961 for these grants, the arguments used in 1956 were repeated in 1961. Blatnik pointed out that:

Construction since 1957 has been largely offset by new needs and the number of needed projects remains, as it was in 1957, at more than 6,000 sewage treatment plants . . . nearly 2, 900 new plants are required for 19.5 million people in communities now discharging raw untreated sewage. There are 1, 100 new plants needed for 3.4 million people in communities where existing treatment works are inadequate or obsolete and require replacement. Another 1, 630 communities need additions and enlargements of existing inadequate plants to provide satisfactory treatment for 25 million persons.

In addition to the backlog of treatment plant needs, population growth will continue to create new needs. If municipalities are to catch up by 1970, they will have to spend an average of \$600 million a year to eliminate the backlog, provide for new population, and to replace plants that will become obsolete (188, p. 6).

Therefore, the changes made in this program were justified to help communities reach the goal of \$600,000,000 annual expenditures for sewage treatment plant construction. The authorizations and appropriations were increased as shown in Table 11, to enable more projects to be built each year. Funds allocated to a state that were not used were now allowed to be reallocated to another state so that no funds would be returned to the Treasury. Limitations for individual projects were increased to \$600,000, and joint projects were encouraged so that larger communities would be stimulated to build large, efficient plants for several political divisions. The results of the construction grant program as amended in 1961 are shown in Table 13.

Enforcement. The change in the enforcement provision made by the 1961 Amendments to the Water Pollution Control Act that made all navigable waters of the United States subject to federal enforcement action led to greatly increased activity in this area. The Public Health Service had interpreted the 1956 Act to limit enforcement actions to interstate waters. This meant that coastal waters, most of the Great Lakes, and sections of some of the largest rivers in the nation were exempt. All 13 federal enforcement actions (Table 10) taken under the authority of the 1956 Act were limited to waters that were clearly interstate under any possible definition. The first action taken under the authority of the 1961 Amendments was in regards to Raritan Bay. This exemplified the extended authority provided by the change from interstate to navigable waters. The enforcement actions made under the authority of the 1961 Amendments are shown in Table 14.

Administration. From the time that the Public Health Service became the administrative agency for the water pollution control program, the Congress emphasized the importance of effective administration. The program was placed under the Division of Water Supply and Pollution in the Bureau of State Services, one of the lowest possible positions in the Public Health Service. The head of the division and other personnel directly connected with the program were regarded as professionals who could have accomplished much if they had

Table 14. Federal enforcement actions: 1961-1965.

Date	River basin (states involved)	Reason for enforcement	Results	Long-term results
August 1961, May 1963, June 1967	Raritan Bay (N.J.-N.Y.)	Inadequately treated sewage and industrial wastes degraded water quality. Numerous cases of infectious hepatitis traced to bay.	A study of pollution sources and their effects initiated.	About one-half of the polluters are in compliance with conference recommendations.
September 1961, March 1962, November 1963	North Platte River (Neb.-Wyo.)	Municipal and industrial wastes interfered with all recreational and aquatic uses, and rendered the water unfit for use as domestic supplies.	Program to abate pollution established.	Significant improvement of water quality accomplished.
January 1962, ^a September & October 1967	Puget Sound (Wash.)	Wastes from eight pulp and paper mills and the cities of Everett, Bellingham, and Port Angeles were causing excessive pollution.	Joint federal-state study project was initiated.	Cities have complied with the recommendations and five of the eight mills have agreed to comply and are taking action but are behind schedule. EPA has recommended court action against the others.
March 1962	Mississippi River- Clinton, Iowa (Ill.-Ia.)	Municipal and industrial wastes causing interference with other legitimate uses of the river.	Remedial action program established.	Waste sources are in compliance with conference recommendations.
March 1962, June 1965	Detroit River (Mich.)	Municipal and industrial wastes from numerous sources deleterious to legitimate uses.	Study project was established.	Compliance has not been satisfactory. Detroit has been cited for violation of water quality standards.
September 1962, October 1969	Androscoggin River (N.H.-Me.)	Wastes from New Hampshire interfering with water uses in Maine.	Agreement not reached until New Hampshire's water quality standards were approved in 1970.	

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Table 14. (Continued)

Date	River basin (states involved)	Reason for enforcement	Results	Long-term results
October 1962 ^a	Escambia River (Ala.-Fla.)	(No pollution of interstate waters subject to abatement was occurring at that time.)		(See page 143)
August 1963, April 1968	Coosa River (Ga.-Ala.)	Discharges of inadequately treated sewage and industrial wastes in Georgia endangering health and welfare in Alabama, as well as excessive clay and silt discharges.	Remedial program established.	Substantial compliance has been achieved.
October 1963, November 1968	Pearl River (Miss.-La.)	Discharges of wastes in Louisiana cause organic and bacteriological pollution in Mississippi, especially in valuable fish and shellfish waters.	Remedial program established; dissolved oxygen standards established for fish spawning.	Three of the four pollution sources are in compliance.
October 1963, ^a April 1966	South Platte River (Colo.)	Deleterious conditions caused by municipal and industrial wastes in the Denver Metropolitan area.	Remedial program established. Additional state legislation may be needed.	Progress satisfactory.
November 1963	Menominee River (Mich.-Wisc.)	Organic pollution interfering with fish and other aquatic life.	Study project established.	All sources of pollution have taken remedial action.
December 1963, September 1967	Lower Connecticut River (Mass.-Conn.)	Pollution interfered with recreation and aquatic uses.	Remedial program established.	Approximately 75 percent of the sources of pollution are in compliance.
December 1963	Monongahela River (W.Va.-Pa.-Md.)	Pollution caused by drainage from coal mines degraded water for all uses.	Technical committee formed to study means of abating this pollution.	

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Table 14. (Continued)

Date	River basin (states involved)	Reason for enforcement	Results	Long-term results
January 1964	Snake River- Lewiston-Clarkston area (Ida.-Wash.)	High loads of suspended solids from pulp and paper industries and municipalities.	Remedial program established.	Abatement unsatisfactory.
February 1964, ^a February 1967	Upper Mississippi River (Minn.-Wisc.)	Industrial, municipal, and storm sewer wastes created a health hazard and nuisance conditions.	Survey conducted.	There has been significant progress toward the abatement of this pollution.
February 1964	Merrimack and Nashua Rivers (N.H.-Mass.)	Municipal and industrial wastes as well as storm sewer overflows created a health hazard to water users.	Remedial program established.	
May 1964	Lower Mississippi River (Ark.-Tenn.-Miss.-La.)	Massive fish kills thought to be associated with pesticides.	Technical Committee was established.	Pollution problem under control.
January 1965, May 1968	Blackstone and Ten Mile Rivers (Mass.-R.I.)	Municipal and industrial wastes interfered with recreation and fishing and created offensive odors.	Remedial program was established.	A number of the pollution sources are behind schedule, but are moving toward compliance with the program.
February 1965, October 1969	Lower Savannah River (S.C.-Ga.)	Wastes interfered with recreation and aquatic life, industrial water supply.	Remedial program established at second conference.	
February 1965	Mahoning River (Ohio-Pa.)	Waste discharges in Ohio created health hazard in Pennsylvania.	The states did not agree with the position of the federal government.	No compliance with requirements on the part of municipalities, but 24 of 31 industries have complied.
March 1965, December 1968	Grand Calumet, Little Calumet, Calumet Rivers, Wolf Lake, Lake Michigan (Ill.-Ind.)	Severe water quality problems caused by municipalities and industries in this highly urban- ized and industrialized area.	Water quality criteria developed by Technical Committee.	Substantial compliance has been achieved by municipalities. Except for Republic and U.S. Steel, other industries are attempt- ing to comply but some are behind schedule.

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Table 14. (Continued)

Date	River basin (states involved)	Reason for enforcement	Results	Long-term results
August 1965, March 1967, October 1968, June 1970	Lake Erie (Mich.-Ind.-Ohio- Pa.-N.Y.)	Sewage, industrial wastes, silt, sediment, and nutrients con- tributed to water degradation.	Remedial programs and schedules established.	Compliance with conference requirements considerably behind schedule. Cities of Detroit, Toledo, and Cleveland, and four steel companies have been cited for water quality standards violation.
September 1965	Red River of the North (Minn.-N.D.)	Municipal and industrial wastes caused health hazards and deleteriously affect municipal water supply, fish and other aquatic life and recreation.	Remedial program established.	Substantial compliance has been achieved except for the city of Fargo, N.D., which has been cited for water quality standards violations.
September 1965, September 1967, November 1969	Hudson River (N.Y.-N.J.)	A wide range of pollutants discharged which interfered with recreation, fishing, naviga- tion, and water supply.	All municipalities should provide secondary treatment and chlorination. Industries to provide a high level of treatment.	The majority of the waste sources have not met the time schedule. The Penn Central Railroad has been cited for water quality standards violations.

^aConferences called at the request of the state.

Source: (250)

received any support from the health officials at the head of the organization who failed to respond to the intent of Congress to develop a successful water pollution control program.

A report of the House Committee on Public Works emphasized this aspect, as follows:

The committee has always believed that the objectives of the program should be given high priority in an appropriate administrative framework in the Department of Health, Education, and Welfare.

The administrative status has not changed since 1948 despite a great increase in program activities, responsibilities, personnel, and appropriations. During hearings the committee heard testimony favoring the establishment of a Federal Water Pollution Control Administration in the Department of Health, Education, and Welfare. The President has urged the establishment of a special unit in the Public Health Service to administer both air and water pollution control programs.

The Secretary asked the committee for 'time to take a complete fresh look at the situation and the various proposals dealing with it.'

The Committee hopes that in reaching any decision on this matter the Secretary of Health, Education, and Welfare takes into consideration the fact that the water pollution control program established in 1956 and strengthened by this bill goes far beyond the usual public health legislation in that it assigns to his Department the responsibility for controlling water pollution to conserve water for all uses (189, p. 4-5).

The Congress granted the request of the Secretary of Health, Education, and Welfare by placing in his office direct responsibility for the water pollution control programs. However, it was made clear that if a satisfactory solution to the administrative problem was not made within a short time, the Congress would seriously consider the proposals for creating a special unit for pollution control in the

Public Health Service. The Congress might also consider the proposals to remove this program from the Public Health Service altogether.

Summary

The decision by Congress to establish a permanent water pollution control program in 1956 was the most important event in the period from 1953 to 1962. As a result of this decision, Congress provided sufficient authority and funds for the development of a vigorous federal involvement in this important resource management area. Grants to states for program development and grants to municipalities for the construction of sewage treatment facilities, as well as enlarged programs in research, basic data collection, cooperative planning, technical services, and enforcement, created increased activity in pollution control throughout the nation.

This commitment from Congress was largely the result of the Representative John Blatnik, who became Chairman of the Subcommittee on Rivers and Harbors in 1955. By emphasizing the need for water conservation, he was able to initiate more pollution control than any health cause ever had. Under his leadership the Congress successfully stopped the Eisenhower Administration from ending the construction grant program.

The water pollution control laws enacted in 1956 and 1961 provided a broad-based program for the abatement and control of the deleterious water conditions that had been built up over a period of 50 years of neglect and apathy. However, the 37 enforcement actions and the \$368,565,000 expended for construction grants from 1956 to 1965, as well as the thousands of dollars spent for other federal water pollution programs, and the millions of dollars of state and local funds, merely provided a first step in the search for improved water supplies.

CHAPTER IV

ESTABLISHING STANDARDS--A NEW DIRECTION: 1963-1968

The enactment of the changes in the Water Pollution Control Act in 1961 had served the purposes of the supporters of water pollution control only on a temporary basis. In their opinion, the compromises that were made to assure the passage of the 1961 amendments could now be forgotten so that the water pollution control program could be further upgraded. In an effort to accomplish this upgrading, and to include provisions that had failed earlier, Representatives Blatnik, Giaimo, and Dingell, Democrats of Minnesota, Connecticut, and Michigan respectively, introduced bills to create a Federal Water Pollution Control Administration in 1962. Representative Blatnik also introduced a bill to provide financial assistance to municipalities for the separation of combined sewers. None of these bills were acted upon; but in the strategy developed over several sessions, it can be assumed that none was expected. The proponents were setting up the agenda for the next sessions of Congress.

Legislative History of the Water Quality Act of 1965

In 1963, action on water pollution was for the first time since 1948 more aggressive and enthusiastic in the Senate than in the House. Senators Muskie and Humphrey, Democrats of Maine and Minnesota,

introduced S. 649 on January 31, 1963 (213). This bill was to amend the Federal Water Pollution Control Act by establishing an administrative unit separate from the Public Health Service, increasing grants for construction of waste treatment works, providing financial assistance to municipalities for the separation of combined sewers, authorizing the issuance of regulations to aid in preventing, controlling, and abating pollution of interstate or navigable waters.

Support for this bill grew as 20 other senators added their names as cosponsors of S. 649, and 10 representatives introduced identical legislation in the House. Legislation was also introduced to protect streams from synthetic-based detergents; to provide financial assistance or tax relief for the construction of industrial waste treatment facilities; to provide financial incentives if municipal treatment plants were in conformance with regional plans; and to transfer the water pollution control functions of the federal government to the Department of the Interior.

The Senate Public Works Committee established a new subcommittee on Air and Water Pollution and Senator Edmund Muskie was made its chairman. The subcommittee's first act was to have its staff prepare a report on water pollution that would help the subcommittee understand the nature of the problem, the needs, and the federal and state activity in the field. The Staff Report summarized the problem as follows:

The disposal of treated wastes from municipalities, communities, factories or farms through the medium of water is a necessary and legitimate use of this resource. However, there is a limit to which individuals or groups of individuals can go before their actions become detrimental to their neighbors; the problem, then, is when to establish the limit and how to develop effective means of enforcement and control. No stream should be reduced to the status of a mere carrier of waste. The adoption of and responsible adherence to a recommended national policy of keeping waters as clean as possible could serve as an effective guideline for preventing this kind of ultimate stream degradation (209, p. 5-6).

The Senate Subcommittee on Air and Water Pollution held hearings on S. 649 and three other pollution bills in June 1963. The purpose of these hearings was to study six possible changes to the Federal Water Pollution Control Acts. These were:

- 1) The establishment of an administrative unit separate from the Public Health Service.
- 2) The provision of grants for separation of combined sewers.
- 3) The increase of construction grants by 10 percent if regional planning is undertaken.
- 4) The strengthening of federal authority to enforce abatement procedures.
- 5) The regulation of detergents so as to require certain decomposability standards.
- 6) The provision of loans to small businesses for construction of treatment works (207).

During these hearings there was substantial disagreement with several of the provisions of S. 649, including the setting of water quality standards and the establishment of the Federal Water Pollution Control Administration. These controversies will be discussed in subsequent sections. In addition, however, there was disagreement surrounding the policy statement. The statement of policy in the original version of S. 649 was as follows:

It is the purpose of this Act to establish a positive national water pollution control policy of keeping waters as clean as possible as opposed to the negative policy of attempting to use the full capacity of such waters for waste assimilation (207, p. 1).

This statement was a recommendation of the National Water Pollution Conference of 1960 (77). However, very few organizations supported this policy. The National Association of Manufacturers suggested amending it to read "as clean as economically feasible" (207, p. 243). The Manufacturing Chemists' Association claimed that the policy would cause "widespread economic disruption" (207, p. 371). The American Paper and Pulp Association said the policy was "clearly contrary to the classic concept that streams' capacity to assimilate wastes must be taken into consideration" (207, p. 529).

When the Public Works Committee reported S. 649, the policy statement had been amended to read:

The purpose of this act is to enhance the quality and value of our water resources, and to establish a national policy for the prevention, control, and abatement of water pollution (210, p. 19643).

This was only one example of the impact that pressure from industries can have on the Congress. The amended version of S. 649 was passed by the Senate on October 16, 1963, by a roll-call vote of 69 to 11 (211).

The House Public Works Committee held extensive hearings on S. 649 and several other water pollution control bills in December 1963 and February 1964. S. 649 was reported out of committee, but the House never voted on the bill.

Senator Muskie introduced S. 4 on January 6, 1965, which was nearly identical⁶⁵ to the amended version of S. 649. The bill was cosponsored by 31 other senators. The Subcommittee on Air and Water Pollution held hearings on S. 4 on January 18, 1965. The Administration was much more supportive of this bill than they had been of S. 649. In his State of the Union Message, President Johnson stated:

We will seek legal powers to prevent pollution of our air and water before it happens. We will step up our effort to control harmful wastes, giving first priority to the cleanup of our most contaminated rivers (285, p. 8).

Later in his Special Message on Conservation and Restoration of Natural Beauty, President Johnson proposed legislation that would include provisions to:

⁶⁵ S. 649 had two provisions, pollution by synthetic detergents and by federal institutions, which were deleted in S. 4 and made the subject of separate legislation.

- 1) Provide, through the setting of effective water quality standards, combined with a swift and effective procedure, a national program to prevent water pollution at its source rather than attempting to cure pollution after it occurs.
- 2) Increase project grant ceilings and provide additional incentives for multi-municipal projects under the waste treatment facilities construction program.
- 3) Increase ceilings for grants to state water pollution control programs.
- 4) Provide a new research and demonstration construction program leading to the solution of problems caused by the mixing of storm water runoff and sanitary wastes (286).

The Senate Public Works Committee reported S. 4 on January 27, 1965. The Senate passed the bill by a vote of 68 to 8 (219), after rejecting two weakening amendments to the standards section. The House Public Works Committee held hearings on S. 4 and several House bills in February. The Committee reported S. 4 on March 31. The House passed the bill without a negative vote, 390 to 0, on April 28, 1965 (223). The Conference Committee took more than four months to reach a compromise on the two versions of S. 4. The primary issue was the standards section (see page 132). Both houses approved the conference report on September 9. When the President signed the Water Quality Act of 1965 on October 2 (287), he said:

No one has a right to use America's rivers and America's waterways that belong to all the people as a sewer. The banks of a river may belong to one man or even one industry or one State, but the waters which flow between these banks should belong to all the people.

There is no excuse for a river flowing red with blood from slaughterhouses. There is no excuse for papermills pouring tons of sulphuric acid into the lakes and the streams of the people of this country. There is no excuse - and we shall call a spade a spade - for chemical companies and oil refineries using our major rivers as pipelines for toxic wastes. There is no excuse for communities to use other people's rivers as a dump for their raw sewage.

This sort of carelessness and selfishness simply ought to be stopped; and more, it just must be reversed. And we are going to reverse it

Additional, bolder legislation will be needed in the years ahead. But we have begun. And we have begun in the best American tradition - with a program of joint Federal, State, and local action (287, p. 1034-1035).

The provisions of the Water Quality Act are shown in Table 15.

The New Institutional Framework: FWPCA

From the time that the federal water pollution control program had been made permanent in 1956, the Congress had been pleading with the Secretary of Health, Education, and Welfare and with the Surgeon General to upgrade its administrative position (see pages 90 and 111). In 1961, the Congress had intended to create a separate administrative unit, but when Secretary of Health, Education, and Welfare Ribicoff promised to respond to these congressional wishes (188), the law was passed with the direct responsibility for this program being placed in the Secretary's Office. However, the Secretary

Table 15. Provisions of the Water Quality Act of 1965.

A. Policies declared by the Congress:

1. To enhance the quality and value of our water resources and to establish a national policy for the prevention, control, and abatement of water pollution.
2. To provide an additional 10 percent incentive on construction grants in metropolitan areas if the project is in accord with regional or metropolitan plans.

B. Programs:

1. To require the states to adopt water quality standards by June 30, 1967.
2. To provide grants for research and for demonstration projects which will develop a new or improved method of controlling the discharge of sewage or other wastes from combined or storm sewers.
3. To increase the limitation on construction grants for individual projects from \$600,000 to \$1,200,000.
4. To increase the limitation on construction grants for joint projects from \$2,400,000 to \$4,800,000.

C. Institutions:

1. To establish a Federal Water Pollution Control Administration within the Department of Health, Education, and Welfare.

D. Authorizations:

1. \$150,000,000 for fiscal years 1966 and 1967 for construction grants.
 2. \$20,000,000 for the fiscal year ending June 30, 1966, and for each of the next three succeeding fiscal years for demonstration grants on the combined sewer problem.
-

Source: (306)

only delegated his authority back to the Surgeon General, and thus the intent of Congress was circumvented. Therefore, one of the provisions of any further amendments to the Water Pollution Control Act was certain to be a new administrative arrangement.

When Senator Muskie introduced S. 4, the bill contained a provision that would establish a Federal Water Pollution Control Administration (FWPCA), effective 90 days after the act was signed. The new FWPCA would control the following program elements: comprehensive planning, interstate cooperation, uniform laws, enforcement, and pollution from federal installations (217). The House version of the bill would entrust the entire water pollution control program to the FWPCA (221).

During the hearings on S. 649 in 1963 and on S. 4 in 1965, this proposal was favored by only a few of the witnesses, including the U.S. Conference of Mayors, the American Municipal Association, the National Audubon Society, the National Wildlife Federation, the Sport Fishing Institute, and the American Federation of Labor and the Congress of Industrial Organizations. On the other hand, the Administration, state and interstate organizations, trade groups, and professional organizations were opposed to the creation of an administrative unit separate from the Public Health Service (207, 212, 217, 220). This apparent support of the Public Health Service was most

likely the result of these organizations wanting to maintain the status quo.

The drive to establish a FWPCA was led mainly by the National Wildlife Federation, the National Audubon Society, and Representative John Dingell, Democrat of Michigan. In reviewing the history of the federal water pollution control program, the National Wildlife Federation pointed out the following failures of the Public Health Service:

1) From 1948-1956, when the water pollution control program was under the Surgeon General, during no year did the Public Health Service obtain the authorized appropriations.

2) After 1956, the Public Health Service failed to hold its gains. Construction grants decreased each year.

3) The water pollution control budget was not set out in full, leading to suspicion that funds were being diverted. In 1960, testimony revealed that \$147,000 was transferred from water and air pollution control to dining car inspection.

4) As late as 1958, the program had been downgraded to branch within a division within a bureau of the Public Health Service. It merits separate 'Administration' like Food and Drug (207, p. 154).

The National Audubon Society believed the establishment of a FWPCA was the key to future success of the federal water pollution control program. According to this organization, a FWPCA would:

1) make the program more readily identifiable by the public and by Congress, and therefore, more responsive to public support and criticism.

2) assure a more aggressive enforcement policy. Public Health Service officials have shown a disposition to shrink from political reaction and controversy.

3) help the health research activities of the Public Health Service by removing them from the hurly-burly political arena (207, p. 122-123).

However, the most outspoken and direct critic of the Public Health Service was Representative Dingell. He had been accusing the Service of poor performance for some time, but in 1963, he became more hostile to that agency. Among his charges were:

- 1) The Taft Center in Cincinnati, Ohio, had been built to do research on water pollution, but air pollution, radiological health, environmental engineering, food protection, and occupational health were using most of the space.
- 2) The Public Health Service had studied at least 90 interstate waters affected by pollution but no enforcement actions had been undertaken in connection with any of them.
- 3) The Public Health Service had failed to carry out interstate quarantine regulations in Raritan Bay, and this led to an outbreak of hepatitis, which the Public Health Service was accused of covering up.
- 4) A Public Health Service official had assured state officials in New England that the federal government had no intention of bringing an enforcement action on the Merrimack River, one of the most polluted in the nation.
- 5) The Public Health Service had done nothing about pollution from federal institutions.
- 6) In seven years, the Public Health Service had not completed one of the 15 cooperative plans authorized by law.

In summary, Dingell remarked, "This gentlemen, is the sorry record of pollution abatement by the Public Health Service. It includes malfeasance, misfeasance, diversion of funds, and clearly the most indifferent and unconcerned attitude to our most pressing resource problems" (207, p. 36).

Congressional Intent

The Senate Public Works Committee emphasized the necessity for strong administrative leadership in its report. The House Committee likewise stressed this provision.

The committee now feels that the need for this upgrading is so imperative that there should be no further delay in the establishment of this new administration within Health, Education and Welfare. It considers this section a major provision of the bill and a long step in the direction of bringing about a proper implementation of existing law (215, p. 4).

The Conference Committee decided to support the House version which would place the entire water pollution control program under the FWPCA (229). In addition the Conference Committee reiterated the importance of the reorganization and that the Assistant Secretary of Health, Education, and Welfare and the Administrator of the FWPCA should be individuals "of the highest caliber with the finest possible background in the field of water pollution, so that this program can be accelerated and real progress can begin to be made in reducing the pollution of the streams of the Nation" (229, p. 10).

The Schwob Memoranda

Throughout the period from 1953 to 1965 when criticism was made of the work of the Public Health Service, the critic usually would exempt the Division of Water Pollution Control. This group of engineers and technicians was generally well thought of by those who studied the federal water pollution control effort. The problems of the Public Health Service actually began when the water pollution control program lost 50 scientific and technical personnel as a result of budget cuts in 1953. Individuals and organizations that were demanding improved water quality took this as a sign that the Public Health Service did not have such motives or the funding cuts would have been more evenly spread throughout the Service.

Later in 1953, a proposal to reduce the Division of Water Pollution Control to a branch, further confirmed these suspicions. According to Dworsky, a water pollution expert in the Public Health Service at that time, this "decision in favor of administrative neatness set off a chain reaction that did not cease until the Congress established the Water Pollution Control Program Administrator as separate and coequal to the Surgeon General and responsible directly to the Secretary of Health, Education, and Welfare" (35, p. 279).

This eventuality was foreseen by Carl Schwob, Chief of the Division of Water Pollution Control in two memoranda that he sent to

his immediate superior, the Chief of the Bureau of State Services. The first one, dated July 17, 1953, concerned the problem of budget cuts. Mr. Schwob pointed out that "the legislative record is quite clear that the major forces that were responsible for pushing through the comprehensive 1948 legislation were the natural resource conservationists, wildlife and sportsmen's groups, and fishing interests" (60, p. 277). Schwob was convinced that if the Public Health Service lost the support of these groups, the Service was risking the loss of the water pollution control program itself. He summarized his position as follows:

If the Water Pollution Control Division is required to carry the burden of the appropriation reduction, effectiveness of the field establishment of the Division will be drastically curtailed. It is my view that this curtailment will do great damage to the Public Health Service in its relations with the interested public groups, and might lead to their looking to another agency for the kind of program they desire (60, p. 279).

Then on November 2, 1953, Schwob prepared a memorandum to argue that reducing the Division of Water Pollution Control to a branch status would also be disastrous.

We suggest that an apparent reduction in interest on the part of the Public Health Service in water pollution control will be reflected in the States. We believe that the Public Health Service must continue to show externally, in a tangible way, the importance it gives to pollution abatement. We believe the Public Health Service has an obligation to do this in view of the interests of other Federal Departments in this work, and the wide implications that it has on many facets of the economy, as well as its long-range implications on public health (61, p. 283-284).

Both of these warnings were ignored by the Surgeon General and the Secretary of Health, Education, and Welfare. Although more than 12 years elapsed before the Public Health Service lost the water pollution control program and 13 years before the Department of Health, Education, and Welfare lost the program, these reorganizations ensued when the upper levels of the Public Health Service failed to heed the advice of Carl Schwob in 1953.

Standards of Water Quality

Proposals for establishing some type of water quality standards had been made since the 1930's. Standards were proposed as a means of preventing water pollution before it occurred. This was needed because the enforcement mechanism could not be activated until pollution had caused danger to public health and welfare. Another purported advantage of standards was that municipalities and industries could plan ahead because they would know what was expected of them as far as waste treatment was concerned.

Senator Muskie proposed in S. 4 that the Secretary of Health, Education, and Welfare be given authority to establish standards of water quality for interstate waters only if the states were not making satisfactory progress with their own standards. These were to be designed to enhance water quality for legitimate uses, including public water supplies, propagation of fish and wildlife, recreational purposes,

and agricultural and industrial water supplies. Abatement actions could be initiated whenever a discharge of matter reduced water quality below the standards (217).

The House version of S. 4 proposed that the states be given a chance to establish their own standards for interstate waters. However, if such standards were not established by June 30, 1967, the Secretary of Health, Education, and Welfare would establish the standards for that state. This was the version that eventually became part of the Water Quality Act (212). In addition, each state was required to submit a letter of intent to set such standards, within one year of the date of enactment of S. 4. These standards were to be composed of two parts:

- 1) Water quality criteria - identify the water uses to be protected and establish limits or ranges for such characteristics as dissolved oxygen, temperature, phenols, chlorides, salinity, alkalinity-acidity balance (pH), hardness, sediments, suspended solids, and coliform count (259).
- 2) Implementation plan - description of actions to be taken to achieve compliance with water quality criteria, and a time schedule for such compliance (259).⁶⁶

⁶⁶ However, these guidelines were not promulgated until May 1966.

These proposals met with adamant negative responses from the states, as well as industries, trade associations, and professional groups, especially public health associations (207). The primary argument against federal water quality standards was that they were an encroachment on state rights and that the federal government was taking over the entire water pollution control effort. The Council of State Governments predicted that, "Since federal law is supreme, state law and programs will be displaced" (207, p. 298). A second argument was that too much arbitrary power was being placed in the hands of one person, the Secretary of Health, Education, and Welfare. Finally, opponents argued that standards were untried and that the establishment of standards would be very difficult. The Association of State and Territorial Health Officers believed that standards became rigid and almost impossible to change. The Attorney General of Michigan concluded that states that used standards spent more time in setting standards than in abating pollution, and that pollution abatement on a case by case basis was preferable (207).

The only supporters of water quality standards were the Wildlife Management Institute, the National Wildlife Federation, the Izaak Walton League, and Secretary of the Interior Udall, and those congressmen who supported the bill (207).

Congressional Intent

The Senate Public Works Committee Report on S. 4 provided some guides as to the intent of the Congress in passing the provision on water quality standards. Among these were:

1) The correction of damaging pollution after it has built up is vastly more complex and costly than prevention of such buildups. Standards of water quality to provide reliable and sound guidelines and effective measuring devices are an important and necessary part of any program of water pollution prevention, abatement, and control.

2) Water quality standards would provide an engineering base for design of treatment works by municipalities and industries.

3) Their principal objective is the orderly development and improvement of our water resources without the necessity of adversary proceedings which inevitably develop in enforcement cases.

4) Water quality standards are not designed to 'lock in' present uses of water or to exclude other uses, not now possible. The standards are not a device to insure the lowest common denominator of water quality but to enhance the quality and productivity of our water resources.

5) Water quality standards should be applied on the basis of the water quality requirements of present and future uses of a stream or section of stream, after due consideration of all factors and variables involved (218, p. 9-10).

However, the actual law never clearly spelled out on what basis the states should determine the proper dissolved oxygen content for each proposed water use, or that for any other characteristic of water.⁶⁷

Nor did the law give any time frame in which the implementation plan

⁶⁷ In fact, the law stressed what would happen if a state failed to set any standards rather than stressing how to set standards that would be approved.

should be developed. Then when the proposed transfer to the Department of the Interior was rumored, the states were in a state of confusion as to how to proceed with the development of standards. As a result, very few states met the deadline of June 30, 1967, for the adoption of water quality standards. This is discussed further on page 145.

Funding

Several changes were made in the construction grants program by the Water Quality Act of 1965, as follows:

- 1) Authorizations for fiscal years 1966 and 1967 were increased to \$150,000,000.
- 2) The limitations on individual and joint project grants were increased from \$600,000 to \$12,000,000 and from \$2,400,000 to \$4,800,000 respectively.
- 3) An incentive of an additional 10 percent was made if a project was approved by a regional or metropolitan planning agency (306).⁶⁸

The appropriations process for construction grants for fiscal years 1966 through 1970 are shown in Table 16. The results of these grants are shown in Table 17.

⁶⁸ Both number 2 and 3 were suggested by the Advisory Committee on Intergovernmental Relations (92).

Table 16. Grants for waste treatment works construction: 1966-1970 (in dollars).

Fiscal year	Authorization	Budget estimate	House recommendation	Senate recommendation	Conference agreement	Actual appropriation
1966	150,000,000	100,000,000	100,000,000	91,000,000	91,000,000	91,000,000
1966 ^a	-	30,000,000	No action	30,000,000	30,000,000	30,000,000
1967	150,000,000	150,000,000	150,000,000	150,000,000	150,000,000	150,000,000
1968	450,000,000	203,000,000	203,000,000	225,000,000	203,000,000	203,000,000
1969	700,000,000	214,000,000	203,000,000	225,000,000	214,000,000	214,000,000
1970	1,000,000,000	800,000,000	600,000,000	1,000,000,000	800,000,000	800,000,000

^aSupplemental appropriations.

Source: (23, 24, 25, 26, 27, 28, 29, 224, 225, 226, 227, 230, 231, 232, 236, 238, 239, 240, 241, 242, 244, 245, 246, 247, 248, 249, 306)

Table 17. Results of the Construction Grant Program: 1966-1970.

Fiscal year	Federal appropriations (\$)	Actual expenditures (\$)	Total contract awards for sewage treatment plants (\$)
1966	121,000,000	81,479,000	553,100,000
1967	150,000,000	84,476,000	597,300,000
1968	203,000,000 ^a	122,109,000	866,800,000
1969	214,000,000 ^a	134,530,000	825,400,000
1970	800,000,000 ^a	173,376,000	1,085,400,000

^a The authorizations for fiscal years 1968 through 1970 were made during the Clean Water Restoration Act of 1966.

Source: (24, 25, 26, 27, 28, 261, 262)

Another new grant program was initiated by the Water Quality Act. This program provided research and development grants and contracts for developing engineering and economic data and the demonstration of new and improved methods of controlling the discharge of inadequately treated wastes from sewers which carry storm water or both storm and sanitary wastes (306).⁶⁹

Grants to states for their program activities were funded at \$4,700,000 for fiscal years 1966 and 1967, and at \$9,000,000 for fiscal years 1968 and 1969, and at \$9,400,000 for fiscal year 1970 (255). Appropriations for the other FWPCA program elements within the Division of Water Supply and Water Pollution Control were \$45,142,000 for fiscal year 1966; \$55,439,000 for fiscal year 1967; \$92,800,000 for fiscal year 1968; \$86,789,000 for fiscal year 1969; and \$86,382,000 for fiscal year 1970 (236, 239, 244, 247, 249).

Enforcement

The Water Quality Act changed the enforcement mechanism in two ways. First, a new circumstance was added that enabled the federal government to call an enforcement action, if substantial economic injury was caused by the "inability to market shellfish or

⁶⁹ In addition, funds were provided by the Appalachian Regional Development Act of 1965 for the construction of sewage treatment facilities amounting to \$3,000,000 for both fiscal years 1965 and 1966 (222, 238).

shellfish products in interstate commerce because of pollution" (306, p. 909). This provision was used to call five enforcement conferences between 1966 and 1970 at Moriches Bay, New York; Eastern New Jersey Shore; Penobscot River and Bay, Maine; Boston Harbor, Massachusetts; and Mobile Bay, Alabama (250).

The second change in the enforcement mechanism was a provision to control violations of water quality standards. This procedure allowed for court action to be taken against a discharge that violated the water quality standards after a 180-day notice period. In association with the enforcement actions shown in Table 18, 180-day notices have been issued against the cities of Atlanta, Georgia; Cleveland, Ohio; Detroit, Michigan; Fargo, North Dakota. Notices also have been issued against the Fairfax Drainage District, Kansas; the Penn Central Railroad at Harmon, New York; General Aniline and Film, Arthur Kill, New Jersey; and four steel companies tributary to Lake Erie (250). The enforcement actions held between 1966 and 1970 are shown in Table 18.

Transfer to the Department of the Interior

On February 26, 1966, President Johnson proposed that the water pollution functions of the Department of Health, Education, and Welfare be transferred to the Department of the Interior (289). The reasons given by the President for this reorganization included the

Table 18. Federal enforcement actions: 1966-1970.

Date	River basin (states involved)	Reason for enforcement	Results of conferences ^b
July 1966, February 1970	Chattahoochee River (Ga.-Ala.)	Discharges of municipal and industrial wastes, and oxygen-deficient waters from impoundments.	Remedial program established.
July 1966	Lake Tahoe (Cal.)	Lake Tahoe constitutes a priceless natural resource which offers a unique experience to those who visit the Basin.	Program to preserve the lake developed, which included a plan to export sewage.
September 1966	Moriches Bay (N.Y.)	Pollution interfered with shellfish industry; this pollution was from duck farms.	Coordinating Committee established.
April 1967	Penobscot River and Upper Penobscot Bay (Me.)	Pollution from untreated and inadequately treated sewage and poultry-processing waste interfered with shellfish industry.	Water quality requirements agreed to.
November 1967	Eastern New Jersey Shore-Shark River to Cape May (N.J.)	Pollution from municipalities and from boats interfered with shellfish industries.	Remedial program established.
January and February 1968, February 1969, March and April, 1970	Lake Michigan and its tributary basin (Wisc.-Ill.-Ind.-Mich.)	To protect the lake's high water quality from future degradation.	Attempts to set limits on waste heat, phosphorus, pesticides, etc.
May 1968, April 1969	Boston Harbor and its tributaries (Mass.)	Pollution from untreated and inadequately treated wastes from municipalities, industries, water- crafts, and federal installations.	Remedial plan established.
November 1968, June 1970	Lake Champlain and its tributary basin (N.Y.-Vt.)	Paper company wastes; and waste heat.	Remedial plan established.

(Continued on next page)

Table 18. (Continued)

Date	River basin (states involved)	Reason for enforcement	Results of conferences
May 1969, April, August, 1970, and January and April 1971	Lake Superior (Minn.-Wisc.-Mich.)	Industrial and municipal wastes, plus the Reserve Mining Company discharges of taconite tailings.	Remedial plan established; with supplemental recommendations for Reserve.
January 1970 ^a	Escambia River Basin (Ala.-Fla.)	Accelerated eutrophication of the upper bay with reduced dissolved oxygen causing numerous fish kills.	Waste abatement program established.
January 1970, ^a February 1971	Perdido Bay (Fla.-Ala.)	Paper company wastes causing low dissolved oxygen, foam, excessive sludge deposits, and increased lignin.	Waste abatement program established.
January 1970	Mobile Bay (Ala.)	Pollution interfered with shellfish industry. The main source of this pollution was the coliforms from the Mobile River.	Remedial program established.
February 1970 ^a	Biscayne Bay (Fla.)	Heated effluent of power company interfered with aquatic life in the lower bay.	Remedial program established.
October 1970 ^a	Dade County (Fla.)	Municipal and industrial wastes endangered health and welfare.	Remedial program established.

^aConferences called at the request of the state.

^bThe long-term results are not known because these conferences were only recently completed.

Source: (250)

following: 1) to act against pollution on a river basin under unified leadership; 2) to strengthen the government's management structure against water pollution; and 3) to provide long-range economies by reason of the efficiencies in organization and in the elimination of duplication of efforts.

The House Subcommittee on Executive and Legislation Reorganization of the Committee on Government Operations held hearings⁷⁰ on the proposed Reorganization Plan on March 30 and May 4, 1966 (234). The Senate Subcommittee on Executive Reorganization of the Committee on Government Operations held hearings on April 1966. Both Secretary of Health, Education, and Welfare Gardner and Secretary of the Interior Udall testified in favor of the reorganization. However, many congressmen expressed their concern in these hearings that such a reorganization would disrupt the water pollution control program especially as a new administration had just been created in October 1965. Representative Blatnik expressed concern that the reorganization would lead to disorganization of the program and that the Department of the Interior would organize a new program, causing a substantial delay. Senator Muskie was against the transfer because he felt it would further delay the promulgation of guidelines for setting

⁷⁰ A proposed reorganization plan would automatically become effective in 60 days unless the Congress passed a disapproval resolution.

standards which would give the states further excuses for delay in meeting the deadline of July 1, 1967.

The New York Times reported that only 75 of the 325 commissioned officers, formerly of the Public Health Service, now in the Federal Water Pollution Control Administration would transfer to the Department of the Interior (7). This personnel problem would certainly hinder the program. This situation was not eased when the President named James M. Quigley, former Democratic representative from Pennsylvania, as Commissioner of the Federal Water Pollution Control Administration (288). According to an article in the Engineering News-Record (308), it was changes made in the enforcement program by Commissioner Quigley that had caused most of the discord in the Congress. This appointment was also representative of the part politics was playing in water pollution control.

On April 27, 1966, Representative Cleveland, Republican of New Hampshire, introduced a resolution of disapproval to the proposed reorganization plan (235). Cleveland gave the following reasons for his resolution: 1) it would shift emphasis from public health to natural resources preservation; 2) it is premature; it follows too closely two earlier reorganizations; and 3) the transferring of commissioned officers to civil service will be damaging to morale and cause the loss of personnel (234). The House Committee on Government Operations reported this resolution to the floor with a

recommendation that the resolution not pass (237), and the leadership never brought it to a vote. Therefore, on May 10, 1966, the water pollution control program was transferred to the Department of the Interior.

Guidelines for State Standards-Setting

The Water Quality Act of 1965 required that the states set water quality standards.⁷¹ Instructions for this requirement in the Act were as follows:

- 1) Submit a letter of intent within one year after date of enactment of the law that the state intends to set standards.
- 2) After public hearings, the state would establish by June 30, 1967:
 - a) water quality criteria applicable to all interstate waters of the state, and
 - b) implementation plan to meet the criteria adopted.
- 3) In setting standards, the state should take into consideration "their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other legitimate uses" (306, p. 908).

⁷¹ If a state failed to set standards the Secretary of Health, Education, and Welfare would set standards for the state (306).

The Federal Water Pollution Control Administration (FWPCA), as part of the Department of the Interior, promulgated guidelines to the states as to the setting of standards in May 1966. These guidelines were as follows:

1. Water quality standards should be designed to enhance the quality of water. If it is impossible to provide for prompt improvement in water quality at the time initial standards are set, the standards should be designed to prevent any increase in pollution. In no case will standards providing for less than existing water quality be acceptable.

2. No standards of water quality will be approved which provide for the use of any stream or portion thereof for the sole or principal purpose of transporting wastes.

3. Water quality criteria should be applied to the stream or other receiving water or portions thereof. The criteria should identify the water uses to be protected and establish limits on pollutants or effects of pollution necessary to provide for such uses. Numerical values should be stated for such quality characteristics where such values are available and applicable. Where appropriate, biological or bioassay parameters may be used. In the absence of appropriate numerical values or biological parameters, criteria should consist of verbal descriptions in sufficient detail as to show clearly the quality of water intended (for example, substantially free from oil).

4. The measure of time period and limiting values which will govern for purposes of the criteria should be defined (for example, annual arithmetic mean concentration, single daily maximum concentration). Where appropriate, the specified recurrence and duration of the accepted design streamflow should be defined (for example, 25-year recurrence of minimum lowflow of 10-day duration).

5. Water quality criteria should be accompanied by a description of present water quality and uses, together with uses expected in the future and the water quality required to make these uses possible. The water quality standards proposed by a State should provide for:

- (a) Potential and future uses as well as present intended use and uses;
- (b) The upgrading and enhancement of water quality and the use or uses of stream or portions thereof that are presently affected by pollution;
- (c) The maintenance and protection of quality and use or uses of waters now of a high quality or of a quality suitable for present and potential future uses.

6. The plan for implementing and enforcing the water quality criteria should be submitted in sufficient detail to describe the nature of the actions to be taken to achieve compliance, a time schedule for such compliance, the controls and surveillance for measuring compliance, and the enforcement authority and measures for ensuring compliance. It is recognized that there are a number of ways that the water quality standards can be effectively implemented and enforced by the States; achievement of the purposes of the Act, rather than the methods by which this is done, is paramount.

7. The plan should include consideration of all relevant pollutional sources, such as municipal and industrial wastes, cooling water discharges, irrigation return flows, and combined sewer overflows.

8. No standard will be approved which allows any wastes amenable to treatment or control to be discharged into any interstate water without treatment or control regardless of the water quality criteria and water use or uses adopted. Further, no standard will be approved which does not require all wastes, prior to discharge into any interstate waters, to receive the best practicable treatment or control unless it can be demonstrated that a lesser degree of treatment or control will provide water quality enhancement commensurate with proposed present and future water uses.

9. Public hearings are required to be held by State establishing standards in accordance with the provisions of the Act. A summary of each public hearing, accompanied by certification as to notice and conduct of such public hearings in conformity with procedures provided therefor, should be provided the Secretary. The summary should adequately advise him of:

- (a) The waters which were the subject of the public hearings;
- (b) The interests and interest groups represented, including

those in downstream or adjacent States which would be affected by the standards;

- (c) The views expressed on water quality and water uses by the various interests and interest groups;
- (d) Statistical data, reports, and other information submitted in support of statements, views, and positions expressed at the hearing, including those provided by the State or States holding the hearing.

When necessary to the Secretary's determination that the State criteria and plan are consistent with the purposes of the Act, a full transcript of the hearings and supporting data will be requested.

In the review of the hearing record to determine whether the State criteria and plan are consistent with the purposes of the Act, attention will be given to the extent to which there was expression of views by conservation, civic, recreation, agricultural, industrial and planning interests, as well as by Federal, State, interstate, and local agencies. Particular attention will be given to the extent to which there was opportunity for participation by interests downstream or adjacent States which would be affected by the standards.

10. State standards will be reviewed in terms of their consistency and comparability with those for affected waters of downstream or adjacent States. Coordination is encouraged among States to assure such consistency.

11. The use or uses of the waters concerned, the water quality criteria to provide for such use or uses, and the plan for implementing the water quality criteria should be in conformity with any comprehensive water pollution control plan developed pursuant to Section 3 of the Federal Water Pollution Control Act, as amended; should encompass any remedial program recommended by the Secretary as a result of an enforcement action taken under Section 10 of the Act; and should be revised to reflect any recommendation resulting as such programs and actions develop.

12. To meet the goals established by the Act, water quality standards must be adequate to protect and upgrade water quality in the face of population and industrial growth, urbanization, and technological change. In accordance with the provisions of the Act, it is anticipated that after the initial setting of standards, periodic review and revision will be required to take

into account changing technology of waste production and waste removal and advance in knowledge of water quality requirements developed through research (259, p. 5-10).

When the states began to submit the standards to the Department of the Interior, it became evident that two of the guidelines were not being carried out in a satisfactory manner. These were numbers 1 and 8, which required that standards will not lead to less than existing water quality, and that wastes receive the best practicable treatment. These requirements came to be known as the non-degradation issue.

In a Press Release dated February 8, 1968, Secretary of the Interior Udall attempted to resolve the controversy over these guidelines, as follows:

Waters whose existing quality is better than the established standards as of the date on which such standards became effective will be maintained at their existing high quality. These and other waters of a State will not be lowered in quality unless and until it has been affirmatively demonstrated to the State water pollution control agency and the Department of the Interior that such change is justifiable as a result of necessary economic or social development and will not interfere with or become injurious to any assigned uses made of, or presently possible in, such waters. This will require that any industrial, public, or private projects or development which would constitute a new source of pollution or an increased source of pollution to high quality waters will be required, as part of the initial project design, to provide the highest and best degree of waste treatment available under existing technology, and, since there are also Federal standards, these waste treatment requirements will be developed cooperatively (87, p. 1-2).

Even though the Department of the Interior had approved the standards of ten states, these approvals were in effect rescinded until the non-degradation policy had been agreed to by these states.

Summary

The Water Quality Act of 1965, a major amendment of the Water Pollution Control Act, provided two major elements to the program as well as providing additional funds for implementing the construction grant program and initiating research and development grants for the combined sewer problem. These two elements were: 1) the establishment of a separate administrative unit for water pollution control, the Federal Water Pollution Control Administration; and 2) the requirement that states establish water quality standards for interstate waters.

The Federal Water Pollution Control Administration was established so that the water pollution control program would be upgraded to the level appropriate to its importance. The Congress had been trying to get the Department of Health, Education, and Welfare to upgrade the program for several years. When the Secretary failed to act as required under the 1961 amendments of the Water Pollution Control Act, the Congress decided to act on its own. The transfer to the Department of the Interior further illustrated the dissatisfaction with the way the program had been administered by the Department of Health, Education, and Welfare.

The main reason for the development of standards was to provide a means to stop pollution before it started. During the process of setting standards, programs were developed to establish water

quality criteria, implementation plans, and time schedules to provide water quality sufficient to meet all legitimate water uses. As an additional means of water quality improvement, the Department of the Interior promulgated a new policy that high quality waters must not be degraded.

The FWPCA and its water pollution control functions were transferred to the Department of the Interior in May 1966, only six months after the passage of the Water Quality Act. The purpose of this reorganization was to unite water pollution control programs of the federal government with the various water programs of the Department of the Interior, especially with the river basin development program.

PART C

THE LOWER COLUMBIA RIVER: IMPLEMENTATION OF
THE PROVISIONS OF THE WATER POLLUTION
CONTROL ACT IN WASHINGTON
AND OREGON

CHAPTER I

WATER QUALITY MANAGEMENT IN THE LOWER
COLUMBIA BASIN PRIOR TO 1965Oregon

Water quality management was first made a specific and enforceable governmental function in the state of Oregon on November 8, 1938, when an initiative measure sponsored by the Oregon Stream Purification League was passed by a three to one margin (69).⁷² This Act established a public policy

. . . to restore and maintain a reasonable degree of purity in all the inland, coastal, and ground waters of the state for the protection and conservation of public health, for the recreational enjoyment of the people, for the economic and industrial development of the state, for the protection of property, and for the conservation of human, plant, aquatic, and animal life (69, p. 9).

To carry out this policy, as well as other objectives of the law, the Oregon State Sanitary Authority was established by the initiative to conduct a state-wide program for the abatement and control of water pollution. Such a program was to be administered under the following responsibilities and guidelines.

- 1) To encourage voluntary cooperation of all persons, political subdivisions, industries and others.
- 2) To establish standards of water quality and purity.

⁷² The State Legislature had failed to pass this law earlier in 1938.

- 3) To formulate and adopt regulations pertaining to minimum requirements for disposal of sewage and industrial wastes, and for operation and maintenance of sewage and waste treatment or disposal facilities.
- 4) To conduct studies, investigations, research, and programs pertaining to water quality and purity or to sewage and waste treatment or disposal.
- 5) To hold hearings, enter orders and enforce compliance with the laws of Oregon and with final orders of the Authority relating to water pollution.⁷³
- 6) When found necessary for the administration of the program to require that permits be obtained for any sewage or waste discharges.
- 7) To advise, consult, and cooperate with other agencies of the state, with political subdivisions, industries, other states, the Federal Government and with other affected groups.
- 8) To perform such other functions or acts as may be necessary to carry out effectively its powers, duties, and responsibilities (69).

The Oregon State Sanitary Authority began its work in 1939 by informing all municipalities and industries of their responsibilities under the new law. Since then, the agency has sought to control the major pollution problems of the state. These problems included the following:

- 1) Oxygen depletion in both the lower Willamette and the South Santiam.

⁷³ By 1965, 110 public hearings had been held and formal orders issued against municipal and industrial polluters, and 15 cases had been taken to court. The hearings involved 52 municipalities, 49 industries, and 9 private entities. Court actions resulted against 4 municipalities, 7 industries, and 3 private entities (72).

- 2) Bacterial contamination below all municipal outfalls.
- 3) Excessive slime growths in the McKenzie, South Santiam, Willamette, and Columbia Rivers below pulp and paper mills.
- 4) Sludge rafts on the lower Willamette which had broken loose from bottom deposits.
- 5) Excessive turbidity and siltation due to placer mining, sand and gravel operations, and logging in the Umpqua, Rogue, Clackamas, Tualatin, and Willamette Rivers.
- 6) Toxicity to fish and other aquatic life due to accidental spills, and mishandling of pesticides and industrial chemicals.
- 7) Objectional odors.
- 8) Tainted fish caused by industrial wastes; especially in the Multnomah Channel during the summer months (73).

In 1939, when the initiative was passed, water pollution was a serious problem in Oregon. Raw sewage from approximately 500,000 persons was being discharged directly into streams and lakes. The wastes of only 93,700 persons, less than 17 percent of the sewered population, were tributary to sewage treatment plants. None of the municipalities along the Columbia, Snake, or Willamette Rivers, or along the Pacific Ocean had sewage treatment facilities. Since then, progress against municipal water pollution has been substantial.

The number of sewage treatment plants built each year, in the period from 1939 to 1965, increased from an average of five per year

in the 1940's, to 10 per year in the 1950's, and to 16 per year in the first half of the 1960's (Table 19). Until the late 1950's, the principal construction was of new plants for municipalities that had none. After that date, however, the number of existing plants replaced or improved started to increase and thus the number of obsolete and inadequate facilities was gradually reduced.

The municipal wastes abatement program in Oregon involved both sewer construction and sewage treatment works, along with collecting interceptors. All of these facilities are expensive. The actual expenditures for the years 1946 to 1965 are shown in Table 20. The total capital investment over this 20-year period was approximately \$110,000,000. Operating and maintenance costs were not included. Part of the growth in sewage treatment plant construction from 1957 onward was the result of the federal construction grants program. The funds allotted to Oregon and the number of projects thus aided are shown in Table 21.

As an additional means to improve the quality of waters in the state, the Oregon State Sanitary Authority established general water quality standards for all waters in 1947. These standards were set to control deleterious fungal and bacterial growths, sludge deposits, gaseous accumulations, and offensive and toxic conditions. These standards are listed in Table 22.

Table 19. Summary of sewage treatment works constructed in Oregon: 1939-1965.

Year	New plants completed	Existing plants replaced	Existing plants improved	Total projects for year	Plants abandoned	No. in existence at end of year
1939	4	0	0	4	0	53
1940	3	0	0	3	0	56
1941	4	0	0	4	0	60
1942	5	0	0	5	0	65
1943	11	0	0	11	0	76
1944	9	0	0	9	0	85
1945	0	0	0	0	0	85
1946	1	0	0	1	4	82
1947	5	1	0	6	0	87
1948	5	0	1	6	1	91
1949	7	1	0	8	2	96
1950	7	0	0	7	8	95
1951	8	3	0	11	1	102
1952	12	2	2	16	3	111
1953	6	2	1	9	0	117
1954	13	0	2	15	3	127
1955	10	3	1	14	0	137
1956	14	1	0	15	2	149
1957	11	1	1	13	1	159
1958	12	3	6	21	2	169
1959	11	1	5	17	1	179
1960	14	3	5	22	3	190
1961	12	1	5	18	5	197
1962	8	1	7	16	3	202
1963	14	2	8	24	4	212
1964	22	3	7	32	4	230
1965	24	2	8	34	7	247

Source: (72)

Table 20. Sewerage works contracts awarded per year in Oregon: 1946-1965 (in dollars).

Year	Sanitary sewer systems	Interceptors, outfalls, and list stations	Sewage treatment works	Total
1946	491, 589	97, 998	200, 480	790, 067
1947	811, 394	578, 702	299, 395	1, 689, 491
1948	1, 571, 762	1, 395, 705	856, 452	3, 823, 919
1949	782, 067	4, 836, 740	1, 237, 951	6, 856, 758
1950	1, 634, 359	3, 408, 953	1, 323, 805	6, 367, 117
1951	984, 951	3, 604, 435	975, 459	5, 564, 845
1952	893, 198	1, 017, 102	2, 759, 209	4, 669, 509
1953	709, 697	2, 843, 841	1, 125, 576	4, 679, 114
1954	844, 657	807, 299	999, 382	2, 651, 338
1955	2, 167, 719	170, 010	700, 594	3, 038, 323
1956	1, 632, 380	200, 558	575, 438	2, 408, 376
1957	1, 198, 955	1, 115, 607	1, 135, 487	3, 450, 049
1958	3, 759, 273	1, 098, 662	1, 666, 282	6, 524, 217
1959	3, 619, 474	345, 807	1, 881, 841	5, 847, 122
1960	5, 058, 240	1, 971, 493	1, 294, 238	8, 323, 935
1961	2, 464, 506	3, 462, 667	1, 232, 800	7, 159, 973
1962	4, 555, 787	2, 778, 592	1, 682, 020	9, 016, 399
1963	4, 508, 313	2, 290, 674	6, 326, 684	13, 125, 671
1964	6, 820, 794	1, 725, 648	2, 503, 135	11, 049, 577
1965	9, 192, 781	1, 881, 161	3, 115, 428	14, 189, 370

Source: (72)

Table 21. Federal construction grants for sewage treatment facilities received by the state of Oregon: 1957-1965.

Fiscal year	Allotment (\$)	No. projects approved
1957	647, 125	11
1958	651, 575	10
1959	657, 300	8
1960	661, 250	7
1961	662, 775	11
1962	1, 113, 778	11
1963	1, 275, 951	16
1964	1, 282, 900	18
1965	1, 300, 900	13

Source: (72)

Table 22. Oregon water quality standards, as adopted in November 1947.

No sewage or industrial waste shall be discharged into any waters of the State of Oregon which in itself or in conjunction with other wastes will cause:

1. the dissolved oxygen content of the waters to be less than 5 parts per million.
 2. the hydrogen-ion concentration (pH) of the waters to be outside of the range of 6.5 to 8.5.
 3. the liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide or any other gases, in sufficient quantities to be deleterious to fish or related forms of aquatic life, navigation, or other reasonable uses made of such waters.
 4. the development of fungi or other growths having a deleterious effect on stream bottoms, fish or related forms of aquatic life, or which are injurious to health, recreation, or industry.
 5. the creation of toxic conditions that are deleterious to fish or related forms of aquatic life or affect the potability of drinking water.
 6. the formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or related forms of aquatic life or injurious to public health, recreation, or industry.
 7. objectionable discoloration, turbidity, scum, oily sleek or floating solids, or coat the aquatic life with oil films.
 8. bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish production, or be otherwise injurious to public health.
-

The main cause of industrial pollution in Oregon was the pulp and paper industry. The Oregon State Sanitary Authority held hearings on February 15, 1950, to determine the status of this industry's waste treatment program. These hearings disclosed that little if any progress had been made by the industry since the water pollution control law went into effect in 1939. As a result, the Oregon State Sanitary Authority issued orders that required the pulp and paper mills to initiate clean-up programs so that by May 1, 1952, all mills would stop discharging concentrated sulfite waste liquors during the months of July, August, September, and October, and all other low-flow periods (70).

Throughout the period from 1950 to 1965, the Oregon State Sanitary Authority continued to increase the requirements for these and other industrial establishments in the state. However, the pulp and paper mill wastes remain the most troublesome of all industrial wastes in Oregon.

The improvement in water quality in Oregon from 1939 to 1965 has been substantial even with the large population and industrial growth that occurred at the same time.⁷⁴ Much of this improvement can be attributed to the support given to the Oregon State Sanitary Authority by the public. However, new sources and types of pollution

⁷⁴ Much of this improvement in the Willamette River can be attributed to the low-flow augmentation made possible by the many Corps of Engineer dams on the tributaries.

are becoming more significant. Some of these will be discussed in the succeeding chapter.

Washington

Water pollution control by the state of Washington was initiated by state law on June 7, 1945 (300). The administration of the law was entrusted to the Washington Pollution Control Commission. This agency was given the authority to control and prevent pollution in all waters of the state, to adopt and promulgate rules, regulations and standards, and to carry out the following policy:

It is declared to be the public policy of the State of Washington to maintain the highest possible standards to insure the purity of all waters of the State consistent with public health and public enjoyment thereof, the propagation and protection of wildlife, birds, game, fish and other aquatic life, and the industrial development of the State, and to that end require the use of all known available and reasonable methods of industries and others to prevent and control the pollution of the waters of the State of Washington (300, p. 608).

The Washington Pollution Control Commission required, in furtherance of the above policy, that all municipalities provide at least primary sewage treatment and disinfection. The development of sewer systems and sewage treatment plants from 1940 to 1968 is shown in Table 23. The effect of this requirement for primary treatment was illustrated in the reduction of the population that discharged raw sewage from 640,000 in 1940 to 67,000 in 1968, at the same time that

Table 23. Status of sewerage and sewage treatment in Washington: 1940, 1945, 1957, 1962, 1968.

	1940	1945	1957	1962	1968
Number of sewerred communities	137	152	207	209	214
Number that discharge raw sewage	72	75	49	33	10
Number that discharge treated sewage	65	70	151	173	203
Number that discharge both raw and treated sewage	3	7	7	3	1
Census population of sewerred communities (in thousands)	998	1,049	1,510	1,685	1,142
Population connected to sewers	767	1,126	1,551	1,628	1,866
Population that discharge raw sewage	640	894	894	534	67
Population that discharge treated sewage	127	233	657	1,094	1,799
Population served by sewage treatment (in thousands)	127	233	657	1,094	1,799
Minor treatment ^a	3	7	0	7	0
Primary treatment	88	126	390	688	1,140
Intermediate treatment	36 ^b	6	0	11	10
Secondary treatment		94	239	389	626
Tertiary treatment	0	0	0	0	0
Number of treatment plants	68	82	155	193	208
Minor ^a	2	3	0	1	0
Primary	51	46	72	86	84
Intermediate	15 ^b	1	0	2	1
Secondary		32	79	104	122
Tertiary	0	0	0	0	0

^a Less than sedimentation.

^b In this survey of 1940, intermediate and secondary treatment and treatment plants were not listed separately.

Source: (264, 291, 292, 294, 297)

the sewerred population of the state was increasing from 767,000 to 1,866,000.

The water pollution control laws of Washington were amended in 1955 to require that all commercial and industrial establishments procure a permit from the Washington Pollution Control Commission before discharging wastes. The purpose of this system was, in effect, for each industry to state the character of its effluent, rather than having the state agency try to prove what it was (301).

The conditions for a permit were established to correct any existing pollution problems. If an industry met these conditions it was given a "permanent" permit, which was good for five years unless revoked. Otherwise, a temporary permit was issued which listed the necessary requirements for a permanent permit and the time schedule for obtaining one.

The specific requirements for permits were made for groups of industries. For example, pulp and paper mills were required to:

- 1) utilize or treat sulfite waste liquor; 2) recover Kraft chemicals;
- 3) reuse water; 4) recover fibers; 5) screen knotter and rejects;
- 6) mix alkaline and acid wastes; 7) use lagoons; and 8) use controlled discharging and diffusion (302).

However, as demonstrated in the enforcement conference in 1959 (page 185), holders of permanent permits acted as though the permit provided them with a license to pollute. Therefore, even considering the improvement made in

abating municipal and industrial wastes, from 1945 to 1965 by the Washington Pollution Control Commission, there was a great deal more to be done especially in regards to the wood-related industries along the Columbia River and in the Puget Sound area.

Lower Columbia River

Water pollution control in the Lower Columbia River by the states of Oregon and Washington has been carried out by each state being responsible for the waste discharges from its side. There has been some cooperation, but it was of little value. Each state had different interests regarding the water quality in the Columbia River. Oregon's main metropolitan area was along the Willamette River near its confluence with the Columbia. Thus, Oregon was more interested in cleaning the Willamette than the Columbia, especially as Oregon blamed most of the pollution in the Columbia on the pulp and paper mills on the Washington side. Because Washington's main cities are far from the Columbia, pollution of that river was not considered to be serious by administrators in Washington state.

The Lower Columbia River from its confluence with the Walla Walla River to Bonneville Dam experienced pollution mainly from food-processing plants, with smaller amounts from wood-processing plants and municipalities. However, because of the high percentage of these wastes that are treated and the high dilution factor, water quality

seldom went below established standards for dissolved oxygen, biochemical oxygen demand, turbidity, dissolved solids, and hardness. Problems did exist in maintaining standards for water temperature, nutrients, and bacteria (75). The pollution problems of the Lower Columbia River from Bonneville Dam to the Pacific Ocean were primarily the result of the pulp and paper industry, as discussed on page 184.

Summary

The states of Washington and Oregon engaged in active water pollution control programs through the Oregon State Sanitary Authority and the Washington Pollution Control Commission. These agencies operated by issuing orders for the installation of waste treatment facilities, and by setting water quality standards or by establishing a permit system for the control of water pollution.

Both states have made substantial progress in the abatement of municipal pollution by the construction of sewage treatment facilities during the period from 1945 to 1965. Progress in abating pollution from industries has been slow, especially that from pulp and paper plants.

CHAPTER II

MEETING REQUIREMENTS OF THE WATER POLLUTION
CONTROL ACT IN THE LOWER COLUMBIA BASINWater Quality StandardsDevelopment of Standards in Oregon

Like most other states, Oregon was against the proposal introduced by Senator Edmund Muskie in 1963, that would require the establishment of standards for all interstate streams (212). Governor Mark Hatfield told the House Committee on Public Works of Oregon's objections to such federal interference. When hearings were held in 1965, Governor Hatfield again registered his disapproval. Nevertheless, when the Water Quality Act became law, Oregon immediately set about the task of establishing the required standards, when Governor Hatfield submitted the letter of intent on December 29, 1965 (73). Federal guidelines were promulgated in 1966 (page 146) to assist the states in the preparation of standards.

Water quality standards that the states developed for all interstate waters consisted of three parts: 1) designation of specific water uses to be protected by the standards; 2) specific water-quality criteria that would provide water quality sufficient for the designated uses; and 3) an implementation and enforcement plan that would show

how these criteria would be met, and a time schedule in which each polluter must meet the necessary abatement plan (243).

The first step in the process of setting standards involved holding public hearings in the various basins affected to determine the public's desires as to water uses that need to be protected. The beneficial uses to be protected by the standards of Oregon are shown in Table 24.

General water-quality criteria (called standards) were adopted by Oregon in 1947 (page 2-3). These criteria, with additions, were used in the 1967 criteria as well. The additions were:

- 9) Any measurable increase in temperature when the receiving water temperatures are 64°F. or above, or more than 2°F. increase when receiving water temperatures are 62°F. or less.
- 10) Aesthetic conditions offensive to the human senses of sight, taste, smell or touch.
- 11) Radioisotope concentrations to exceed Maximum Permissible Concentrations in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products or pose an external radiation hazard (67, p. 106).

Oregon also adopted a general policy apart from these general standards. This policy was as follows:

Notwithstanding the general and special water quality standards contained in this subdivision, the highest and best practicable treatment and/or control of wastes, activities, and flows shall in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels (67, p. 1-2).

Table 24. Oregon's water quality standards: beneficial uses to be protected: 1967.

	Domestic water supply	Industrial water supply	Irrigation	Livestock watering	Anadromous fish passage	Salmonid fish rearing	Salmonid fish spawning	Resident fish and other aquatic life	Hunting and wildlife	Fishing	Water skiing and swimming	Pleasure boating	Aesthetic qualities	Navigation
Goose Lake				X		X		X	X	X	X	X	X	
Grande Ronde River	X	X	X	X	X	X	X	X	X	X	X	X	X	
Walla Walla River	X	X	X	X	X	X	X	X	X	X	X	X	X	
Snake River	X	X	X	X	X ^a	X	X	X	X	X	X	X	X	
Columbia River	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Klamath River														
Klamath Lake to Keno Regulating Dam	X	X	X	X				X	X	X	X	X	X	
Keno Regulating Dam to California border	X	X	X	X		X	X	X	X	X	X	X	X	
Willamette River														
Mouth to Willamette Falls including Multnomah Channel	X ^b	X	X	X	X	X		X	X	X	X	X	X	X
Willamette Falls to Newberg	X	X	X	X	X	X		X	X	X	X	X	X	X
Newberg to Salem	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Salem to Coast Fork	X	X	X	X	X	X	X	X	X	X	X	X	X	
Marine and estuarine		X			X	X		X	X	X	X	X	X	X

^aUp to Oxbow Dam.

^bIf no better source is reasonably attainable.

Source: (74)

The implementation and enforcement plan, as part of the state water quality standards, was to:

- 1) Assess the present adequacy of water quality in specific areas to meet the criteria and use needs.
- 2) List present waste discharges and assess the adequacy of present treatment or control measures.
- 3) List treatment or control needs and time schedules for installing necessary treatment or control facilities to achieve water quality objectives.
- 4) Describe the state water quality surveillance programs (242).

These steps were accomplished by the Oregon State Sanitary Authority and published in May 1967 (74). The results of the assessment of adequacy of water quality both in 1967 and 1970 are shown in Table 25. The cataloging of waste sources in the Columbia Basin is shown in Table 26, along with implementation plans for both 1967 and 1972. This latter data show the progress made, or the lack of it, in that time period.

The final phase of the implementation and enforcement plan is the surveillance program. This involved the periodic checking of fixed stations that are selected as monitoring or control points above and below pollution sources and near the mouths of tributaries. At these points it is usual to run a "sanitary survey" consisting of date, time, flow, pH, temperature, dissolved oxygen, biochemical oxygen

Table 25. Compliance of Oregon streams with water quality standards of 1967.

Body of water	1967			1970		
	Compliance	Non-compliance	Remarks	Compliance	Non-compliance	Remarks
Goose Lake	X		Need longer period of record.	X		Turbidity high.
Grande Ronde River	X			X		Turbidity and temperature problems.
Walla Walla River	X		Practically no summer flow.	X		Temperature and bacteria count too high.
Snake River		X	Nutrients and algal problems.		X	Turbidity, bacteria, nutrients, and temperature problems.
Columbia River		X	Slime problems and high bacteria count.	X		Turbidity and temperature problems.
Klamath River		X	Nutrient and algal problems.		X	Algal, dissolved oxygen, bacteria, temperature, color, and pH problems.
Willamette River		X	Summer dissolved oxygen deficiencies, slime, and high bacteria count.		X	Turbidity, bacteria, and temperature problems.
Marine and estuarine		X	Bacteria count high in shellfish areas.	X		High bacteria count.

Source: (68, 74)

Table 26. Major sources of wastes discharged into the Columbia River from Oregon; including implementation plans: 1967 and 1972.

Source	Character of waste	Type of treatment installed, as of 1966	Needed action: Implementation plan	
			1967	1972
Umatilla	Domestic sewage	Primary treatment, with chlorination	Secondary treatment, by July 1972	Complete secondary treatment by Aug. 1972
Boardman	Domestic sewage	Single-cell lagoon, non-overflow	Continued surveillance, and monthly reports	Facilities deemed adequate at present, continued surveillance required
Arlington	Domestic sewage	Primary treatment, with chlorination	Secondary treatment by July 1972	Complete secondary treatment by Sept. 1973
The Dalles	Domestic sewage	Primary treatment, with chlorination	Secondary treatment by July 1972	Complete secondary treatment by Oct. 1972
Hood River	Domestic sewage	Primary treatment, with chlorination	Secondary treatment by July 1972	Complete secondary treatment by Dec. 1973
Gresham	Domestic sewage	Primary treatment, with chlorination	Secondary treatment by July 1972	Complete secondary treatment by Aug. 1972
Portland International Airport	Domestic sewage	Primary treatment, with chlorination	Secondary treatment by July 1972	Connect to area sewer, Oct. 1972
Portland	Domestic sewage	Primary treatment, with chlorination	Secondary treatment by July 1972	Complete secondary treatment by Dec. 1973
Kaiser Gypsum, St. Helens ^a	Wood fiber	Primary treatment under construction	Septic tank, drainfield or secondary treatment prior to July 1, 1967	Facilities deemed appropriate at present. Continued surveillance required. Secondary completed Sept. 1968
Boise-Cascade Pulp Mill, St. Helens	Pulp mill wastes (Kraft)	Primary treatment under construction	Septic tank, drainfield or secondary treatment prior to July 1, 1967; subject to conference requirements ^b	Facilities deemed adequate at present. Continued surveillance required
St. Helens	Domestic sewage	Primary treatment, with chlorination	Secondary treatment by July 1972	Facilities deemed adequate at present (completed Aug. 1971). Continued surveillance required.

(Continued on next page)

Table 26. (Continued)

Source	Character of waste	Type of treatment installed, as of 1966	Needed action: Implementation plan	
			1967	1972
Rainier	Domestic sewage	Primary treatment, with chlorination	Secondary treatment by July 1972	Complete secondary treatment by July 1973
Crown Zellerbach, Wauna	Pulp and paper wastes	Primary treatment-clarification	Aerobic digestion; subject to conference requirements ^b	Secondary treatment for industrial wastes Dec. 1975
Astoria	Domestic sewage	No treatment	Interceptor sewers; Secondary treatment or equivalent by Dec. 12, 1970; monthly reports	Complete secondary treatment by June 1973

^aWastes actually discharged into Scappose Slough.

^bThese requirements are: All pulp and paper mills discharging wastes to the Lower Columbia River shall design and construct primary treatment facilities for removal of solids. Such facilities shall accomplish a 70 percent reduction by December 31, 1967 (68).

Source: (68, 74)

demand, specific conductance, coliform concentrations, and any other parameter that appears to be pertinent. At other points, a "basic data" survey is made consisting of pH, color, turbidity, total solids, suspended solids, alkalinity, hardness, sulfates, ammonia nitrogen, nitrate nitrogen, phosphates, and chlorides. The purpose of this surveillance plan is to record the water quality at various time intervals to establish the effects of new treatment practices and to determine the needs for further treatment (74).

Oregon's water quality standards were approved by the Secretary of the Interior, by letter dated July 18, 1967. However, complete approval was withheld on the Klamath River and Goose Lake until the Secretary could determine the compatibility of Oregon's and California's standards (52).

As a result of the special pollution problems in the Columbia River, both present and potential, special water quality standards were adopted for it. These standards are shown in Table 27. These special standards differed from the general water quality standards of Oregon as follows:

- 1) Specific limits for coliform bacteria were established for the Columbia, rather than the broad statement of the general standards.
- 2) Dissolved oxygen was changed to 90 percent saturation for the river below Bonneville Dam rather than 5 parts per million.

Table 27. Oregon water quality standards for the Columbia River; adopted according to the requirements of the Water Quality Act of 1965.

No sewage or industrial wastes shall be discharged into the waters of the Columbia River or its tributaries, nor shall any industrial, commercial, agricultural or other operation be conducted so that such waters or operations in itself or in connection with other waste and/or operation will cause the quality of the public waters of the main stream of the Columbia River in Oregon to be less than or outside the range of the following standards:

1. Organisms of the coliform group:
 - a. From the eastern Oregon-Washington boundary downstream to the Interstate Highway #5 Bridge: Average less than 24 per 100 ml and not exceed this in more than 20 percent of samples.
 - b. From the Interstate Highway #5 Bridge to the mouth: Average less than 1,000 per 100 ml with 20 percent of samples not to exceed 2400 per 100 ml.
 2. Dissolved oxygen:
 - a. Above Bonneville Dam: Average daily greater than 95 percent saturation.
 - b. Below Bonneville Dam: Average daily greater than 90 percent saturation.
 3. pH: Between 7.0 and 8.5.
 4. Turbidity (in Jackson Turbidity Units): Less than 5 above natural conditions.
 5. Temperature: No significant increase in natural water temperature.
 6. Dissolved chemical substances (above zone of marine water intrusion): Conform with current U.S. Public Health Service drinking water standards.
 7. Toxic or other deleterious substances: No tastes and odors to be imparted to drinking water supplies or fish and related forms. No pesticide concentrations, either individually or in synergistic combination in quantities which are likely to have detrimental effects upon humans, plants, animals, or fish and related forms.
 8. Radioactivity: Conform with current U.S. Public Health Service drinking water standards except where concentration factors of aquatic flora and fauna exceed Public Health Service reduction factors; then maximum permissible concentration of radioisotopes shall be reduced below acute or chronic problem levels.
-

Source: (67)

- 3) The limits on pH were changed to a range of 7.0 to 8.5 rather than 6.5 to 8.5.
- 4) A specific limit of less than 5 Jackson Turbidity Units above natural conditions was set rather than the general statement of the general standards.
- 5) No significant increase in natural water temperature was the standard for the Columbia River, and the general standards were no measurable increase when the receiving water temperature was 64°F or above, or no more than 2°F increase when that temperature was 62°F or less (67).

Development of Standards in Washington

The standard-setting process proceeded somewhat differently in Washington than in Oregon because Washington decided to use a classification of streams system. The beneficial uses to be protected were matched to the needed water quality by a four-part classification: AA, A, B, and C. The results of this process are shown in Table 28, for both fresh and marine waters. Then, each stream was classified either AA, A, B, or C, according to the water quality needed to meet the uses desired of that stream. The classification system is shown in Table 29.

The Lower Columbia River was classified as an "A," or excellent stream. The standards associated with this classification

Table 28. Washington's water quality standards: characteristic uses to be protected: 1968.

Uses	Watercourse classification			
	AA	A	B	C
Fisheries				
Salmonid				
Migration	FM	FM	FM	FM
Rearing	FM	FM	FM	
Spawning	F	F		
Warm water game fish				
Rearing	F	F	F	
Spawning	F	F	F	
Other food fish	FM	FM	FM	
Commercial fishing	FM	FM	FM	
Shellfish	M	M	M	
Wildlife	FM	FM	FM	
Recreation				
Water contact	FM	FM	FM	
Boating and fishing	FM	FM	FM	FM
Environmental aesthetics	FM	FM	FM	FM
Water supply				
Domestic	F	F		
Industrial	FM	FM	FM	FM
Agricultural	F	F	F	F
Navigation	FM	FM	FM	FM
Log storage and rafting	FM	FM	FM	FM
Hydro-power	F	F	F	F

F - Fresh water; M - Marine water

Source: (303)

Table 29. Washington's water quality standards: Water Quality Criteria: 1968.

1. Class AA Extraordinary

a. General Characteristic

Water quality of this class markedly and uniformly exceeds the requirements for all or substantially all uses.

b. Characteristic Uses

Characteristic uses include, but are not limited to, the following:

Water supply (domestic, industrial, agricultural)

Wildlife habitat, stock watering

General recreation and aesthetic enjoyment (picnicking, hiking, fishing, swimming, skiing and boating)

General marine recreation and navigation

Fish and shellfish reproduction, rearing and harvest

c. Water Quality Standards

Total Coliform Organisms shall not exceed median values of 50 (FRESH WATER) or 70 (MARINE WATER) with less than 10% of samples exceeding 230 when associated with any fecal source.

Dissolved Oxygen shall exceed 9.5 mg/l (FRESH WATER) or 7.0 mg/l (MARINE WATER).

Temperature No measurable increases shall be permitted within the waters designated which result in water temperatures exceeding 60°F (FRESH WATER) or 55°F (MARINE WATER) nor shall the cumulative total of all such increases arising from nonnatural causes be permitted in excess of $t = 75/(T-22)$ (FRESH WATER) or $t = 24/(T-39)$ (MARINE WATER); for purposes hereof "t" represents the permissive increase and "T" represents the resulting water temperature.

pH shall be within the range of 6.5 to 8.5 (FRESH WATER) or 7.8 to 8.5 (MARINE WATERS) with an induced variation of less than 0.1 units.

Turbidity shall not exceed 5 JTU.

Toxic, Radioactive or Deleterious Material Concentrations shall be less than those which may affect public health, the natural aquatic environment, or the desirability of the water for any usage.

Aesthetic Values shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch or taste.

2. Class A Excellent

a. General Characteristic

Water quality of this class exceeds or meets the requirements for all or substantially all uses.

b. Characteristic Uses

Characteristic uses include, but are not limited to, the following:

Water supply (domestic, industrial, agricultural)

Wildlife habitat, stock watering

(Continued on next page)

Table 29. (Continued)

General recreation and aesthetic enjoyment (picnicking, hiking, fishing, swimming, skiing and boating)
 Commerce and navigation
 Fish and shellfish reproduction, rearing and harvest

c. Water Quality Standards

Total Coliform Organisms shall not exceed median values of 240 (FRESH WATER) with less than 20% of samples exceeding 1,000 when associated with any fecal source or 70 (MARINE WATER) with less than 10% of samples exceeding 230 when associated with any fecal source.

Dissolved Oxygen shall exceed 8.0 mg/l (FRESH WATER) or 6.0 mg/l (MARINE WATER).

Temperature No measurable increases shall be permitted within the waters designated which result in water temperatures exceeding 65°F (FRESH WATER) or 61°F (MARINE WATER) nor shall the cumulative total of all such increases arising from nonnatural causes be permitted in excess of $t = 90/(T-19)$ (FRESH WATER) or $t = 40/(T-35)$ (MARINE WATER); for purposes hereof "t" represents the permissive increase and "T" represents the resulting water temperature.

pH shall be within the range of 6.5 to 8.5 (FRESH WATER) or 7.8 to 8.5 (MARINE WATER) with an induced variation of less than 0.25 units.

Turbidity shall not exceed 5 JTU over natural conditions.

Toxic, Radioactive or Deleterious Material Concentrations shall be below those of public health significance, or which may cause acute or chronic toxic conditions to the aquatic biota, or which may adversely affect any water use.

Aesthetic Values shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch or taste.

3. Class B Good

a. General Characteristic

Water quality of this class exceeds or meets the requirements for most uses.

b. Characteristic Uses

Characteristic uses include, but are not limited to, the following:

General recreation and aesthetic enjoyment (fishing, swimming, skiing and boating)
 Fishery and wildlife habitat
 Industrial and agricultural water supply
 Stock watering
 Commerce and navigation
 Shellfish reproduction and rearing, and crustacea (crabs, shrimp, etc.) harvest

c. Water Quality Standards

Total Coliform Organisms shall not exceed median values of 1,000 with less than 20% of samples exceeding 2,400 when associated with any fecal source.

Dissolved Oxygen shall exceed 6.5 mg/l (FRESH WATER) or 5.0 mg/l (MARINE WATER), or 70% saturation whichever is greater.

(Continued on next page)

Table 29. (Continued)

Temperature No measurable increases shall be permitted within the waters designated which result in water temperatures exceeding 70°F (FRESH WATER) or 66°F (MARINE WATER) nor shall the cumulative total of all such increases arising from nonnatural causes be permitted in excess of $t = 110/(T-15)$ (FRESH WATER) or $t = 52/(T-32)$ (MARINE WATER); for purposes hereof "t" represents the permissive increase and "T" represents the resulting water temperature.

pH shall be within the range of 6.5 to 8.5 (FRESH WATER) or 7.8 to 8.5 (MARINE WATER) with an induced variation of less than 0.5 units.

Turbidity shall not exceed 10 JTU over natural conditions.

Toxic, Radioactive or Deleterious Material Concentration shall be below those which adversely affect public health during the exercise of characteristic usages, or which may cause acute or chronic toxic conditions to the aquatic biota, or which may adversely affect characteristic water uses.

Aesthetic Values shall not be reduced by dissolved, suspended, floating or submerged matter, not attributable to natural causes, so as to affect water usage or taint the flesh of edible species.

4. Class C Fair

a. General Characteristic

Water quality of this class exceeds or meets the requirements of selected and essential uses.

b. Characteristic Uses

Characteristic uses include, but are not limited to, the following:

- Commerce and navigation
- Cooling water
- Boating
- Fish passage

c. Water Quality Standards

Total Coliform Organisms shall not exceed median values of 1,000 when associated with any fecal source.

Dissolved Oxygen shall exceed 5.0 mg/l (FRESH WATER) or 4.0 mg/l (MARINE WATER), or 50% saturation whichever is greater.

Temperature No measurable increases shall be permitted within the waters designated which result in water temperatures exceeding 75°F (FRESH WATER) or 72°F (MARINE WATER) nor shall the cumulative total of all such increases arising from nonnatural causes be permitted in excess of $t = 125/(T-12)$ (FRESH WATER) or $t = 64/(T-29)$ (MARINE WATER); for purposes hereof "t" represents the permissive increase and "T" represents the resulting water temperature.

pH shall be within the range of 6.0 to 9.0 (FRESH WATER) or 7.0 to 9.0 (MARINE WATER) with an induced variation of less than 0.5 units.

(Continued on next page)

Table 29. (Continued)

Turbidity shall not exceed 10 JTU over natural conditions.

Toxic, Radioactive or Deleterious Material Concentrations shall be below those which adversely affect public health during the exercise of characteristic usages, or which may cause acute or chronic toxic conditions to the aquatic biota, or which may adversely affect characteristic water uses.

Aesthetic Values shall not be interfered with by the presence of obnoxious wastes, slimes, or aquatic growths or by materials which will taint the flesh of edible species.

Source: (303)

are shown on page 187. In addition to these standards, two additional ones were set for this section of the river:

- 1) Temperature - no measurable increase in water temperature which results in 68^oF or above.
- 2) Coliform organisms - in the section of the river below the interstate highway No. 5 bridge, median values of 1,000 with less than 20 percent of samples exceeding 2,400 when associated with any fecal source.

Implementation and Enforcement Plan

To insure that the criteria and classifications established were complied with, the following plan was to be followed. Five years were considered to be the most time needed, except in the most extraordinary of circumstances. Washington's implementation and enforcement plan was promulgated on December 4, 1967 (303). The policy under which this plan was to be enforced was: "It shall be an unalterable guideline that existing discharges which conflict with criteria and classifications shall be notified so as to be consistent with such, as expeditiously as is reasonably possible" (303, p. 78).

Municipal waste discharges were to be controlled by the issuance of orders, and industrial wastes, by the issuance of permits. The Washington Pollution Control Commission was responsible for maintaining a surveillance program to see that the various regulations,

orders, and permits were being met. When such regulations, orders, and permits were not being complied with, the Commission would notify the person responsible for such failures. A public hearing was held to further substantiate the cause of such pollution. If the pollution still was not abated, the Commission could request an injunction, levy a penalty of \$100 per day, initiate criminal proceedings, or issue additional orders (303).

The water quality standards of Washington were approved by the Secretary of the Interior on January 22, 1968 (53). The Secretary also said that a review of the standards of Oregon and Washington regarding thermal effects in the Columbia River would be made when a joint federal-state study had been completed.

Program Grants

The amount of federal grants for the water pollution control programs of the states of Oregon and Washington for the period from 1950 to 1952 and from 1957 to 1965 are shown in Table 30.

Construction Grants

Nearly all the municipalities along the Lower Columbia River have benefited from federal construction grants in the building of their sewage treatment facilities. The improvement in the bacteriological quality of the river can in part be attributed to this aid. Those

municipalities receiving grants-in-aid from the beginning of the program in 1957 through June 1970 are shown in Table 31. In addition to those municipalities along the river, communities in the Portland Metropolitan Area are included because of the impact the sewage pollution from this area has on water quality in the Lower Columbia River.

The Federal Enforcement Action on the
Lower Columbia River

The Lower Columbia River from Bonneville Dam to Cathlamet, Washington, became the subject of a federal enforcement action in September 1958, at a request of the states of Oregon and Washington (30). Studies by the Public Health Service confirmed that the "use of the river, unfortunately, results in pollution of these interstate waters that endangers the health and welfare of some of the inhabitants of both states" (30, p. 10). This pollution was the result of:

- 1) bacteria and other microorganisms contained in untreated and inadequately treated domestic sewage discharged to the river; and
- 2) organic wastes from both municipal and industrial sources that acted as nutrients for the excessive growth of algae.

It was estimated that the coliform content of the sewage discharged to the Lower Columbia River was equivalent to 156,000

Table 30. Program grants received by the states of Oregon and Washington: 1950-1965.

State	Program grants (\$)					
	1950	1951	1952	1957	1958	1959
Oregon	12,208	12,100	10,400	21,785	29,700	30,100
Washington	13,473	13,400	12,500	26,555	38,200	38,500
	1960	1961	1962	1963	1964	1965
Oregon	30,100	29,800	44,600	45,800	46,400	45,900
Washington	38,900	39,200	61,700	65,300	66,100	66,300

Source: (141, 146, 150, 167, 173, 180, 197, 205, 215, 233)

Table 31. Construction grants received by municipalities along the Lower Columbia River under the authority of the Water Pollution Control Act: 1957-1970.

Municipality or other grantee	Project status	Project description	Estimated cost (\$)	Federal grant (\$)	Date of grant
<u>Washington</u>					
Beacon Hill	Completed	New interceptor	85,245	25,570	2/1961
Sanitary District	Completed	Extension of interceptor	43,877	13,163	11/1965
Camas	Completed	New (other)	25,323	13,883	9/1957
Cathlamet	Completed	New treatment plant, outfall sewer, and interceptor	67,346	20,200	12/1959
Clark County Sanitary District No. 1	Approved	Extension of interceptor	110,000	36,300	6/1970
Hazel Dell	Completed	New lagoon	80,963	24,280	7/1960
Sanitary District	Completed	Addition to lagoon	8,183	2,450	6/1962
	Completed	Extension of interceptor	208,537	68,570	6/1966
Ilwaco	Completed	New treatment plant, outfall sewer, and interceptor	164,302	49,290	8/1957
Kelso	Completed	Extension to (other)	28,178	8,250	6/1961
	Completed	Alterations to outfall sewer	15,355	4,350	7/1963
La Center	Completed	New treatment plant, outfall sewer, and interceptor	63,106	18,931	4/1966
Longview	Completed	New and enlarged lagoons	626,361	187,908	3/1966
	Approved	Extension of interceptor	739,400	244,000	12/1969
Ridgefield	Completed	New treatment plant and outfall sewer	72,410	21,720	12/1958
Stevenson	Approved	New treatment plant and interceptor	281,600	84,480	10/1968
Vancouver	Completed	New interceptor	71,509	21,452	2/1960
	Completed	Extension of interceptor	215,130	64,530	1/1962
	Completed	Extension of interceptor	640,274	192,082	3/1966
	Approved	New and larger treat- ment plant and interceptor	3,072,000	1,013,760	5/1970
Washougal	Completed	New lagoon	332,217	99,665	3/1965

(Continued on next page)

Table 31. (Continued)

Municipality or other grantee	Project status	Project description	Estimated cost (\$)	Federal grant (\$)	Date of grant
<u>Oregon</u>					
Boardman	Completed	New lagoon	73,371	22,010	7/1964
Clatskanie	Completed	New treatment plant, outfall sewer, and interceptor	193,310	57,993	2/1957
Hood River	Completed	New treatment plant and interceptor	193,213	57,960	5/1959
Odell Sanitary District	Completed	New treatment plant	126,404	37,920	10/1969
Rainier	Completed	New treatment plant and interceptor	132,761	39,400	1/1958
St. Helens	Completed	New treatment plant, outfall sewer, and interceptor	404,442	121,090	11/1957
The Dalles	Completed	New treatment plant	276,550	82,965	5/1959
Troutdale	Under constr.	Extension of treatment plant and interceptor	299,500	159,940	1/1969
	Approved	Extension of interceptor	110,400	36,430	11/1969
	Approved	Extension of interceptor	97,000	29,100	6/1970
Warrenton	Completed	New lagoon	234,784	77,470	10/1969
Wood Village Sanitary District	Completed	Extension of interceptor	19,637	5,890	11/1962
<u>Portland Metropolitan Area</u>					
Aloha Sanitary District	Completed	New treatment plant and interceptor	1,351,584	405,475	4/1964
Beaverton	Completed	Addition to treatment plant	149,907	43,850	8/1962
Gresham	Completed	Extension of interceptor	66,078	19,300	11/1966
	Under constr.	Extension of interceptor	825,200	272,310	10/1969
Lake Oswego	Completed	Addition to treatment plant and interceptor	1,374,286	250,000	11/1961
	Completed	Extension of interceptor	64,573	19,370	11/1964
	Completed	Extension of interceptor	170,724	56,330	4/1970

(Continued on next page)

Table 31. (Continued)

Municipality or other grantee	Project status	Project description	Estimated cost (\$)	Federal grant (\$)	Date of grant
Milwaukie	Completed	Addition to treatment plant	192,770	57,830	10/1961
Multnomah County	Completed	New outfall sewer	87,318	26,195	3/1957
	Completed	New treatment plant and interceptor	1,487,108	250,000	9/1959
	Completed	Extension of interceptor	10,989	3,290	1/1964
	Completed	Extension of treatment plant	240,446	72,133	8/1965
	Completed	Alteration of treatment plant	337,997	111,539	2/1966
	Completed	New treatment plant	838,810	461,345	1/1967
	Completed	New treatment plant, outfall sewer, and interceptor	1,434,663	250,000	11/1961
Portland	Completed	Extension of treatment plant	104,077	31,220	7/1961
	Completed	Extension to interceptor	607,239	182,170	8/1962
	Completed	Extension to interceptor	38,883	11,080	9/1962
	Completed	New interceptor	113,106	33,930	8/1963
	Completed	Extension to interceptor	30,738	9,221	8/1965
	Completed	Extension to interceptor	4,029,376	600,000	10/1965
	Under constr.	New and extension to interceptor	2,111,500	1,161,320	7/1967
	Under constr.	Extension to treatment plant	2,828,000	1,555,400	11/1968
	Approved	Extension of interceptor	539,000	177,870	3/1970
	Completed	Extension of interceptor	382,576	125,530	3/1970
	Completed	Extension of treatment plant, outfall sewer, and interceptor	348,145	104,440	8/1963
Tigard	Completed	Extension of interceptor	61,587	33,873	11/1968
	Completed	New treatment plant	87,197	26,159	2/1957
Tigard Sanitary District	Completed	New outfall sewer and interceptor	855,375	250,000	11/1959

Source: (263)

persons.⁷⁵ The municipalities on the Oregon side of the river contributed 94 percent. The main source of this bacterial pollution was the city of Portland, which contributed nearly 90 percent of the total. This was because the city provided no disinfection for its wastes. In addition, untreated sewage was discharged by the municipalities of St. Helens and Rainier, Oregon, and Cathlamet, Washington, and a small segment of Vancouver, Washington (Table 32). The enforcement conference concluded that this pollution was a health hazard to those who used the river for public water supply, navigation, fishing, boating, swimming, and other recreational uses (Figure 2).

The pollution of the Lower Columbia River by the organic constituents of sewage and industrial wastes was equivalent to a population of 3,200,000. Of this pollution, sewage contributed 9 percent and industrial wastes, 91 percent; Washington sources contributed 85 percent and Oregon, 15 percent. Pulp and paper mills and associated wood industries contributed 87 percent of all organic wastes (Figure 3 and Table 33). These wastes contained nutrients that aided the growth of algal slimes which interfered with commercial and sport fishing by fouling gear. The conference unanimously agreed to meet in a year to work on an action program to abate this pollution.

⁷⁵ The sewered population tributary to the Lower Columbia River was 377,800. Thus, approximately 59 percent of the wastes were treated (88.5 percent in Washington, and 50.1 percent in Oregon).

Table 32. Bacterial population equivalents of sewage discharged to Lower Columbia River: 1958.

Source	Treatment	Sewered population	Bacterial population equivalent	
			Number	Percent of total
<u>Oregon</u>				
Clatskanie	Intermediate-chlorination	800	80	0.05
Rainier ^a	None	1,200	1,200	0.77
St. Helens ^b	None	4,500	4,500	2.88
Portland	Primary	280,000	140,000	89.57
Portland Airport	Primary-chlorination	3,000	300	0.19
Gresham	Primary-chlorination	3,000	300	0.19
Troutdale Multnomah County Farm	Secondary	1,000	100	0.06
Reynolds Aluminum Co.	Primary	500	250	0.16
Total Oregon		294,000	146,730	93.87
<u>Washington</u>				
Cathlamet ^c	None	650	650	0.42
Kelso	Primary-chlorination	8,000	800	0.51
Longview	Primary-chlorination	24,000	2,400	1.54
International Paper Co.	Primary-chlorination	400	40	0.03
Longview Fiber Co.	Primary-chlorination	570	60	0.04
Reynolds Aluminum Plant	Primary-chlorination	120	10	Negligible
Weyerhaeuser Timber Co.	Primary-chlorination	1,000	100	0.06
Kalama	Primary-chlorination	1,000	100	0.06
Woodland	Primary-chlorination	1,000	100	0.06
Vancouver	Primary-chlorination	40,550	4,060	2.60
	None	700	700	0.45
Aluminum Company of America	Primary-chlorination	430	40	0.03
Camas	Primary-chlorination	5,200	520	0.33
Washougal Woolen Mill	Primary-chlorination	180	20	Negligible
Total Washington		83,800	9,600	6.13
Total all sources		377,800	156,330	100.00

^aPrimary treatment plant with chlorination facilities placed in operation June 1959.

^bFacilities for primary treatment and chlorination under construction.

^cFederal grant requested. Plans and specifications being prepared.

Source: (293)

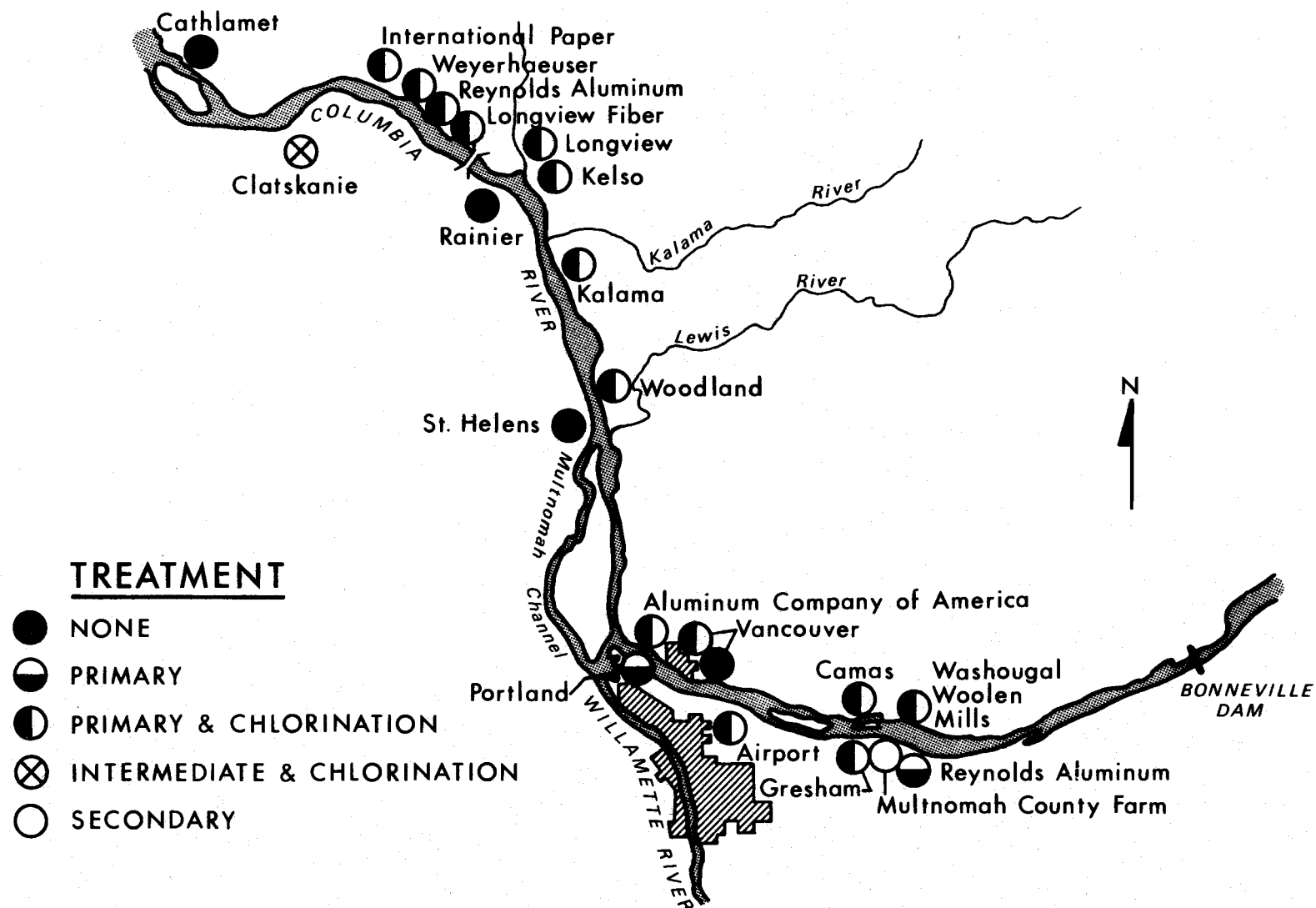


Figure 2. Principal Sources of Sewage: Lower Columbia River, 1958.

Source: (285)

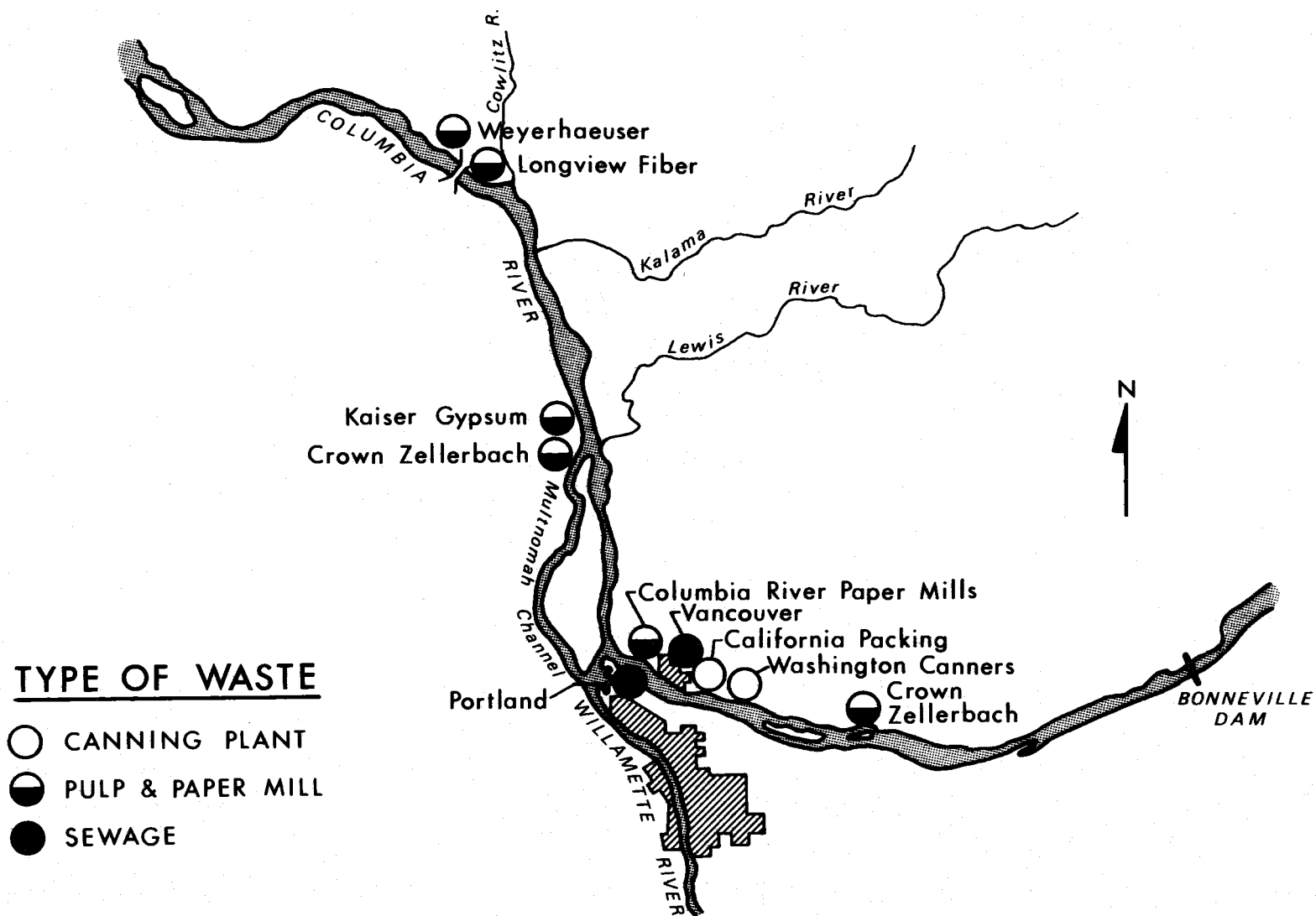


Figure 3. Principal Sources of Organic Wastes: Lower Columbia River, 1958.

Source: (285)

Table 33. Oxygen demand population equivalents of sewage and industrial wastes discharged to Lower Columbia River: 1958.

Source	Population equivalent			
	Sewage		Industrial wastes	
	Number	Percent of total	Number	Percent of total
<u>Oregon</u>				
Clatskanie	320	Negligible	-	-
Rainier	1,200	0.04	-	-
St. Helens	4,500	0.14	-	-
Kaiser Gypsum Co., Inc.	-	-	100,000	3.11
Crown Zellerbach Corp.	-	-	150,000	4.66
Portland	218,000	6.78	-	-
Associated Meat Packers	-	-	4,800	0.15
Columbia Wool Scouring Co.	-	-	Unknown	-
Pacific Meat Co.	-	-	2,000	0.06
Portland Airport	2,100	0.07	-	-
Portland Rendering Co.	-	-	500	0.01
Portland Union Stockyard ^a	-	-	1,000	0.03
Swift and Company	-	-	9,000	0.28
Gresham	5,900	0.18	-	-
Troutdale				
Bissinger and Co.	-	-	Unknown	-
Multnomah County Farm	200	Negligible	-	-
Reynolds Aluminum Co.	350	0.01	-	-
Total Oregon	232,570	7.22	267,300	8.30
<u>Washington</u>				
Cathlamet	650	0.02	-	-
Kelso	5,200	0.16	-	-
Central Smelt Co.	-	-	Unknown	-
Longview	16,000	0.50	-	-
International Paper Co.	400	0.01	-	-
Longview Fiber Co.	400	0.01	216,000	6.72
Longview Meat Packing Co.	-	-	300	0.09
Reynolds Aluminum Plant	120	Negligible	-	-
Weyerhaeuser Timber Co.	700	0.02	407,000	12.66

(Continued on next page)

Table 33. (Continued)

Source	Population equivalent			
	Sewage		Industrial wastes	
	Number	Percent of total	Number	Percent of total
Kalama	700	0.02	-	-
Woodland	700	0.02	-	-
Vancouver	29,150	0.90	-	-
Aluminum Company of America	430	0.01	-	-
California Packing Co.	-	-	76,000	2.36
Columbia River Paper Mill	-	-	431,000	13.40
Great Western Matting Co.	-	-	5,200	0.16
Vancouver Plywood Co.	-	-	130	Negligible
Washington Cannery Corp.	-	-	20,500	0.64
Camas	3,640	0.11	-	-
Crown Zellerbach Corp.	-	-	1,500,000	46.66
Washougal				
Washougal Woolen Mills	120	Negligible	450	0.01
Total Washington	58,210	1.78	2,656,580	82.70
Total all sources	290,780	9.00	2,923,880	91.00

^aPrimary treatment facilities installed in 1959.

Source: (293)

The conference was reconvened on September 3, 1959. The only order of business was to consider the Action Program devised by the Public Health Service. The purpose of this program was to abate the pollution that was interfering with the legitimate uses of the Lower Columbia River. Most of the witnesses approved of this proposal, although some wished for an earlier compliance date.⁷⁶ However, both the Longview Fibre Company and the Weyerhaeuser Timber Company of Longview, Washington, protested the establishment of such a program. There were three reasons given for their opposition:

- 1) Waste assimilation was not given as a legitimate use to be protected.
- 2) The companies had been issued permanent waste discharge permits by the Washington Pollution Control Commission, and this was taken as evidence that their wastes were not causing harmful conditions in the river.
- 3) Even if such wastes were harmful, these industries said there was no known method to abate such wastes (31).

Despite these objections, the Action Program was unanimously approved by the conferees. This program had two parts: 1) a set of water quality objectives to protect legitimate uses (Table 34); and

⁷⁶ The compliance date for municipalities was July 1, 1961, and for industries, March 1, 1961 (31).

Table 34. Water quality objectives established by enforcement action on the Lower Columbia River: 1959.

In order to conserve the waters of the Lower Columbia River for the specified legitimate water uses: public water supply, commercial uses including commercial fishing, and recreational uses including sport fishing, limits must be established for the following:

1. Bacteria (Coliform)
2. Solid materials discharged by municipal or industrial operations
3. Sphaerotilus (slime growths)
4. Toxic, colored, or other deleterious substances.

A. Bacteria (Coliform): The limit of Coliform bacteria is as follows:

A representative number of samples should average less than 240 per 100 milliliters and should not exceed this number in more than 20 per cent of samples examined, when associated with domestic sewage.

B. Solid materials discharged by municipal and industrial operations: The limit of such material is as follows:

Floating, suspended, and settleable solids attributable to sewage and industrial waste are limited to that remaining after primary treatment or its equivalent; and which after reasonable dilution and mixture with receiving waters does not cause the formation of sludge beds and does not interfere with the specified legitimate uses.

C. Slimes: The limit of such material is as follows:

The presence of sphaerotilus in such amounts that will interfere with specified legitimate uses.

D. Toxic, colored, or other deleterious substances: The limit of such material is as follows:

Substances alone or in combination with other substances or wastes, in sufficient amounts or of such nature as to make receiving waters unsafe or unsuitable for specified legitimate uses.

Source: (31)

2) the responsibilities of municipalities and industries in meeting these objectives (Table 35).

The Public Health Service reviewed the status of the Lower Columbia River in August 1965. The results showed that all the municipalities and industries,⁷⁷ with the exception of the pulp and paper mills, had met the treatment requirements of the 1959 Action Program (298). These mills had made some small gains in reducing wastes per unit of production, but the increased production of pulp and paper resulted in daily loadings from all pulp and paper mill sources of 778,275 pounds of biochemical oxygen demand and 248,100 pounds of volatile suspended matter (primarily wood fiber). Both values were increases from the 1959 amounts of 613,000 and 193,000 respectively. The amount of biochemical oxygen demand and volatile suspended matter attributed to each of the mills and the recommended limits are shown in Table 36.

The Public Health Service proposed that the amount of biochemical oxygen demand and volatile suspended matter reductions shown in Table 36, be attained by requiring that all mills provide: 1) primary treatment facilities to reduce volatile suspended matter by

⁷⁷ Cathlamet, Washington, had installed a treatment lagoon with chlorination facilities, and Vancouver had completed the interception of all untreated wastes. Portland, Oregon, provided chlorination, but only after court action was initiated by the Oregon State Sanitary Authority.

Table 35. Action Program: Municipal and industrial pollution control requirements established by enforcement action on the Lower Columbia River: 1959.

-
- I. Municipal: All municipalities in Oregon and Washington situated on the Lower Columbia River from Bonneville Dam to Cathlamet, Washington, or situated immediately adjacent thereto so as to produce an effect not consistent with the water quality requirements specified herein, shall take effective action to construct sewage treatment works comprising not less than primary treatment and effective disinfection as follows:
- A. Projects involving the institution of effective disinfection or minor plant and operation improvements.
 - 1. Work to be completed and in operation by July 1, 1960.
 - B. Projects involving major construction.
 - 1. Financing arranged not later than June 1, 1960.
 - 2. Final plans and specifications prepared not later than June 1, 1960.
 - 3. Contract awarded not later than August 1, 1960.
 - 4. Projects in operation not later than July 1, 1961.
- II. Industrial: All industries in Oregon and Washington situated on the Lower Columbia River from Bonneville Dam to Cathlamet, Washington, situated immediately adjacent thereto, or involved in operations so as to produce an effect not consistent with the water quality requirements specified herein, shall take effective action to reduce pollution produced by them in order to achieve the water quality specified.
- A. Each state will assess the status of each industrial establishment with respect to its pollution problem. In doing this, each State will require each industrial establishment to submit a report in triplicate within 60 days after the date of the second session of the Conference indicating how the establishment proposes to:
 - 1. Control pollution through inplant or process changes, by-products recovery, or other equivalent methods.
 - 2. Control pollution through the construction of treatment processes, and disposal methods, or other equivalent methods.
 - B. Action to reduce pollution through inplant or process changes, by-products recovery or other equivalent methods will be instituted immediately upon submission of the report. Dates of completion of such activities will be specified in the report including information on the dates of completion of all specific segments of such activity.
 - C. Action to control pollution through treatment processes, disposal methods, or other equivalent methods, will be completed and placed in operation not later than March 1, 1961. Dates of completion of such activities will be specified in the report including information on the dates of completion of all specific segments of such activity.
 - D. If, in the light of the above program, any additional knowledge is needed on the part of an individual industrial establishment, a supplementary report and a request for a time extension will be submitted within 60 days of the second session of the Conference. This report will outline the nature of the problem, specify in detail the character and aims of

(Continued on next page)

Table 35. (Continued)

studies and investigations under way or to be undertaken, list the resources to be applied to such studies and investigations, and indicate the progress, if any, made to date. If such request is granted, the studies and investigations will be undertaken at a level sufficiently high to anticipate a reasonable solution in not more than one calendar year from the date of submission of the supplementary report. The supplementary report will specify the date of completion of such studies and investigations. Upon completion of these studies and investigations, a time schedule will be established for the institution of pollution control methods or facilities.

- E. Each municipality and industrial establishment will provide a report in triplicate to its State Water Pollution Control Agency at not less than three-month intervals of progress made in carrying out this action program. Each state will provide to the conferees a quarterly report of progress with respect to its municipalities and industrial establishments.
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Source: (31)

Table 36. Lower Columbia River: Pulp and paper industry untreated and recommended waste loadings: 1965.

	Pounds volatile suspended matter/day ^a		Pounds 5 day BOD/day		
	Reported discharge	With primary treatment	Reported discharge	With 70% SWL- BOD removed	With 15% reduction by primary treatment
Crown Zellerbach Camas, Wash.	81,700	24,500	325,000	170,000 ^b	144,500
Boise Cascade Vancouver, Wash.	16,200	4,900	133,000	48,000 ^b	40,800
Publishers Paper Oregon City, Oregon	No report	-	60,000	Barging to be discontinued	
Kaiser Gypsum St. Helens, Oregon	8,575 7,700 ^c	2,300	7,025	7,025	5,970
Boise Cascade St. Helens, Oregon	40,100 36,100 ^c	10,800	23,250	23,250	19,760
Longview Fiber Longview, Wash.	47,500	14,300	80,000	80,000	68,000
Weyerhaeuser Co. Longview, Wash.	<u>59,000</u>	<u>17,700</u>	<u>150,000</u>	<u>150,000</u>	<u>127,500</u>
Totals	248,100	74,500	778,275	478,275	406,530
% Reduction		70		39	48
Population equivalent ^d			4,578,000	2,813,000	2,391,000

^aVSM as determined by American Public Health Association (APHA) standard methods.

^bAdjusted on calculated total B.O.D. produced.

^cVolatile suspended matter assumed 90% of total suspended matter.

^dBased on 0.17 lb BOD/capita/day.

Source: (298)

70 percent; 2) treatment facilities to reduce biochemical oxygen demand by 70 percent from the mills at Camas and Vancouver only; 3) reduction of recoverable solids and sludge; and 4) the elimination of wastes barged to disposal sites in the Columbia from the Oregon City mill (32). If these measures proved ineffective, the mills should then be required to provide biological (secondary) treatment.

As a result of this report, the Secretary of Health, Education, and Welfare called for a third session of the conference without the support of Oregon.⁷⁸ This session was held on September 8 and 9, 1965, for the purpose of agreeing on a plan for correcting the pollution from pulp and paper mills (32). The conferees agreed to the recommendations of the Public Health Service regarding these wastes. Under this program the 1965 conference was the last official meeting between the federal government and the states of Oregon and Washington, even though the pollution from pulp and paper plant wastes was not yet solved.

Summary

In the period from 1948 to 1965, the Water Pollution Control Act affected the water quality of the Lower Columbia River in three

⁷⁸ A representative of Oregon said that there was no pollution from either Oregon or Washington endangering health or welfare of persons in the other state. Thus, the prerequisite for federal enforcement was missing.

different ways. First, the Act, from 1957 through 1965, provided financial aid for the construction of sewage treatment facilities and for the development by the state pollution control agencies of new or expanded program elements. Both of these grant programs were beneficial.

Second, the Act provided the authority for federal enforcement which was initiated on the Lower Columbia River at the request of the states of Oregon and Washington in 1958. In 1959, the enforcement conferees agreed on a plan for the abatement of municipal and industrial pollution. By 1965, all pollution sources met the requirements of the plan except the pulp and paper mills. The Secretary of Health, Education, and Welfare called a third session in September 1965, to deal with this problem, but its effect was marginal.

Third, the 1965 Act required that the states set water quality standards for all interstate waters. These standards involved listing the legitimate uses to be made of each water, devising water quality criteria necessary to support these uses, and developing an implementation and enforcement plan to abate pollution so that the needed water quality would be made available. Water quality standards were set by Oregon in 1967 and by Washington in 1968. Both states met the adopted standards for the Lower Columbia River by 1970.

PART D**CONCLUSIONS**

CONCLUSIONS

The Water Pollution Control Act of June 30, 1948, was the first federal legislation designed specifically to abate water pollution.

Earlier federal laws concerned with navigation, public health, and conservation had provided a very limited impact on water pollution.

The provisions of the 1948 Act had been before the Congress as proposals since 1936. Failure to pass any water pollution control laws in the 1930's was the result of the controversy between two groups who favored a federal water pollution control law. These groups were the conservation forces led by the Izaak Walton League, and the public health and professional groups led by the Cincinnati Stream Pollution Committee. This controversy was principally in regards to which agency should administer the program, the degree of federal control, and the costs of pollution abatement. Even with these disagreements, bills were nearly approved on three different occasions. The first occurred in 1936, when Senator Lonergan, Democrat of Connecticut, a supporter of water pollution control, asked for a reconsideration of the vote by which a bill had been passed by the Senate. The House passed similar legislation later that year. In 1938, President Roosevelt vetoed a water pollution control bill on the ground that the budgetary process had been ignored. Then, in

1940, the Conference Committee of the two houses fought for nearly a year and still could not agree on a compromise.

After World War II, the controversies that were so prevalent in the 1930's disappeared quite rapidly, and when Senator Taft, Republican of Ohio, joined with Senator Barkley, Democrat of Kentucky, in introducing a water pollution control bill, the issue became bipartisan.

Thus, the Water Pollution Control Act of 1948 was passed.

The 1948 Act authorized grants for the planning of sewage treatment facilities, and loans for their construction. Neither program was ever funded. In addition, the cooperative activities of the Public Health Service received only a small fraction of the authorizations. The enforcement provisions were never funded as well. However, this law did allow the creation of a Division of Water Pollution Control within the Public Health Service. This agency performed creditably as long as the water pollution control program was within the Public Health Service.

The Amendment to the Water Pollution Control Act passed in 1956 was the beginning of the construction grants program, and provided enforcement authority which was eventually used in nearly every large river system in the United States. This amendment was primarily the work of Representative John Blatnik, Democrat of

Minnesota, the Chairman of the Subcommittee on Rivers and Harbors that handled this program in the House.

In 1961, the law was amended to allow water quality enhancement to be considered a benefit in federally-funded reservoirs. Congress also authorized the construction of seven regional water quality laboratories to conduct research on special water pollution problems.

The last amendment to the Water Pollution Control Act in the period from 1948 to 1965 was the Water Quality Act of 1965. The main feature of this amendment was that it required the states to set water quality standards for all interstate waters. These standards were composed of three parts. The first was the establishment of legitimate uses for each interstate water in the state. These uses were to be determined by public hearings in the particular basin. The second part was the water quality criteria which were the specific parameters of water quality necessary so that the legitimate uses could be made of each stream and lake. The third part was the implementation and enforcement plan which listed each waste source, the needed treatment, and a surveillance plan to assure that the action was taken.

By June 5, 1968, only 36 of the state water quality standards had been approved by the Secretary of the Interior. The original deadline was June 30, 1967. No state met that deadline. In addition, many

states had to resubmit their standards to meet the non-degradation policy established on February 8, 1968.

The 1965 Act also removed the water pollution control program from the Public Health Service and created a new institution: the Federal Water Pollution Control Administration. This agency was then transferred from the Department of Health, Education, and Welfare, to the Department of the Interior in 1966.

Water pollution control by the states of Oregon and Washington began in 1938 and 1945 respectively, when laws were passed authorizing the establishment of administrative agencies and specific policies under which these agencies were to operate. Since then the Oregon State Sanitary Authority and the Washington Pollution Control Commission have been active in developing water pollution control programs in the respective states. In the Lower Columbia River, both states had similar water pollution problems--primarily untreated and inadequately treated municipal wastes and pulp and paper mill wastes. Pollution control programs in these states from their beginning to 1965, were successful in reducing the amount of municipal-caused pollution, but the pollution caused by pulp and paper mills was still causing interference with other legitimate uses of the Lower Columbia River.

The Water Pollution Control Act affected water quality in the Lower Columbia River by authorizing funds to aid in the construction

of municipal sewage treatment facilities; by providing the states with funds to improve their water quality programs; by requiring that standards of water quality be set and complied with; and by providing a mechanism for an enforcement conference with the states of Oregon and Washington to deal with municipal and industrial pollution in the section of the river below Bonneville Dam. Thus, in the period from 1948 to 1965, the federal water pollution control legislation provided assistance to the states of Oregon and Washington so that their water pollution control efforts were expanded and strengthened.

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