U.S.
Environmental
Protection
Agency

Building For Clean Water

Federal Grants Lend a Hand

Wastes discharged from municipal sewers are one of the major causes of water pollution. In recent decades there was a tremendous increase in the volume of these discharges because of rapid population growth and the enormous build-up of urban and suburban areas.

Communities, in general, could not construct treatment facilities fast enough to cope with the rising flow of wastes. Lack of money was the chief reason. To help our cities and towns catch up and thus combat water pollution, Congress in 1956 passed the Federal Water Pollution Control Act. A major element of the Act authorized the Federal Government to award grants to municipalities to help finance construction of sewage treatment facilities. The program was limited in scope.

Today, the construction grant effort, authorized by amendments to the 1956 Act involves billions of dollars in Federal funding annually and is currently the largest public works program in the Nation. It is providing tens of thousands of jobs and other economic stimulus. The program is administered by the U.S. Environmental Protection Agency (EPA).

This booklet details the highlights of today's construction grant program, describes how it works, what it accomplishes, and how it fits into the Nation's overall environmental control strategy. The economic effect of the program will be considered. It has particular relevance in a period of unemployment and inflation.

The Grant Program Grows Up

Work on the first sanitary sewer in the United States was begun in Chicago in 1855, 12 years after the world's first sanitary sewage system was completed in Hamburg, Germany. The first sewage treatment plants were built here in the 1870's, and by 1948 the plants served some 45 million Americans out of a total population of 145 million. The facilities were far too few; most of them did not do an adequate job of cleaning up discharges. Water pollution grew steadily worse as ever-increasing loads of municipal and industrial wastes were dumped into our waterways.

In 1956, Congress tackled the problem of municipal waste disposal by enacting the Federal Water Pollution Control Act which established the

construction grant program. Congress authorized a modest $50 million a year in grant funds.

The grants covered 30 percent of the cost of a wastewater treatment project, and the total amount for any one grant was limited to $250,000.

More Money For Grants

The program picked up steam with enactment of the 1966 Water Pollution Control Act Amendments which raised the Federal share of a project's cost up to 50 and 55 percent under certain conditions. The dollar ceiling on the amount of individual grants was removed, permitting cities of all sizes to participate in the program. Appropriations for grant money rose substantially in the late 60's and reached $1 billion for fiscal year 1971.

The 1966 law also included a provision under which State and local funds could be used to prefinance the Federal share or any part of it. This permitted initiation of a greater number of projects with limited Federal funds. Although a Federal funds "deficit" was created in a number of projects under this provision, no legal liability was created for the Federal government to reimburse States and localities for having prefinanced some portion of the Federal grant. The level of "deficit" in Federal grants had risen to almost $2 billion before the enactment of the 1972 Amendments to the Water Pollution Control Act. The 1972 law included funds for reimbursement of States and localities.

Between 1956 and enactment of the current law—the 1972 amendments—some progress toward cleaner water was registered across the country. Almost 14,000 sewage treatment projects were federally funded by grants totaling about $5.2 billion for facilities costing $14 billion. In 1973, public sewage facilities were estimated to serve 159 million persons of a total population of 210 million. Many facilities, however, were not achieving an effective degree of treatment.

A National Clean Water Program Begins to Emerge

After 1965, the clean water drive began to take on direction and coherence and to set the stage for the comprehensive 1972 amendments.

The establishment of water quality standards for our rivers, lakes, and estuaries was begun under the Water Quality Act of 1965.

There was a marked expansion of State water pollution control programs. More and more of the States inaugurated construction grant programs of their own. State and local governments worked more closely together to stimulate construction of waste treatment facilities.

Local planning groups began to participate increasingly in the review of proposed sewage treatment plant construction to ensure conformity with community and regional needs.

Generally, by the outset of the 70's, Federal, State and local efforts were beginning to mesh into a national program for clean water.

But it remained obvious that existing government laws and regulations were inadequate for the monumental clean-up task ahead. And, further, there was a growing realization that the clean-up costs would be far higher than estimated for both government and industry.

The 1972 Amendments and Construction Grants

The 1972 amendments encompassed the most complete and extensive water pollution control program in the world.

Under the program, EPA is authorized to make grants of $18 billion to the States for construction of new municipal treatment facilities. The Federal funding share for these projects is 75 percent. The rest of the cost is divided among State and local governments and industrial users who hook up to a municipal sewage system. Municipalities are also eligible for grants for demonstration projects that utilize new methods for treating sewage, for developing joint systems for treatment of municipal and industrial waste discharges and for perfecting new water purification techniques.

Up to $2.6 billion in additional funds were authorized to reimburse State and local agencies for treatment projects started during the 1966-72 period when adequate Federal funding had not been available. Of this amount almost $1.9 billion was reimbursed through June 30, 1975.

Of the $18 billion authorized for construction grants beginning in fiscal year 1973, more than $6 billion was obligated by June 30, 1975. The $12 billion remaining is expected to be obligated by September 30, 1977.

More than 5,300 treatment projects are now underway, with an estimated cost in Federal and non-Federal funds upon completion of about $15 billion. Federal funding of the projects is divided almost equally between the old and the new law authorizations with more than 90 percent of the old law projects far into the construction stage. Under the new law, some 1,600 projects are in the first stage of planning.

The 1972 amendments not only greatly modified and expanded the construction grant program but also established a system of effluent limitations and permits for both municipal and industrial dischargers. The effluent limitation and permit system is designed with clean-up target dates for all dischargers. These targets must be met or tough enforcement measures will

be taken by States or the Federal Government.

Far reaching goals also were set by the new law. They are: by 1983, water that's clean enough for swimming, boating, and protection of fish, shellfish and wildlife, and by 1985, no more discharges of pollutants into the Nation's waters.

Today's construction grant program is clearly tailored to help municipalities meet step-by-step targets and the 1983 goals of the new law. And help *is* needed.

About 1,500 municipal wastewater facilities serving 3.2 million persons are discharging untreated sewage. And some 2,700 plants provide only primary treatment of wastes, a process which removes about 30 percent of some pollutants.

Under the '72 amendments, municipalities must provide secondary treatment for their waste waters by July 1977, or 1978 in the case of plants that are under construction. However, when secondary treatment will not maintain the water quality standards of the receiving waters, a higher degree of treatment must be provided.

(Secondary treatment provides, in general, for 85 percent removal of biochemical oxygen demand (BOD) and suspended solids. BOD is the amount of free oxygen that can be absorbed from water. If excessive amounts of BOD demanding substances are present in the water, the available oxygen supply can be depleted to the point where water biota will die. The oxygen is critical because it is water's chief self-cleansing and fish supporting agent.)

Who May Apply For Construction Grants?

Municipalities, intermunicipal agencies, States, or interstate agencies may apply for grants. A municipality is described in the law as a "a city, town, borough, county, parish, district, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage,

industrial wastes, or other wastes, and an Indian tribe or an authorized Indian tribal organization." Grants also may go to a designated and approved management agency directing coordinated areawide water pollution control planning under section 208 of the 1972 amendments.

Projects Eligible for Grants

In general, eligible projects include construction of new treatment plants, expansion or improvement of existing plants, construction of interceptor and outfall sewer lines or provision of pumping, power and other equipment necessary to operate a sewage treatment system. Under certain conditions, sewage collection systems and projects to control pollution from combined sewers (storm and sanitary sewers) may also receive Federal assistance. Further, the 1972 amendments urge that consideration be given to grants for application of wastes to land, a generally less expensive method of treatment which already has met with some success.

All projects, of course, must be on a State priority list. (See "The Role of the States," page 7).

The Grant Process

EPA is now authorized to pay the Federal share (up to 75 percent) of costs of separate stages in the development of a project. In the past, the Agency awarded a single grant for the Federal part of the overall project cost. EPA now pays the Federal share of the costs of:

(1) preliminary plans and studies and other eligible early preparatory work

(2) design plans and specifications

(3) construction of the waste treatment facilities.

Federal payment to cover these three steps in the process are made to the applicant as all, or parts of each of these elements, are completed. The three major stages in the process are generally accompanied by pre-application requirements and post-construction activities primarily associated with operations and maintenance. (For fuller details of the construction grant process see Table.)

There are questions that must be answered in the grant process:

Have alternative wastewater management approaches been evaluated?

Is the design of the project cost effective?

Is the design environmentally, socially and institutionally acceptable?

Has a wastewater discharge permit been issued?

If no permit has been issued, have applicable effluent limitations been developed, and will the project attain the required degree of treatment?

What are the plans for disposing of sludge?

Typical Stages

Preapplication stage	**Facilities planning stage**
State places project on priority list.	Application for Step 1 grant submitted to State and EPA for review and approval.
Applicant selects consultant.**	Consultant prepares facilities plan.
Applicant and consultant have pre-application conference with State and EPA.	EPA and State review and approve facilities plan.
	EPA prepares environmental impact statement, if necessary, or declares none is needed.

Has satisfactory provision been made for the effective operation and maintenance of the facility?

Does the project conform to the requirements of any applicable river basin plan?

Has a user charge been worked out to assure that all recipients of the treatment plant services pay their respective proportional share of operation and maintenance costs? (Industrial users of new municipal treatment plant must now also pay a proportionate share of the construction cost of the plant.)

The scope of the project will determine how detailed the answers to these questions would be.

The Role of the States

To be considered, a project must appear on a State priority list. This is to ensure that the most needed facilities will be constructed with the funds available. The priority lists are based on four required criteria and whatever additional criteria the States wish to impose. The required criteria are:

- Population affected
- Severity of pollution problems
- Need for the preservation of high-quality water
- National priorities (as well as total funds available).

At present, EPA regional administrators are authorized to delegate to State agencies the technical and/or administrative review and certification of adequacy of an applicant's facility plans, design plans and specifications, operation and maintenance manuals, and certain documents involved in the bid and contract process. By the end of 1975, it is estimated that perhaps 40 States will have been delegated

of Development in Municipal Waste Water Treatment Works Projects*

Design stage	**Construction stage**	**Operation and Maintenance stage**
Consultant generally prepares materials for Step 2 grant agreement; submits it to State and EPA for approval.	Consultant generally prepares materials for Step 3 grant agreement; submits it to State and EPA for approval.	Plant operated and maintained for life of project.
Consultant prepares plans and specifications.	Grantee advertises for construction bids, selects responsive low bidder, submits all bids in tabular form to State and EPA for approval, and upon approval awards contract.	State and EPA make O&M and permit compliance inspections.
EPA and State review and approve project plans and specifications.	Project is constructed.	Municipality collects user charges and industrial cost recovery payment.
	EPA and State conduct final inspection.	
	EPA conducts final audit and makes final payment.	

*At the present time, and for several years to come, many projects will enter the program for grants at the design or construction stages

**Some cities do in-house design without consultant

responsibility to review and certify one or more of these elements of the grant process. However, EPA cannot delegate responsibility for actual approval of submissions.

The Role of EPA Regional Offices

The EPA regional offices are responsible for conducting the grant program within the policy and procedural guidance received from EPA headquarters. They must integrate the requirements of the program into regional priorities and resource constraints. They have authority to deal directly and conclusively with grant applicants and State agencies. The regional offices are authorized to:

- Interpret Agency policy, guidance, and procedures to the States, communities, and consultants retained by applicants.
- Review submissions by applicants for adequacy and conformance with administrative requirements.
- Conduct environmental reviews of applicant's plans as necessary, prepare environmental impact statements.
- Make grant awards and payments.
- Monitor and report on project status.
- Conduct final inspections and close out the project after completion.
- Determine the readiness of State agencies to assume delegated EPA responsibilities.

Construction Grants and the Environment

A major responsibility of EPA, its regional offices, and the States is to assure that construction of waste facilities is not a threat to the environment but does, in fact, enhance the environment. The land use impact of new waste treatment facilities and connecting sewer lines is a case in point.

Under the construction grant process the possible environmental effects of a project are analyzed when an applicant submits a facilities plan (stage one of the process) to EPA. The facilities plan includes a discussion of possible environmental effects (primary and secondary) of the proposed project and the alternatives (structural and nonstructural) that were considered during project development.

After reviewing the plan's environmental evaluation of the project, an EPA regional administrator or his designee may clear the plan as is or require that an Environmental Impact Statement (EIS) be prepared, publicized and approved. In the latter instance, a public hearing is held to discuss the environmental aspects of the proposed project. EPA then prepares an EIS and circulates it for review among the appropriate governmental agencies and interested groups and private citizens. EPA revises the EIS in light of the review comments and files the final document with the Council on Environmental Quality.

EPA is emphasizing that environmental evaluation should occur at the earliest possible point in the processing of each project. This procedure could eliminate months of delay in the construction of waste facilities. In many cases, the preparation period of a project—from conception to beginning of construction is running from a year to about 2½ years. EPA's goal is to cut the preparation period to 9 months to 1½ years.

EPA is preparing definitive manuals to assist communities in the environmental assessment process and thus help avoid delays in the grant program.

Construction Grants and the Economy

One key reason for EPA's push to reduce preparation time for new plant projects is because Step 3 of the grant process, the actual construction phase, has such a powerfully beneficial effect on the economy, particularly on the currently hard-hit construction industry. Step 3 provides the bulk of employment and economic activity such as equipment purchases and does so over a substantial period of time—one to five years. Step 1 and Step 2, of course, create reasonable immediate employment for professional

consultants, primarily architectural and engineering consultants, and others who provide planning and associated services.

Based on data provided by the Bureau of Labor Statistics, it was estimated that early in 1975 more than 40,000 people were employed in building treatment facilities for municipalities. For every $1 billion in construction outlays, it is estimated that 20,000 to 25,000 on-site workers will be employed. Thus during FY 1977 approximately 180,000 workers will be employed in direct construction of treatment facilities. This rise in on-site employment will be reflected, of course, in a proportionate increase in off-site employment in the raw material industries, manufacturing, and so forth.

Of the $4.2 million it would take to build a typical sewage treatment plant serving 100,000 persons, 11.6 percent of the cost would go for metal products; 26 percent for machinery and equipment; 12.6 percent for stone, clay and glass; 3.1 percent for lumber and other materials; 28.9 percent for labor, and 17.8 percent for overhead and profit.

Further, the construction grant program translates into more and larger treatment plants across the country, and this means new jobs for operators, technicians and maintenance personnel.

The Joint Economic Committee of Congress has concluded, after hearings, that environmental expenditures, including construction grants, are not feeding inflation and that because of their stimulative effect are beneficial to the economy.

Progress is Being Made

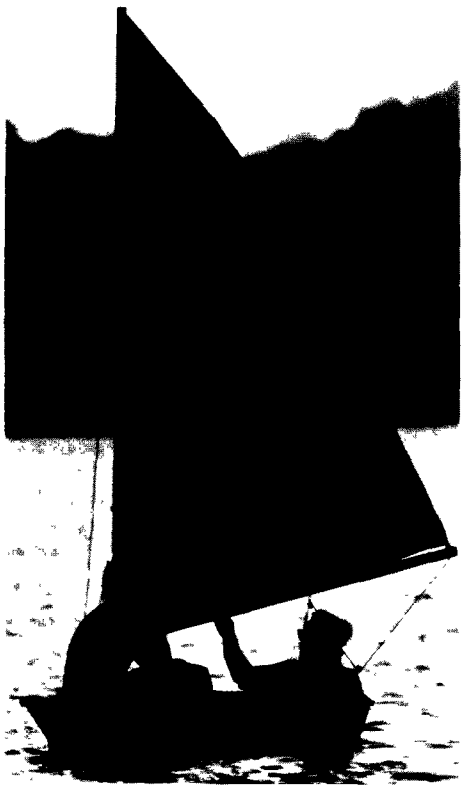
The rate of obligation of construction grant funds authorized in the 1972 amendments is accelerating rapidly. In fiscal year 1974, EPA obligated $1.4 billion for new treatment projects. In fiscal 1975, the comparable total was more than $3.5 billion. And the level of grant awards in fiscal 1976 will be much higher.

The grant program is having a striking effect on America's quest for clean water. New and improved municipal waste treatment facilities are reducing effectively the pollutant load. For example, in the last few years levels of coliform bacteria and biochemical oxygen demand have decreased in many waterways.

The spread of polluted water across the country is being halted, and, in fact, dramatic improvement in water quality is being registered in some areas.

In February 1975, EPA Administrator Russell E. Train reported on restoration of good water quality and announced a list of 25 major rivers and bays, plus the Great Lakes, where improvement has been measured.

EPA officials estimate that there will be marked enhancement of water quality in many parts of the country by 1977.



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