

090346

RED-76-45

RESTRICTED — Not to be released outside the General Accounting Office except on the basis of specific approval by the Office of Congressional Relations. 12-5-75

**REPORT TO THE CONSERVATION,
ENERGY, AND NATURAL RESOURCES
SUBCOMMITTEE HOUSE COMMITTEE
ON GOVERNMENT OPERATIONS**

**BY THE COMPTROLLER GENERAL
OF THE UNITED STATES**



**Federal, State, Local And
Public Roles In Constructing
Waste Water Treatment
Facilities**

Environmental Protection Agency

The Environmental Protection Agency awards grants of 75 percent of the costs of constructing waste water treatment facilities.

GAO reviewed how well Federal, State, and local governments and consulting engineers planned, designed, constructed, operated, maintained, and inspected facilities, and whether the public participated in the policy and decisionmaking process in the agency's Philadelphia and Chicago regional offices.

090346
201196



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-166506

C1 The Honorable William S. Moorhead
Chairman, Subcommittee on Conservation,
Energy, and Natural Resources
Committee on Government Operations
House of Representatives

H 1502

Dear Mr. Chairman:

C2 + JC
C3 This is our report, pursuant to the requests from
Congressman Henry S. Reuss, former chairman of the Subcom-
mittee, and Guy Vander Jagt, former ranking minority member
of the Subcommittee, on our review of Federal, State, local,
and public roles in constructing waste water treatment facili-
ties.

cd - 7 We want to invite your attention to the fact that this
report contains recommendations to the Administrator of the
Environmental Protection Agency. As you know, section 236 of
the Legislative Reorganization Act of 1970 requires the head
of a Federal agency to submit a written statement on actions
he has taken on our recommendations to the House and Senate
Committees on Government Operations not later than 60 days
after the date of the report and to the House and Senate
Committees on Appropriations with the agency's first request
for appropriations made more than 60 days after the date of
the report. We shall be in touch with your office in the
near future to arrange for the release of the report so that
the requirements of section 236 can be set in motion. 1500
300

C8 We are sending copies of this report to the Honorable
Gilbert Gude, Ranking Minority Member of the Subcommittee,
and to Congressmen Reuss and Vander Jagt.

Sincerely yours,

Thomas A. Steats

Comptroller General
of the United States

C o n t e n t s

		<u>Page</u>
DIGEST		
CHAPTER		
1	INTRODUCTION	1
	Federal water pollution control acts	1
	Federal funding	2
2	ROLE OF MUNICIPALITIES AND CONSULTING ENGINEERS	3
	Designing and constructing waste treatment facilities	4
	Cost and performance guarantees	5
3	ROLE OF EPA AND THE STATES	10
	Requirements of the Federal Water Pollution Control Act not always met	11
	Recommendation	16
	National Environmental Policy Act requirements not always met	16
	Consideration of alternative or improved methods of treatment	23
	Need for prompt final inspections and followup actions	24
	Recommendation	26
	Recommendation	28
	State O&M programs	28
4	ROLE OF THE PUBLIC	32
	Public participation in establishing regulations	33
	Public participation in the facilities planning process	35
5	SCOPE OF REVIEW	40
APPENDIX		
I	Letter dated September 2, 1975, from the Environmental Protection Agency to the General Accounting Office	41
II	Principal Environmental Protection Agency officials responsible for activities discussed in this report	45

ABBREVIATIONS

BOD	biochemical oxygen demand
EAS	environmental assessment statement
EIS	Environmental impact statement
EPA	Environmental Protection Agency
mgd	million gallons per day
NEPA	National Environmental Policy Act of 1969
O&M	operation and maintenance
TAG	Technical Advisory Group

COMPTROLLER GENERAL'S REPORT TO
THE SUBCOMMITTEE ON CONSERVATION,
ENERGY, AND NATURAL RESOURCES
COMMITTEE ON GOVERNMENT OPERATIONS
HOUSE OF REPRESENTATIVES

FEDERAL, STATE, LOCAL AND
PUBLIC ROLES IN CONSTRUCTION
WASTE WATER TREATMENT
FACILITIES

D I G E S T

GAO noted a number of improvements needed in the administration of the Environmental Protection Agency's grant program for waste water treatment facilities which pays 75 percent of construction costs. GAO is making appropriate recommendations and the Agency concurs with them. (See pp. 16, 26, and 28.)

Role of local governments and consulting engineers

Local governments are responsible for planning, designing, constructing, operating, and maintaining waste water treatment facilities. Most of them engage consulting engineering firms to carry out these various services.

The Subcommittee wanted to know whether engineers guaranteed (1) facility performance or (2) reliability of construction cost estimates. The agreement between the local governments and engineers did not provide for such guarantees.

None of the five plants reviewed experienced large cost increases over estimates; however, none met designed performance standards because of poor operation and maintenance, plant overloading, or possible faulty design. (See pp. 5 and 6.)

Role of the Agency and States

Regulations, guidelines, and policies are established at Agency headquarters for the guidance of regional offices and States in directing the construction grants program. Regional offices and/or States review local government proposals and determine the priority for a project before Federal funds are granted.

The Philadelphia and Chicago regional offices awarded grants for projects which did not meet some of the requirements of the Federal Water Pollution Control Act Amendments of 1972 and the National Environmental Policy Act. Many of the shortcomings were attributed to the Agency's delay in developing and issuing regulations and guidelines to carry out the 1972 amendments and its reluctance to request local governments to update their applications to meet new requirements. (See pp. 11 to 31.)

Role of the public

Both of the Federal laws cited require public participation in the planning of proposed actions by Federal agencies.

GAO found the public participated in establishing the Agency's regulations and guidelines, but participation was poor and not always allowed in planning waste water treatment projects.

--Public hearings were not held for more than 50 percent of the grants reviewed.

--Attendance at hearings was very limited.

Since GAO's review, the Agency has made improvements in this area. (See pp. 32 to 39.)

CHAPTER 1

INTRODUCTION

The Chairman and Ranking Minority Member of the Subcommittee on Conservation and Natural Resources, House Committee on Government Operations, in letters of June 11 and 22, 1973, asked us to review the Environmental Protection Agency's (EPA's) administration of its grant program which provided financial assistance to municipalities for constructing waste treatment facilities.

The Subcommittee asked us to (1) assess how well Federal, State, and local governments and consulting engineers were designing, constructing, and inspecting waste treatment facilities and (2) determine whether the public was allowed to participate in the governmental policymaking and decision-making process.

FEDERAL WATER POLLUTION CONTROL ACTS

The Federal Water Pollution Control Act Amendments of 1956 (Public Law 84-660) created the waste treatment construction grant program. The act authorized grants for constructing waste treatment facilities to prevent sewage or other waste discharges into waterways. The grant recipient (State, municipality, intermunicipality, or interstate agency) received Federal assistance of 30 percent of the project costs. Subsequent amendments to the act increased the Federal share of project costs up to a maximum of 55 percent, and the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) established Federal share at a flat 75 percent of project costs.

The amendments established a national goal of eliminating the discharge of pollutants into navigable waters by 1985 and an interim goal of providing water quality sufficient for the protection of fish, shellfish, wildlife, and recreation by 1983.

Publicly owned treatment works are required to achieve secondary treatment by July 1, 1977, and to use best practicable waste treatment technology by July 1, 1983. As generally defined by EPA, secondary treatment would remove at least 85 percent of the biochemical oxygen demand (BOD)¹ from municipal sewage.

¹A measure of the oxygen consumed in the biological processes that break down organic matter in water. Large quantities of organic waste require large amounts of dissolved oxygen. The more oxygen demanding matter, the greater the pollution.

To assist States and municipalities in meeting the requirements of the 1972 amendments, the Congress authorized the allocation of \$18 billion during fiscal years 1973 to 1975 for constructing waste treatment facilities.

FEDERAL FUNDING

Between fiscal years 1957 and 1974, Federal funds totaling about \$9.2 billion were obligated under the waste treatment construction grant program. Facilities authorized for construction under the program included treatment plants, interceptor and outfall sewers, pumping stations, power supplies, and other equipment. The 1972 amendments made collector systems, combined storm and sanitary sewers, and recycled water supply facilities eligible for Federal assistance.

Through its 10 regional offices, EPA awarded construction grants totaling about \$4.6 billion in fiscal years 1973 and 1974 (\$3.1 billion and \$1.5 billion, respectively). The two regional offices reviewed, Philadelphia (region III) and Chicago (region V), together awarded about one-third of the total.

Of the total funds awarded by regions III and V in fiscal years 1973 and 1974, 43 percent were awarded for treatment plants; 11 percent for interceptor sewers; 27 percent for interceptors and/or treatment plants combined with other facilities (cost of individual interceptor sewers or treatment plants under grants funding combined facilities were not readily available); and 19 percent for all other facilities, including outfall sewers, sewage collection systems, pumping stations, and power supplies. As of July 31, 1975, \$11.2 billion of the \$18 billion was available for obligation until September 30, 1977.

CHAPTER 2

ROLE OF MUNICIPALITIES AND CONSULTING ENGINEERS

Municipalities are responsible for planning, designing, constructing, operating, and maintaining waste treatment facilities. Most municipalities, especially the smaller ones, hire consulting engineering firms because they do not have the engineering capability to plan, design, and supervise treatment facility construction.

The Subcommittee asked us to determine the role of consulting engineers and whether the engineers guarantee treatment facility performance or cost estimate reliability.

The agreement entered into between a municipality and a consulting engineering firm specifies the services to be provided but generally does not require a guarantee of treatment plant performance or cost estimate reliability. However, a consulting engineer is liable for deficiencies in his design work or his performance.

EPA does not require such guarantees. EPA reviews the proposed project plans, specifications, and cost estimates before approving a grant to insure that the proposed plant can reasonably be expected to meet the design criteria and that the associated cost estimates are reasonable.

o If the plant does not meet the design criteria, EPA can withhold the municipality's final grant payment until the problems are corrected. Municipalities can also take legal action against the consulting engineering firm.

We reviewed five waste treatment projects constructed before July 1973 to determine whether the projects met performance requirements and whether construction costs exceeded estimates. The Subcommittee specifically requested a review of the Wayne Township, New Jersey, project and we selected four others to obtain a broader sample. None of the projects met performance requirements. Two of the five projects failed to meet requirements because of possible faulty design. The other plants did not meet performance requirements for reasons others than treatment plant design. None of the five projects incurred cost increases greater than 5.6 percent.

However, EPA data for the period October 1, 1974 to February 13, 1975, showed that construction grant projects were experiencing much greater cost increases. During that period construction started on 113 projects. For 69 of these projects the original grant amounts increased an average of 27 percent. The net increase in grant amounts for the 113

projects was 13 percent. Later, however, in September 1975, EPA told us that its preliminary analysis showed that average project costs had actually decreased during calendar year 1975.

The Subcommittee requested that we review the increases in the EPA grant to expand the Western Branch plant, Prince Georges County, Maryland. We found the cost estimate had increased from \$8.8 million to \$25.7 million due primarily to factors such as changing standards, increased requirements, and a major design change.

DESIGNING AND CONSTRUCTING WASTE TREATMENT FACILITIES

Consulting engineers hired by municipalities are responsible for all phases of constructing waste treatment facilities. The services vary slightly from project to project but generally include selecting the treatment process; preparing design plans, specifications, and cost estimates; supervising construction of the facility; preparing the applications for financial assistance; and representing the municipality in dealing with State agencies and EPA regional offices.

EPA has structured its construction grant program so that grants are awarded for each of three steps--step I, preparing facility plans; step II, preparing construction drawings and specifications; and step III, constructing the facility. Each of the three steps requires a separate grant application. The technical services provided by consulting engineers parallel those required in the three steps that follow.

Facility planning:

- Consulting on project requirements, including an assessment of current and future treatment requirements, development of project alternatives, and other assessments required by the 1972 amendments.
- Preparing preliminary engineering studies and designs, including recommendations, schematic layouts and sketches, outlining specifications, and preliminary cost estimates.
- Assisting in the preparation of applications for financial aid from governmental agencies and supporting documentation, such as project descriptions and environmental assessment statements.

Design:

- Preparing detailed construction drawings and specifications.

- Preparing final cost estimates.
 - Assisting in obtaining plan approvals from all authorities having jurisdiction.
- Construction:
- Preparing proposal forms and notices to bidders and assisting in preparing contract documents.
 - Assisting in obtaining and evaluating bids and awarding contracts.
 - Providing engineering services to verify that all work complies with plans and specifications.
 - Approving contractor payments.
 - Preparing contract change orders.
 - Checking and approving samples, schedules, tests, and shop drawings.
 - Conducting final project inspections.
 - Furnishing "as constructed" drawings.

COST AND PERFORMANCE GUARANTEES

We reviewed the planning and construction of five waste treatment plants which were completed before July 1973. None of the municipalities required the consulting engineer to provide cost or performance guarantees. Although there were no large cost increases over the estimates, none of the five projects were meeting design performance requirements, as shown in the following summary schedule.

<u>Grantee</u>	<u>Design performance achieved</u>	<u>Possible faulty design</u>	<u>Percent of actual cost over estimated cost</u>
Region II: Wayne Township, New Jersey	No	Yes	0
Region III: Franklin Township, Pennsylvania	No	No	4.4
Region V: Bedford, Michigan	No	No	2.5
Janesville, Wisconsin	No	No	3.5
King, Wisconsin	No	Yes	5.6

Three of the plants failed to meet design performance requirements either because the plant was receiving flows greater than its designed capacity or because inadequate operating practices were being used. The flows in the Janesville plant peaked at more than double its designed capacity. These excessive flows were due to unusually heavy rains and an unexpected increase in flow of 2.3 million gallons per day (mgd) from an industry. According to EPA officials, the Franklin Township plant received excessive flows even during dry weather due to infiltration of ground water into an old sewer system which was subsequently connected to the newly constructed plant. The Bedford plant did not meet design performance requirements due to operating procedures, which have since been changed, and a suspect method of measuring the contents of the plant's effluent.

EPA and State officials said treatment plant performance was dependent upon variables such as flows received and operation and maintenance procedures at the plant. Some State officials believe that these factors would preclude guarantees and that the professionalism of consulting engineers negated the need for guarantees. Officials of one State believed guarantees were needed but feared that, to insure performance, they would possibly lead to overdesigned plants.

EPA and State officials said the Wayne Township and King plants did not meet performance standards because of possible faulty design.

A brief summary of the histories and present status of the Wayne Township and King plants follows. At the request of the Subcommittee, we have also included a summary of the cost increases in the grant to modify the Western Branch plant.

Wayne Township

Wayne Township received Federal grants in 1960, 1962, and 1967 totaling about \$1.7 million to construct and expand its Mountain View sewage treatment plant. The plant's designed capacity after the 1967 expansion was 4 mgd; however, by August 1972, the average flow was 4.6 mgd and during wet weather the flow reached as high as 10 mgd.

EPA records show that since 1966 the Mountain View plant has been unable to consistently operate at design treatment levels and has experienced excessive wet weather flows or infiltration. The project engineer for Wayne Township told us that the plant's design engineer should have known of the infiltration problem. However, the engineer designed the

facility according to State minimum standards, therefore, he did not believe the consulting engineer was liable for poor plant performance. These conditions continued after completion of work under the 1967 grant and, consequently, EPA withheld the final 10 percent payment on the grant until October 9, 1973.

During that period several studies were made by or for the consulting engineer to evaluate infiltration and plant operating problems. One study concluded that a good effluent could be achieved if additional staff were added to improve operating and testing procedures. Another study recommended certain equipment modifications because units were not functioning efficiently.

As a result of these studies, the Township purchased additional equipment, hired a full-time laboratory technician, trained personnel in proper sampling and testing procedures, and initiated an infiltration abatement program.

In March 1973 EPA informed Wayne Township that the problems at the Mountain View plant might be inherent in the plant design and that improvements could only be achieved by modifying the present processing units.

In June 1973 the municipality filed another grant application which provided for changes to the processing units and for doubling plant capacity. The application was returned with an EPA recommendation that expansion be handled in two phases. Phase I would be a step III grant for a sludge processing project. A step III grant was awarded to Wayne Township on August 9, 1974, in the amount of \$5.3 million to construct a sludge processing facility with a capacity of 14 mgd. The facility is scheduled to be completed in December 1976. Phase II would be for a step I grant for expanding and upgrading the treatment facility. A step I grant was awarded on May 7, 1974, in the amount of \$221,610 for plans to expand treatment facility capacity. As of October 24, 1974, the status of the grant was listed as 24-percent completed.

In September 1975 EPA told us that the problems associated with projects like Wayne Township, which were funded before Public Law 92-500, should be largely avoided with new projects because that law provides that "The Administrator shall not approve any grant after July 1, 1973, for treatment works * * * unless the applicant shows to the satisfaction of the Administrator that each sewer collection system discharging into such treatment works is not subject to excessive infiltration."

King

The small activated sludge plant in King became operational in July 1970 at a total cost of \$548,451, including Federal funds of \$274,225. Due to the possible inadequate design of the soil absorption beds, the effluent disposal portion of the plant did not achieve design performance standards. State engineers said that clay conditions, which reduced the expected rate of absorption, should have been discovered by soil borings. The consulting engineer said that the tests were performed, but evidence of the tests has never been shown to State or local officials. The State has spent a total of about \$13,600 to correct the problem. As of February 1975 the State's attorney general was considering filing suit against the consulting engineer for damages.

Prince Georges County, Maryland

Pursuant to the Subcommittee's request, we reviewed the planned expansion of the Western Branch waste treatment plant in Prince Georges County, Maryland, to determine whether there were cost increases. The plant, having a capacity of 5 mgd is operated by the Washington Suburban Sanitary Commission. It was designed in 1964 and completed in 1970 at a cost of about \$5 million, including Federal funds of about \$3.3 million.

By the time plant construction was completed, increasing population necessitated further plant expansion. In a July 1970 report the consulting engineer recommended expanding treatment capacity to 30 mgd at an estimated cost of \$8.8 million. The expansion plan called for adding 10 mgd to the existing plant and constructing a new 15 mgd plant.

On the basis of the 1970 report and State agency recommendations, EPA awarded a grant in April 1971, in the amount of \$100,000, for the design and construction of the project. After an inquiry by the regional office, the grantee submitted the plans and specifications for the project in October 1972, a year overdue.

When the plans and specifications were received, EPA learned that the original cost estimate had increased from \$8.8 million to \$25.7 million. The consulting engineers told us the original costs could have been underestimated by as much as 40 percent; however, the primary reason for the cost increase was due to abandonment of the originally proposed expansion plan. They concluded that the existing plant could not be economically modified to accomplish required treatment levels or provide for long-range future

expansion to 60 mgd. In addition, landfill availability had become more critical and the sludge disposal design was reevaluated to minimize total costs. EPA and the consulting engineers said other factors increasing costs included:

- The nitrification facility design concept was changed from a single- to a two-stage biological system.
- Discharge standards became more stringent, requiring additional equipment and design changes.
- Filtration was added at the State's request.
- Sterilization of landfill material was required.
- The Construction Cost Index greatly increased due to inflation.

Under the new proposal, the expansion to 30 mgd was to be accomplished in two phases. Phase I provided for constructing a 15 mgd treatment facility and a sludge processing facility to handle the planned plant capacity of 30 mgd. Phase II provided for constructing the remaining 15 mgd treatment capacity. The existing 5 mgd plant was to continue operation until completion of phase I.

EPA rescinded the \$4.4 million grant because funds were not available from the State's fiscal year 1972 allocation to meet the revised costs. In June 1973 EPA awarded a new grant of \$16.5 million for 75 percent of the eligible phase I cost. EPA region III officials told us the new grant was awarded because the need for plant expansion was critical.

The Commission said construction of the project was started on October 10, 1973, with completion scheduled for February 13, 1975. As of March 13, 1975, the project was 52 percent complete on the basis of funds obligated, and was scheduled for completion on October 19, 1975. Structural completion was greater than the funding percent indicates. A Commission official said that delays in construction occurred because of inclement weather, slow delivery of material, and necessary design changes.

In February 1975, region III estimated the cost of the plant expansion was \$30 million, with phase I costing \$22 million and phase II costing \$8 million.

CHAPTER 3

ROLE OF EPA AND THE STATES

The 1972 amendments state that it is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate water pollution. EPA has transferred, or is attempting to transfer, certain review and approval functions under its waste treatment construction grant program to the States as they are able to assume them. Such functions include reviews of project plans and specifications, bid and contract documents, and operation and maintenance manuals. EPA, however, is responsible for insuring that Federal requirements are met by all grant applicants.

In line with the Subcommittee's request, we reviewed 230 grant files for waste treatment facilities in EPA's regions III and V, to determine if certain requirements of the Federal Water Pollution Control Act, as amended; EPA's regulations and guidelines; and the National Environmental Policy Act of 1969 were met before the grants were approved by EPA regional offices.

Our review showed that EPA's regions III and V approved grant applications which did not comply with several Federal requirements, such as the requirements for a cost study on the reserve capacity of treatment facilities and a comparison of the capacity of the plant with the capacity of the sewer system. Also, grants were awarded for projects which included sewers not eligible for Federal funding and which did not have the (1) required environmental impact statements, (2) required consideration of environmental problems, such as siting plants in wetlands, and/or (3) complete or responsive environmental assessment statements.

Many of the above shortcomings are attributed to EPA's delays in developing and issuing regulations and guidelines for carrying out provisions of the 1972 amendments, and EPA's reluctance to delay the processing of applications for meeting the requirements of the National Environmental Policy Act and the additional requirements of the 1972 amendments.

At the Subcommittee's request, we also reviewed EPA and State programs for inspecting treatment plants to insure proper operation and maintenance (O&M). Our review showed that regions III and V, EPA had delayed making final payment inspections and had not been monitoring the States followup actions on deficiencies identified either in final payment inspections or in the States O&M inspections.

EPA has made some improvements in its monitoring of State O&M programs to insure that waste treatment facilities constructed with Federal grant funds are operated efficiently and are modified or repaired when deficiencies are identified.

REQUIREMENTS OF THE FEDERAL WATER POLLUTION CONTROL ACT NOT ALWAYS MET

Reserve capacity

Waste treatment facilities are usually designed and constructed with more capacity than is required to treat initial average daily flows. Section 204(a)(5) of the 1972 amendments requires EPA approval of grants for these facilities to be based on a comparison of costs of (1) constructing the entire reserve capacity initially or (2) providing the reserve capacity on a phased construction basis.

The 1972 amendments required EPA to publish regulations for cost effective analyses by April 16, 1973, but they were not published until September 10, 1973, and did not become effective until October 10, 1973. These regulations consisted of a one-page document which dealt with cost-effectiveness analysis, in general, and did not specify the factors to be considered in providing reserve capacity on an initial-versus phased-construction basis.

We reviewed 21 grants awarded in June and July 1973 to determine whether they had met the requirements of section 204(a)(5). None of the grant award files showed evidence that the cost comparisons required by the 1972 amendments had been done. If the municipalities had made cost comparisons, it was possible that they would not have submitted the documentation because, at that time, EPA did not require it as part of the grant applications.

An example of a project where a cost comparison should have been made was an interceptor sewer project for which a grant was awarded in region V. The grant files contained no evidence to show what consideration was given to phased development or whether a cost analysis supported the extension of the sewer into an undeveloped area.

An outer segment of the interceptor extended along a creek into a completely undeveloped area with only cultivated fields along both sides of the interceptor. This segment of the interceptor was almost a mile long and cost about \$165,000.

We asked EPA regional office officials why they funded what appeared to be an unneeded segment. EPA personnel con-

tacted the grantee's engineer and then told us that they were assured that some development was started in the area. EPA files showed that the project was designed for 2023, or about 50 years. EPA, however, did not obtain any definitive data on the development near the interceptor segment before grant award.

Not until January 1974 when EPA issued guidelines for waste treatment facility planning were any details made known on what was required of municipalities to satisfy the reserve capacity requirement. The guidelines provided considerable detail and contained a specific section on phased development. The following factors were to be considered in making the reserve and excess capacity analysis of treatment facilities:

- Ease of constructing additional facilities at a later date, for example, space limitations, disruption of community activities, and environmental impacts.
- Relative cost of providing excess capacity initially as compared with the discounted cost of deferring provision of capacity until needed.
- Uncertainties of projecting long-term wastewater flows.
- Difficulty of plant operation at low flows and settlement due to low velocities in gravity sewers.
- Future technological advances or adoption of flow and waste reduction measures which may limit need for excess capacity.

To determine whether the new guidelines had resulted in a more complete evaluation of reserve capacity and phased development considerations, we reviewed 10 project files for grants awarded from July 1 to December 31, 1974, in regions III and V.

In region III the five grants were for new treatment plants and sewers to provide increased capacity and treatment levels to communities with outdated sewage treatment systems. Reserve capacity of the new plants was based on projected waste loads for 16 to 51 years. The possibility of phased development for the reserve capacity was not documented by the applicants, although this was required by the October 1973 regulations.

A region III planning reviewer said the applications

for the grants awarded during that time were being processed by the applicants and submitted for State approval before the 1974 regulations were issued. To avoid delays in processing applications, the regional office evaluated each application to determine whether a cost-effective analysis was required and either returned the application so that an analysis could be done or processed the application so the pollution problem could be resolved.

The planning reviewer said all facility plans initiated after May 1, 1974, must contain a cost-effectiveness study or they would not be approved.

The five grants in region V provided for increasing the capacity and treatment levels of existing treatment plants. The reserve capacity was based on projected waste loads for 16 to 26 years. The possibility of phased development of the reserve capacity was not documented in any of the five projects.

A region V official told us the regional policy of requiring cost-effectiveness studies on the reserve capacity of proposed treatment facilities complied with EPA's construction grant regulations and Guidance for Facilities Planning manual. He said that the potential for phased development of the facility was considered if there was rapid development in the recent past or if future development was uncertain.

We noted that the areas served by the proposed facilities were neither experiencing rapid growth nor uncertain prospects for future growth.

Sewage collection systems

A sewage collection system--a number of lateral sewers connected to a main sewer--collects wastes from industries, subdivisions, communities, and other areas and transports them to interceptor sewers. Under section 211 of the 1972 amendments, sewage collection systems are eligible for Federal waste treatment facility construction grants provided they are for

--replacement or major rehabilitation of an existing collection system or

--a new collection system in an existing community with sufficient existing or planned treatment capacity.

Between March 1 and December 31, 1973, region III awarded three grants totaling about \$2.6 million for designing and constructing new sewage collection systems.

These grants complied with section 211 of the 1972 amendments. The collection systems were for existing communities and were part of new treatment facilities which would have sufficient capacity to adequately treat the collected sewage.

In June and July 1973, region V awarded 21 grants totaling \$35 million for waste treatment projects which included designing and constructing sewage collection systems. We reviewed three of these grants totaling \$9.7 million to determine whether they met the requirements of the 1972 amendments.

Our review showed that there was confusion in region V as to what constituted eligibility for funding new collection systems. The three grants we reviewed were for new collection systems serving areas undergoing some development. In determining eligibility for funding collection systems, region V defined an existing community as one where existing habitation along a segment of the proposed collection system constitutes over 50 percent of the potential habitation for that segment. The region inconsistently applied this criteria to the projects which we reviewed.

In one of the three projects, EPA disallowed individual segments of the collection system because existing building density along these segments was less than 50 percent of the projected density. As a result, \$484,000 of the estimated \$5.7 million total cost of the project was declared not eligible.

The project files of another grant amounting to \$474,000 for the construction of treatment facilities for a small community contained no evidence that the eligibility of collection system segments was reviewed. A lack of such a review was evidenced by the fact that the grant was approved as submitted by the applicant, even though the project included service connections which were not eligible for funding under EPA regulations. We brought this to the attention of region V officials in February 1974, who subsequently disallowed these segments costing approximately \$40,000 of the total estimated \$145,000 sewer cost.

The third grant we reviewed funded construction of a sewer collection system, an interceptor sewer, and a treatment facility at a cost of \$3.5 million. This project was also approved without the benefit of a segment review. We found the eligibility of one 5,300-foot segment questionable

using the 50-percent habitation criteria. The construction of that segment was approved for an area having current habitation at only 30 percent of potential habitation.

EPA engineers told us they primarily scanned the grant applicant's report for questionable and apparent guideline deviations and did not make a detailed review of the report.

A region V official acknowledged that inconsistencies existed in the grant awards we reviewed. He attributed these inconsistencies to the need to handle each project on a judgmental case-by-case basis because of the lack of regulations. Regulations were then issued in February 1974. They provide that no grant award may be made for a new sewer collection system in a community in existence on October 18, 1972 (the date of the amendments), unless the bulk of the flow (generally two-thirds) of the design capacity through the sewer system will be for waste waters originating from the existing community (habitation).

To determine if the the new regulations were being followed by region V, we reviewed five grants awarded from June 1 to December 31, 1974, in that region. We noted in determining eligibility that consideration was given to the two-thirds habitation requirement in all five grants. If the proposed collection system provided for large-scale future growth, a segment analysis was made and those segments not meeting the two-thirds requirement were excluded from grant eligibility.

Interceptor sewers

From March 1 through June 30, 1973, region III awarded 15 grants totaling \$30.3 million for interceptor sewers. During June and July 1973 region V awarded 13 interceptor sewer grants totaling \$48.6 million. In response to the Subcommittee's request, we reviewed 17 of these grant awards to determine whether the present or planned treatment plant capacity could handle the increased flow from the new interceptor sewers, as required in sections 204 and 211, Public Law 92-500.

In 14 of the 17 projects, documentation in the files indicated that there was, or would be, adequate treatment plant capacity to treat the interceptor sewers' increased flows if proposed actions were taken by the municipalities and State agencies.

In two projects funded by region V, the treatment plants could treat the increased flows from the new interceptor

sewers during dry weather but could not handle the flow during wet weather because they were connected to combined sewers that carried both sanitary sewage and storm water run off.

In the other project reviewed, region III did not take proper action to insure that existing or planned treatment plant capacity was adequate before awarding the grant for a new interceptor sewer. We requested and received data on the flows being treated at the plant before approval of the grant for the interceptor sewer project and noted that the plant was receiving capacity flows when the grant was awarded in June 1973. We asked region III officials whether data on the flows being received at the plant was obtained before the grant award.

Region III personnel told us actual flow data at the plant had not been obtained. They also told us that, since the State had approved the project, they believed there was no question about the adequacy of the plant's capacity to properly treat the additional flows.

Recommendation

We recommend that the Administrator, EPA, remind the regional offices awarding sewer system grants which increase the flow to existing treatment plants to assure themselves that the plant will not be overloaded by the increased flow or that plans are underway for plant expansion.

In a letter dated September 2, 1975, EPA said it recognized the basic merit of this recommendation.

NATIONAL ENVIRONMENTAL POLICY ACT REQUIREMENTS NOT ALWAYS MET

The National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321) enacted on January 1, 1970, established the Council on Environmental Quality, and directed Federal agencies to prepare an environmental impact statement (EIS) on all major Federal actions significantly affecting the quality of the human environment. The Council is responsible for providing policy advice and guidance on Federal activities affecting the environment, assisting in the coordination of activities, issuing guidelines to Federal agencies for preparing an EIS, and overseeing the act's implementation by Federal agencies.

The Council issued EIS interim guidelines on April 30, 1970. Each Federal agency was required to establish its own formal procedures, consistent with these guidelines, by July 1, 1970. In October 1970 the Federal Water Quality Administration, EPA's predecessor, issued an order setting forth procedures for complying with the Council's guidelines. The order required applicants for waste treatment construction grants to submit an environmental assessment statement (EAS) addressing the proposed project's environmental impact. The EAS was used by the agency to determine whether an EIS was required. If an EIS was not required, EPA issued a negative environmental impact declaration.

In April 1972 EPA issued interim guidelines requiring EASs for waste treatment facilities which included

- an examination and systematic comparison of alternatives considering economic, technical, and social factors, in addition to the environmental factors, and
- a complete listing of the beneficial and adverse effects for each alternative.

In January 1973--more than 3 years after enactment of NEPA--EPA published interim regulations in the Federal Register (38 FR 1696), effective in February 1973, establishing EPA's policy and procedures for identifying and analyzing the environmental impact of agency actions and for preparing EASs and EISs.

Our review showed EPA was not fully carrying out NEPA requirements regarding EASs and EISs.

EASs not complete or responsive

EPA regulations dated January 17, 1973, requiring preparation of an EAS, state that:

"The analysis shall be structured in a manner which allows comparisons of: (1) environmental and financial cost differences among equally effective alternatives, or (2) differences in effectiveness among equally costly alternatives."

"* * *the analysis of different courses of action shall include alternatives capable of substantially reducing or eliminating any adverse impacts, even at the expense of reduced project objectives. The specific alternative of taking no action must always be evaluated.

This analysis shall evaluate alternatives in such a manner that reviewers independently can judge their relative desirability. In addition, the reasons why the proposed action is believed by the Agency to be the best course of action shall be explained. On projects that will involve construction, alternative sites must be considered."

EPA's consideration of alternatives to environmental problems in constructing waste treatment facilities is limited to reviewing documentation submitted by the applicant. We found that the extent to which the applicant discussed and evaluated alternatives in submitted EAS statements varied from a limited amount to none.

We reviewed 24 waste treatment grants totaling \$204.5 million which were awarded between May 1972 and July 1973 in EPA regions III and V. The consideration of alternatives in an EAS was required by the 1972 guidelines and the 1973 interim regulations. No consideration of alternatives was documented in EASs for 19 of the 24 projects. At least one alternative was discussed in the other five. The costs of the alternatives were not supplied in two of the five projects.

In general the EASs submitted with the grant applications reviewed did not provide an adequate discussion of the project's possible environmental impact. One response was merely a positive or negative restatement of questions required to be addressed in the assessment statement. Some answers were not responsive to the questions asked, such as the following:

"Any irreversible and irretrievable commitments of resources. Since matter is neither created or destroyed--only converted from one form to another--then the only such commitment is that which is necessary to support human life. Thus the greater the population, the greater the impact on natural resources in their present form. Also, the more that is done to create a man-made environment that more rapidly will artificial conversion of forms of matter take place. The element most involved in this project is oxygen. Thus the U.S.A. - EPA should be seeking worldwide cooperation on the replenishment of free oxygen via the forests and fields which is in balance with man and his activities."

To determine whether improvements had been achieved in EPA's current regional policy on requiring applicants

to submit a complete EAS, we reviewed 10 more recent grants awarded between July 1 and December 31, 1974, in regions III and V. Each of the five applicants in region V submitted EASs which included data on alternative treatment methods and related cost estimates. The regional office has shifted to its Planning Branch the functions of reviewing an applicant's EAS and determining if EPA should issue an EIS. The Planning Branch has distributed to consulting engineers a copy of EPA's Manual for Preparation of Environmental Impact Statements and has requested that the EAS be in the same or similar format. The Chief, Planning Branch said this has eased and speeded the regional evaluation of an applicant's EAS.

The five region III grants did not contain enough information on alternative treatment methods and on cost effectiveness to meet the requirements of EPA regulations. We noted in some cases region III personnel completed the EAS with information gathered from reports submitted with the application, rather than return the application and request a complete EAS. A region III official said workshops were conducted in several cities in September 1974, informing consulting engineers of the documents that must be submitted with an application. He feels that the applications submitted in fiscal year 1976 will be better documented and the regional staff will not be doing the present amount of work.

In September 1975 EPA told us current EPA regulations issued in April 1975 and guidelines revised in May 1975 required and emphasized the preparation of thorough environmental assessments on EPA grant projects.

Few EISs being prepared

NEPA and EPA regulations require an EIS when significant environmental impacts are anticipated upon construction of a project. EPA regions III and V awarded 1,218 grants for waste treatment construction projects from July 1970 through August 1973, but only 6 EISs were issued.

Region V Federal Activities Branch personnel and a Council staff member said EPA was not fully carrying out NEPA requirements.

The Branch is responsible for reviewing EISs issued by other Federal agencies and, by agreement with the region V's Construction Grants Branch, is responsible for concurring in EISs and negative declarations issued on EPA waste treatment facility projects.

In evaluating 115 negative declarations issued in June and July 1973, the Branch determined that 8 projects should have had an EIS issued, 4 projects, although requiring additional information, should also have had an EIS issued, and available data on 8 other projects was so poor that a determination of the environmental impact could not be made.

The Branch officials' opinions that an EIS should have been prepared for the eight projects were based on the extent of development that was anticipated as a result of the project. The following information submitted by an applicant is an example of one project which the Branch concluded had a significant environmental impact.

"Discuss how the proposed action will encourage or discourage population or industrial growth to the extent that it will change the character and economy of the area. It is anticipated that the proposed project will greatly encourage both population and industrial growth, and will beneficially affect the character and economy of the area. Presently the area is rural in character with a low population density. The proposed regional facility will ultimately serve an approximate area of 54 square miles. The present population is estimated to be 23,000 people. The 1990 projected population is estimated at 83,000 people and the ultimate saturation population is predicted to be 306,000 people. Obviously, the availability of sewer and water facilities will be the stimulus for the anticipated growth of the area.

* * * *

"Thus, the proposed regional wastewater treatment facility will provide the necessary capacity for the 360 percent population growth expected in the next 20 years. Sufficient land area at the proposed site will also be acquired to accommodate the future expansion of the regional facility to serve the ultimate population growth."

Officials in region III and V contended that the term "significant environmental impact" is too nebulous for consistent interpretation. They said that all waste treatment grants have a significant environmental impact and a broad interpretation of NEPA guidelines could necessitate an EIS for every project resulting in delays in waste treatment construction.

In February 1975 we again looked at region III's and V's efforts to issue required EISs. From September 1973 through December 1974 the regions awarded 152 grants for waste treatment plants and prepared 3 EISs. During the same period, three EISs were started. The policy on writing EISs is basically the same in both regions. The official reviewing the applicant's EAS makes the decision to prepare, or not to prepare, an EIS on the basis of any significant or controversial aspect of the project.

Branch officials in region V said the region was improving its EIS process. The responsibility for determining the need for an EIS has been transferred from Construction Grants to the Planning Branch.

Other environmental problems not always considered

The interim EIS regulations, effective February 1973, require the grant applicant to evaluate the project's environmental impacts and any adverse impacts which cannot be avoided if the proposal is carried out. In line with the Subcommittee's request we reviewed 13 projects for which grants were awarded before July 1973 to determine whether EPA considered the following environmental problems when reviewing an application: (1) siting in wetlands, (2) sludge disposal in oceans or landfills, and (3) air pollution from burning sludge.

Each of the 13 projects reviewed was awarded a construction grant; however, EPA regional offices determined that only 1 required preparation of an EIS. A negative declaration was initially issued for this project, but subsequent information submitted to EPA necessitated an EIS.

Siting plants in wetlands

The Nation's wetlands include marshes, swamps, bogs, and other low-lying areas and are a valuable irreplaceable water resource. In February 1973 EPA headquarters issued a policy to preserve the wetlands

"* * *from destruction through waste-water or non-point source discharges and their treatment facilities or by other physical, chemical or biological means."

The region V staff was not familiar with this policy in September 1973 and acknowledged that no review was made of grant applications for this environmental consideration.

A resident of a community in region V complained that an interceptor sewer project would promote development along the sewer line, thus destroying a wetland. Region V told us this project would not be covered by the EPA wetland policy. This policy was only directed to effluent discharges in wetlands and not to the impact that might result around to the construction. Region V's interpretation disagreed with EPA's policy statement.

The EPA policy on protection of wetlands was issued in Administrator's Decision Statement No. 4, dated February 21, 1973, and reads in part:

"In its decision processes, it shall be the Agency's policy to give particular cognizance and consideration to any proposal that has the potential to damage wetlands* * *."

Our February 1975 examination of region V policy on wetlands revealed that the region was carrying out the above policy. The Construction Grants Branch reviewed the application for the siting of treatment plants and their effluent discharge in wetlands, and the Planning Branch dealt with potential damage to wetlands as a result of the siting of treatment plants.

Sludge disposal in oceans or landfills

The ultimate disposal of sludge is considered in EPA's grant review process. Region V officials told us that under no circumstances was disposal permitted in a body of water. Landfill was merely one sludge disposal alternative along with land spreading, incineration, and others. However, as with other environmental problems, the region's evaluation of the environmental impact of sludge disposal was based on data submitted by the applicant. Moreover, regional officials told us they rely on State agency enforcement of local sludge disposal requirements. A region III official told us there was no policy on the disposal of sludge in oceans, landfill, or lakes; on land; or by incineration. The applicant must convince EPA that the proposed method was the best of the alternatives. The disposal method must be approved by the State before EPA becomes involved.

Potential air pollution from sludge

Regions III and V require that sludge incineration meet the requirements of the Clean Air Act and depend on the States to insure compliance. States issue permits for the operation of incinerators. Region III's air quality group reviews each proposal for sludge incineration for air pollution effects and cost effectiveness. Region V also told us it reviews applicants' specifications for incinerators in the context of applicable air standards.

CONSIDERATION OF ALTERNATIVE OR IMPROVED METHODS OF TREATMENT

The Subcommittee asked us to review the extent to which EPA and the States adequately considered and adopted alternative or improved methods of waste treatment, such as land treatment or advanced treatment. Local authorities were responsible for considering and adopting such alternative and improved methods of waste treatment. The State and EPA were generally limited to reviewing and approving a facility's plan before awarding a construction grant.

To determine the consideration of alternative or improved methods of treatment, we reviewed 24 grants awarded by regions III and V during January 1972 through June 1973. Of the 24 grants, 15 were for projects which included advanced waste treatment facilities. One other project, an aerated lagoon, included spray irrigation (land application) of the effluent. A region III official told us that the region did not evaluate each project relative to alternative treatment methods and that applicants were not required to adopt alternative or improved methods unless the proposed method (1) would not provide an effluent that would meet prescribed water quality standards or (2) would result in significant adverse impact on the environment.

Region V officials estimated that about 75 percent of the grants in their region were for projects that included advanced waste treatment. This advanced treatment is needed because (1) phosphorous removal is required in the Great Lakes basin to meet the provisions of the 1972 joint international agreement on Great Lakes water quality between the United States and Canada and (2) secondary treatment of waste is inadequate for discharges into low-flow streams, such as those found in Indiana.

EPA region V officials consider land disposal of effluent as a viable alternative to discharge into streams. Wisconsin officials said this is a viable alternative for small communities. Region V's staff said that Michigan promoted land disposal to some extent because it satisfied the best practicable method of treatment requirement and offered a solution to waste disposal for the future.

Beginning with grants awarded from fiscal year 1975 and subsequent authorizations, facilities' plans must provide for the application of best practicable waste treatment technology. An EPA publication entitled "Guidance for Facilities Planning" requires developing and screening preliminary alternative systems featuring at least one

technique under each of three categories--treatment (biological and physical-chemical) and discharge to receiving waters, treatment and reuse, and land application. A final proposal will be prepared by the applicant for each technique unless adequate justification is presented for eliminating a technique during the screening process.

NEED FOR PROMPT FINAL INSPECTIONS AND FOLLOWUP ACTIONS

EPA regulations and guidelines for the waste water treatment construction grants program (40 CFR, parts 30 and 35) require that an EPA representative inspect a completed project before the final payment of a grant.

EPA guidelines state that the purpose of the inspection is to determine that all work has been accomplished according to the approved plans and specifications and to the satisfaction of all interested parties and that the project will result in an operable treatment facility able to meet water quality standards. An EPA official told us a final inspection also included a verification that all documentation necessary for final payment was available and that only eligible costs were included.

Our review of 147 construction grants in regions III and V showed that EPA's final inspections were often done long after a project was completed.

A treatment plant's effectiveness at removing pollutants from waste water depends on each of the plant's systems operating properly. The final payment inspection identifies problems a plant may be experiencing at the earliest possible date since it is the first inspection the plant will receive. To quickly obtain data on a federally funded plant's ability to operate at its designed treatment levels and correct any problems, EPA must reduce the present time lag between plant completion and final inspection.

One of the causes of delayed inspections is the grantee not promptly notifying EPA that a project is completed. Another cause is the time needed to document contract costs, certify O&M manuals, approve the grantee's cost recovery system, and meet other administrative requirements. These actions compound each other and produce a long struggle to close out the grant.

Neither regional office started the administrative process of closing out a grant until it received a request for inspection from the grantee. The grantee's request could arrive as late as 8 months after the project was

completed. Documenting the history of the grant can consume from 1 to 4 or more months. The regional offices identified the grantee's failure to submit required documents as the number one reason for delays. State officials said the municipalities and their consulting engineers were not prepared for the task of completing the administrative requirements of the grant.

We believe one solution to the problem to be a method whereby the regional offices keep abreast of which projects are complete and begin their administrative process of closing out the grant without waiting for the grantee's inspection request.

We also noted that operating deficiencies identified in the final inspection did not receive followup action by the regional office or the State and continued to be a problem in the plant's operations many months later.

Lack of timely final inspections

EPA obtains initial information on operating problems and treatment plant efficiency primarily through final inspections. To evaluate EPA final inspections, we reviewed construction grant files of 59 projects in region III and 88 projects in region V completed during fiscal years 1972 and 1973. We reviewed the final inspection reports to determine if the projects had been inspected, if they were inspected in a timely manner, and if the regional offices took corrective action on deficiencies identified.

As of December 3, 1973, 53 of the 59 region III projects had been inspected and as of December 10, 1973, 83 of the 88 region V projects had been inspected. An average of 8.1 months elapsed between completion of construction and the final inspection for the 136 projects. Over 1 year elapsed for 34 of the projects, and 10 of these took more than 18 months to inspect.

Delays in final inspections have occurred because the grantee failed to notify the regional office promptly upon project completion, and because the administrative process of closing out the grant was prolonged by EPA and the grantee. The grantee is responsible for requesting a final inspection after construction is completed on a grant project. EPA regulations and guidelines, however, do not specify how much time the grantee has to submit an inspection request. In our sample of 136 projects, about 4.3 months elapsed between completion of construction and request for final inspection. For 44 of these projects, more than 6 months elapsed before the grantee requested an inspection.

Delays also occur after EPA is notified that a facility is ready for final inspection. In our sample about 3.8 months elapsed between the date of request and the date of final inspection. For 29 of these projects, more than 6 months elapsed before EPA inspected the facility.

In February 1974 EPA issued regulations requiring a final inspection within 60 days from the date of request.

Our review of the project files in region V showed that most of the problems to be resolved before final payment were administrative. Only 39 of the 88 project files we reviewed contained explanations for the delays in final inspection completions. Some of the 39 projects had more than one problem.

<u>Problems to be resolved</u>	<u>Number of projects with problems</u>
Administrative problems:	
Establishing industrial waste cost recovery system	10
O&M manual and plant staffing	10
Cost data and change orders	24
Other administrative problems	7
Plant operating problems	6

The grantee's final payment request initiates the regional offices' administrative efforts to close out the grant. In many cases EPA goes through a series of requests for data from the grantee. Regional officials said the grantee's failure to submit data was the primary cause for delays. State officials told us that grantees were not familiar with Federal requirements and did not have the capability to readily assemble the required data. As of July 1975, EPA had not acted to decrease the time frame for closing out a grant or to promptly inform grantees of the Federal data requirements.

Recommendation

We recommend that the Administrator, EPA, instruct the regional offices to keep abreast of projects nearing completion and to brief grantees on the data needed to close out those grants. Also, we recommend that EPA begin its data collection for closing out grants at the completion of

construction, rather than waiting for the grantees' request for final payment.

In a letter dated September 2, 1975, EPA said it concurred with this recommendation in general but disagreed with the report's conclusion about EPA data collecting. EPA said it collected data on projects continuously and did not wait for the grantee's request for final payment before obtaining all of the data necessary to close the grant.

Although EPA does obtain some data before the grantee's request for final payment, the regions are experiencing delays in obtaining the information necessary to closing out grants. For example, region III in a memo dated August 21, 1975, commenting on this report, stated

"Due to manpower restrictions, final inspections and project close-outs have received a lower priority in Region III than other grant related work such as obligations, contract awards, interim payments, and municipal needs surveys. With the anticipated increase in construction grant staffing for FY 76 and implementation of internal control procedures, final inspections and close-outs will be completed in a more expeditious manner."

Correction of deficiencies noted during final inspections

To insure correction of defects noted during final inspections, EPA may withhold part of the final payment. This part is normally equal to the cost of correcting the defects. Region V officials said responsibility for correction rests with the grantee. These officials rely on the statements of the grantee, without a followup inspection, to determine that corrective actions have been or will be taken to correct the problems. They justified this position on the basis that the State agencies also have monitoring responsibilities, including receiving operating reports from the grantee and insuring that identified deficiencies were corrected.

The regional office had little information to show whether State agencies were insuring that deficiencies identified during the final inspection were being corrected.

Operating defects were noted in 36 of 83 final inspections in region V projects completed during fiscal years 1972 to 1973. In January and February 1974 we checked the operating status of six of these projects: final payments had been made on two projects, but five projects continued to have operating problems. We visited the three States in region V

in which these six projects were located to assess State efforts in correcting defects identified during final inspections. Two of the three States were involved with the grantee in correcting the problems.

The remaining State viewed this task as an EPA and grantee responsibility and had no program to correct plant defects or operating problems. The responsible State district engineers indicated the plants were still experiencing operating problems.

We noted that although EPA relied on the States to insure that deficiencies noted during final inspections were corrected, its regulations did not require the States to carry out this function. In view of the fact that one of the States did not view this activity as its responsibility, we believe that EPA should revise its regulation to specifically require States to insure that such deficiencies are corrected.

Recommendation

We recommend that the Administrator, EPA, issue regulations to require that States insure that operating defects noted during final inspections have been corrected before final payment.

In a letter dated September 2, 1975, EPA agreed with this recommendation.

STATE O&M PROGRAMS

EPA's Administrator is required by the 1972 amendments to annually survey and report to the Congress on the efficiency of treatment works financed with Federal funds. The latest survey results are contained in the EPA "Clean Water Report to Congress--1974" and are based on information taken from reports on inspections conducted from January 1972 through October 1973. When the operating performance for a sample of 461 treatment plants was compared to the original design criteria

--30 percent were not meeting BOD removal criteria,

--50 percent were not meeting suspended solids removal criteria, and

--21 percent were not meeting settleable solids removal criteria.

The report cautioned that the survey sample could not be assumed to fully represent the Nation because facilities in only 38 States were included, and the number in each State ranged from 1 to 64. The report states, however, that if the survey results for BOD were applied nationally, approximately 6,000 plants would be contributing unnecessarily high pollution loads in their receiving streams. The plants inspected did not meet design criteria because of operational, mechanical, or manpower deficiencies; hydraulic overloading; infiltration/inflow during wet weather; and other operational or maintenance problems.

We did not attempt to verify EPA's conclusions on plant efficiency. We believe, however, that State O&M inspection programs and reporting requirements cannot be expected to greatly improve these conditions unless EPA improves its monitoring of State programs.

In our report entitled "Need for Improved Operation and Maintenance of Waste Treatment Plants" dated September 1, 1970 (B-166506), we recommended that, to avoid duplication, EPA should discontinue its plant O&M inspections except for periodically evaluating State O&M programs. Regions III and V have apparently followed this recommendation and have relied on the States to do O&M inspections and to followup on identified deficiencies. EPA's role as monitor of State programs, however, is weak in region V.

A region V official told us that all initial O&M inspections for fiscal year 1973 were scheduled to be joint inspections but that regional inspectors accompanied State inspectors on only 20 percent of initial O&M inspections. Region V has not done joint initial O&M inspections since July 1, 1973. Followup action to correct defects noted in O&M inspections has been left to the States with no monitoring by the regional office.

Region III officials said since January 1971 all initial O&M inspections in region III have been conducted jointly by EPA and State inspectors. The States are expected to insure the correction of deficiencies identified during O&M inspections. Region III makes periodic inquiries to the States on the status of deficiencies, and followup inspections are made to insure progress on corrective measures. Region III's goal is to visit each plant once every 3 years.

O&M inspections

In September 1970 EPA issued comprehensive guidelines requiring each State to establish an O&M inspection and correction program to insure effective, efficient, and

continuous operation of federally financed waste treatment plants. In June 1972 EPA issued interim regulations which required State agencies to inspect each federally financed project annually for the 3 years after construction and periodically thereafter.

According to guidelines and regulations, the State agencies are responsible for continuous O&M programs and the Federal agencies have a monitoring role. The guidelines specify that every January 1, the responsible regional office notify States of the facilities they must inspect and tentatively identify those facilities where regional office representatives would accompany the State inspectors. Region III representatives accompany State inspectors on all initial O&M inspections of treatment plants. These plants are identified on the list of projects scheduled for inspection by State agencies. This was also the policy of region V; however, a regional official told us that, in fiscal year 1973, region V representatives accompanied State inspectors on 20 percent of the inspections. Region V did not attend O&M inspections in fiscal year 1974.

In region III, 37 of the 59 projects completed in fiscal years 1972 and 1973 were treatment plants. Regional and State officials did the initial O&M inspections on 16 of these plants in 1973 and scheduled 17 other inspections in 1974. The remaining four had not received a final inspection or grant payment.

Of the 88 projects we selected in region V, 56 were eligible for an O&M inspection during fiscal years 1973 and 1974. However, inspections were conducted on only eight of these projects.

To see whether problems noted during inspections were corrected, we selected 20 projects in regions III and V. The EPA inspections were conducted between 1969 and 1972 and disclosed various structural, mechanical, or operational deficiencies. The inspection reports indicated that followup action was needed to correct the deficiencies. In region III, all 10 projects had been reinspected more than once by EPA and the State, and corrective action had been taken or was being taken.

A region V official told us that no corrective action was taken by the region because it was not aware of the problems at the 10 treatment plants. Two State agencies were responsible for the plants. One agency was aware of the problems at its two plants and was aiding the plant operators in finding solutions. The other agency was not pursuing corrective action on its eight plants because

operating reports indicated that all were meeting secondary treatment standards. Of the 10 plants, 8 were experiencing problems similar to those noted in the inspection reports.

In February 1975 we again visited regions III and V to evaluate the current policy regarding the O&M inspection of treatment plants during fiscal year 1975.

Region III had, in the first half of fiscal year 1975, conducted 75 O&M inspections, all of which were conducted jointly with the States. In addition, the States made many inspections. Region III's O&M program consisted of joint inspections and a midyear evaluation of the States' O&M program efforts. A region III official said followup action to correct deficiencies was left to the States.

In the first 5 months of fiscal year 1975, 559 O&M inspections had been recorded in region V. Region V conducted 55 and the State conducted 504. Data on the number of joint inspections was not readily available.

Region V officials outlined their O&M program which was established in April 1974. The program recognizes primary responsibility belonging to the States with region V providing an overview of quality assurance and technical assistance and expertise on nonroutine problems.

The States in region V are expected to visit all major municipalities and newly completed plants each year. A sampling of the plants' influent and effluent is required. If possible, a visit, without sampling, is required to the remaining treatment plants in the State.

Region V is to conduct 20 percent of the required inspections with half of the 20 percent conducted jointly with the States. To evaluate State efforts to correct deficiencies the region is to review a 5-percent sample of inspection reports each year to determine if problems were corrected.

CHAPTER 4

ROLE OF THE PUBLIC

The objective of the National Environmental Policy Act of 1969 is to build into the Federal decisionmaking process an appropriate and careful consideration of all environmental aspects of proposed actions including public participation as an integral part of the planning process. Section 101(e) of the Federal Water Pollution Control Act Amendments of 1972 requires public participation in all aspects of water pollution control programs.

In a speech before the Water Pollution Control Federation on October 2, 1973, EPA's Administrator, expressed commitment to public participation:

"Throughout all our activities relating to the 1972 law, we are highly sensitive to the need for meaningful citizen involvement. Such participation is crucial to continued public understanding of and support for clean water efforts. In such a complex field, however, achieving meaningful citizen participation throughout the program is no small challenge. We have issued regulations on this subject and are looking for all possible means of achieving both the spirit and the letter of the law in this respect."

Because of the Subcommittee's expressed interest we examined public participation in EPA's development and promulgation of regulations for the construction grants program and compliance with EPA regulations requiring public hearings to carry out NEPA's objectives.

EPA issued proposed NEPA regulations in January 1972 and interim regulations in January 1973. These regulations required a public hearing for all waste treatment grants and became the initial focal point for public participation in planning the construction of waste treatment facilities.

The public was given the opportunity to comment on the proposed EPA regulations and guidelines to carry out the construction grant program. However, our review of 54 waste treatment construction projects awarded by regions III and V from March through July 1973 showed that grantees, in most cases, did not hold the required public hearings for planning the construction of waste treatment facilities, and EPA did not issue waivers when hearings were not held.

When public hearings were held, they were generally held so late in the development of the projects that the public had little chance to become involved in the decision-making process. In addition attendance was very limited and individual property right controversies were generally raised, rather than environmental issues.

EPA has taken action to improve public participation in the decisionmaking process by issuing regulations and guidelines to carry out provisions of the 1972 amendments, which also require public participation.

PUBLIC PARTICIPATION IN ESTABLISHING REGULATIONS

The opportunity for public participation in the construction grant program decisionmaking process begins with establishing agency regulations to carry out legislative provisions. The development of regulations involves three phases--planning, development, and external coordination.

In the planning phase, public input is through a 14-member Technical Advisory Group (TAG) which acts in an advisory capacity to EPA's Municipal Waste Water Systems Division. TAG members represent various conservation, professional, academic, and industrial groups having special knowledge of, or interest in, sewage treatment. EPA representatives meet with TAG in the planning phase to discuss the general approach to be taken and the important points to be considered in developing the regulations.

In the development phase, TAG, State agencies, public interest groups, or environmental groups may submit comments on a draft of the proposed regulation.

In the external coordination phase, the proposed regulation is published in the Federal Register, a news release is prepared, and the general public is invited to submit written comments. The comments are evaluated by EPA, and the major issues identified are presented to TAG and other agency committees for review and comment. A briefing memorandum is then prepared and presented to the Administrator. This memorandum summarizes the major issues involved, the proposed alternative courses of action, and the extent to which the public participated. The Administrator makes final disposition of the major issues and the final regulation is published in the Federal Register.

The following schedule lists the EPA regulations reviewed:

<u>Sections of the 1972 act</u>	<u>Titles of the regulations</u>
304(d) (1)	Secondary treatment regulations
307(b)	Pretreatment regulations
304(f)	Pretreatment guidelines

For each regulation, files containing the written comments received were available at EPA headquarters for public review. These files contained correspondence relating to the subject matter and comments received during the development and external coordination phases.

In the external coordination phase 93 comments were received for the secondary treatment regulations, 52 for the pretreatment regulations, and 14 for the pretreatment guidelines. A majority of the comments on each of the three proposals were received from groups most affected by the proposed regulations or guidelines. For example, 71 of the 93 comments on secondary treatment regulations were submitted by Federal agencies, State agencies, city officials, and county or sanitary districts, who were most affected by the proposed regulations. The remaining 22 were submitted by private citizens, consulting engineers, industry representatives, and others.

In addition to soliciting written comments on the proposed Pretreatment Standards, EPA held a public hearing in Washington, D.C., on September 26, 1973. EPA issued a public hearing notice as required in the regulations and invited each commenter on the proposed standards to attend.

Eight presentations were made orally and one written presentation was submitted. A transcript of the proceedings was available for public review.

We also received a copy of the briefing memorandum for each of the regulations reviewed. In each case, the issues raised by the public were identified. The major issues were discussed and recommended alternative solutions were presented to the Administrator for final disposition.

EPA officials cited several methods--other than requesting written comments and holding public hearings--used by the agency to stimulate the public interest and hopefully increase participation. These methods ranged from pamphlets and speeches to seminars, institutes, and workshops.

The seminar approach was used in developing the sewer system evaluation guidelines. A series of 12 seminars was developed and presented by EPA's Municipal Waste Water Systems Division. In total, about 2,500 to 3,000 State and local government officials and consulting engineers attended the series. Questions and comments were solicited and, when considered appropriate, were included in the proposed guidelines.

The EPA Office of Public Affairs has developed a two-part Institutional Workshop program to educate the public. The first part of the program consists of 10 institutes, 1 in each EPA region, each attended by approximately 50 to 75 citizen leaders. These leaders set up workshops at the local level to involve other interested citizens. According to an EPA official, approximately 85 workshops were set up in fiscal year 1974. The program was continued in fiscal year 1975.

PUBLIC PARTICIPATION IN THE FACILITIES PLANNING PROCESS

Our review of public participation in the waste treatment facility planning process was limited to NEPA requirements because EPA had not established regulations at the time of our field work defining public participation requirements under the Federal Water Pollution Control Act, as amended. We reviewed 10 EPA waste treatment grant award files in region III and 44 in Region V awarded in June and July 1973.

In most cases, the grants were awarded without adequate public participation, as required by NEPA. For some projects, perfunctory public hearings were held before a grant award, but they were held after major decisions had been made; therefore, the public did not have the opportunity to influence the decisionmaking process. Public attendance at hearings was very limited, and controversies that arose related primarily to individual property rights, not environmental issues.

EPA's regulations to carry out NEPA requirements were issued in January 1973 and required a public hearing on all waste water treatment works. The hearing was to be held during the project's development so the public could help identify environmental issues to be considered in designing the project.

Before EPA approves plans and specifications for a treatment plant, the applicant is required to submit a record

of the hearing containing a list of witnesses, the text of each presentation, and a statement that participants were informed of the purpose of the hearing.

Regional administrators are authorized to waive the public hearing requirement for a minor project, such as an addition or modification to an existing treatment works.

Region III and V had not adhered to requirements

Our review of public participation in 10 region III construction grants showed that:

- Environmental assessment statements contained only brief comments that there were no public objections to the projects.
- Documentation on public hearings was not in the project files and was not requested by the regional office.
- A waiver of the public hearing requirement was not granted by the regional administrator where hearings were not held.
- Applicants were required to submit public hearing documents only for projects known to be controversial.

Region III's desire to not interrupt the grants program by returning incomplete applications and the lack of personnel to make environmental reviews were cited as the reasons for failing to comply with NEPA regulations.

Our review of 44 project files in region V showed that

- the regional administrator waived the public hearing requirement for 1 project,
- no hearings were held and no waivers were granted for 18 projects, and
- a public hearing was held for 25 projects, but a negative declaration was prepared before public hearings for 6 of the 25 projects.

When an environmental review of a project indicates no significant impact attributable to the project, EPA issues a declaration of negative impact. A negative declaration was issued for all 44 projects reviewed.

Region V officials told us the requirement for public hearings came at the same time the region was preparing to carry out the complex provisions of the 1972 amendments. A conflict existed between awarding the grant and carrying out the guidelines. The public hearing requirements were somewhat late; many projects had been in the planning stage for several years and had already advanced to the point where plans and specifications were available.

Attendance at hearings often low

Attendance at the 25 public hearings held in region V was very limited. At hearings for five projects, no one attended and in more than half of the remaining hearings, the public attendance amounted to no more than five persons. Attendance at public hearings on the 25 projects in region V is shown below.

<u>Public attendance</u>	<u>Public hearings</u>
0	5
1-5	9
6-10	3
11-20	3
Over 20	1
Attendance data not available	<u>4</u>
Total	25

Regional and State officials blamed public apathy for the low attendance. However, the lack of controversy in the projects might have been a contributing factor.

Environmental controversies not usually raised

The project files reviewed in regions III and V contained little evidence of controversial environmental issues. Generally, controversies arose when individual property rights were believed threatened. Environmental issues were raised in only 5 of the 54 project files we reviewed. Of the five, four had issues raised at public hearings. Those four projects involved issues dealing with loss of trees, destruction of a creek, ruining of rural atmosphere, and destruction of wetlands through induced development.

EPA efforts to improve
public participation

On February 11, 1974, EPA issued final construction grant regulations which, for the first time under the 1972 amendments, outlined the requirements for facility planning. At least one public hearing or meeting is required to obtain public advice at the beginning of the facility planning process. If the planning were initiated after April 30, 1974, another public hearing must be held before the facilities plan could be adopted. This latter hearing may also satisfy the NEPA hearing requirement. The regional administrator may require additional hearings to discuss more fully the plan and alternatives or to give concerned interests adequate opportunity to express their views.

The planning process must also be consistent with EPA's August 23, 1973, regulations concerning the guidelines for minimum participation in water pollution control programs. For construction grant applications this requires a Summary of Public Participation as part of the application. The summary is to describe the measures taken to provide for, encourage, and assist participation; the public response to such measures; and the disposition of major points raised.

EPA published detailed procedural guidance designed to be used by engineers and planners in Guidance for Facilities Planning, dated January 1974. In addition to the mandatory public hearing, other public involvement mechanisms are recommended. These mechanisms include:

- Development of a list of concerned and affected local bodies.
- Information solicitation to identify new sources of information and expertise.
- Newspaper articles to inform the public.
- Advisory committees having the necessary expertise and representing the affected publics.
- Mailings to interested and affected publics.
- Radio and television spots to announce major alternative proposals.

The agency expects this guidance to serve continuously as a useful planning tool and will update the information as necessary.

The regulations and guidelines pertaining to public participation under the 1972 amendments were issued after the completion of our field work. In February 1975 we reviewed five construction grants in regions III and V to check compliance with the regulations. The grants were awarded between July 1 and December 31, 1974.

A public hearing or meeting was held for all 10 grants; public attendance was very low. Both regions required the applicant to submit documented evidence of the hearing and the publicity given to it. Region III suggested to its applicants that the public hearing or meeting be held during the development of a project.

A region III official told us in February 1975 that over the past year public participation has improved.

CHAPTER 5

SCOPE OF REVIEW

To comply with the Subcommittee's request, we talked with various EPA and State officials and reviewed legislation, regulations, project inspection records, and grant files. We examined the files for all new waste treatment construction grants awarded in Pennsylvania (region III), Michigan and Wisconsin (region V) between January 1, 1972, and March 30, 1973, to determine the types of projects for which grant funds were obligated. The grant files which we reviewed in detail were generally selected so as to include projects from each State in the regions. In addition, we selected project files of grants awarded during the period July 1 to December 31, 1974, to determine the effect of new guidelines. Also, we reviewed the grant files of projects which were specifically requested by the Subcommittee. Our review was conducted at EPA's region III office in Philadelphia and region V office in Chicago; EPA headquarters in Washington, D.C.; and the agencies responsible for processing construction grant applications in Delaware, Maryland, Pennsylvania, Ohio, Michigan, and Wisconsin.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 2 1975

OFFICE OF
PLANNING AND MANAGEMENT

Mr. Henry Eschwege
Director
Resources and Economic Development Division
U. S. General Accounting Office
Washington, DC 20548

Dear Mr. Eschwege:

This letter is in reply to your letter of July 28, 1975, to Mr. Train accompanying copies of the proposed report to the Subcommittee on Conservation, Energy and Natural Resources, House Committee on Government Operations entitled, "Federal, State, Local and Public Roles in Constructing Waste Water Treatment Facilities." We appreciate the opportunity to review and comment on this report prior to its submission to the requesting committee.

I am enclosing the comments prepared by the Office of Water and Hazardous Materials for the Agency and understand that the comments received from the Regions, III and V, have been informally submitted to you earlier.

If there is any additional information required that we are capable of furnishing, please let us know.

Sincerely yours,

A handwritten signature in black ink that reads "Alvin L. Alm".

Alvin L. Alm
Assistant Administrator
for Planning and Management

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

AUG 25 1975

SUBJECT: Draft GAO Report: Federal, State, Local and Public Roles
in Constructing Waste Water Treatment Facilities

FROM: James L. Agee, Assistant Administrator
for Water and Hazardous Materials (WH-556)

TO: Malcolm S. Stringer
Director, Office of Audit (PM-209)

We appreciate the opportunity to comment on the draft GAO report on the EPA construction grants program. In general, we have found the report to be thorough and objective. We also believe, however, that the report has focused too heavily on "old law" projects funded under our previous legislation and on "new law" projects funded in the first year of our current program under P.L. 92-500. EPA has made substantial progress in the last two years in remedying many of the problems observed in these earlier projects. The report briefly recognizes several of these improvements, but a preponderant part of the narrative and a large majority of the examples deal with the earlier phases of the program.

A more balanced analysis of the grants program utilizing data from a greater number of recent projects would result in a clearer picture of the program's development. Our specific comments on the report, which follow, focus primarily on those areas where we believe too much reliance has been placed on dated issues.

1. P. 2, line 6 - The report confuses "best practicable treatment," which is required of industrial point sources by July 1, 1977, with "best practicable waste treatment technology," which is required of publicly-owned treatment works by July 1, 1983.
2. P. 3, line 13 - As of July 31, 1975, 11.2 billion dollars remained available for obligation until September 30, 1977. The report cites an older figure of 13 billion.
3. P. 5, line 15 - We feel that the use of the word "demonstrate" in the context of this sentence is inappropriate. To demonstrate that a plant will meet design specifications implies that something like a working model must be presented.
4. P. 6, line 10 - Our preliminary analysis indicates that average project costs have actually decreased somewhat so far during CY 1975.

5. P. 7, line 15 - The description of the technical services provided by consulting engineers for facility planning is incomplete. The major responsibility of the consultant is to prepare the facility plan which must include:

- a) an assessment of the current wastewater treatment situation, including infiltration and inflow, and environmental conditions
- b) an assessment of the future situation with projections as to flow and waste loads and population growth
- c) the development of project alternatives for providing a cost-effective and environmentally sound wastewater treatment system
- d) an environmental assessment of the proposed project and its alternatives
- e) a preliminary design for the proposed treatment works

These requirements are detailed in the EPA Guidance for Preparing a Facility Plan, Revised - May 1975.

6. P. 11 - The original Wayne Township project examined by the report was funded with "old law" grants (1960, 1962, 1967). Our current law and regulations place stricter conditions on the award of construction grants than were required under the old law. For example, Section 201(g)(3) of P.L. 92-500 states that "the Administrator shall not approve any grant after July 1, 1973, for treatment works under this section unless the applicant shows to the satisfaction of the Administrator that each sewer collection system discharging into such treatment works is not subject to excessive infiltration". The problems associated with projects like Wayne Township should be largely avoided with new law projects.

7. P. 13 - The King, Wisconsin project was also an old law project.

8. P. 21, line 6 - Phased construction of treatment facilities should not be described as providing reserve capacity on an "as needed" basis. "As needed" implies that a facility might be constructed to provide only for existing needs, whereas section 204(a)(5) requires that every project provide sufficient reserve capacity. The problem is to determine how much reserve capacity is sufficient and cost-effective.

9. P. 21, line 8 - The cost-effectiveness analysis regulation of October 1973 was published pursuant to Section 212(2)(c) of the Act and not pursuant to Section 204(a)(5). These guidelines are relevant to the reserve capacity issue but were not promulgated specifically to implement that section.

10. P. 29, line 13 - We would suggest an addition to this recommendation, recognizing its basic merit, as follows:

We recommend that before awarding sewer system grants which would increase the flow to existing treatment plants EPA regional offices insure that the plant will not be overloaded by the increased flow or that plans are currently underway for plant expansion.

11. P. 34, line 1 - We concur with the spirit of the recommendation but would emphasize that current EPA regulations and guidelines require and emphasize the preparation of thorough environmental assessments on EPA grant projects. Environmental assessments are provided for in our regulation, Preparation of Environmental Impact Statements, 40 CFR Part 6 (§ 6.512), April 14, 1975, in the Title II construction grants regulation, 40 CFR Part 35 (§ 35.917), and in the Guidance for Preparing a Facility Plan, Revised - May 1975.

12. P. 46, line 6 - We believe it is of little value to analyze a sample of projects completed in 1972 and 1973 as to compliance with a 60 day final inspection requirement established in a February 1974 regulation.

13. P. 47, line 10 - We concur with this recommendation in general but would disagree with the report's conclusion about EPA data collecting. EPA collects data on projects continuously and does not wait for the grantee's request for final payment before obtaining all of the data necessary to close the grant.

14. P. 48, line 14 - The NPDES permit system under P.L. 92-500 provides EPA with a comprehensive method of monitoring the operating performance of grants projects. All operating facilities will have been issued a NPDES permit with required effluent limitations. Compliance with such limitations is a good index of operating performance.

15. P. 49, line 17 - We concur with this recommendation.

We hope that the above comments will prove useful to GAO and that, where appropriate, their substance can be incorporated in the final report on this subject. Please do not hesitate to call on us if we can be of further assistance.

PRINCIPLE ENVIRONMENTAL PROTECTION AGENCYOFFICIALS RESPONSIBLE FOR ACTIVITIESDISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
ADMINISTRATOR:		
Russell E. Train	Sept. 1973	Present
John R. Quarles, Jr. (acting)	Aug. 1973	Sept. 1973
Robert W. Fri (acting)	Apr. 1973	Aug. 1973
William D. Ruckelshaus	Dec. 1970	Apr. 1973
ASSISTANT ADMINISTRATOR FOR WATER AND HAZARDOUS MATERIALS:		
Dr. A. W. Breidenback	Sept. 1975	Present
James L. Agee	Apr. 1974	Sept. 1975
Roger Strelow (acting) (note a)	Feb. 1974	Apr. 1974
Robert L. Sansom (note a)	Apr. 1972	Feb. 1974
DEPUTY ASSISTANT ADMINISTRATOR FOR WATER PROGRAM OPERATIONS:		
John T. Rhett	Mar. 1973	Present
Louis De Camp (acting)	Sept. 1972	Mar. 1973
Eugene T. Jensen	June 1973	Sept. 1972

 a Before April 22, 1974, the title of this position was Assistant Administrator for Air and Water Programs.